User Manual and Programmers' Reference

Altova XMLSpy 2012 User & Reference Manual

Published: 2012

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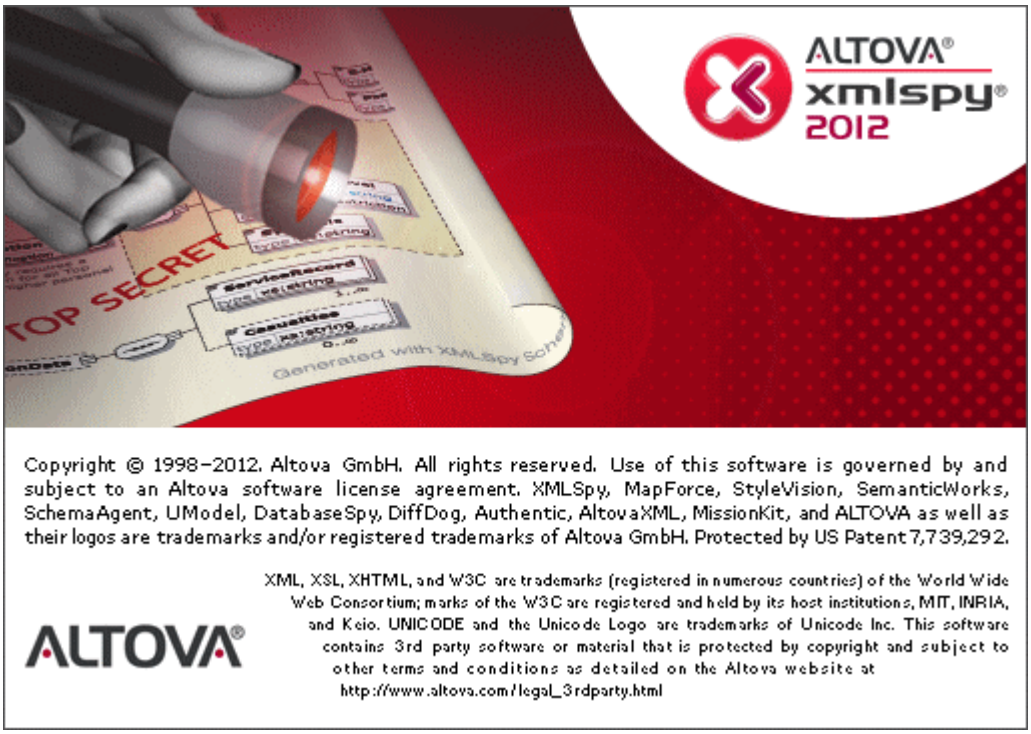
Altova XMLSpy 2012

Welcome to XMLSpy

Welcome to XMLSpy

Altova XMLSpy® 2012 Professional Edition is the industry standard XML Development Environment for designing, editing and debugging enterprise-class applications involving XML, XML Schema, XSLT, XQuery, SOAP, WSDL and Web service technologies. It is the ultimate productivity enhancer for J2EE, .NET and database developers. XMLSpy is available in 64-bit and 32-bit versions.



This documentation is organized into the following sections:

- User Manual
- Programmers' Reference
- Appendices

It is available in the following formats:

- As the built-in Help system of XMLSpy (Help menu or **F1**)
- In HTML and PDF formats, and for purchase as a book, these formats being available via the Altova website

Last updated: 02/17/2012

Altova XMLSpy 2012

User Manual

User Manual

The User Manual part of this documentation contains all the information you need to get started using XMLSpy and to learn the various XMLSpy features. It is organized into four broad parts: (i) an Introduction; (ii) a Tutorial; (iii) a Working With part; and (iv) a User Reference.

We suggest that you start by reading the Introduction in order to get a feel for the GUI and to understand key application settings. If you are new to XML, the XMLSpy tutorial will help you not only to get to know XMLSpy but also to easily create and use your first XML documents. After that, you should read the Editing Views section and then the sections in the Working With part that are of most interest to you. The User Reference part can be used thereafter as a reference.

Introduction
The introduction describes the GUI, important settings in the Options dialog, and the application environment.

Tutorial
The XMLSpy tutorial helps you get started and shows you how to use the most common XMLSpy features.

Working With
The Working With part of the documentation describes the functionality that XMLSpy offers for working with various XML and XML-related technologies. It starts with a description of XMLSpy 's multiple editing views. The sections that immediately follow explain the functionality for each technology separately. The Working With part concludes with a series of descriptions of application-wide XMLSpy features, such as Altova Global Resources and projects. The sections in the Working With part are:

- Editing Views: Describes the various editing views in XMLSpy
- XML: Explains the various features available for working with XML documents in XMLSpy
- DTDs and XML Schemas: Shows how schemas (DTDs and XML Schemas) can be edited and leveraged in XMLSpy
- XSLT and XQuery: Presents the range of features available for XSLT and XQuery development
- Authentic: Explains the utility of Altova's graphical XML editor, and shows how it is used
- HTML, CSS, and JSON: Explores XMLSpy's support for HTML, CSS, and JSON
- Databases: Explores the wide range of features XMLSpy offers for interfacing XML with databases
- Global Resources: Describes a unique Altova mechanism that can be used to boost development efficiency when using Altova products, especially as a suite of products
- Projects: Explains XMLSpy's project mechanism, which enables increased efficiency and additional development options
- File/Directory Comparisons: Presents XMLSpy's inbuilt comparison engine
- XMLSpy in Visual Studio: Describes integration in the Visual Studio developer platform
- XMLSpy in Eclipse: Describes integration in the Eclipse developer platform
- Code Generator: Explains the working of the built-in code-generator, which produces program code for schema definitions

User Reference

The User Reference part is organized according to the menus in XMLSpy and describes each menu command in detail.

File paths in Windows XP, Windows Vista, and Windows 7
File paths given in this documentation will not be the same for all operating systems. You should note the following correspondences:

- *(My) Documents folder:* The My Documents folder of Windows XP is the Documents folder of Windows Vista and Windows 7. It is located by default at the following respective locations. Example files are usually located in a sub-folder of the (My) Documents folder.

Windows XP	`C:/Documents and Settings/<username>/My Documents`
Windows Vista, Windows 7	`C:/Users/<username>/Documents`

- *Application folder:* The Application folder is the folder where your Altova application is located. The path to the Application folder is, by default, the following.

Windows XP	`C:/Program Files/Altova`
Windows Vista, Windows 7	`C:/Program Files/Altova`
32-bit package on 64-bit Windows OS (XP, Vista, 7)	`C:/Program Files (x86)/Altova`

1 New Features

Features that are new in XMLSpy **Version 2012** are listed below. Features that were new in older versions are listed further below.

Version 2012 Release 2

- An EPUB file is a zipped group of files used for the distribution of digital publications (EPUB books). In Archive View, you can open EPUB files, create and edit EPUB files, preview the digital EPUB book, edit component files of the EPUB archive directly in XMLSpy, validate the EPUB file, and save the component files back to the EPUB archive. See the section EPUB Files for details.
- XML special characters can be escaped or unescaped using a context menu command.
- Bug fixes.

Version 2012

- Find in Projects enables project files and folder to be quickly found in the Project window.
- Entry helpers and intelligent editing support for CSS 3.0 has been added. This is in addition to support for CSS 2.1.
- Support for HTML 5.0.
- Support for JDBC connections to databases.
- New Application API interface for Java.

Version 2011 Release 3

- Simplified spellchecker.
- Scripting and the Scripting Editor in XMLSpy support for .NET version 4.0 (in addition to versions 2.0, 3.0, and 3.5).

Version 2011 Release 2

- In Schema View, documentation of the XML Schema document can be generated using an SPS that can be customized in Altova's StyleVision product. In earlier versions of XMLSpy, the design of the generated schema documentation was a standard default design. With this new feature, the structure and formatting of the documentation can be designed by the user.
- The content of an external file, such as an image file, can be encoded as Base-16 or Base-64 text and inserted in Text View and Grid View. This is done via the **Insert | Encoded External File** command of the Edit menu.
- Schema View has been enhanced with the following features: (i) Sorting of global components, attributes, and identity constraints; sorting has also been introduced in Content Model View; (ii) Finding and renaming of global components in the schema file and in related schema files; (iii) If the base type of a derived type is modified, the content, attributes, facets and sample values defined within the derived type can be preserved if they are still applicable with the new base type.

Version 2011

- In Schema View, creating Schema Subsets from the components of a single schema file. A schema file can therefore easily be split up into subsets. The reverse process of assimilating components from included schema subsets into the active file is also supported.

Version 2010 Release 3

- Generate sample values in sample files that are generated from an XML Schema. (*Enterprise and Professional editions only.*)
- Integration in Microsoft Visual Studio 2010. This extends support to the latest version of Visual Studio, which is in addition to support for versions 2005 and 2008. Support for Visual Studio 2003 has been discontinued. (*Enterprise and Professional editions only.*)

Version 2010 Release 2

- Optimizations for working with large files in Text View and Grid View
- Validation against XML Schemas up to three times faster in Text View
- SharePoint® server support enables files to be checked out and checked in directly from within the XMLSpy interface.
- CSS and HTML Info windows provide a quick way, via the GUI, to link CSS and HTML files and open them in various browsers and editors.
- 64-bit versions of XMLSpy available in Enterprise and Professional Editions.

2 Introduction

This introduction describes:

- The application GUI, and
- The application environment.

The GUI section starts off by presenting an overview of the GUI and then goes on to describe each of the the various GUI windows in detail. It also shows you how to re-size, move, and otherwise work with the windows and the GUI.

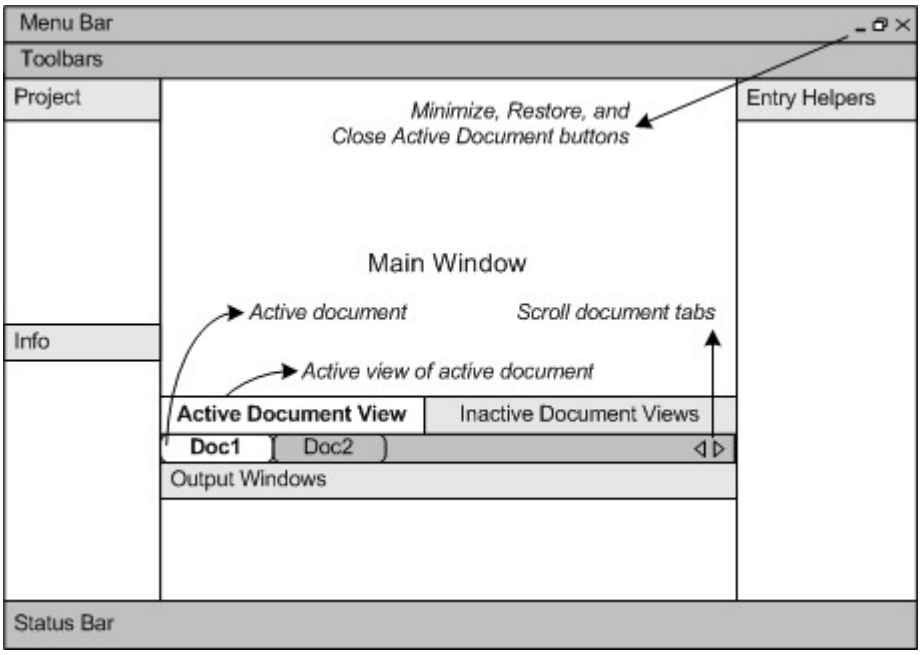
The Application Environment section points out the various settings that control how files are displayed and can be edited. It also explains how and where you can customize your application. In this section, you will learn where important example and tutorial files have been installed on your machine, and, later in the section, you are linked to the Altova website, where you can explore the feature matrix of your application, learn about the multiple formats of your user manual, find out about the various support options available to you, and discover other products in the Altova range.

2.1 The Graphical User Interface (GUI)

The Graphical User Interface (GUI) consists of a Main Window and several sidebars (*see illustration below*). By default, the sidebars are located around the Main Window and are organized into the following groups:

- Project Window
- Info Window
- Entry Helpers: Elements, Attributes, Entities, etc (depending upon the type of document currently active)
- Output Windows: Messages, XPath, XSL Outline, Find in Files, Find in Schemas

The main window and sidebars are described in the sub-sections of this section.



The GUI also contains a menu bar, status bar, and toolbars, all of which are described in a subsection of this section.

Switching on and off the display of sidebars
Sidebar groups (Project Window, Info Window, Entry Helpers, Output Windows) can be displayed or hidden by toggling them on and off via the commands in the **Window** menu. A displayed sidebar (or a group of tabbed sidebars) can also be hidden by right-clicking the title bar of the displayed sidebar (or tabbed-sidebar group) and selecting the command **Hide**.

Floating and docking the sidebars
An individual sidebar window can either float free of the GUI or be docked within the GUI. When a floating window is docked, it docks into its last docked position. A window can also be docked as a tab within another window.

A window can be made to float or dock using one of the following methods:

- Right-click the title bar of a window and choose the required command (**Floating** or **Docking**).

- Double-click the title bar of the window. If docked, the window will now float. If floating, the window will now dock in the last position in which it was docked.
- Drag the window (using its title bar as a handle) out of its docked position so that it floats. Drag a floating window (by its title bar) to the location where it is to be docked. Two sets of blue arrows appear. The outer set of four arrows enables docking relative to the application window (along the top, right, bottom, or left edge of the GUI). The inner set of arrows enables docking relative to the window over which the cursor is currently placed. Dropping a dragged window on the button in the center of the inner set of arrows (or on the title bar of a window) docks the dragged window as a tabbed window within the window in which it is dropped.

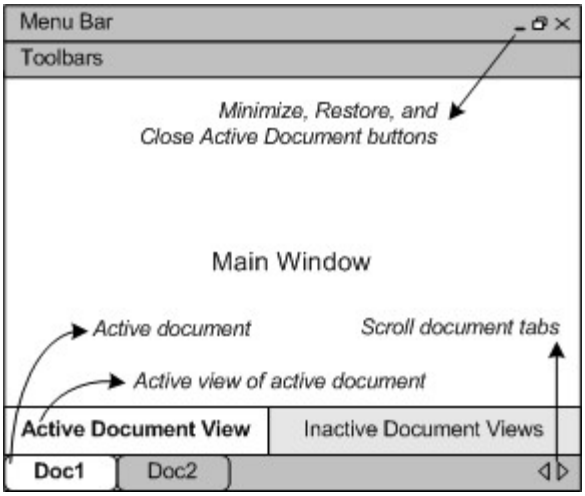
To float a tabbed window, double-click its tab. To drag a tabbed window out of a group of tabbed windows, drag its tab.

Auto-hiding sidebars
The Auto-hide feature enables you to minimize docked sidebars to buttons along the edges of the application window. This gives you more screen space for the Main Window and other sidebars. Scrolling over a minimized sidebar rolls out that sidebar.

To auto-hide and restore sidebars click the drawing pin icon in the title bar of the sidebar window (or right-click the title bar and select **Auto-Hide**).

2.1.1 Main Window

The Main Window (*screenshot below*) is where you view and edit documents.



Files in the Main Window

- Any number of files can be opened and edited at once.
- Each open document has its own window and a tab with its name at the bottom of the Main Window. To make an open document active, click its tab.
- If several files are open, some document tabs might not be visible for lack of space in the document tabs bar. Document tabs can be brought into view by: (i) using the scroll buttons at the right of the document tab bar, or (ii) selecting the required document from the list at the bottom of the **Window** menu.
- When the active document is maximized, its **Minimize**, **Restore**, and **Close** buttons are located at the right side of the Menu Bar. When a document is cascaded, tiled, or

minimized, the **Maximize, Restore**, and **Close** buttons are located in the title bar of the document window.
- When you maximize one file, all open files are maximized.
- Open files can be cascaded or tiled using commands in the **Window** menu.
- You can also activate open files in the sequence in which they were opened by using **Ctrl+Tab** or **Ctrl+F6**.
- Right-clicking a document tab opens a context-menu with a selection of **File** commands, such as **Print** and **Close**.

Views in the Main Window
The active document can be displayed and edited in multiple views. The available views are displayed in a bar above the document tabs (*see illustration above*), and the active view is highlighted. A view is selected by clicking the required view button or by using the commands in the **View** menu.

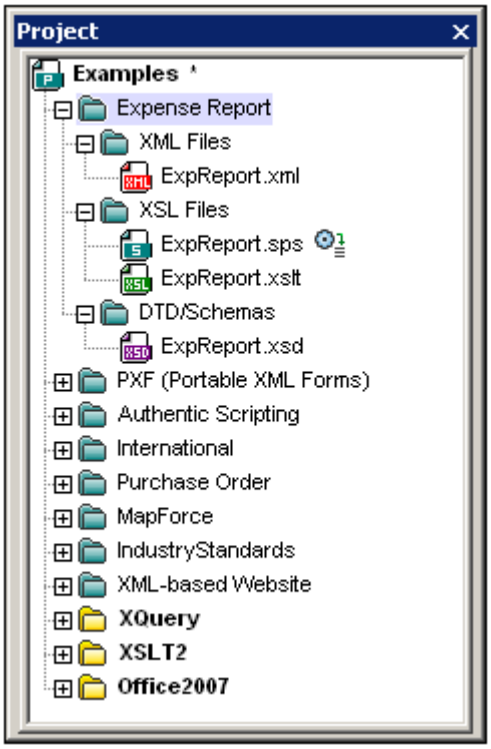
The available views are either editing or browser views:

- **Text View:** An editing view with syntax-coloring for source-level work.
- **Grid View:** For structured editing. The document is displayed as a structured grid, which can be manipulated graphically. This view also contains an embedded **Table view**, which shows repeating elements in a tabular format.
- **Schema View:** For viewing and editing XML Schemas.
- **Authentic View:** For editing XML documents that are based on StyleVision Power Stylesheets
- **Browser View:** An integrated browser view that supports both CSS and XSL stylesheets.

Note: The default view for individual file extensions can be customized in the **Tools | Options** dialog: in the Default View pane of the File Types tab.

2.1.2 Project Window

A project is a collection of files that are related to each other in some way you determine. For example, in the screenshot below, a project named `Examples` collects the files for various examples in separate example folders, each of which can be further organized into sub-folders. Within the `Examples` project, for instance, the `OrgChart` example folder is further organized into sub-folders for XML, XSL, and Schema files.



Projects thus enable you to gather together files that are used together and to access them quicker. Additionally, you can define schemas and XSLT files for individual folders, thus enabling the batch processing of files in a folder.

Project operations

Commands for folder operations are available in the **Project** menu, and some commands are available in the context menus of the project and its folders (right-click to access).

- One project is open at a time in the Project Window. When a new project is created or an existing project opened, it replaces the project currently open in the Project Window.
- After changes have been made to a project, the project must be saved (by clicking the **Project | Save Project** command).
- The project has a tree structure composed of folders, files, and other resources. Such resources can be added at any level and to an unlimited depth.
- Project folders are *semantic* folders that represent a logical grouping of files. They **do not need** to correspond to any hierarchical organization of files on your hard disk.
- Folders can correspond to, and have a direct relationship to, physical directories on your file system. We call such folders *external folders*, and they are indicated in the Project Window by a yellow folder icon (as opposed to normal project folders, which are green). External project folders must be explicitly synchronized by using the **Refresh** command.
- A folder can contain an arbitrary mix of file-types. Alternatively, you can define file-type extensions for each folder (in the Properties dialog of that folder) to keep common files in one convenient place. When a file is added to the parent folder, it is automatically added to the sub-folder that has been defined to contain files of that file extension.
- In the Project Window, a folder can be dragged to another folder or to another location within the same folder, while a file can be dragged to another folder but cannot be moved within the same folder (within which files are arranged alphabetically). Additionally, files and folders can be dragged from Windows File Explorer to the Project Window.

- Each folder has a set of properties that are defined in the Properties dialog of that folder. These properties include file extensions for the folder, the schema by which to validate XML files, the XSLT file with which to transform XML files, etc.
- Batch processing of files in a folder is done by right-clicking the folder and selecting the relevant command from the context menu.

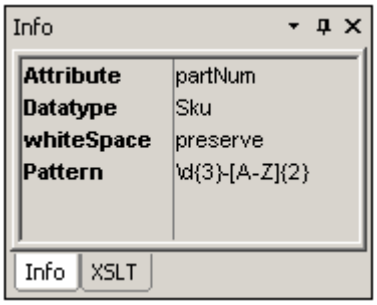
For a more detailed description of projects, see the section Projects.

Note: The display of the Project Window can be turned on and off in the **Window** menu.

2.1.3 Info Window

The Info Window (*screenshot below*) shows information about the element or attribute in which the cursor is currently positioned.

- When an XSLT document is active, additional XSLT-specific information and commands are available in the XSLT tab of the Info window (*see XSLT tab in screenshot below*). How to read the information and use the commands in the XSLT tab is explained in the section XSLT and XQ | XSLT | XSL Outline.



Information is available in the Info Window in Text View, Grid View, and Authentic View.

Note: The display of the Info Window can be turned on and off in the **Window** menu.

2.1.4 Entry Helpers

Entry helpers are an intelligent editing feature that helps you to create valid XML documents quickly. When you are editing a document, the entry helpers display structural editing options according to the current location of the cursor. The entry helpers get the required information from the underlying DTD, XML Schema, and/or StyleVision Power Stylesheet. If, for example, you are editing an XML data document, then elements, attributes, and entities that can be inserted at the current cursor position are displayed in the relevant entry helpers windows.

The entry helpers that are available depend upon:

1. *The kind of document being edited*. For example, XML documents will have different entry helpers than XQuery documents: elements, attributes, and entities entry helpers in the former case, but XQuery keywords, variables, and functions entry helpers in the latter case. The available entry helpers for each document type are described in the description of that document type.
2. *The current view*. Since the editing mechanisms in the different views are different, the entry helpers are designed so as to be compatible with the editing mechanism in the relevant views. For example: In Text View, an element can only be inserted at the cursor location point, so the entry helper is designed to insert an element when the element is double-clicked. But in Grid View, an element can be inserted before the

selected node, appended after it, or added as a child node, so the Elements entry helper in Grid View has three tabs for Insert, Append, and Add as Child, with each tab containing the elements available for that particular operation.

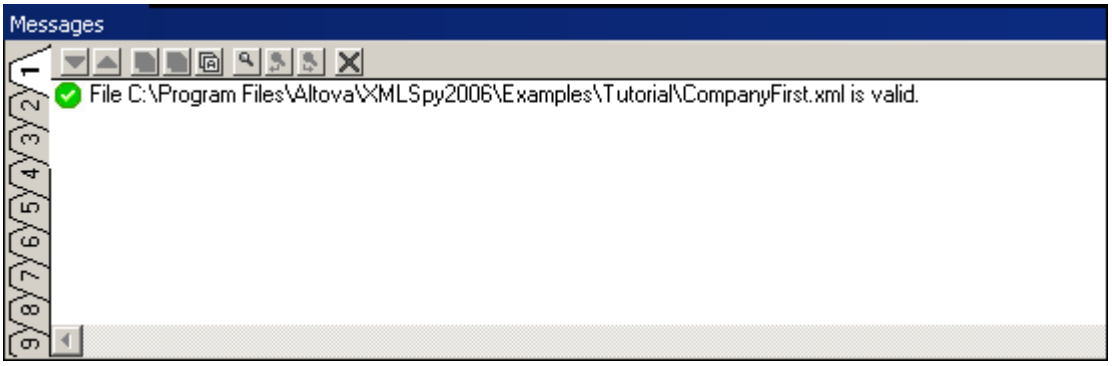
A general description of entry helpers in each type of view is given in Editing Views. Further document-type-related differences within a view are noted in the description of the individual document types, for example XML entry helpers and XQuery entry helpers.

Note the following:

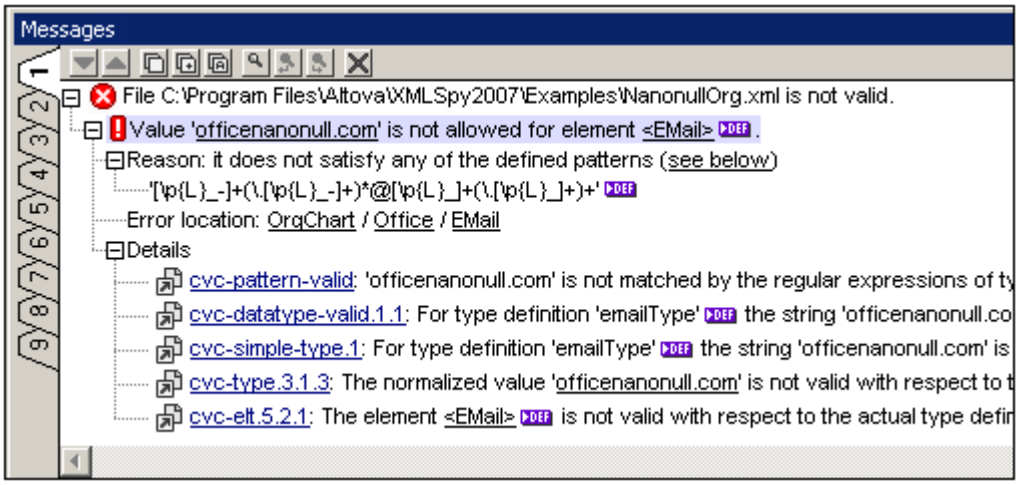
- You can turn the display of entry helpers on or off with the menu option **Window | Entry Helpers**.
- In Visual Studio .NET, entry helper windows have a prefix that is the application name.

2.1.5 Output Window: Messages

The Messages Window displays messages about actions carried out in XMLSpy as well as errors and other output. For example, if an XML, XML Schema, DTD, or XQuery document is validated and is valid, a successful validation message (*screenshot below*) is displayed in the Messages Window:



Otherwise, a message that describes the error (*screenshot below*) is displayed. Notice that there are links (black link text) to nodes and node content in the XML document, as well as links (blue link text) to the sections in the relevant specification on the Internet that describe the rule in question. Clicking the purple `Def` buttons, opens the relevant schema definition in Schema View.

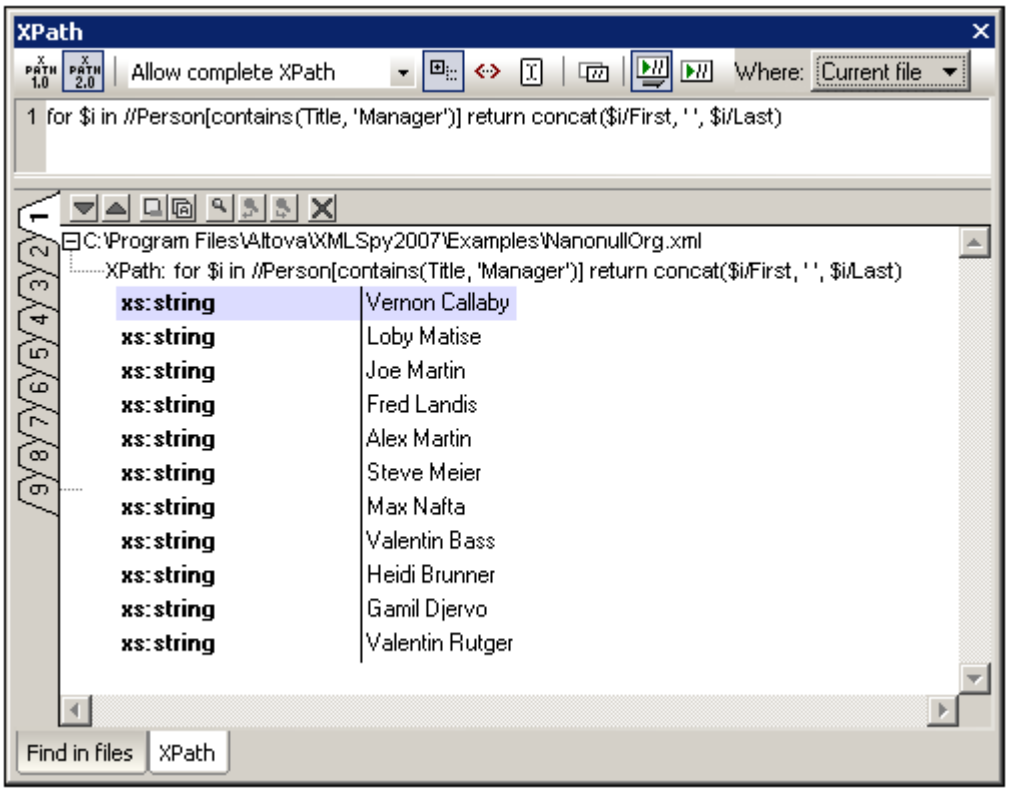


The Messages Window is enabled in all views, but clicking a link to content in an XML document highlights that node in the XML document in Text View. However, when an XML Schema has been validated in Schema View, clicking a `Def` button does not change the view.

Note: The **Validate** command (in the XML menu) is normally applied to the active document. But you can also apply the command to a file, folder, or group of files in the active project. Select the required file or folder in the Project Window (by clicking on it), and click **XML | Validate** or **F8**. Invalid files in a project will be opened and made active in the Main Window, and the File Is Invalid error message will be displayed.

2.1.6 Output Window: XPath

The XPath Window enables you to evaluate up to nine XPath expressions, each in the context of the currently active XML document. Additionally, an expression can be evaluated in: (i) all currently open XML documents; (ii) XML files of the currently active XMLSpy project; and (iii) XML files of a selected folder. This means that you can enter different XPath expressions in different tabs and then evaluate each expression on multiple XML files at once.

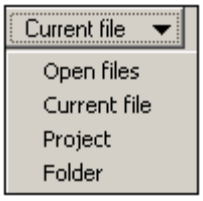


The XPath Window shows, in a single view: (i) the XML document; (ii) the XPath expression; and (iii) the result of evaluating the XPath expression on the active XML document. The benefits are that you can: (i) navigate the XML document while keeping the XPath expression and its results in view; (ii) navigate the XML document by clicking items in the result; and (iii) modify the XPath expression while keeping the XML document in view.

Steps for evaluating an XPath expression
Given below are the main steps required to use the XPath Window.

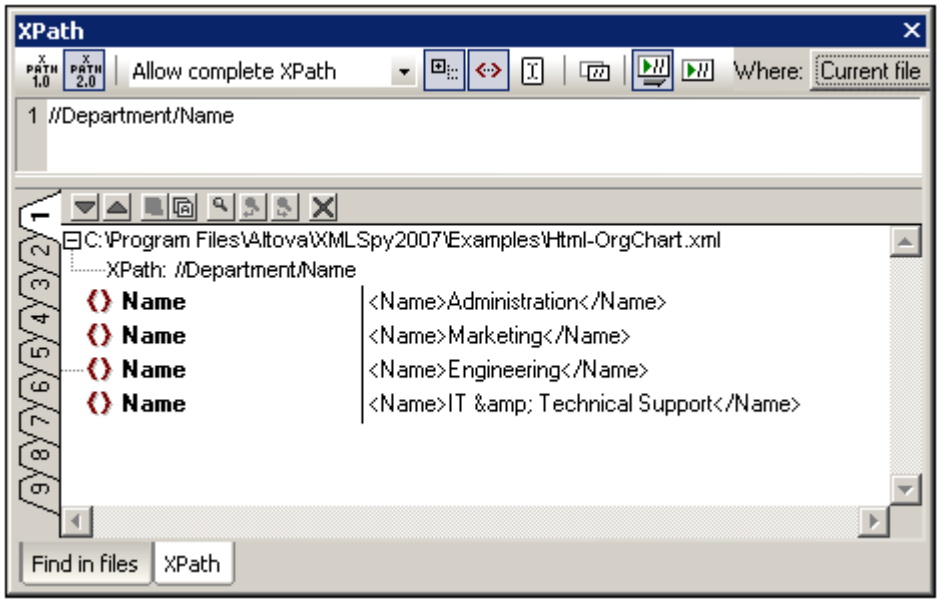
1. Depending on where the XPath expression is to be evaluated, select from one of the

options in the Where options list (*screenshot below*): *Current file; Open files; (XMLSpy) Project;* or *Folder*.



If *Current file* is selected, the file that is currently active is used. Selecting *Open files* causes the XPath expression to be evaluate against all the files currently open in XMLSpy. Project refers to the currently active XMLSpy project. The external folders in a XMLSpy project can be excluded by checking the *Skip external folders* check box. The *Folder* option enables you to browse for the required folder; the XPath expression will be evaluated against XML files in this folder.

2. Select the XPath version you wish to use (`1.0` or `2.0`) by clicking the appropriate icon in the toolbar of the output window (*see screenshot below*).
3. Select the type of XPath expression from the dropdown list in the combo box. `Allow Complete XPath` is the usually required option. The `XML Schema Selector` and `XML Schema Field` options can be used for a narrow subset of specific XPath 1.0 cases and are useful when unique identity constraints have been defined in the XML Schema. When either of these options is selected, only name tests (and the wildcard `*`) are allowed in the XPath expression, and predicates and XPath functions may not be used. Furthermore, for the `XML Schema Selector` option, only expressions on the child axis are allowed; for the `XML Schema Field` option, expressions on the child axis and attribute axis are allowed. For more information, see the W3C's XML Schema: Structures Recommendation.
4. Toggle the Evaluate XPath Expression On Typing icon  on if you want the XPath expression to be evaluated while you are typing it in. If this icon is toggled off, the expression will be evaluated only when you click the Evaluate XPath Expression icon  .
5. Toggle the Show Header In Output icon  on if, in the output, you wish to show the location of the XML file and the XPath expression (*as in screenshot below*).
6. If the XPath expression will returns nodes—such as elements or attributes—you can select whether the entire contents of the selected nodes should be shown. This is done by switching the Show Complete Results icon  on. In the screenshot below, both the element and its content are displayed (in the right-hand column).



7. To set an XPath expression relative to a selection in the XML document, toggle the Set Current Selection As Origin icon on.
8. Enter the XPath expression. The intelligent XPath editing feature will pop up a list of XPath functions, XPath axes, and document elements and attributes, from which you can choose. If you wish to create the expression over multiple lines, press the **Return** key.
9. To evaluate the expression (if Evaluate on Typing is toggled off or when a new XML document is made active), click the Evaluate XPath Expression icon.

Features of the Result Pane
The Result Pane has the following useful features:

- When the result contains a node (including a text node)—as opposed to expression-generated literals—clicking on that node in the Result Pane highlights the corresponding node in the XML document in the Main Window.
- When a node in the XML document is selected, clicking the Copies XPath of Current Selection to Edit Field icon does the following: (i) generates an XPath expression to specifically locate the selected node; (ii) overwrites the expression currently in the edit field with the newly generated XPath expression.
- The Copies XPath from Current Result Tab to Edit Field icon copies the XPath expression of the currently open result tab to the XPath expression edit field. This is useful if (i) the expression in the edit field is different than one that was used to generate the result in one of the result tabs, and (ii) you wish to re-evaluate the expression used in that result tab. In this case, you make the result tab active and then use this command to copy the result tab's XPath expression to the edit field. The XPath expression can then be re-evaluated.

XPath expressions in the edit field
The following general points about XPath expressions should be noted. Issues specific to XPath 1.0 and XPath 2.0, respectively, are treated separately below.

- When you enter an expression in the edit field, it is displayed in black if the syntax is correct and in red if the syntax is incorrect. Note that correct syntax does not ensure that the expression is error-free. Error messages are displayed in the results pane.

- An error might be caused because of incorrectly set options. So set the options correctly, especially the XPath Version and the XPath Origin (absolute, or relative to the current selection in the currently active XML document).
- Only namespaces that are in scope on the element where the XPath expression originates (i.e. on the context node) are evaluated.

XPath 1.0 expressions

- XPath 1.0 functions must be entered without any namespace prefix.
- The four node tests by type are supported: `node()`, `text()`, `comment()`, and `processing-instruction()`.

XPath 2.0 expressions

- String (e.g. 'Hello') and numeric literals (e.g. 256) are supported. To create other literals based on XML Schema types, you use a namespace-prefixed constructor (e.g. `xs:date('2004-09-02')`). The namespace prefix that you use for XML Schema types must be bound to the XML Schema namespace: `http://www.w3.org/2001/XMLSchema`, and this namespace must be declared in your XML file.
- XPath 2.0 functions used by the XPath Evaluator belong to the namespace `http://www.w3.org/2005/xpath-functions`. Conventionally, the prefix `fn:` is bound to this namespace. However, since this namespace is the default functions namespace used by the XPath Evaluator, you do not need to specify a prefix on functions. If you do use a prefix, make sure that the prefix is bound to the XPath 2.0 Functions namespace, which you must declare in the XML document. Examples of function usage: `current-date()` (with Functions namespace not declared in XML document); `fn:current-date()` (with Functions namespace not declared in XML document, or declared in XML document and bound to prefix `fn:`). You can omit the namespace prefix even if the Functions namespace has been declared in the XML document with or without a prefix; this is because a function so used in an XPath expression is in the default namespace—which is the default namespace for functions.
- When using the two duration datatypes (`yearMonthDuration` and `dayTimeDuration`), the XML Schema namespace (`http://www.w3.org/2001/XMLSchema`) must be declared in the XML file and the namespace prefix must be used on these types in the XPath expression. Example: `years-from-yearMonthDuration(xs:yearMonthDuration('P22Y18M'))`.

Please note: To summarize the namespace issue: If you use constructors or types from the XML Schema namespace, you must declare the XML Schema namespace in the XML document and use the correct namespace prefixes in the XPath expression. You do not need to use a prefix for XPath functions.

Datatypes in XPath 2.0

If you are evaluating an XPath 2.0 expression for an XML document that references an XML Schema and is valid according to this schema, you must explicitly construct or cast datatypes that are not implicitly converted to the required datatype by an operation. In the XPath 2.0 Data Model used by the built-in XPath engine, all **atomized** node values from the XML document are assigned the `xs:untypedAtomic` datatype. The `xs:untypedAtomic` type works well with implicit type conversions. For example, the expression `xs:untypedAtomic("1") + 1` results in a value of 2 because the `xs:untypedAtomic` value is implicitly promoted to `xs:double` by the addition operator. Arithmetic operators implicitly promote operands to `xs:double`. Comparison operators promote operands to `xs:string` before comparing.

In some cases, however, it is necessary to explicitly convert to the required datatype. For example, if you have two elements, `startDate` and `endDate`, that are defined as being of type `xs:date` in the XML Schema, then using the XPath 2.0 expression `endDate - startDate` will show an error. On the other hand, if you use `xs:date(endDate) - xs:date(startDate)` or `(endDate cast as xs:date) - (startDate cast as xs:date)`, the expression will correctly evaluate to a singleton sequence of type `xs:dayTimeDuration`.

Please note: The XPath Engines used by the XPath Evaluator are also used by the Altova XSLT Engine, so XPath 2.0 expressions in XSLT stylesheets that are not implicitly converted to the required datatype must be explicitly constructed as or cast to the required datatype.

String length of character and entity references
When character and entity references are used as the input string for the `string-length()` function, the references cannot be resolved, and the length of the unresolved text string is returned. Within an XSLT environment, however, these references would have meaning, and the length of the resolved string is returned.

Troubleshooting
If your XPath expression returns an error, do the following:

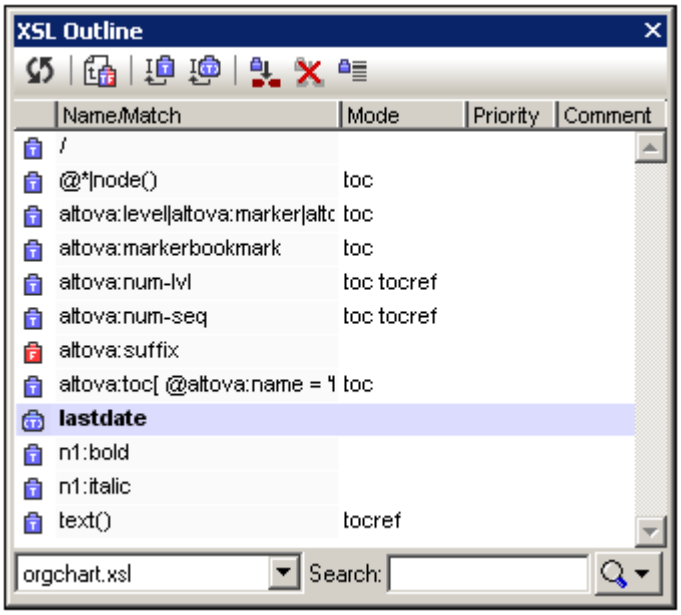
1. Check whether the options have been correctly set (XPath version, origin, etc).
2. Check that the spelling of function names, constructor names, node names, etc., are correct.
3. Check whether prefixes are required and correctly set on functions, constructors, and arguments in the XPath expression.
4. If namespaces are declared in the XML document check that they are correct. The correct namespaces are:

   XML Schema: `http://www.w3.org/2001/XMLSchema`
   XPath 2.0 Functions: `http://www.w3.org/2005/xpath-functions`

XPath 2.0 Functions Support
See the appendices.

2.1.7 Output Window: XSL Outline

The XSL Outline Window (*screenshot below*) lists all the templates and functions in an XSLT stylesheet, and, optionally, in all included and imported XSLT stylesheets as well. The XSL Outline Window is located by default docked with the Output Windows at the bottom of the XMLSpy window. It can be undocked, or docked along another edge of the XMLSpy window.

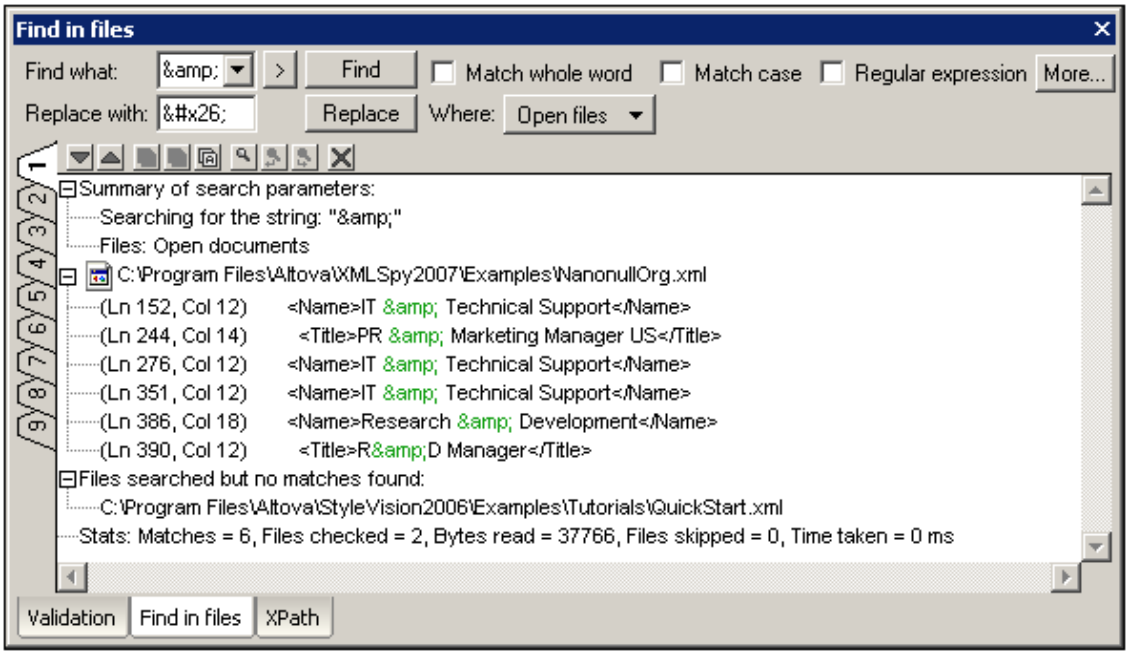


The XSL Outline Window provides information about templates and functions in the stylesheet. This information can be sorted and searched, and the window's toolbar contains commands that enable you to easily insert calls to named templates and to set named templates as the starting point of transformations. How to work with the XSL Outline Window is described in the section XSLT and XQuery | XSLT | XSL Outline | XSL Outline Window.

Note: File-related information about the stylesheet and file-related commands are available in the XSLT tab of the Info Window. How to use these commands is described in the section XSLT and XQuery | XSLT | XSL Outline | Info Window.

2.1.8 Output Window: Find in Files

The Find in Files Window (*screenshot below*) enables you to carry out find-and-replace operations quickly within several documents at a time, and provides mechanisms that help you to quickly navigate among the found instances. The results of each find-and-replace action are presented in one of the tabs numbered 1 to 9. Clicking on a found item in the results takes you to that item in the Text View of that document.



Find criteria
There are two broad find criteria: (i) what to find, and (ii) where to look?

What to find: The string to find is entered in the Find What text box. If that string must match a whole word, then the Match Whole Word check box must be clicked. For example, for the find string `fit`, with Match Whole Word checked, only the word `fit` will match the find string; the `fit` in `fitness`, for example, would not. You can specify whether casing is significant using the Match Case check box. If the text entered in the Find What text box is a regular expression, then the Regular Expression check box must be checked. An entry helper for regular expressions can be accessed by clicking the button. The use of regular expressions for searching is explained in the section, Find. The **More** button opens the Find in Files dialog, where you can set advanced search conditions and actions. For more information, see Edit | Find in Files.

Where to look: The search can be conducted in: (i) all the files that are open in the GUI; (ii) the files of the current project; and (iii) the files of a selected folder. You can set additional conditions in the Find in Files dialog (accessed by clicking **More**).

Replace with
The string with which the found string is to be replaced is entered in the Replace With text box. Note that if the Replace With text box is empty and you click the Replace button, the found text will be replaced by an empty string.

The results
After you click the Find or Replace buttons, the results of the find or replace are displayed in the Find in Files output window. The results are divided into four parts:

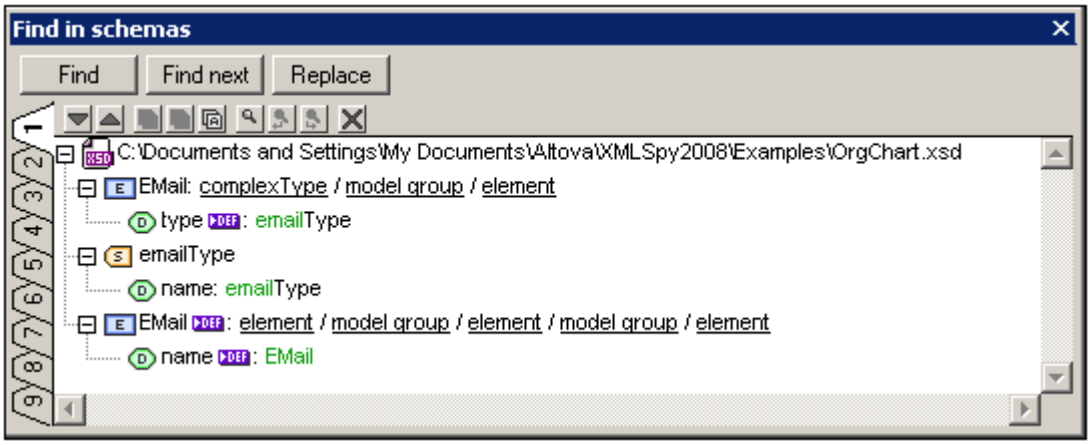
- A summary of the search parameters, which lists the search string and what files were searched.
- A listing of the found or replaced strings (according to whether the **Find** or **Replace** button was pressed). The items in this listing are links to the found/replaced text in the

Text View of the document. If the document is not open, it will be opened in Text View and the found/replaced text will be highlighted.
- A list of the files which were searched but in which no matches were found.
- A summary of statics for the search action, including the number of matches and number of files checked.

Note: Note that the Find in Files feature executes the Find and the Replace commands on multiple files at once and displays the results in the Find in Files output window. To do a find so that you go from one found item to the next, use the Find command.

2.1.9 Output Window: Find in Schemas

When an XML Schema is active in Schema View, it can be searched intelligently using XMLSpy 's Find and Replace in Schema View feature. The Find and Replace in Schema View feature is accessed via: (i) the **Find** and **Replace** commands in the **Edit** menu; and (ii) the **Find** and **Replace** buttons in the Find in Schemas Window (*screenshot below*).



The results of the Find and Replace in Schema View feature (i.e. each time a Find or Replace command is executed) are displayed in the Find in Schemas window. The term that was searched for is displayed in green; (in the screenshot above, it can be seen that `email` was the search term, with no case restriction specified). Notice that the location of the schema file is also given.

Results are displayed in nine separate tabs (numbered 1 to 9). So you can keep the results of one search in one tab, do a new search in a new tab, and compare results. To show the results of a new search in a new tab, select the new tab before starting the search. Clicking on a result in the Find In Schemas window pops up and highlights the relevant component in the Main Window of Schema View. In this way you can search and navigate quickly to the desired component, as well as copy messages to the clipboard. For more details, see the Results and Information section in the description of the Find in Schemas feature.

2.1.10 Menu Bar, Toolbars, Status Bar

Menu Bar

The menu bar (*see illustration*) contains the various application menus. The following conventions apply:

- If commands in a menu are **not** applicable in a view or at a particular location in the document, they are unavailable.
- Some menu commands pop up a submenu with a list of additional options. Menu

commands with submenus are indicated with a right-pointing arrowhead to the right of the command name.

- Some menu commands pop up a dialog that prompts you for further information required to carry out the selected command. Such commands are indicated with an ellipsis (...) after the name of the command.
- To access a menu command, click the menu name and then the command. If a submenu is indicated for a menu item, the submenu opens when you mouseover the menu item. Click the required sub-menu item.
- A menu can be opened from the keyboard by pressing the appropriate key combination. The key combination for each menu is **Alt+*KEY***, where ***KEY*** is the underlined letter in the menu name. For example, the key combination for the **File** menu is **Alt+F**.
- A menu command (that is, a command in a menu) can be selected by sequentially selecting (i) the menu with its key combination (see previous point), and then (ii) the key combination for the specific command (**Alt+*KEY***, where ***KEY*** is the underlined letter in the command name). For example, to create a new file (**File | New**), press **Alt+F** and then **Alt+N**.
- Some menu commands can be selected **directly** by pressing a special **shortcut** key or key combination (**Ctrl+*KEY***). Commands which have shortcuts associated with them are indicated with the shortcut key or key combination listed to the right of the command. For example, you can use the shortcut key combination **Ctrl+N** to create a new file; the shortcut key **F8** to validate an XML file. You can create your own shortcuts in the Keyboard tab of the Customize dialog (**Tools | Customize**).

Toolbars

The toolbars (*see illustration*) contain icons that are shortcuts for selecting menu commands. The name of the command appears when you place your mouse pointer over the icon. To execute the command, click the icon.

Toolbar buttons are arranged in groups. In the **Tools | Customize | Toolbars** dialog, you can specify which toolbar groups are to be displayed. These settings apply to the current view. To make a setting for another view, change to that view and then make the setting in the **Tools | Customize | Toolbars**. In the GUI, you can also drag toolbar groups by their handles (or title bars) to alternative locations on the screen. Double-clicking the handle causes the toolbar to undock and to float; double-clicking its title bar causes the toolbar to dock at its previous location.

Status Bar

The Status Bar is located at the bottom of the application window (*see illustration*) and displays (i) status information about the loading of files, and (ii) information about menu commands and command shortcuts in the toolbars when the mouse cursor is placed over these. If you are using the 64-bit version of XMLSpy, this is indicated in the status bar with the suffix (x64) after the application name. There is no suffix for the 32-bit version.

2.2 The Application Environment

In this section we describe various aspects of the application that are important for getting started. Reading through this section will help you familiarize yourself with XMLSpy and get you off to a confident start. It contains important information about settings and customization, which you should read for a general idea of the range of settings and customization options available to you and how these can be changed.

This section is organized as follows:

- *Settings, Customization and Menus:* Describes how and where important settings and customization options can be defined.
- *Tutorials, Projects, Examples:* notes the location of the various non-program files included in the application package.
- *Product features and documentation, and Altova products:* provides links to the Altova website, where you can find information about product features, additional Help formats, and other Altova products.

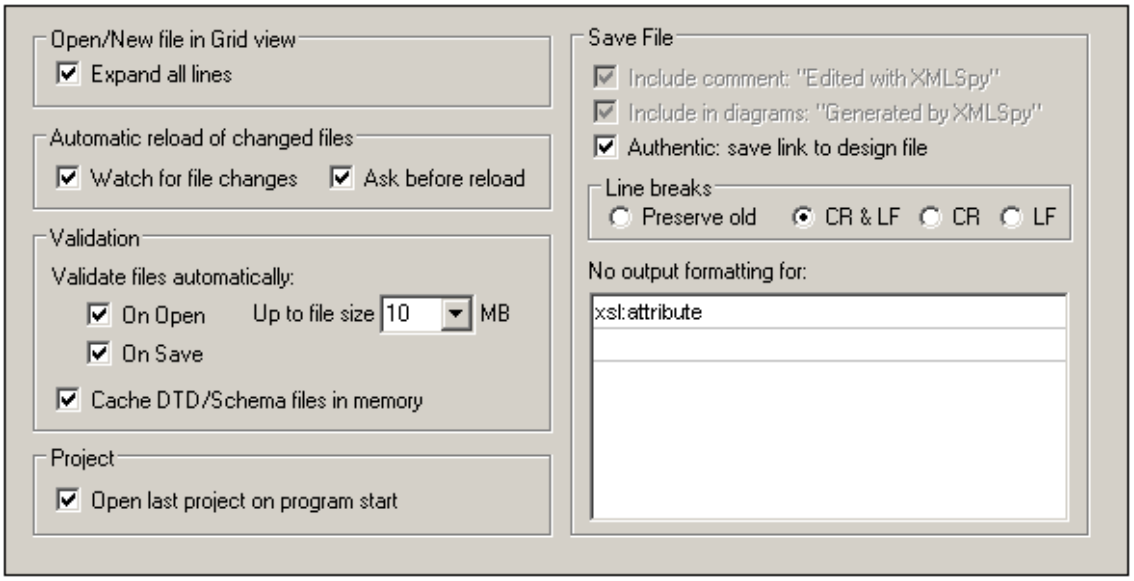
2.2.1 Settings, Customization, and Menus

In XMLSpy, there are several settings and customization options that you can select. In this section, we point you to these options and also briefly discuss some aspects of XMLSpy menus. This section is organized into the following parts.

- Settings
- Customization
- Menus

Settings

Several important XMLSpy settings are defined in different tabs in the Options dialog (*screenshot below*, accessed via the menu command **Tools | Options**). You should look through the various options to familiarize yourself with what's available.

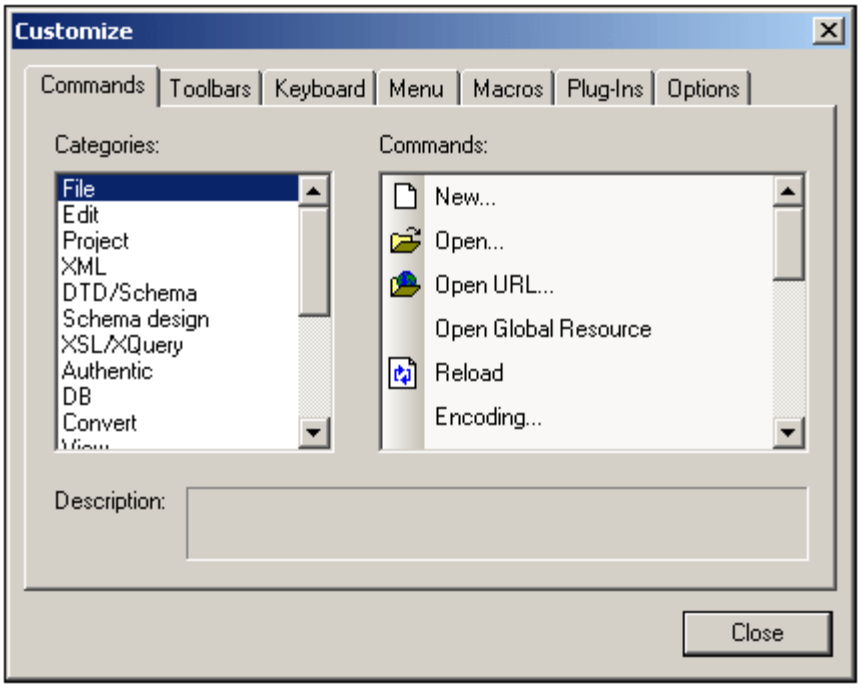


Given below is a summary of the most important settings. For details, see the description of the Options dialog in the User Reference section.

- *File types and default views:* In the File Types tab, you can add a file type that XMLSpy will recognize. You do this by adding a file extension to the list of file extensions. For each file type, you can then specify to what specification files of this file type should conform and in what XMLSpy view files of this file type should open (the default view for this file type).
- *File validation:* In the File tab, you can specify whether files should be validated automatically on opening and/or saving. In the File Types tab, file validation can then be disabled for specific file types.
- *Editing features:* In the Editing tab, you can specify how entry helpers should be organized, how new elements are generated, and whether auto-completion is enabled. Additional options are available for individual views in the View tab. In the Fonts tabs for various views, you can specify the font characteristics of individual node types in each of these views.
- *XSLT and FO Engines:* In the XSL tab, you can specify that an external XSL engine be used for transformations made from within the GUI. You must also specify the location of the FO processor executable to be used for FO processing within XMLSpy. For more information, see the XSLT Processing section.
- *Encoding:* Default encodings for XML and non-XML files are specified in the Encoding tab.

Customization

You can also customize various aspects of XMLSpy, including the appearance of the GUI. These customization options are available in the Customize dialog (*screenshot below*, accessed via the menu command **Tools | Customize**).



The various customization options are described in the **User Reference** section.

Menus

Menu commands are enabled/disabled depending upon three factors: (i) file type, (ii) active view, and (iii) current cursor location or current document status. For example:

- *File type:* The command **DTD/Schema | Include Another DTD** is enabled only when the active file is a DTD. Similarly, commands in the **WSDL** menu will be enabled only when a WSDL file is active.
- *Active view:* Most commands in the **Schema Design** menu will be active only when the active view is Schema View.
- *Current cursor location, document status:* In Grid View, whether the command to add an attribute as a child node (**XML | Add Child | Attribute**) is enabled will depend on whether the selected item in Grid View is an element or not (*current cursor location*). When an XSLT document is active the **Stop Debugger** command will not be active till after a debugger session has been started (*current document status*).

Note also that you can customize menus (**Tools | Customize**) as well as drag and reorganize them within the GUI (see Menu Bar, Toolbars, Status Bar).

2.2.2 Tutorials, Projects, Examples

The XMLSpy installation package contains tutorials, projects, and example files.

Location of tutorials, projects, and example files
The XMLSpy tutorials, projects, and example files are installed in the folder:

```
C:\Documents and Settings\<username>\My Documents\
Altova\XMLSpy2012\Examples\
```

The `My Documents\Altova\XMLSpy2012` folder will be installed for each user registered on a PC within that user's `<username>` folder. Under this installation system, therefore, each user will have his or her own `ExamplesAuthenticExamples` folder in a separate working area.

Note about the master XMLSpy folder
When XMLSpy is installed on a machine, a master `Altova\XMLSpy2012` folder is created at the following folder location:

```
C:\Documents and Settings\All Users\Application Data\
```

When a user on that machine starts XMLSpy for the first time, XMLSpy creates a copy of this master folder in the user's `<username>\My Documents\` folder. It is therefore important not to use the master folder when working with tutorial or example files, otherwise these edited files will be copied to the user folder of a user subsequently using XMLSpy for the first time.

Location of tutorial, project, and examples files
All tutorial, project, and example files are located in the `Examples` folder. Specific locations are as follows:

- *XMLSpy tutorial:* `Tutorial` folder.
- *Authentic View tutorial:* `Examples` folder.
- *WSDL tutorial:* `Examples` folder.
- *Project file:* The Examples project with which XMLSpy opens is defined in the file `Examples.spp`, which is located in the `Examples` folder.
- *Examples files:* are in the `Examples` folder and in sub-folder of the `Examples` folder.

2.2.3 XMLSpy Features and Help, and Altova Products

The Altova website, www.altova.com, has a wealth of XMLSpy-related information and resources. Among these are the following.

XMLSpy feature listing
The Altova website carries an up-to-date list of XMLSpy features, which also compares the support of various features across XMLSpy editions (Enterprise, Professional, and Standard). On the website, you can also obtain a listing of features that are new since any previous release.

XMLSpy Help
This documentation is the Altova-supplied Help for XMLSpy. It is available as the built-in Help system of XMLSpy, which is accessible via the **Help** menu or by pressing **F1**. Additionally, the user manuals for all Altova products are available in the following formats:

- Online HTML manuals, accessed via the Support page at the Altova website
- Printable PDFs, which you can download from the Altova website and print locally
- Printed books that you can buy via a link at the Altova website

Support options
If you require additional information to what is available in the user manual (this documentation) or have a query about Altova products, visit our Support Center at the Altova website. Here you will find:

- Links to our FAQ pages
- Discussion forums on Altova products and general XML subjects
- Online Support Forms that enable you to make support requests, should you have a support package. Your support request will be processed by our support team.

Altova products
For a list of all Altova products, see the Altova website.

3 XMLSpy Tutorial

This tutorial provides an overview of XML and takes you through a number of key XML tasks. In the process you will learn how to use some of XMLSpy's most powerful features.

The tutorial is divided into the following parts:

- Creating an XML Schema. You will learn how to create an XML Schema in XMLSpy's intuitive Schema View, how to create complex content models using drag-and-drop mechanisms, and how to configure Schema View.
- Using Schema View features to create complex and simple types, global element references, and attribute enumerations.
- Learning how to navigate schemas in Schema View, and how to generate documentation of schemas.
- Creating an XML document. You will learn how to assign a schema for an XML document, edit an XML document in Grid View and Text View, and validate XML documents using XMLSpy's built-in validator.
- Transforming an XML file using an XSLT stylesheet. This involves assigning an XSLT file and carrying out the transformation using XMLSpy's built-in XSLT engines.
- Working with XMLSpy projects, which enable you to easily organize your XML documents.

Installation and configuration
This tutorial assumes that you have successfully installed XMLSpy on your computer and received a free evaluation key-code, or are a registered user. The evaluation version of XMLSpy is fully functional but limited to a 30-day period. You can request a regular license from our secure web server or through any one of our resellers.

Tutorial example files
The tutorial files are available in the application folder:

```
C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\
Examples\Tutorial
```

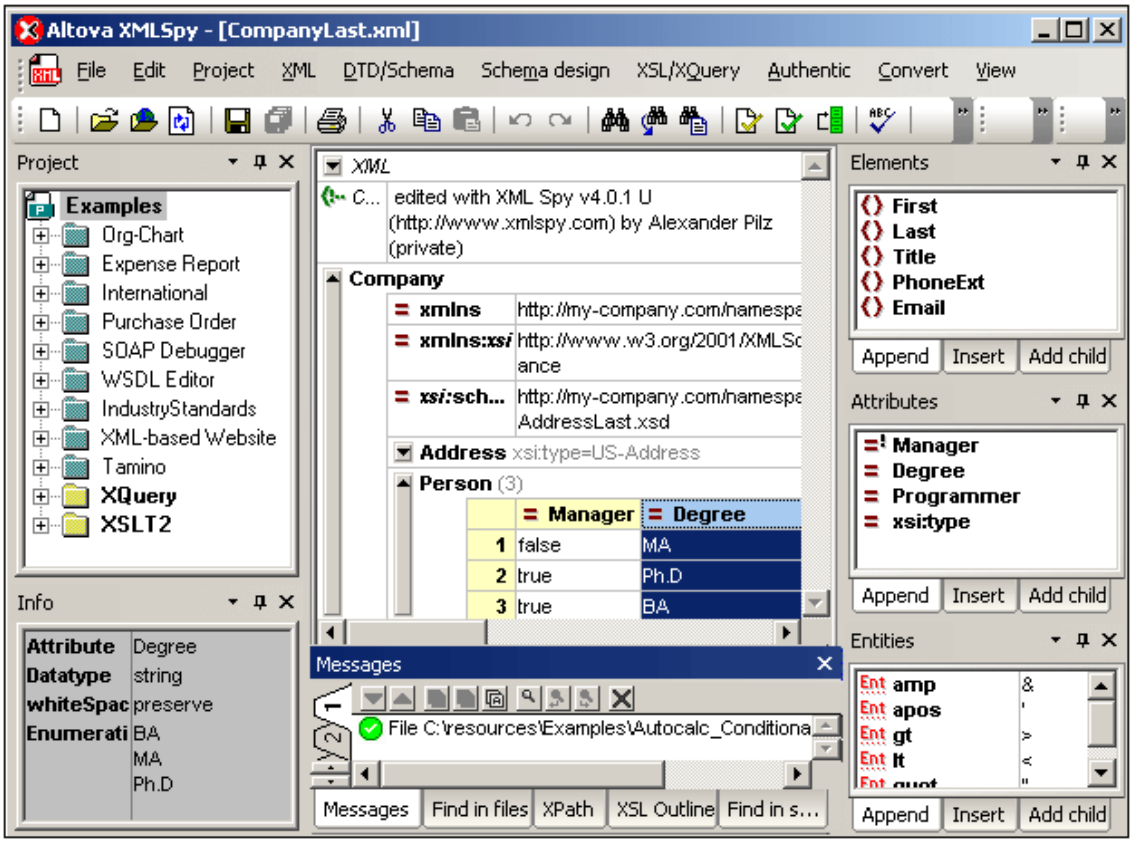
The `Examples` folder contains various XML files for you to experiment with, while the `Tutorial` folder contains all the files used in this tutorial.

The `Template` folder in the application folder (typically in `c:\Program Files\Altova`) contains all the XML template files that are used whenever you select the menu option **File | New**. These files supply the necessary data (namespaces and XML declarations) for you to start working with the respective XML document immediately.

3.1 XMLSpy Interface

The XMLSpy interface is structured into three vertical areas. The central area provides you with multiple views of your XML document. The areas on either side of this central area contain windows that provide information, editing help, and file management features.

- The left area consists of the **Project** and **Info** windows.
- The central area, called the **Main** window, is where you edit and view all types of XML documents. You can switch between different views: Text View, Grid View, Schema View, Authentic View, and Browser View. These views are described in detail in the individual sections about them in the User Manual.
- The right-hand area contains the three **Entry Helper** windows, which enable you to insert or append elements, attributes, and entities. What entries are displayed in the Entry Helper windows depends on the current selection or cursor location in the XML file.



The details of the interface are explained as we go along. Note that the interface changes dynamically according to the document that is active in the Main Window and according to the view selected.

3.2 XML Schemas: Basics

An XML Schema describes the structure of an XML document. An XML document can be validated against an XML Schema to check whether it conforms to the requirements specified in the schema. If it does, it is said to be **valid**; otherwise it is **invalid**. XML Schemas enable document designers to specify the allowed structure and content of an XML document and to check whether an XML document is valid.

The structure and syntax of an XML Schema document is complex, and being an XML document itself, an XML Schema must be valid according to the rules of the XML Schema specification. In XMLSpy, Schema View enables you to easily build valid XML Schemas by using graphical drag-and-drop techniques. The XML Schema document you construct is also editable in Text View and Grid View, but is much easier to create and modify in Schema View.

Objective
In this section of the tutorial, you will learn how to edit XML Schemas in Schema View. Specifically, you will learn how to do the following:

- Create a new schema file
- Define namespaces for the schema
- Define a basic content model
- Add elements to the content model using context menus and drag-and-drop
- Configure the Content Model View

After you have completed creating the basic schema, you can go to the next section of the tutorial, which teaches you how to work with the more advanced features of XML Schema in XMLSpy. This advanced section is followed by a section about schema navigation and documentation in XMLSpy.

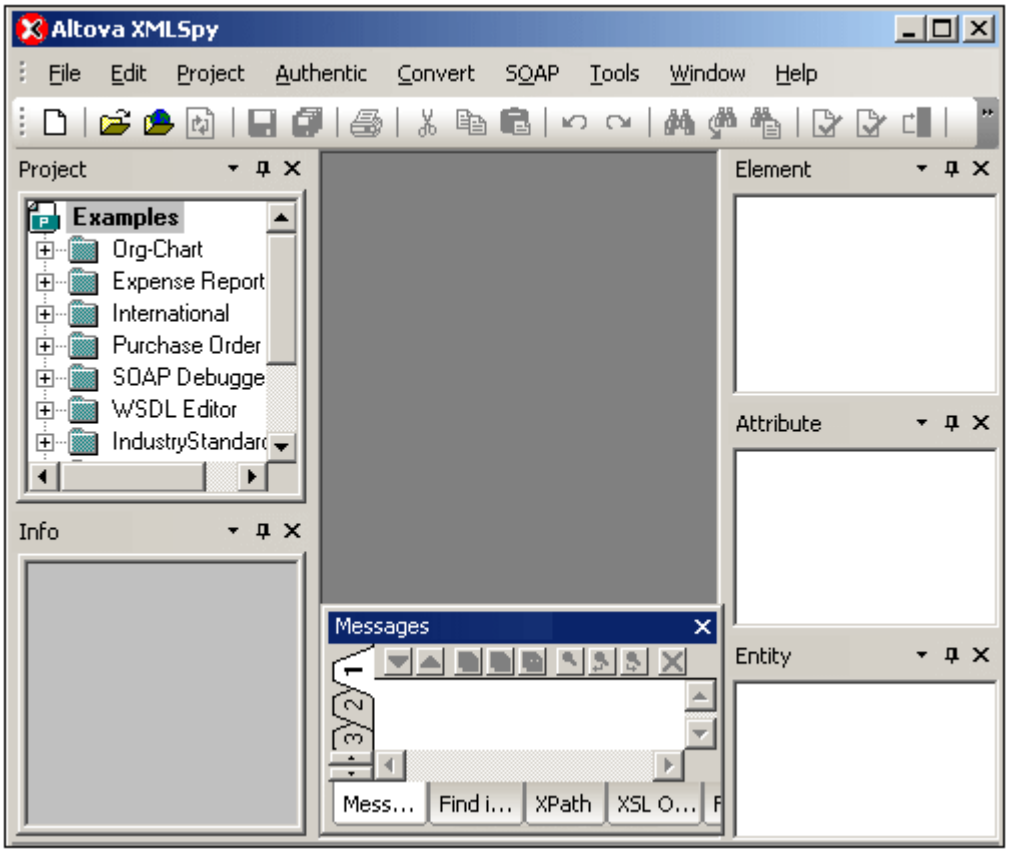
Commands used in this section
In this section of the tutorial, you will use Schema View exclusively. The following commands are used:

Display Diagram (or Display Content Model View). This icon is located to the left of all global components in Schema Overview. Click this icon to display the content model of the associated global component.

3.2.1 Creating a New XML Schema File

To create a new XML Schema file in XMLSpy, you must first start XMLSpy and then create a new XML Schema (. `xsd`) document.

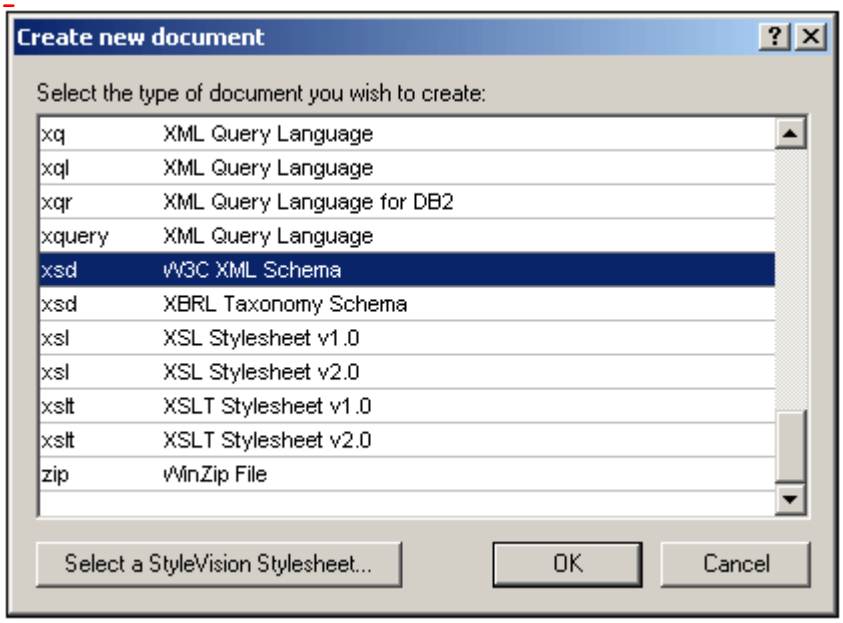
Starting XMLSpy
To start XMLSpy, double-click the XMLSpy icon on your desktop or use the **Start | All Programs** menu to access the XMLSpy program. XMLSpy is started with no documents open in the interface.



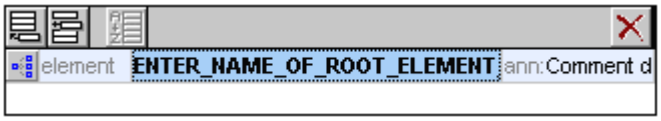
Note the four main parts of the interface: (i) the Project and Info Windows on the left; (ii) the Main Window in the middle; (iii) the Entry Helpers on the right; and (iv) the Output Windows at the bottom.

Creating a new XML Schema file
To create a new XML Schema file:

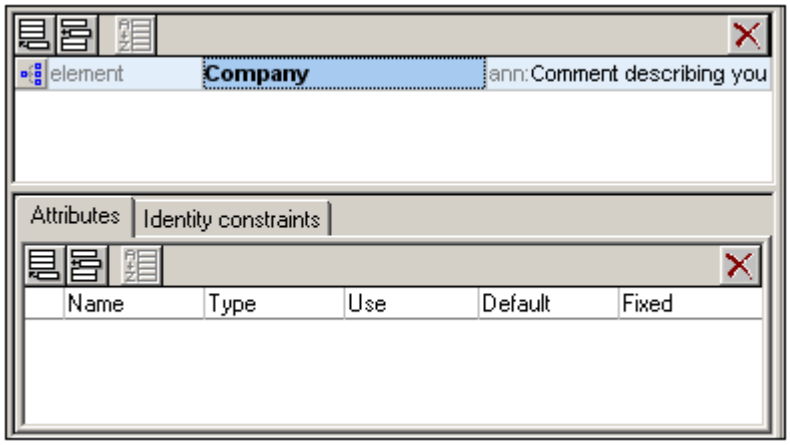
1. Select the menu option **File | New**. The Create new document dialog opens.



2. In the dialog, select the `xsd` entry (the document description and the list in the window might vary from that in the screenshot) and confirm with **OK**. An empty schema file appears in the Main Window in Schema View. You are prompted to enter the name of the root element.



3. Double-click in the highlighted field and enter `Company`. Confirm with **Enter**. `Company` is now the root element of this schema and is created as a global element. The view you see in the Main Window *(screenshot below)* is called the Schema Overview. It provides an overview of the schema by displaying a list of all the global components in the top pane of the Main Window; the bottom pane displays the attributes and identity constraints of the selected global component. (You can view and edit the content model of individual global components by clicking the Display Diagram icon to the left of that global component.)



4. In the Annotations field (`ann`) of the `Company` element, enter the description of the element, in this case, `Root element.`
5. Click the menu option **File | Save**, and save your XML Schema with any name you like (`AddressFirst.xsd`, for example).

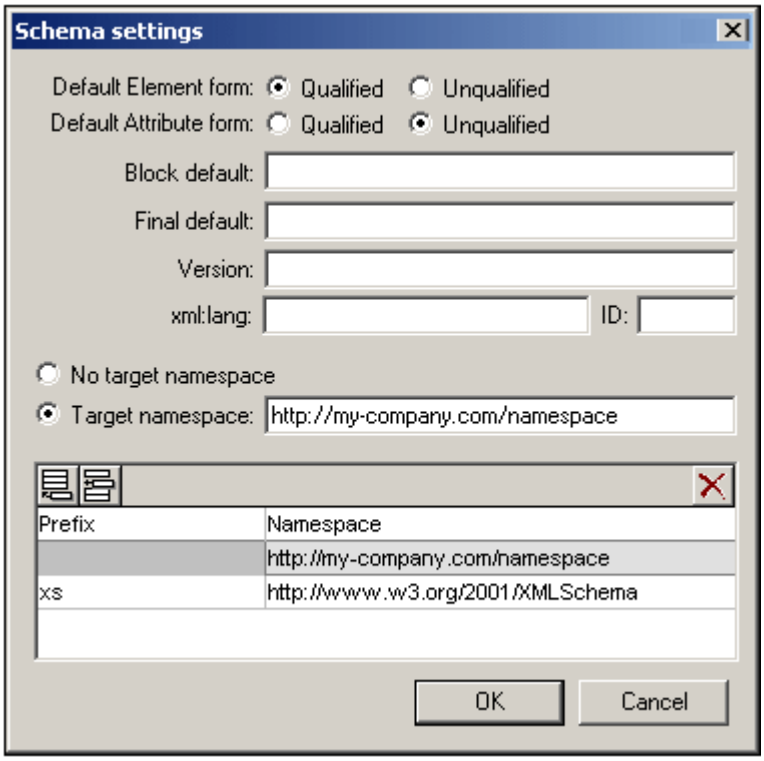
3.2.2 Defining Namespaces

XML namespaces are an important issue in XML Schemas and XML documents. An XML Schema document must reference the XML Schema namespace and, optionally, it can define a target namespace for the XML document instance. As the schema designer, you must decide how to define both these namespaces (essentially, with what prefixes.)

In the XML Schema you are creating, you will define a target namespace for XML document instances. (The required reference to the XML Schema namespace is created automatically by XMLSpy when you create a new XML Schema document.)

To create a target namespace:

1. Select the menu option **Schema Design | Schema settings**. This opens the Schema Settings dialog.



2. Click the Target Namespace radio button, and enter `http://my-company.com/namespace`. In XMLSpy, the namespace you enter as the target namespace is created as the default namespace of the XML Schema document and displayed in the list of namespaces in the bottom pane of the dialog.
3. Confirm with the **OK** button.

Please note:

- The XML Schema namespace is automatically created by XMLSpy and given a prefix of `xs:` .
- When the XML document instance is created, it must have the target namespace defined in the XML Schema for the XML document to be valid.

3.2.3 Defining a Content Model

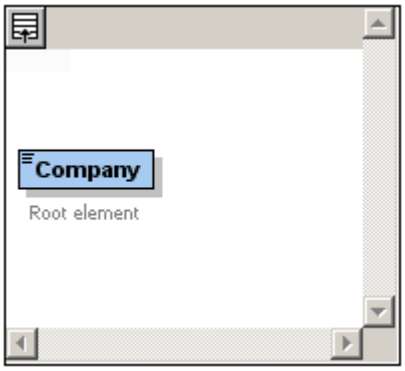
In the Schema Overview, you have already created a global element called `Company`. This element is to contain one `Address` element and an unlimited number of `Person` elements—its content model. Global components that can have content models are elements, complexTypes, and element groups.

In XMLSpy, the content model of a global component is displayed in the Content Model View of Schema View. To view and edit the content model of a global component, click the Display Diagram icon located to the left of the global component.

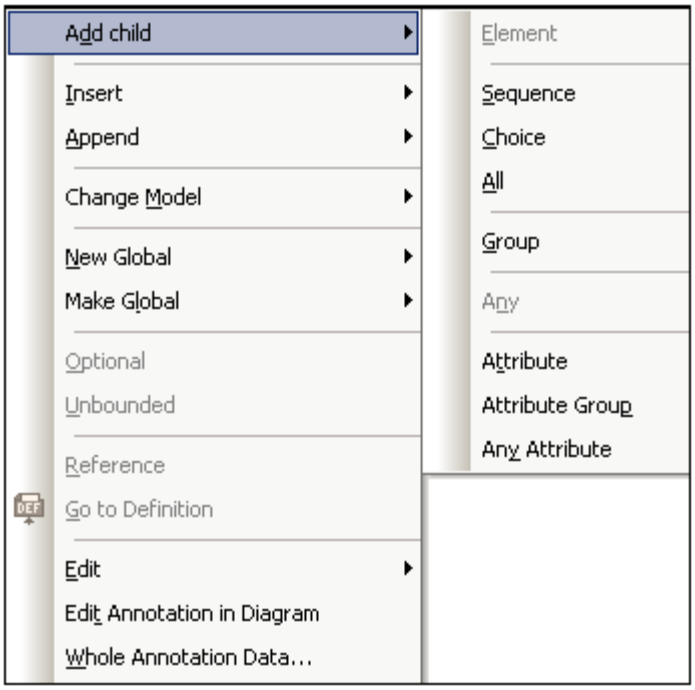
In this section, you will create the content model of the `Company` element.

Creating a basic content model
To create the content model of the `Company` element:

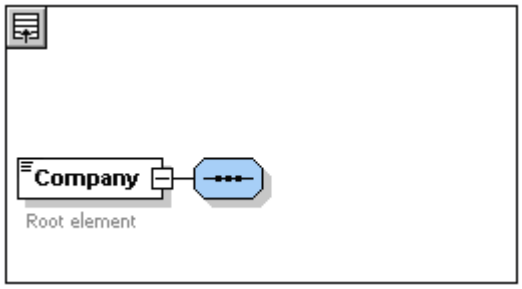
1. In the Schema Overview, click the Display Diagram icon  of the `Company` element. This displays the content model of the `Company` element, which is currently empty. Alternatively, you can double-click the `Company` entry in the Components entry helper to display its content model.



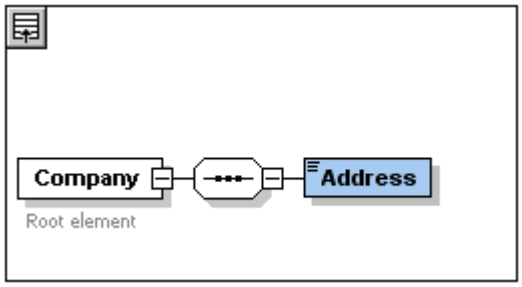
2. A content model consists of **compositors** and **components**. The compositors specify the relationship between two components. At this point of the `Company` content model, you must add a child compositor to the `Company` element in order to add a child element. To add a compositor, right-click the Company element. From the context menu that appears, select **Add Child | Sequence**. (Sequence, Choice, and All are the three compositors that can be used in a content model.)



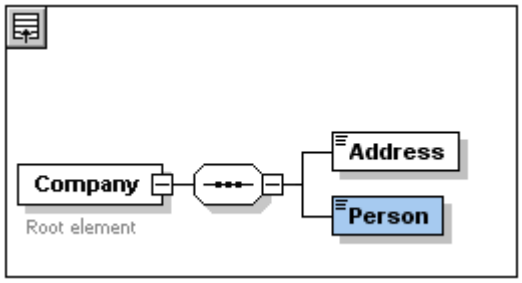
This inserts the Sequence compositor, which defines that the components that follow must appear in the specified sequence.



3. Right-click the Sequence compositor and select **Add Child | Element**. An unnamed element component is added.
4. Enter `Address` as the name of the element, and confirm with **Enter**.

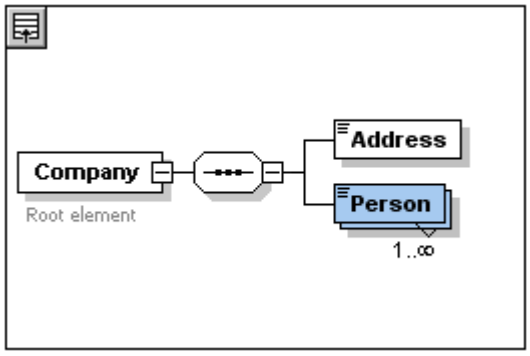


5. Right-click the Sequence compositor again, select **Add Child | Element**. Name the newly created element component `Person`.



You have so far defined a schema which allows for one address and one person per company. We need to increase the number of `Person` elements.

6. Right-click the `Person` element, and select **Unbounded** from the context menu. The `Person` element in the diagram now shows the number of allowed occurrences: 1 to infinity.

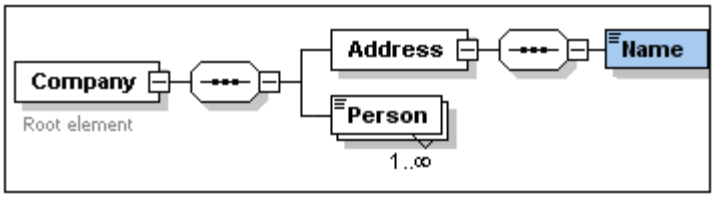


Alternatively, in the Details Entry Helper, you can edit the `minOcc` and `maxOcc` fields to specify the allowed number of occurrences, in this case 1 and unbounded, respectively.

Adding additional levels to the content model structure
The basic content model you have created so far contains one level: a child level for the `company` element which contains the `Address` and `Person` elements. Now we will define the content of the `Address` element so it contains `Name`, `Street`, and `City` elements. This is a second level. Again we need to add a child compositor to the `Address` element, and then the element components themselves.

Do this as follows:

1. Right-click the `Address` element to open the context menu, and select **Add Child | Sequence**. This adds the Sequence compositor.
2. Right-click the Sequence compositor, and select **Add Child | Element**. Name the newly created element component `Name`.



Complex types, simple types, and XML Schema data types
Till this point, we have not explicitly defined any element type. Click the **Text** tab to display the Text View of your schema (*listing below*). You will notice that whenever a Sequence compositor was inserted, the `xs:sequence` element was inserted within the `xs:complexType` element. In short, the `Company` and `Address` elements, because they contain child elements, are complex types. A complex type element is one which contains attributes or elements.

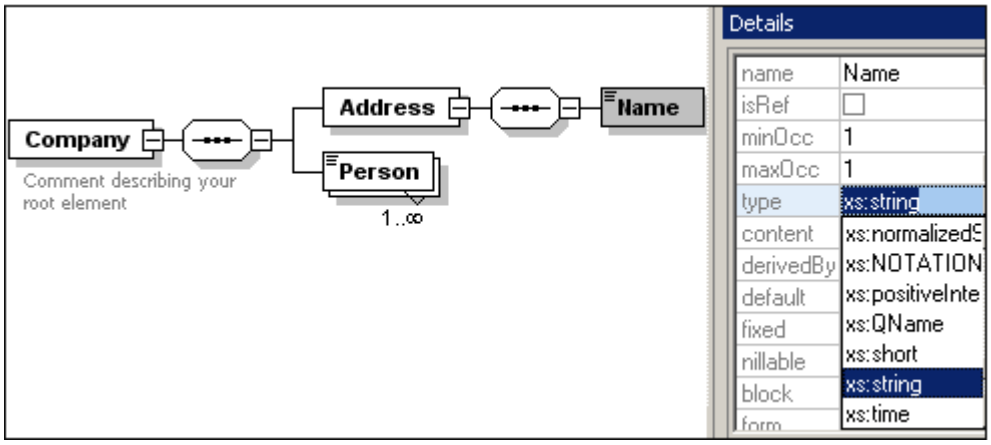
```
<xs:element name="Company">
  <xs:annotation>
    <xs:documentation>Root element</xs:documentation>
  </xs:annotation>
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Address">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Name"/>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="Person"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

Simple type elements, on the other hand, contain only text and have no attributes. Text can be strings, dates, numbers, etc. We want the `Name` child of `Address` to contain only text. It is a simple type, the text content of which we want to restrict to a string. We can do this using the XML Schema data type `xs:string`.

To define the `Name` element to be of this datatype:

1. Click the **Schema** tab to return to Schema View.
2. Click the `Name` element to select it.

3. In the Details Entry Helper, from the dropdown menu of the `type` combo box, select the `xs:string` entry.



Note that both `minOcc` and `maxOcc` have a value of 1, showing that this element occurs only once.

The text representation of the `Name` element is as follows:

```
<xs:element name="Name" type="xs:string"/>
```

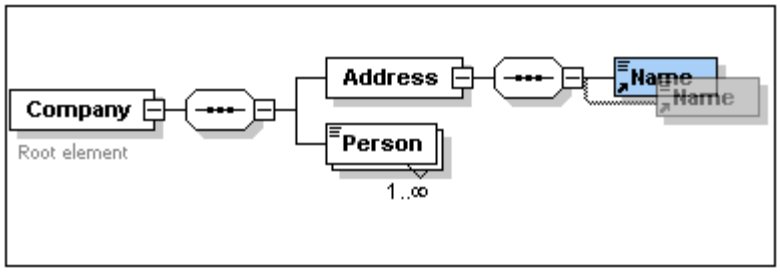
Please note: A simple type element can have any one of several XML Schema data types. In all these cases, the icon indicating text-content appears in the element box.

3.2.4 Adding Elements with Drag-and-Drop

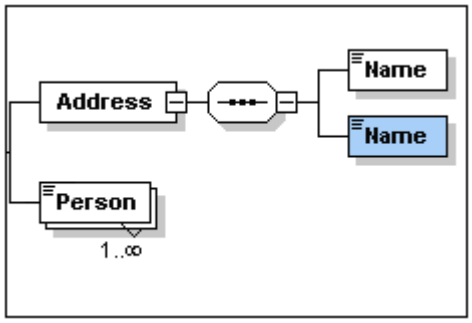
You have added elements using the context menu that appears when you right-click an element or compositor. You can also create elements using drag-and-drop, which is quicker than using menu commands. In this section, you will add more elements to the definition of the `Address` element using drag-and-drop, thus completing this definition.

To complete the definition of the `Address` element using drag-and-drop:

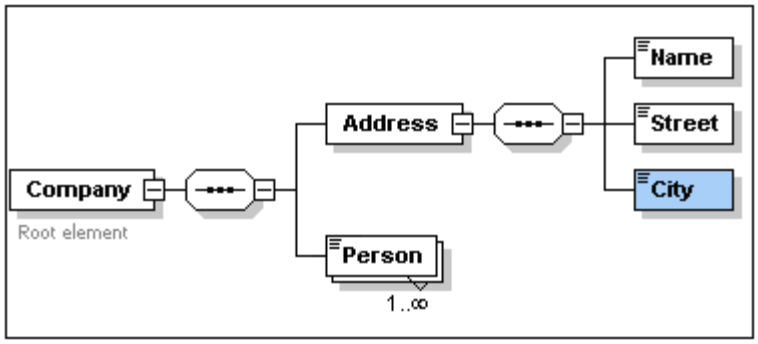
1. Click the `Name` element of the `Address` element, hold down the **Ctrl** key, and drag the element box with the mouse. A small "plus" icon appears in the element box, indicating that you are about to copy the element. A copy of the element together with a connector line also appears, showing where the element will be created.



2. Release the mouse button to create the new element in the `Address` sequence. If the new element appears at an incorrect location, drag it to a location below the `Name` element.



3. Double-click in the element box, and type in `Street` to change the element name.
4. Use the same method to create a third element called `City`. The content model should now look like this:



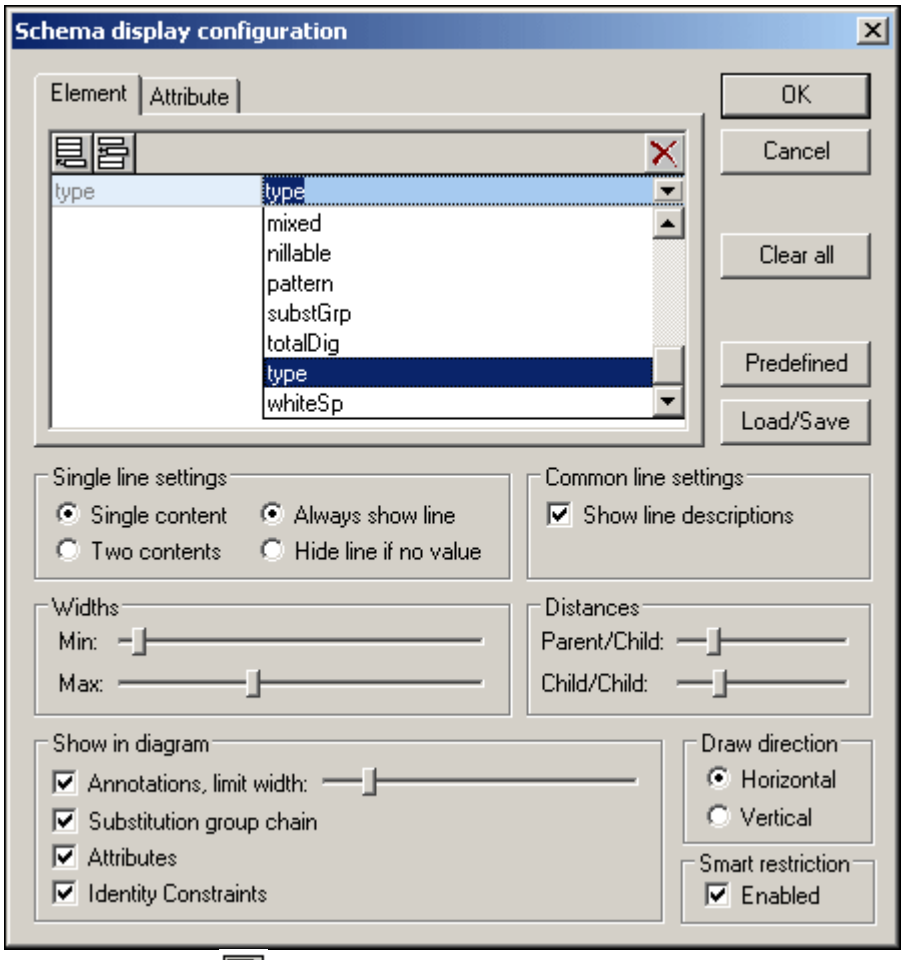
The `Address` element has a sequence of a `Name`, a `Street`, and a `City` element, in that order.

3.2.5 Configuring the Content Model View

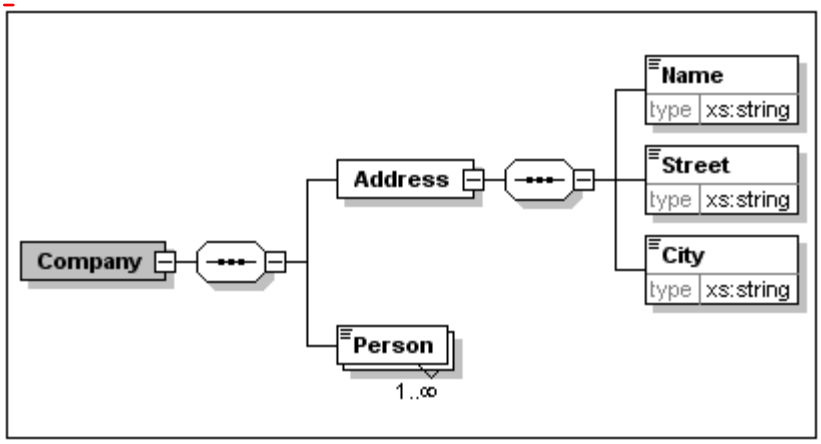
This is a good time to configure the Content Model View. We will configure the Content Model View such that the `type` of the element is displayed for each element.

To configure the Content Model View:

1. Select the Content Model View (click the Content Model View icon ) of a component in order to enable the Configure view command.
2. Select the menu option **Schema Design | Configure view**. The Schema Display Configuration dialog appears.

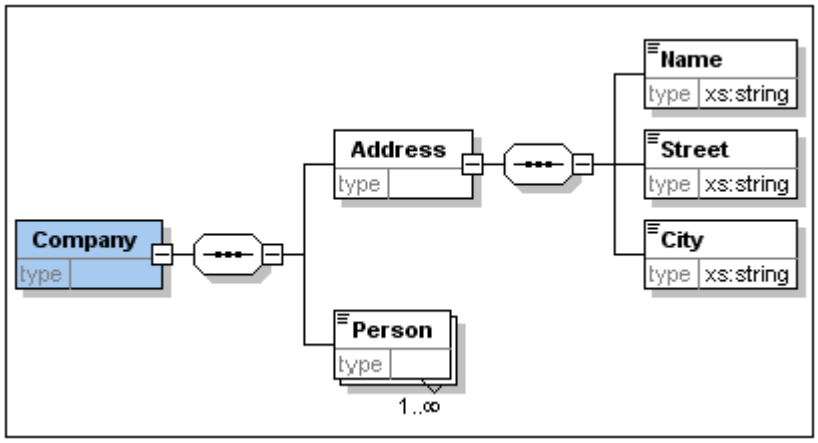


3. Click the **Append** icon (in the **Element** tab) to add a property descriptor line for each element box.
4. From the dropdown menu, select `type` (or double-click in the line and enter "`type`"). This will cause the data type of each element to be displayed in the Content Model View.
5. In the Single Line Settings pane, select Hide Line If No Value. This hides the description of the datatype in the element box if the element does not have a datatype (for example, if the element is a complex type).



Notice that the type descriptor line appears for the `Name`, `Street`, and `City` elements, which are simple types of type `xs:string`, but not for the complex type elements. This is because the Hide Line If No Value toggle is selected.

6. In the Single Line Settings group, select the Always Show Line radio button.
7. Click **OK** to confirm the changes.



Notice that the descriptor line for the data type is always shown—even in element boxes of complex types, where they appear without any value.

Please note:

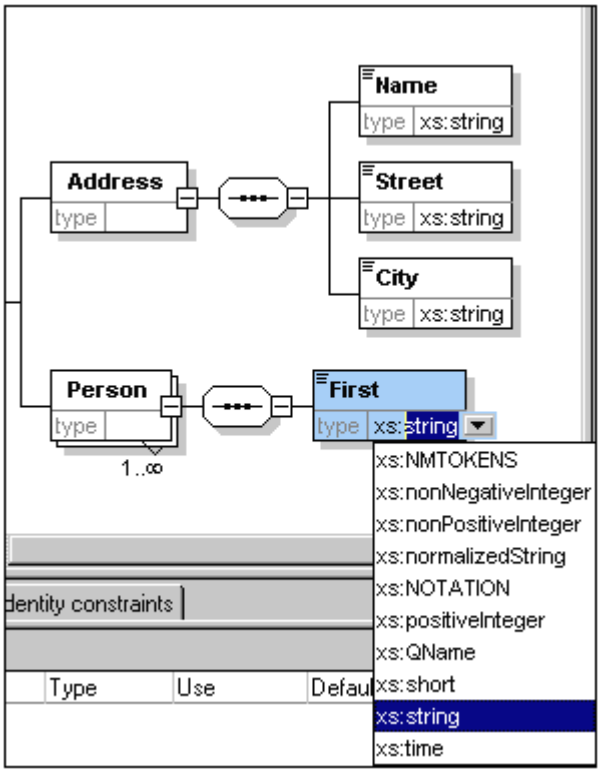
- The property descriptor lines are editable, so values you enter in them become part of the element definition.
- The settings you define in the Schema display configuration dialog apply to the schema documentation output as well as the printer output.

3.2.6 Completing the Basic Schema

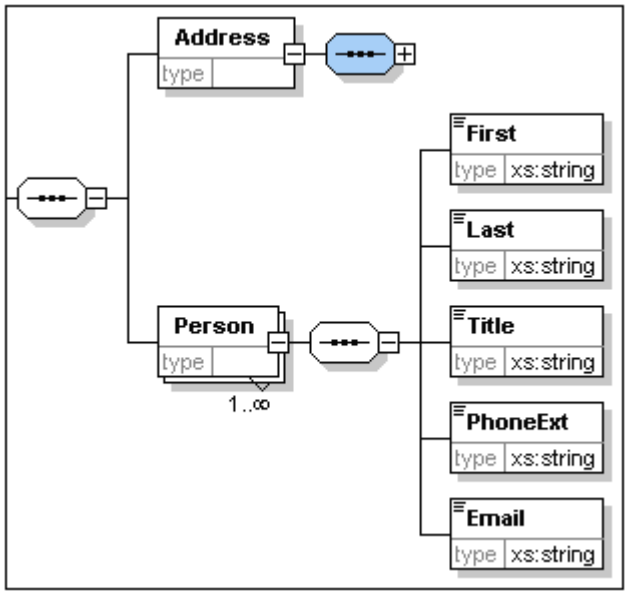
You have defined the content of the `Address` element. Now you need to define the content of the `Person` element. The `Person` element is to contain the following child elements, all of which are simple types: `First`, `Last`, `Title`, `PhoneExt`, and `Email`. All these elements are mandatory except `Title` (which is optional), and they must occur in the order just specified. All should be of datatype `xs:string` except `PhoneExt`, which must be of datatype `xs:integer` and limited to 2 digits.

To create the content model for `Person`:

1. Right-click the `Person` element to open the context menu, and select **Add Child | Sequence**. This inserts the Sequence compositor.
2. Right-click the Sequence compositor, and select **Add Child | Element**.
3. Enter `First` as the name of the element, and press the **Tab** key. This automatically places the cursor in the `type` field.



4. Select the `xs:string` entry from the dropdown list or enter it into the `type` value field.
5. Use the drag-and-drop method to create four more elements. Name them `Last`, `Title`, `PhoneExt`, and `Email`, respectively.

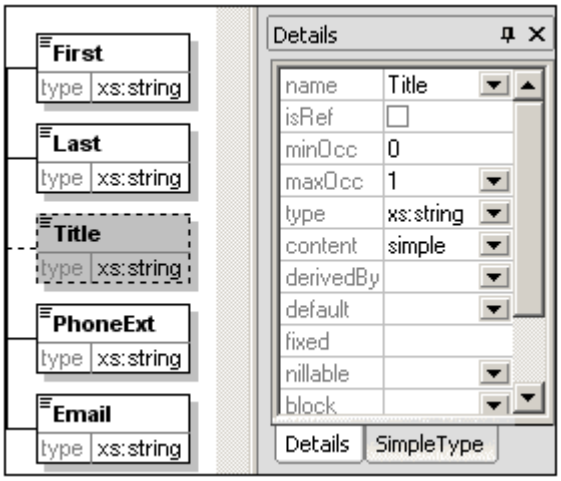


Please note: You can select multiple elements by holding down the **Ctrl** key and clicking each of the required elements. This makes it possible to, e.g., copy several elements at once.

Making an element optional

Right-click the `Title` element and select **Optional** from the context menu. The frame of the

element box changes from solid to dashed; this is a visual indication that an element is optional.

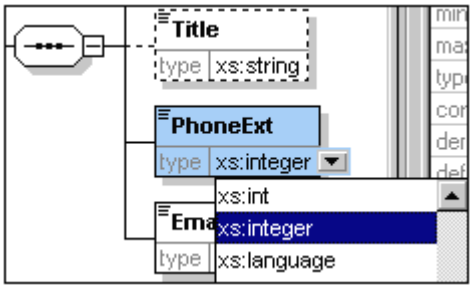


In the Details Entry Helper, you will see that `minOcc=0` and `maxOcc=1`, indicating that the element is optional. Alternatively to using the context menu to make an element optional, you can set `minOcc=0` in order to make the element optional.

Limiting the content of an element

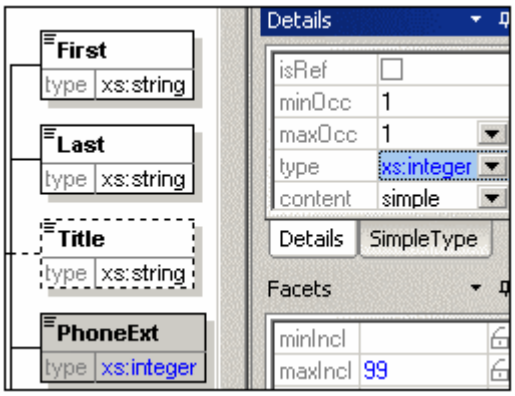
To define the `PhoneExt` element to be of type `xs:integer` and have a maximum of two digits:

1. Double-click in the `type` field of the `PhoneExt` element, and select (or enter) the `xs:integer` entry from the dropdown list.



The items in the Facets Entry Helper change at this point.

2. In the Facets Entry Helper, double-click in the `maxIncl` field and enter `99`. Confirm with **Enter**.



This defines that all phone extensions up to, and including 99, are valid.

3. Select the menu option **File | Save** to save the changes to the schema.

Please note:

- Selecting an XML Schema datatype that is a simple type (for example, `xs:string` or `xs:date`), automatically changes the content model to simple in the Details Entry Helper (`content = simple`).
- Adding a compositor to an element (`sequence`, `choice`, or `all`), automatically changes the content model to complex in the Details Entry Helper (`content = complex`).
- The schema described above is available as `AddressFirst.xsd` in the `C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\\Examples\Tutorial` folder of your XMLSpy application folder.

3.3 XML Schemas: Advanced

Now that you have created a basic schema, we can move forward to a few advanced aspects of schema development.

Objective
In this section, you will learn how to:

- Work with complex types and simple types, which can then be used as the types of schema elements.
- Create global elements and reference them from other elements.
- Create attributes and their properties, including enumerated values.

You will start this section with the basic **AddressFirst.xsd** schema you created in the first part of this tutorial.

Commands used in this section
In this section of the tutorial, you will use Schema View exclusively. The following commands are used:

Display Diagram (or Display Content Model View). This icon is located to the left of all global components in Schema Overview. Clicking the icon causes the content model of the associated global component to be displayed.

Display All Globals. This icon is located at the top left-hand corner of the Content Model View. Clicking the icon switches the view to Schema Overview, which displays all global components.

Append. The Append icon is located at the top left-hand corner of the Schema Overview. Clicking the icon enables you to add a global component.

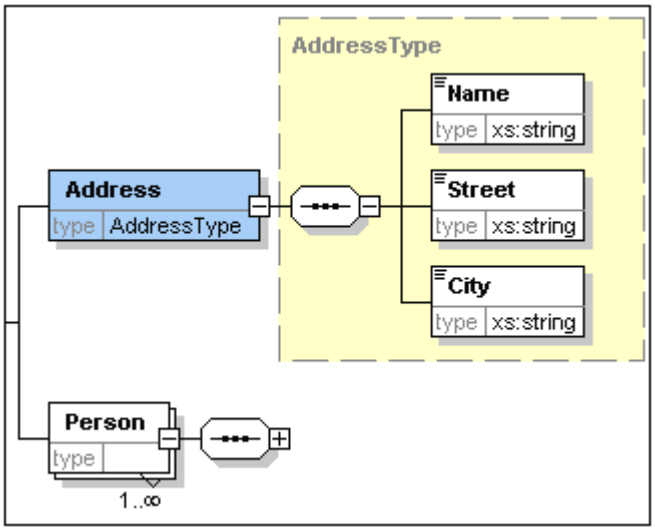
3.3.1 Working with Complex Types and Simple Types

Having defined the content model of an element, you may decide you want to reuse it elsewhere in your schema. The way to do this is by creating that element definition as a global complex type or as a global element. In this section, you will work with global complex types. You will first create a complex type at the global level and then extend it for use in a content model. You will learn about global elements later in this tutorial.

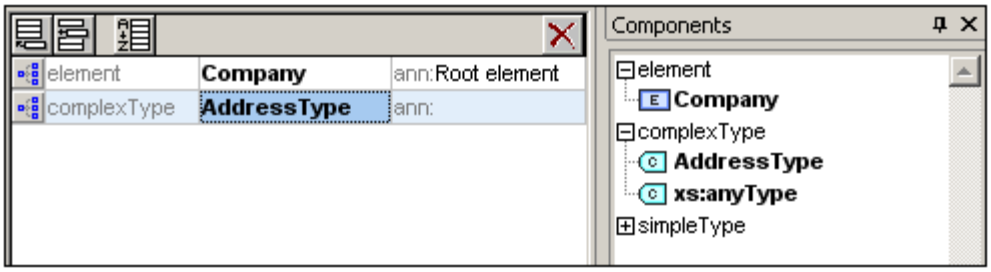
Creating a global complex type
The basic `Address` element that we defined (containing `Name`, `Street`, and `City` elements) can be reused in various address formats. So let us create this element definition as a complex type, which can be reused.

To create a global complex type:

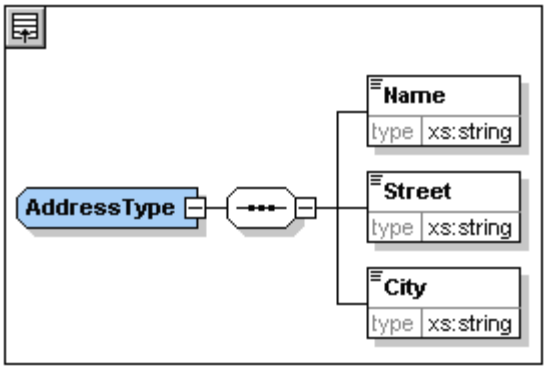
1. In the Content Model View, right-click the `Address` element.
2. In the context menu that now appears, select **Make Global | Complex type**. A global complex type called `AddressType` is created, and the `Address` element in the `Company` content model is assigned this type. The content of the `Address` element is the content model of `AddressType`, which is displayed in a yellow box. Notice that the datatype of the `Address` element is now `AddressType`.



3. Click the Display All Globals icon. This takes you to the Schema Overview, in which you can view all the global components of the schema.
4. Click the expand icons for the **element** and **complexType** entries in the Components entry helper, to see the respective schema constructs.
   The Schema Overview now displays two global components: the `Company` element and the complex type `AddressType`. The Components Entry Helper also displays the `AddressType` complex type.



5. Click on the Content Model View icon of `AddressType` to see its content model (*screenshot below*). Notice the shape of the complex type container.



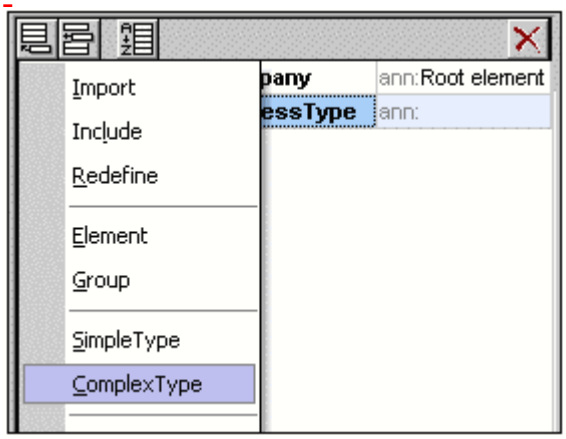
6. Click the Display All Globals icon to return to the Schema Overview.

Extending a complex type definition
We now want to use the global `AddressType` component to create two kinds of

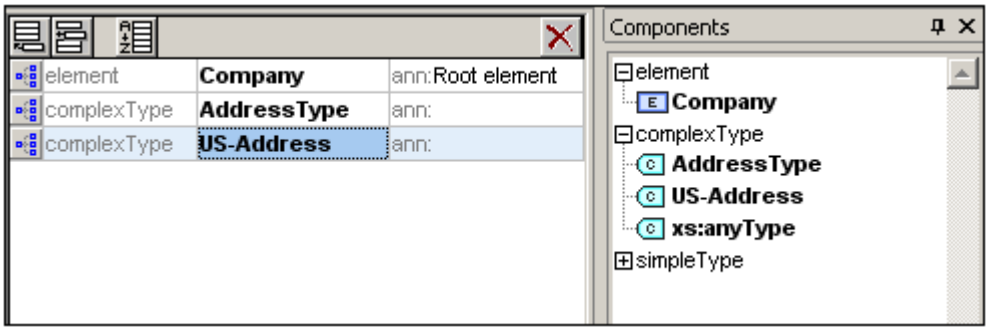
country-specific addresses. For this purpose we will define a new complex type based on the basic `AddressType` component, and then extend that definition.

Do this as follows:

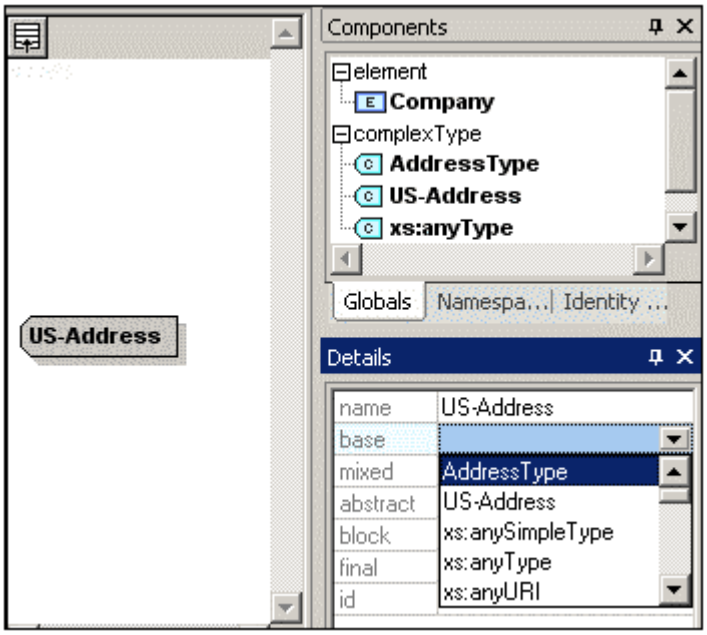
1. Switch to Schema Overview. (If you are in Content Model View, click the Display All Globals icon .)
2. Click the Append icon at the top left of the component window. The following menu opens:



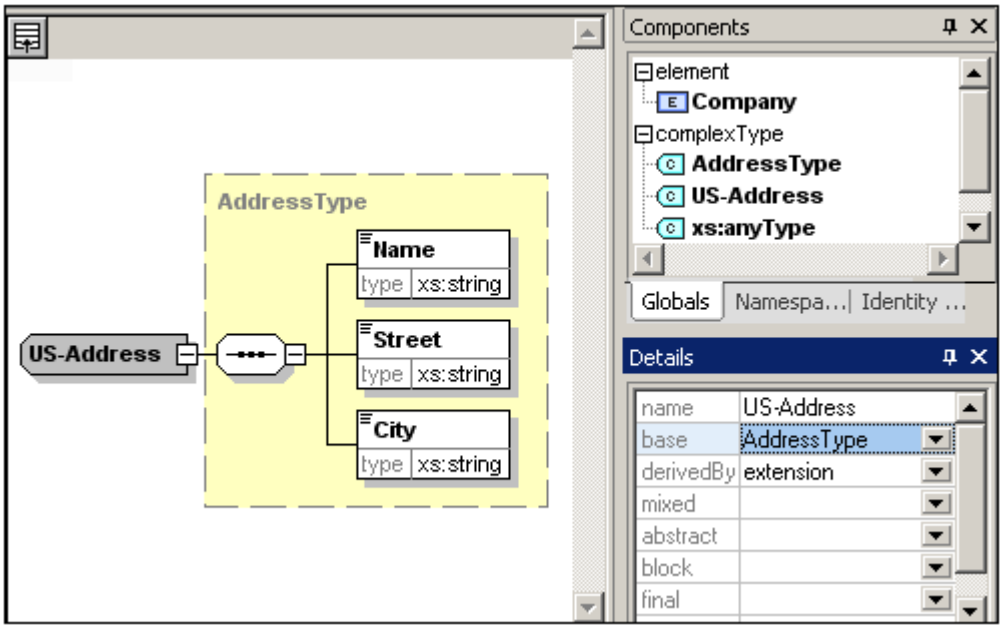
3. Select **ComplexType** from the menu. A new line appears in the component list, and the cursor is set for you to enter the component name.
4. Enter `US-Address` and confirm with **Enter**. (If you forget to enter the hyphen character "-" and enter a space, the element name will appear in red, signalling an invalid character.)



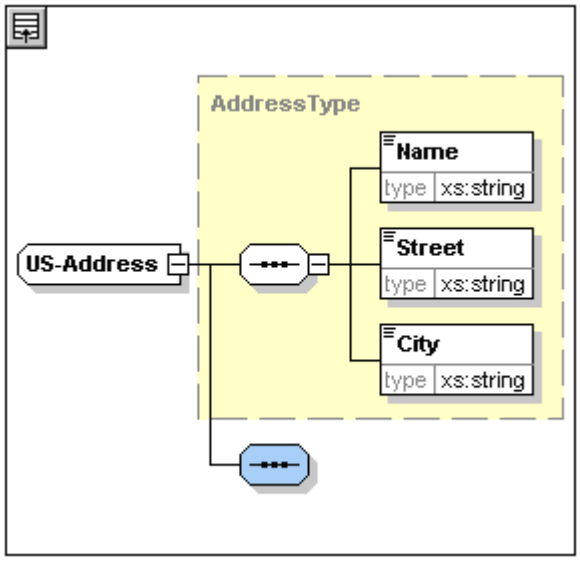
5. Click the Content Model View icon of `US-Address` to see the content model of the new complex type. The content model is empty (*see screenshot below*).
6. In the Details entry helper, click the `base` combo box and select the `AddressType` entry.



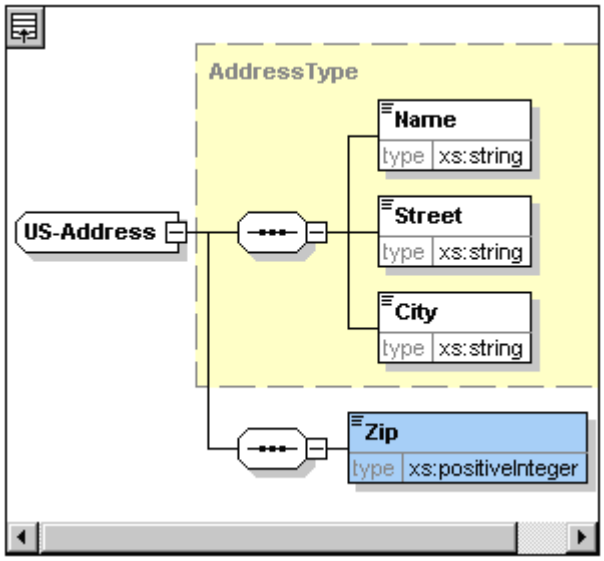
The Content Model View now displays the `AddressType` content model as the content model of US-Address (*screenshot below*).



7. Now we can extend the content model of the `US-Address` complex type to take a ZIP Code element. To do this, right-click the `US-Address` component, and, from the context menu that appears, select **Add Child | Sequence**. A new sequence compositor is displayed outside the `AddressType` box (screenshot below). This is a visual indication that this is an extension to the element.



8. Right-click the new sequence compositor and select **Add Child | Element**.
9. Name the newly created element `Zip`, and then press the **Tab** key. This places the cursor in the value field of the type descriptor line.
10. Select `xs: positiveInteger` from the dropdown menu that appears, and confirm with **Enter**.



You now have a complex type called `US-Address`, which is based on the complex type `AddressType` and extends it to contain a ZIP code.

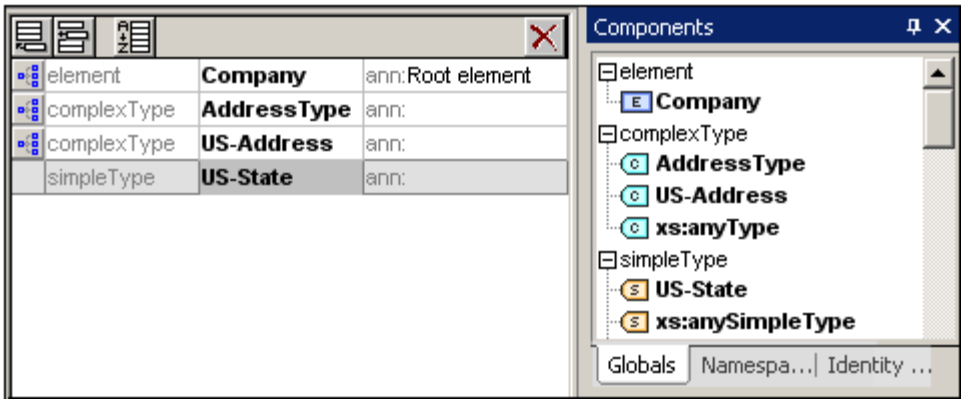
Global simple types
Just as the complex type `US-Address` is based on the complex type `AddressType`, an element can also be based on a simple type. The advantage is the same as for global complex types: the simple type can be reused. In order to reuse a simple type, the simple type must be defined globally. In this tutorial, you will define a content model for US states as a simple type. This simple type will be used as the basis for another element.

Creating a global simple type
Creating a global simple type consists of appending a new simple type to the list of global

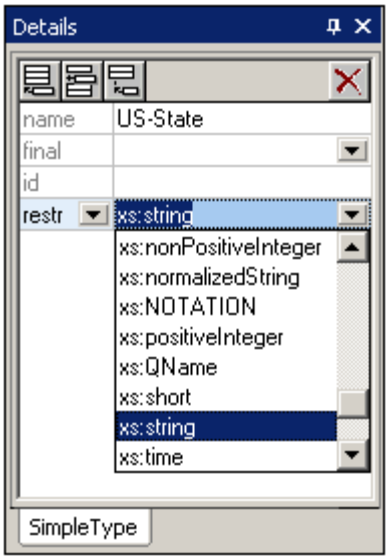
components, naming it, and defining its datatype.

To create a global simple type:

1. Switch to Schema Overview. (If you are in Content Model View, click the Display All Globals icon .)
2. Click the Append icon, and in the context menu that appears, select **SimpleType**.
3. Enter `US-State` as the name of the newly created simpleType.
4. Press **Enter** to confirm. The simple type `US-State` is created and appears in the list of simple types in the Components Entry Helper (Click the expand icon of the simpleType entry to see it).



5. In the Details Entry Helper (*screenshot below*), place the cursor in the value field of `restr` and enter `xs: string`, or select `xs: string` from the dropdown menu in the `restr` value field.



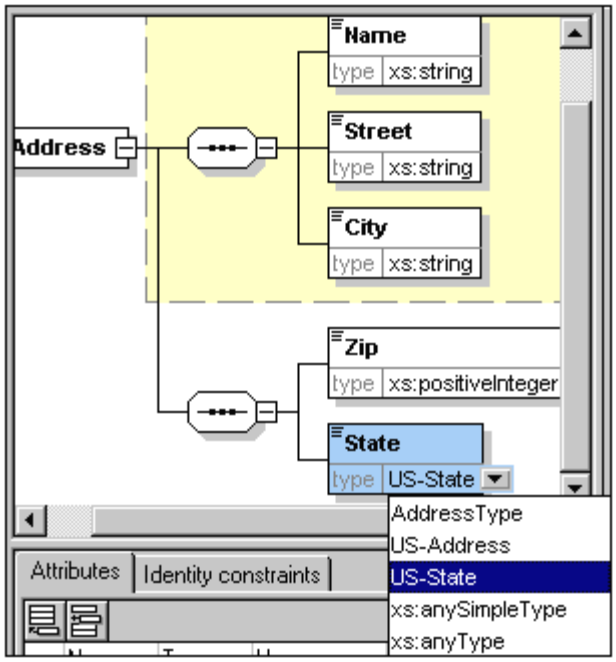
This creates a simple type called `US-State`, which is of datatype `xs: string`. This global component can now be used in the content model of `US-Address`.

Using a global simple type in a content model

A global simple type can be used in a content model to define the type of a component. We will use `US-State` to define an element called `State` in the content model of `US-Address`.

Do the following:

1. In Schema Overview, click the Component Model View icon  of `US-Address`.
2. Right-click the lower sequence compositor and select **Add Child | Element**.
3. Enter `State` for the element name.
4. Press the **Tab** key to place the cursor in the value field of the type descriptor line.
5. From the drop-down menu of this combo box, select `US-State`.



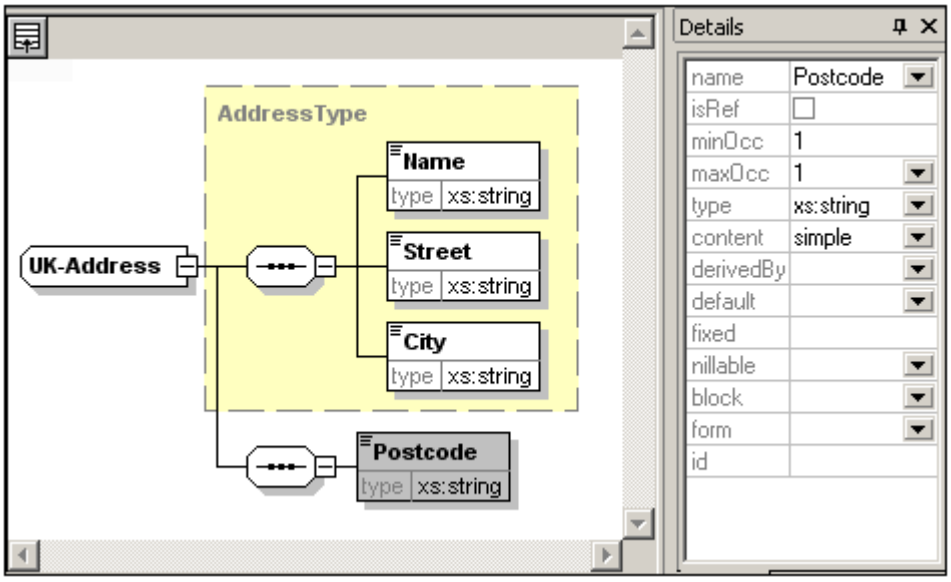
The `State` element is now based on the `US-State` simple type.

Creating a second complex type based on `AddressType`
We will now create a global complex type to hold UK addresses. The complex type is based on AddressType, and is extended to match the UK address format.

Do the following:

1. In Schema Overview, create a global complex type called `UK-Address`, and base it on `AddressType` (`base=AddressType`).
2. In the Content Model View of `UK-Address`, add a `Postcode` element and give it a type of `xs:string`.

Your `UK-Address` content model should look like this:

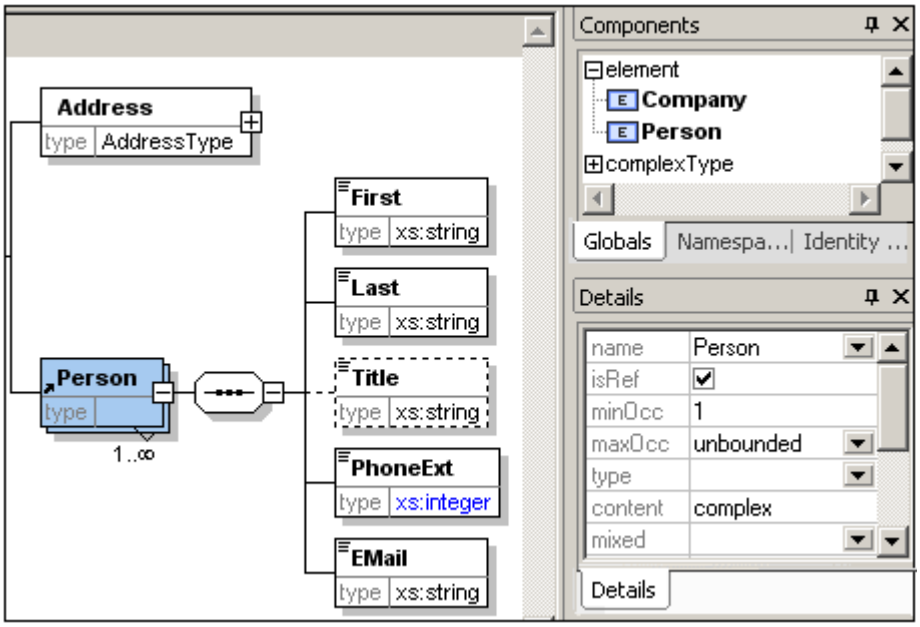


Please note: In this section you created global simple and complex types, which you then used in content model definitions. The advantage of global types is that they can be reused in multiple definitions.

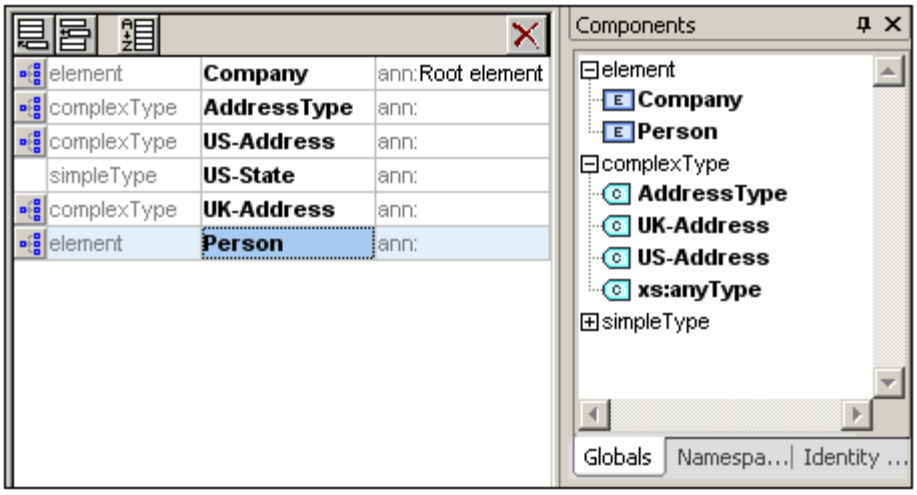
3.3.2 Referencing Global Elements

In this section, we will convert the locally defined `Person` element to a global element and reference that global element from within the `Company` element.

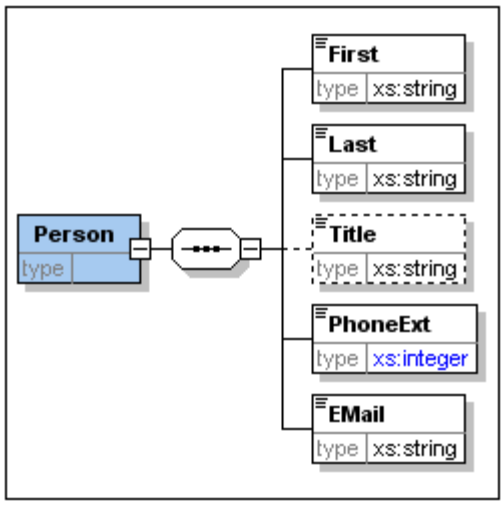
1. Click  (Display All Globals) to switch to Schema Overview.
2. Click the Display Diagram icon  of the `Company` element.
3. Right-click the `Person` element, and select **Make Global | Element**. A small link arrow icon appears in the `Person` element, showing that this element now references the globally declared `Person` element. In the Details Entry Helper, the `isRef` check box is now activated.



4. Click the Display All Globals icon  to return to Schema Overview. The `Person` element is now listed as a global element. It is also listed in the Components Entry Helper.



5. In the Components Entry Helper, double-click the `Person` element to see the content model of the global `Person` element.



Notice that the global element box does **not** have a link arrow icon. This is because it is the referenced element, not the referencing element. It is the referencing element that has the link arrow icon.

Please note:

- An element that references a global element must have the same name as the global element it references.
- A global declaration does not describe where a component is to be used in an XML document. It only describes a content model. It is only when a global declaration is referenced from within another component that its location in the XML document is specified.

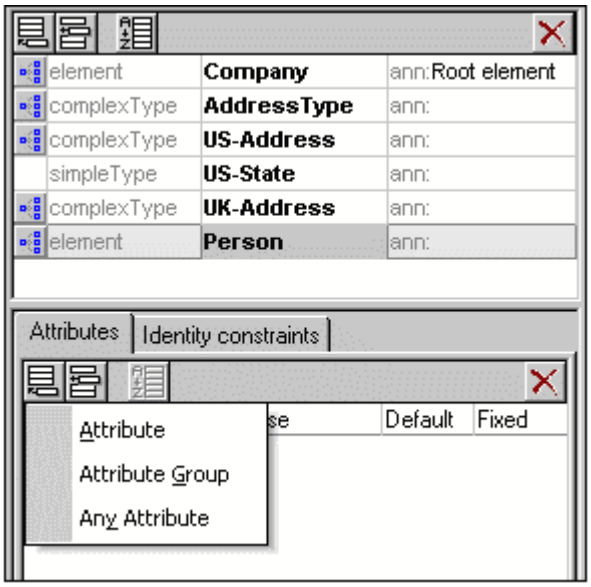
  A globally declared element can be reused at multiple locations. It differs from a globally declared complex type in that its content model cannot be modified without also modifying the global element itself. If you change the content model of an element that references a global element, then the content model of the global element will also be changed, and, with it, the content model of all other elements that reference that global element.

3.3.3 Attributes and Attribute Enumerations

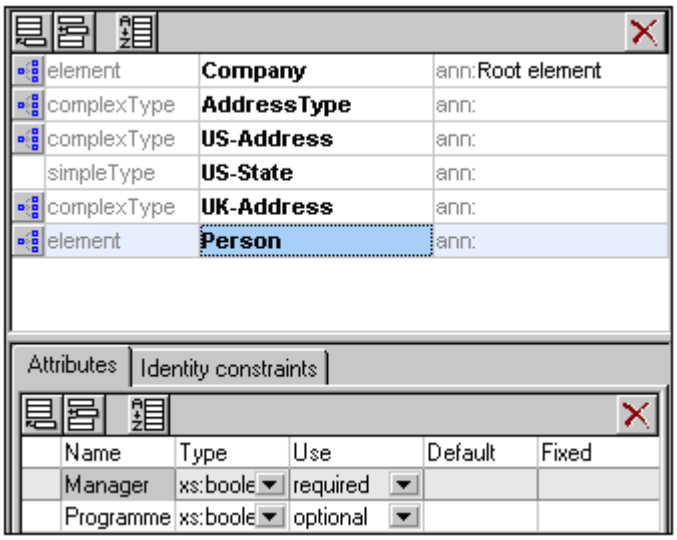
In this section, you will learn how to create attributes and enumerations for attributes.

Defining element attributes

1. In the Schema Overview, click the `Person` element to make it active.
2. Click the Append icon  , in the top left of the Attributes/Identity Constraints tab group (in the lower part of the Schema Overview window), and select the Attribute entry.



3. Enter `Manager` as the attribute name in the Name field.
4. Use the `Type` combo box to select `xs: boolean`.
5. Use the `Use` combo box to select `required`.

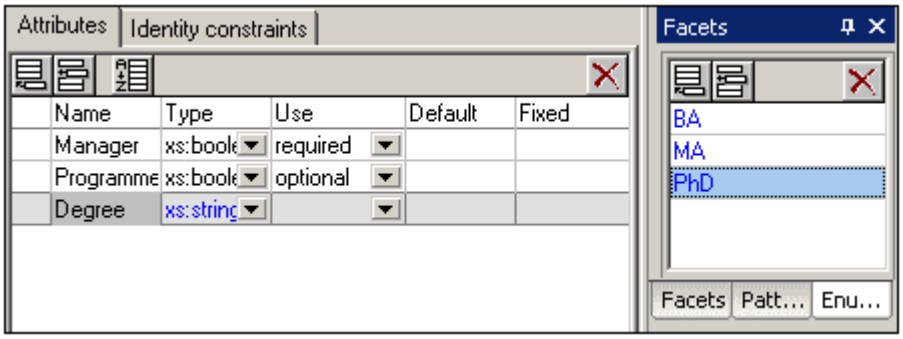


6. Use the same procedure to create a `Programmer` attribute with `Type=xs: boolean` and `Use=optional`.

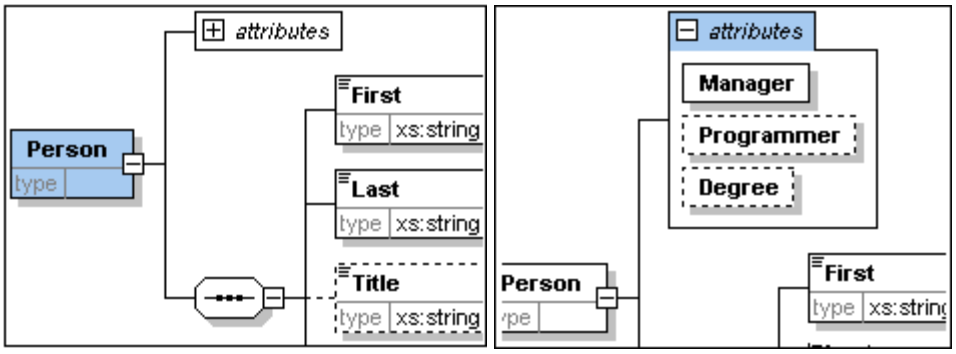
Defining enumerations for attributes
Enumerations are values allowed for a given attribute. If the value of the attribute in the XML instance document is not one of the enumerations specified in the XML Schema, then the document is invalid. We will create enumerations for the `Degree` attribute of the `Person` element.

Do the following:

1. In the Schema Overview, click the `Person` element to make it active.
2. Click the Append icon  in the top left of the Attributes window, and select the **Attribute** entry.
3. Enter `Degree` as the attribute name, and select `xs:string` as its type.
4. With the Degree attribute selected, in the Facets Entry Helper, click the **Enumerations** tab (*see screenshot*).



5. In the **Enumerations** tab, click the Append icon  .
6. Enter `BA`, and confirm with **Enter**.
7. Use the same procedure to add two more enumerations: `MA` and `PhD`.
8. Click on the Content Model View icon  of Person.



The previously defined attributes are visible in the Content Model View. Clicking the expand icon displays all the attributes defined for that element. This display mode and the Attributes tab can be toggled by selecting the menu option **Schema Design | Configure view**, and checking and unchecking the **Attributes** check box in the **Show in diagram** pane.

9. Click the Display all Globals icon  to return to the Schema Overview.

Saving the completed XML Schema

Please note: Before saving your schema file, rename the `AddressLast.xsd` file that is delivered with XMLSpy to something else (such as `AddressLast_original.xsd`), so as not

to overwrite it.

Save the completed schema with any name you like (**File | Save as**). We recommend you save it with the name `AddressLast.xsd` since the XML file you create in the next part of the tutorial will be based on the `AddressLast.xsd` schema.

3.4 XML Schemas: XMLSpy Features

After having completed the XML Schema, we suggest you become familiar with a few navigation shortcuts and learn about the schema documentation that you can generate from within XMLSpy. These are described in the subsections of this section.

Commands used in this section
In this section of the tutorial, you will use Schema View exclusively. The following commands are used:

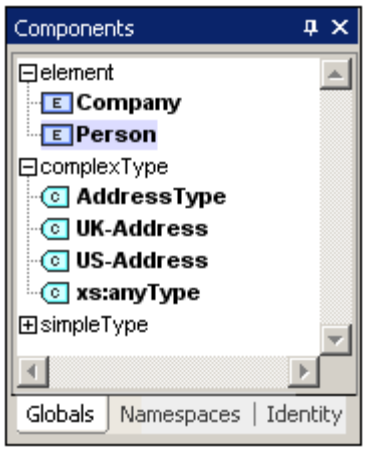
Display Diagram (or Display Content Model View). This icon is located to the left of all global components in Schema Overview. Clicking the icon causes the content model of the associated global component to be displayed.

3.4.1 Schema Navigation

This section shows you how to navigate Schema View efficiently. We suggest that you try out these navigation mechanisms to become familiar with them.

Displaying the content model of a global component
Global components that can have content models are complex types, elements, and element groups. The Content Model View of these components can be opened in the following ways:

- In Schema Overview, click the Display Diagram icon  to the left of the component name.
- In either Schema Overview or Content Model View, double-click the element, complex type, or element group in the Components Entry Helper (*screenshot below*).

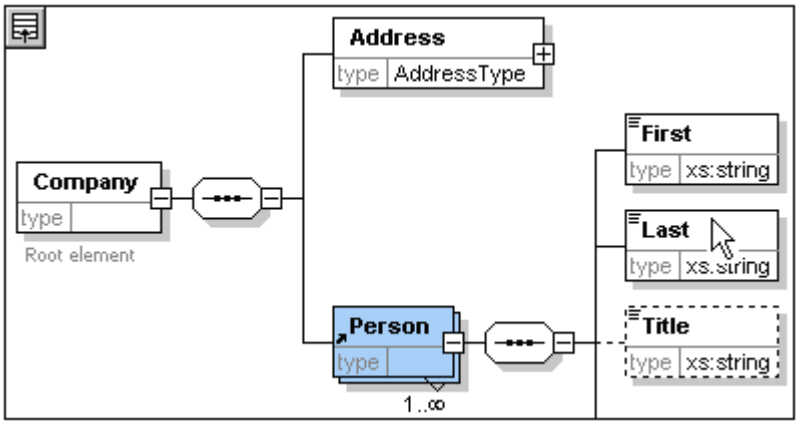


If you double-click any of the other global components (simple type, attribute, attribute group) in the Components Entry Helper, that component will be highlighted in Schema Overview (since they do not have a content model).

In the Components Entry Helper, the double-clicking mechanism works from both the By Type and By Namespace tabs.

Going to the definition of a global element from a referencing element
If a content model contains an element that references a global element, you can go directly to the content model of that global element or to any of its contained components by holding down **Ctrl** and double-clicking the required element.

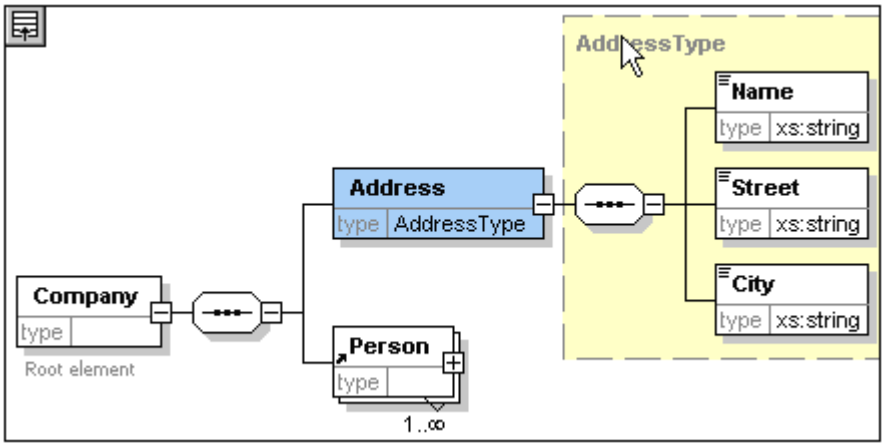
For example, while viewing the `Company` content model, holding down **Ctrl** while double-clicking `Last` opens the `Person` content model and highlights the `Last` element in it.



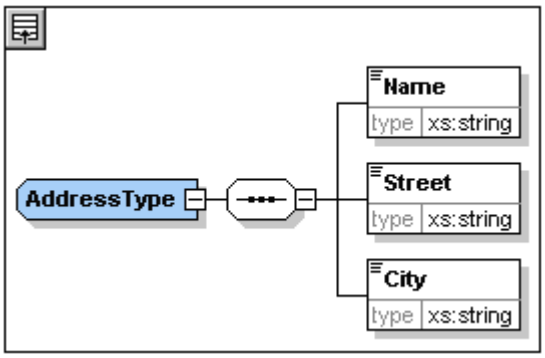
When the `Last` element is highlighted, all its properties are immediately displayed in the relevant entry helpers and information window.

Going to the definition of a complex type

Complex types are often used as the type of some element within a content model. To go directly to the definition of a complex type from within a content model, double-click the **name** of the complex type in the yellow box (*see mouse pointer in screenshot below*).



This takes you to the Content Model View of the complex type.



Please note: Just as with referenced global elements, you can go directly to an element within the complex type definition by holding down **Ctrl** and double-clicking the required element in the content model that contains the complex type.

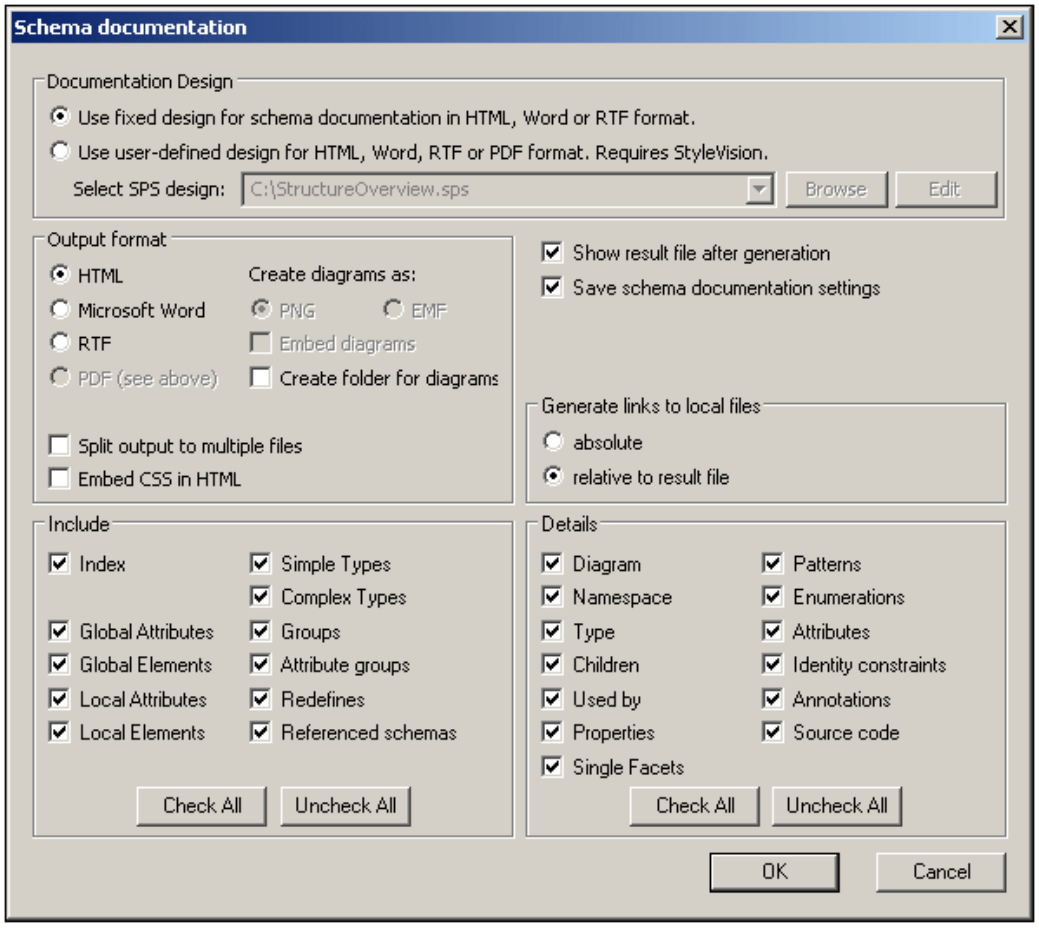
3.4.2 Schema Documentation

XMLSpy provides detailed documentation of XML Schemas in HTML and Microsoft Word (MS Word) formats. You can select the components and the level of detail you want documented. Related components are hyperlinked in both HTML and MS Word documents. In order to generate MS Word documentation, you must have MS Word installed on your computer (or network).

In this section, we will generate documentation for the `AddressLast.xsd` XML Schema.

Do the following:

1. Select the menu option **Schema design | Generate documentation**. This opens the Schema Documentation dialog.



2. For the Output Format option, select HTML, and click **OK**.
3. In the Save As dialog, select the location where the file is to be saved and give the file a suitable name (say `AddressLast.html`). Then click the **Save** button.

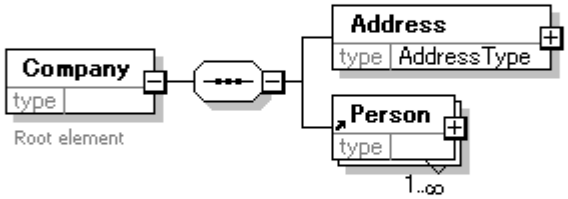
   The HTML document appears in the Browser View of XMLSpy. Click on a link to go to the corresponding linked component.

Schema **AddressLast.xsd**

schema location: **C:¥Program Files¥Altova¥XMLSpy2010¥Examples¥Tutorial¥AddressLast.xsd**
attribute form default: **unqualified**
element form default: **qualified**
targetNamespace: **http://my-company.com/namespace**

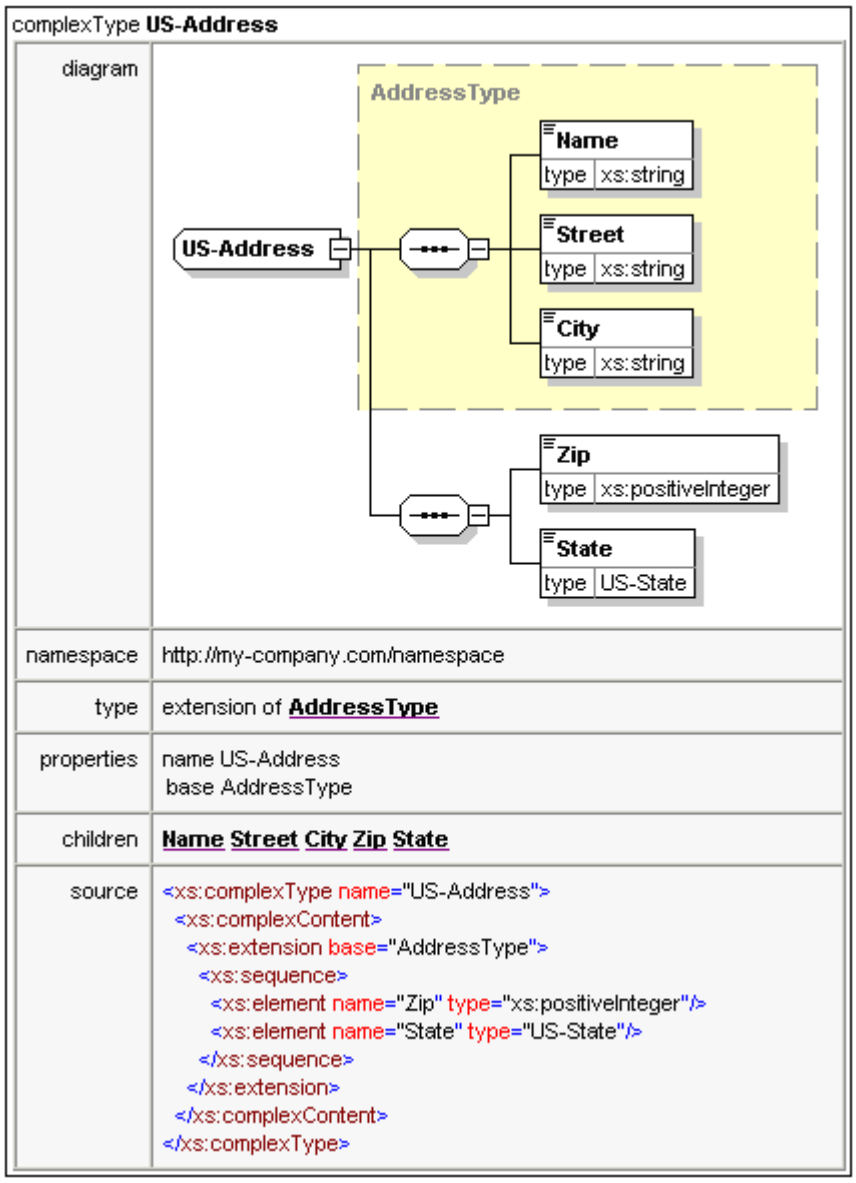
Elements	Complex types	Simple types
Company	**AddressType**	**US-State**
Person	**UK-Address**	
	US-Address	

element **Company**

diagram	
namespace	http://my-company.com/namespace
properties	content complex
children	**Address** **Person**
annotation	documentation Root element

source	`<xs:element name="Company">`
	`<xs:annotation>`
	`<xs:documentation>Root element</xs:documentation>`
	`</xs:annotation>`
	`<xs:complexType>`
	`<xs:sequence>`
	`<xs:element name="Address" type="AddressType"/>`
	`<xs:element ref="Person" maxOccurs="unbounded"/>`
	`</xs:sequence>`
	`</xs:complexType>`
	`</xs:element>`

The diagram above shows the **first page** of the schema documentation in HTML form. If components from other schemas have been included, then those schemas are also documented.



The diagram above shows how complex types are documented.

element **US-Address/Zip**

diagram	**Zip** type xs:positiveInteger
namespace	http://my-company.com/namespace
type	**xs:positiveInteger**
properties	name Zip isRef 0 content simple
source	<xs:element name="Zip" type="xs:positiveInteger"/>

element **US-Address/State**

diagram	**State** type US-State
namespace	http://my-company.com/namespace
type	**US-State**
properties	name State isRef 0 content simple
source	<xs:element name="State" type="US-State"/>

simpleType **US-State**

namespace	http://my-company.com/namespace
type	**xs:string**
properties	name US-State
used by	element **US-Address/State**
source	<xs:simpleType name="US-State"> <xs:restriction base="xs:string"/> </xs:simpleType>

The diagram above shows how elements and simple types are documented.

You can now try out the MS Word output option. The Word document will open in MS Word. To use hyperlinks in the MS Word document, hold down **Ctrl** while clicking the link.

3.5 XML Documents

In this section you will learn how to create and work with XML documents in XMLSpy. You will also learn how to use the various intelligent editing features of XMLSpy.

Objective
The objectives of this section are to learn how to do the following:

- Create a new XML document based on the `AddressLast.xsd` schema.
- Specify the type of an element so as to make an extended content model for that element available to the element during validation.
- Insert elements and attributes and enter content for them in Grid View and Text View using intelligent entry helpers.
- Copy XML data from XMLSpy to Microsoft Excel; add new data in MS Excel; and copy the modified data from MS Excel back to XMLSpy. This functionality is available in the Database/Table View of Grid View.
- Sort XML elements using the sort functionality of Database/Table View.
- Validate the XML document.
- Modify the schema to allow for three-digit phone extensions.

Commands used in this section
In this section of the tutorial, you will mostly use the Grid View and Text View, and in one section Schema View. The following commands are used:

File | New. Creates a new type of XML file.

View | Text View. Switches to Text View.

View | Grid View. Switches to Enhanced Grid View.

XML | Table | Display as Table. Displays multiple occurrences of a single element type at a single hierarchic level as a table. This view of the element is called the Database/Table View (or simply Table View). The icon is used to switch between the Table View and regular Grid View.

F7. Checks for well-formedness.

F8. Validates the XML document against the associated DTD or Schema.

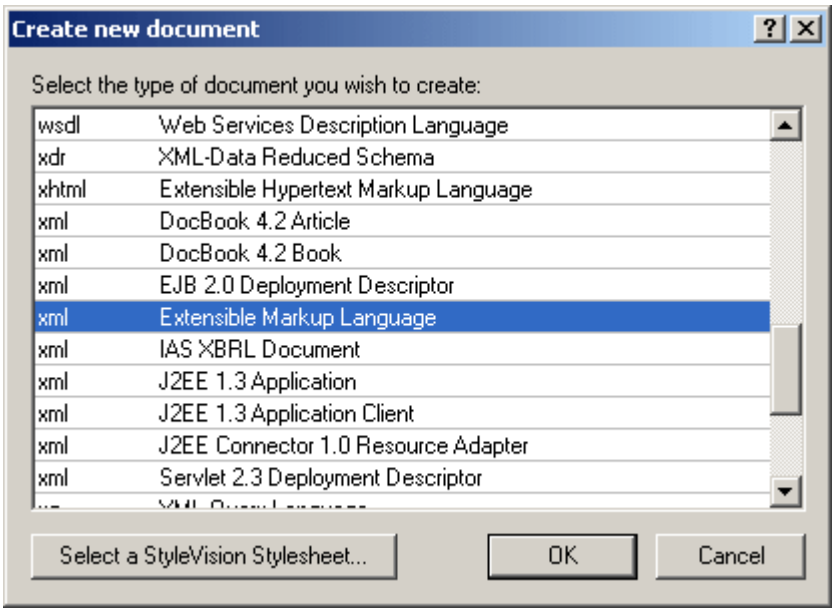
Opens the associated DTD or XML Schema file.

3.5.1 Creating a New XML File

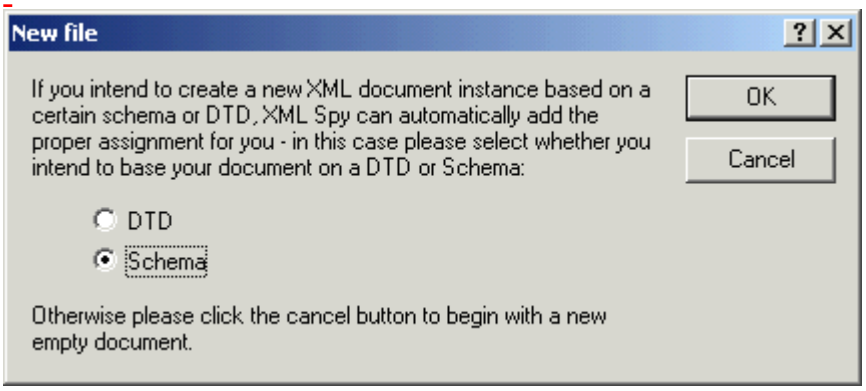
When you create a new XML file in XMLSpy, you are given the option of basing it on a schema (DTD or XML Schema) or not. In this section you will create a new file that is based on the `AddressLast.xsd` schema you created earlier in the tutorial.

To create the new XML file:

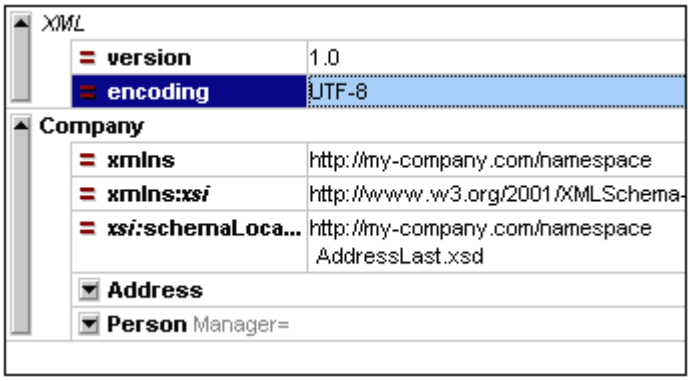
1. Select the menu option **File | New**. The Create new document dialog opens.



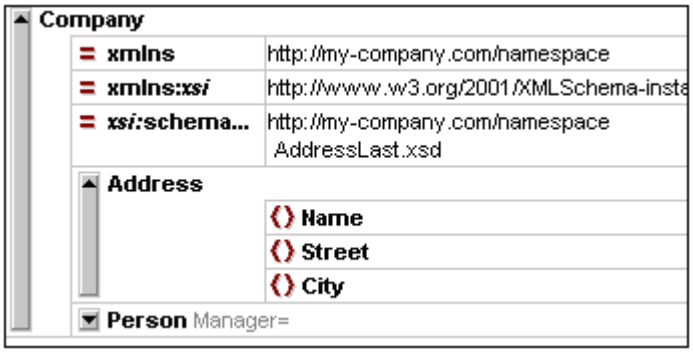
2. Select the `Extensible Markup Language` entry (or generic XML document entry) from the dialog, and confirm with **OK**. A prompt appears, asking if you want to base the XML document on a DTD or Schema.



3. Click the Schema radio button, and confirm with **OK**. A further dialog appears, asking you to select the schema file your XML document is to be based on.
4. Use the Browse or Window buttons to find the schema file. The Window button lists all files open in XMLSpy and projects. Select `AddressLast.xsd` (see Tutorial introduction for location), and confirm with **OK**. An XML document containing the main elements defined by the schema opens in the main window.
5. Click the **Grid** tab to select Grid View.
6. In Grid View, notice the structure of the document. Click on any element to reduce selection to that element. Your document should look something like this:

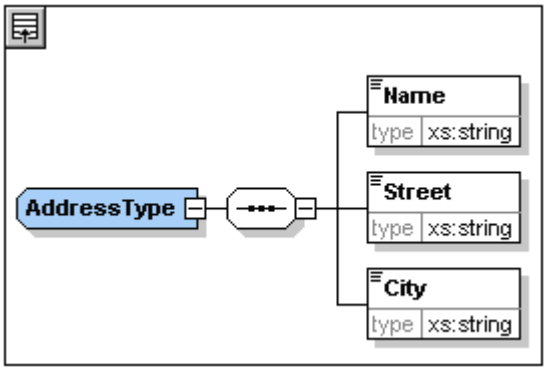


7. Click on the icon next to `Address`, to view the child elements of `Address`. Your document should look like this:

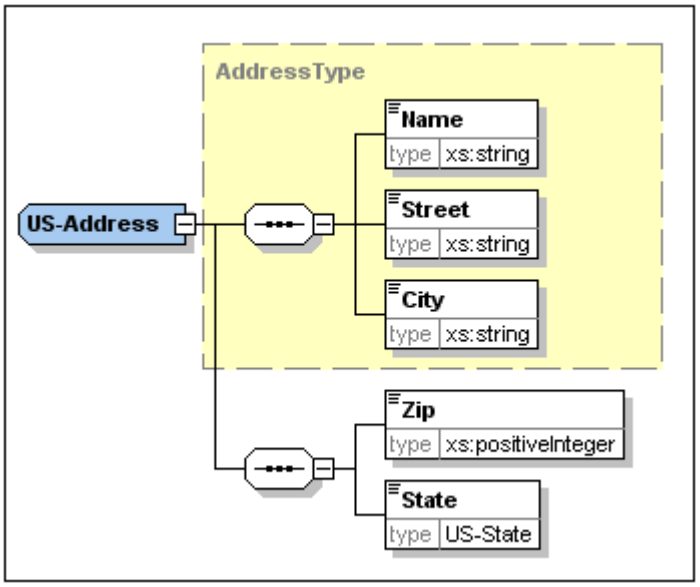


3.5.2 Specifying the Type of an Element

The child elements of `Address` are those defined for the global complex type `AddressType` (*the content model of which is defined in the XML Schema* `AddressLast.xsd` *shown in the Grid View screenshot below*).



We would, however, like to use a specific US or UK address type rather than the generic address type. You will recall that, in the `AddressLast.xsd` schema, we created global complex types for `US-Address` and `UK-Address` by extending the `AddressType` complex type. The content model of `US-Address` is shown below.

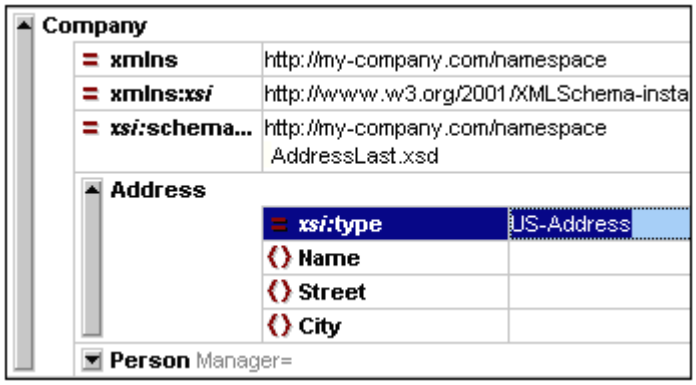


In the XML document, in order to specify that the `Address` element must conform to one of the extended `Address` types (`US-Address` or `UK-Address`) rather than the generic `AddressType`, we must specify the required extended complex type as an attribute of the `Address` element.

Do the following:

1. In the XML document, right-click the `Name` element, and select **Insert | Attribute** from the context menu.

   An attribute field is added to the `Address` element.
2. Ensure that `xsi:type` is entered as the name of the attribute (screenshot below).
3. Press **Tab** to move into the next (value) field.



4. Enter `US-Address` as the value of the attribute.

Please note: The `xsi` prefix allows you to use special XML Schema related commands in your XML document instance. Notice that the the namespace for the `xsi` prefix was automatically

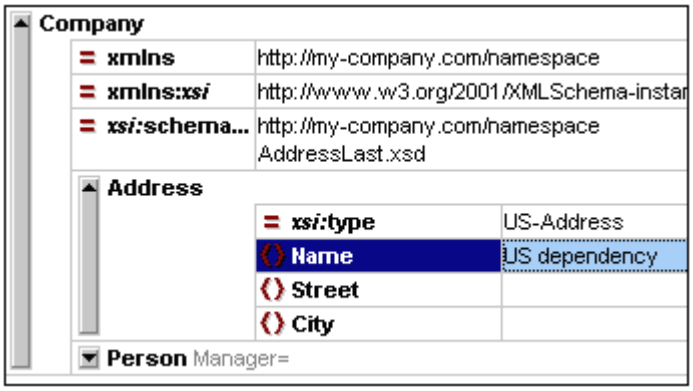
added to the document element when you assigned a schema to your XML file. In the above case, you have specified a type for the `Address` element. See the XML Schema specification for more information.

3.5.3 Entering Data in Grid View

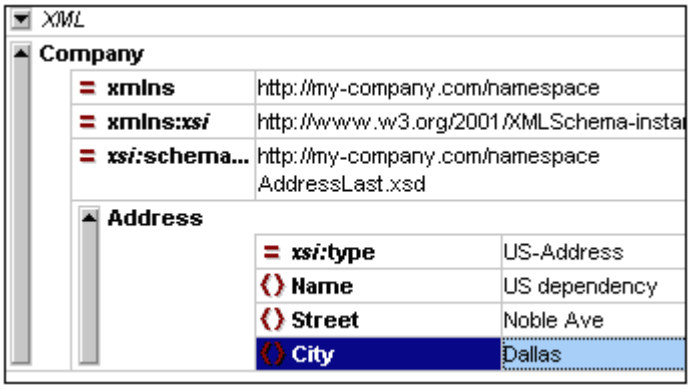
You can now enter data into your XML document.

Do the following:

1. Double-click in the `Name` value field (or use the arrow keys) and enter `US dependency`. Confirm with **Enter**.



2. Use the same method to enter a `Street` and `City` name (for example, `Noble Ave` and `Dallas`).
3. Click the `Person` element and press **Delete** to delete the `Person` element. (We will add it back in the next section of the tutorial.) After you do this, the entire `Address` element is highlighted.
4. Click on any child element of the `Address` element to deselect all the child elements of `Address` except the selected element. Your XML document should look like this:

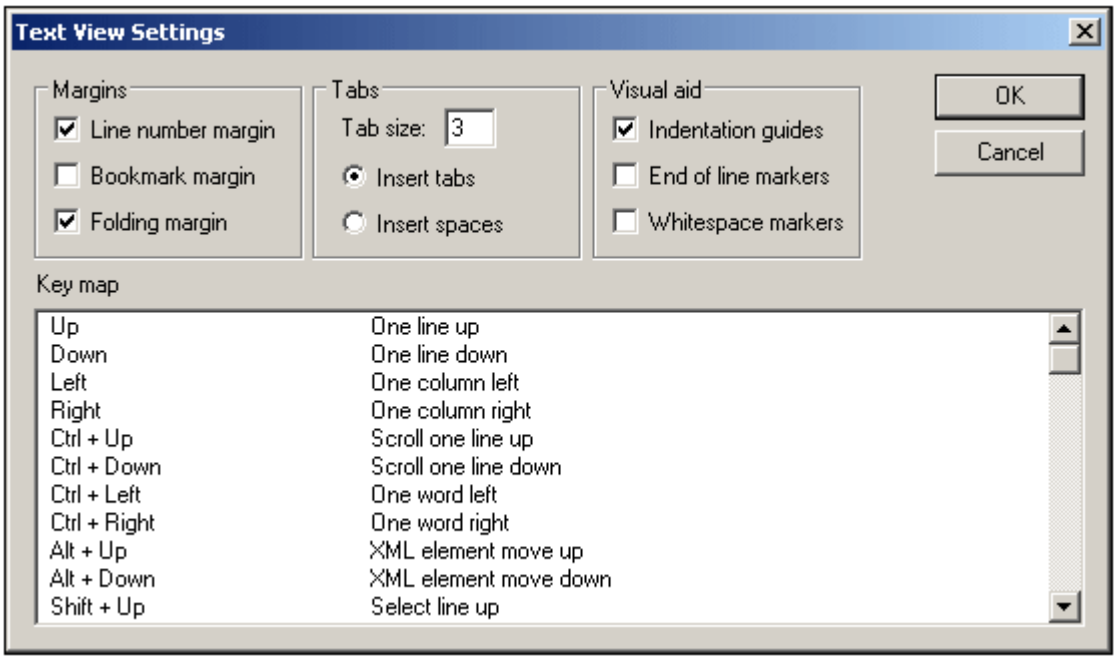


3.5.4 Entering Data in Text View

Text View is ideal for editing the actual data and markup of XML files because of its DTD/XML Schema-related intelligent editing features.

Structural layout features
In addition, Text View has a number of viewing and structural editing features that make editing

large sections of text easy. These features can be switched on and off in the Text View Settings dialog (**View | Text View Settings**, *screenshot below*).



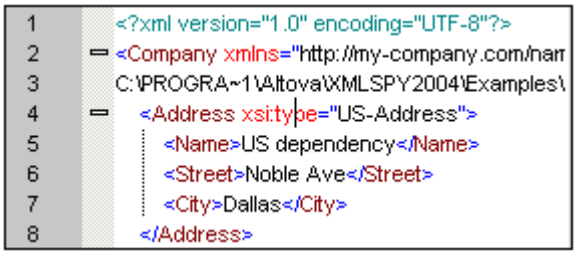
The following margins in Text View can be switched on and off:

- Line number margins
- Bookmark margins, in which individual lines can be highlighted with a marker
- Source folding margins, which contain icons to expand and collapse the display of elements

Additionally, visual aids such as indentation guides, end-of-line markers, and whitespace markers can be switched on and off, by checking and unchecking, respectively, their check boxes in the *Visual Aid* pane of the Text View Settings dialog (*see screenshot above*).

The bookmark feature is useful for setting up markers in your document. To insert a bookmark, use the command **Edit | Insert/Remove Bookmark**. Once bookmarks have been inserted you can navigate these bookmarks using commands in the **Edit** menu.

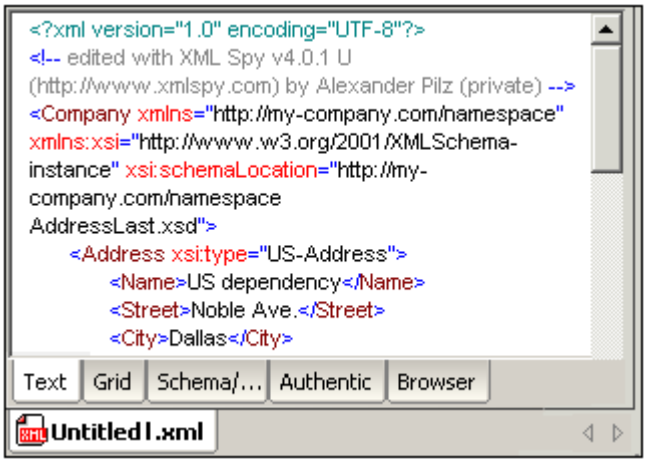
The screenshot below shows the current XML file in Text View with all structural editing features enabled. For the sake of clarity, none of the line numbers, indentation guides, etc, will be shown in Text View in rest of this tutorial. Please see the User Manual for more information on Text View.



Editing in Text View
In this section, you will enter and edit data in Text View in order to become familiar with the features of Text View.

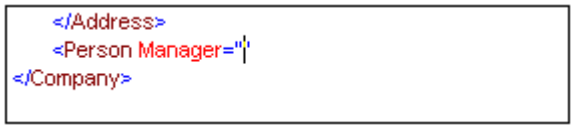
Do the following:

1. Select the menu item **View | Text view**, or click on the **Text** tab. You now see the XML document in its text form, with syntax coloring.

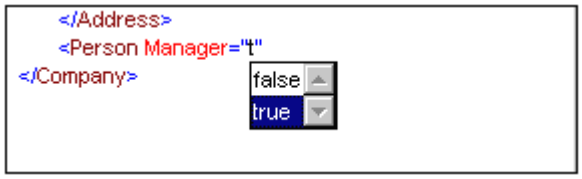


2. Place the text cursor after the end tag of the Address element, and press **Enter** to add a new line.
3. Enter the less-than angular bracket **<** at this position. A dropdown list of all elements allowed at that point (according to the schema) is displayed. Since only the `Person` element is allowed at this point, it will be the only element displayed in the list.

4. Select the `Person` entry. The `Person` element, as well as its attribute `Manager`, are inserted, with the cursor inside the value-field of the `Manager` attribute.



5. From the dropdown list for the `Manager` attribute, select `true`.

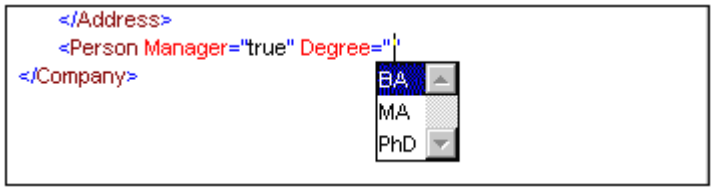


Press **Enter** to insert the value `true` at the cursor position.

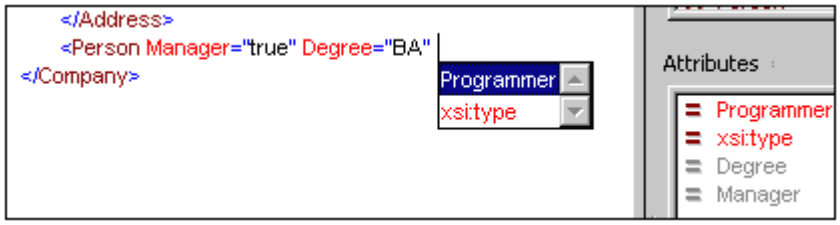
6. Move the cursor to the end of the line (using the **End** key if you like), and press the space bar. This opens a dropdown list, this time containing a list of attributes allowed at

that point. Also, in the Attributes Entry Helper, the available attributes are listed in red. The Manager attribute is grayed out because it has already been used.

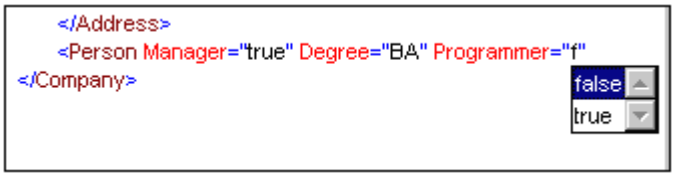
7. Select `Degree` with the Down arrow key, and press **Enter**. This opens another list box, from which you can select one of the predefined enumerations (`BA`, `MA`, or `PhD`).



8. Select `BA` with the Down arrow key and confirm with **Enter**. Then move the cursor to the end of the line (with the **End** key), and press the space bar. `Manager` and `Degree` are now grayed out in the Attributes Entry Helper.



9. Select `Programmer` with the Down arrow key and press **Enter**.

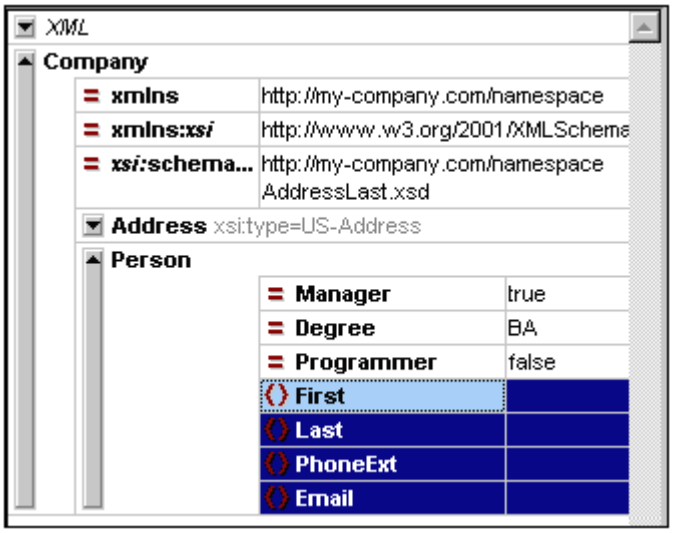


10. Enter the letter `"f"` and press **Enter**.
11. Move the cursor to the end of the line (with the **End** key), and enter the greater-than angular bracket **>**. XMLSpy automatically inserts all the required child elements of `Person`. (Note that the optional `Title` element is not inserted.) Each element has start and end tags but no content.

```
<?xml version="1.0" encoding="UTF-8"?>
<Company xmlns="http://my-company.com/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://my-company.com/namespace
AddressLast.xsd">
    <Address xsi:type="US-Address">
        <Name>US dependency</Name>
        <Street>Noble Ave</Street>
        <City>Dallas</City>
    </Address>
    <Person Manager="true" Degree="BA" Programmer="false">
        <First></First>
        <Last></Last>
        <PhoneExt></PhoneExt>
        <Email></Email>
    </Person>
</Company>
```

You could now enter the `Person` data in Text View, but let's move to Grid View to see the flexibility of moving between views when editing a document.

Switching to Grid View
To switch to Grid View, select the menu item **View | Grid View,** or click the **Grid** tab. The newly added child elements of `Person` are highlighted.



Now let us validate the document and correct any errors that the validation finds.

3.5.5 Validating the Document

XMLSpy provides two evaluations of the XML document:

- A well-formedness check
- A validation check

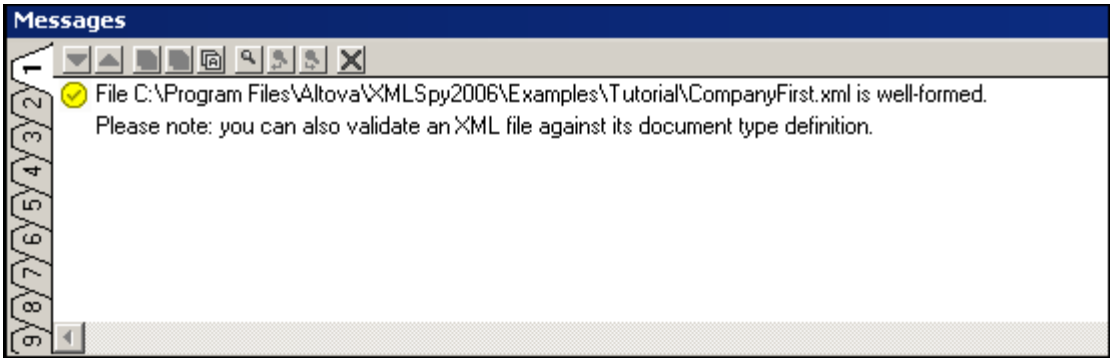
If either of these checks fails, we will have to modify the document appropriately.

Checking well-formedness
An XML document is well-formed if starting tags match closing tags, elements are nested

correctly, there are no misplaced or missing characters (such as an entity without its semi-colon delimiter), etc.

You can do a well-formedness check in any editing view. Let us select Text View. To do a well-formedness check, select the menu option **XML | Check well-formedness**, or press the **F7** key, or click  . A message appears in the Messages window at the bottom of the Main Window saying the document is well-formed.

Notice that the output of the Messages window has 9 tabs. The validation output is always displayed in the active tab. Therefore, you can check well-formedness in Tab1 for one schema file and keep the result by switching to Tab2 before validating the next schema document (otherwise Tab1 is overwritten with the validation result).



Please note: This check does not check the structure of the XML file for conformance with the schema. Schema conformance is evaluated in the validity check.

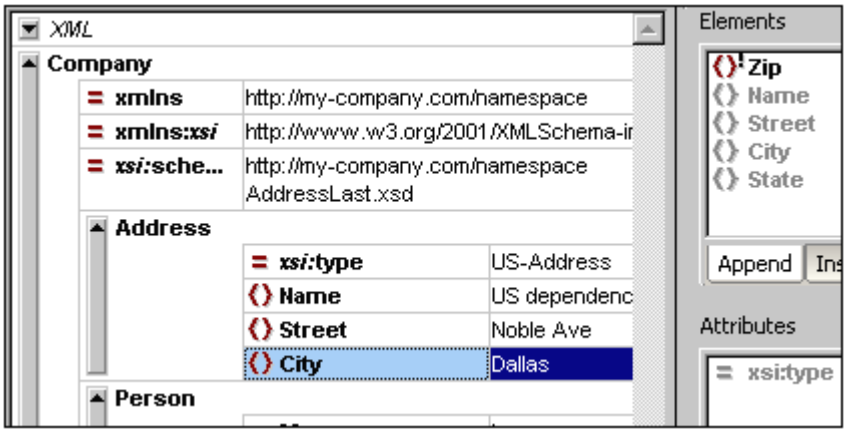
Checking validity

An XML document is valid according to a schema if it conforms to the structure and content specified in that schema.

To check the validity of your XML document, first select Grid View, then select the menu option **XML | Validate**, or press the **F8** key, or click  . An error message appears in the Messages window saying the file is not valid. Mandatory elements are expected after the `City` element in `Address`. If you check your schema, you will see that the `US-Address` complex type (which you have set this `Address` element to be with its `xsi:type` attribute) has a content model in which the City element must be followed by a `Zip` element and a `State` element.

Fixing the invalid document

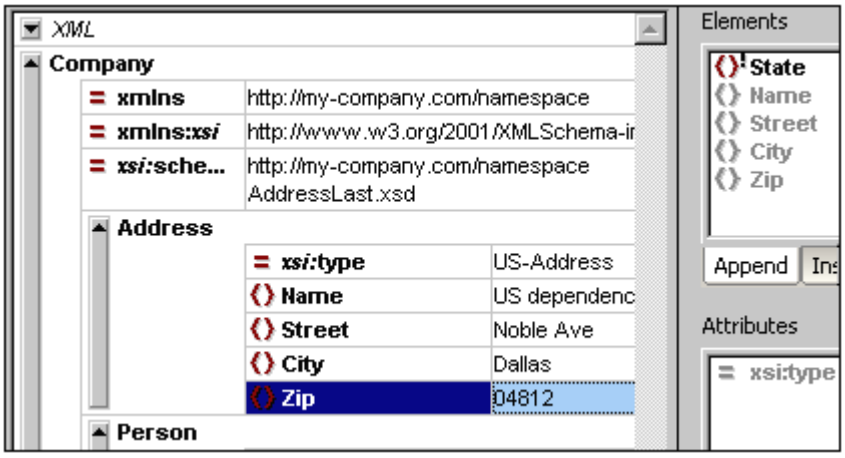
The point at which the document becomes invalid is highlighted, in this case the `City` element.



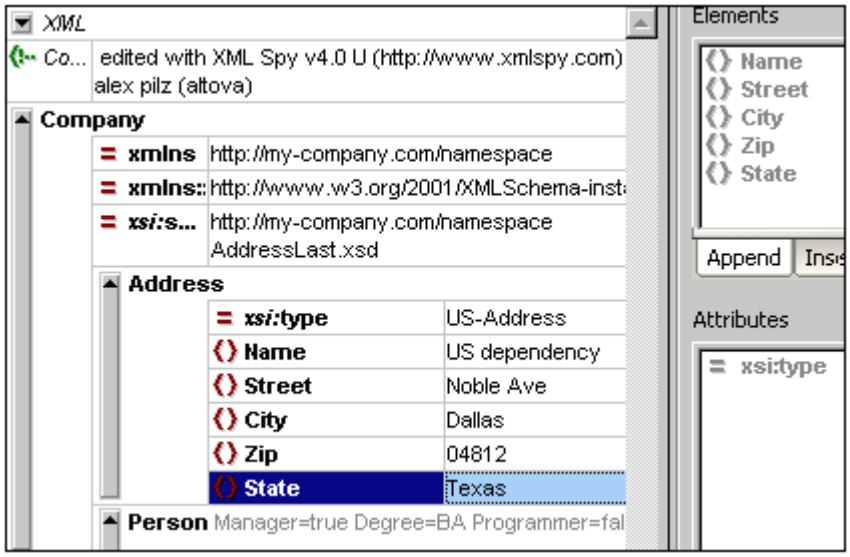
Now look at the Elements Entry Helper (at top right). Notice that the `Zip` element is prefixed with an exclamation mark, which indicates that the element is mandatory in the current context.

To fix the validation error:

1. In the Elements Entry Helper, double-click the `Zip` element. This inserts the `Zip` element after the `City` element (we were in the Append tab of the Elements Entry Helper).
2. Press the **Tab** key, and enter the Zip Code of the State (`04812`), then confirm with **Enter**. The Elements Entry Helper now shows that the `State` element is mandatory (it is prefixed with an exclamation mark). *See screenshot below*.



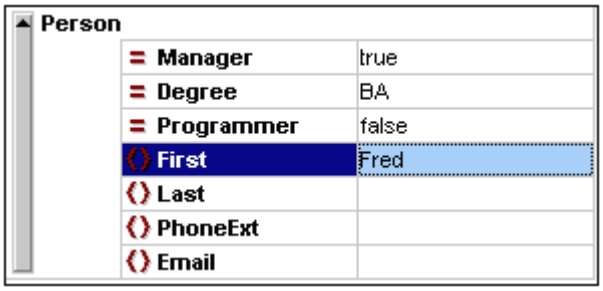
3. In the Elements Entry Helper, double-click the `State` element. Then press **Tab** and enter the name of the state (`Texas`). Confirm with **Enter**. The Elements Entry Helper now contains only grayed-out elements. This shows that there are no more required child elements of `Address`.



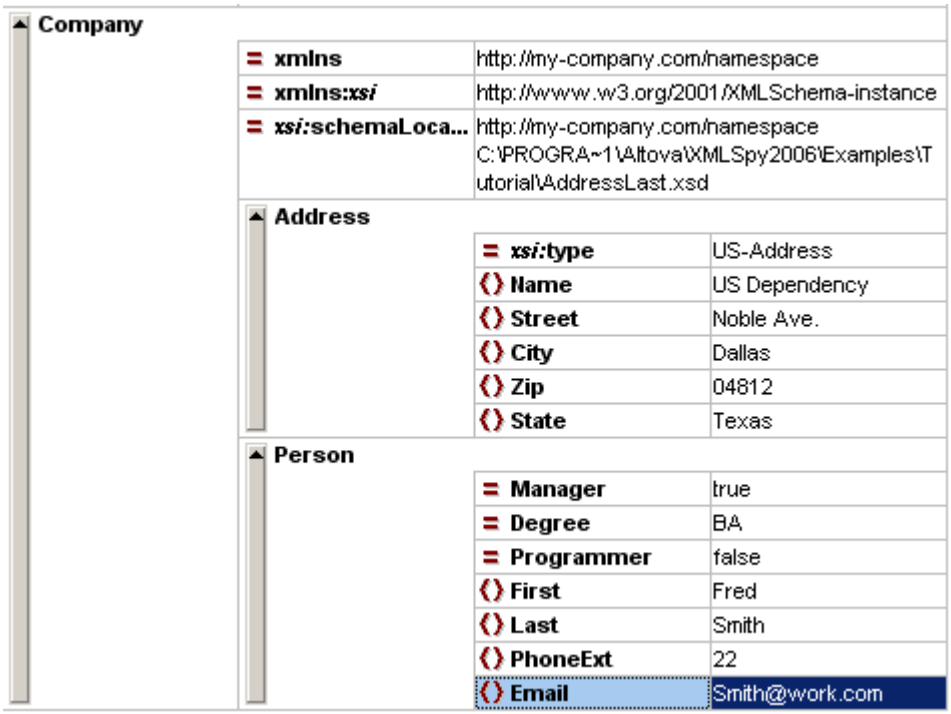
Completing the document and revalidating
Let us now complete the document (enter data for the `Person` element) before revalidating.

Do the following:

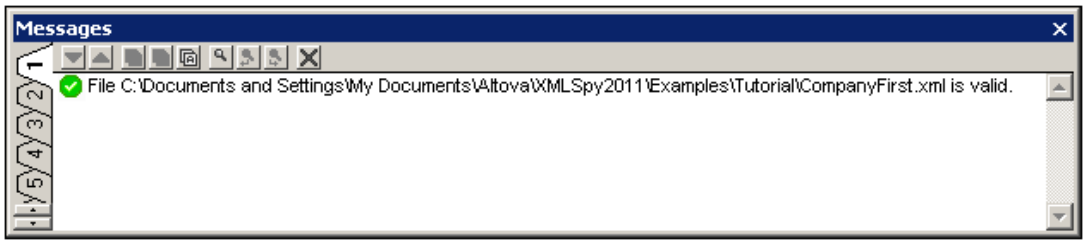
1. Click the value field of the element `First`, and enter a first name (say `Fred`). Then press **Enter**.



2. In the same way enter data for all the child elements of `Person`, that is, for `Last`, `PhoneExt`, and `Email`. Note that the value of `PhoneExt` must be an integer with a maximum value of 99 (since this is the range of allowed `PhoneExt` values you defined in your schema). Your XML document should then look something like this in Grid View:



3. Click  again to check if the document is valid. A message appears in the Messages window stating that the file is valid. The XML document is now valid against its schema.



4. Select the menu option **File | Save** and give your XML document a suitable name (for example `CompanyFirst.xml`). Note that the finished tutorial file `CompanyFirst.xml` is in the `Tutorial` folder, so you may need to rename it before you give that name to the file you have created.

Please note: An XML document does not have to be valid in order to save it. Saving an invalid document causes a prompt to appear warning you that you are about to save an invalid document. You can select **Save anyway**, if you wish to save the document in its current invalid state.

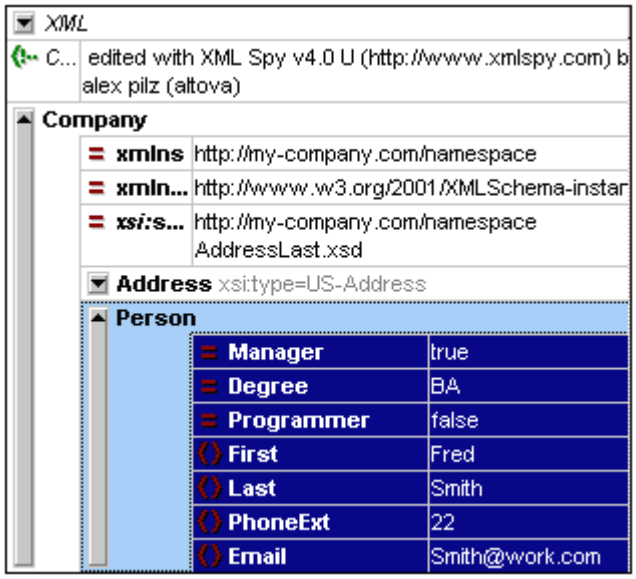
3.5.6 Adding Elements and Attributes

At this point, there is only one `Person` element in the document.

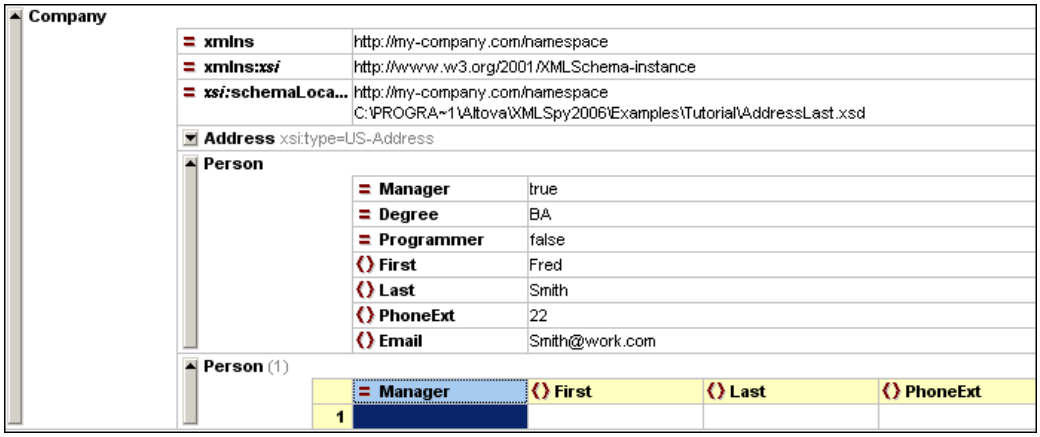
To add a new `Person` element:

1. Click the gray sidebar to the left of the `Address` element to collapse the `Address` element. This clears up some space in the view.
2. Select the entire `Person` element by clicking on or below the `Person` element text in

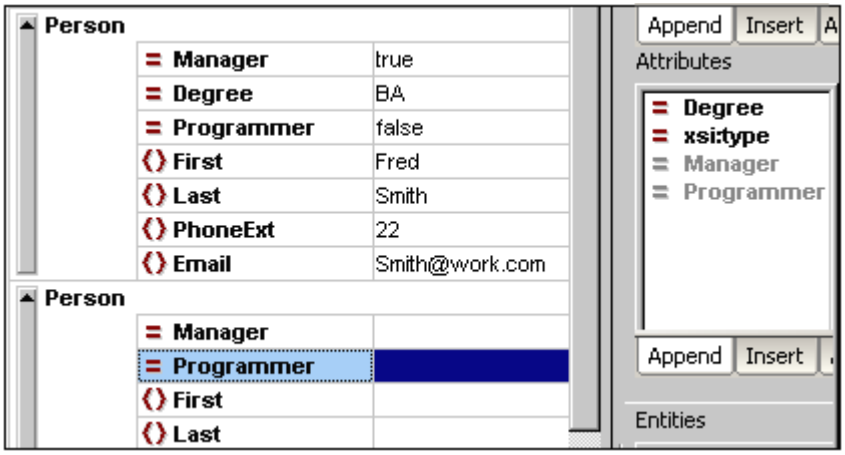
Grid View. Notice that the `Person` element is now available in the **Append** tab of the Elements Entry Helper.



3. Double-click the `Person` element in the Elements Entry Helper. A new `Person` element with all mandatory child elements is appended (*screenshot below*). Notice that the optional `Title` child element of `Person` is not inserted.



4. Switch to Grid View and then press **F12** to switch the new `Person` element from Table View to normal Grid View.
5. Click on the `Manager` attribute of the new `Person` element. Take a look at the Attributes Entry Helper. The Manager entry is grayed out because it has already been entered. Also look at the Info Window, which now displays information about the `Manager` attribute. It is a required attribute and has therefore been added. The `Programmer` attribute has not been added.
6. In the **Append** tab of the Attributes Entry Helper, double-click the `Programmer` entry. This inserts an empty `Programmer` attribute after the `Manager` attribute.



The `Programmer` attribute is now grayed out in the Attributes Entry Helper.

You could enter content for the `Person` element in this view, but let's switch to the Database/Table View of Grid View since it is more suited to editing a structure with multiple occurrences, such as `Person`.

3.5.7 Editing in Database/Table View

Grid View contains a special view called Database/Table View (hereafter called Table View), which is convenient for editing elements with multiple occurrences. Individual element types can be displayed as a table. When an element type is displayed as a table, its children (attributes and elements) are displayed as columns, and the occurrences themselves are displayed as rows.

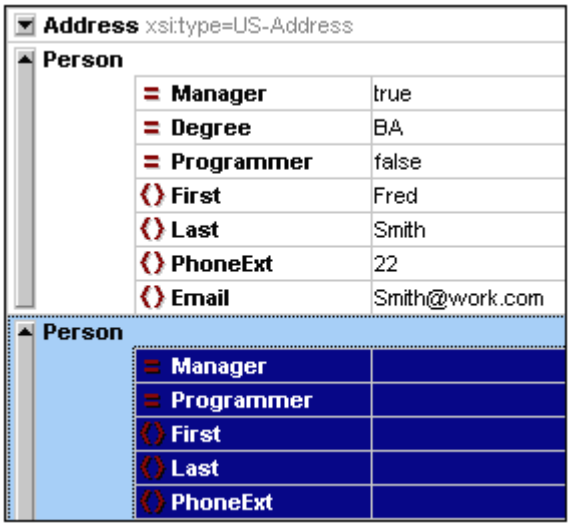
To display an element type as a table, you select any one of the element type occurrences and click the Display as Table icon in the toolbar (**XML | Table | Display as table**). This causes that element type to be displayed as a table. Descendant element types that have multiple occurrences are also displayed as tables. Table View is available in Enhanced Grid View, and can be used to edit any type of XML file (XML, XSD, XSL, etc.).

Advantages of Table View
Table View provides the following advantages:

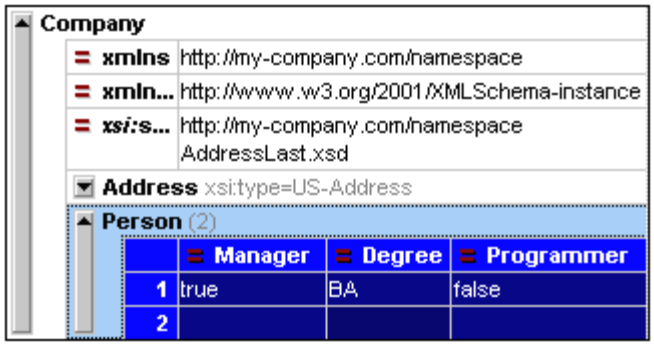
- You can drag-and-drop column headers to reposition the columns relative to each other. This means that, in the actual XML document, the relative position of child elements or attributes is modified for all the element occurrences that correspond to the rows of the table.
- Tables can be sorted (in ascending or descending order) according to the contents of any column using **XML | Table | Ascending Sort** or **Descending Sort**.
- Additional rows (i.e., element occurrences) can be appended or inserted using **XML | Table | Insert Row**.
- You can copy-and-paste **structured data** to and from third party products
- The familiar intelligent editing feature is active in Table View also.

Displaying an element type as a Table
To display the `Person` element type as a table:

1. In Grid View, select either of the `Person` elements by clicking on or near the `Person` text.


Address xsi:type=US-Address
Person
Manager true
Degree BA
Programmer false
First Fred
Last Smith
PhoneExt 22
Email Smith@work.com
Person
Manager
Programmer
First
Last
PhoneExt

2. Select the menu option **XML | Table | Display as table**, or click the Display as Table icon. Both `Person` elements are combined into a single table. The element and attribute names are now the column headers, and the element occurrences are the rows of the table.

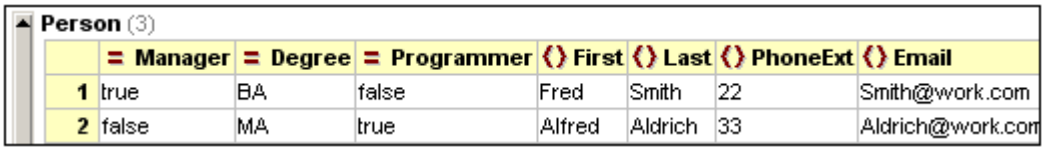


3. Select the menu option **View | Optimal widths**, or click the Optimal Widths icon, to optimize the column widths of the table.

Please note: Table View can be toggled off for individual element types in the document by selecting that table (click the element name in the table) and clicking the Display As Table icon. Note however that child elements which were displayed as tables will continue to be displayed as tables.

Entering content in Table View

To enter content for the second `Person` element, double-click in each of the table cells in the second row, and enter some data. Note, however, that `PhoneExt` must be an integer up to 99 in order for the file to be valid. The intelligent editing features are active also within cells of a table, so you can select options from dropdown lists where options are available (Boolean content and the enumerations for the `Degree` attribute).



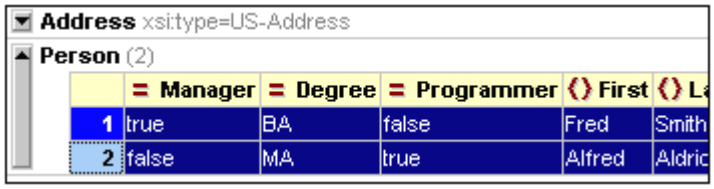
Please note: The Entry Helpers are active also for the elements and attributes displayed as a table. Double-clicking the `Person` entry in the Elements Entry Helper, for example, would add a new row to the table (i.e., a new occurrence of the `Person` element).

Copying XML data to and from third party products

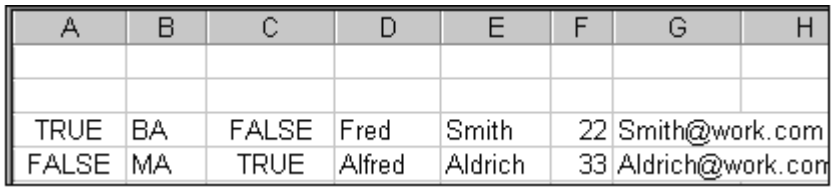
You can copy spreadsheet-type data between third party products and XML documents in XMLSpy. This data can be used as XML data in XMLSpy and as data in the native format of the application copied to/from. In this section you will learn how to copy data to and from an Excel data sheet.

Do the following:

1. Click on the row label `1`, hold down the **Ctrl** key, and click on row label `2`. This selects both rows of the table.

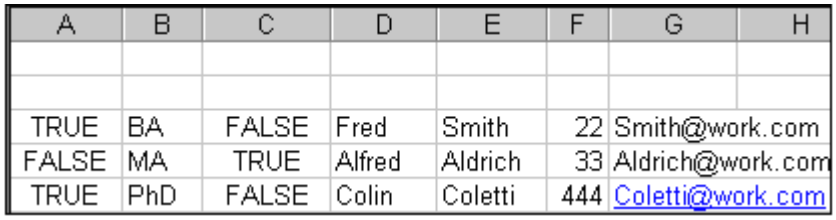


2. Select the menu option **Edit | Copy as Structured text**. This command copies elements to the clipboard as they appear on screen.
3. Switch to Excel and paste (**Ctrl+V**) the XML data in an Excel worksheet.



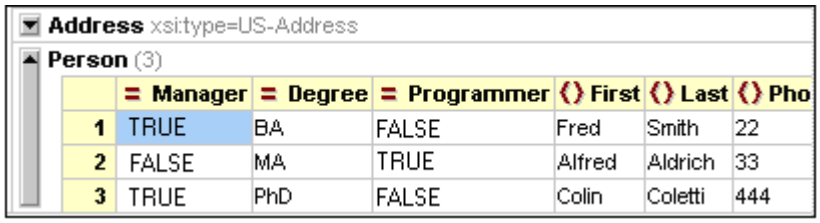
A	B	C	D	E	F	G	H
TRUE	BA	FALSE	Fred	Smith	22	Smith@work.com	
FALSE	MA	TRUE	Alfred	Aldrich	33	Aldrich@work.com	

4. Enter a new row of data in Excel. Make sure that you enter a three digit number for the `PhoneExt` element (say, `444`).



A	B	C	D	E	F	G	H
TRUE	BA	FALSE	Fred	Smith	22	Smith@work.com	
FALSE	MA	TRUE	Alfred	Aldrich	33	Aldrich@work.com	
TRUE	PhD	FALSE	Colin	Coletti	444	Coletti@work.com	

5. Mark the table data in Excel, and press **Ctrl+C** to copy the data to the clipboard.
6. Switch back to XMLSpy.
7. Click in the top left **data** cell of the table in XMLSpy, and select **Edit | Paste**.



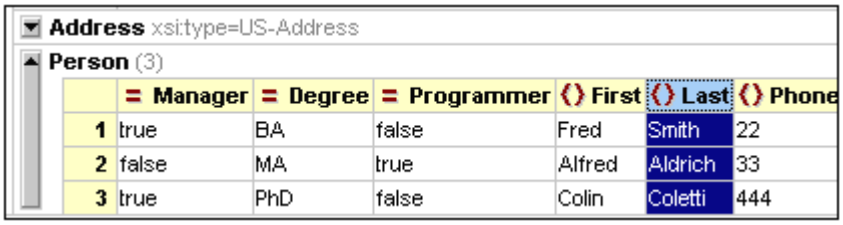
8. The updated table data is now visible in the table.
9. Change the uppercase boolean values `TRUE` and `FALSE` to lowercase `true` and `false`, respectively, using the menu option **Edit | Replace (Ctrl+H)**.

Sorting the table by the contents of a column

A table in Table View can be sorted in ascending or descending order by any of its columns. In this case, we want to sort the `Person` table by last names.

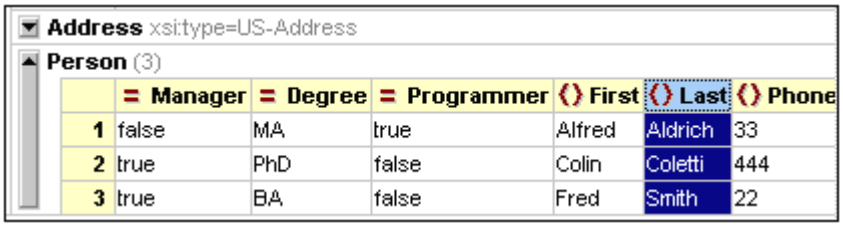
To sort a table by the contents of a column:

1. Select the `Last` column by clicking in its header.



	Manager	Degree	Programmer	First	Last	Phone
1	true	BA	false	Fred	Smith	22
2	false	MA	true	Alfred	Aldrich	33
3	true	PhD	false	Colin	Coletti	444

2. Select the menu option **XML | Table | Ascending sort** or click on the Ascending Sort icon  . The column, and the **whole table** with it, are now sorted alphabetically. The column remains highlighted.



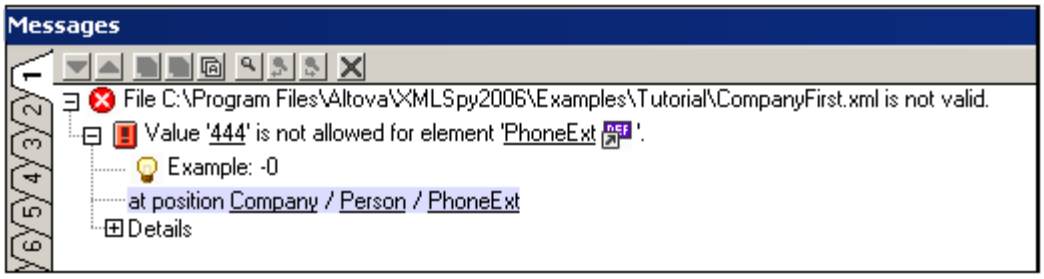
	Manager	Degree	Programmer	First	Last	Phone
1	false	MA	true	Alfred	Aldrich	33
2	true	PhD	false	Colin	Coletti	444
3	true	BA	false	Fred	Smith	22

The table is sorted not just in the display but also in the underlying XML document. That is, the order of the `Person` elements is changed so that they are now ordered alphabetically on the content of `Last`. (Click the Text tab if you wish to see the changes in Text View.)

3. Select the menu option **XML | Validate** or press **F8**. An error message appears indicating that the value '444' is not allowed for a PhoneExt element (*see screenshot*). The invalid PhoneExt element is highlighted .

   Expand "Details" to see that `PhoneExt` is not valid because it is not less than or equal to the maximum value of 99.

   Please Note: You can click on the links in the error message to jump to the spot in the XML file where the error was found.



Since the value range we set for phone extension numbers does not cover this extension number, we have to modify the XML Schema so that this number is valid. You will do this in the next section.

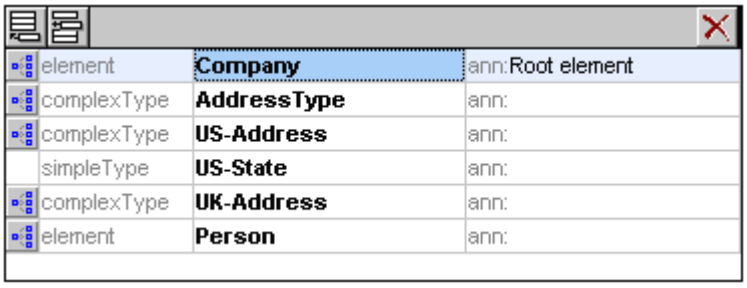
3.5.8 Modifying the Schema

Since two-digit phone extension numbers do not cover all likely numbers, let's extend the range of valid values to cover three-digit numbers. We therefore need to modify the XML Schema. You can open and modify the XML Schema without having to close your XML document.

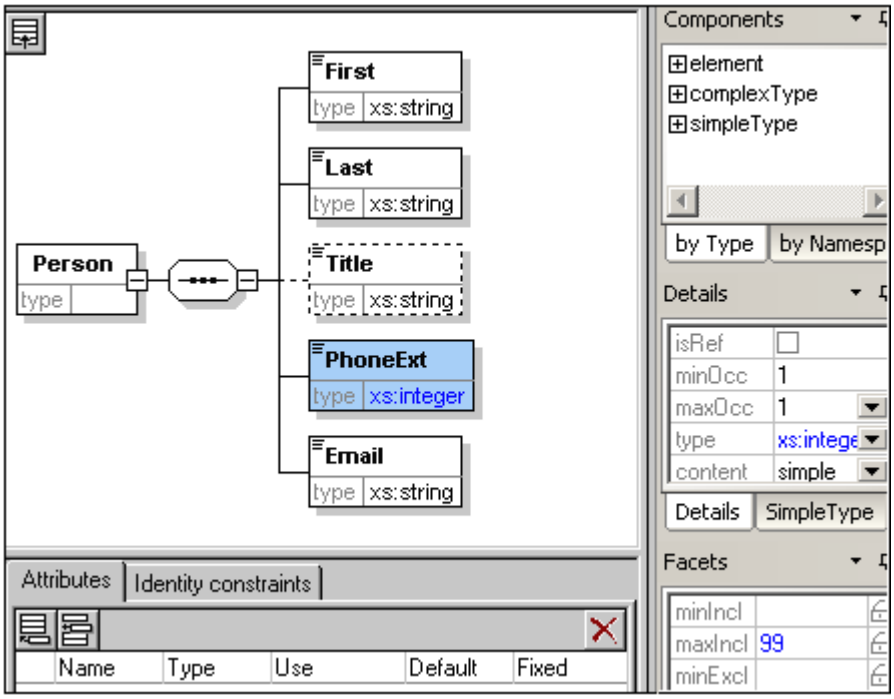
Do the following:

1. Select the menu option **DTD/Schema | Go to definition** or click the Go To Definition

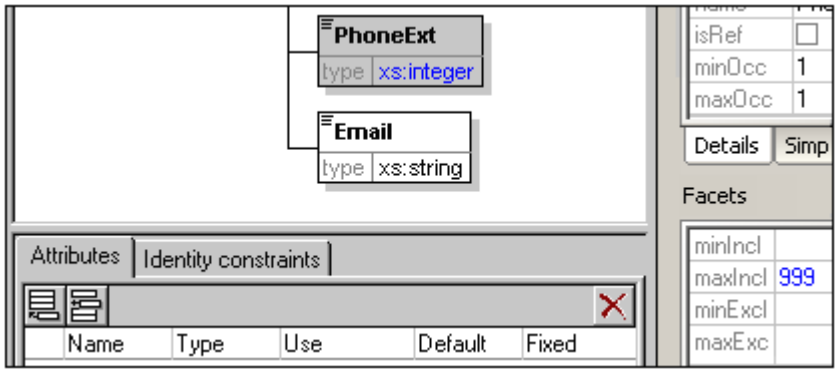
icon . The associated schema, in this case `AddressLast.xsd` is opened. Switch to Schema View (*screenshot below*).



2. Click the Display Diagram icon of the global `Person` element, and then click the `PhoneExt` element. The facet data in the Facets tab is displayed.

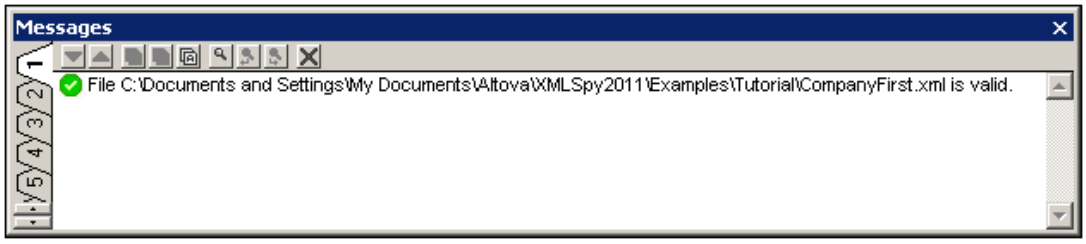


3. In the Facets tab, double-click the `maxIncl` value field, change the value `99` to `999`, and confirm with **Enter**.



4. Save the schema document.

5. Press **Ctrl+Tab** to switch back to the XML document.
6. Click  to revalidate the XML document.



A message that the file is valid appears in the Validation window. The XML document now conforms to the modified schema.

7. Select the menu option **File | Save As...** and save the file as `CompanyLast.xml`. (Remember to rename the original `CompanyLast.xml` file that is delivered with XMLSpy to something else, like `CompanyLast_orig.xml`).

Please note: The `CompanyLast.xml` file delivered with XMLSpy is in the in the `Tutorial` folder.

3.6 XSLT Transformations

Objective
To generate an HTML file from the XML file using an XSL stylesheet to transform the XML file. You should note that a "transformation" does not change the XML file into anything else; instead a new output file is generated. The word "transformation" is a convention.

Method
The method used to carry out the transformation is as follows:

- Assign a predefined XSL file, `Company.xsl`, to the XML document.
- Execute the transformation within the XMLSpy interface using one of the two built-in Altova XSLT engines. (*See note below.*)

Commands used in this section
The following XMLSpy commands are used in this section:

 **XSL/XQuery | Assign XSL**, which assigns an XSL file to the active XML document.

 **XSL/XQuery | Go to XSL**, opens the XSL file referenced by the active XML document.

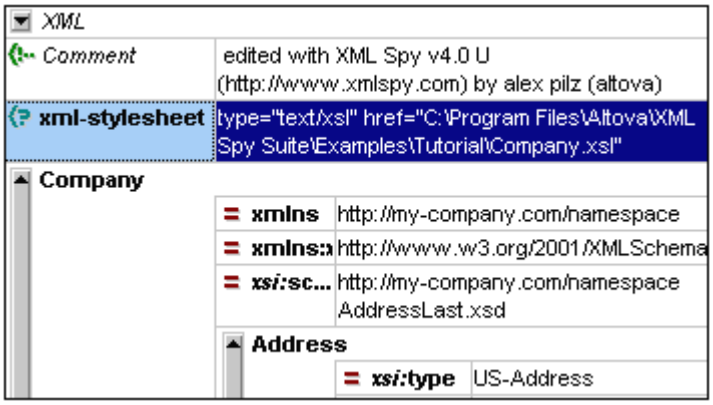
 **XSL/XQuery | XSL Transformation (F10)**, or the toolbar icon , transforms the active XML document using the XSL stylesheet assigned to the XML file. If an XSL file has not been assigned then you will be prompted for one when you select this command.

Please note: XMLSpy has two built-in XSLT engines, the Altova XSLT 1.0 Engine and Altova XSLT 2.0 Engine. The Altova XSLT 1.0 Engine is used to process XSLT 1.0 stylesheets. The Altova XSLT 2.0 Engine is used to process XSLT 2.0 stylesheets. The correct engine is automatically selected by XMLSpy on the basis of the version attribute in the `xsl:stylesheet` or `xsl:transform` element. In this tutorial transformation, we use XSLT 1.0 stylesheets. The Altova XSLT 1.0 Engine will automatically be selected for transformations with these stylesheets when the **XSL Transformation** command is invoked.

3.6.1 Assigning an XSLT File

To assign an XSLT file to the `CompanyLast.xml` file:

1. Click the `CompanyLast.xml` tab in the main window so that `CompanyLast.xml` becomes the active document, and switch to Text View.
2. Select the menu command **XSL/XQuery | Assign XSL**.
3. Click the **Browse** button, and select the `Company.xsl` file from the Tutorial folder. In the dialog, you can activate the option Make Path Relative to `CompanyLast.xml` if you wish to make the path to the XSL file (in the XML document) relative.4. Click **OK** to assign the XSL file to the XML document.
5. Switch to Grid View to see the assignment (*screenshot below*).

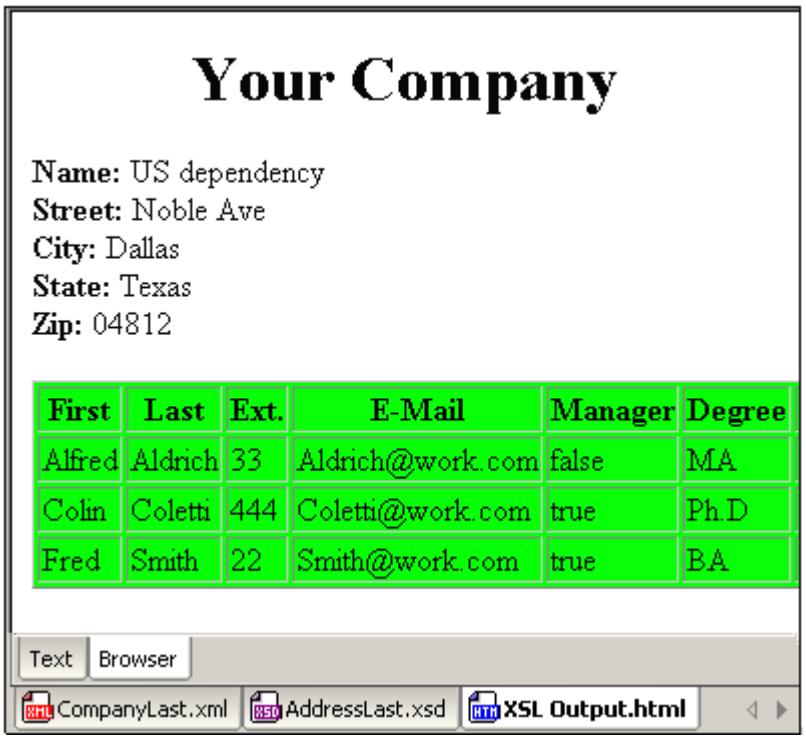


An `XML-stylesheet` processing instruction is inserted in the XML document that references the XSL file. If you activated the Make Path Relative to `CompanyLast.xml` check box, then the path is relative; otherwise absolute (as in the screenshot above).

3.6.2 Transforming the XML File

To transform the XML document using the XSL file you have assigned to it:

1. Ensure that the XML file is the active document.
2. Select the menu option **XSL/XQuery | XSL Transformation (F10)** or click the  icon. This starts the transformation using the XSL stylesheet referenced in the XML document. (Since the `Company.xsl` file is an XSLT 1.0 document, the built-in Altova XSLT 1.0 Engine is automatically selected for the transformation.) The output document is displayed in Browser View; it has the name `XSL Output.html`. (If the HTML output file is not generated, ensure that, in the XSL tab of the Options dialog (**Tools | Options**), the default file extension of the output file has been set to `.html`.) The HTML document shows the Company data in one block down the left, and the Person data in tabular form below.



Please note: Should you only see a table header and no table data in the output file, make sure that you have defined the target namespace for your schema as detailed in Defining your own namespace at the beginning of the tutorial. The namespace must be **identical** in all three files (Schema, XML, and XSL).

3.6.3 Modifying the XSL File

You can change the output by modifying the XSL document. For example, let's change the background-color of the table in the HTML output from lime to yellow.

Do the following:

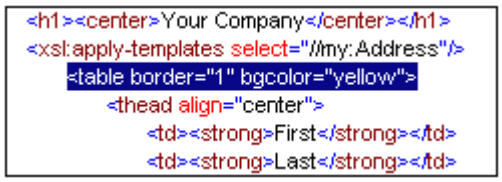
1. Click the `CompanyLast.xml` tab to make it the active document, and make sure you are in Grid View.
2. Select the menu option **XSL/XQuery | Go to XSL**.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:xsi ="http://www.w3.org/2000/10/XMLSchema-instance"
xmlns:my="http://my-company.com/namespace">

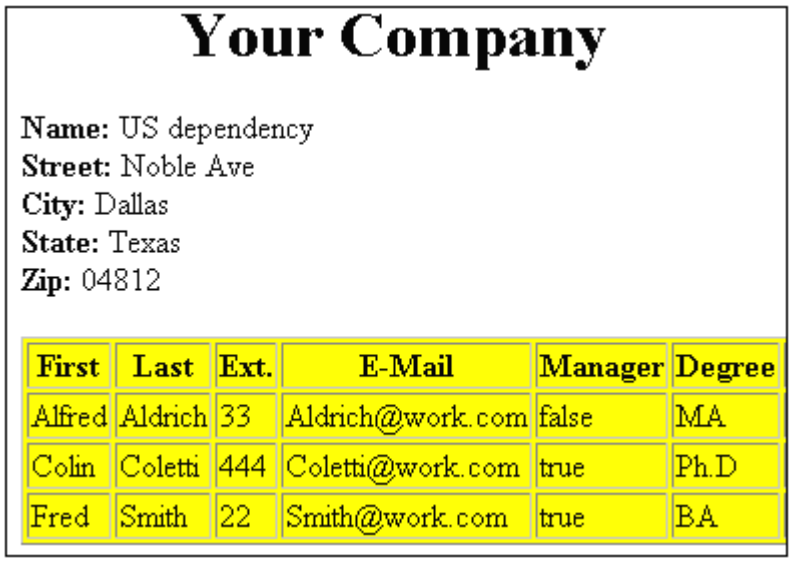
<xsl:template match="/">
    <html>
        <head> <title>Your company</title></head>
            <body>
                <h1><center>Your Company</center></h1>
                <xsl:apply-templates select="//my:Address"/>
                    <table border="1" bgcolor="lime">
                        <thead align="center">
                            <td><strong>First</strong></td>
                            <td><strong>Last</strong></td>
                            <td><strong>Ext.</strong></td>
```

The command opens the `Company.xsl` file referenced in the XML document.

3. Find the line `<table border="1" bgcolor="lime">`, and change the entry `bgcolor="lime"` to `bgcolor="yellow"`.



4. Select the menu option **File | Save** to save the changes made to the XSL file.
5. Click the `CompanyLast.xml` tab to make the XML file active, and select **XSL/XQuery | XSL Transformation,** or press **F10**. A new `XSL Output.html` file appears in the XMLSpy GUI in Browser View. The background color of the table is yellow.



Your Company

Name: US dependency
Street: Noble Ave
City: Dallas
State: Texas
Zip: 04812

First	Last	Ext.	E-Mail	Manager	Degree
Alfred	Aldrich	33	Aldrich@work.com	false	MA
Colin	Coletti	444	Coletti@work.com	true	Ph.D
Fred	Smith	22	Smith@work.com	true	BA

6. Select the menu option **File | Save**, and save the document as `Company.html`.

3.7 Project Management

This section introduces you to the project management features of XMLSpy. After learning about the benefits of organizing your XML files into projects, you will organize the files you have just created into a simple project.

3.7.1 Benefits of Projects

The benefits of organizing your XML files into projects are listed below.

- Files and URLs can be grouped into folders by common extension or any other criteria.
- Batch processing can be applied to specific folders or the project as a whole.
- A DTD or XML Schema can be assigned to specific folders, allowing validation of the files in that folder.
- XSLT files can be assigned to specific folders, allowing transformations of the XML files in that folder using the assigned XSLT.
- The destination folders of XSL transformation files can be specified for the folder as a whole.

All the above project settings can be defined using the menu option **Project | Project Properties...**. In the next section, you will create a project using the Project menu.

Additionally, the following advanced project features are available:

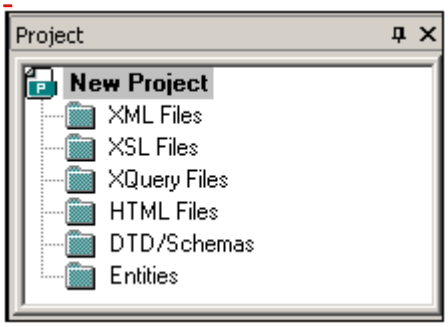
- XML files can be placed under source control using the menu option **Project | Source control | Add to source control...**. (Please see the Source Control section in the online help for more information.)
- Personal, network and web folders can be added to projects, allowing batch validation.

3.7.2 Building a Project

Having come to this point in the tutorial, you will have a number of tutorial-related files open in the Main Window. You can group these files into a tutorial project. First you create a new project and then you add the tutorial files into the appropriate sub-folders of the project.

Creating a basic project
To create a new project:

1. Select the menu option **Project | New Project**. A new project folder called `New Project` is created in the Project Window. The new project contains empty folders for typical categories of XML files in a project (*screenshot below*).



2. Click the `CompanyLast.xml` tab to make the `CompanyLast.xml` file the active file in the Main Window.
3. Select the menu option **Project | Add active and related files to project.** Two files are added to the project: `CompanyLast.xml` and `AddressLast.xsd`. Note that files

referenced with Processing instructions (such as XSLT files) do not qualify as related files.

4. Select the menu option **Project | Save Project** and save the project under the name `Tutorial`.

Adding files to the project
You can add other files to the project as well. Do this as follows:

1. Click on any open XML file (with the `.xml` file extension) other than `CompanyLast.xml` to make that XML file the active file. (If no other XML file is open, open one or create a new XML file.)
2. Select the menu option **Project | Add active file to project**. The XML file is added to the XML Files folder on the basis of its `.xml` file type.
3. In the same way, add an HTML file and XSD file (say, the `Company.html` and `AddressFirst.xsd` files) to the project. These files will be added to the HTML Files folder and DTD/Schemas folder, respectively.
4. Save the project, either by selecting the menu option **Project | Save Project** or by selecting any file or folder in the Project Window and clicking the Save icon in the toolbar (or **File | Save**).

Please note: Alternatively, you can right-click a project folder and select Add Active File to add the active file to that specific folder.

Other useful commands
Here are some other commonly used project commands:

- To add a new folder to a project, select **Project | Add Project folder to Project**, and insert the name of the project folder.
- To delete a folder from a project, right-click the folder and select **Delete** from the context menu.
  To delete a file from a project, select the file and press the **Delete** key.

3.8 That's It

If you have come this far congratulations, and thank you!

We hope that this tutorial has been helpful in introducing you to the basics of XMLSpy. If you need more information please use the context-sensitive online help system, or print out the PDF version of the tutorial, which is available as `tutorial.pdf` in your XMLSpy application folder.

4 Editing Views

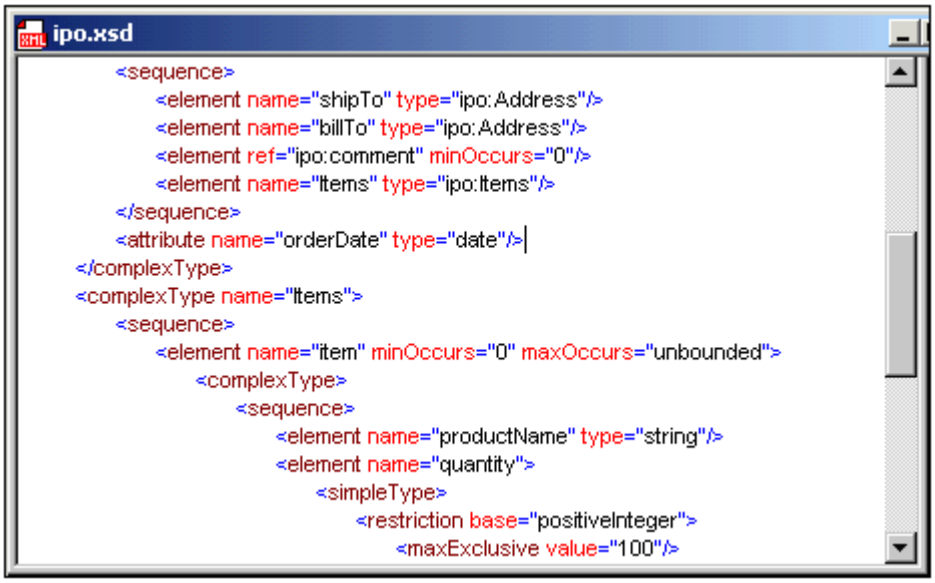
XMLSpy contains powerful editing views. In addition to a Text View with intelligent editing features, there are graphical views that greatly simplify the editing of documents. Depending on what type of document is currently active in XMLSpy, the Main Window will have one or more of XMLSpy's Editing Views. For example, when an HTML document is active, the Main Window will contain two editing views: Text View and Browser View. When an XML document is active, there will be five editing views: Text View, Grid View, Schema View, Authentic View, and Browser View. Of these views, Schema View will be enabled only for XML Schema documents.

In this section, we describe the various editing views available in XMLSpy:

- Text View
- Grid View
- Schema View
- Authentic View
- Browser View

4.1 Text View

In Text View (*screenshot below*), you can type in the text of your document—both, markup and content—directly. Any text file, including non-XML documents (such as XQuery and HTML documents) can be edited in Text View. A number of features help you to quickly and accurately type in your document.



In this section, we describe general Text View features that are available for all kinds of documents. Specific document types, such as XML, XQuery, and CSS have certain type-specific features, which are described in the respective sections for those document types. For example, additional XML-specific features of Text View are described in the section XML | Editing XML in Text View.

The general Text View features have been organized as follows:

- Formatting in Text View describes how the font properties, indentation, and word-wrapping of the document can be specified.
- Document display contains information about the line-numbering, bookmarking, expanding/collapsing of nodes, and other display-related features.
- Editing in Text View describes the features that are available while you edit, particularly the intelligent editing features.
- Entry helpers are the windows that provide context-sensitive data-entry options. For example, the elements or attributes that can be validly added at a given document location are displayed in an entry helper and any one of these options can be inserted by double-clicking it.

Switching to Text View
To open the Text View of a document, click the **Text** button at the bottom of the Document Window or select **View | Text View**.

4.1.1 Formatting in Text View

Text View offers a number of text formatting options. These are listed below.

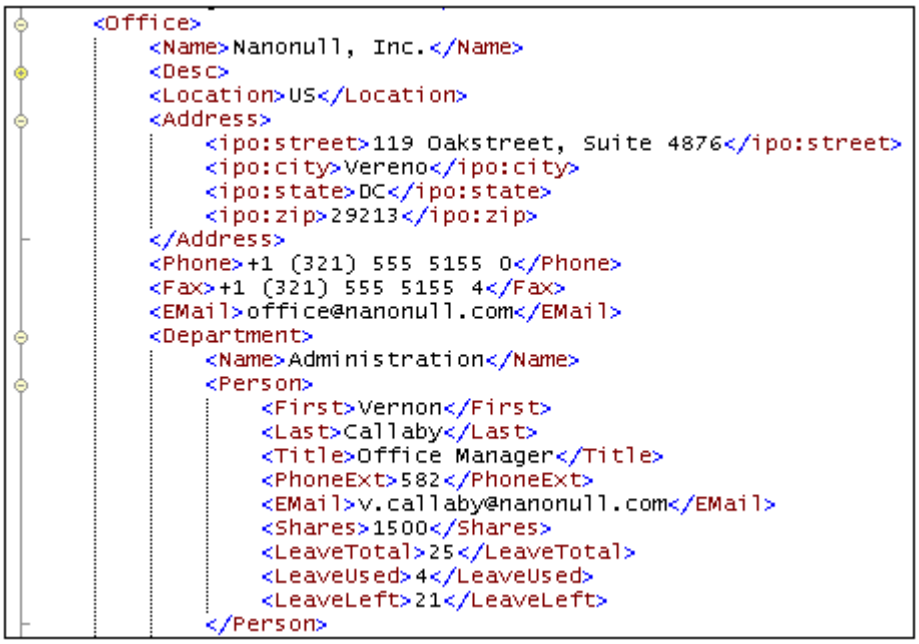
Fonts

The font-family, font-size, font-style, and text background-color can be customized separately for the following groups of documents: (i) generic XML documents (including HTML); (ii) XQuery documents; and (iii) CSS documents.

Text items in a document that have different semantics, can be colored differently. For example, you can color element names, attribute names, and element content differently. When you set different colors for different text items, the syntax-coloring feature is enabled. Text fonts are customized in the Text Fonts tab of the Options dialog, and how to do this is described in the section, User Reference | Options | Text Fonts section of this documentation.

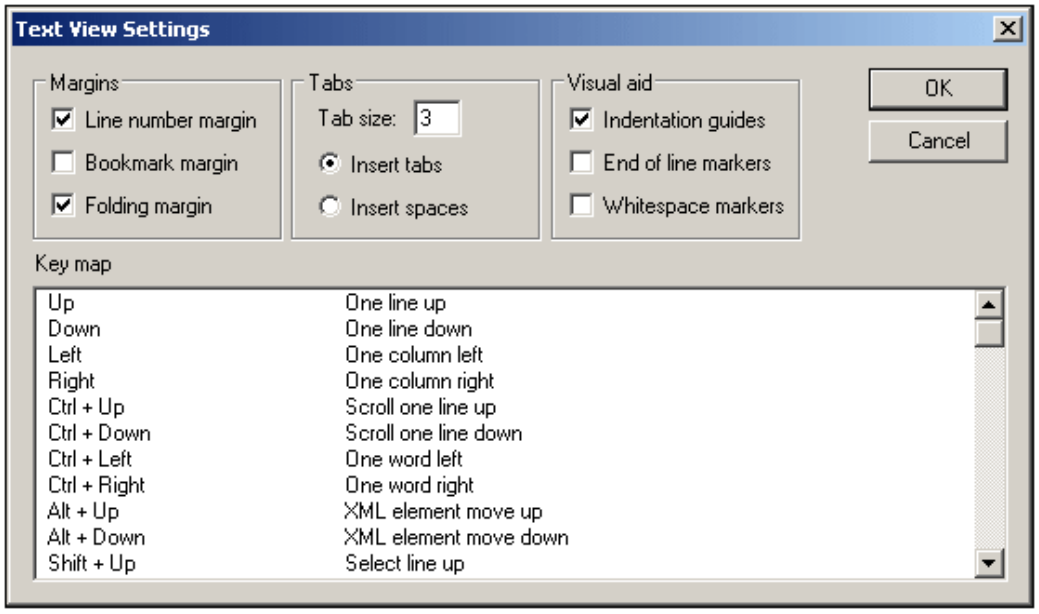
Indentation

Well-formed XML documents can be pretty-printed. This means that the document can be formatted so that the hierarchical structure of the document is displayed using new lines and indentations (*see screenshot below*).



To display the document in this way, you need to do the following:

1. In the View Tab of the Options dialog, check the Use Indentation option for pretty printing. This will cause the document to be pretty-printed with indents to indicate the hierarchical structure. Each deeper level will be displayed with a deeper indent than its parent element. If the Use Indentation option is not checked, every line in the document will start with a zero indent.
2. In the Text View Settings dialog (*screenshot below*), select either Insert Tabs or Insert Spaces. This determines whether tabs or spaces will be used for indentation when the document is pretty-printed. If spaces are specified, each deeper level of the hierarchy is indented with an additional number of spaces as specified in the Tab Size setting of the Text View Settings dialog.



3. Click the **Edit | Pretty-Print XML Text** command or the **Pretty Print** icon in the Text toolbar. This will cause the document text to be displayed (i) with or without indentation as specified in the View Tab of the Options dialog; and (ii) if indentation is specified in the View Tab of the Options dialog, then the the indentation is determined by the settings in the Tabs pane of the Text View Settings dialog. Clicking the Pretty Print command removes unnecessary leading or trailing whitespace.

Note: Pretty-printing is also used in the background when you save the document or switch views. If the document is not well-formed, you will get an error message to that effect. Correct the error and then pretty-print. The extent of indentation of a line is indicated by indentation guides, which are vertical dotted lines (*see screenshot at the start of this section*) that are toggled on and off with the Indentation Guides check box in the Visual Aid pane of the Text View Settings dialog (*see screenshot above*).

Using tabs and spaces for formatting
You can use tabs and spaces for formatting text, especially for non-XML documents, where the pretty-printing option is not available. When you press **Return** or **Shift+Return**, the cursor will jump to a position on the next line that corresponds to the starting position of the previous line.

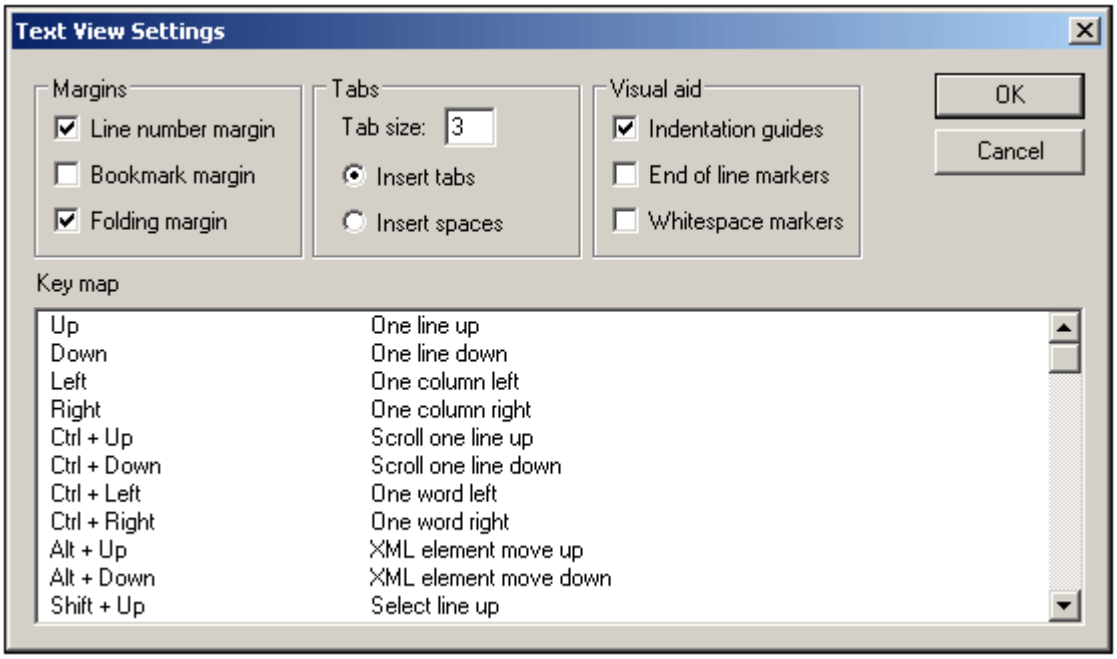
Word-wrapping
Lines of text that are longer than the breadth of the Main Window can be made to wrap by toggling the **View | Word Wrap** command on; the corresponding icon is in the Text toolbar.

4.1.2 Displaying the Document

Text View has visual features to make the display and editing of large sections of text easier. Some very useful features are: (i) Line Numbers, (ii) Bookmarks, (iii) Source Folding (expanding and collapsing the display of nodes), (iv) Indentation Guides, and (v) End-of-Line and Whitespace Markers. These commands are available in the Text View Settings dialog (*first screenshot below*) and the Text toolbar (*second screenshot below*).

The Text View Settings dialog is accessed via the **View | Text View Settings** command or the **Text View Settings** button in the Text toolbar. Settings in the Text View Settings dialog apply to

the entire application—not only to the active document.



Other useful features are the Zooming and Go-to-Line/Character features.

Line numbers
Line numbers are displayed in the line numbers margin (*screenshot below*), which can be toggled on and off In the Text View Settings dialog (see screenshot above). When a section of text is collapsed, the line numbers of the collapsed text are also hidden. A related command is the Go-to-Line/Character command.

Bookmarks
Lines in the document can be separately bookmarked for quick reference and access. If the bookmarks margin is toggled on, bookmarks are displayed in the bookmarks margin; otherwise, bookmarked lines are highlighted in cyan.

The bookmarks margin can be toggled on or off in the Text View Settings dialog (*screenshot above*).

You can edit and navigate bookmarks using commands in the **Edit** menu and Text toolbar. Bookmarks can be inserted with the **Edit | Insert/Remove Bookmark** command, enabling you to mark a line in the document for reference. A bookmark can be removed by selecting the bookmarked line and then selecting the **Edit | Insert/Remove Bookmark** command. To navigate through the bookmarks in a document, use the **Edit | Next Bookmark** and **Edit | Previous Bookmark** commands. These bookmark commands are also available as icons in the Text toolbar (*screenshot above*).

Source folding

Source folding refers to the ability to expand and collapse nodes (*screenshot below*) and is displayed in the source folding margin. The margin can be toggled on and off in the Text View Settings dialog (*see screenshot above*). In the screenshot below, notice how the line numbering at Lines 14 and 24 has been collapsed together with the collapsed nodes.

The **Toggle All Folds** command in the Text toolbar toggles **all** nodes to their expanded forms or collapses all nodes to the top-level document element. After a node has been expanded, the following options are available when clicking on the node's toggle icon (+/- icon):

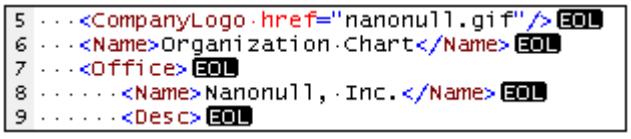
- ***Plain click:*** Collapses the node. Clicking on it again expands the node so that descendant nodes are shown expanded or collapsed according to how they were before the node was collapsed.
- ***Shift+Click:*** Collapses all descendant nodes up to the level of the children nodes. The clicked node itself is open and shows the collapsed children nodes. This will work for all collapsible nodes in a branch of the hierarchy except the last collapsible node in that branch.
- ***Ctrl+Click:*** If a node or any of its descendants is collapsed, **Ctrl+Click** expands all collapsed descendant nodes. In short, this means that all descendant nodes of the control-clicked node are expanded.

Indentation guides

Indentation guides are vertical dotted lines that indicate the extent of a line's indentation (*see screenshot above*). They can be toggled on and off in the Text View Settings dialog.

End-of-line markers, whitespace markers

End-of-line (EOL) markers and whitespace markers can be toggled on in the Text View Settings dialog. The screenshot below shows these markers in the document display; each dot represents a whitespace.



Zooming in and out
You can zoom in and out of Text View by scrolling (with the scroll-wheel of the mouse) while keeping the **Ctrl** key pressed. This enables you to magnify and reduce the size of text in Text View. If you wish to increase the size of fonts, do this in the Options dialog.

Go to line/character
This command in the **View** menu and Text toolbar enables you to go to a specific line and character in the document text.

4.1.3 Editing in Text View

The following text editing features are available in Text View generally for all document types. These features are in addition to common features of editing applications, such as **Cut**, **Copy**, **Paste**, **Delete**, and **Select All** (which are available as commands in the **Edit** menu).

- Syntax coloring
- Start-tag and end-tag matching
- Intelligent editing
- Auto-completion
- Moving siblings relative to each other
- Selecting an entire element
- Drag-and-drop and context menus
- Find and replace
- Unlimited undo
- Spelling check

For some document types (such as XML and XQuery) additional specialized features are available, and these are described, respectively, in the sections that deal with those document types.

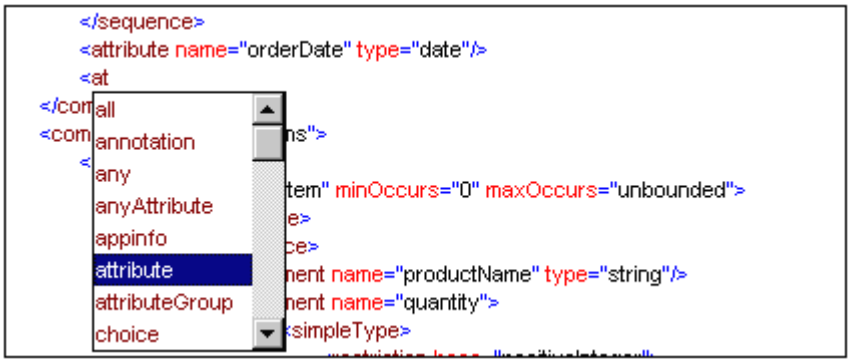
Note: For large files, Auto-completion and entry helpers can be disabled, thus enabling faster loading and editing. The threshold file size is specified by the user. For more details, see the reference section, Options | Editing.

Syntax coloring
Syntax coloring is applied according to the semantic value of the text. For example, in XML documents, depending on whether the XML node is an element, attribute, content, CDATA section, comment, or processing instruction, the node name (and in some cases the node's content) is colored differently. Four groups of document type are distinguished: (i) generic XML (which includes HTML); (ii) XQuery; (iii) CSS; and (iv) JSON. The text properties (including color) of each group can be set in the Text Fonts tab of the Options dialog (**Tools | Options**).

Start-tag and end-tag matching
When you place the cursor inside a start or end tag of a markup element, pressing **Ctrl+E** highlights the other member of the pair. Pressing **Ctrl+E** repeatedly enables you to switch between the start and end tags. This is an excellent aid to locating the start and end tags of an XML element.

Intelligent Editing

If you are working with an XML document based on a schema, XMLSpy provides you with various intelligent editing capabilities in Text View. These allow you to quickly insert the correct element, attribute, or attribute value according to the content model defined for the element you are currently editing. For example, when you start typing the start tag of an element, the names of all the elements allowed by the schema at this point are shown in a pop-up (*screenshot below*). Selecting the required element name and pressing **Enter** inserts that element name in the start tag.



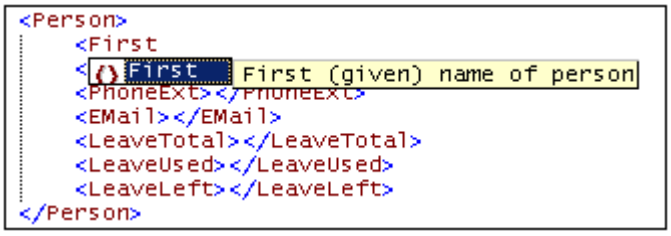
Popup windows also appears in the following cases:

- When the cursor is inside the start tag of an element that has an attribute defined for it and the space bar is pressed. The popup will contain all available attributes.
- When the cursor is within the double-quotes delimiting an attribute value that has enumerated values. The popup will contain the enumerated values.
- When you type `</` (which signifies the start of a closing tag), the name of the element to be closed appears in the popup.
- When you wish to write an empty element as a single tag or convert an empty element of two tags to an empty element of one tag, type in the closing slash after the element name: `<element/`. An empty element with a single tag is created; if a close tag exists, it is removed: `<element/>`.

Auto-completion

Editing in Text View can easily result in XML and other marked-up documents (such as HTML) that are not well-formed. For example, closing tags may be missing, mis-spelled, or structurally mismatched. XMLSpy automatically completes the start and end tags of elements, as well as inserts all required attributes as soon as you finish entering the element name on your keyboard. The cursor is also automatically positioned between the start and end tags of the element, so that you can immediately continue to add child elements or contents: `<img src="" alt="">` `</img>`

XMLSpy makes use of the XML rules for well-formedness and validity to support auto-completion. The information about the structure of the document is obtained from the schema on which the document is based. (In the case of well-used schemas, such as HTML and XSLT, the schema information is built into XMLSpy.) Auto-completion uses not only information about the structure of the document, but also the values stored in the document. For example, enumerations and schema annotations in an XML Schema are actively used by the Auto-Completion feature. If, in the schema, values are enumerated for a particular node, then those enumerations will be displayed as auto-completion options when that node comes to be edited. Similarly, if, for a node, annotations exist in the schema, then these annotations are displayed when the node name is being typed in the document (*screenshot below*). (*First (given) name of person* is the schema annotation of the `First` element.)



Auto-completion can be switched on and off in the Editing tab of the Options dialog (**Tools | Options | Editing**).

Moving sibling elements relative to each other
When the cursor is within an element, pressing **Alt+ArrowUp** or **Alt+ArrowDown** moves the selected element up or down relative to its siblings.

Selecting an entire element
When the cursor is within an element, pressing **Ctrl+Shift+E** selects the entire element.

Drag-and-Drop and Context Menus
You can also use drag-and-drop to move a text block to a new location, as well as right-click to directly access frequently used editing commands (such as Cut, Copy, Paste, Delete, Send by Mail, and Go to line/char) in a context menu.

Find and Replace
You can use the Find and Replace commands to quickly locate and change text. These commands also take regular expressions as input, thereby giving you powerful search capabilities. (See Edit | Find for details.)

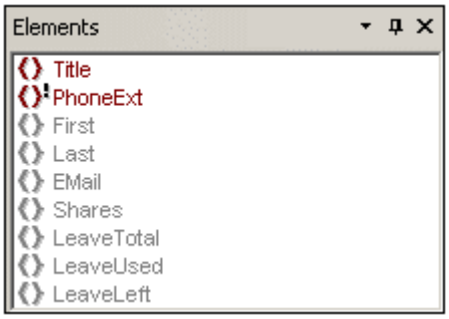
Unlimited Undo
XMLSpy offers unlimited levels of Undo and Redo for all editing operations.

Spelling check
In Text View, documents can be spellchecked with any of the built-in language dictionaries. A user dictionary can also be created and edited to allow words not contained in the language dictionary. For details, see the descriptions of the Spelling and Spelling Options commands.

4.1.4 Entry Helpers in Text View

What entry helpers are available in Text View depends upon the type of document being edited. A list of entry helpers is given below for the most common document types. The general use of entry helpers is described below. Additional features for specific document types, if any, are described in the sections describing the respective document types.

- *XML:* Elements (*screenshot below*), Attributes, Entities



- *HTML:* Elements, Attributes, Entities
- *CSS:* CSS Outline, CSS Properties, HTML Elements
- *DTD:* None
- *XQuery:* XQuery Keywords, XQuery Variables, XQuery Functions
- *Text:* Entities

Note that several document types, such as XSD, XSLT, XHTML, and RDF, are essentially XML documents and will therefore have the Elements, Attributes, and Entities entry helpers.

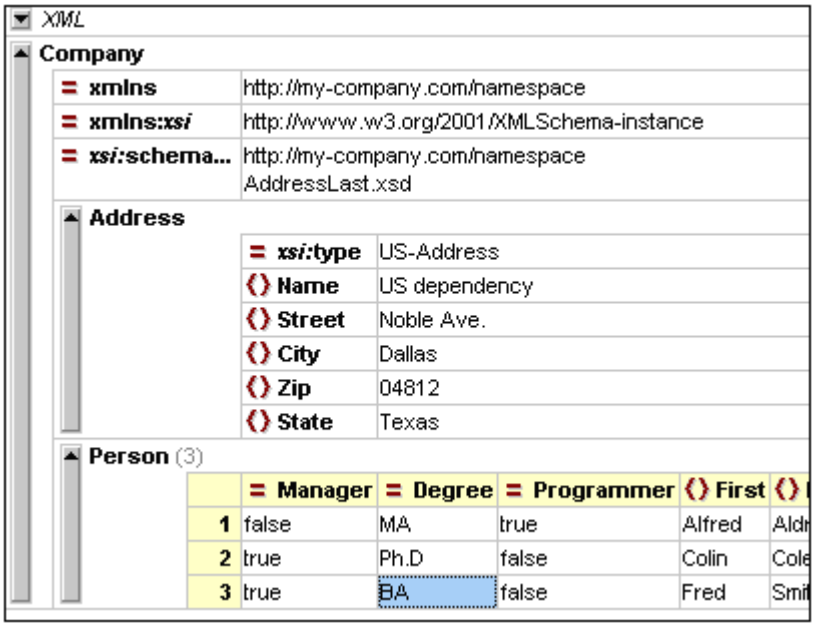
Display and use of entry helper items
Different items in the various entry helpers are variously color-coded. These color codes are explained in the Entry Helpers documentation of the respective document types. In general, the following points should be noted about entry helpers:

- The entry helpers are context-sensitive and display items that may be inserted at that point.
- If the item has already been inserted at the selected (or at another equivalent and valid location) and may not be inserted again at that location (for example, an XML attribute), it is displayed in gray.
- If the item is mandatory, an exclamation mark icon is displayed next to it.
- To insert an entry helper item at the cursor selection point in the text, double-click the entry-helper item.
- When an element is inserted via the Elements entry helper, its start and end tags are inserted in the document text. Mandatory elements are also inserted if this option has been specified in the **Options** dialog (**Tools | Options | Editing**).
- When an attribute is inserted via the Attributes entry helper, the attribute is inserted at the cursor point together with an equals-to sign and quotes to delimit the attribute value. The cursor is placed between the quotes, so you can start typing in the attribute value directly.

Note: For large files, Auto-completion and entry helpers can be disabled, thus enabling faster loading and editing. The threshold file size is specified by the user. For more details, see the reference section, Options | Editing.

4.2 Grid View

Grid View (*screenshot below*) shows the hierarchical structure of XML documents and DTDs through a set of nested containers, that can be easily expanded and collapsed to get a clear picture of the document's structure. In Grid View contents and structure can both be easily manipulated.



A hierarchical item (such as the XML declaration, document type declaration, or element containing child elements) is represented with a gray bar on the left side containing a small upwards-pointing arrow at the top. Clicking the side bar expands or collapses the item. An element is denoted with the {} icon, an attribute with the = icon.

Display and navigation

- The contents of an item depend on its kind. For example, in the case of elements, the contents will typically be attributes, character data, comments, and child elements. Attributes are always listed and are ordered as in the input file. Following the attributes, items appear exactly in the order found in the source file. This order can be changed using drag-and-drop, and the change will also be implemented in the source data.
- If an element contains only character data, the data will be shown in the same line as the element and the element will not be considered hierarchical by nature. The character data for any other element will be shown indented with the attributes and potential child elements and will be labeled as "Text".
- If an element is collapsed, its attributes and their values are shown in the same line in gray. This attribute preview is especially helpful, when editing XML documents that contain a large number of elements of the same name that differ only in their contents and attributes (for example, database-like applications).
- The arrow keys move the selection bar in the grid view
- The + and – keys on the numeric keypad allow you to expand and collapse items.

Customizing Grid View

- To resize columns, place the cursor over the appropriate border and drag so as to

achieve the desired width.

- To resize a column to the width of its largest entry, double-click on the grid line to the right of that column.
- To adjust column widths to display all content, select the menu item View | Optimal widths command, or click on the Optimal widths icon  .
- The heights of cells are determined by their contents. They can be adjusted with the menu option **Tools | Options | View | Grid View,** "Limit cell height to xx lines".

Please note: If you mark data in Grid View and switch to Text View, that data will be marked also in Text View.

Intelligent editing
Grid View enables intelligent editing when the XML document is based on a schema. See Editing in Grid View for details. The Entry Helpers used in Grid View are described below.

Grid View tables
Grid View allows you to display recurring elements in a table (Grid View tables). This function is available for any type of XML file: XML, XSD, XSLT, etc.

4.2.1 Editing in Grid View

When editing an XML document based on a schema (DTD or XML Schema), Grid View provides intelligent editing features based on information gathered from the schema. These features are listed below.

Inserting or appending element or attribute names
To insert or append an element or attribute relative to a selected item, you can use either commands in the XML menu or icons in the **Attributes and Elements Toolbar**  . If this toolbar is not visible, select the menu option **Tools | Customize**, and, in the **Toolbars** tab, check the **Attr & Elem** entry. For a detailed explanation of how to use the toolbar icon commands and XML menu commands, see the XML Menu section.

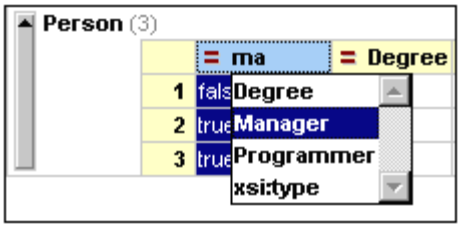
To insert or append an element or attribute:

1. Select the item relative to which the element or attribute is to be inserted or appended.
2. Click on the appropriate icon in the Attributes and Elements toolbar, or select the appropriate command from the **XML** menu (**Insert**, **Append**, or **Add Child)**. This creates a new entry in the grid and opens a popup with available element or attribute options.
3 Select the desired element or attribute from the popup, and either click or press **Enter**. Alternatively, you can type in the name of the desired element or attribute.

You will notice that the various Entry Helpers are constantly updated depending on the current selection in the Grid View. The Info Window constantly shows important information regarding the selected element or attribute.

Editing an element or attribute name
When you edit the name of an element or attribute, a popup menu containing the available options opens. These options depend on the position of the element and the content model

defined by the schema. A similar popup is displayed if the contents of an element or attribute are restricted by an enumeration or choice of some sort.



To edit an element or attribute name:

1. Double-click the element or attribute name. A popup with the available options appears.
2. Select the required element or attribute from the popup menu.
3. Accept the selection by hitting **Return** or clicking the name. (**Esc** causes the change to be abandoned.)

Adding namespace prefixes
The **XML | Namespace Prefix** command enables a namespace prefix to be added to the selected node in Grid View and all its descendant element or attribute elements. The namespace will have to be declared separately.

Grid View context menu
In addition to the commands available through the various menus and toolbars, Grid View also provides a context menu that contains the most frequently used commands collected from several menus in one convenient place. To open the context menu, right-click the item for which you wish to perform an action.

Spelling check
In Grid View, documents can be spellchecked with any of the built-in language dictionaries. A user dictionary can also be created and edited to allow words not contained in the language dictionary. For details, see the descriptions of the Spelling and Spelling Options commands.

4.2.2 Grid View Tables

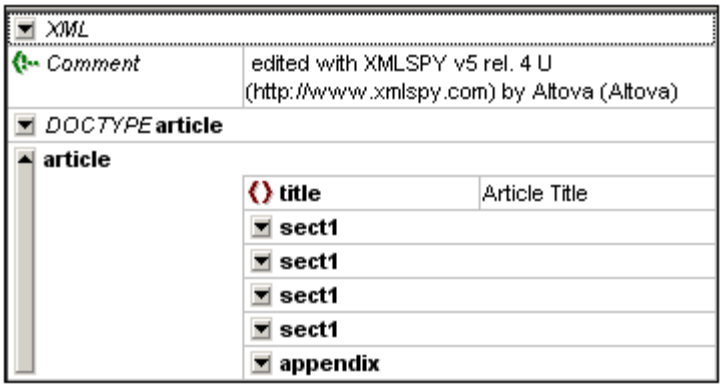
Table View is integrated in the Grid View and allows you to view recurring elements in table form. Table View is different from the normal Grid View in that it creates a column for each child-type of the element displayed as a table. You can then modify properties for entire columns or selections.

For instance, consider the following XML document:

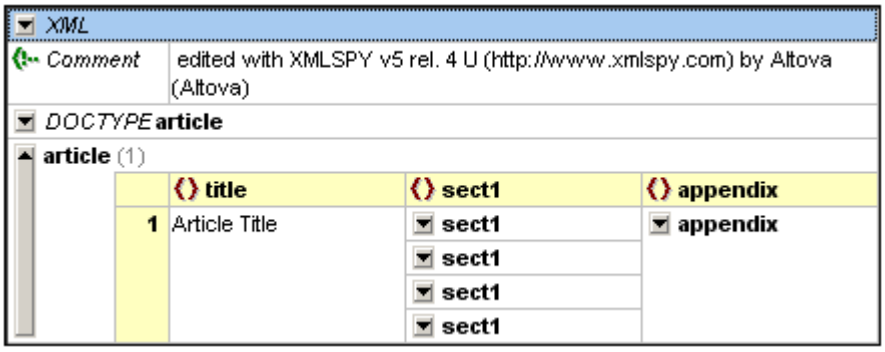

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <!-- edited with XMLSPY v5 rel. 4 U (ht
3  <!DOCTYPE article SYSTEM "C:\Program Fi
4  <article>
5    <title>Article Title</title>
6    <sect1>
7      <title>Section 1</title>
8      <simpara/>
9    </sect1>
10   <sect1>
11     <title>Section 2</title>
12     <para/>
13   </sect1>
14   <sect1>
15     <title>Section 3</title>
16     <para/>
17     <para/>
18   </sect1>
19   <sect1>
20     <title>Section 4</title>
21     <para/>
22   </sect1>
23   <appendix>
24     <title/>
25     <para/>
26   </appendix>
27 </article>
```

The document element is `article`, and `article` has the following sequence of child elements: one `title` element, four `sect1` elements, and one `appendix` element. Each `sect1` and `appendix` element has one `title` element followed by any number of `para` or `simpara` elements.

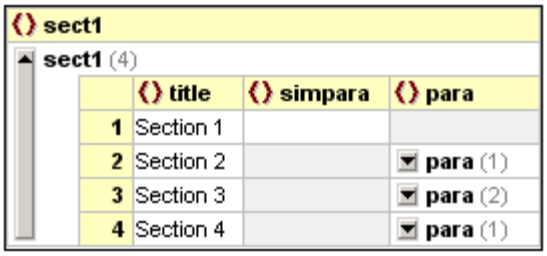
The normal Grid View of this document is as follows:



Now here is the Table View of this document—more correctly, that of the `article` element. (To get this view: select the `article` element in normal Grid View (by clicking on it) and click the **Display as Table** icon . Alternatively, select the menu item **XML | Table | Display as Table (F12)**.)



Notice that each child element of `article` (the element displayed as a table)—that is, `title`, `sect1`, and `appendix`—has been assigned a column and that each occurrence of each child-type is listed in the appropriate column. Note also that the table structure extends only to the child level (the `sect1` elements themselves are not displayed as a table). In order to display `sect1` elements as a table, select any of the `sect1` elements in the `sect1` column, and click  . The `sect1` elements are now displayed in a table (see screenshot below): each of their child elements is assigned a column in the `sect1` table.



In each column, if a child element (`title`, `simpara`, or `para`) exists for one of the four occurrences of `sect1`, then that cell has a white background (e.g. `simpara` in the first `sect1`). If a child does not exist for an occurrence then the corresponding cell has a gray background (e.g. `para` in first `sect1`). It should be apparent, therefore, that columns were assigned by taking a union of all child elements of all `sect1` occurrences, and creating a column for each unique child-type.

Please note:

- Attributes are also considered child nodes, and columns are also created for attributes.
- You can switch between normal Grid View and Table View by selecting the desired element and clicking  or **F12**.
- If you are viewing the document in Table View and you switch to Text View, when you switch back to Grid View the document will display in normal Grid View.

Manipulating table data

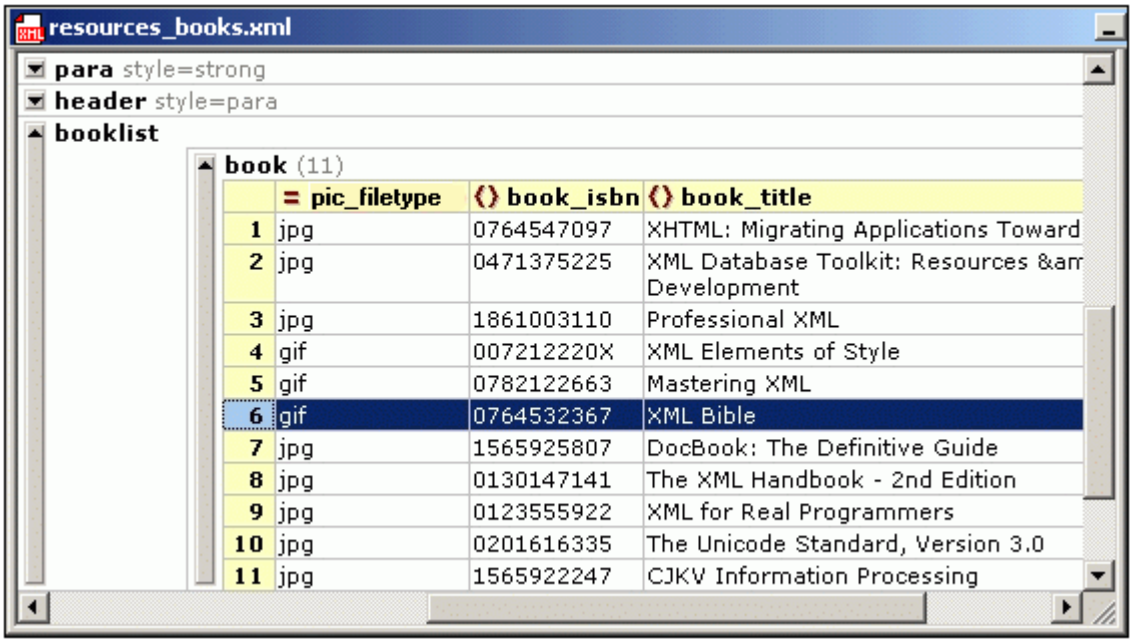
You can manipulate table data in the following ways:

- Drag-and-drop column headers to move columns.
- Sort column data for text nodes using the menu command **XML | Table | Ascending Sort** (also **Descending Sort**).
- Append (or insert) rows using the menu command **XML | Table | Insert Row** (also **Append Row**).

Moving data between Table View and external applications

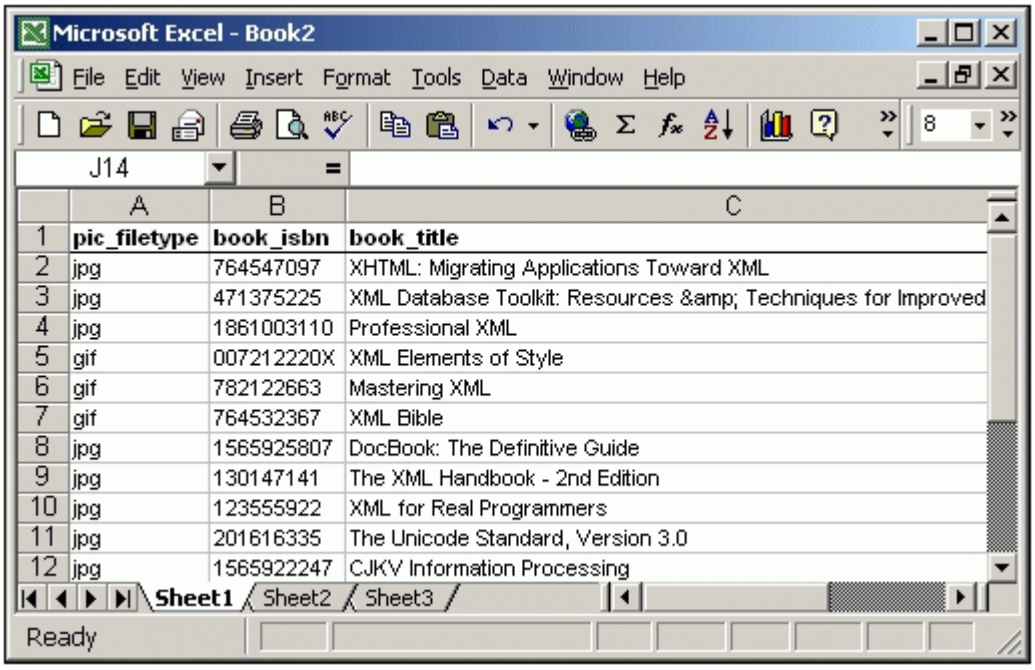
You can take advantage of the table structure of data in Table View to exchange data between

Table View and a spreadsheet application. To move data from Table View to another application, select the required nodes in the table and use the Copy as Structured Text option to copy/paste the data directly into, say, an Excel sheet. (You can select nodes in Table View by clicking the cells themselves, column headers, row headers (shown below), or the entire table. If you click the entire table or column headers, then the text of the column headers is also copied; otherwise it is not.)



	= pic_filetype	{} book_isbn	{} book_title
1	jpg	0764547097	XHTML: Migrating Applications Toward
2	jpg	0471375225	XML Database Toolkit: Resources &am Development
3	jpg	1861003110	Professional XML
4	gif	007212220X	XML Elements of Style
5	gif	0782122663	Mastering XML
6	gif	0764532367	XML Bible
7	jpg	1565925807	DocBook: The Definitive Guide
8	jpg	0130147141	The XML Handbook - 2nd Edition
9	jpg	0123555922	XML for Real Programmers
10	jpg	0201616335	The Unicode Standard, Version 3.0
11	jpg	1565922247	CJKV Information Processing

The screenshot above shows 11 book elements displayed as a table in Table View. To copy the entire table into an Excel sheet, you would select the `book (11)` element, copy it as structured text, and paste it into an Excel sheet. If you were to select cell A1 and paste, the result would be as shown below.



	A	B	C
1	pic_filetype	book_isbn	book_title
2	jpg	764547097	XHTML: Migrating Applications Toward XML
3	jpg	471375225	XML Database Toolkit: Resources & Techniques for Improved
4	jpg	1861003110	Professional XML
5	gif	007212220X	XML Elements of Style
6	gif	782122663	Mastering XML
7	gif	764532367	XML Bible
8	jpg	1565925807	DocBook: The Definitive Guide
9	jpg	130147141	The XML Handbook - 2nd Edition
10	jpg	123555922	XML for Real Programmers
11	jpg	201616335	The Unicode Standard, Version 3.0
12	jpg	1565922247	CJKV Information Processing

Data exchange works in both ways. So you can copy data from any spreadsheet-like application and insert it directly into a table in Table View. Do this as follows:

1. Select a range in the external application and copy it (to the clipboard, in Windows systems with **Ctrl+C**)
2. Select a single cell in Table View of your XML document.
3. Paste the copied data with **Ctrl+V**.

The data will be pasted into the table in XMLSpy with a cell structure corresponding to the original structure and starting from the cell selected in Table View. The following points need to be noted:

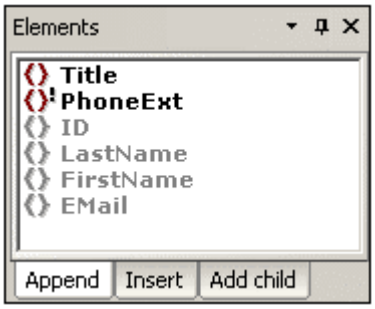
- If data already exists in these cells in Table View, the new data overwrites the original data.
- If more rows are required to accommodate the new data, these are created.
- If more columns are required to accommodate the new data, these are **not** created.
- The data in the cells becomes the contents of the elements represented by the respective cells.

For more complex data exchange tasks, XMLSpy also offers a set of unique conversion functions that let you directly import or export XML data from any text file, Word document or database.

4.2.3 Entry Helpers in Grid View

Elements Entry Helper

In Grid View, the Elements Entry Helper has three tabs: Append, Insert, and Add Child. The **Append** tab displays elements that can be appended after all the siblings of the current element; the **Insert** tab displays all elements that can be inserted before the current element; and the **Add Child** tab displays those elements you can insert as a child of the current element.

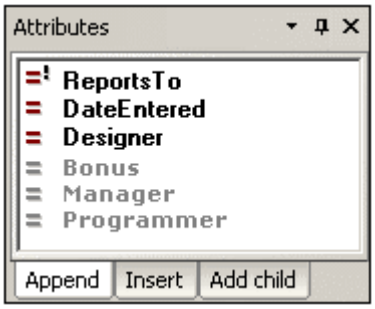


To insert an element, select the appropriate tab and double-click the required element. Note that mandatory elements are indicated with an exclamation mark. Siblings of allowed elements that cannot themselves be inserted at the cursor point are unavailable.

Please note: In the **Options** dialog (**Tools | Options | Editing**), you can specify that mandatory child elements are inserted when an element is inserted.

Attributes Entry Helper

The Attributes Entry Helper displays a list of available attributes for the element you are currently editing. Mandatory attributes are indicated with an exclamation mark "**!**" before the name of the attribute. If an attribute has already been entered for that element, that attribute is shown in gray.



- To use the attributes in the Append and Insert tabs, select, in Grid View, an existing attribute or an element that is a child of the attribute's parent element, and double-click the required attribute in the Entry Helper.
- To use the attributes in the Add Child tab, select the attribute's parent element in Grid View and double-click the required attribute in the Entry Helper.

Please note: Existing attributes, which cannot legally be added to the current element a second time, are shown in gray.

Entities Entry Helper
The Entities Entry Helper displays all parsed or unparsed entities that are declared inline or in an external DTD. If a text node or attribute node is selected in Grid View, the Add Child tab will appear empty—because, by definition, such nodes cannot have any children.

To use the cursor to insert an entity in Grid View, place the cursor at the required position in a text field or select the required field; then select the appropriate tab, and double-click the entity. Note the following rules:

- If the cursor is placed within a text field (including an attribute value field), the entity is inserted at the cursor insertion point.
- If an element with a text-only child (i.e. `#PCDATA` or `simpleType`) is selected but the cursor is not placed in the text field, then any existing text content **is replaced** by the entity.
- If a non-text field is selected, then the entity is created as text at a location corresponding to the Entry Helper tab that you select.

Please note: If you add an internal entity, you will need to save and reopen your document before the entity appears in the Entities Entry Helper.

4.3 Schema View

XML Schemas can be viewed and edited in Schema View. Schema View itself has two views:

- ***Schema Overview*** displays all global components, such as global elements and complex types, in a simple tabular list (*see screenshot*)
- ***Content Model View*** shows the content models of individual global components (*see screenshot*)

You can switch from Schema Overview to the content model of a specific global component by clicking the icon of that global component. To return to Schema Overview, click the Show Globals icon  in Content Model View.

Organization of this section
This section has been organized into the following sub-sections

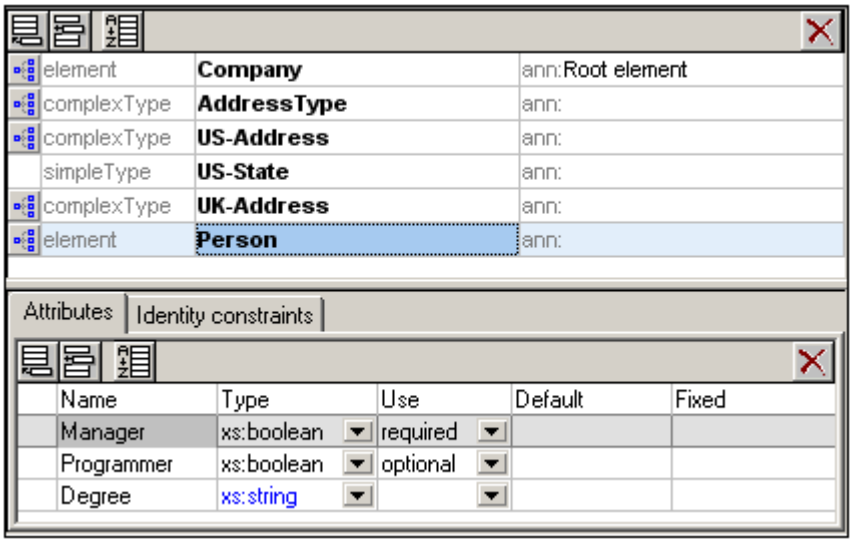
- Schema Overview describes how global components are displayed in Schema Overview and how they are edited
- Content Model View describes how the content models of individual global components are edited
- Entry Helpers explains the organization of the entry helpers in Schema View
- Identity Constraints describes how identity constraints are displayed and edited in Schema View
- Smart Restrictions is a XMLSpy editing feature that facilitates the graphical creation and editing of derived types from their base types; this section describes how the Smart Restrictions feature is used
- A description of how the xml: prefixed attributes `base`, `id`, `lang`, and `space` can be added graphically to schema components
- Back and Forward: Moving through Positions explains a Schema View feature that enables you to move through previously viewed positions

Connecting to SchemaAgent
From XMLSpy you can also connect to SchemaAgent in order to display components from other schemas in the GUI and to use these components in the schema being currently edited. How to work with SchemaAgent in XMLSpy is described in the section Working with SchemaAgent.

Find in schemas
The Find in Schemas features enables intelligent searches in schemas, i.e., searches that are restricted by various schema-related criteria. For example, searches may be restricted to certain component types, thus making the search more efficient. Find in Schemas is described in the DTDs and XML Schemas section.

4.3.1 Schema Overview

Schema Overview displays a list of all the global components of the schema (global elements, complex types, etc).



You can insert, append, or delete global components, as well as modify their properties. To insert, append, or delete, use the respective buttons at the top of Schema Overview. To modify properties, select the required component in the Schema Overview list, and edit its properties in either the entry helpers (at right of view) or the Attributes/Identity Constraints pane (at bottom of view).

You can edit the content model of a global component in Content Model View, which is accessed by clicking the Content Model View icon at the left of the global component.

Note the following editing features of Schema Overview:

- You can reposition components in the Schema Overview list using drag-and-drop.
- You can navigate using the arrow keys of your keyboard.
- You can copy or move global components, attributes, and identity constraints to a different position and from one schema to another using cut/copy-and-paste.
- Right-clicking a component opens a context menu that allows you to cut, copy, paste, delete, or edit the annotation data of that component.

Global components in Schema Overview

At the top level of an XML Schema document (i.e., at the level of children of the `schema` element), the following five basic components can be defined:

- Annotation
- Type definition (simple or complex)
- Declaration (element or attribute)
- Attribute group
- Model group

These components are called **global components**. The **Schema Overview** displays a list of all global components in your schema in a tabular form. Some global components (such as complex types, element declarations, and model groups) can have a content model which describes the component's structure and contents. Other global components (such as annotations, simple types, and attribute groups) do not have a content model. Those components for which content models are possible have a icon to the left of the component name. Clicking on this icon opens the Content Model View for that global component.

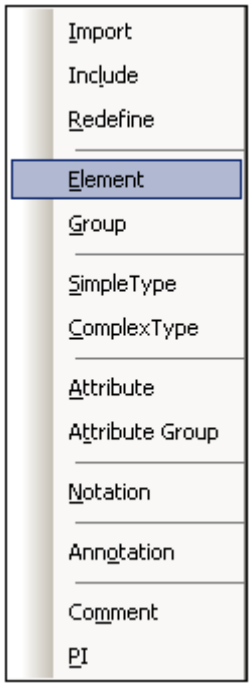
Key terms

- *Simple type and complex type.* A simple type is used to define all attributes and elements that contain only text and that have no associated attribute. A simple type, therefore, has no content model—only text (which can be restricted by the datatype). A complex type is one that has at least one child element or attribute. Declaring a child element on an element automatically assigns the element a type of complex.
- *Global and local components.* A global component can be any of the five listed above. A global component can be defined in Schema Overview, and it then immediately appears in the list of global components in Schema Overview. If the global component is a complex type, an element declaration, or a model group, you can subsequently define its content model by editing it in Content Model View. Once a global component has been defined, it can be referenced by local components. A local component is created directly within the content model of some component. Note that, in the Content Model View, a local component can be converted into a global component (via the right-click context menu).

Comments and processing instructions
In XML Schema documents, comments and processing instructions within simple types and complex types are collected and moved to the end of the enclosing object. In such cases, it is therefore recommended that you use annotations instead of comments.

Creating global components
To create a global component in Schema Overview:

1. Click the Insert or Append icon at the top of the Schema Overview. This pops up a menu listing the various component types (element, simple type, complex type, model group, etc).



2. Select the type of component you want. An entry of that type is created in the list of global components.
3. Enter the name of the component in the entry, and press **Enter**. The name of the new

global component is added to the appropriate list/s (`Elm`, `Grp`, `Com`, `Sim`, etc.) in the Component Navigator entry helper. You can edit the content model of the new global component either by double-clicking the component name in the Component Navigator or by clicking the  icon to the left of the new component's name in the list of global components.

Please note:

- You can also create a global component while editing in Content Model View. Right-click anywhere in the window and select **New Global | Element**.
- While editing in Content Model View, you can make a local element a global element—or even a complex type if the element has an element or attribute child. Select the local element, right-click anywhere in the window, and select **Make Global | Element** or **Make Global | Complex type**.

Deleting global components

To delete a global component:

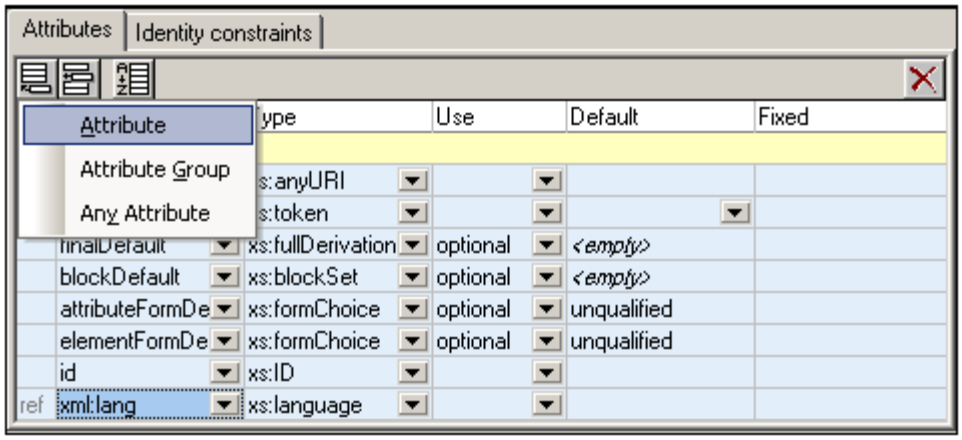
1. Select the global component in the list of global components in the Schema Overview.
2. Press the **Delete** key, or click the **Delete** icon  at the top of the Schema Overview.

Attributes and identity constraints of components

You can define attributes and identity constraints for components in either Schema Overview or Content Model View. In Schema Overview, the attributes and identity constraints of a component are displayed in the Attributes/Identity Constraints pane at the bottom of the Schema Overview window and can be edited there. In Content Model View, attributes and identity constraints can appear either in the Attributes/Identity Constraints pane at the bottom of the Content Model Window or within the Content Model diagram itself, where it can be edited. You can select how to display attributes and identity constraints in Content Model View with a setting in the Schema Display Configuration dialog, which is accessed with the **Schema design | Configure view** menu command.

Defining attributes for a component

To define attributes for a component, you use the Attributes/Identity Constraints pane, which is at the bottom of the Schema Overview window.



To define attributes for a global component for which attributes are allowed:

1. Select the global component in the global components list.

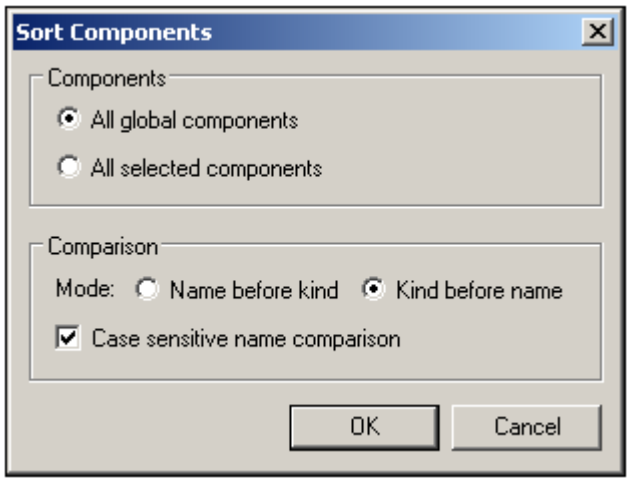
2. In the Attributes/Identity Constraints pane, select the Attributes tab.
3. Click the Append or Insert icon at the top left of the Attribute tab.
4. From the popup that appears, select the attribute type you want to append or insert. An entry is created in the Attribute list.
5. In the newly created entry, enter the attribute's properties.

Please note: You can also define attributes for global components in Content Model View: Select the global component, and then define attributes as described above.

Defining identity constraints for a component
To define identity constraints for a component, you use the Attributes/Identity Constraints pane, which is at the bottom of the Schema Overview window. See Identity Constraints for a description of how to work with identity constraints.

Sorting global components, attributes, and identity constraints
Global components can be sorted alphabetically, in ascending order, by local name and kind. Do this as follows:

1. If you wish to sort a selection of global components, then select the global components you wish to sort by clicking them with the **Ctrl** key pressed. (You can also select a range by pressing the **Shift** key and clicking the first and last components of the range.) The global components you select will be highlighted. If you wish to sort all the global components you can select one or more global components. An option for sorting all the components will be available.
2. Clicking the **Sort** icon at the top of the Schema Overview pane. This pops up the Sort Components dialog (*screenshot below*).



3. In the *Components* pane, select whether all the components or only the selection is to be sorted. The *Selected Components* option is enabled only if a the number of selected global components is greater than one.
4. In the *Comparison* pane, you can select whether the sort is performed first on the criterion of local name or component kind. If there is more than one component of the same local name or same component kind (whichever is the first sort criterion), then these are sorted on the secondary criterion.
5. For case-sensitive name comparison, select the check box with this label. If this option is selected, lowercase will be listed before uppercase.

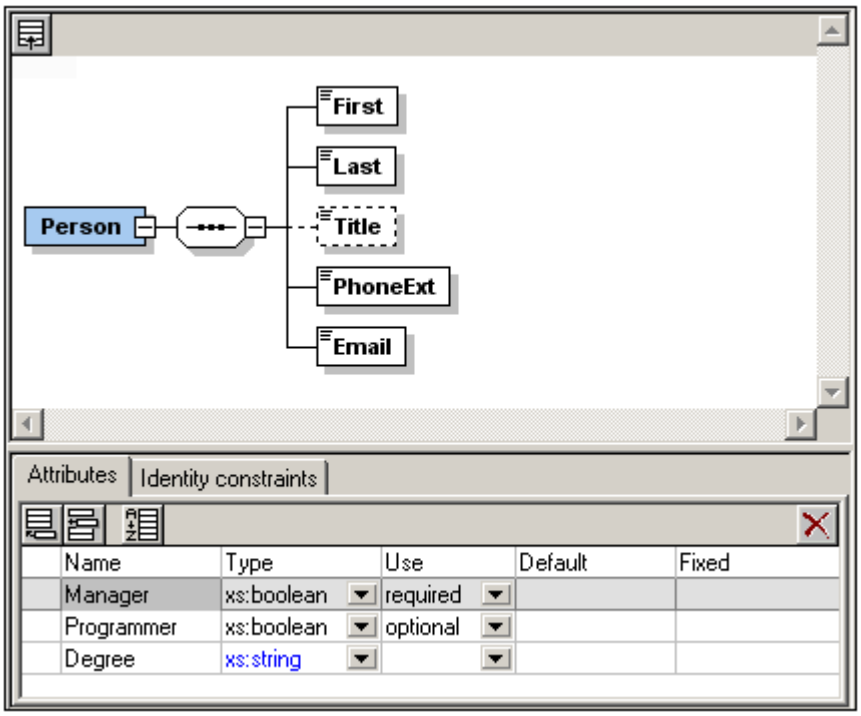
Sorting attributes and identity constraints works in the same way as sorting global

components. The **Sort** icon is located in the toolbar of the Attributes/Identity Constraints pane, and it is enabled if the pane contains at least two named sibling components (such as attributes or keys).

4.3.2 Content Model View

A content model is a description of the structure and contents of an element. Global components which can have a content model (for example, elements, complex types, and model groups; but not, for example, simple types) are indicated in the Schema Overview list with a icon to the left of the component name. Clicking on this icon opens the Content Model View for that global component. Alternatively, (i) select a component and then select the menu option **Schema design | Display Diagram,** or (ii) double-click on a component's name in the Component Navigator (which is the entry helper located, by default, at top right). Note that only one content model in the schema can be open at a time. When a content model is open, you can jump to the content model of a component within the current content model by holding down **Ctrl** and double-clicking the required component.

The content model is displayed in the Content Model View as a tree (*see screenshot below*). You can configure the appearance of the tree in the Schema Display Configuration dialog (menu item **Schema design | Configure view**).



Note the following editing features of Content Model View:

- Each level (of elements or element groups) in the tree is joined to adjacent levels with a compositor.
- Drag-and-drop functionality enables you to move tree objects (compositors, elements, element groups) around.
- You can use keyboard shortcuts to copy (**Ctrl-c**) and paste (**Ctrl-v**) tree objects
- You can add objects (compositors, elements, and element groups) via the context menu (right-click an object).

- You can sort sibling components by selecting the sibling components you wish to sort, right-clicking, and selecting the **Sort Components** command from the context menu. You can prioritize two sort criteria: (i) local name, and (ii) component kind.
- You can edit the properties of an object in the Details entry helper (compositors, elements, element groups) and the Attributes/Identity Constraints pane.
- The Attributes and Identity Constraints of a component are displayed in a pane at the bottom of the Main Window. Attributes and Identity Constraints can also be displayed in the Content Model diagram instead of in the Attributes/Identity Constraints pane. This viewing option can be set in the Schema Display Configuration dialog.

These features are explained in detail in the subsections of this section and in the tutorial.

To return to the Schema Overview, click the **Show Globals** icon  or select the menu option **Schema design | Display All Globals**.

Editing in Content Model View

Content Model View enables you to quickly define the content model of the following three component types graphically with a few mouse clicks:

- Complex types
- Element declarations
- Model groups

All other schema components (annotations, attribute declarations, simple types, etc.) do not have a content model.

In Content Model View, the various parts of the content model are represented graphically, These parts are organized into two broad groups: **compositors** and **components**. Typically a compositor is added and then the desired child components.

Compositors

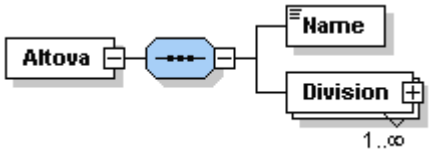
A **compositor** defines the order in which child elements occur. There are three compositors: `sequence`, `choice`, and `all`.

To insert a compositor:

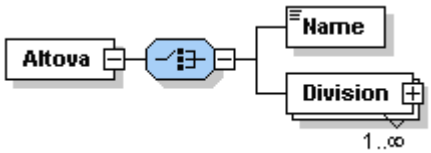
1. Right-click the element to which you wish to add child elements
2. Select **Add Child | Sequence** (or **Choice** or **All**).

The compositor is added, and will look as below:

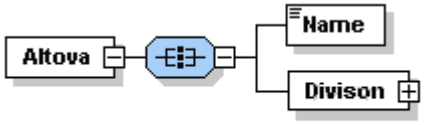
- **Sequence**



- **Choice**



- **All**



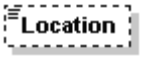
To change the compositor, right-click the compositor and select **Change Model | Sequence** (or **Choice** or **All**). After you have added the compositor, you will need to add child element/s or a model group.

Components in the Content Model
Given below is a list of components that are used in content models. The graphical representation of each provides detailed information about the component's type and structural properties.

- Mandatory single element

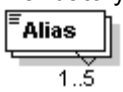
Details: The rectangle indicates an element and the solid border indicates that the element is required. The absence of a number range indicates a single element (i.e. `minOcc=1` and `maxOcc=1`). The name of the element is `Country`. The blue color indicates that the element is currently selected; (a component is selected by clicking it). When a component is not selected, it is white.

- Single optional element



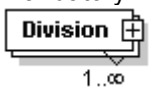
Details: The rectangle indicates an element and the dashed border means the element is optional. The absence of a number range indicates a single element (i.e. `minOcc=0` and `maxOcc=1`). Element name is `Location`.
Note: The context menu option **Optional** converts a mandatory element into an optional one.

- Mandatory multiple element



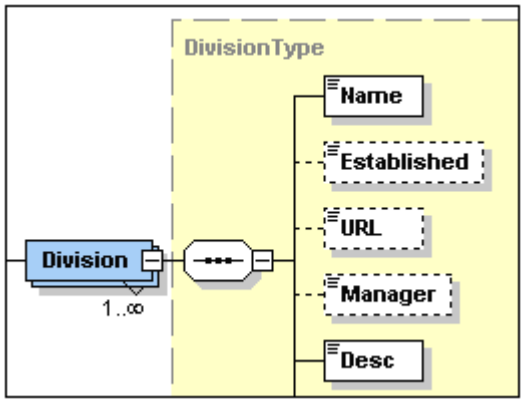
Details: The rectangle indicates an element and the solid border indicates that the element is required. The number range 1..5 means that `minOcc=1` and `maxOcc=5`. Element name is `Alias`.

- Mandatory multiple element containing child elements



Details: The rectangle indicates an element and the solid border indicates that the element is required. The number range 1..infinity means that `minOcc=1` and `maxOcc=unbounded`. The plus sign means complex content (i.e. at least one element

or attribute child). Element name is `Division`.
Note: The context menu option **Unbounded** changes `maxOcc` to `unbounded`.
Clicking on the + sign of the element expands the tree view and shows the child elements.

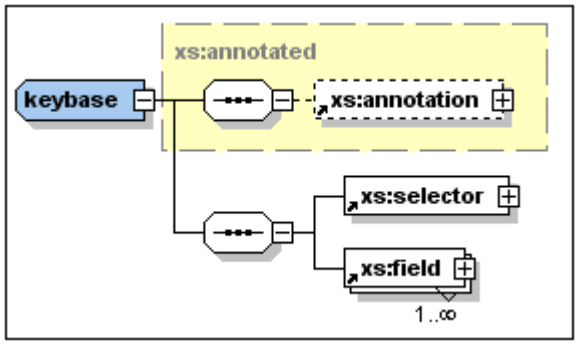


- Element referencing global element

Details: The arrow in the bottom-left means the element references a global element. The rectangle indicates an element and the solid border indicates that the element is required. The number range 1..infinity means that `minOcc=1` and `maxOcc=unbounded`. The plus sign indicates complex content (i.e. at least one element or attribute child). Element name is `xs:field`.
Note: A global element can be referenced from within simple and complex type definitions, thus enabling you to re-use a global declaration at multiple locations in your schema. You can create a reference to a global element in two ways: (i) by entering a name for the local element that is the same as that of the global element; and (ii) by right-clicking the local element and selecting the option **Reference** from the context menu. You can view the definition of a global element by holding down **Ctrl** and double-clicking the element. Alternatively, right-click, and select **Go to Definition**. If you create a reference to an element that does not exist, the element name appears in red as a warning that there is no definition to refer to.

- Complex type

Details: The irregular hexagon with a plus sign indicates a complex type. The complex type shown here has the name `keybase`. This symbol indicates a global complex type. A global complex type is declared in the Schema Overview, and its content model is typically defined in Content Model View. A global complex type can be used either as (i) the data type of an element, or (ii) the base type of another complex type by assigning it to the element or complex type, respectively, in the Details entry helper (in either Content Model View or in Schema Overview).



The `keybase` complex type shown above was declared in Schema Overview with a base type of `xs:annotated`. The base type is displayed as a rectangle with a dashed gray border and a yellow background color. Then, in Content Model View, the child elements `xs:selector` and `xs:field` were created. (Note the tiny arrows in the bottom left corner of the `xs:selector` and `xs:field` rectangles. These indicate that both elements reference global elements of those names.)

A local complex type is defined directly in Content Model View by creating a child element or attribute for an element. There is no separate symbol for local complex types.

Please note: The base type of a content model is displayed as a rectangle with a dashed gray border and a yellow background color. You can go to the content model of the base type by double-clicking its name.

- Model group

Details: The irregular octagon with a plus sign indicates a model group. A model group allows you to define and reuse element declarations.
Note: When the model group is declared (in Schema Overview) it is given a name. You subsequently define its content mode (in Content Model View) by assigning it a child compositor that contains the element declarations. When the model group is used, it is inserted as a child, or inserted or appended within the content model of some other component (in Content Model View).

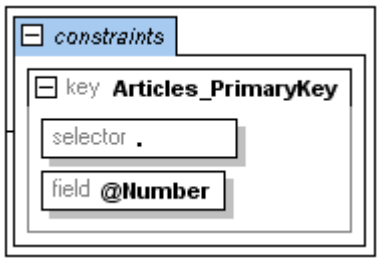
- Wildcards

Details: The irregular octagon with `any` at left indicates a wildcard.
Note: Wildcards are used as placeholders to allow elements not specified in the schema or from other namespaces. `##other` = elements can belong to any namespace other than the target namespace defined in the schema; `##any` = elements can belong to any namespace; `##targetNamespace` = elements must belong to the target namespace defined in the schema; `##local` = elements cannot belong to any namespace; *`anyURI`* = elements belong to the namespace you specify.

- Attributes

Details: Indicated with the word *'attributes'* in italics in a rectangle that can be expanded. Each attribute is shown in a rectangle with a (i) dashed border if the attribute is options, or (ii) a solid border if the attribute is required (mandatory).
Note: Attributes can be edited in the Details Entry Helper. Attributes can be displayed in the Content Model View diagram or in a pane below the Content Model View. You can toggle between these two views by clicking the Display Attributes icon. When attributes are displayed in the Content Model View diagram, all attributes of a single element are displayed in a rectangle with a dashed border. To change the order of attributes of an element, drag the attribute outside the containing box and drop when the arrow appears at the required location.

- Identity constraints

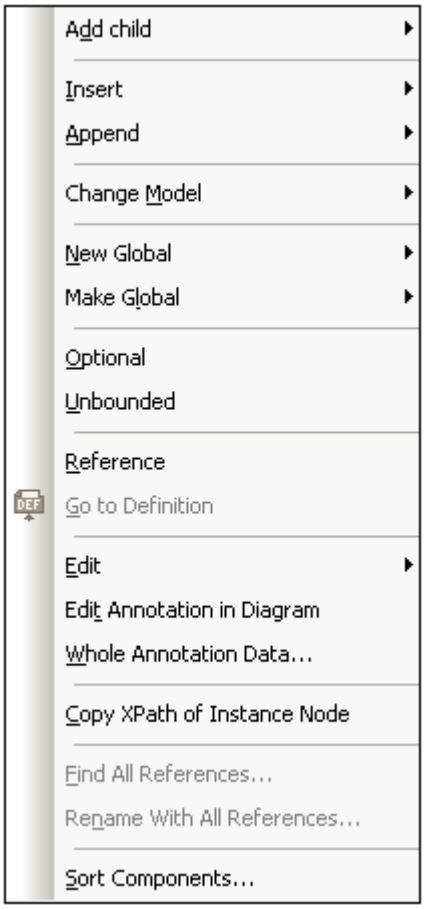


Details: Indicated with the word '*constraints*' in italics in a rectangle that can be expanded.
Note: The identity constraints listed in the content model of a component show constraints as defined with the `key` and `keyref` elements, and with the `unique` element. Identity constraints defined using the `ID` datatype are not shown in the content model diagram, but in the Details Entry Helper. Identity constraints can be displayed and edited in the Content Model View or in the Identity Constraints tab of Schema Overview. In Content Model View, you can toggle the Constraints box on and off with the Display Constraints icon..

Please note:

- Property descriptor lines you have defined in the Schema Display Configuration dialog can be turned on and off by clicking the Add Predefined Details toolbar icon.
- You can toggle Attributes and Identity Constraints to appear either in the diagram of the content model itself or in a pane below the Content Model View by clicking the Display in Diagram icons for attributes and constraints, and respectively.
- In Content Model View, you can jump to the content model view of any global component within the current content model by holding down the **CTRL** key and double-clicking the required component. You can go to the content model of a base type by double-clicking the name of the base type.

Other editing operations in Content Model View
Editing operations in Content Model View are carried out via the context menu (*see screenshot*) that appears when you right-click within Content Model View. A description of the operations are given below.



Adding child compositors/components and inserting/appending compositors/components

1. Right-click the compositor or component. This opens the context menu (with only the allowed operations enabled).
2. Select the required operation from the context menu.

Changing a compositor

1. Right-click the compositor you want to change.
2. Select the context menu option **Change Model** and, from the sub-menu, select the compositor to which you want to change. (The currently selected compositor is checked.) If a compositor is not allowed at that point, it is disabled.

Creating global components

- To create a new global component, right-click anywhere in Content Model View, select **New Global**, and, from the sub-menu, the required component.
- To make a local element a global element or global complex type, right-click the local element, select **Make Global**, and, from the sub-menu, select either **Element** or **Complex type**. If any of these components cannot legally be created, then it is disabled.

Changing the occurrence definition
You can toggle the minimum and maximum occurrences values of a compositor between `0` and `1` (for `minOccurs`) and `1` and `unbounded` (for `maxOccurs`), respectively.

Do this as follows:

1. Right-click the compositor or component for which the occurrence value has to be changed.
2. Select the context menu option **Optional** to set `minOccurs` to `0`, deselect **Optional** to set `minOccurs` to `1`. Select the context menu option **Unbounded** to set `maxOccurs` to `unbounded`, deselect **Unbounded** to set `maxOccurs` to `1`. A check mark appears to the left of the respective menu item when that menu item is selected.

Toggling between local definition and global definition
If a global element exists that has the same name as a local element, then you can toggle between referencing the global definition and using the local definition.

Do this as follows:

1. Right-click the element.
2. Select the context menu option **Reference**. If the global element is referenced, then the menu item is checked. If the local definition is used, the **Reference** item in the menu is not checked.

Jumping to another definition
When you are within a content model, you can jump to the definition of any global component that is contained in that content model.

Do this as follows:

1. Right-click the global component. The global component could be the yellow rectangle of a base type; an element that references a global element; or a model group.
2. Select the context menu option **Go to Definition**. This opens the Content Model View of that global component.

Alternatively, double-click the name of the base type, or press **Ctrl** and double-click the referencing element or the model group.

Editing element names and types

1. Right-click the element.
2. Select the context menu option **Edit | Name** and edit the name, or select **Edit | Type** and edit the type.

Alternatively, double-click the element name, and type in the change.

Creating and editing documentation for a compositor or component
You can add documentation to individual compositors and components as a guide for schema editors.

Do this as follows:

1. Right-click the compositor or component.

2. Select the context menu option **Edit Annotation**. This highlights the documentation space below the compositor/component, in which you can enter descriptive text about the compositor or component. In Text View, the `annotation` and `annotation/documentation` elements will have been created and the `documentation` element will contain the descriptive text you enter.

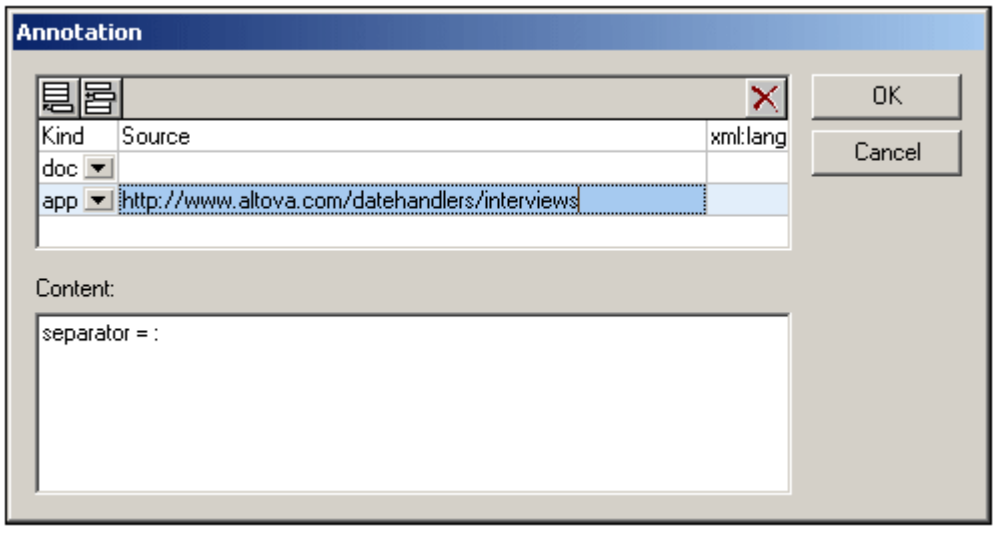
Alternatively, you can right-click the compositor or component and select Whole Annotation Data. In the Annotation dialog that opens, you can append or insert a documentation item and enter content for it.

In order to edit pre-existing documentation text, you can use either of the two methods described above, but a quicker method is to double-click the annotation in the diagram and edit directly.

Creating and editing application info for a compositor or component

1. Right-click the compositor or component.

2. Select the context menu option **Whole Annotation Data**. The Annotation dialog box opens (*see screenshot below*). If annotation (either documentation or appinfo) exists for that element, then this is indicated by a corresponding row in the dialog.



3. To create an `appinfo` element, click the Append or Insert icon at top left to append or insert a new row, respectively.
4. In the Kind field of the new row, select the `app` option from the dropdown menu.
5. In the Content pane of the dialog, enter the script or info that you want to have processed by a processing application.
6. Optionally, in the Source field, you can enter a source URI where further information can be made available to the processing application.

Copy XPath of Instance Node

The context menu command, **Copy XPath of Instance Node**, is enabled for elements and attributes defined within a global element or complex type. It copies to the clipboard an XPath expression that locates the selected node.

Find All References and Rename with All References

The two context menu commands, **Find All References** and **Rename with All References**, is enabled for global elements. These, respectively, find and rename the selected global component in the active document and, optionally, in all schema files related to the active document. See Finding and Renaming Globals for details.

Sorting declarations and references

The **Sort** command is enabled when a node (element or attribute) has multiple declarations or references. The sorting works in the same way as the sorting described in the section, Schema Overview.

Using keyboard shortcuts in Content Model View

You can copy and paste elements in Content Model View using the shortcuts **Ctrl-c** and **Ctrl-v**.

To copy and paste elements:

1. Select the elements you want to copy. To select one element, click on it. To select more than one element, click on the first element and use **SHIFT** and the down arrow key to select further elements.
2 Press **Ctrl**-**c**. The elements are copied to the clipboard.
3. Select the compositor you want to copy the elements to.
4. Press **Ctrl**-**v**. The elements are pasted as child elements of the compositor.

To copy and paste elements in reverse order:

1. Click on the lowermost element you want to copy and use **SHIFT** and the up arrow key to select further elements.
2. Press **Ctrl**-**c**. The elements are copied to the clipboard.
3. Select the compositor you want to copy the elements to.
4. Press **Ctrl**-**v**. The elements are pasted such that the element that was the uppermost element is now the lowermost element.

About XML Schema annotations

XML Schema annotations are held in the `annotation` element. There are two types of annotation, both of which are elements of the annotation element:

- compositor or component documentation, which contains information that could be useful for editors of the schema and is contained in the `documentation` child element of `annotation`.
- application information, which allows you to insert a script or information that a processing application may use; this information is contained in the `appinfo` child element of `annotation`.

Given below is the text of an annotation element. It is based on the example in the description of creating documentation and application information given above.

```
<xs:element name="session_date" type="xs:dateTime" nillable="true">
   <xs:annotation>
      <xs:documentation>Date and time when interview was
held</xs:documentation>
```



```
      <xs:appinfo
source="http://www.altova.com/datehandlers/interviews">separator =
:</xs:appinfo>
   </xs:annotation>
</xs:element>
```

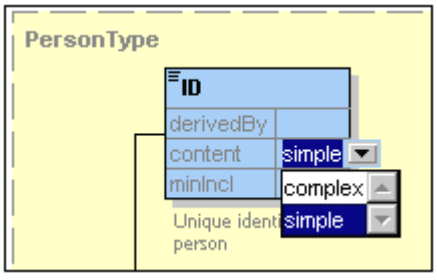
Comments and processing instructions
In XML Schema documents, comments and processing instructions within simple types and complex types are collected and moved to the end of the enclosing object. In such cases, it is therefore recommended that you use annotations instead of comments.

Configuring the content model view
You can configure the content model view for the entire schema in the Schema display configuration dialog (**Schema design | Configure view**). For details about configuration options, see the Configure view section later in the User Reference. Note that the settings you define here apply to the whole schema, and to the schema documentation output as well the printer output.

Changing component properties directly in the content model
If the Content Model View is configured so that components are displayed with property descriptor lines (additional information about components) in the component box, then you can edit this information and so change the properties of components. The property descriptor lines you have defined can be turned on and off by clicking the Add Predefined Details  toolbar icon. You can toggle between a view containing the defined properties and a view not containing them.

To edit component properties:

1. Double-click the (component's) information field that you want to edit, and start entering or editing data. If a predefined option is available, then a drop-down list can be opened and the appropriate entry selected. Otherwise simply enter the required value.



2. Press **Enter** to confirm. The Details entry helpers will be updated to reflect your changes.

Alternatively, you can edit a component's properties in the Details entry helper, and changes will be reflected in the placeholder fields—if these are configured to be displayed.

Documenting the content model
You can generate detailed documentation about your schema in HTML and MS Word formats. Detailed documentation is generated for each global component, and the list of global components is displayed in a table-of-contents page that allows you to link to the content models of individual components. Additionally, related elements (such as child elements or

complex types) are referenced by hyperlinks, thus enabling you to navigate from element to element. To generate schema documentation, select the menu command **Schema design | Generate documentation**.

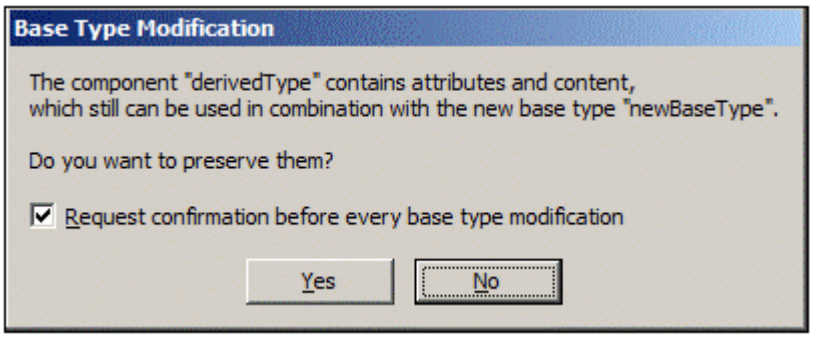
Attributes and Identity Constraints
Attributes and Identity constraints can appear in a pane below the Content Model View or as boxes in the Content Model View itself. You can toggle between these views by clicking the icon. For a description of how to insert and edit attributes and identity constraints, see Defining attributes for components and Defining identity constraints for components, respectively.

4.3.3 Base Type Modification

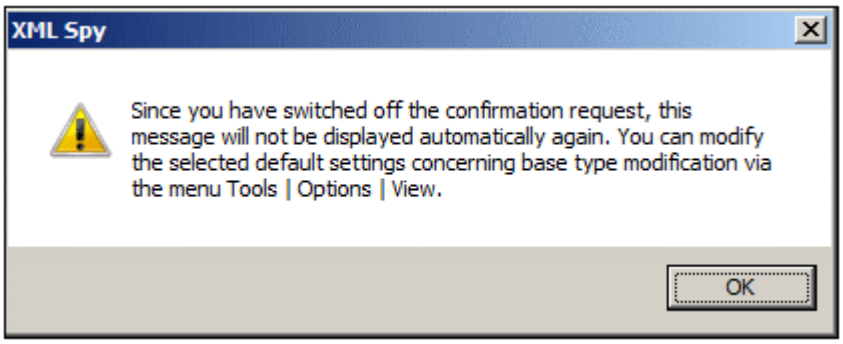
If the base type of a derived type is changed in Schema View, content, attributes, facets and sample values defined within the derived type can be handled in one of two ways:

- They can be preserved if they are still applicable in combination with the new base type.
- They can be removed automatically whether or not they are still applicable in combination with the new base type.

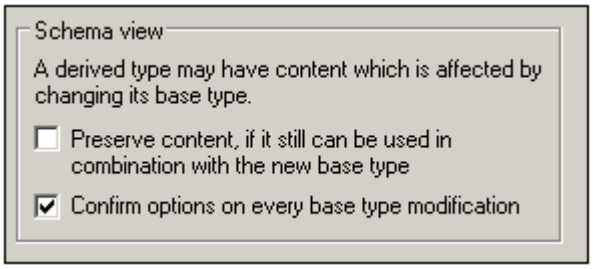
When changing the base type of a derived type which contains content, attributes, facets or sample values the Base Type Modification dialog (*screenshot below*) is displayed.



If the Request Confirmation check box is de-selected a pop-up (*screenshot below*) indicates that the confirmation can be turned on again in the View tab of the Options dialog (**Tools | Options | View**).



In the Schema View pane (*screenshot below*) of the View tab of the Options dialog (**Tools | Options | View**), you can specify whether content should be preserved and whether user confirmation is required for every base type modification.



Check the respective check boxes to preserve content and require confirmation if you wish these to be the default options.

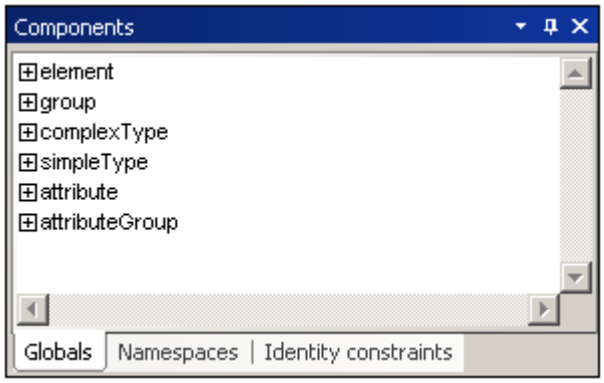
4.3.4 Entry Helpers in Schema View

There are three Entry Helpers in Schema View: Component Navigator, Details Entry Helper, and Facets Entry Helper. The entry helpers are the same in both Schema Overview and Content Model View. They are described below.

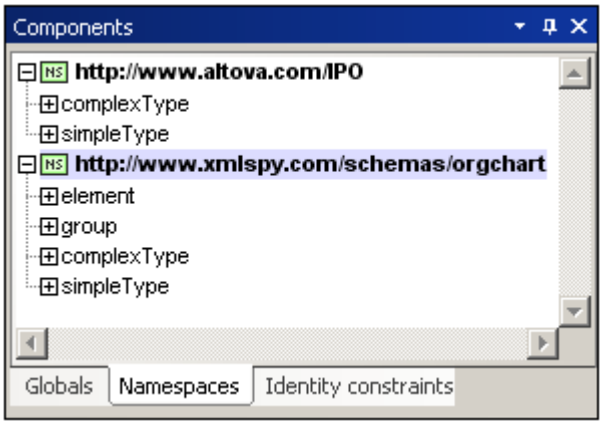
Component Navigator

The Component Navigator is an Entry Helper in **Schema View**. It serves three purposes:

- To organize global components in a tree view by component type and namespace *(see screenshots below)*. This provides organized overviews of all global components.
- To enable you to navigate to and display the Content Model View of a global component —if the component has a content model. If a component does not have a content model, the component is highlighted in the Schema Overview. Global components that are included or imported from other schemas are also displayed in the Component Navigator.
- To provide an overview of the identity constraints defined in the schema document. For a description of the Identity Constraints tab, see Identity Constraints Overview.



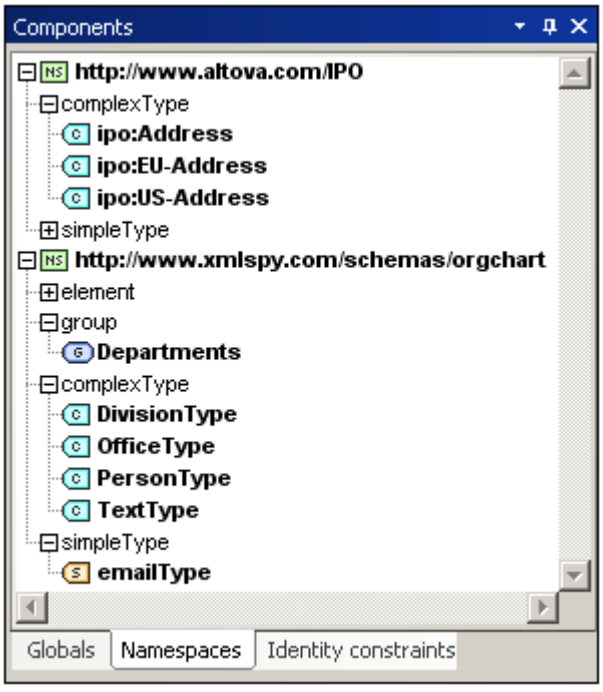
In the Globals tab *(above)* global components are grouped in a tree according to their component type. In the Namespace tab *(below)*, components are organized first according to namespace and then according to component type. Note that a component type is listed in a tree only if at least one component of that type exists in the schema.



In the tree display, global components are organized into the following six groups:

- Element Declarations (Elements)
- Model Groups (Groups)
- Complex Types
- Simple Types
- Attribute Declarations (Attributes)
- Attribute Groups

Expanding a component-type group in the tree displays all the components in that group *(see screenshot)*. This enables you to easily navigate to a required component.

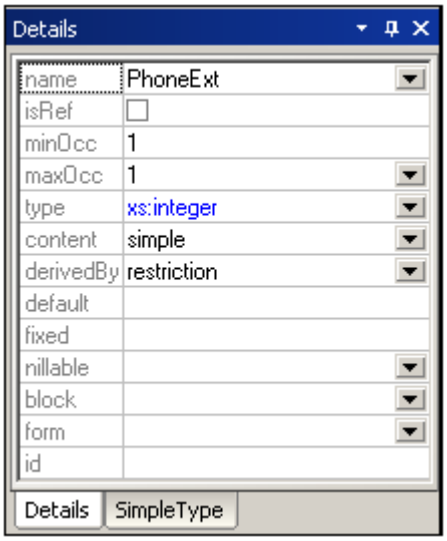


If a component has a content model (i.e., if it is an Element, Group, or Complex Type), double-clicking it will cause the content model of that component to be displayed in Content Model View (in the Main Window). If the component does not have a content model (i.e. if it is a Simple Type, Attribute, or Attribute Group), then the component is highlighted in the Schema Overview (in the Main Window).

Please note: If the component is in an included or imported schema, then the included/imported schema is opened (if it is not already open), and either the component's content model is displayed in Content Model View or the component is highlighted in Schema Overview.

Details Entry Helper

The Details Entry Helper is available in **Schema View**. It displays editable information about the compositor or component currently selected in the Main Window. If you are editing a schema file which contains database extensions, an additional tab with information about the DB extensions may be visible.

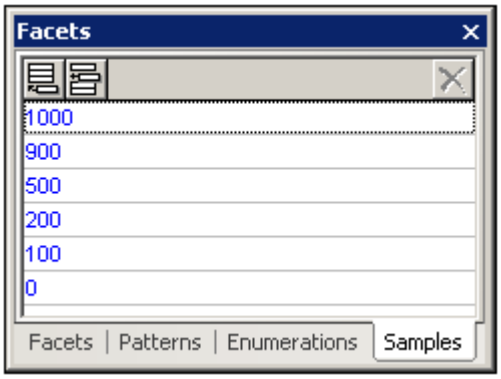


To change the properties of the currently selected compositor or component, double-click the field to be edited and edit or enter text directly. If a combo box is available in the field to be edited, select the desired value; this value is entered in the field.

Changes you make via the Details Entry Helper are immediately reflected in the content model diagram.

Facets Entry Helper

The Facets Entry Helper is available in the **Schema View**, and enables you to enter the values of facets, patterns, sample values, and enumerations.



To change facets, patterns, Sample Values, or enumerations in the Facets Entry Helper:

1. Select the required tab (Facets, Patterns, Sample Values, or Enumerations)
2. If a combo box is present, select a value from the drop-down menu. Alternatively, double-click a row, and edit or enter text directly.

Note:

- You can use the cut, copy and paste shortcuts (CTRL+X, CTRL+C, CTRL+V, respectively) to copy the patterns and enumerations of one component to another component. In the Facets Entry Helper, select the pattern/s or enumeration/s to copy, cut or copy the selection, then click in the Facets Entry Helper window of the target component, and paste.
- Sample values can be used when generating an XML file from the schema (with the menu command **DTD/Schema | Generate Sample XML File**). If a sample value is invalid, this is flagged as a warning and the sample value is displayed in orange in the Samples tab. You can switch off the validation warnings icon  in the toolbar. Note also that, in the case of invalid samples, the XSD file itself is not affected; it will still be valid if the file is valid in other respects.

4.3.5 Identity Constraints

Identity constraints can be defined for a global component via two entry points:

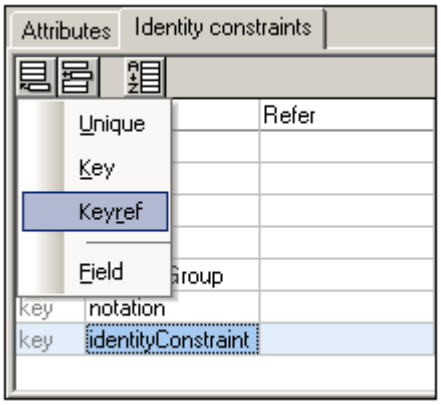
- In Schema Overview, select a global component and define identity constraints in the Identity Constraints tab (at the bottom of the view and below the main pane).
- In the Content Model View of a global component. Content Model View provides a graphical representation of the identity constraints and drag-and-drop editing functionality, neither of which is available when editing identity constraints in Schema Overview.

In this section, we describe these two mechanisms for creating and editing identity constraints. An overview of all identity constraints in the schema is available in the Identity Constraints tab of the Components entry helper; this is described further below.

Identity constraints in Schema Overview

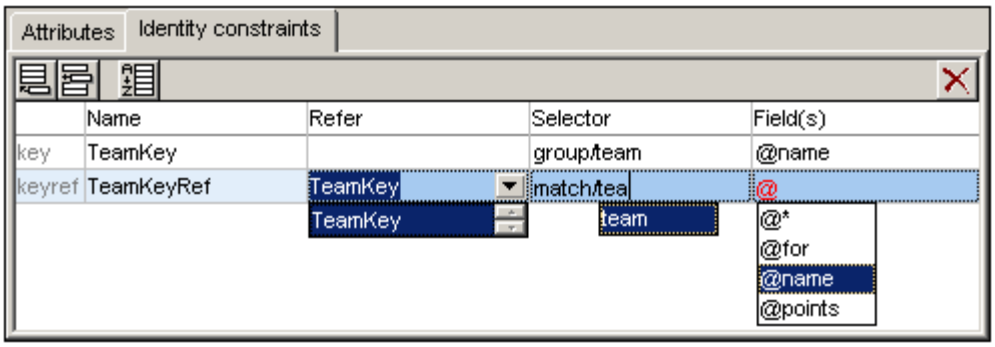
To define identity constraints for a global component in Schema Overview, do the following:

1. Select the global component in the global components list of Schema Overview.
2. In the Attributes/Identity Constraints pane, select the Identity Constraints tab.
3. Click the **Append**  or **Insert**  icon at the top left of the Identity Constraints tab.
4. From the popup that appears (*screenshot below*), select the type of identity constraint you want to append or insert: *Unique*, *Key*, or *Keyref*.



An entry is created in the Identity Constraints list.

5. In the newly created entry, enter the Identity Constraint's properties. Give the identity constraint a name (*see screenshot below*) and then define XPath expressions for the `selector` and `field` elements. For each location step in these XPath expression, a pop-up containing the available nodes appears (*see screenshot below*). For the `refer` element of the `keyref` kind of identity constraint, a dropdown list shows the available `key` elements (*see screenshot below*).



If you wish to define multiple field elements on an identity constraint, select the identity constraint, click the **Append** or **Insert** icon (*see Step 3 above*), and select **Field**. An empty Field entry box is added to the selected identity constraint. Enter the required XPath expression in the Field entry box.

Note: An ID can be assigned to any of these elements (that is, to the identity constraint, its selector, and/or field/s). To assign an ID, select the element and, in the Details entry helper, enter the ID in the `id` row.

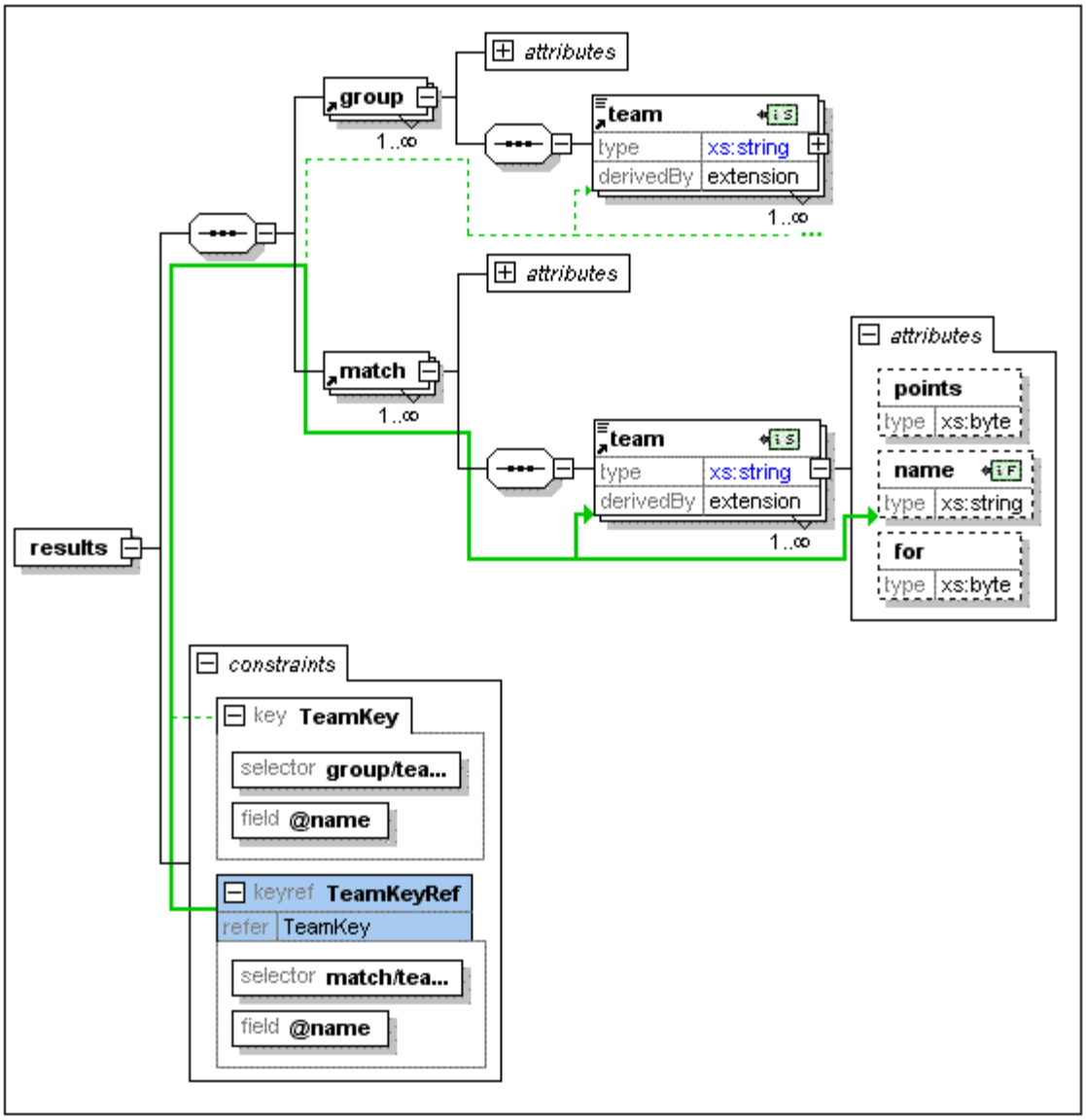
Identity constraints in Content Model View

To view identity constraints in Content Model View, do the following:

1. In Schema Overview, select the global component for which you wish to create the identity constraint and switch to the Content Model View of that component.
2. Ensure that the display of identity constraints is toggled on in the Schema Display Configuration dialog (**Schema Design | Configure View**). This toggle switches on and off the display of the identity constraints box in the design (*see screenshot below*). You can also toggle on and off the display of the Constraints box with the Display Constraints icon in the Schema Design toolbar
3. Ensure that the Visualize ID Constraints icon in the Schema Design toolbar is toggled on. This ensures that relationship lines and ID constraint information are displayed in Content Model View (*see screenshot below*).

Note: The Visualize ID Constraints icon switches on ID Constraint editing and validating functionality in Schema View. If an XPath expression in an ID Constraint does not locate a node, an error or warning might be displayed. This error or warning is to alert you to the incorrect XPath expression; the XML Schema document itself is not invalid because of the incorrect XPath expression. To re-check the validity of the document without the XPath expression check, switch to Text View or Grid View and validate. You can also disable validation in Schema View by toggling the Visualize ID Constraints icon off.

The screenshot below shows the graphical display of identity constraints. There are two identity constraints in the identity constraints box: `TeamKey` and `TeamKeyRef`. The properties of `TeamKeyRef` are highlighted with a solid green line (since `TeamKeyRef` is selected). The properties of `TeamKey` (unselected) are shown with a dotted green line. For each identity constraint the node selected by the XPath expression for `selector` and `field` are show with the icons and respectively. If a node is collapsed, as is the case with the `field` element of the `TeamKey` constraint, the relationship line ends with an ellipsis (*see screenshot below*).



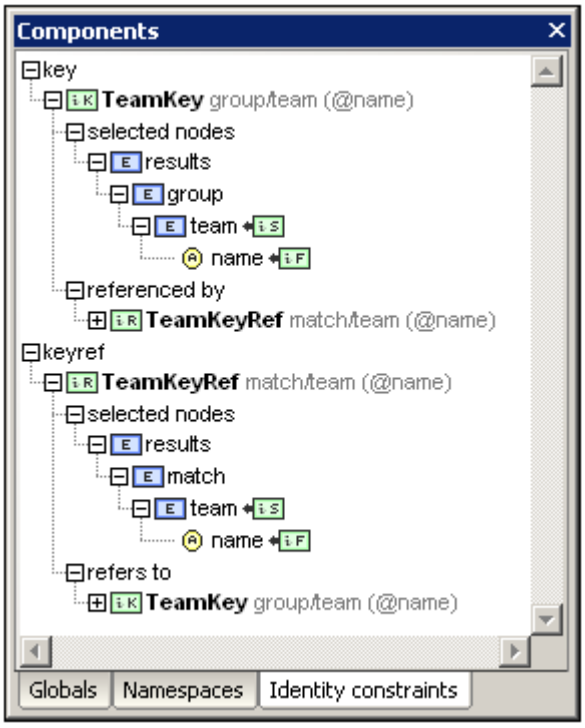
To create an identity constraint in Content Model View, do the following:

1. In the Constraints box, right-click the Constraints entry or the name of an existing identity constraint.
2. Select **Insert** or **Append**, and then select the kind of identity constraint to insert (at the top of the list of existing constraints) or append (at the bottom of the list of existing constraints). The identity constraint will be created with an empty `selector` element and an empty `field` element.
3. The XPath expression can be entered in the `selector` and `field` element boxes in one of two ways: (i) By typing it in, or (ii) By dragging the target node into the `selector` or `field` element box and dropping it when the box becomes highlighted; the XPath expression will be created automatically.
4. To add an additional `field` element to an identity constraint, either right-click the constraint name and select **Add child | Field** from the context menu, or right-click the `selector` or `field` element and select **Insert | Field** or **Append | Field** from the context menu.
5. To enter an ID attribute on any element in a constraint, select that element and enter a value in the `id` row of the Details entry helper.

Note: Identity constraint information can be toggled on and off with the Enable ID Constraints Information icon in the Schema Design toolbar. The display of the entire Constraint box can be toggled on and off in the Schema Display Configuration dialog (**Schema Design | Configure View**) or with the Display Constraints icon in the Schema Design toolbar.

Identity constraints overview

The Identity Constraints tab of the Components entry helper (*screenshot below*) provides an overview of a document's identity constraints. In this tab, identity constraints are listed by the kind of identity constraint (`unique`, `key`, `keyref`) and displayed as an expandable/collapsible tree.



Entries in bold are present in the current schema, while those in normal face are present in sub-schemas. Double-clicking an entry in the Identity Constraints tab selects that schema component in Content Model View.

The following context menu commands are available when an item in the Identity Constraints tab is selected:

- *Show in Diagram*: selects the schema component in Content Model View.
- *Show Selector/Field Target in Diagram*: selects, in Content Model View, the schema component targeted by the selector or field of the identity constraint. In the case of multiple fields, a dialog prompts the user for the required field.
- *Go to Identity Constraint*: selects the identity constraint in Schema Overview.
- *Expand/Collapse All*: expands or collapses the tree, respectively.

4.3.6 Smart Restrictions

When restricting a complex type, parts of the content model of the base type are rewritten in the derived type. This can be confusing if the content model is complex because while editing the derived type it might be hard to correctly remember exactly what the content model of the base type looks like.

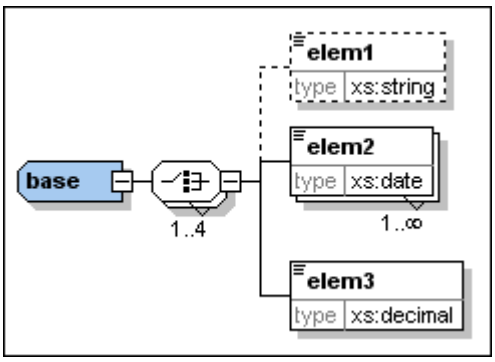
Smart Restrictions combine and correlate the two content models in the graphical view of the derived content model. In the derived complex type, all particles of the base complex type, and how they relate to the derived type, can be seen. Additionally, Smart Restrictions provide visual hints to show you all possible ways to restrict the base type. This makes it easy to correctly restrict the derived type.

To switch on Smart Restrictions:

- Click the Smart Restrictions icon  . in the Schema Design toolbar.

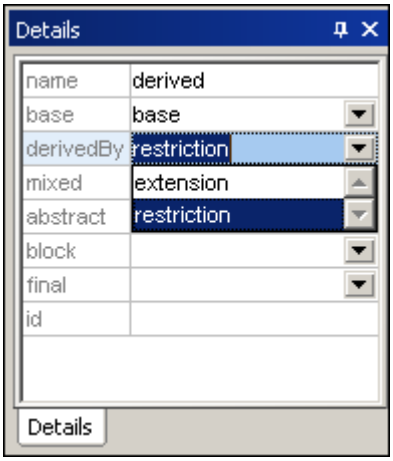
The example that follows illustrates the features of Smart Restrictions.

The following complex type is the base type used in this example:

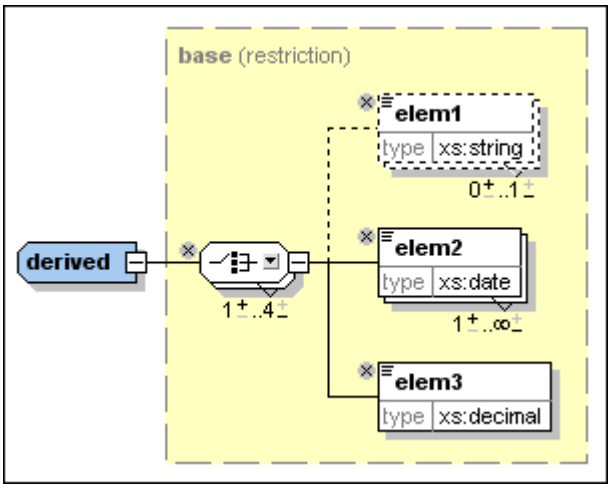


The complex type "derived" is derived from the "base" type as follows:

1. Create a new complex type in the schema and call it "derived".
2. In the Details Entry Helper select "base" from the **base** drop-down list and "restriction" from the **derivedBy** drop-down list.

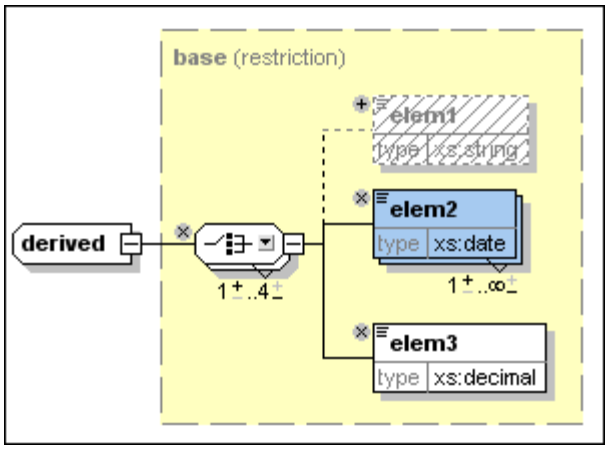


With Smart Restrictions switched on, the new derived type looks like this:

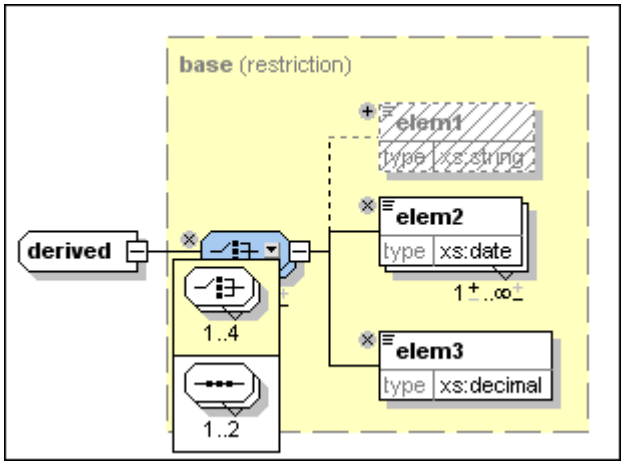


Notice the following controls that can be used to restrict the derived type in this example:

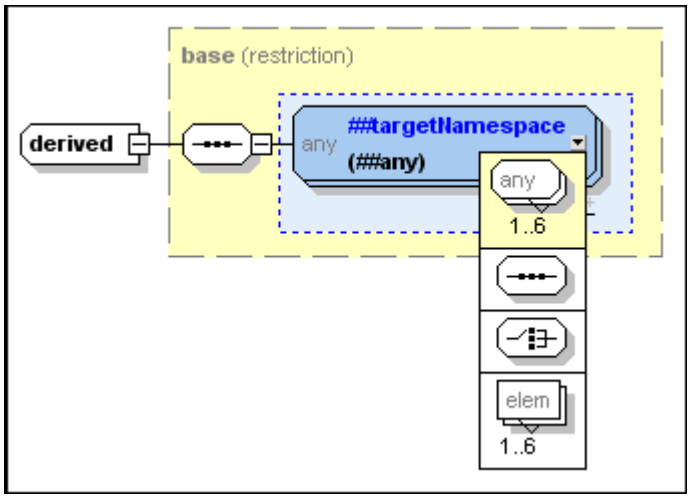
- Use this icon  to remove elements that are in the base type from the derived type. Here, elem1 has been deleted. To add it again, click this icon  .



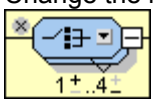
- Click the down arrow on the Choice compositor  to get the following list, which allows you to change the Choice model group to a Sequence model group:

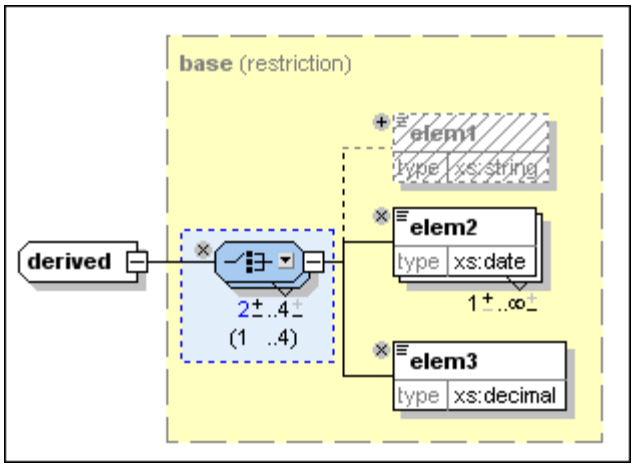


It is also possible to change wildcards in the same way, as seen in this example:



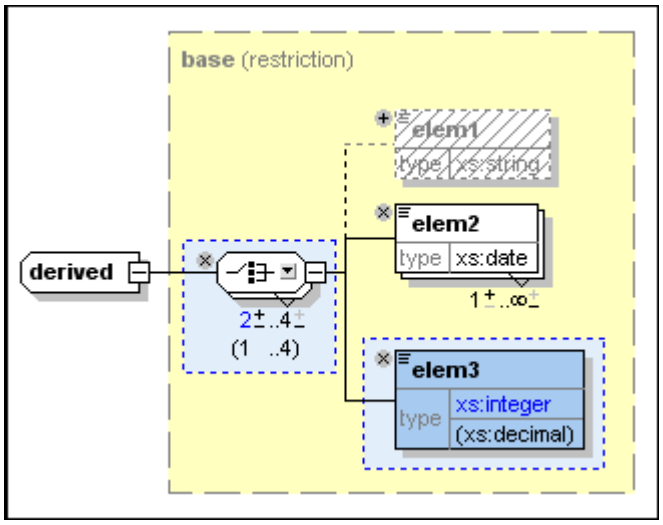
For a complete list of which particles can be replaced by which other particles, see the XML schema specification.

- Change the number of occurrences of the model group using the following control  to increase the minimum number of occurrences by clicking the plus sign over the "1", or to decrease the maximum number of occurrences by clicking the minus sign under "4". These controls are shown if the occurrence range in the base describes a real range (e.g., 2-5) and not a certain amount (e.g. 4-4). They are also displayed if the occurrence range is wrong.

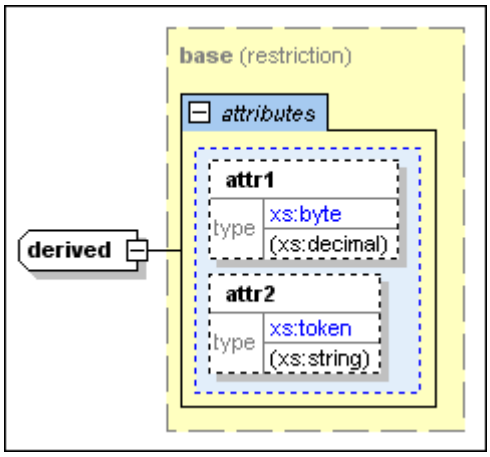


Here you can see that the minimum occurrence for this element has been changed to 2. Notice that the model group now has a blue background, which means that it is no longer the same as the model group in the base complex type. Also, the permitted occurrence range of the model group in the base particle is now displayed in parentheses.

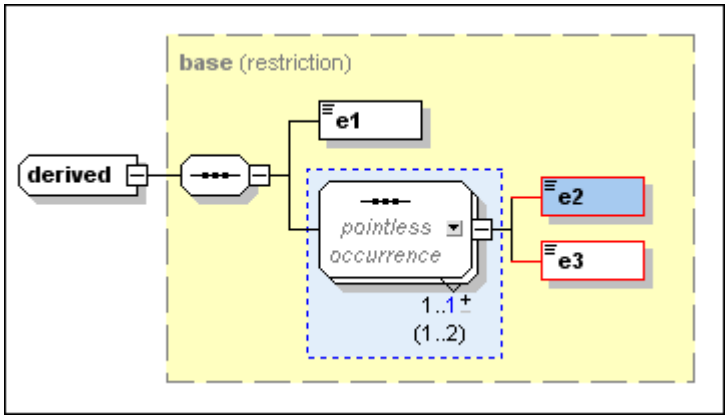
- It is possible to change the data types of attributes or elements if the new data type is a valid restriction of the base data type as defined in the XML schema specification. For example, you can change the data type of elem3 in the "derived" data type from decimal to integer. After you do this, the element has a blue background to show that is different from the element in the base type, and the type that the element has in the base type is displayed in parentheses:



This example shows attributes whose data types have been restricted in the derived complex type:



- Smart Restrictions alert you to *pointless occurrences* in the content model. A pointless occurrence happens, for example, when a sequence that is present in the content model is unnecessary. This example shows a pointless occurrence:



Please note: Pointless occurrences are only shown if the content model contains an error. It is possible for a content model to contain a pointless occurrence and be valid,

in which case the pointless occurrence is not explicitly shown in order to avoid confusion.

See the XML schema specification for more information about pointless occurrences.

4.3.7 xml:base, xml:id, xml:lang, xml:space

The namespace `http://www.w3.org/XML/1998/namespace` is, according to the XML Namespaces specification, bound by definition to the `xml:` prefix. What this means is that this is the namespace that must be used with the `xml:` prefix and that is reserved for it. There are four attributes in this namespace that can be children of any XML element in any XML document (schema or instance):

- `xml:base` (for setting the base URI of an element)
- `xml:id` (for specifying the unique ID of an element)
- `xml:lang` (for identifying the language used within that element)
- `xml:space` (for specifying how whitespace in the element should be handled)

In Schema View, once the XML Namespaces namespace has been imported into the XML Schema document, these four `xml:` attributes can be referenced for use on any element in the schema.

In order to declare one of these attributes on an element, do the following:

1. Declare the XML Namespaces namespace for that schema document and bind the namespace to the `xml:` prefix. When any of the four `xml:` attributes is used in the document, its name would then be expanded to include the correct namespace part.
2. Import the XML Namespaces namespace. XMLSpy's validator will recognize the namespace and make the four `xml:` attributes available as global attributes, which can be referenced within that schema.
3. Insert the required `xml:` attribute as the child of an element. The attribute is declared as a reference to the "imported" global attribute.

Declare the XML Namespaces namespace

You can declare the XML Namespaces namespace (`http://www.w3.org/XML/1998/namespace`) by entering it via the Schema Settings dialog, where all namespaces declared for that schema are stored and can be edited. The namespace must be bound to the `xml:` prefix. (Alternatively, you could declare the namespace (with the `xml:` prefix) on the `xs:schema` element in Text View.)

Import the XML Namespaces namespace

In Schema Overview, create a global import declaration for the XML Namespaces namespace.

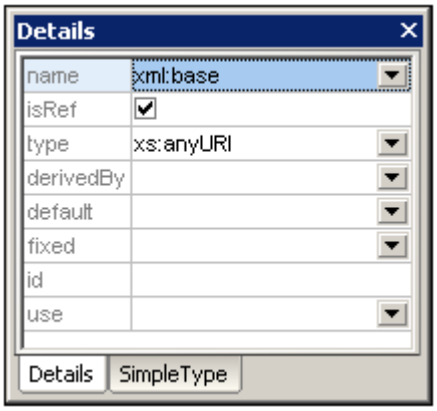
Do this by clicking the Insert  or Append  icon at the top of the Schema Overview window and selecting **Import** from the menu that pops up. Enter the XML Namespaces namespace as the namespace to be imported. In Text View, the import declaration should look like this:

```
<xs:import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="http://www.w3.org/XML/1998/namespace"/>.
```

Adding the `xml:` attribute

In Schema Overview, select the element for which the `xml:` attribute is to be added, and add an attribute for it. In the Details entry helper (*screenshot below*), click the down arrow of the name

combo box and select the required `xml:` attribute, for example `xml:base`. When you are prompted whether you wish to reference the global attribute, click **Yes**. The attribute is added as a reference.



XInclude and `xml:base`
When XInclude's `include` element is replaced by the XML file specified in the `href` attribute of the include element, the top-level element of the parsed XML document is included with an `xml:base` attribute. If this XML document is going to be validated, then the schema must define an xml:base attribute on the relevant element/s.

4.3.8 Back and Forward: Moving through Positions

The **Back** and **Forward** commands in Schema View enable you to move through previously viewed positions in Schema View. This is useful because, while clicking through schema components in Schema View, you might wish to view a previously viewed component. Clicking the **Back** button once in the toolbar takes you to the previously viewed position. By repeatedly clicking the **Back** button, you can view up to 500 of the last visited positions. After moving back through previous positions, you can move forward through these positions by using the **Forward** button in the toolbar.

The shortcut keys for the two commands are:

-  ***Back:*** **Alt + Left Arrow**
-  ***Forward:*** **Alt + Right Arrow**

Back/Forward versus Undo/Redo
Note that the **Back** and **Forward** commands are not the same as the **Undo (Ctrl+Z)** and **Redo (Ctrl+Y)** commands. These two sets of commands make up two different series of steps. Clicking the **Back** command once takes you to the previously viewed component as previously displayed. Clicking the **Undo** command once undoes the last editing change regardless of when that editing change was made.

Additional notes
Note the following points:

- The **Back** button enables you to re-view the previous 500 positions.

- The Back/Forward feature is enabled across schemas. If a schema has since been closed or is currently open in another view, it will be opened in Schema View or switched to Schema View, respectively.
- If a component that was viewed in a previous position is deleted, then that component will not be able to be viewed. If such a component was part of a previous position, this position will be displayed without the deleted component. If the component comprised the entire position, the entire position will be unavailable, and clicking the **Back** button at this point in the Back series will take you to the position previous to the unavailable position.

4.4 Authentic View

Authentic View is enabled by clicking the Authentic tab of the active document. If no SPS has been assigned to the XML document, you are prompted to assign one. You can assign an SPS at any time via the **Authentic | Assign a Stylevision Stylesheet** command.

This section provides:

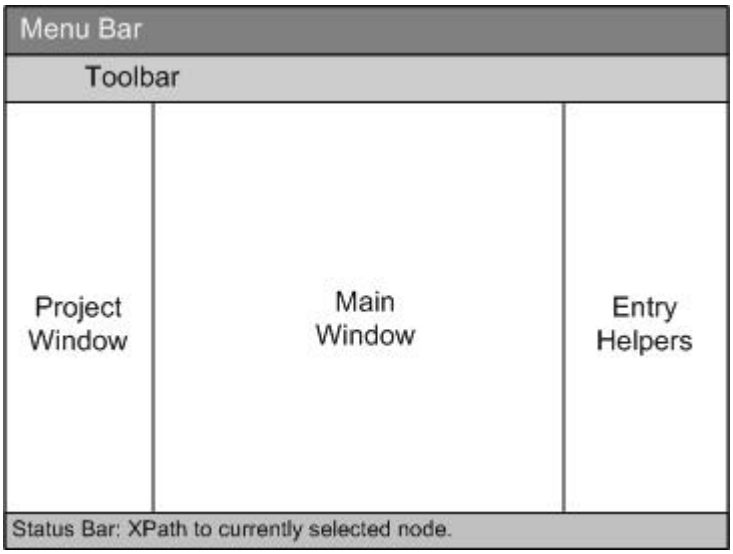
- An overview of the interface
- A description of the toolbar icons specific to Authentic View
- A description of viewing modes available in the main Authentic View window
- A description of the Entry Helpers and how they are to be used
- A description of the context menus available at various points in the Authentic View of the XML document

Additional sources of Authentic View information are:

- An Authentic View Tutorial, which shows you how to use the Authentic View interface. This tutorial is available in the documentation of the Altova XMLSpy and Altova Authentic Desktop products (see the Tutorials section), as well as online.
- For a detailed description of Authentic View menu commands, see the User Reference section of your product documentation.

4.4.1 Overview of the GUI

Authentic View has a menu bar and toolbar running across the top of the window, and three areas that cover the rest of the interface: the Project Window, Main Window, and Entry Helpers Window. These areas are shown below.



Menu bar
The menus available in the menu bar are described in detail in the User Reference section of your product documentation.

Toolbar
The symbols and icons displayed in the toolbar are described in the section, Authentic View

toolbar icons.

Project window
You can group XML, XSL, XML schema, and Entity files together in a project. To create and modify the list of project files, use the commands in the **Project** menu (described in the User Reference section of your product documentation). The list of project files is displayed in the Project window. A file in the Project window can be accessed by double-clicking it.

Main window
This is the window in which the XML document is displayed and edited. It is described in the section, Authentic View main window.

Entry helpers
There are three entry helper windows in this area: Elements, Attributes, and Entities. What entries appear in these windows (Elements and Attributes Entry Helpers) are context-sensitive, i.e. it depends on where in the document the cursor is. You can enter an element or entity into the document by double-clicking its entry helper. The value of an attribute is entered into the value field of that attribute in the Attributes Entry Helper. See the section Authentic View Entry Helpers for details.

Status Bar
The Status Bar displays the XPath to the currently selected node.

Context menus
These are the menus that appear when you right-click in the Main Window. The available commands are context-sensitive editing commands, i.e. they allow you to manipulate structure and content relevant to the selected node. Such manipulations include inserting, appending, or deleting a node, adding entities, or cutting and pasting content.

4.4.2 Authentic View Toolbar Icons

Icons in the Authentic View toolbar are command shortcuts. Some icons will already be familiar to you from other Windows applications or Altova products, others might be new to you. This section describes icons unique to Authentic View. In the description below, related icons are grouped together.

Show/hide XML markup
In Authentic View, the tags for all, some, or none of the XML elements or attributes can be displayed, either with their names (large markup) or without names (small markup). The four markup icons appear in the toolbar, and the corresponding commands are available in the **Authentic** menu.

Hide markup. All XML tags are hidden except those which have been collapsed. Double-clicking on a collapsed tag (which is the usual way to expand it) in Hide markup mode will cause the node's content to be displayed and the tags to be hidden.

Show small markup. XML element/attribute tags are shown without names.

Show large markup. XML element/attribute tags are shown with names.

Show mixed markup. In the StyleVision Power Stylesheet, each XML element or attribute can be specified to display (as either large or small markup), or not to display at all. This is called mixed markup mode since some elements can be specified to be displayed with markup and some without markup. In mixed markup mode, therefore, the Authentic View user sees a customized markup. Note, however, that this customization is created by the person who has designed the StyleVision Power Stylesheet. It cannot be defined by the Authentic View user.

Editing dynamic table structures
Rows in a **dynamic SPS table** are repetitions of a data structure. Each row represents an occurrence of a single element. Each row, therefore, has the same XML substructure as the next.

The dynamic table editing commands manipulate the rows of a dynamic SPS table. That is, you can modify the number and order of the element occurrences. You cannot, however, edit the columns of a dynamic SPS table, since this would entail changing the substructure of individual element occurrences.

The icons for dynamic table editing commands appear in the toolbar, and are also available in the **Authentic** menu.

Append row to table

Insert row in table

Duplicate current table row (i.e. cell contents are duplicated)

Move current row up by one row

Move current row down by one row

Delete the current row

Please note: These commands apply only to **dynamic SPS tables**. They should not be used inside static SPS tables. The various types of tables used in Authentic View are described in the Using tables in Authentic View section of this documentation.

Creating and editing XML tables
You can insert your own tables should you want to present your data as a table. Such tables are inserted as XML tables. You can modify the structure of an XML table, and format the table. The icons for creating and editing XML tables are available in the toolbar, and are shown below. They are described in the section XML table editing icons.

The commands corresponding to these icons are **not available as menu items**. Note also that

for you to be able to use XML tables, this function must be enabled and suitably configured in the StyleVision Power Stylesheet.

A detailed description of the types of tables used in Authentic View and of how XML tables are to be created and edited is given in Using tables in Authentic View.

Text formatting icons
Text in Authentic View is formatted by applying to it an XML element or attribute that has the required formatting. If such formatting has been defined, the designer of the StyleVision Power Stylesheet can provide icons in the Authentic View toolbar to apply the formatting. To apply text formatting using a text formatting icon, highlight the text you want to format, and click the appropriate icon.

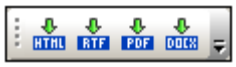
DB Row Navigation icons

 The arrow icons are, from left to right, Go to First Record in the DB; Go to Previous Record; Open Go to Record # dialog; Go to Next Record; and Go to Last Record.

 This icon opens the Edit Database Query dialog in which you can enter a query. Authentic View displays the queried record/s.

XML database editing
The **Select New Row with XML Data for Editing** command enables you to select a new row from the relevant table in an XML DB, such as IBM DB2. This row appears in Authentic View, can be edited there, and then saved back to the DB.

Portable XML Form (PXF) toolbar buttons
The following PXF toolbar buttons are available in the Authentic View of XMLSpy and Authentic Desktop:



Clicking the individual buttons generates HTML, RTF, PDF, and/or DocX output.

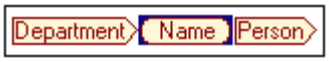
These buttons are enabled when a PXF file is opened in Authentic View. Individual buttons are enabled if the PXF file was configured to contain the XSLT stylesheet for that specific output format. For example, if the PXF file was configured to contain the XSLT stylesheets for HTML and RTF, then only the toolbar buttons for HTML and RTF output will be enabled while those for PDF and DocX (Word 2007+) output will be disabled.

4.4.3 Authentic View Main Window

There are four viewing modes in Authentic View: Large Markup; Small Markup; Mixed Markup; and Hide All Markup. These modes enable you to view the document with varying levels of markup information. To switch between modes, use the commands in the **Authentic** menu or the icons in the toolbar (see the previous section, Authentic View toolbar icons).

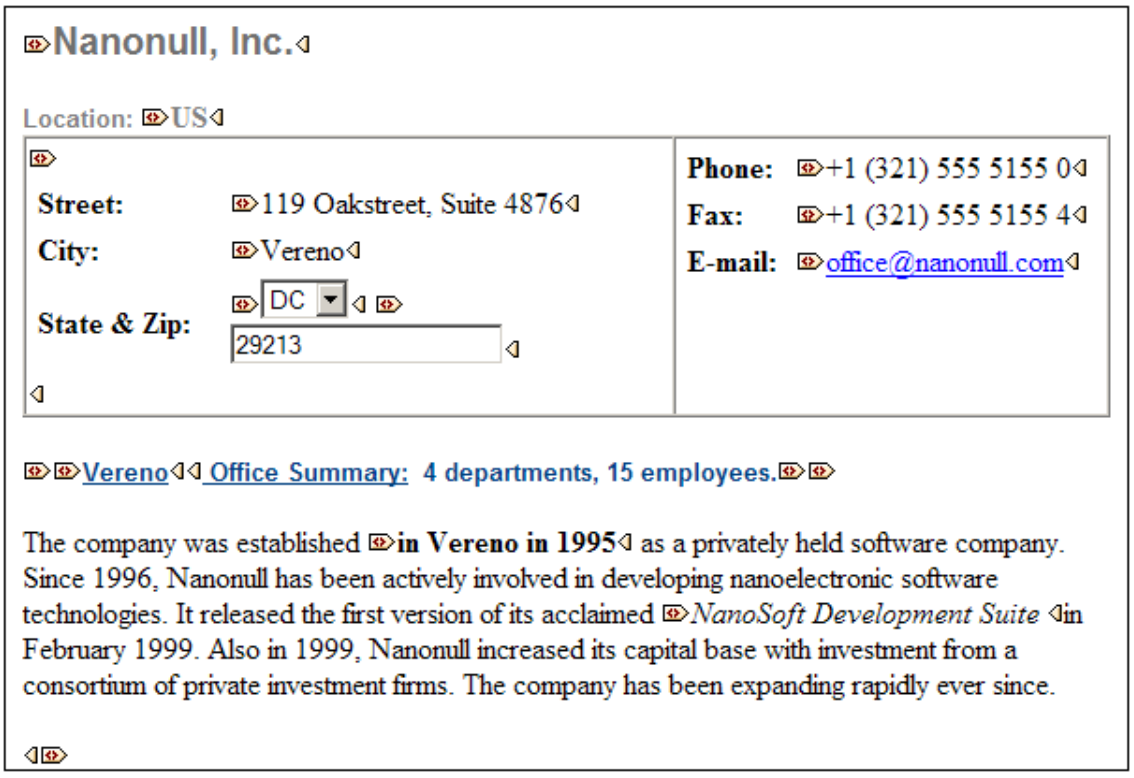
Large markup
This shows the start and end tags of elements and attributes with the element/attribute names in the tags:

The element `Name` in the figure above is **expanded**, i.e. the start and end tags, as well as the content of the element, are shown. An element/attribute can be **contracted** by double-clicking either its start or end tag. To expand the contracted element/attribute, double-click the contracted tag.



In large markup, attributes are recognized by the equals-to symbol in the start and end tags of the attribute:

Small markup
This shows the start and end tags of elements/attributes without names:



Notice that start tags have a symbol inside it while end tags are empty. Also, element tags have an angular-brackets symbol while attribute tags have and equals sign as its symbol (*see screenshot below*).

To collapse or expand an element/attribute, double-click the appropriate tag. The example below shows a collapsed element (highlighted in blue). Notice the shape of the tag of the collapsed element and that of the start tag of the expanded element to its left.

Mixed markup
Mixed markup shows a customized level of markup. The person who has designed the StyleVision Power Stylesheet can specify either large markup, small markup, or no markup for individual elements/attributes in the document. The Authentic View user sees this customized markup in mixed markup viewing mode.

Hide all markup
All XML markup is hidden. Since the formatting seen in Authentic View is the formatting of the printed document, this viewing mode is a WYSIWYG view of the document.

Content display
In Authentic View, content is displayed in two ways:

- Plain text. You type in the text, and this text becomes the content of the element or the value of the attribute.

- Data-entry devices. The display contains either an input field (text box), a multiline input field, combo box, check box, or radio button. In the case of input fields and multiline input fields, the text you enter in the field becomes the XML content of the element or the value of the attribute.

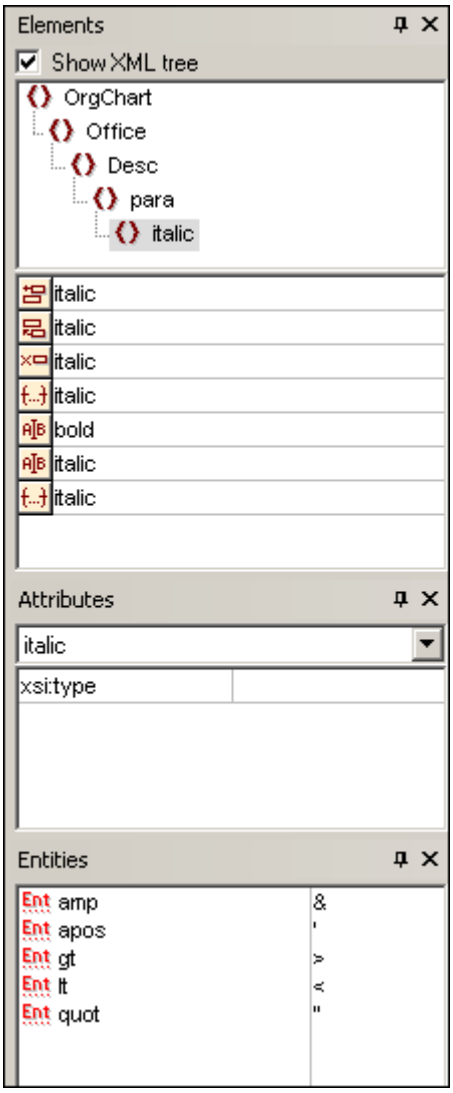
  In the case of the other data-entry devices, your selection produces a corresponding XML value, which is specified in the StyleVision Power Stylesheet. Thus, in a combo box, a selection of, say, "approved" (which would be available in the dropdown list of the combo box) could map to an XML value of "1", or to "approved", or anything else; while "not approved" could map to "0", or "not approved", or anything else.

Optional nodes
When an element or attribute is **optional** (according to the referenced schema), a prompt of type `add [element/attribute]` is displayed:

Clicking the prompt adds the element, and places the cursor for data entry. If there are multiple optional nodes, the prompt `add...` is displayed. Clicking the prompt displays a menu of the optional nodes.

4.4.4 Authentic View Entry Helpers

There are three entry helpers in Authentic View: for Elements, Attributes, and Entities. They are displayed as windows down the right side of the Authentic View interface (*see screenshot below*).



The Elements and Attributes Entry Helpers are context-sensitive, i.e. what appears in the entry helper depends on where the cursor is in the document. The entities displayed in the Entities Entry Helper are not context-sensitive; all entities allowed for the document are displayed no matter where the cursor is.

Each of the entry helpers is described separately below.

Elements Entry Helper

The Elements Entry Helper consists of two parts:

- The upper part, containing an XML tree that can be toggled on and off using the **Show XML tree** check box. The XML tree shows the ancestors up to the document's root element for the current element. When you click on an element in the XML tree,

elements corresponding to that element (as described in the next item in this list) appear in the lower part of the Elements Entry Helper.

- The lower part, containing a list of the nodes that can be inserted within, before, and after; removed; applied to or cleared from the selected element or text range in Authentic View. What you can do with an element listed in the Entry Helper is indicated by the icon to the left of the element name in the Entry Helper. The icons that occur in the Elements Entry Helper are listed below, together with an explanation of what they mean.

To use node from the Entry Helper, click its icon.

Insert After Element
The element in the Entry Helper is inserted after the selected element. Note that it is appended at the correct hierarchical level. For example, if your cursor is inside a `//sect1/para` element, and you append a `sect1` element, then the new `sect1` element will be appended not as a following sibling of `//sect1/para` but as a following sibling of the `sect1` element that is the parent of that `para` element.

Insert Before Element
The element in the Entry Helper is inserted before the selected element. Note that, just as with the Append After Element command, the element is inserted at the correct hierarchical level.

Remove Element
Removes the element and its content.

Insert Element
An element from the Entry Helper can also be inserted within an element. When the cursor is placed within an element, then the allowed child elements of that element can be inserted. Note that allowed child elements can be part of an elements-only content model as well as a mixed content model (text plus child elements).

An allowed child element can be inserted either when a text range is selected or when the cursor is placed as an insertion point within the text.

- When a text range is selected and an element inserted, the text range becomes the content of the inserted element.
- When an element is inserted at an insertion point, the element is inserted at that point.

After an element has been inserted, it can be cleared by clicking either of the two Clear Element icons that appear (in the Elements Entry Helper) for these inline elements. Which of the two icons appears depends on whether you select a text range or place the cursor in the text as an insertion point (see below).

Apply Element
If you select an element in your document (by clicking either its start or end tag in the Show large markup view) and that element can be replaced by another element (for example, in a mixed content element such as `para`, an `italic` element can be replaced by the `bold` element), this icon indicates that the element in the Entry Helper can be applied to the selected (original) element. The **Apply Element** command can also be applied to a text range within an

element of mixed content; the text range will be created as content of the applied element.

- If the applied element has a **child element with the same name** as a child of the original element and an instance of this child element exists in the original element, then the child element of the original is retained in the new element's content.
- If the applied element has **no child element with the same name** as that of an instantiated child of the original element, then the instantiated child of the original element is appended as a sibling of any child element or elements that the new element may have.
- If the applied element has **a child element for which no equivalent exists** in the original element's content model, then this child element is not created directly but Authentic View offers you the option of inserting it.

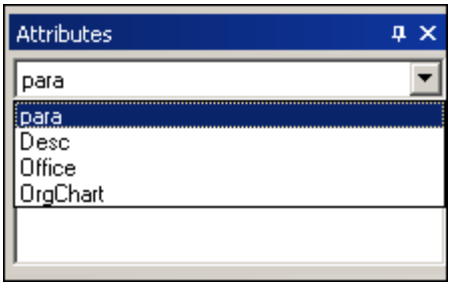
If a text range is selected rather than an element, applying an element to the selection will create the applied element at that location with the selected text range as its content. Applying an element when the cursor is an insertion point is not allowed.

Clear Element (when range selected)
This icon appears when text within an element of mixed content is selected. Clicking the icon clears the element from around the selected text range.

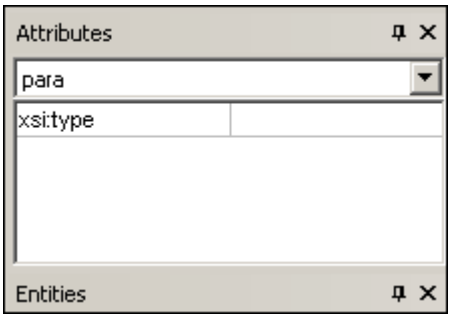
Clear Element (when insertion point selected)
This icon appears when the cursor is placed within an element that is a child of a mixed-content element. Clicking the icon clears the inline element.

Attributes Entry Helper
The Attributes Entry Helper consists of a drop-down combo box and a list of attributes. The element that you have selected (you can click the start or end tag, or place the cursor anywhere in the element content to select it) appears in the combo box.

The Attributes Entry Helper shown in the figures below has a `para` element in the combo box. Clicking the arrow in the combo box drops down a list of all the `para` element's **ancestors up to the document's root element**, which in this case is `OrgChart`.



Below the combo box, a list of valid attributes for that element is displayed, in this case for `para` . If an attribute is mandatory on a given element, then it appears in bold. (In the example below, there are no mandatory attributes except the built-in attribute `xsi:type`.)



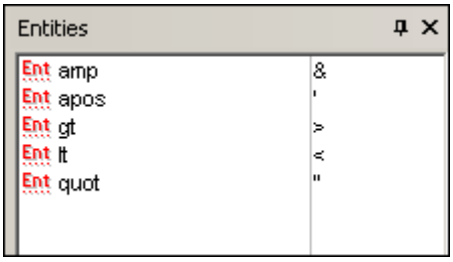
To enter a value for an attribute, click in the value field of the attribute and enter the value. This creates the attribute and its value in the XML document.

In the case of the `xsi:nil` attribute, which appears in the Attributes Entry Helper when a nillable element has been selected, the value of the `xsi:nil` attribute can only be entered by selecting one of the allowed values (`true` or `false`) from the dropdown list for the attribute's value.

The `xsi:type` attribute can be changed by clicking in the value field of the attribute and then selecting, from the dropdown list that appears, one of the listed values. The listed values are the available abstract types defined in the XML Schema on which the Authentic View document is based.

Entities Entry Helper

The Entities Entry Helper allows you to insert an entity in your document. Entities can be used to insert special characters or text fragments that occur often in a document (such as the name of a company). To insert an entity, place the cursor at the point in the text where you want to have the entity inserted, then double-click the entity in the Entities Entry Helper.



Note: An internal entity is one that has its value defined within the DTD. An external entity is one that has its value contained in an external source, e.g. another XML file. Both internal and external entities are listed in the Entities Entry Helper. When you insert an entity, whether internal or external, the entity—not its value—is inserted into the XML text. If the entity is an internal entity, Authentic View displays **the value of the entity**. If the entity is an external entity, Authentic View displays the entity—and not its value. This means, for example, that an XML file that is an external entity will be shown in the Authentic View display as an entity; its content does not replace the entity in the Authentic View display.

You can also **define your own entities** in Authentic View and these will also be displayed in the entry helper: see Define Entities in the Editing in Authentic View section.

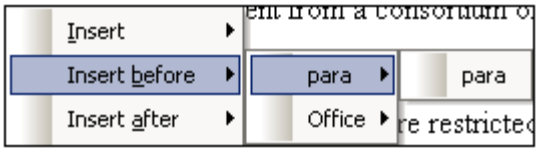
4.4.5 Authentic View Context Menus

Right-clicking on some selected document content or node pops up a context menu with commands relevant to the selection or cursor location.

Inserting elements

The figure below shows the **Insert** submenu, which is a list of all elements that can be inserted at that current cursor location. The **Insert Before** submenu lists all elements that can be inserted before the current element. The **Insert After** submenu lists all elements that can be inserted after the current element. In the figure below, the current element is the `para` element. The `bold` and `italic` elements can be inserted within the current `para` element.

As can be seen below, the `para` and `Office` elements can be inserted before the current `para` element.



The node insertion, replacement (**Apply**), and markup removal (**Clear**) commands that are available in the context menu are also available in the Authentic View entry helpers and are fully described in that section.

Insert entity

Positioning the cursor over the Insert Entity command rolls out a submenu containing a list of all declared entities. Clicking an entity inserts it a the selection. See Define Entities for a description of how to define entities for the document.

Insert CDATA Section

This command is enabled when the cursor is placed within text. Clicking it inserts a CDATA section at the cursor insertion point. The CDATA section is delimited by start and end tags; to see these tags you should switch on large or small markup. Within CDATA sections, XML markup and parsing is ignored. XML markup characters (the ampersand, apostrophe, greater than, less than, and quote characters) are not treated as markup, but as literals. So CDATA sections are useful for text such as program code listings, which have XML markup characters.

Remove node

Positioning the mouse cursor over the **Remove** command pops up a menu list consisting of the selected node and all its removable ancestors (those that would not invalidate the document) up to the document element. Click the element to be removed. This is a quick way to delete an element or any removable ancestor. Note that clicking an ancestor element will remove all its descendants, including the selected element.

Clear

The **Clear** command clears the element markup from around the selection. If the entire node is

selected, then the element markup is cleared for the entire node. If a text segment is selected, then the element markup is cleared from around that text segment only.

Apply
The **Apply** command applies a selected element to your selection in the main Window. For more details, see Authentic View entry helpers.

Copy, Cut, Paste
These are the standard Windows commands. Note, however, that the **Paste** command pastes copied text either as XML or as Text, depending on what the designer of the stylesheet has specified for the SPS as a whole. For information about how the **Copy as XML** and **Copy as Text** commands work, see the description of the **Paste As** command immediately below.

Paste As
The **Paste As** command offers the option of pasting as XML or as text an Authentic View XML fragment (which was copied to the clipboard). If the copied fragment is pasted as XML it is pasted together with its XML markup. If it is pasted as text, then only the text content of the copied fragment is pasted (not the XML markup, if any). The following situations are possible:

- An ***entire node together with its markup tags*** is highlighted in Authentic View and copied to the clipboard. (i) The node can be pasted as XML to any location where this node may validly be placed. It will not be pasted to an invalid location. (ii) If the node is pasted as text, then only the node's *text content* will be pasted (not the markup); the text content can be pasted to any location in the XML document where text may be pasted.
- A ***text fragment*** is highlighted in Authentic View and copied to the clipboard. (i) If this fragment is pasted as XML, then the XML markup tags of the text—even though these were not explicitly copied with the text fragment—will be pasted along with the text, but only if the XML node is valid at the location where the fragment is pasted. (ii) If the fragment is pasted as text, then it can be pasted to any location in the XML document where text may be pasted.

Note: Text will be copied to nodes where text is allowed, so it is up to you to ensure that the copied text does not invalidate the document. The copied text should therefore be:

(i) lexically valid in the new location (for example, non-numeric characters in a numeric node would be invalid), and
(ii) not otherwise invalidate the node (for example, four digits in a node that accepts only three-digit numbers would invalidate the node).

If the pasted text does in any way invalidate the document, this will be indicated by the text being displayed in red.

Delete
The **Delete** command removes the selected node and its contents. A node is considered to be selected for this purpose by placing the cursor within the the node or by clicking either the start or end tag of the node.

4.5 Browser View

Browser View is typically used to view:

- XML files that have an associated XSLT file. When you switch to Browser View, the XML file is transformed on the fly using the associated XSLT stylesheet and the result is displayed directly in Browser View.
- HTML files which are either created directly as HTML or created via an XSLT transformation of an XML file.

To view XML and HTML files in Browser View, click the **Browser** tab.

Note about Microsoft Internet Explorer and XSLT
Browser View requires Microsoft's Internet Explorer 5.0 or later. If you wish to use Browser View for viewing XML files transformed by an XSLT stylesheet, we strongly recommend Internet Explorer 6.0 or later, which uses MSXML 3.0, an XML parser that fully supports the XSLT 1.0 standard. You might also wish to install MSXML 4.0. Please see our Download Center for more details.(Note that support for XSLT in IE 5 is not 100% compatible with the official XSLT Recommendation. So if you encounter problems in Browser View with IE 5, you should upgrade to IE 6 or later.) You should also check the support for XSLT of your version of Internet Explorer.

Browser View features
The following features are available in Browser View. They can be accessed via the **Browser** menu, **File** menu, and **Edit** menu.

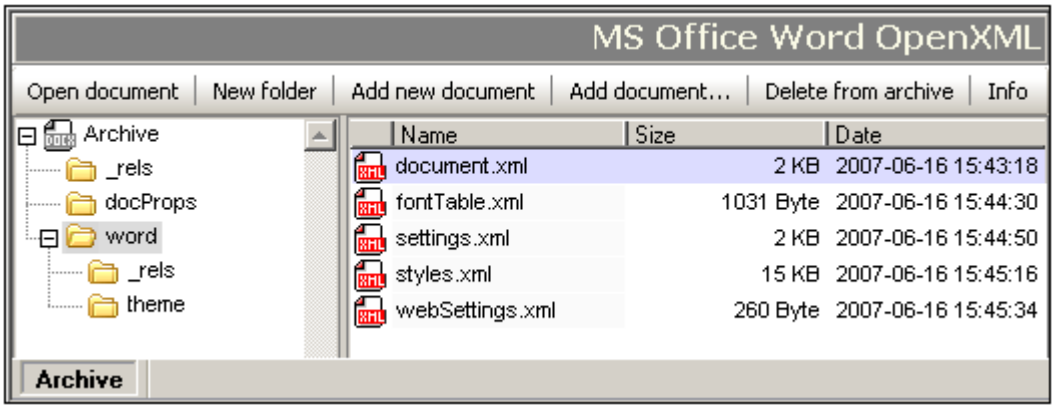
- ***Open in separate window*:** When Browser View is a separate window, it can be positioned side-by-side with an editing view of the same document. This command is in the **Browser** menu and is a toggle-command that can be used to return a separate Browser View window as a tabbed view. In the View tab of the Options dialog, you can set whether Browser View should, by default, be a separate window.
- ***Forward* and *Back*:** The common browser commands to navigate through pages that were loaded in Browser View. These commands are in the **Browser** menu.
- ***Font size:*** Can be adjusted via the **Browser** menu command.
- ***Stop, Refresh, Print:*** More standard browser commands, these can be found in the **Browser** and **File** menus.
- ***Find:*** Enables searches for text strings, this command is in the **Edit** menu.

4.6 Archive View

An Office Open XML (OOXML) file, ZIP file (for example, WinZip or WinRAR), or EPUB file can be opened and edited in Archive View. Not only can OOXML, ZIP, and EPUB archives be structurally modified in Archive View, but individual files in the archive can be opened from Archive View, edited in one of XMLSpy's editing views, and then saved directly back to the archive.

Archive files and Archive View

When an archive file (OOXML, ZIP, or EPUB file) is created or opened in XMLSpy, it is opened in Archive View (*screenshot below*). Multiple archive files can be open at a time, with each archive file being in a separate Archive View window. The type of the archive file appears in the top right-hand corner of Archive View. In the screenshot below, the type of the archive file is MS Office Word Open XML.



Folder View

The Folder View is located on the left-hand side of the Archive View window and displays the folder structure of the zipped archive. On each level, folders are listed alphabetically. To view the sub-folders of a folder, click the plus symbol to the left of the folder. If a folder does not have a plus symbol to the left of it, then it has no sub-folder. To view the document files (hereafter called documents) contained in a folder, select the folder; the files will be displayed in the Main Window. In the screenshot above, the documents displayed in the Main Window are in the `word` folder, which also has two sub-folders: `_rels` and `theme`.

Main Window

The Main Window lists the documents in the folder that is selected in Folder View. Documents are displayed in alphabetical order, each with its respective uncompressed size and the date and time of last modification. To open a Document from Archive View, double-click it. The document opens in a separate XMLSpy window.

Command buttons

The command buttons are located along the top of the Archive View window.

- ***Open document:*** Enabled when a document in the Main Window is selected. Clicking it opens the selected document. A document can also be opened by double-clicking the document listing in the Main Window.
- ***New folder:*** Adds a new folder to the folder that is currently selected in Folder View. The folder must be named immediately upon its being created in Folder View. It is not possible to rename a folder subsequently. The new folder is saved in the archive when

the archive file is saved.

- ***Add new document:*** Adds a new document to the folder currently selected in Folder View. Clicking this button opens the Create New Document dialog of XMLSpy. The newly created document opens in a separate XMLSpy window. The document must be named immediately upon its being listed in the document listing of the selected folder. The document is saved in the archive only when it is saved in its own editing window or when the archive file is saved.
- ***Add document:*** Opens a Browse dialog in which you can browse for a document to add. The document is added to the listing in the Main Window of documents currently in the selected folder, and the document is opened in a separate XMLSpy window. For the document to be saved to the archive, it must either be saved in its own window, or the archive file must be saved.
- ***Delete from archive:*** Deletes the selected document (in Main Window) or selected folder (in Folder View) from the archive. The archive file must be saved in order for the deletion to take effect.
- ***Info:*** Toggles the Info Window on and off. *See below*.

Info Window

The Info Window is toggled on and off by clicking the Info command button. The Info Window provides general information about the archive file, such as the number of files it contains, its uncompressed and compressed sizes, and the compression ratio.

5 XML

This section describes how to work with XML documents in XMLSpy. It covers the following aspects:

- How to create, open, and save XML documents. In this section, some important XMLSpy settings relating to file creation are also explained.
- XML documents can be edited in Text View, Grid View, and Authentic View. You can select the view that is most useful for you and switch among the views while editing. Each of the views offers different advantages.
- Entry helpers for XML documents have certain specific features, and these are described.
- How to process XML documents with XSLT and XQuery. Various XMLSpy features related to processing are explained.
- Miscellaneous other features for working with XML documents are described.

Altova website:  XML Editor

5.1 Creating, Opening, and Saving XML Documents

When creating, opening, or saving XML documents, the following issues are involved:

- In what view will the XML document open: Text View, Grid View, or Authentic View
- When a new XML document is created, whether a schema (XML Schema or DTD) will be automatically assigned, manually assigned, or not assigned
- If a schema is assigned to the XML document, whether the document will be validated automatically on opening and/or saving

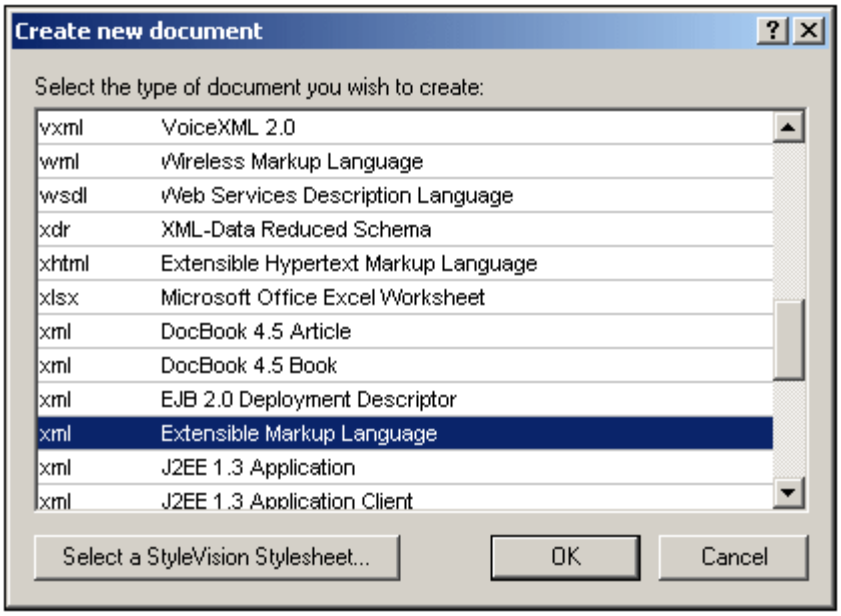
Default view
There are application-wide settings for specifying in what view XML documents (new and existing) should open. These settings are in the Options dialog (**Tools | Options**).

In the ***File Types*** tab of the Options dialog, select a file type of `.xml` and, in the Default View pane, check the required editing view (Text or Grid). Note that: (i) Schema View can be used only for XML Schema; and (ii) Browser View is a display view, not an editing view.

In the ***File Types*** tab, you can also set XMLSpy as the default editor for the selected file type.

An XML document can be edited in Authentic View if a StyleVision Power Stylesheet (SPS) has been assigned to it. When an XML file with an associated SPS is opened, you can specify that it opens directly in Authentic View. Do this by checking the *Always open in Authentic View* option in the ***View*** tab of the Options dialog. If this option is not checked, the file will open in the default view specified for `.xml` files in the ***File Types*** tab (*see above*).

Assigning schemas
When a new XML file is to be created, select the menu command **File | New**. This pops up the Create New Document dialog (*screenshot below*).



Notice that there are several options for the XML document type. The option marked *Extensible Markup Language* creates a generic XML document. Each of the other options is associated with a schema, for example the DocBook DTD. If you select one of these options, an XML document is created that has (i) the corresponding schema automatically assigned to it, and (ii)

a skeleton document structure that is valid according to the assigned schema. Note that you can create your own skeleton XML document. If you save it in the `Template` folder of the application folder, your skeleton document will be available for selection in the Create New Document dialog.

If you select the generic Extensible Markup Language document type, you will be prompted for a schema (DTD or XML Schema) to assign to the document. At this point, you can choose to browse for a schema or go ahead and create an XML document with no schema assigned to it.

You can, of course, assign a schema via the **DTD/Schema** menu at any subsequent time during editing.

Automatic validation

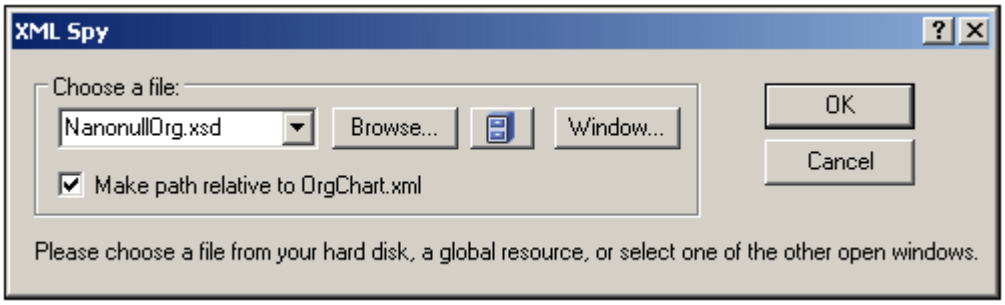
If an existing XML document has a schema assigned to it, then it can be automatically validated on opening and/or saving. The setting for this is in the ***File*** tab of the Options dialog (**Tools | Options**).

The automatic validation settings in the ***File*** tab can be combined with a setting in the File Types tab to disable automatic validation for specific file types. Using the settings in the two tabs together enables you to specify automatic validation for specific file types.

5.2 Assigning Schemas and Validating

Altova website: XML Validator, XML Validation

A schema (DTD or XML Schema) can be assigned to an XML document when it is first created. A schema can also be assigned, or changed, at any subsequent time using the **Assign DTD** or **Assign Schema** commands in the **DTD/Schema** menu.



The path to the schema file that is inserted in the XML document can be made relative by checking the relative path check box in the dialog.

Global resources for schemas

A global resource is an alias for a file or folder. The target file or folder can be changed within the GUI by changing the active configuration of the global resource (via the menu command **Tools | Active Configuration**). Global resources therefore enable the assigned schema to be switched among multiple schemas, which can be useful for testing. How to use global resources is described in the section Altova Global Resources.

XML Schema plus DTD

One very useful DTD feature that XML Schema does not have is the use of entities. However, if you wish to use entities in your XML-Schema-validated XML document, you can add a `DOCTYPE` declaration to the XML document and include your entity declarations in it.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE OrgChart [
  <!ENTITY name-int "value">
  <!ENTITY name-ext SYSTEM "extfile.xml">
]>
<OrgChart xmlns="http://www.xs.com/org"
          xsi:schemaLocation="http://www.xs.com/org OrgChart.xsd">
  ...
</OrgChart>
```

After declaring the entities in the DTD, they can be used in the XML document. The document will be well-formed and valid. Note, however, that external parsed entities are not supported in Authentic View..

Going to schema definitions

With the XML document open, you can directly open the DTD or XML Schema on which it is based by clicking the Go to DTD or Go to Schema commands in the **DTD/Schema** menu. Additionally, you can place the cursor within a node in the XML document and go to the schema definition of that node via the **Go to Definition** command in the **DTD/Schema** menu.

Validating and checking well-formedness
To validate and/or check for well-formedness, use the **Validate XML (F8)** and **Check Well-Formedness (F7)** commands in the XML menu or the corresponding commands in the toolbar. Any error is reported in the Messages window.

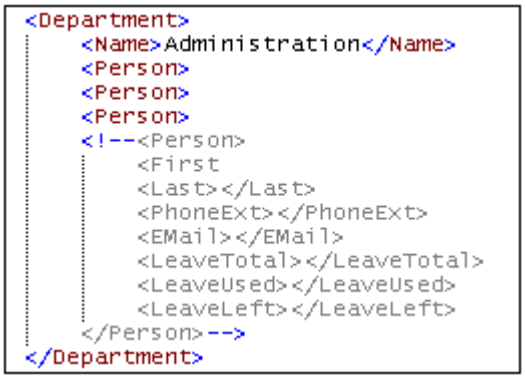
5.3 Editing XML in Text View

XMLSpy offers some specialized XML text editing features in addition to the generally available editing features in Text View, which are described in Text View in the Editing Views section.

- Commenting text in and out
- Escaping and unescaping XML characters
- Inserting file paths
- Inserting XML fragments via XInclude
- Copying XPath and XPointer expressions to the clipboard

Commenting text in/out
Text in an XML document can be commented out using the XML start-comment and end-comment delimiters, respectively <! -- and -->. In XMLSpy, these comment delimiters can be easily inserted using the **Edit | Comment In/Out** menu command.

To comment out a block of text, select the text to be commented out and then select the command **Comment In/Out**, either from the **Edit** menu or the context menu that you get on right-clicking the selected text. The commented text will be grayed out (*see screenshot below*).



To uncomment a commented block of text, select the commented block **excluding** the comment delimiters, and select the command **Comment In/Out**, either from the **Edit** menu or the context menu that you get on right-clicking the selected text. The comment delimiters will be removed and the text will no longer be grayed out.

Note about empty lines
In XML documents, empty lines are discarded when you change views or save the document. If you wish to retain empty lines, enclose them in comment delimiters.

Escaping and unescaping XML characters
The five XML special characters (*listed below*) can be escaped and unescaped with the corresponding entity references (*listed below*) by highlighting a block of text and selecting the context menu command **Escape XML Characters** or **Unescape XML Characters**. The XML special characters in that block of text will then be escaped or unescaped according to the command selected.

<	<
>	>
&	&

' '

" "

For example:

<a> can be escaped with the **Escape XML Characters** command to <a>

<a> can be unescaped with the **Unescape XML Characters** command to <a>

Inserting file paths

The **Edit | Insert File Path** command enables you to browse for the file in question and insert its file path at the selected location in the XML document being edited. This command enables you to quickly and accurately enter a file path. See the command description for more details.

Inserting XML fragments via XInclude

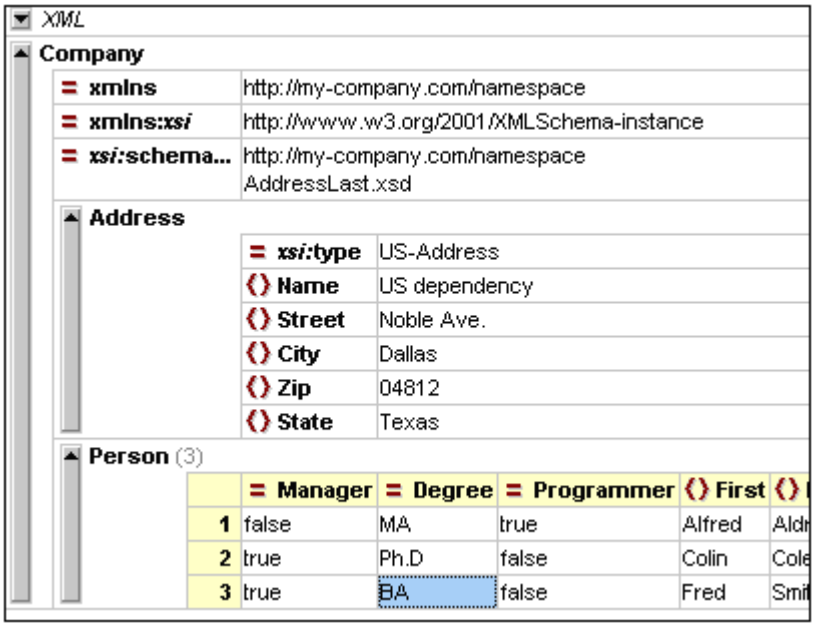
The **Edit | Insert XInclude** enables you, via XInclude, to insert the contents of an entire XML document, or a fragment of one, in the XML document being edited. This command enables you to quickly and accurately enter a file path. See the command description for more details.

Copying XPath and XPointer expressions to the clipboard

The XPath and XPointer expressions of the selected node can be copied to the clipboard using the **Edit | Copy XPath** and **Edit | Copy XPointer** commands, respectively. This enables you to obtain the correct XPath and XPointer expressions for a given node. The copied expressions can then be inserted at the required location, for example, an XPath expression in an XSLT stylesheet and an XPointer expression in the `href` attribute of an `xinclude` element. For more detailed descriptions of the commands, see their descriptions in the User Reference section.

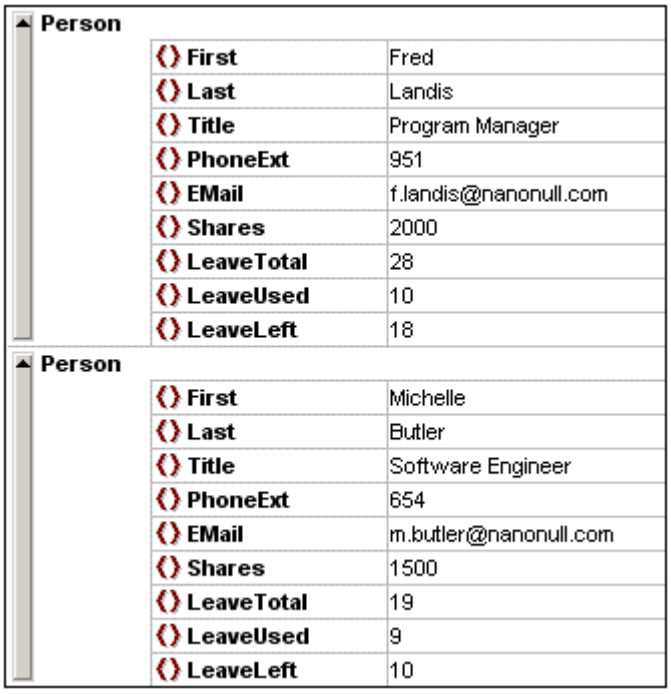
5.4 Editing XML in Grid View

Grid View shows the hierarchical structure of **XML documents** through a set of nested containers that can be expanded and collapsed. This provides a clear picture of the document's structure. In Grid View, both structure and contents can be easily manipulated.



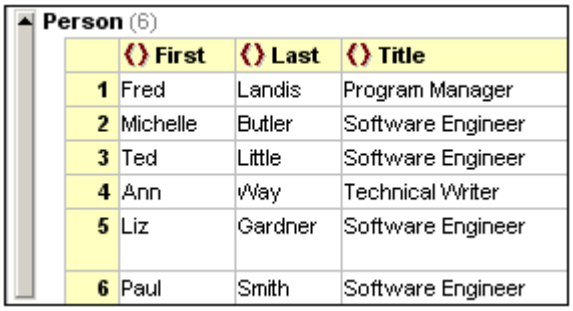
In the screenshot above, notice that the document is displayed as a hierarchy in a grid form. When a node can contains content, it is divided into two fields: for name and for content. Node names are displayed in bold face and node content in normal face.

Display as table
If there are several instances of a repeating element, then, in standard Grid View, each complete instance is displayed, one after the other, progressing vertically downward in document order (*screenshot below*).



Person		
	First	Fred
	Last	Landis
	Title	Program Manager
	PhoneExt	951
	EMail	f.landis@nanonull.com
	Shares	2000
	LeaveTotal	28
	LeaveUsed	10
	LeaveLeft	18
Person		
	First	Michelle
	Last	Butler
	Title	Software Engineer
	PhoneExt	654
	EMail	m.butler@nanonull.com
	Shares	1500
	LeaveTotal	19
	LeaveUsed	9
	LeaveLeft	10

Such a structure of multiple instances can also be displayed as a table (*screenshot below*), in which the child nodes form the columns and the multiple instances form the rows.



Person (6)

	First	Last	Title
1	Fred	Landis	Program Manager
2	Michelle	Butler	Software Engineer
3	Ted	Little	Software Engineer
4	Ann	Way	Technical Writer
5	Liz	Gardner	Software Engineer
6	Paul	Smith	Software Engineer

Table View offers a unique editing advantage in that whole rows and columns can be manipulated relative to other columns and rows in the table. This enables such operations as sorting data with respect to the value of one common child node. For example, in the screenshot above, the six `Person` elements can be sorted on the basis of their `Last` child elements via a simple GUI operation. Such an operation is much simpler than running an XSLT transformation, which would be the usual way to sort an XML nodeset.

Editing the document structure

In Grid View, the XML document structure can be edited graphically. For example, you can collapse and expand individual segments of the document structure, insert, append and delete nodes, drag-and-drop nodes to different locations, and convert one type of node to another type.

The **XML** menu offers commands to insert, append, and add empty child nodes. For example, you can add an empty child node by selecting an element and then adding an empty child element. You can then enter a name and content for the newly added node by double-clicking in the respective field (name or content field) and entering the required string.

The **Elements and Attributes entry helpers** enable you to insert, append, and add child nodes that are allowed at the selected location. For example, you select a node in the Main Window. The element and attribute nodes that may be validly inserted, appended, or added as a child at this location are listed in the Elements and Attributes entry helpers.

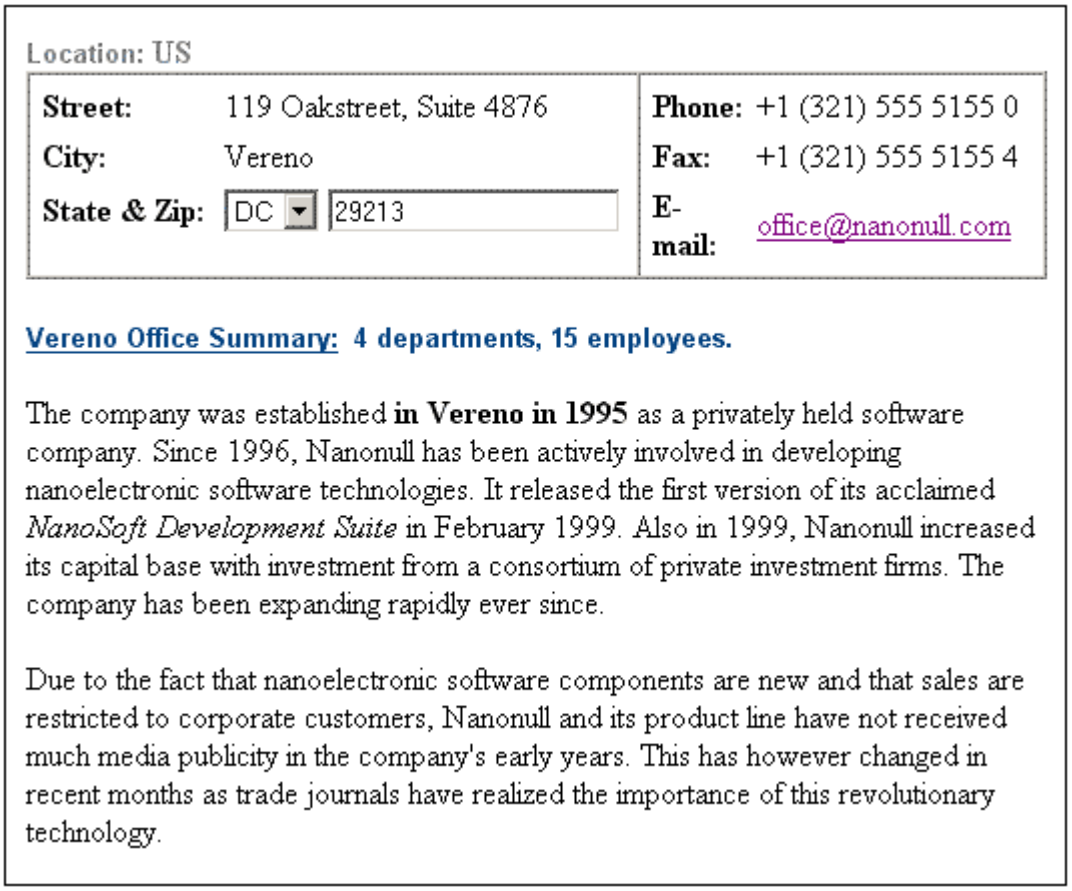
The commands available in the XML menu and entry helpers that are applicable to a selected node are also available in the context menu of that node.

Editing content
To edit content, double-click in the content field and type in the content text. Entities can be inserted via the Entities entry helper.

More about Grid View
For a more detailed description of Grid View, see under Editing Views.

5.5 Editing XML in Authentic View

Authentic View enables a user to edit an XML document as if it were a text document (*screenshot below*). The XML markup and all other non-content text can be hidden from the person editing the document. This can be useful for people who are unfamiliar with XML, enabling them to a valid XML document even while concentrating entirely on the content of the document..



The Authentic View of a document is enabled when a StyleVision Power Stylesheet (SPS) is assigned to an XML document. An SPS is based on the same schema source as that on which the XML document is based, and it defines the structure of the XML document. The SPS also defines the layout and formatting of the document in Authentic View. For example, in the document shown in the screenshot above, the following Authentic formatting and editing features are used:

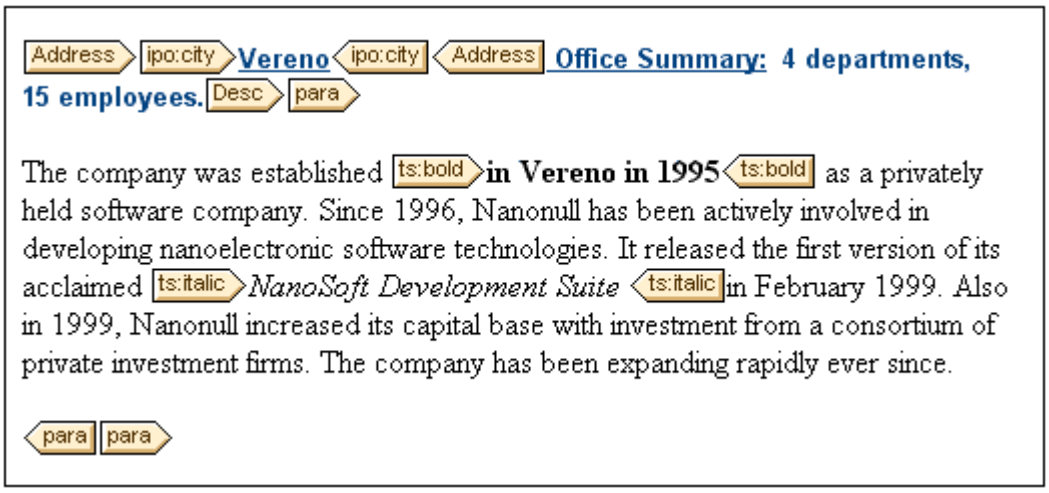
- Paragraph and other block formatting
- Table structures
- Text formatting, such as color and font face
- Combo boxes (see the State and Zip fields) enable the user to select from a group of valid choices, which can be taken from schema enumerations, as has been done in the case above
- Additional information can be calculated from the data in the document and be presented (in the example above, the office summary details have not been entered by the user but calculated from other data in the document)

SPSs are created specifically for viewing and editing XML documents in Authentic View and for

generating standard output (such as HTML, PDF, RTF, and Word 2007 documents) from XML. SPSs are created with Altova StyleVision.

Editing document structure
Valid nodes can be added to the document at any time by selecting a location and then adding the required node via the entry helpers (Elements and Attributes) or context menu. The nodes available at any given location are restricted to the nodes that can be validly added as siblings or children at the selected location. For example, when the cursor is located within a paragraph, you can append another paragraph if this is allowed by the schema.

When editing the structure of an XML document in Authentic View, it could be useful to see the markup of the document. Markup can therefore be switched on as tags (*screenshot below*) using the **Authentic | Show Large Markup** command (or the corresponding toolbar icon).



Editing content
Content is created and edited by typing it into the nodes of the document. Entities and CDATA sections can be added via the context menu (entities also via the Entities entry helper).

More about editing in Authentic View
For more details of how to edit in Authentic View, see the Authentic View section.

5.6 Entry Helpers for XML Documents

For XML documents, there are three entry helpers: Elements entry helper; Attributes entry helper; and Entities entry helper. When an element is added via the Elements entry helper, it can be added together with mandatory child elements, mandatory attributes, all child elements, or no child element or attribute, according to the respective settings in the Editing tab of the Options dialog. When empty attributes are added, they are added with quotes.

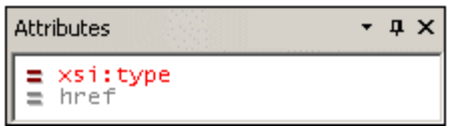
Note that in the different views, the entry helpers are designed differently, in accordance with the functionality of the respective view.

Elements entry helper
The following points should be noted:

- *Text View:* Elements are inserted at the cursor insertion point. Unused elements are displayed in red, used elements in gray. Mandatory elements are indicated with an exclamation mark "**!**" before the name of the element.
- *Grid View:* Elements can be appended after, inserted before, or added as a child of the selected element. There are therefore three tabs, each displaying the elements that may be added. Unused elements are displayed in black, used elements in gray.
- *Authentic View:* Elements can be inserted before, after, or within the selected element. Additionally, there is a document tree that shows the location of the currently selected element in the document's tree structure. For more details of how to edit in Authentic View, see the Authentic View section.

Attributes entry helper
The following points should be noted:

- *Text View:* When the cursor is placed inside the start tag of an element and after a space, the attributes declared for that element become visible. Unused attributes are displayed in red, used attributes in gray. Mandatory attributes are indicated with an exclamation mark "**!**" before the name of the attribute.



  To insert an attribute, double-click the required attribute. The attribute is inserted at the cursor point together with an equals-to sign and quotes to delimit the attribute value. The cursor is placed between the quotes, so you can start typing in the attribute value directly.
- *Grid View:* When an element is selected, the attributes that can be added as a child are listed in the Add Child tab of then entry helper. When an attribute is selected, the available attributes are listed in the Append (after) and Insert (before) tabs. Unused attributes are displayed in black, used attributes in gray.
- *Authentic View:* When an element is selected, the attributes declared for that element become visible. Enter he value of the attribute in the entry helper.

Entities entry helper
Any parsed or unparsed entity that is declared inline (within the XML document) or in an external DTD, is displayed in the Entities entry helper. In all three views (Text, Grid, and Authentic), an entity is inserted at the cursor insertion point by double-clicking it. In Grid View, entities are displayed in the Append, Insert, and Add Child tabs.

Note that if you add an internal entity, you will need to save and reopen your document before the entity appears in the Entities entry helper.

5.7 Processing with XSLT and XQuery

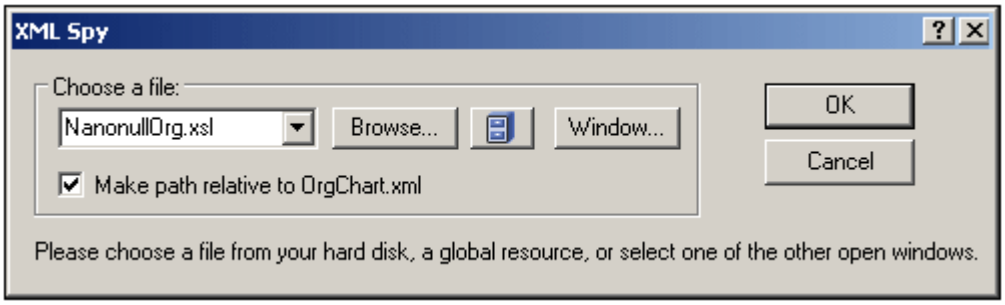
XML documents can be processed with XSLT or XQuery documents to produce output documents. XMLSpy has built-in XSLT 1.0, XSLT 2.0, and XQuery 1.0 processors. The following processing-related features are available in the GUI:

- Assigning XSLT stylesheets
- Go to XSLT
- XSLT parameters and XQuery variables
- XSLT transformations
- XQuery executions
- Automating XML tasks with AltovaXML

Assigning XSLT stylesheets

You can assign an XSLT stylesheet to an XML document via the **XSL/XQuery | Assign XSL** command (browse for the file in the dialog (*screenshot below*) that pops up). The assignment is entered in the XML document as a processing instruction (PI) having the standard XSLT target defined by the W3C: `xml-stylesheet`. This assignment is used when an XSLT transformation is invoked (**XSL/XQuery | XSL Transformation**).

Additionally, an XSLT-for-FO stylesheet can be assigned with the **XSL/XQuery | Assign XSL: FO** command (browse for the file in the dialog (*screenshot below*) that pops up). The assignment is entered in the XML document as a processing instruction (PI) having the Altova-defined target: `altova_xslfo`. This assignment is used when an XSLT-for-FO transformation is invoked (**XSL/XQuery | XS:FO Transformation**).



You can also select a global resource to specify the XSLT file. A global resource is an alias for a file or folder. The target file or folder can be changed within the GUI by changing the active configuration of the global resource (via the menu command **Tools | Active Configuration**). Global resources therefore enable the assigned XSLT file to be switched from one to another, which can be useful for testing. How to use global resources is described in the section Altova Global Resources.

If a previous assignment using either of these PI targets exists, then you are asked whether you wish to overwrite the existing assignment.

Go to XSLT

The **XSL/XQuery | Go to XSL** command opens the XSLT file that has been assigned to the XML document.

XSLT parameters and XQuery variables

XSLT parameters and XQuery variables can be defined, edited, and deleted in the dialog that

appears on clicking the command **XSL/XQuery | XSLT Parameters / XQuery Variables**. The parameter/variable values defined here are used for all XSLT transformations and XQuery executions in XMLSpy. However, these values will not be passed to external engines such as MSXML. For the details of how to use this feature, see the User Reference section.

XSLT transformations
Two types of XSLT transformation are available:

- Standard XSLT transformation (**XSL/XQuery | XSL Transformation**): The output of the transformation is displayed in a new window or, if specified in the stylesheet, is saved to a file location. The engine used for the transformation is specified in the XSL tab of the Options dialog (**Tools | Options**).
- XSL-for-FO transformation (**XSL/XQuery | XSL-FO Transformation**): The XML document is transformed to PDF in a two-step process. In the first step, the XML document is transformed to an FO document using the XSLT processor specified in the XSL tab of the Options dialog (**Tools | Options**); note that you can also select (at the bottom of the tab) the XSLT engine that comes with some FO processors such as FOP. In the second step, the FO document is processed by the FO processor specified in the XSL tab of the Options dialog (**Tools | Options**) to produce PDF output.

Note: An FO document (which is a particular type of XML document) can be transformed to PDF by clicking the XSL:FO transformation command. When the source document is an FO document, the second step of the two-step process for this command is executed directly.

XQuery executions
An XQuery document can be executed on the active XML document by clicking the command **XSL/XQuery | XQuery Execution**. You are prompted for the XQuery file, and the result document is displayed in a new window in the GUI.

Automating XML tasks with AltovaXML
AltovaXML is a free application which contains Altova's XML Validator, XSLT 1.0, XSLT 2.0, and XQuery 1.0 engines. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

XSLT transformation tasks can therefore be automated with the use of AltovaXML. For example, you can create a batch file that calls AltovaXML to transform a set of documents. See the Altova XML documentation for details.

5.8 Additional Features

Additional features for working with XML files are listed below.

- Encoding
- Generating DTDs and XML Schemas
- Find and Replace
- Evaluating XPath
- Importing and exporting text

Encoding

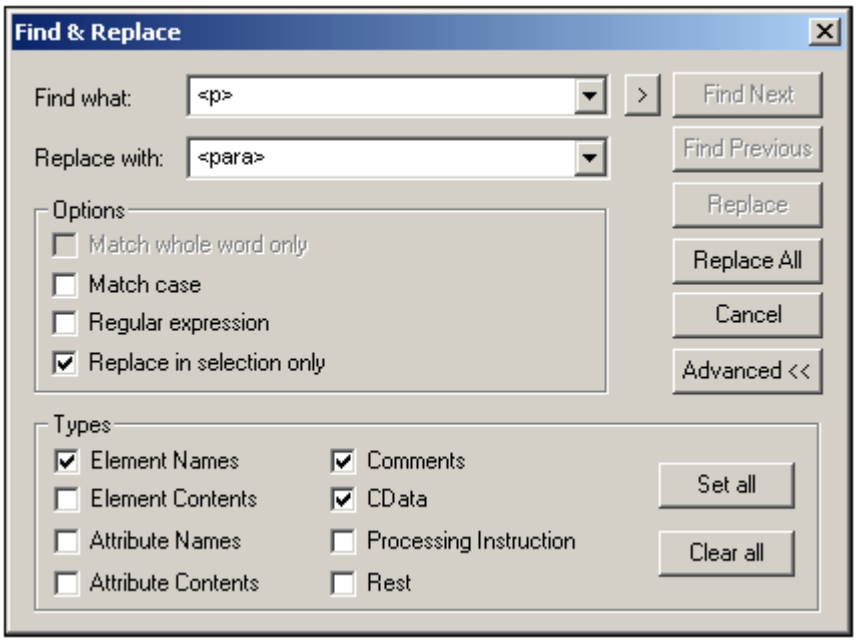
The encoding of XML files (and other types of documents) can be set via the menu command **File | Encoding**. The default encoding of XML and non-XML files can be specified in the Options | Encoding tab.

Generating DTDs and XML Schemas

If you wish to create a schema that describes the structure of an XML document, use the **DTD/Schema | Generate DTD/Schema** menu command. In the Generate DTD/Schema dialog that appears, you can select whether to generate a DTD or an XML Schema as well as certain XML Schema options, such as whether to generate enumerations from the values contained in the XML document.

Find and Replace

The Find and Replace features (accessed via the **Edit** menu) has powerful search capabilities. The search term can be defined additionally in terms of casing and whether whole words should be matched, and it can also be expressed as a regular expression. The search range can be restricted to a selection in the document and to particular node types (*see screenshot below*).



The screenshot above shows the Find & Replace dialog in Text View. The dialog and functionality varies according to the view that is active.

Evaluate XPath
An XPath expression, which you enter in the XPath Window, can be evaluated against the active XML document. The results of the evaluation are displayed in the XPath Window, and clicking a node in the result highlights that node in the document display in the Main Window. Note that the XPath Window can be made active by clicking **XML | Evaluate XPath** command.

Importing and exporting text
Text data can be imported from, and exported to, other application formats. Commands for these features are in the **Convert** menu.

6 DTDs and XML Schemas

Altova website: XML Schema Editor

This section provides an overview of how to work with DTDs and XML Schemas. It also describes SchemaAgent and the powerful Find in Schemas feature. In addition to the editing features, XMLSpy provides the following powerful DTD/Schema features:

Catalog mechanism
Support for the OASIS catalog mechanism enables the re-direction of URIs to local addresses, thus facilitating use across multiple workstations.

Schema subsets
Components of a large schema can, in Schema View, be created as a separate file. These smaller schema subsets can then be included in the larger schema. The reverse operation, known as flattening a schema, puts the components of included files directly in the larger schema. How to generate schema subsets and flatten schemas is described in the section, Schema Subsets.

Converting DTDs to XMLSchemas and vice versa
A DTD can be converted to an XML Schema and vice versa via the **DTD/Schema | Convert DTD/Schema** menu command. See the description of this file command in the User Reference section for a description of how to use it.

Generate Sample XML file
You can generate, via the **DTD/Schema | Generate Sample XML File** menu command, a skeleton XML document based on the active DTD or XML Schema file. This is very useful for quickly creating an XML file based on a schema.

Go to definition
When the cursor is located within a node in an XML document, clicking the **DTD/Schema | Go to Deinition** menu command opens the schema file and highlights the definition of the selected XML node.

6.1 DTDs

A DTD document can be edited in Text View and Grid View. The default view can be set in the File Types tab of the Options dialog.

Text View

In Text View, the document is displayed with syntax coloring and must be typed in. Given below is a sample of a DTD fragment:

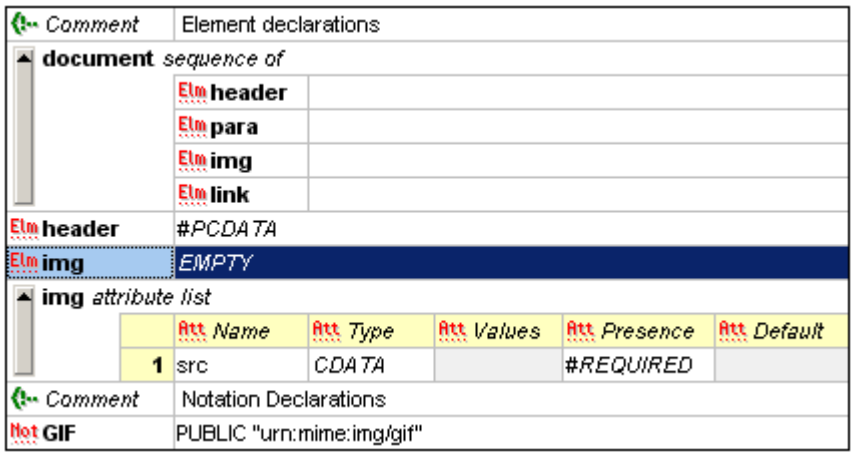
```
<!-- Element declarations -->
<!ELEMENT document (header, para, img, link)>
<!ELEMENT header (#PCDATA)>
<!ELEMENT img EMPTY>
  <!ATTLIST img
    src CDATA #REQUIRED
  >

<!-- Notation Declarations -->
<!NOTATION GIF PUBLIC "urn:mime:img/gif">
```

Indentation is indicated by indentation guides and is best obtained by using the tab key. The amount of tab indentation can be set in the Text View Settings dialog.

Grid View

In Grid View, the DTD document is displayed as a table. The screenshot below shows the Grid View display of the DTD listed above.



When the cursor is inside a row of the table, or if a row is selected, DTD editing commands in the **XML** menu become enabled. You can insert, append, and add child nodes to the graphical representation of the DTD. The DTD items available at a particular selection point are enabled in the respective sub-menu of the **XML** menu (**Insert**, **Append**, **Add Child**). You can also convert a selected DTD item to another item, and move the item left or right in order to change its position in the document hierarchy. When a node is selected, available DTD items are also displayed as items in the entry helpers.

DTD features in XMLSpy

XMLSpy offers the following very useful features:

- *Convert DTD to XML Schema:* With the **DTD/Schema | Convert DTD/Schema** command, DTDs can be converted to XML Schemas.

- *Generate sample XML file from DTD:* With the **DTD/Schema | Generate Sample XML File** command, an XML document can be generated that is based on the active DTD.

6.2 XML Schemas

XML Schema documents can be edited in Text View, Grid View, and Schema View. The default view in which XML Schema documents open can be set in the File Types tab of the Options dialog. You can switch between views while you edit, using the view that is most useful for the current purpose. XML Schema documents are typically saved with the extension `.xsd` or `.xs`.

Editing in Text View
In Text View an XML Schema is edited as an XML document; the editing features available for XML documents are also available for XML Schemas. As with all XML documents where the schema is identified and accessible, Text View entry helpers display the items available for addition at the cursor location point.

Editing in Grid View
In Grid View an XML Schema is edited as an XML document; the editing features available for XML documents are also available for XML Schemas. When an item in Grid View is selected, Grid View entry helpers display the items available for addition at the cursor location point.

Editing in Schema View
Schema View is a graphical interface for designing schemas. While you create/edit the schema in Schema View, XMLSpy generates a corresponding text document behind the interface. How to create and edit XML Schema documents in Schema View is described in detail in the section Editing Views | Schema View.

XML Schema features in XMLSpy
Additionally, XMLSpy offers the following very useful features:

- *Convert XML Schema to DTD:* With the **DTD/Schema | Convert DTD/Schema** command, XML Schemas can be converted to DTDs.
- *Generate sample XML file from XML Schema:* With the **DTD/Schema | Generate Sample XML File** command, an XML document can be generated that is based on the active XML Schema. Sample values can also be specified for elements and attributes in the sample XML.

6.3 Schema Subsets

One or more components of an XML Schema can be created as a separate schema file, known as a schema subset. The advantage of using smaller schema subsets to compose the larger schema (by means of Includes) is that the smaller files are more manageable than the single full schema.

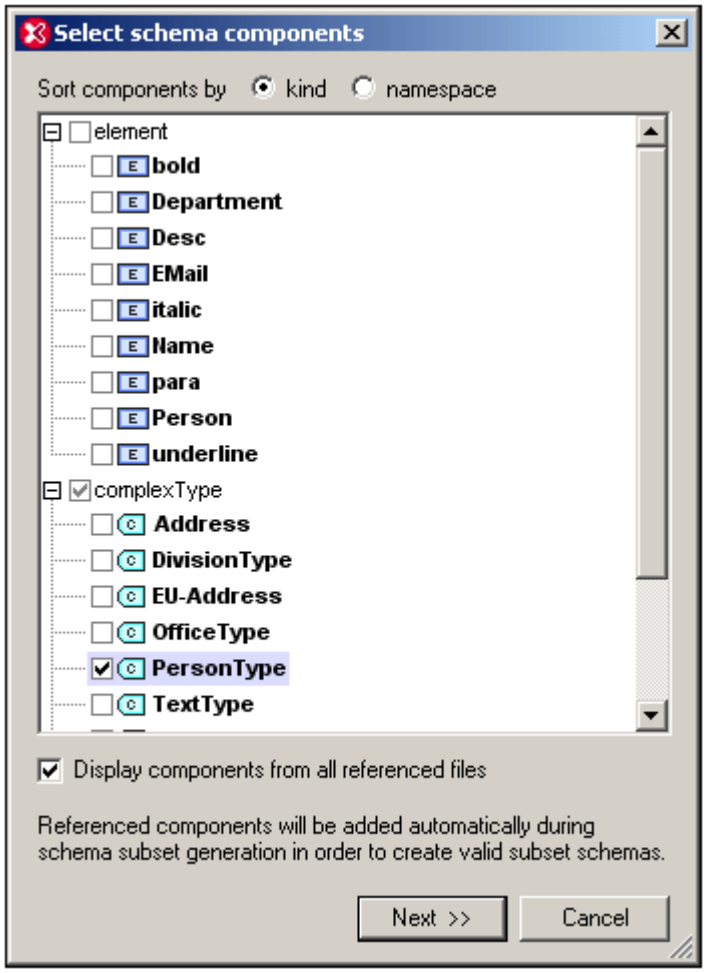
In Schema View, one possible work scenario that describes various aspects of the Schema Subsets feature is as follows:

1. Create a schema subset that contains one or more components of the active schema. How to do this is described below,
2. Create additional schema subsets as required.
3. Include the newly created schema subset/s to compose the larger schema. Do this for each schema subset by appending or inserting an Include component in the Schema Overview window, and selecting the newly created schema subset file.
4. Delete any components that were present in the original full schema but are now duplicated because of the included subset/s.

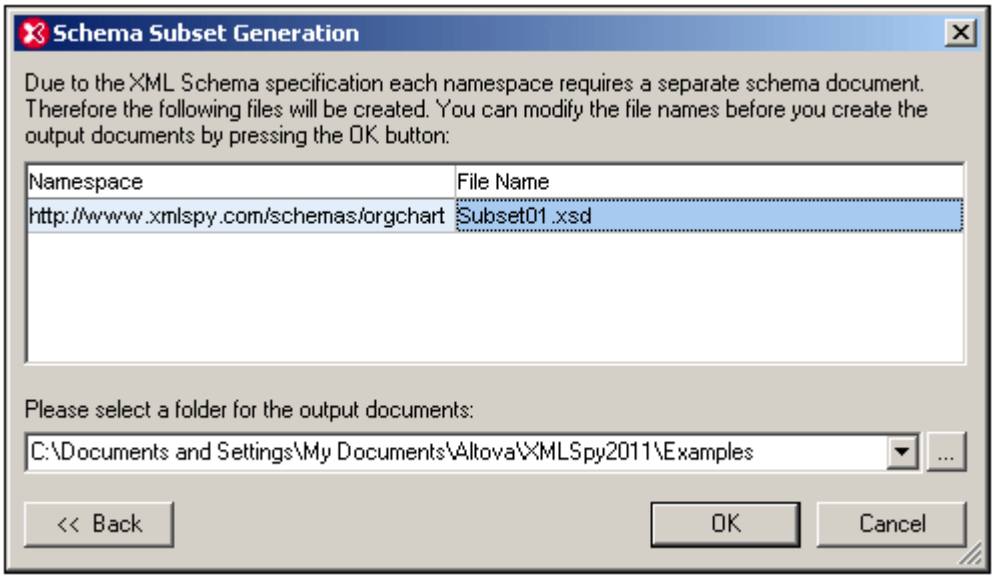
You can also do the reverse in Schema View, that is, flatten the included schema subsets so that: (i) the components contained in the schema subsets are added directly to the main schema, and (ii) the included schema subsets are deleted from the main schema. How to flatten a schema is described further below.

Creating schema subsets
To create a schema subset, do the following:

1. With the required XML Schema active in Schema View, select the command **Schema Design | Create Schema Subset**. This pops up the Select Schema Components dialog (*screenshot below*).
2. In the dialog, check the component or components you wish to create as a single schema subset, then click **Next**. (Note that a check box below the pane enables components from all referenced files to also be listed for selection.)



3. In the Schema Subset Generation dialog that now appears (*screenshot below*), enter the name/s you want the file/s of the schema subset package to have. You must also specify the folder in which the new schema subset files are to be saved. A schema subset package could have multiple files if one or more of the components being created is an imported component in the original schema. A separate schema file is created for each namespace in the schema subset. The filenames displayed in the dialog are, by default, the names of the original files. But since you are not allowed to overwrite the original files, use new filenames if you wish to save the files in the same folder as the original files.

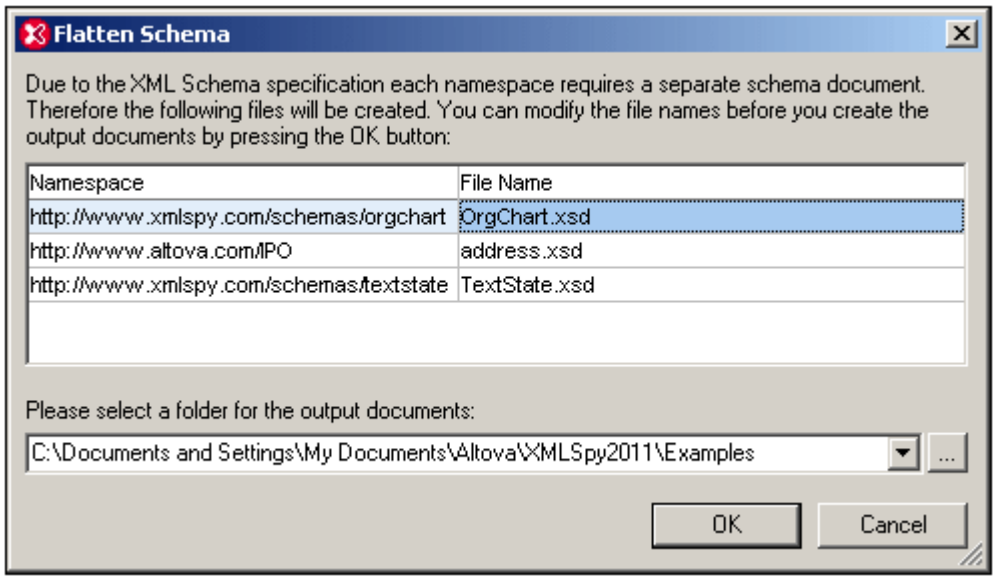


4. On clicking **OK**, the schema subset file with the namespace corresponding to that of the active file is opened in Schema View. Any other files in the package are created but not opened in Schema View.

Flattening a schema

Flattening the active schema in Schema View is the process of: (i) adding the components of all included schemas as global components of the active schema, and (ii) deleting the included schemas.

To flatten the active schema, select the command **Schema Design | Flatten Schema**. This pops up the Flatten Schema dialog (*screenshot below*), which contains the names of separate files, one for each namespace that will be in the flattened schema. These default names are the same as the original filenames. But since you are not allowed to overwrite the original files, the filenames must be changed if you wish to save in the same folder as the active file. You can browse for a folder in which the flattened schema and its associated files will be saved.



On clicking **OK**, the flattened schema file will be opened in Schema View.

6.4 Catalogs in XMLSpy

XMLSpy supports a subset of the OASIS XML catalogs mechanism. The catalog mechanism enables XMLSpy to retrieve commonly used schemas (as well as stylesheets and other files) from local user folders. This increases the overall processing speed, enables users to work offline (that is, not connected to a network), and improves the portability of documents (because URIs would then need to be changed only in the catalog files.)

The catalog mechanism in XMLSpy works as outlined below.

RootCatalog.xml

When XMLSpy starts, it loads a file called `RootCatalog.xml` (*structure shown in listing below*), which contains a list of catalog files that will be looked up. You can modify this file and enter as many catalog files to look up as you like, each in a `nextCatalog` element. Each of these catalog files is looked up and the URIs in them are resolved according to the mappings specified in them.

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog"
         xmlns:spy="http://www.altova.com/catalog ext"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog
Catalog.xsd">
  <nextCatalog catalog="%PersonalFolder%/Altova/%AppAndVersionName%/
CustomCatalog.xml"/>
  <nextCatalog catalog="CoreCatalog.xml"/>
  <!-- Include all catalogs under common schemas folder on the first directory
level -->
  <nextCatalog spy:recurseFrom="%AltovaCommonFolder%/Schemas" catalog="
catalog.xml" spy:depth="1"/>
  <!-- Include all catalogs under common XBRL folder on the first directory
level -->
  <nextCatalog spy:recurseFrom="%AltovaCommonFolder%/XBRL" catalog="
catalog.xml" spy:depth="1"/>
</catalog>
```

In the listing above, notice that in the `Schemas` and `XBRL` folders of the folder identified by the variable `%AltovaCommonFolder%` are catalog files named `catalog.xml`. (The value of the `%AltovaCommonFolder%` variable is given in the table below.)

The catalog files in the Altova Common Folder map the pre-defined public and system identifiers of commonly used schemas (such as SVG) and XBRL taxonomies to URIs that point to locally saved copies of the respective schemas. These schemas are installed in the Altova Common Folder when XMLSpy is installed.You should take care not to duplicate mappings in these files, as this could lead to errors.

CoreCatalog.xml, CustomCatalog.xml, and Catalog.xml

In the `RootCatalog.xml` listing above, notice that `CoreCatalog.xml` and `CustomCatalog.xml` are listed for lookup:

- `CoreCatalog.xml` contains certain Altova-specific mappings for locating schemas in the Altova Common Folder.
- `CustomCatalog.xml` is a skeleton file in which you can create your own mappings. You can add mappings to `CustomCatalog.xml` for any schema you require but that is not addressed by the catalog files in the Altova Common Folder. Do this using the supported elements of the OASIS catalog mechanism (*see below*).
- There are a number of `Catalog.xml` files in the Altova Common Folder. Each is inside

the folder of a specific schema or XBRL taxonomy in the Altova Common Folder, and each maps public and/or system identifiers to URIs that point to locally saved copies of the respective schemas.

Location of catalog files and schemas
The files `RootCatalog.xml` and `CoreCatalog.xml` are installed in the XMLSpy application folder. The file `CustomCatalog.xml` is located in your `MyDocuments\Altova\XMLSpy` folder. The `catalog.xml` files are each in a specific schema folder, these schema folders being inside the folders: `%AltovaCommonFolder%\Schemas` and `%AltovaCommonFolder%\XBRL`.

Shell environment variables and Altova variables
Shell environment variables can be used in the `nextCatalog` element to specify the path to various system locations (*see RootCatalog.xml listing above*). The following shell environment variables are supported:

`%AltovaCommonFolder%`	C:\Program Files\Altova\Common2012
`%DesktopFolder%`	Full path to the Desktop folder for the current user.
`%ProgramMenuFolder%`	Full path to the Program Menu folder for the current user.
`%StartMenuFolder%`	Full path to Start Menu folder for the current user.
`%StartUpFolder%`	Full path to Start Up folder for the current user.
`%TemplateFolder%`	Full path to the Template folder for the current user.
`%AdminToolsFolder%`	Full path to the file system directory that stores administrative tools for the current user.
`%AppDataFolder%`	Full path to the Application Data folder for the current user.
`%CommonAppDataFolder%`	Full path to the file directory containing application data for all users.
`%FavoritesFolder%`	Full path of the Favorites folder for the current user.
`%PersonalFolder%`	Full path to the Personal folder for the current user.
`%SendToFolder%`	Full path to the SendTo folder for the current user.
`%FontsFolder%`	Full path to the System Fonts folder.
`%ProgramFilesFolder%`	Full path to the Program Files folder for the current user.
`%CommonFilesFolder%`	Full path to the Common Files folder for the current user.
`%WindowsFolder%`	Full path to the Windows folder for the current user.
`%SystemFolder%`	Full path to the System folder for the current user.
`%CommonAppDataFolder%`	Full path to the file directory containing application data for all users.

%LocalAppDataFolder%	Full path to the file system directory that serves as the data repository for local (nonroaming) applications.
%MyPicturesFolder%	Full path to the MyPictures folder.

How catalogs work

Catalogs are commonly used to redirect a call to a DTD to a local URI. This is achieved by mapping, in the catalog file, public or system identifiers to the required local URI. So when the DOCTYPE declaration in an XML file is read, the public or system identifier locates the required local resource via the catalog file mapping.

For popular schemas, the PUBLIC identifier is usually pre-defined, thus requiring only that the URI in the catalog file point to the correct local copy. When the XML document is parsed, the PUBLIC identifier in it is read. If this identifier is found in a catalog file, the corresponding URL in the catalog file will be looked up and the schema will be read from this location. So, for example, if the following SVG file is opened in XMLSpy:

```
<?xml version="1.0" standalone="no"?>
<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN"
"http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">

<svg width="20" height="20" xml:space="preserve">
  <g style="fill:red; stroke:#000000">
     <rect x="0" y="0" width="15" height="15"/>
     <rect x="5" y="5" width="15" height="15"/>
  </g>
</svg>
```

This document is read and the catalog is searched for the PUBLIC identifier. Let's say the catalog file contains the following entry:

```
<catalog>
  ...
    <public publicId="-//W3C//DTD SVG 1.1//EN" uri="schemas/svg/svg11.dtd"/>
  ...
</catalog>
```

In this case, there is a match for the PUBLIC identifier, so the lookup for the SVG DTD is redirected to the URI schemas/svg/svg11.dtd (this path is relative to the catalog file), and this local file will be used as the DTD. If there is no mapping for the Public ID in the catalog, then the URL in the XML document will be used (in the example above: http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd).

The catalog subset supported by XMLSpy

When creating entries in CustomCatalog.xml (or any other catalog file that is to be read by XMLSpy), use only the following elements of the OASIS catalog specification. Each of the elements below is listed with an explanation of their attribute values. For a more detailed explanation, see the XML Catalogs specification. Note that each element can take the xml:base attribute, which is used to specify the base URI of that element.

- <public publicId="PublicID of Resource" uri="URL of local file"/>
- <system systemId="SystemID of Resource" uri="URL of local file"/>
- <uri name="filename" uri="URL of file identified by filename"/>
- <rewriteURI uriStartString="StartString of URI to rewrite" rewritePrefix="String to replace StartString"/>
- <rewriteSystem systemIdStartString="StartString of SystemID"

```
rewritePrefix="Replacement string to locate resource locally"/>
```

In cases where there is no public identifier, as with most stylesheets, the system identifier can be directly mapped to a URL via the `system` element. Also, a URI can be mapped to another URI using the `uri` element. The `rewriteURI` and `rewriteSystem` elements enable the rewriting of the starting part of a URI or system identifier, respectively. This allows the start of a filepath to be replaced and consequently enables the targeting of another directory. For more information on these elements, see the XML Catalogs specification.

File extensions and intelligent editing according to a schema

Via catalog files you can also specify that documents with a particular file extension should have XMLSpy's intelligent editing features applied in conformance with the rules in a schema you specify. For example, if you create a custom file extension `.myhtml` for (HTML) files that are to be valid according to the HTML DTD, then you can enable intelligent editing for files with these extensions by adding the following element of text to `CustomCatalog.xml` as a child of the `<catalog>` element.

```
<spy:fileExtHelper ext="myhtml" uri="schemas/xhtml/xhtml1-transitional.dtd"/>
```

This would enable intelligent editing (auto-completion, entry helpers, etc) of `.myhtml` files in XMLSpy according to the XHTML 1.0 Transitional DTD. Refer to the `catalog.xml` file in the `%AltovaCommonFolder%\Schemas\xhtml` folder, which contains similar entries.

XML Schema and catalogs

XML Schema information is built into XMLSpy and the validity of XML Schema documents is checked against this internal information. In an XML Schema document, therefore, no references should be made to any schema for XML Schema.

The `catalog.xml` file in the `%AltovaCommonFolder%\Schemas\schema` folder contains references to DTDs that implement older XML Schema specifications. You should not validate your XML Schema documents against either of these schemas. The referenced files are included solely to provide XMLSpy with entry helper info for editing purposes should you wish to create documents according to these older recommendations.

More information

For more information on catalogs, see the XML Catalogs specification.

6.5 Working with SchemaAgent

XMLSpy can be set up to work with Altova's SchemaAgent technology.

SchemaAgent technology
The SchemaAgent technology enables users to build and edit relationships between multiple schemas. It consists of:

- A SchemaAgent Server, which holds and serves information about the relationships among schemas in one or more search path/s (folder/s on the network) that you specify.
- A SchemaAgent client, Altova's SchemaAgent product, which uses schema information from the SchemaAgent server to which it is connected (i) to build relationships between these schemas; and (ii) to manage these schemas (rename, move, delete schemas, etc).

Two types of SchemaAgent server are available:

- Altova SchemaAgent Server, which can be installed on, and accessed from, a network, and
- Altova SchemaAgent, which is the SchemaAgent client product. It includes a lighter server version, called LocalServer, which can only be used on the same machine on which SchemaAgent is installed.

XMLSpy uses SchemaAgent technology to directly edit schemas in Schema View using information about other schemas it gets from a SchemaAgent server. In this setup, XMLSpy is connected to a SchemaAgent server, and, in interaction with SchemaAgent Client, sends requests to SchemaAgent Server. When XMLSpy has been set up to work with SchemaAgent, the Entry Helpers in Schema View not only list components from the schema currently active in Schema View but also list components from other schemas in the search paths of the SchemaAgent server to which it is connected. This provides you with direct access to these components. You can view the content model of a component belonging to another schema in Schema View, and reuse this component with or without modifications. You can also build relationships between schemas, thereby enabling you to modularize and manage complex schemas directly from within XMLSpy.

Installing SchemaAgent and SchemaAgent Server

For details about installing SchemaAgent and SchemaAgent Server and configuring search paths on servers, see the SchemaAgent user manual.

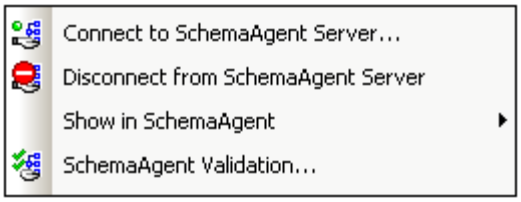
Setting up XMLSpy as a SchemaAgent client
In order for XMLSpy to work as a SchemaAgent client, you must do the following:

- Download SchemaAgent from the Altova website. You can now use SchemaAgent's LocalServer to serve schemas. For information about configuring search paths on LocalServer, see the SchemaAgent user manual.
  Please note: SchemaAgent requires a valid license, which must be purchased after the free trial period runs out. Also note that Altova MissionKit product packages each includes the SchemaAgent product and a license key for it. (The SchemaAgent Server application, however, is not included in Altova MissionKit packages.)
- Additionally, you might want to download and install the network-based SchemaAgent Server from the Altova website.
- Define the search path(s) for SchemaAgent server (also known as configuring SchemaAgent Server). A detailed description of how to do this is given in the SchemaAgent user manual. (A search path is a path to the folder containing the XML

schemas that will be mapped for their relationships with each other.)
- Start a connection from within XMLSpy to a SchemaAgent server.

Important: All SchemaAgent and SchemaAgent-related products from Altova (including XMLSpy) starting with Version 2005 release 3 are **not compatible** with previous versions of SchemaAgent or SchemaAgent-related products.

SchemaAgent commands in XMLSpy
The SchemaAgent functionality in XMLSpy is available only in Schema View and is accessed via menu commands in the Schema Design menu (*see screenshot*) and by using the Entry Helpers in Schema View.



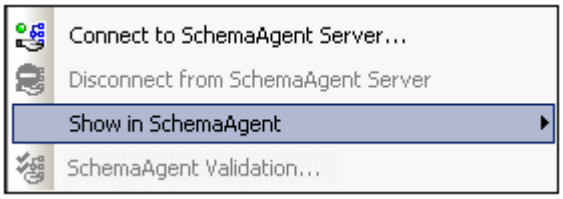
The menu commands provide general administrative functionality. The Entry Helpers (and standard GUI mechanisms, such as drag-and-drop) are used to actually edit schemas.

This section describes how to use the SchemaAgent functionality available in Schema View.

6.5.1 Connecting to SchemaAgent Server

Please note: SchemaAgent Client must be installed in order for you to be able to make a connection.

Before you connect to SchemaAgent Server, only the **Connect to SchemaAgent Server** command is enabled in the **Schema Design** menu; other SchemaAgent commands in the **Schema Design** menu are disabled (*see screenshot*). The other menu items become enabled once a connection to a SchemaAgent Server has been successfully made.



Connection steps
To connect to a SchemaAgent server:

1. Click the Connect to SchemaAgent server toolbar icon  (**Schema Design | Connect to SchemaAgent Server**). The Connect to SchemaAgent Server dialog (*screenshot below*) opens:

2. You can use either the local server (the SchemaAgent server that is packaged with Altova SchemaAgent) or a network server (the Altova SchemaAgent Server product, which is available free of charge). If you select Work Locally, the local server of SchemaAgent will be started when you click **OK** and a connection to it will be established. If you select Connect to Network Server, the selected SchemaAgent Server must be running in order for a connection to be made.

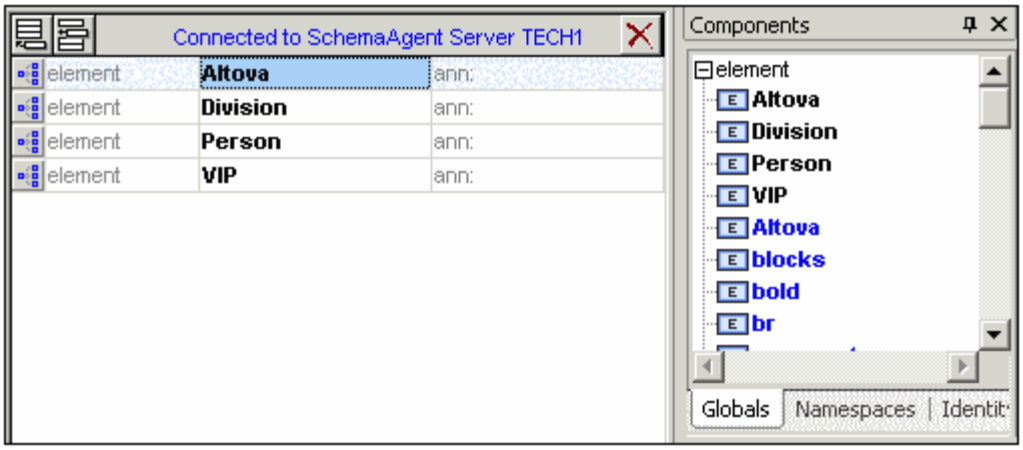
Note on servers running with Windows XP SP2
If the SchemaAgent Server name is listed in the Connect to SchemaAgent Server dialog but you cannot connect to it, it is possible that your server is not taking part in the name resolution process of your network. Name resolution is blocked by the default settings of the Windows XP SP2 Firewall.

To connect to such a server, do one of the following:

- Change the server settings to enable the name resolution process, or
- Enter the IP address of the server in the Edit field of the Connect Dialog box.

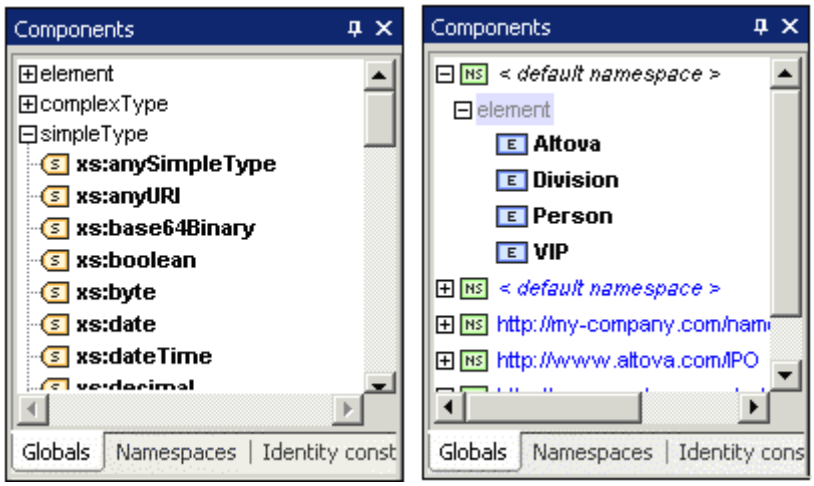
This need be done only once as SchemaAgent Client stores the connection string of the last successful connection.

Schema View after connecting to SchemaAgent server
After a connection to a SchemaAgent server is established, Schema View will look something like this:



Please note:

- At the top of the Globals view the text "Connected to SchemaAgent Server" appears, specifying the server to which the connection has been made.
- You now have full access to all schemas and schema constructs available in the server search path. SchemaAgent schema constructs such as global elements, complexTypes, and simpleTypes are visible in **bold blue text**, below the constructs of the active schema (**bold black text**).

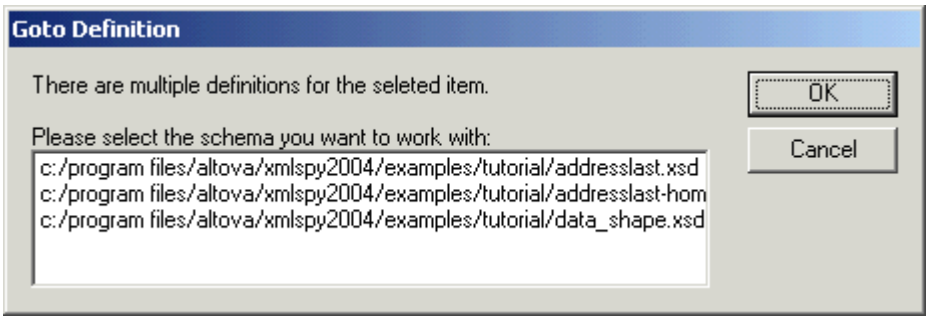


Schema constructs can be viewed by Type (Globals), by Namespace, or by Identity Constraints in the respective tabs in the Schema View.

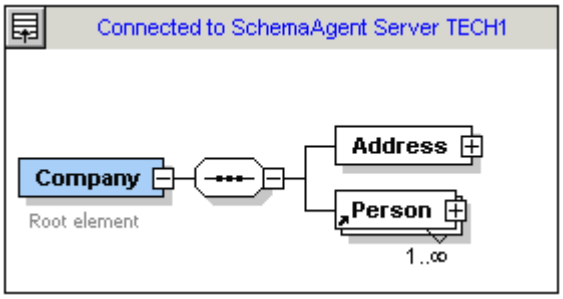
6.5.2 Opening Schemas Found in the Search Path

This example demonstrates how to open a schema found in a search path defined in SchemaAgent Server. It uses the `DB2schema.xsd` file available in the `..\Tutorial` folder as the active schema. The `Global` tab of the Components entry helper is active.

1. Scroll down to the blue `Company` entry in the Components entry helper, and double-click it. The Goto Definition dialog box is opened.



2. Click the `Addresslast.xsd` entry, and click **OK** to confirm. This opens the `addresslast.xsd` schema and displays the content model of the `Company` element.



Please note: Double-clicking a SchemaAgent schema construct, such as Element, complexType, or simpleType, opens the associated schema (as well as all other included schemas) in XMLSpy.

6.5.3 Using IIRs

XML schema provides Import, Include, and Redefine (IIR) statements to help modularize schemas. Each method has different namespace requirements. These requirements are automatically checked by SchemaAgent Client and XMLSpy when you try to create IIRs.

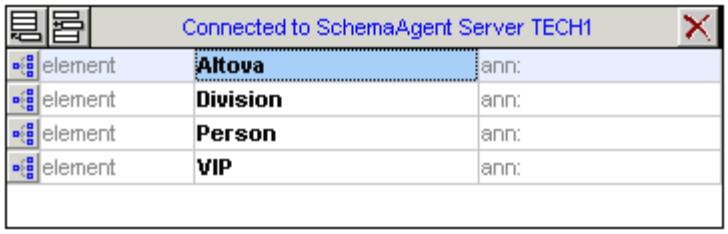
Imports, Includes, and Redefines (IIRs)
Schema constructs can be "inserted" by different methods:

- Global elements can be dragged directly from the Components Entry Helper into the content model of a schema component (in Schema View).
- Components, such as complexTypes and simpleTypes, can be selected from the list box that automatically opens when defining new elements/attributes, etc.
- Components, such as complexTypes, can be selected from the Details Entry Helper when creating/updating these type of constructs.

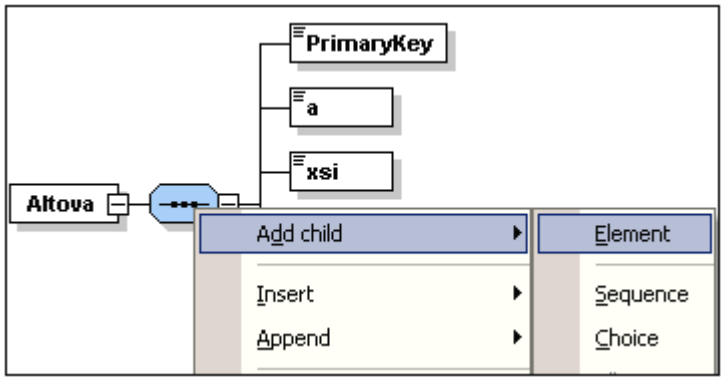
Incorporating schema components
This example uses the `DB2schema.xsd` file available in the `..\Tutorial` folder as the active schema; the `Global` tab of the Components Entry Helper is active.

To use schema constructs from SchemaAgent Server schemas:

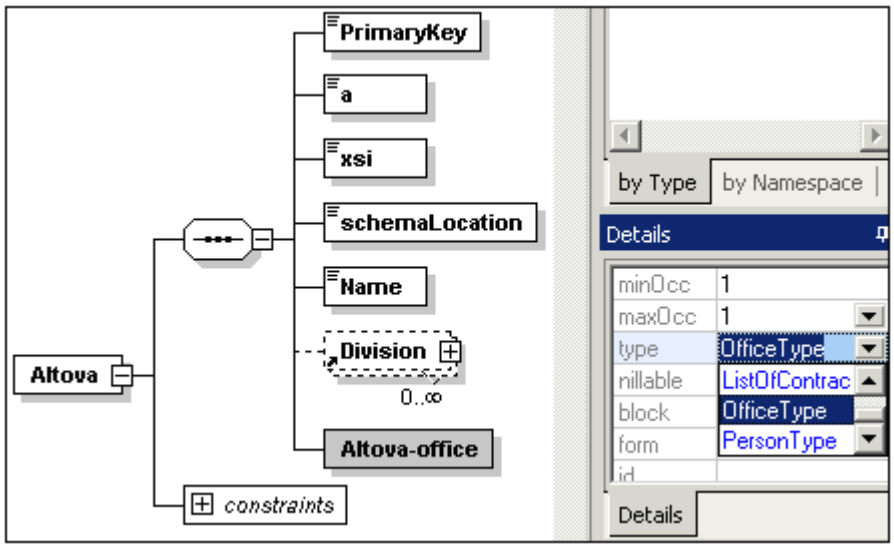
1. Make sure you are connected to a SchemaAgent server (see Connecting to SchemaAgent server).
2. Open and rename the `DB2Schema.xsd` file for this example, for example to `Altova-office`.



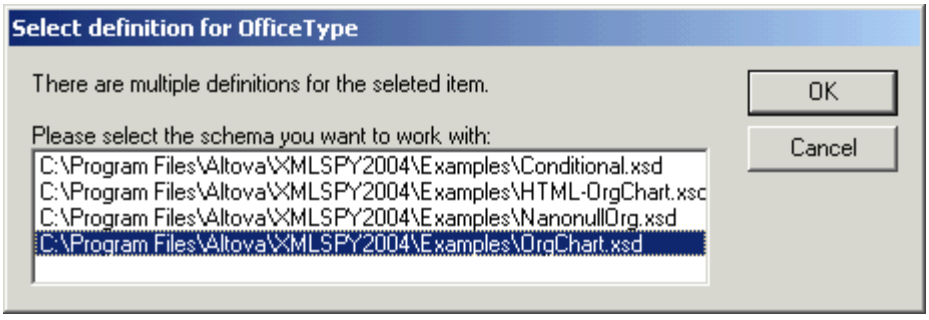
3. Click the  icon of the `Altova` element in the Schema Overview to see its content model.
4. Right-click the `Altova` sequence compositor and select the menu option **Add Child | Element**. Note that a list box containing all global elements within the server path opens automatically at this point. Selecting one would incorporate that element.



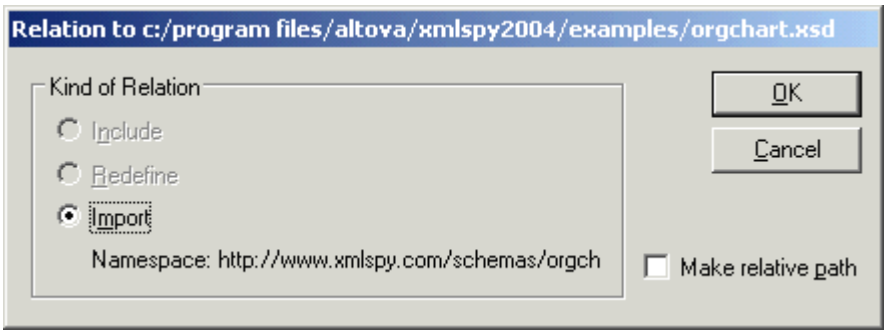
5. Enter `Altova-office` as the name for this new element and press **Enter**.
6. Using the Details Entry Helper, click the `type` combo box and select the entry `OfficeType`.



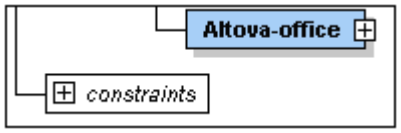
This opens the Select Definition For OfficeType dialog box.



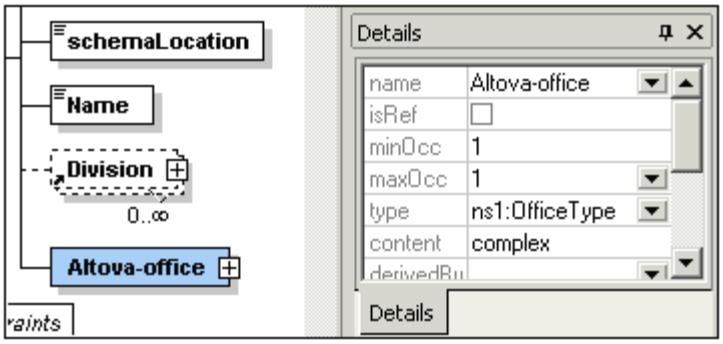
7. Select `Orgchart.xsd` and click **OK** to confirm.



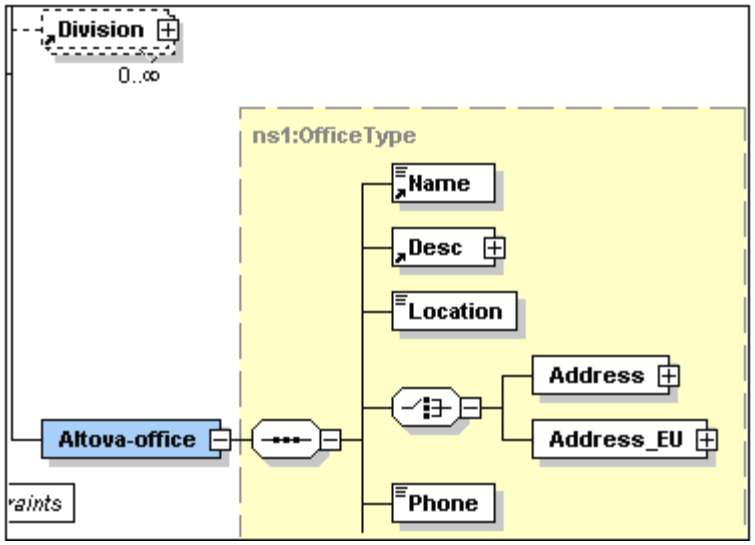
8. Click **OK**. The Import command was automatically selected for you. An expand icon appears in the `Altova-office` element.



Please note: The `type` entry in the Details entry helper has changed; it is now displayed as `ns1:OfficeType` due to the fact that the `Orgchart.xsd` schema file has been imported and the target namespaces must be different in both schemas. An Import command has also been added to the schema.



9. Click the Expand button to see the `OfficeType` content model.

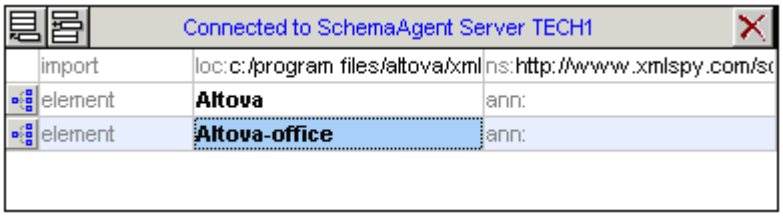


10. Press **F8** to validate the schema. The "Schema is valid" message should appear at this

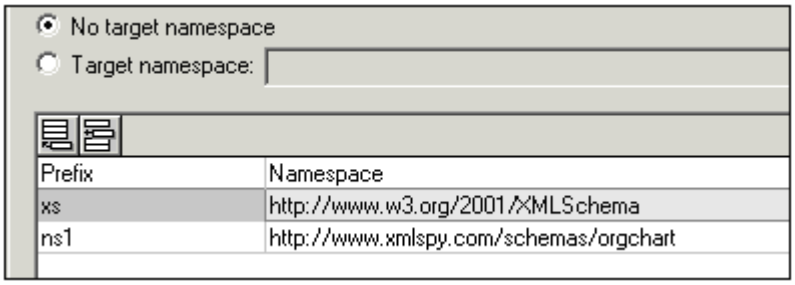
stage.

Cleaning up the schema:

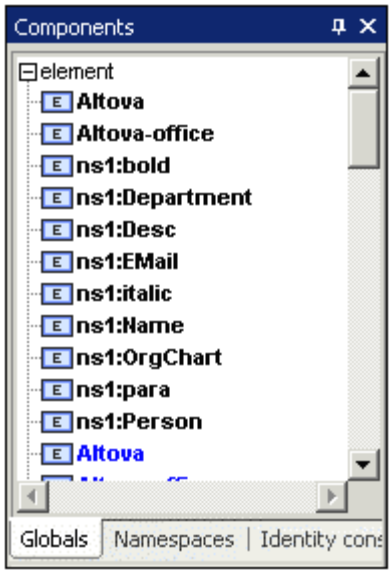
1. Delete the `Division` element in the content model.
2. Click the Return to globals icon to switch to the Schema Overview.
3. Delete the following global elements: `Division`, `Person` and `VIP`.



4. Select the menu option **Schema Design | Schema settings** to see how the namespace settings have changed.



The `ns1` prefix has been automatically added to the `www.xmlspy.com/schemas/orgchart` namespace. The Components (*see screenshot*) and Details Entry Helpers displays all imported constructs with the `ns1:` namespace prefix.



Please note:

- Changes made to schemas under SchemaAgent Server control using XMLSpy

automatically update other schemas in the SchemaAgent Server path that referenced the changed schema.
- It is possible to see duplicates of constructs element, simpleTypes etc. in entry helpers (in black and blue), if the schema you are working on is also in the SchemaAgent Server path.

6.5.4 Viewing Schemas in SchemaAgent

To work with the active schema and its related schemas in SchemaAgent, select the menu option **Schema Design | Show in SchemaAgent | *schema or related schemas*** *(see screenshot).*

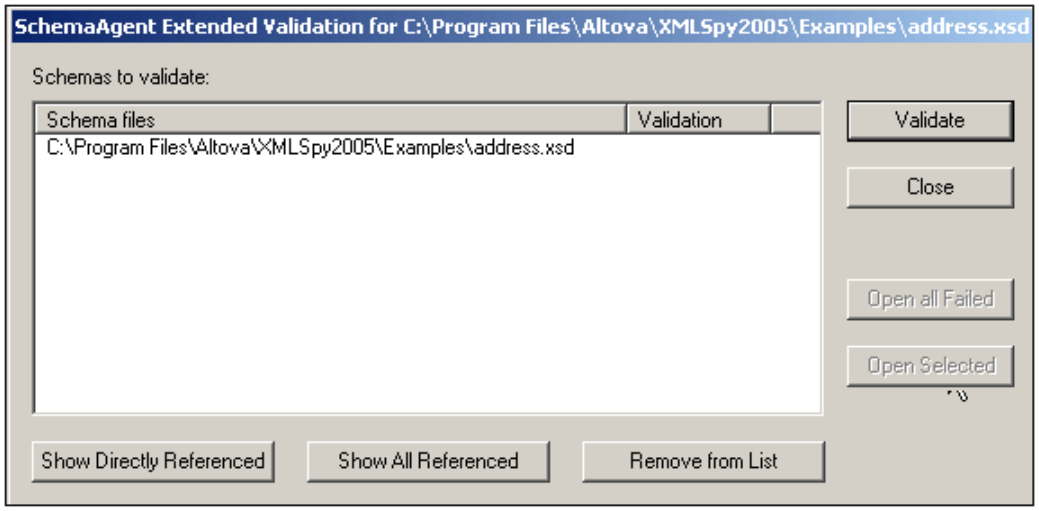
You have the option of opening only the active schema in SchemaAgent (**File only** command), or the active schema together with either (i) all directly referenced schemas, or (ii) all directly referencing schemas, or (iii) all directly related schemas.

6.5.5 SchemaAgent Validation

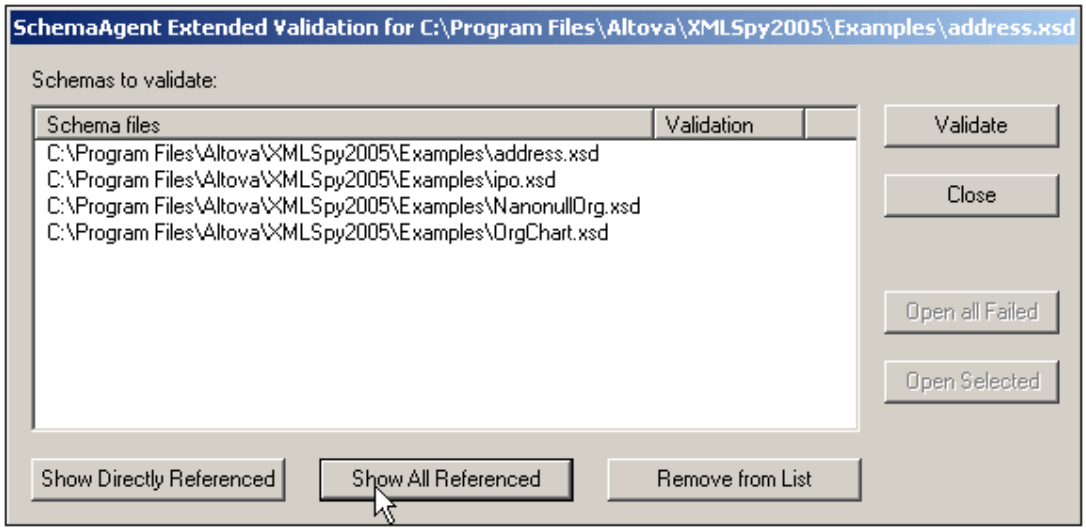
XMLSpy, in conjunction with SchemaAgent, allows you to validate not only the currently active schema but also schemas related to the currently active schema. We call this extended validation. There are two types of related schemas that SchemaAgent distinguishes for extended validation: (i) directly referenced schemas, and (ii) referenced schemas.

How to carry out extended validation is demonstrated below by means of an example. This example assumes that the schema file `address.xsd` is the active schema in Schema View of XMLSpy. You would then do the following:

1. Click the Extended Validation icon  in the toolbar or the menu item **Schema Design | Extended Validation**. This opens the Extended Validation dialog box, in which you can choose whether to validate the active schema only or one or more related schemas as well.

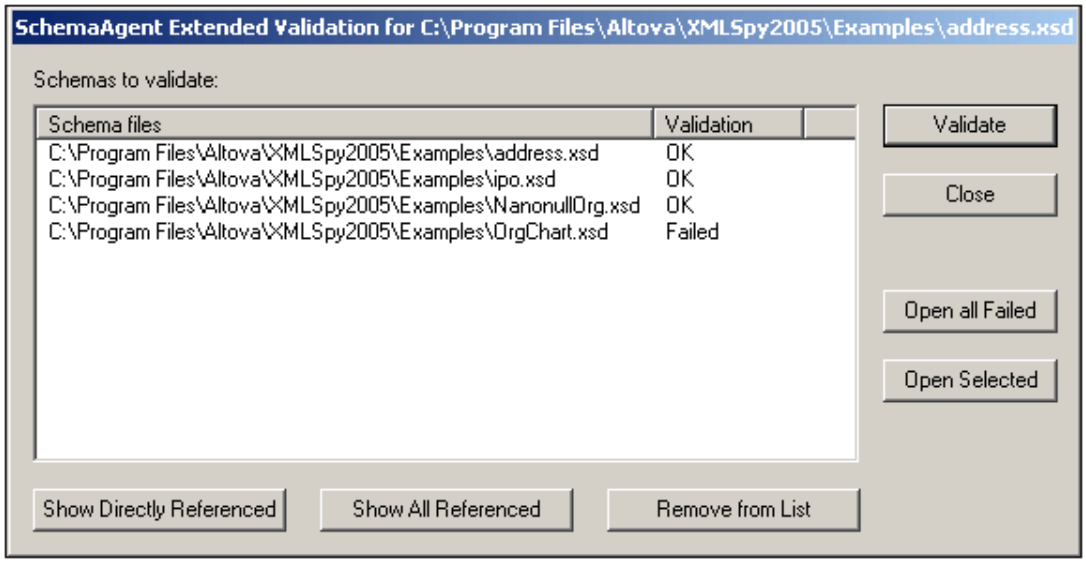


2. To insert schemas into the list, click the **Show Directly Referenced** or **Show All Referenced** button as required. In this example, we have clicked the **Show All Referenced** button, and this inserts all referenced files into the list.



At this point, you can remove a schema from the list (Remove from List).

3. Click the **Validate** button to validate all the schemas in the list box.



The Validate column displays whether the validation was successful or whether it failed.

You can now open the schemas that failed validation or a set of selected schemas in XMLSpy.

6.6 Find in Schemas

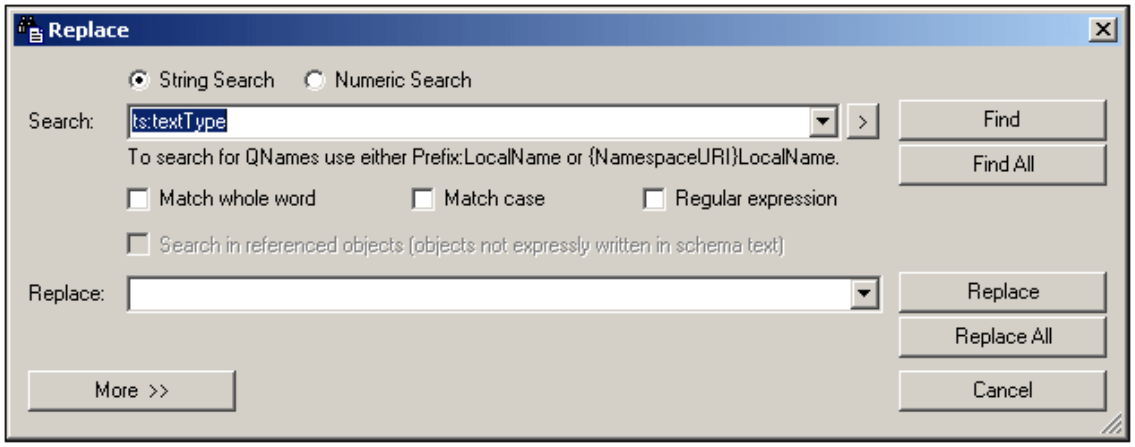
In Schema View, XML Schemas can be searched intelligently using XMLSpy's Find & Replace in Schema View feature.

The Find and Replace in Schema View feature is enabled when a schema is active in Schema View. It is accessed in one of two ways:

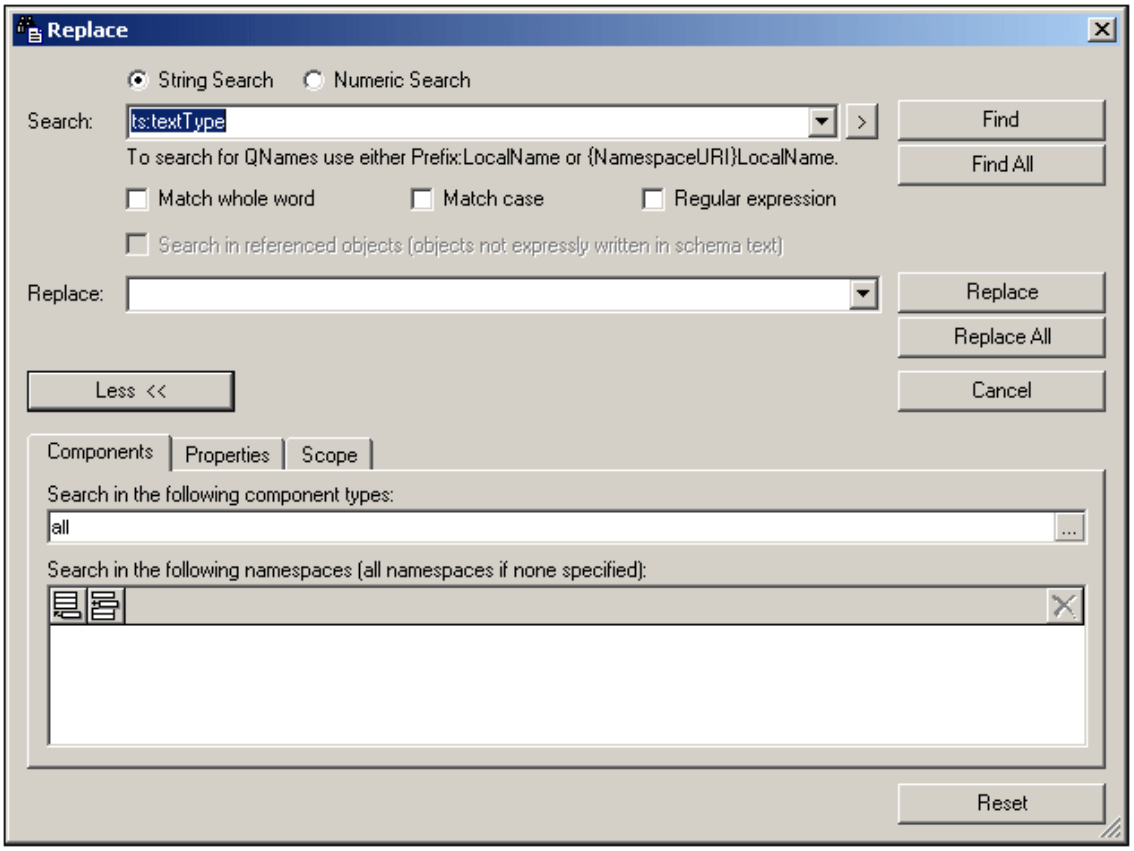
- Via the **Edit | Find** and **Edit | Replace** menu commands.
- Via the **Find** and **Replace** buttons in the Find in Schemas window.

Clicking a command or a button pops up the Find or the Replace dialog, according to which command/button was clicked. The Replace dialog (*screenshots below*) is different from the Find dialog in that it has a text entry field for the Replace term.

The standard Replace dialog looks like this:



Clicking the **More** button expands the dialog to show additional search criteria (*screenshot below*).



Usage is as follows:

- Enter the search and replace terms in the Search and Replace text fields
- Specify the schema components to be searched in the Components tab
- Specify the properties of the components to be searched; this helps to narrow the search
- Set the scope of the search to the current document or project, or specify a folder to search
- Execute the command
- Use the Find in Schemas window to navigate to a component quickly

The **Reset** button at the bottom of the dialog resets the original settings, which are as follows:

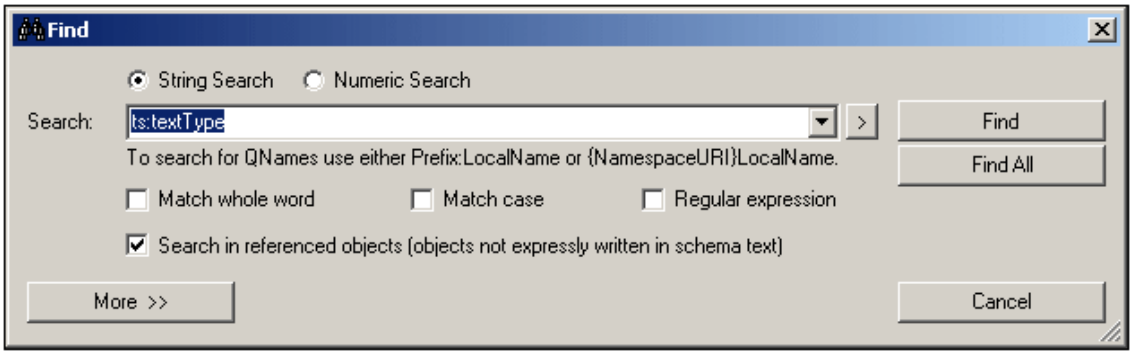
- No search term, no replace term
- Components: `all`
- Namespaces: none specified
- Property restrictions: `anywhere`
- Additional property restrictions: none
- Scope: current file

Note: Regular expressions are not supported in the Replace field.

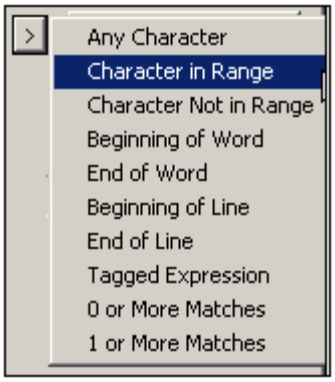
6.6.1 Search Term

The search term can be entered as a string (select the **String** radio button) or as a number (**Numeric** radio button).

String search
In a string search (*screenshot below*), the entry can be: (i) text; (ii) a QName; or (iii) a regular expression. For QName searches, the namespace is determined on the basis of either the prefix used in the document or by the namespace URI, either of which must be entered. In the screenshot below, the `ts:` prefix is the prefix used in the document to identify a certain namespace.



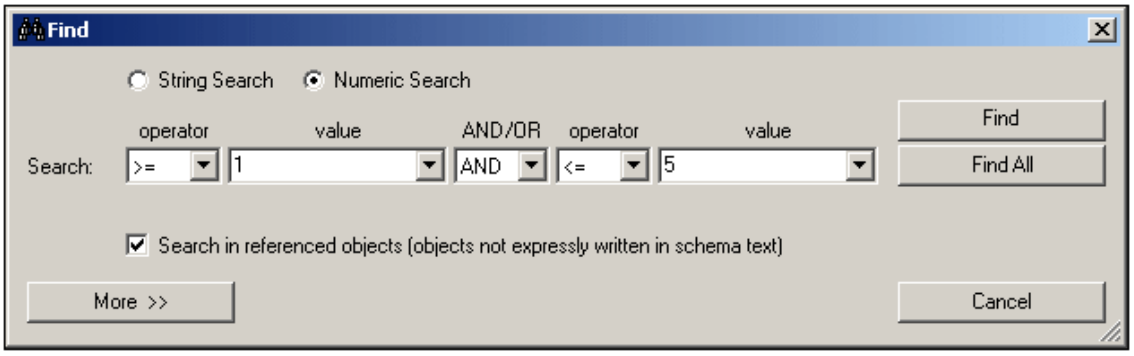
To search using a regular expression, check the Regular Expression check box and then enter the regular expression. Entry helpers for regular expressions are available in a menu that is activated by clicking the right-pointing arrowhead at the right of the Search entry field (*screenshot below*).



You can also select whether a search term must match a whole word in the document and/or whether the casing in the document must match. Use the check boxes below the text entry field to specify these options.

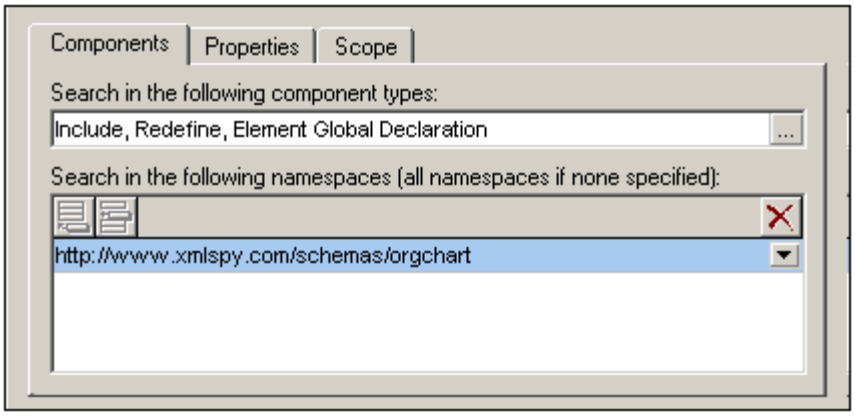
If you wish to search in referenced objects (such as a complexType definition or a global element), then check the Search In Referenced Objects check box. This option is available only in the Find dialog; it is disabled in the Replace dialog.

Numeric search
When the Numeric Search radio button is selected, the search term can be a single operator-and-number search parameter, or a set of two such operator-and-number search parameters joined by the logical connector `AND` or `OR`. In the screenshot below, there are two search term parameters which create a search term for all integers between, and including, 1 and 5.



6.6.2 Components

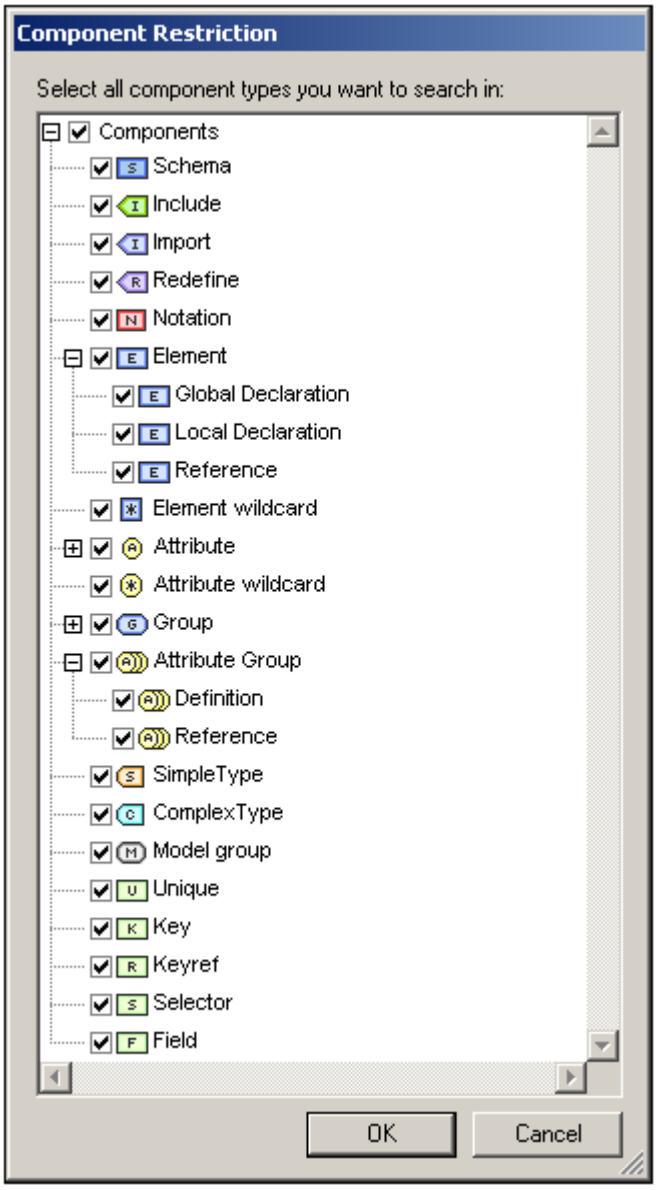
The search can be restricted to one or more component types and to one or more target namespaces. These options are available in the Components tab. Expand the Find or Replace dialog by clicking the **More** button. This will bring up the tabs for refining the search, one of which is the Components tab (*screenshot below*).



The Components tab consists of two parts: (i) for selecting the component types to be searched, and (ii) for selecting the target namespaces to be searched.

Component selection

You can enter the component types to be searched by clicking the **Add** icon  located to the right of the text field (*see screenshot above*). This pops up the Component Restriction dialog (*screenshot below*), in which you can select the components to be searched by checking them. Checking the `Components` item at the top of the list selects all components (text entry: `all`). Unchecking it de-selects all components (text entry: `none`)—including individually selected components. Individual components, therefore, can be selected only when the `Components` item is unchecked. The selected components are entered in the text field as a comma-separated list (*see screenshot above*).



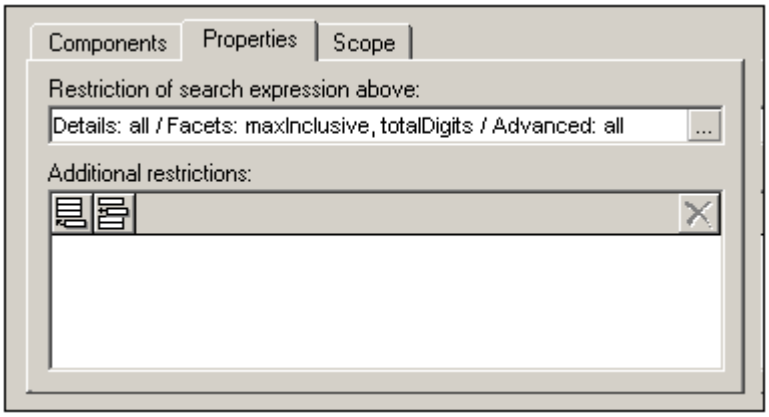
Note: Each time the Components tab or the Find/Replace dialog is opened, the previous component selection is retained.

Namespace selection
To select one or more target namespaces to be searched, click the **Add** or **Insert** icons and enter the required namespace/s. If no target namespace is specified, then all target namespaces are searched. To delete a target namespace that has been entered in this pane, select the target namespace and click the **Delete** icon.

6.6.3 Properties

The search can be restricted to one or more component properties (details and facets) by using options in the Properties tab, as well as to match the contents of properties. Expand the Find or Replace dialog by clicking the **More** button, and then select the Properties tab (*screenshot*

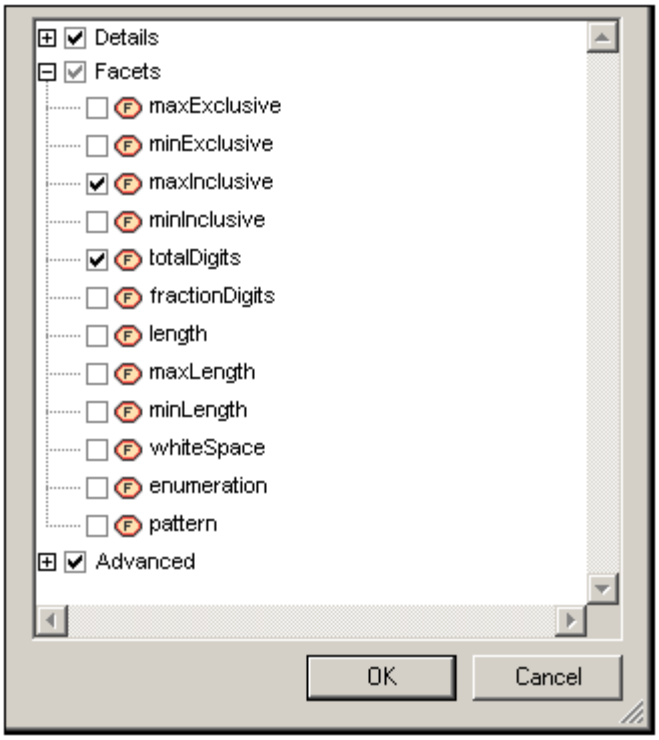
below).



The Properties tab consists of two parts: (i) for restricting the main search term (entered in the Find text box); and (ii) for adding additional content restrictions (which have their own match term); *see the section Additional Restrictions below*.

Properties selection

You can enter the property types to be searched by clicking the **Add** icon  , which is to the right of the text field (*see screenshot above*). This pops up the Property Restriction dialog (*screenshot below*), in which you can select the properties to be searched by checking them. The properties are organized in three groups: (i) Details; (ii) Facets; (iii) Advanced (such as the DerivedFrom property). Checking Details, Facets, or Advanced selects all properties in that group. Unchecking a group de-selects all properties in that group, including individually selected properties. Individual properties, therefore, can be selected only when the group item is unchecked. The selected properties are entered in the text field (*see screenshot above*).

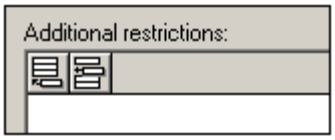


Note: Each time the Properties tab or the Find/Replace dialog is opened, the previous properties selection is retained.

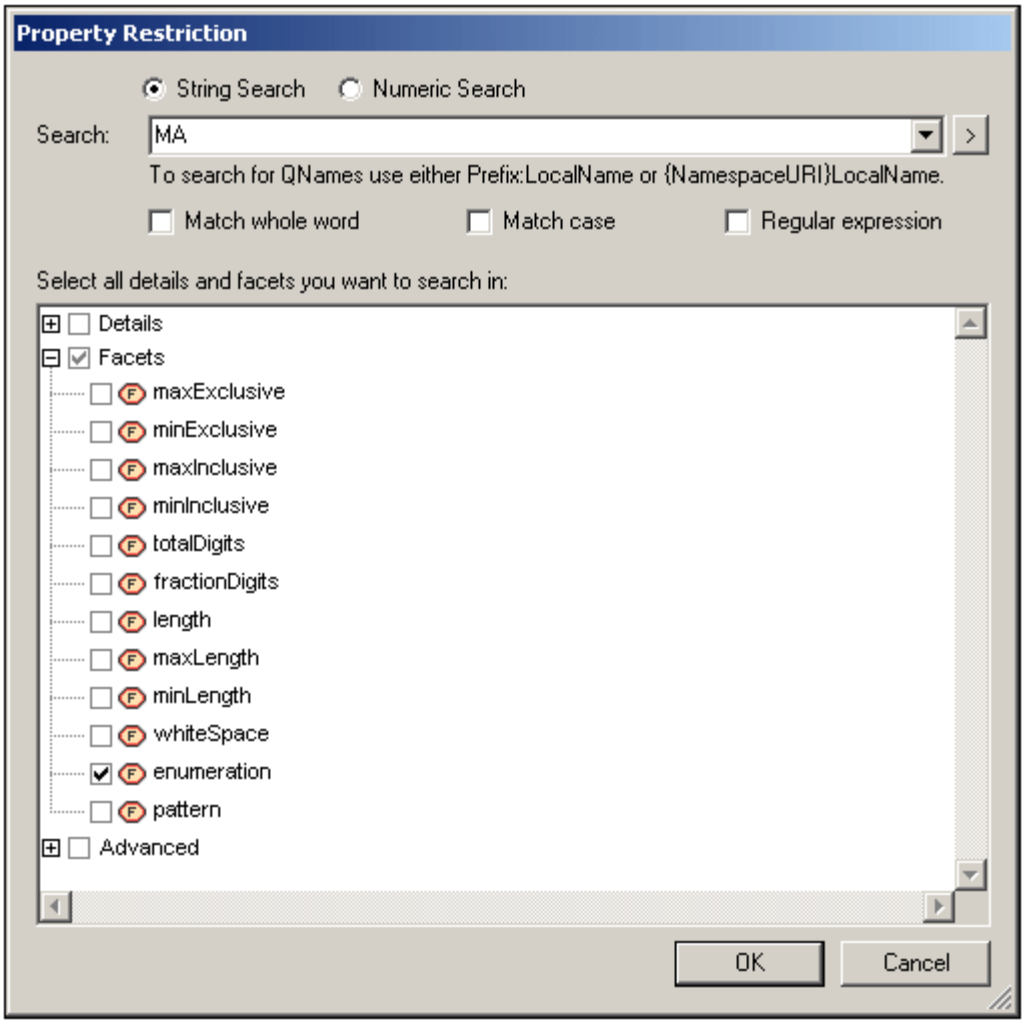
Additional restrictions

An additional restriction enables you to specify the value of the property to search for. For example, if you are looking for an element called `state` which has an enumeration `MA` (for the US state of Massachusetts), you could specify the value `MA` of the property `enumeration` with the Addition Restrictions option. You would do this as follows:

1. In the Additional Restrictions pane, click the the **Add** or **Insert** icon (*screenshot below*).

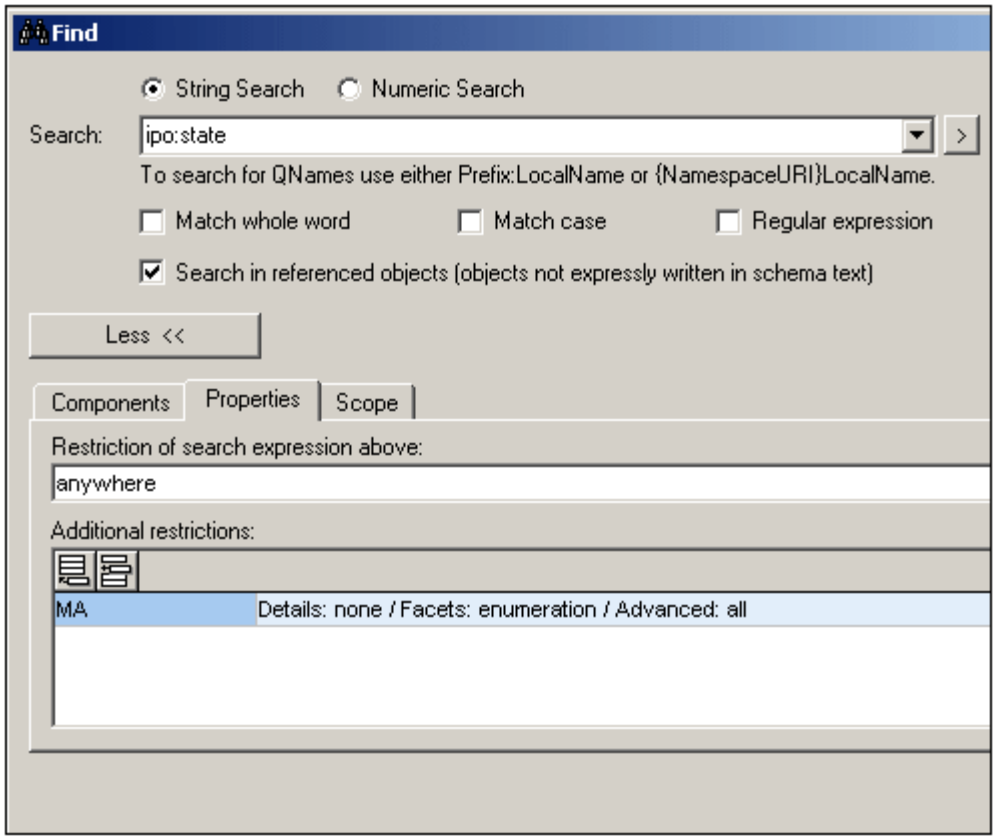


2. This adds a row to the pane and pops up the Property Restriction dialog. Deselect all properties and select only the `enumeration` property (*screenshot below*).



3. In the text field at the top of the dialog, enter the enumeration value to be searched for, in this case, `MA` (*see screenshot above*).

4. Click **OK**. The additional restriction is entered in the newly created row in the Additional Restrictions pane (*screenshot below*).



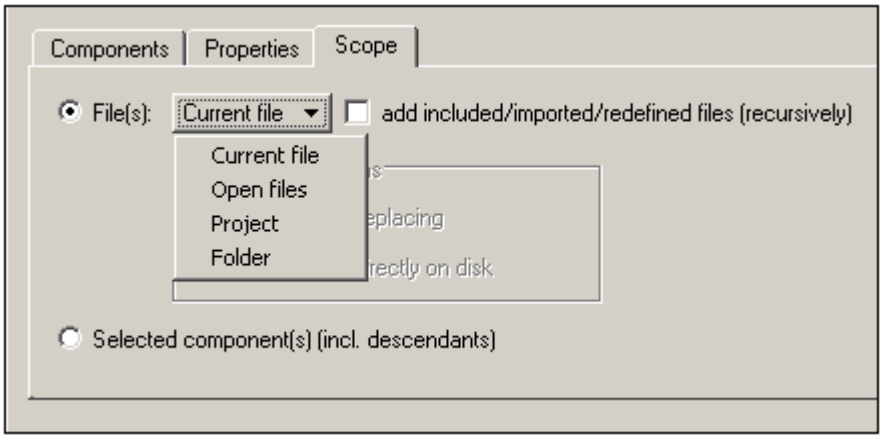
In the screenshot above, notice that the search term is `ipo:state`. In the Properties tab, the `anywhere` specifies that all properties will be searched, but the additional restriction specifies that the search should be restricted to enumerations having a value of `MA`.

Multiple additional restrictions can be added to further narrow the search. To delete an additional restriction, select the additional restriction and click the **Delete** icon.

Note: Each time the Properties tab or the Find/Replace dialog is opened, the previous additional restriction/s are retained.

6.6.4 Scope

The scope of the search can be set in the Scope tab (*screenshot below*). You can select either file/s or the currently selected schema component in Schema View.



If the File/s option is selected, you can further specify one from among the following options:

- *Current file:* An additional option to search included, imported and redefined files is also available.
- *Open files:* All XML Schema (XSD) files that are open in XMLSpy. Only the Find All and Replace All commands are enabled; single-step searching is not available.
- *Project:* The currently active project is selected, with the option to skip external folders. Only the Find All and Replace All commands are enabled; single-step searching is not available. If the default view for the `.xsd` file extension (**Tools | Options | File Types | Default View**) is not Schema View, then the `.xsd` files are not searched.
- *Folder:* You can browse for the required folder; an option to search sub-folders is also available. Only the Find All and Replace All commands are enabled; single-step searching is not available.If the default view for the `.xsd` file extension (**Tools | Options | File Types | Default View**) is not Schema View, then the `.xsd` files are not searched.
- *Included, imported, and redefined files* can be included in the scope by checking the option for adding them to the scope.

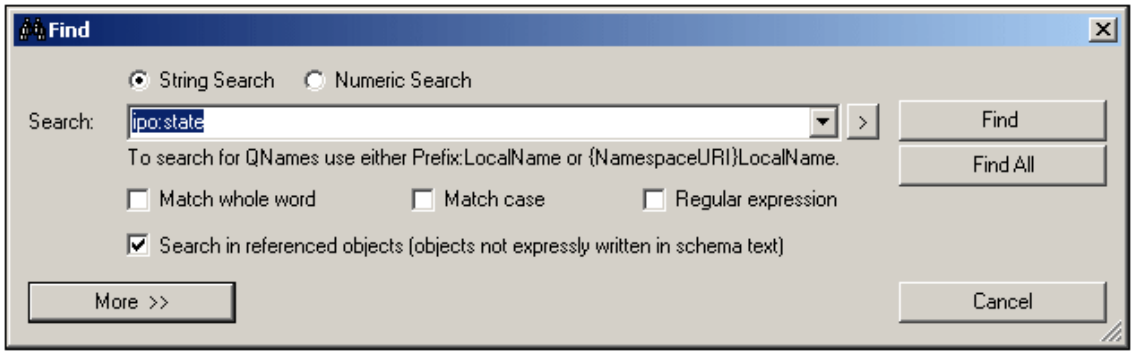
In the Replace dialog, you can choose whether to copy the replacement to the file on disk or whether to open the file in XMLSpy. Do this by selecting the appropriate button in the dialog.

6.6.5 Find and Replace Commands

The **Find** command behaves differently in the Find and Replace dialogs. The behavior of the **Find** command in both dialogs and of the **Replace** command is described below.

Find dialog

After you have entered the search term and, optionally, other criteria to refine the search, you can click either the **Find (F3)** or **Find All** command (*screenshot below*).



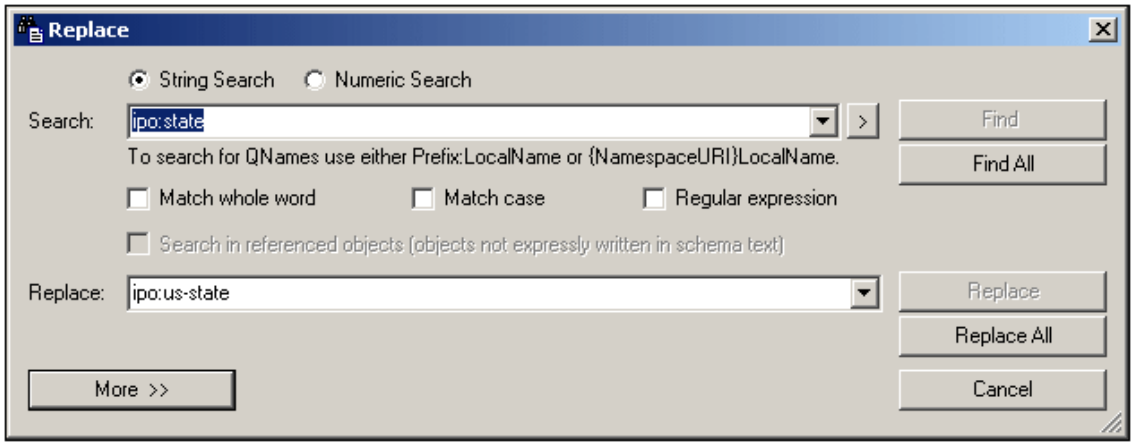
Clicking the **Find (Ctrl+F)** command in the dialog closes the Find dialog and finds the next occurrence of the search term within the specified scope and refinement criteria. The next occurrence is found relative to the currently selected component in Schema View. If the search reaches the end of the scope, it will not start automatically from the beginning of the scope. Therefore, you should make sure that the currently selected component in Schema View before starting the search is located before the document part you wish to search.

The result of the **Find** is highlighted in Schema View and the result is also reported in the Find In Schemas window. In the Find In Schemas window, you can click a result to highlight that item in Schema View.

Clicking the **Find All** command closes the Find dialog and lists all the search results in the Find In Schemas window.

Replace dialog

In the Replace dialog (*screenshot below*), clicking the **Find** command finds the next occurrence of the search term relative to the current selection in Schema View. You can then click **Replace** to replace this occurrence.



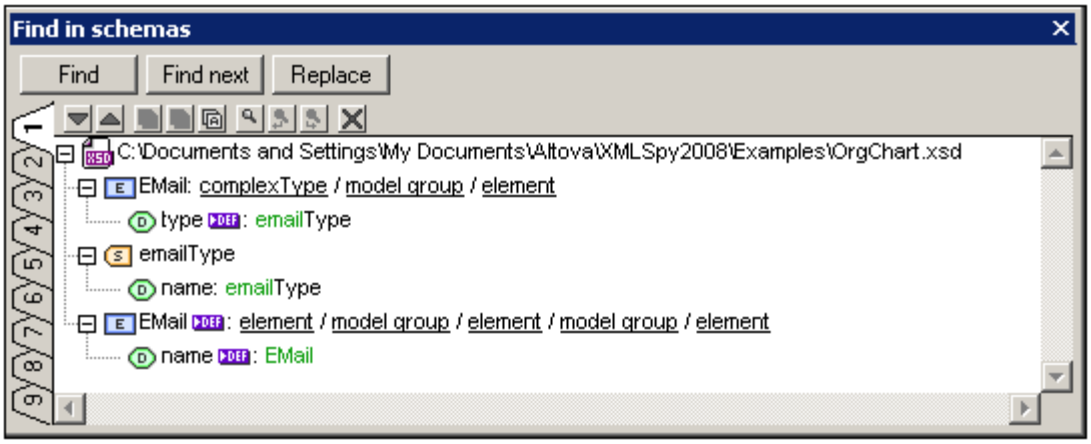
The **Find All** command closes the Replace dialog and lists all the search results in the Find In Schemas window.

The **Replace All** command replaces all occurrences of the found term, closes the Replace dialog, and lists the found terms in the Find In Schemas dialog.

Note: Regular expressions are not supported in the Replace field.

6.6.6 Results and Information

Each time a **Find**, **Find All**, **Replace**, or **Replace All** command is executed the results of the command execution are displayed in the Find In Schemas window (*screenshot below*). The term that was searched for is displayed in green; (in the screenshot below, it can be seen that `email` was the search term, with no case restriction specified). Notice that the location of the schema file is also given.



The **Find All** and **Replace All** commands list all the found occurrences in the document.

Note: The **Find** and **Replace** buttons at the top of this window bring up the Find dialog and the Replace dialog, respectively. The **Find** button can be used to find the next occurrence of the search term.

Features of the Find In Schemas window
Results are displayed in nine separate tabs (numbered 1 to 9). So you can keep the results of one search in one tab, do a new search, and compare results. Clicking on a result in the Find In Schemas window pops up and highlights the relevant component in the Main Window of Schema View. In this way you can search and navigate quickly to the desired component.

The following Find In Schema toolbar commands are available:

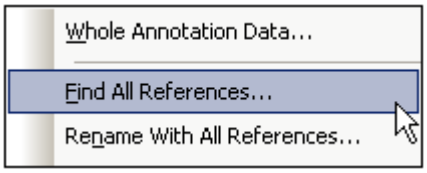
- The **Next** and **Previous** icons select, respectively, the next and previous messages to the currently selected message.
- The **Copy Messages** commands copy, respectively, the selected message, the selected message and its children messages, and all messages, to the clipboard.
- The **Find** commands find text in the Find In Schemas window.
- The **Clear** command deletes all messages in the currently active tab.

6.6.7 Finding and Renaming Globals

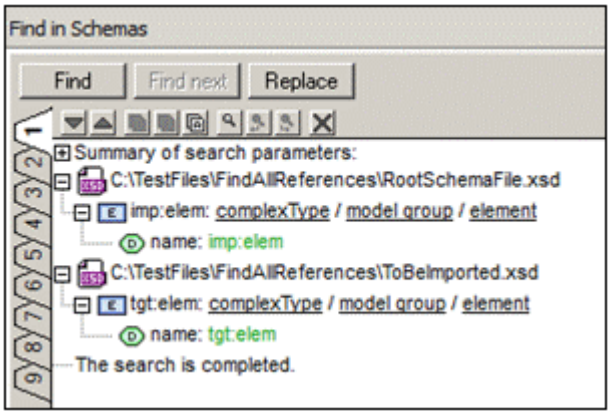
Named global components of XML Schemas can be found and renamed in a selected file and in all schema files related to the selected file. Named global components are all global components except: Include, Import, Redefine, Annotation, Comment, and PI components

The process works as follows:

1. In Schema Overview, the global component to be found or renamed is selected.
2. In the context menu that pops up on right-clicking the selected component, select the required command (**Find All References** or **Rename with All References**).



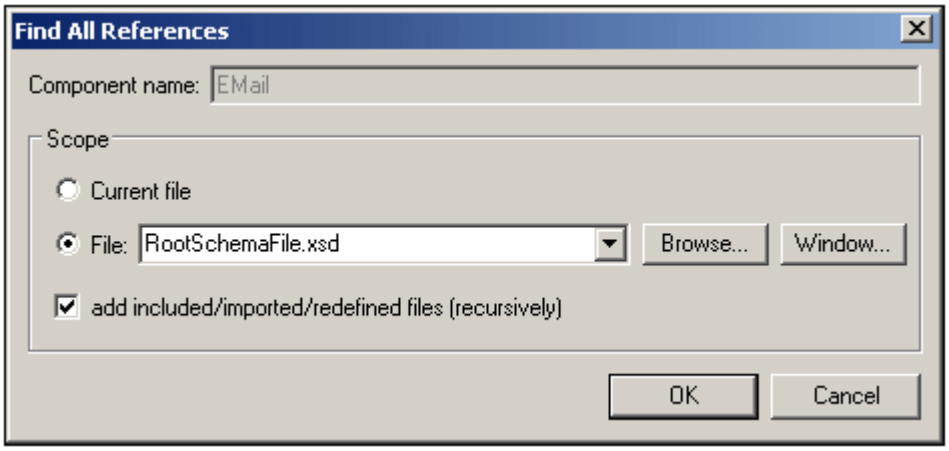
3. In the dialog that pops up, select the scope of the search (or rename operation). In the case of a Rename operation, enter the new name of the global component.
4. On clicking **OK**, the search results are displayed in the Find in Schemas window (*screenshot below*).



The locations of all files in which references to the global component are found are listed (*see screenshot above*). All renamed components that were found and renamed are also listed.

Find All References

To open the Find All References dialog (*screenshot below*), do the following: (i) Right-click the global component in Schema Overview, (ii) In the context menu that pops up select the **Find All References** command.

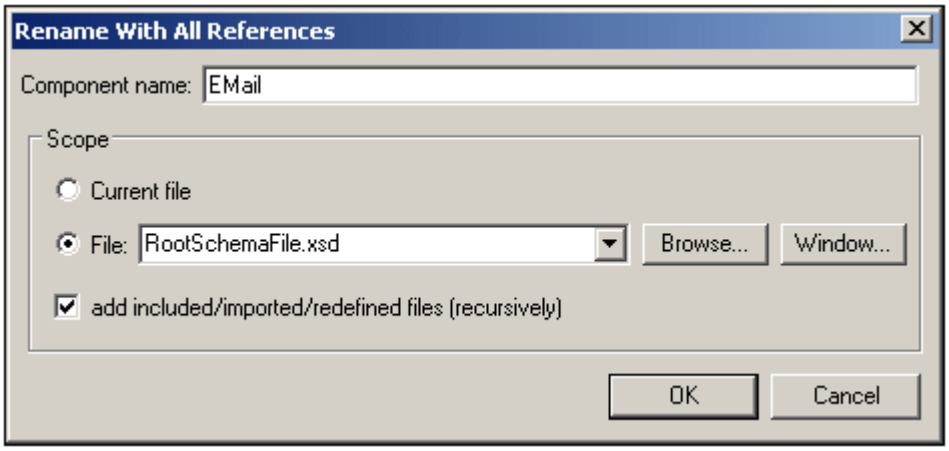


The global component name is displayed in the *Component Name* field, which is grayed out and cannot be edited. You can choose whether the search should be carried out in the current file or

in another file you can browse for (or select from a list of open files). You can also then specify whether related files (included, imported, redefined) should be searched, by checking the Add IIR Files check box at the bottom of the dialog.

Rename with All References

To rename a global component, right-click it and select **Rename with All References** from the context menu that pops up. This pops up the Rename with All References dialog (*screenshot below*).



The new name you wish to give the selected global component must be entered in the *Component Name* text field. You can choose whether the search and renaming should be carried out in the current file or in another file you can browse for (or select from a list of open files). You can also then specify whether related files (included, imported, redefined) should be searched, by checking the Add IIR Files check box at the bottom of the dialog.

7 XSLT and XQuery

XMLSpy provides editing support for XSLT and XQuery documents, has built-in engines for transforming with XSLT and executing XQuery documents, as well as powerful debuggers. This section provides an overview of the XSLT and XQuery functionality available in XMLSpy. It is organized into the following sections:

- XSLT
- XQuery
- XSLT and XQuery Debugger

Additional and more detailed information about commands is in the descriptions of the relevant menu commands (in the User Reference section). For more information on editing support, also see the Editing Views section and the XML section.

7.1 XSLT

Altova website: XSLT Editor

This section on XSLT is organized into the following sections:

- Editing XSLT documents: describes the editing support for XSLT documents in XMLSpy
- XSLT Processing: shows the various ways in which XSLT transformations can be carried out in the XMLSpy GUI using engines of your choice. This section also explains important XSLT settings in XMLSpy.
- XSL Outline: describes the XSL Outline and XSL Info Windows, which together provide a powerful way to view, navigate, and manage a collection of XSLT files.

XPath Evaluation
When an XML document is active, you can use the XPath Window to evaluate XPath expressions. This is a very useful feature to quickly check how an XPath expression will be evaluated. Type in an XPath expression and specify whether it should be evaluated relative to the document root or to a selected context node in the XML document. The result of the evaluation will be displayed immediately in the XPath Window. How to use the XPath Window is described in the section Introduction | XPath Window.

XSLT Debugger
XMLSpy also contains an XSLT Debugger to help you create correct and efficient XSLT stylesheets faster. These two features are described in the section XSLT and XQuery.

Additional XSLT features
Additional and more detailed information about the various features described in this section is in the descriptions of the relevant menu commands (in the User Reference section).

Altova XSLT Engines
For details about how the Altova XSLT 1.0 and 2.0 Engines are implemented, see Engine Information in the Appendices.

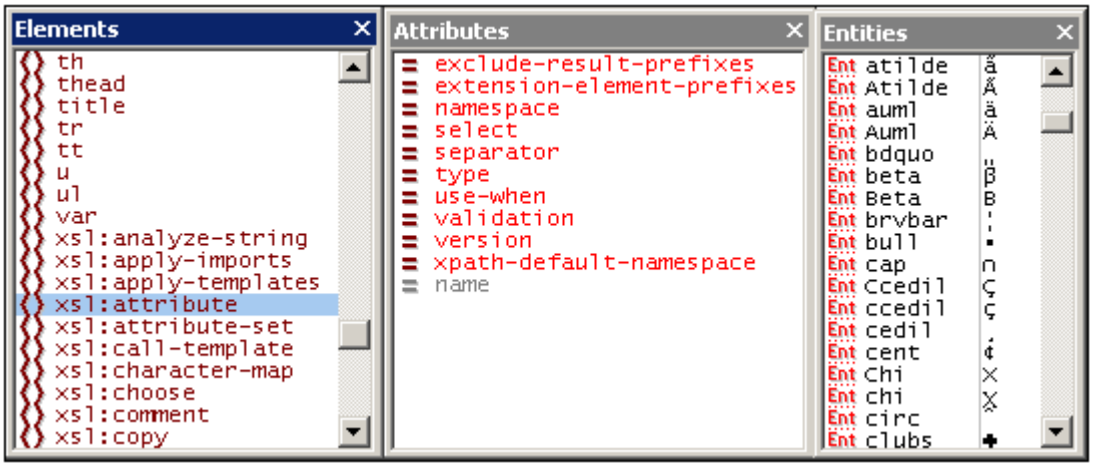
AltovaXML for command line and batch processing
The XMLSpy GUI enables batch processing via the projects functionality. However, if you are looking for more flexibility, you should try Altova's free AltovaXML product, which contains the Altova XSLT 1.0 and 2.0 Engines that are built into XMLSpy. AltovaXML is ideal if you wish to perform XSLT transformations from the command line, or batch processing.

7.1.1 XSLT Documents

XSLT 1.0 and 2.0 documents can be edited in Text View and Grid View, and are edited like any other XML document in Text View and Grid View. The default view in which an XSLT document is opened can be set in the File Types tab of the Options dialog.

Entry helpers
Entry helpers are available for elements, attributes, and entities. Information about the items displayed in the entry helpers is built into XMLSpy, and is not dependent on references

contained in the XSLT document.



The following points should be noted:

1. If a new XSLT document is created via the Create a New Document dialog (**File | New**), then the appropriate XSLT elements and attributes (XSLT 1.0 or XSLT 2.0, depending upon which document type was created) are loaded into the entry helpers. Additionally, HTML elements and attributes are loaded, as well as the HTML 4.0 entity sets, Latin-1, special characters, and symbols.
2. If an XML document is created via the Create a New Document dialog (**File | New**) and given XSLT content, no entry helper items are available except for XML character entities.
3. If an XSLT document is opened that was created as an XSLT document via the Create a New Document dialog (**File | New**), then the entity helpers will be as in Point 1 above.
4. If an XSLT document is opened that was **not** created as an XSLT document via the Create a New Document dialog (**File | New**), then the entity helpers will be as in Point 1 above. Additionally, XSL-FO elements and attributes will be listed in the Text View entry helpers.
5. The prefixes of elements in the Elements entry helper are as follows and are invariable: `xsl:` prefix for XSLT elements; no prefix for HTML elements; `fo:` prefix for XSL-FO elements. Consequently, in order to use the entry helpers, the namespace declarations in the XSLT document must define prefixes that match the built-in prefixes shown in the entry helpers.

Auto-completion

In Text View, auto-completion is available in a pop-up as you type, with the first item in the pop-up list being highlighted that matches the typed text. When an element is being typed, a list of elements pops up with the first nearest match in alphabetical order being highlighted. Similarly, when an attribute is being typed in, a list of applicable attributes pops up. The items in the list are determined according to the rules described in the previous section on entry helpers.

XPath intelligent editing

At locations in the XSLT document where XPath expressions can be entered (for example, the value of a `select` attribute), intelligent XPath editing is available. XPath functions and XPath axes become available in popup as you type. Additionally, if an XML file has been assigned in the Info window, the elements and attributes of the XML file will also be available in the popup.

Validating XSLT documents

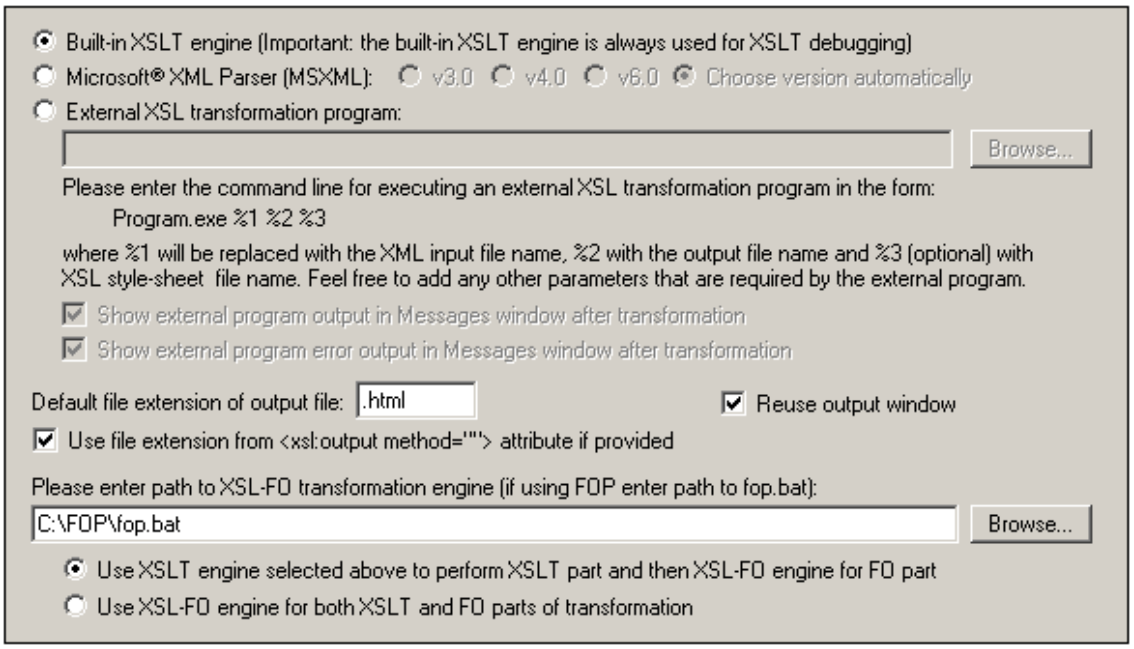
The XSLT document can be validated against the XSLT schema built into XMLSpy (click **XML | Validate (F8)**). The correct built-in schema is automatically selected according to whether the XSLT document is XSLT 1.0 or XSLT 2.0 (specified in the `version` attribute of the `xsl:stylesheet` element).

7.1.2 XSLT Processing

In the XMLSpy GUI, two types of XSLT transformation are available:

- The **XSL/XQuery | XSL Transformation (F10)** command is used for straightforward XML transformations with an XSLT stylesheet to result formats specified and described in the stylesheets.
- The **XSL/XQuery | XSL-FO Transformation** command is used: (i) for transformations of XML to FO to PDF in two steps, and (ii) for one-step transformations of FO to PDF.

Specifying the XSLT processor for the transformation
The XSLT engine that will be used for transformations is specified in the XSL tab of the Options dialog (*screenshot below*).



The available options are explained in the User Reference section. The engine specified in the XSL tab will be used for all XSLT transformations. Note that for the XSL:FO transformation, an additional XSLT engine option is available: the XSLT engine that is packaged with some FO processors. To select this option, select the corresponding radio button at the bottom of the XSL tab (*see screenshot above*).

Specifying the FO processor
The FO processor that will be used for transformations of FO to PDF is specified in the text box at the bottom of the XSL tab of the Options dialog (*screenshot above*).

XSLT 1.0 and 2.0 and Altova's XSLT engines
The XSLT version of a stylesheet is specified in the `version` attribute of the `xsl:stylesheet`

(or `xsl:transform`) element. XMLSpy contains the built-in Altova XSLT 1.0 and Altova XSLT 2.0 engines, and the appropriate engine is selected according to the value of the version attribute (`1.0` or `2.0`).

XSLT Transformation
The **XSLT Transformation (F8)** command can be used in the following scenarios:

- To transform an XML document that is active in the GUI and has an XSLT document assigned to it. If no XSLT document is assigned, you are prompted to make an assignment when you click the **XSLT Transformation (F8)** command.
- To transform an XSLT document that is active in the GUI. On clicking the **XSLT Transformation (F8)** command, you are prompted for the XML file you wish to process with the active XSLT stylesheet.
- To transform project folders and files. Right-click the project folder or file and select the command.

XSL:FO Transformation
The **XSL:FO Transformation** command can be used in the following scenarios:

- To transform an XML document that is active in the GUI and has an XSLT document assigned to it. The XML document will first be transformed to FO using the specified XSLT engine. The FO document will then be processed with the specified FO processor to produce the PDF output. If no XSLT document is assigned, you are prompted to make an assignment when you click the **XSL:FO Transformation** command.
- To transform an FO document to PDF using the specified FO processor.
- To transform an XSLT document that is active in the GUI. On clicking the **XSL:FO Transformation** command, you are prompted for the XML file you wish to process with the active XSLT stylesheet.
- To transform project folders and files. Right-click the project folder or file and select the command.

For a description of the options in the XSL:FO output dialog, see the User Reference section.

Parameters for XSLT
If you are using the Altova XSLT engines, XSLT parameters can be stored in a convenient GUI dialog. All the stored parameters are passed to the XSLT document each time you transform. For more information, see the description of the XSLT Parameters / XQuery Variable command.

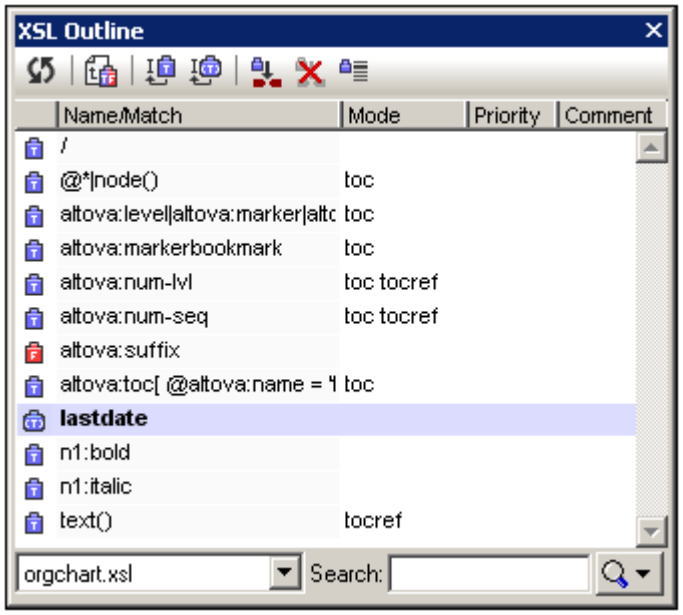
Batch processing with AltovaXML
AltovaXML is a free standalone application that contains Altova's XML validator, XSLT engines, and XQuery engine. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

XSLT transformation tasks can therefore be automated with the use of Altova XML. For example, you can create a batch file that calls AltovaXML to transform a set of documents. See the Altova XML documentation for details.

7.1.3 XSL Outline

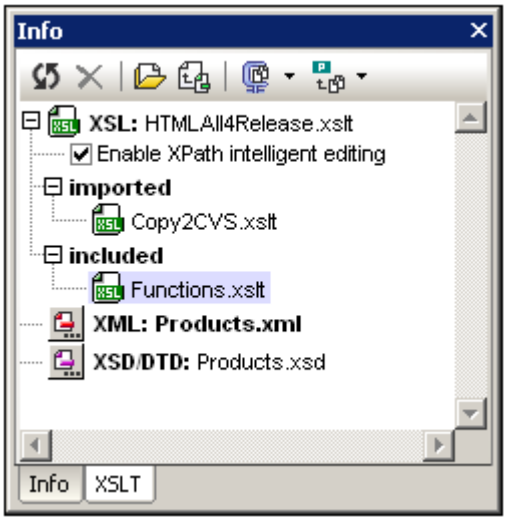
When an XSLT document is the active document in XMLSpy, information about the structure of the document is displayed in the XSL Outline window and information about the files related to the active XSLT document is displayed in the XSLT tab of the Info Window (which is displayed only when an XSLT document is the active document in XMLSpy). Additionally, via these two windows, a number of commands are available that facilitate editing the XSLT document and managing files related to it.

In the **XSL Outline window** (*screenshot below*), you can do the following:



- View the templates and functions in the active XSLT document and in all imported and included XSLT documents.
- Sort the templates and functions on the basis of their names or match expressions, mode, priority, or comments.
- Search for specific templates on the basis of their names/expressions.
- Use the XSL Outline to navigate to the corresponding template in the XSLT document.
- Quickly insert calls to named templates.
- Set a selected named template as the entry point for transformations.

In the **XSLT tab of the Info Window** (*screenshot below*), you can do the following:

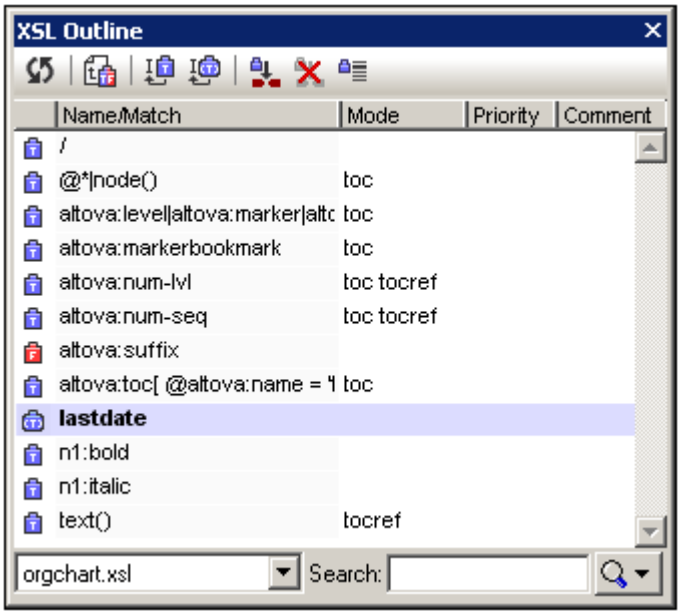


- View information about all the files related to the active XSLT document, such as the locations of imported and included files.
- Set an XML file for transformation with the active XSLT document. Also, the schema (XSD/DTD) file can be set for validating the selected XML file.
- Open a related file from within the Info Window.
- Quickly organize all related files into XMLSpy projects.
- Zip all related files to a user-defined location.

The XSL Outline window and the XSLT tab of the Info Window are described in detail in the sub-sections of this section.

XSL Outline Window

In the XSL Outline Window (*screenshot below*), all templates and functions in the active XSLT document are listed. Templates are indicated with blue icons (templates without a parameter; and templates containing parameters). Functions are indicated with a red icon. In the combo box in the bottom left-hand of the window, you can select whether the templates and functions listed are from: (i) only the active XSLT document (as in the screenshot below), or (ii) the active XSLT document and all included and imported stylesheets.



There are two types of templates: (i) named templates, and (ii) templates that match an XPath expression. Each template is listed with:

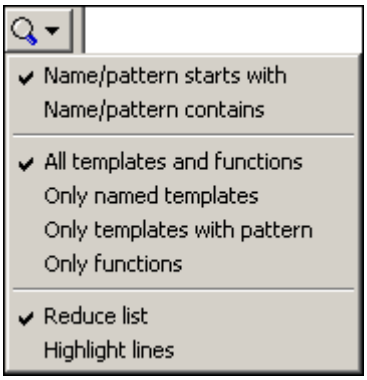
- Its name (if the template has a `name` attribute) and/or XPath expression (if the template has a `match` attribute). If the template has both, a `name` and a `match` attribute, then both are listed, with the value of the `name` attribute first: `namevalue, matchvalue` (*see the template named* `bold` *in the screenshot above*).
- Its mode, if any;
- Its priority, if any;
- The comment that directly precedes the template or function, if any.

Functions in the stylesheet are listed by their names. Functions have neither mode nor priority.

Operations

The following operations can be performed in the XSL Outline Window:

- *Filtering:* The list displayed in the window can be filtered to show one of the following: (i) all templates and functions (the default setting each time XMLSpy is started); (ii) named templates only; (iii) XPath-expression templates only; (iv) functions only. To select the required filter, click the dropdown arrow to the right of the Search box at bottom right of the window (*screenshot below*), and select the required filter (the second group of commands in the menu). The selected filter is applied immediately and applies from this moment onwards till it is modified or till XMLSpy is closed.



- *Sorting and locating:* Each column can be sorted alphabetically by clicking the column header. Each subsequent click reverses the previous sorting order. After a column has been sorted in this way, if you select any item in the list and then quickly type in a term from the sorted column, the first item in the list that contains that term will be highlighted. In this way, you can quickly go to templates of a particular name/ expression, mode, or priority.
- *Searching:* Enter in the Search box (at bottom right) the name or XPath expression for which you wish to search. The search results are displayed as you type. The following search options are available in the dropdown list of the Search box (*screenshot above*): (i) whether the name or expression either starts with or contains the search term (the first group of commands in the menu); the starts-with option is the default each time XMLSpy is started; (ii) whether the search results should be displayed as a reduced list or be highlighted (the third group of commands in the menu); the reduced-list option is the default each time XMLSpy is opened. These selections are applied immediately and remain in effect till changed or till XMLSpy is closed.
- *Reloading:* After the stylesheet has been modified, click the **Reload** icon in the window's toolbar to update the XSL outline.
- *Go to item:* When a template or function is selected in the XSL Outline window, clicking the the **Go to Item** icon in the window's toolbar highlights the template or function in the document in Design View. Alternatively, double-click an entry to go to it.
- *Named template actions:* Two groups of actions can be carried out involving named templates: (i) Calls to the named template (with `xsl:call-template`) can be inserted in the stylesheet at the cursor insertion point; and (ii) A named template can be set as the entry point for a transformation. The commands for these actions are carried out via icons in the toolbar and are described below.

Named templates

When a named template is selected, one or more commands in the window's toolbar relating to named templates become enabled (*screenshot below*).

The commands in the toolbar (*screenshot above*) are, from left to right:

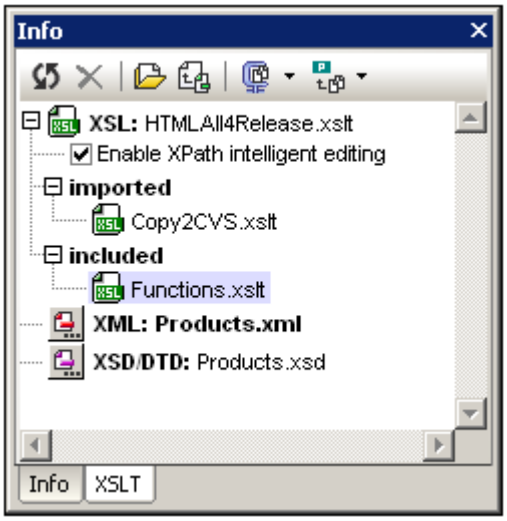
- *Insert xsl:call-template:* This command becomes active when a named template is selected in the XSL Outline window. The command inserts an `xsl:call-template` element at the cursor insertion point in the stylesheet. The `name` attribute of the `xsl:call-template` element that is inserted in the stylesheet is given a value that is the value of the `name` attribute of the selected named template. This makes the `xsl:call-template` a call to the selected named template.
- *Insert xsl:call-template with param:* This command becomes active when a named

template having one or more `xsl:param` child elements is selected in the XSL Outline window. As with the **Insert xsl:call-template** command, the command inserts an `xsl:call-template` element, but in this case with a corresponding `xsl:with-param` child element for every `xsl:param` child element of the selected named template. The names of the inserted `xsl:call-template` and its `xsl:with-param` child elements correspond to the names of the selected named template and its `xsl:param` children.

- *Set the selected named template as entry point for transformation:* When a named template is set as the entry point for a transformation, transformations executed in XMLSpy start at this named template. In the XSL Outline Window, such a named template is indicated in boldface (see screenshot at the start of this section).
- *Clear named template as entry point for transformation:* Becomes active once a named template has been set as the entry point for transformations.
- *Jump to the named template selected as the entry point for transformations:* Becomes active once a named template has been set as the entry point for transformations. When the focus in the XSL Outline window is at some other point than the named template set as the entry point for transformations, clicking this icon highlights the named template in the XSL Outline window, thus making access to it faster.

Info Window

The XSLT tab of the Info Window, which is displayed only when an XSLT document is the active document in XMLSpy, displays all the imported and included XSLT files related to the active XSLT document, and enables the selection of an XML file that can be used as the source XML document on which the XSLT document is used for the transformation.

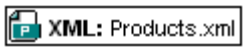


The following files are displayed in the XSLT tab of the Info Window:

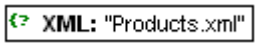
- *XSLT files:* All imported and included XSLT files are listed (*see screenshot above*). The location of each file is displayed in a pop-up when the mouse cursor is placed over the file. Double-clicking an imported or included file, or selecting it and then clicking the **Open** icon in the Info Window toolbar, opens the file in a new window. The **Go to Include/Import Location** icon in the toolbar highlights the include/import declaration in the active XSLT document.

- *XML file:* An XML file can be assigned to the active XSLT stylesheet for transformations. The location of the assigned XML file is displayed in a pop-up when the mouse cursor is placed over the file. If an XML file is specified and the menu

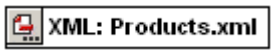
command **XSL/XQuery | XSL Transformation (F10)** is clicked, a transformation is executed on the defined XML file using the active XSLT document as the stylesheet. The XML file can be selected by clicking the **XML** icon and browsing; the selected file is displayed in bold face. Alternatively, the XML file can be assigned via the Project Properties dialog (*XSL transformation of XSL files*) or via a processing instruction in the XSLT document of the form: `<?altova_samplexml "Products.xml"?>`. In each case, the XML file will be shown in the Info Window with the relevant icon:



assigned via the Project Properties dialog



assigned via a processing instruction in the XSLT document



assigned by clicking the XML icon and browsing for the required file; entry is in bold font face

In the event that more than one of the above assignments exists, the selection priority is: (i) project; (ii) processing instruction; (iii) browsed by user. The XML file can be opened by double-clicking it or by selecting it and clicking the **Open** toolbar icon.

- *XSD/DTD file:* If the selected XML file has a reference to a schema (XML Schema or DTD), then this schema file is displayed in the XSD/DTD entry. Alternatively, just as with the XML file, the schema file can be selected via the Project Properties dialog (*Validation*) or by clicking the **XSD/DTD** icon and browsing for the required schema file. If the schema file is selected via the Projects Properties dialog, a Projects icon is displayed next to the entry, otherwise the clickable **XSD/DTD** icon is displayed with the file entry either in a normal font face (when the schema is referenced from the XML file) or bold font face (schema browsed for by the user via the **XSD/DTD** icon). Should the schema file be assigned via more than one method, then the order of priority is as follows: (i) project; (ii) browsed by user; (iii) reference in XML document. The location of the assigned XSD file is displayed in a pop-up when the mouse cursor is placed over the file. The schema file can be opened by double-clicking it or by selecting it and clicking the **Open** toolbar icon.

Note: If an XML or XSD/DTD file is selected via the Project Properties dialog, then to clear this selection, you must go to the Project Properties dialog and clear the setting there. If the selection has been made by browsing via the **XML** or **XSD/DTD** icons, then to clear this setting, select the file and click the **Clear** icon in the Info Window toolbar.

Options

XPath intelligent editing: If an XML file has been assigned, the structure of the XML document is known and intelligent XPath editing will extend to elements and attributes. At locations in the XSLT document where an XPath expression can be entered, available elements and attributes will be shown in a popup. This option is switched on by default. To disable XPath intelligent editing, uncheck the check box. The setting is saved for each XSLT file separately when the file is closed, and will be used each time the file is opened.

Toolbar icons

The Info Window toolbar icons (*screenshot below*) are, from left to right:

- *Reload info:* Updates the Info Window to reflect modifications made in teh XSLT

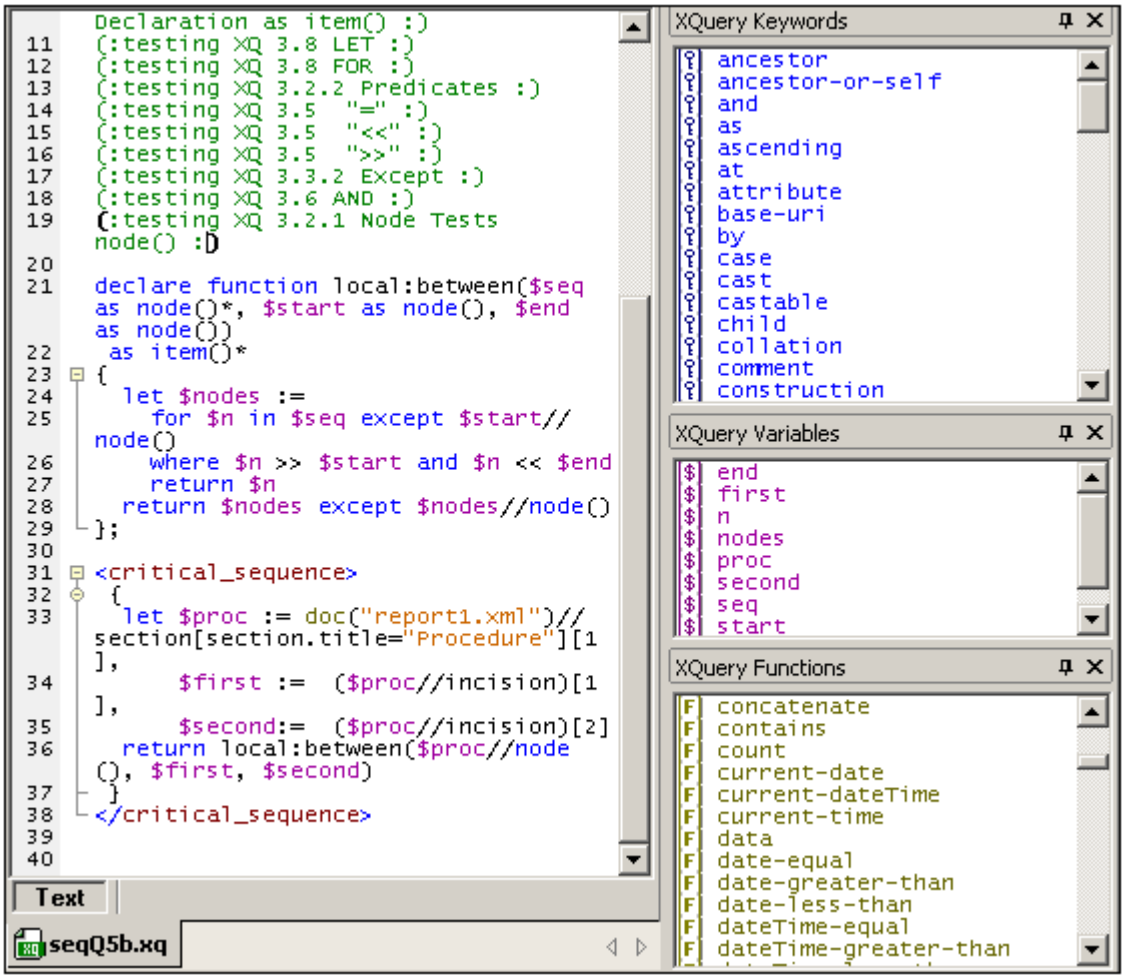
document.

- *Clear XML/XSD assignment:* Clears an XML or XSD/DTD assignment made by the user by browsing via the XML or XSD/DTD icons, respectively. Select the file to clear and then click this icon.
- *Open document:* Opens the selected document.
- *Go to import/include location:* When an imported or included file is selected, clicking this icon highlights the relevant import or include declaration in the XSLT document.
- *Zip all local documents:* Zips all the documents listed in the Info Window to a user-defined location. Alternatively, only the selected documents can be zipped; do this by selecting, in the dropdown menu of this icon, the command **Zip selected local documents**.
- *Add all files to projects:* Adds all files to the current projects. Alternatively, only the selected documents can be added; do this by selecting, in the dropdown menu of this icon, the command **Add selected files to project**.

7.2 XQuery

Altova website: XQuery Editor

XQuery documents can be edited in Text View. The Entry Helpers, syntax coloring, and intelligent editing are different than for XML documents (*see screenshot; line numbering and folding margins in Enterprise and Professional Editions only*). We call this mode of Text View its XQuery Mode. In addition, you can validate your XQuery document in Text View and execute the code in an XQuery document (with an optional XML file if required) using the built-in Altova XQuery Engine.



Please note: XQuery files can be edited only in Text View. No other views of XQuery files are available.

XQuery Profiler and Debugger

XMLSpy also contains an XQuery Debugger to help you create correct XQuery documents faster. These two features are described in the section XSLT and XQuery.

Altova XQuery Engine

For details about how the Altova XQuery Engine is implemented and will process XQuery files,

see XQuery Engine Implementation.

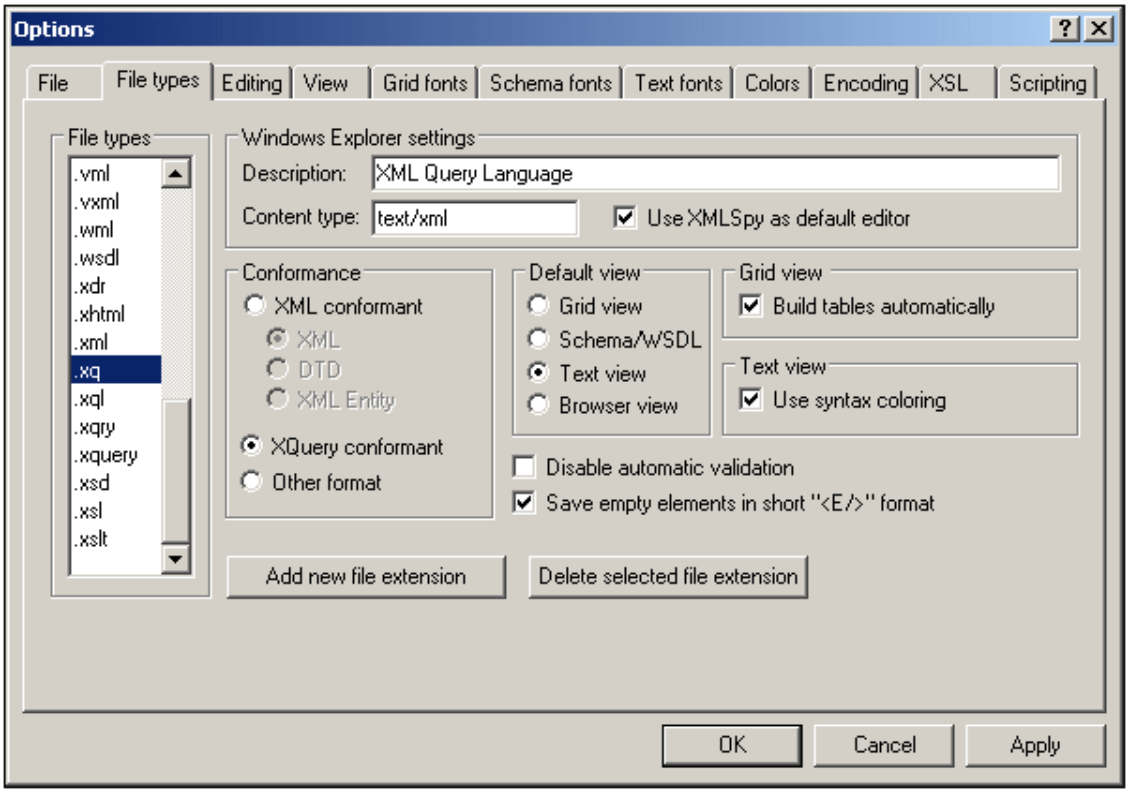
AltovaXML for command line and batch processing
The XMLSpy GUI enables batch processing via the projects functionality. However, if you are looking for more flexibility, you should try Altova's free AltovaXML product, which contains the Altova XQuery Engine that is built into XMLSpy. AltovaXML is ideal if you wish to perform XQuery executions from the command line, or batch processing.

7.2.1 XQuery Documents

An XQuery document is opened automatically in XQuery Mode of Text View if it is XQuery conformant. Files that have the file extension `.xq`, `.xql`, and `.xquery` are pre-defined in XMLSpy as being XQuery conformant.

Setting additional file extensions to be XQuery conformant
To set additional file extensions to be XQuery conformant:

1. Select **Tools | Options**. The Options dialog appears (*see screenshot*).
2. Select the **File types** tab.
3. Click Add new file extension to add the new file extension to the list of file types.
4. Under **Conformance**, select **XQuery conformant**.

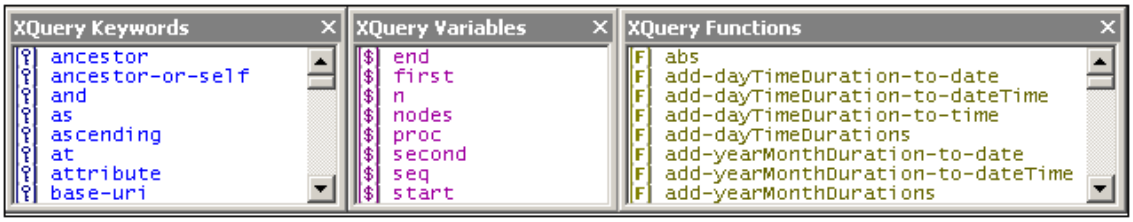


You should also make the following **Windows Explorer settings** in this dialog:

- **Description:** XML Query Language
- **Content** type: text/xml
- If you wish to use XMLSpy as the default editor for XQuery files, activate the **Use XMLSpy as default editor** check box.

7.2.2 XQuery Entry Helpers

There are three Entry Helpers in the XQuery Mode of Text View: XQuery Keywords (blue), XQuery Variables (purple), and XQuery Functions (olive).



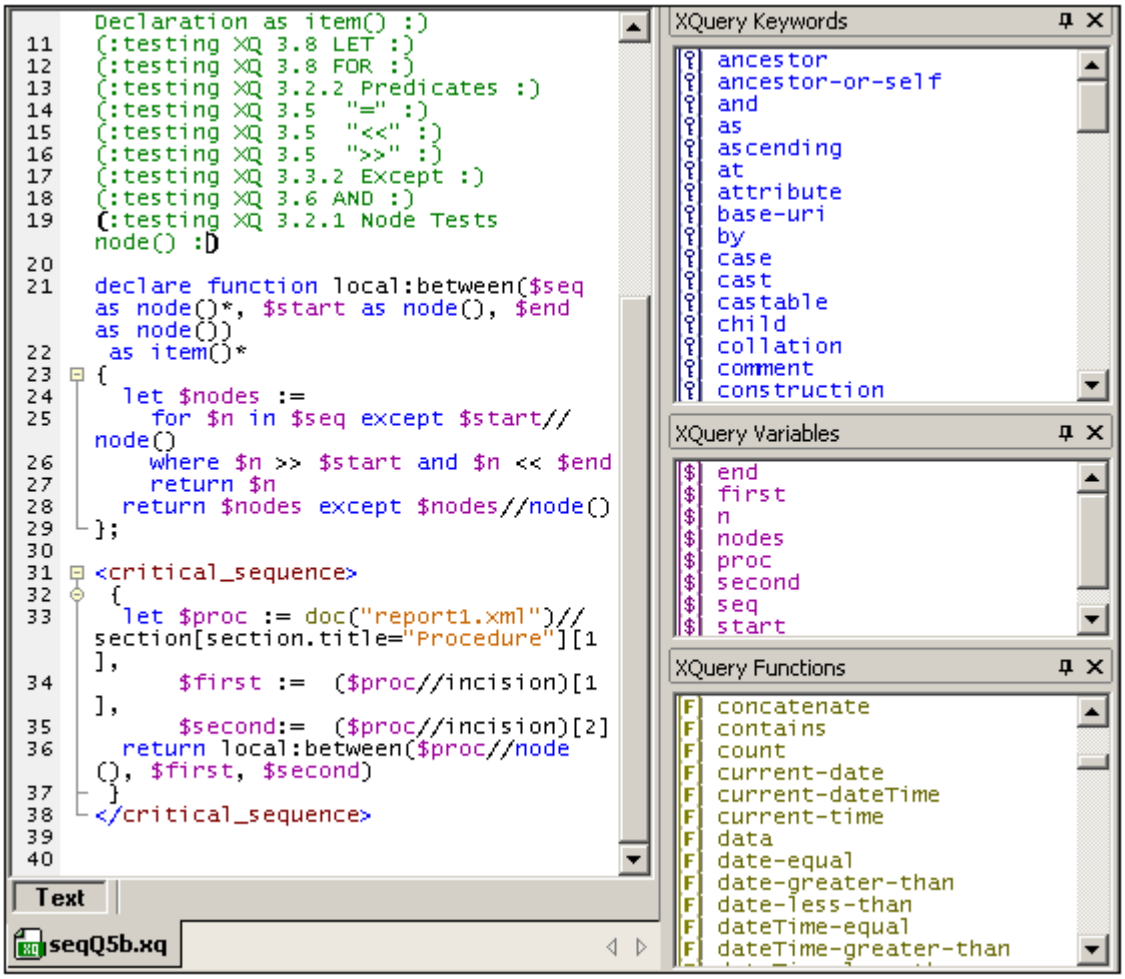
Note the following points:

- The color of items in the three Entry Helpers are different and correspond to the syntax coloring used in the text. These colors cannot be changed.
- The listed keywords and functions are those supported by the Altova XQuery Engine.
- The variables are defined in the XQuery document itself. When a `$` and a character are entered in Text View, the character is entered in the Variables Entry Helper (unless a variable consisting of exactly that character exists). As soon as a variable name that is being entered matches a variable name that already exists, the newly entered variable name disappears from the Entry Helper.
- To navigate in any Entry Helper, click an item in the Entry Helper, and then use either the scrollbar, mouse wheel, or page-down and page-up to move up and down the list.

To insert any of the items listed in the Entry Helpers into the document, place the cursor at the required insertion point and double-click the item. In XQuery, some character strings represent both a keyword and a function (`empty`, `unordered`, and `except`). These strings are always entered as keywords (in blue)—even if you select the function of that name in the Functions Entry Helper. When a function appears in blue, it can be distinguished by the parentheses that follow the function name.

7.2.3 XQuery Syntax Coloring

An XQuery document can consist of XQuery code as well as XML code. The default syntax coloring for the XQuery code is described in this section. The syntax coloring for XML code in an XQuery document is the same as that used for regular XML documents. All syntax coloring (for both XQuery code and XML code) is set in the Text Fonts tab of the Options dialog (**Tools | Options**). Note that XQuery code can be contained in XML elements by enclosing the XQuery code in curly braces `{ }` (*see screenshot for example*).



In XQuery code in the XQuery Mode of Text View, the following default syntax coloring is used:

- `(: Comments, including 'smiley' delimiters, are in green :)`
- XQuery Keywords are in blue: `keyword`
- XQuery Variables, including the dollar sign, are in purple: `$start`
- XQuery Functions, but **not** their parentheses, are in olive: `function()`
- Strings are in orange: `"Procedure"`
- All other text, such as path expressions, is black (*shown underlined below*). So:

```
for $s in doc("report1.xml")//section[section.title =
"Procedure"]
return ($s//incision)[2]/instrument
```

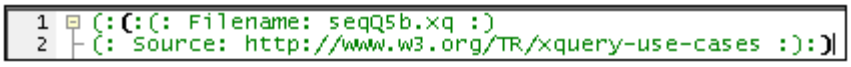
You can change these default colors and other font properties in the Text Fonts tab of the Options dialog (**Tools | Options**).

Please note: In the above screenshot, one pair of colored parentheses for a comment is displayed black and bold. This is because of the bracket-matching feature (see XQuery Intelligent Editing).

7.2.4 XQuery Intelligent Editing

The XQuery Mode of Text View provides the following intelligent editing features.

Bracket-matching
The bracket-matching feature highlights the opening and closing brackets of a pair of brackets, enabling you to clearly see the contents of a pair of brackets. This is particularly useful when brackets are nested, as in XQuery comments (*see screenshot below*).

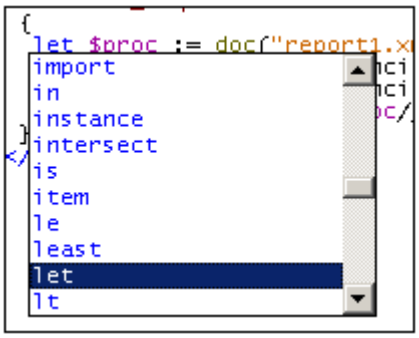


Bracket-matching is activated when the cursor is placed either immediately before or immediately after a bracket (either opening or closing). That bracket is highlighted (bold black) together with its corresponding bracket. Notice the cursor position in the screenshot above.

Bracket-matching is enabled for round parentheses **( )** , square brackets **[ ]** , and curly braces **{ }** . The exception is angular brackets **<>**, which are used for XML tags.

Please note: When you place the cursor just inside a start or end bracket, both brackets are highlighted. Pressing **Ctrl+E** moves the cursor to the other member of the pair. Pressing **Ctrl+E** repeatedly enables you to switch between the start and end brackets. This is another aid to quickly navigating your document.

Keywords
XQuery keywords are instructions used in query expressions, and they are displayed in blue. You select a keyword by placing the cursor inside a keyword, or immediately before or after it. With a keyword selected, pressing **Ctrl+Space** causes a complete list of keywords to be displayed in a pop-up menu. You can scroll through the list and double-click a keyword you wish to have replace the selected keyword.

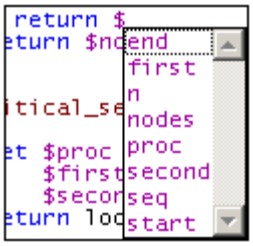


In the screenshot above, the cursor was placed in the `let` keyword. Double-clicking a keyword from the list causes it to replace the `let` keyword.

Variables
Names of variables are prefixed with the **$** sign, and they are displayed in purple. This mechanism of the intelligent editing feature is similar to that for keywords. There are two ways to access the pop-up list of all variables in a document:

- After typing a **$** character, press **Ctrl+Space**
- Select a variable and press **Ctrl+Space**. (A variable is selected when you place the cursor immediately after the **$** character, or within the name of a variable, or

immediately after the name of a variable.)

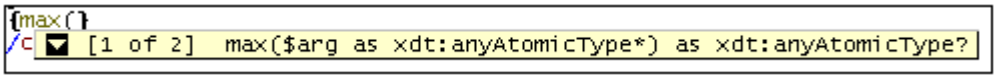


To insert a variable after the **$** character (when typing), or to replace a selected variable, double-click the variable you want in the pop-up menu.

Functions
Just as with keywords and variables, a pop-up menu of built-in functions is displayed when you select a function (displayed in olive) and press **Ctrl+Space**. (A function is selected when you place the cursor within a function name, or immediately before or after a function name. The cursor must not be placed between the parentheses that follow the function's name.) Double-clicking a function name in the pop-up menu replaces the selected function name with the function from the pop-up menu.

To display a tip containing the signature of a function (*screenshot below*), place the cursor immediately after the opening parenthesis and press **Ctrl+Space**.

Please note: The signature can be displayed only for standard XQuery functions.



The downward-pointing arrowhead indicates that there is more than one function with the same name but with different arguments or return types. Click on the signature to display the signature of the next function (if available); click repeatedly to cycle through all the functions with that name. Alternatively, you can use the **Ctrl+Shift+Up** or **Ctrl+Shift+Down** key-combinations to move through a sequence.

Visual Guides
Text folding is enabled on XQuery curly braces, XQuery comments, XML elements, and XML comments.

7.2.5 XQuery Validation and Execution

Validating XQuery documents
To validate an XQuery document:

1. Make the XQuery document the active document.
2. Select **XML | Validate**, or press the **F8** key, or click the  toolbar icon.

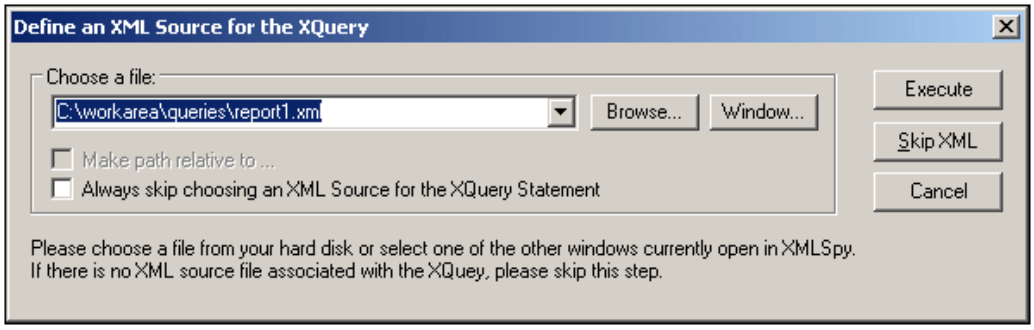
The document will be validated for correct XQuery syntax.

Executing XQuery documents
XQuery documents are executed within XMLSpy using the built-in XQuery 1.0 engine. The output is displayed in a window in XMLSpy.

Typically, an XQuery document is not associated with any single XML document. This is because XQuery expressions can select any number of XML documents with the `doc()` function. In XMLSpy, however, before executing individual XQuery documents you can select a source XML document for the execution. In such cases, the document node of the selected XML source is the starting context item available at the root level of the XQuery document. Paths that begin with a leading slash are resolved with this document node as its context item.

To execute an XQuery document:

1. Make the XQuery document the active document.
2. Select **XSL/XQuery | XQuery Execution** or click the  toolbar icon. This opens the Define an XML Source for the XQuery dialog.



3. Do one of the following:
   - To select an XML file, use either the **Browse** button or the **Window** button (which lists files that are open in XMLSpy and that are in XMLSpy projects). Select an XML source if you wish to assign its document node as the context item for the root level of the XQuery document. Click **Execute**.
   - To skip this dialog click **Skip XML**.

The result document is generated as a temporary file that can be saved to any location with the desired file format and extension.

XQuery Variables
If you are using the Altova XQuery engine, XQuery variables can be stored in a convenient GUI dialog. All the stored variables are passed to the XQuery document each time you execute an XQuery document via XMLSpy. For more information, see the description of the XSLT Parameters / XQuery Variable command.

Altova XQuery Engine
For details about how the Altova XQuery Engine is implemented and will process XQuery files, see XQuery Engine Implementation.

7.2.6 XQuery and XML Databases

An XQuery document can be used to query an XML database (XML DB). Currently this XQuery functionality is supported only for IBM DB2 databases. The mechanism for querying an XML DB using XQuery essentially involves: (i) indicating to the XQuery engine that XML in a DB is to be queried—as opposed to XML in an XML document; and (ii) accessing the XML data in the DB.

The steps for implementing this mechanism are as follows and are described in detail below:

1. Set up the XQuery document to query the XML DB by inserting the `XQUERY` keyword at

the start of the document.
2. For the active XQuery document, enable DB support (via the Info window) and connect to the DB (using the Quick Connect dialog).
3. In the XQuery document, insert DB-specific XQuery extensions so as to access the DB data and make it available for XQuery operations.
4. Execute the XQuery document in XMLSpy.

Setting up the XQuery document to query the XML DB
To set up the XQuery document to query an XML DB, open the XQuery document (or create a new XQuery document) and enter the keyword `XQUERY` (casing is irrelevant) at the start of the document (before the prolog); *see examples below*.

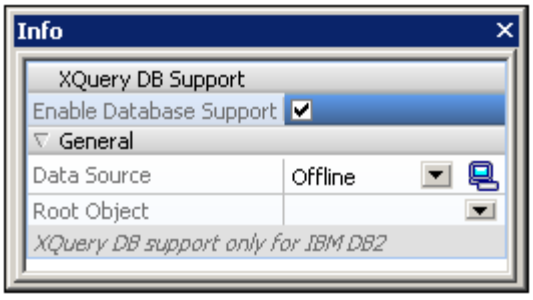
```
XQUERY (: Retrieve details of all customers :)
declare default element namespace "http://www.altova.com/xquery/databases/db2"
;
<a> {db2-fn:xmlcolumn("CUSTOMER.INFO")} </a>
```

If the document uses the optional `xquery version` expression, the `XQUERY` keyword is still required:

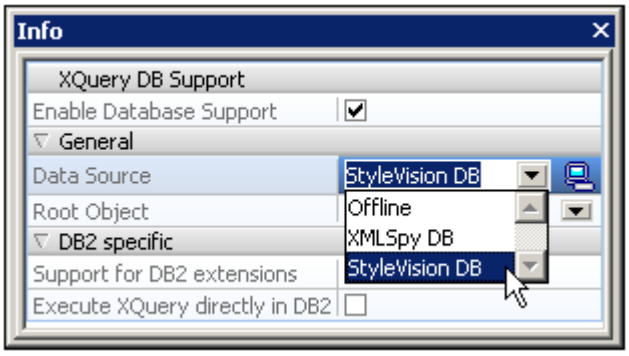
```
XQUERY xquery version "1.0"; (: Retrieve details of all customers :)
declare default element namespace "http://
http://www.altova.com/xquery/databases/db2";
<a> {db2-fn:xmlcolumn("CUSTOMER.INFO")} </a>
```

Note: XMLSpy's built-in XQuery Engine reads the `XQUERY` keyword as indicating that an XML DB is to be accessed. As a result, attempting to execute an XQuery document containing the `XQUERY` keyword on any XML document other than one contained in an XML DB will result in an error.

Enable DB support for XQuery and connect to the DB
DB support for an XQuery document is enabled by checking the Enable Database Support check box in the Info window (*screenshot below*). Note that DB Support must be enabled for each XQuery document separately and each time an XQuery document is opened afresh.



When you enable DB support in the Info window, a Quick Connect dialog pops up, which enables you to connect to a database. Currently, only IBM DB2 databases are supported. How to connect to a DB is described in the section, Connecting to a Data Source. If connections to data sources already exists, then these are listed in the Data Sources combo box of the Info window (*screenshot below*), and one of these data sources can be selected as the data source for the active XQuery document. In the Info window, you can also select the root object from among those available in the Root Object combo box.



The Quick Connect dialog (which enables you to connect to a DB) can be accessed at any time by clicking the icon in the Info window.

Note: When you close an XQuery document the connection to the DB is closed as well. If you subsequently re-open the XQuery document, you will also have to re-connect to the DB.

IBM DB2-specific XQuery language extensions

Two IBM DB2-specific functions can be used in XQuery documents to retrieve data from an IBM DB2 database:

- `db2-fn:xmlcolumn` retrieves an entire XML column without searching or filtering the column.
- `db2-fn:sqlquery` retrieves values based on an SQL `SELECT` statement

The XML data retrieved using these functions can then be operated on using standard XQuery constructs. *See examples below*.

`db2-fn:xmlcolumn`: The argument of the function is a case-sensitive string literal that identifies an XML column in a table. The string literal argument must be a qualified column name of type XML. The function returns all the XML data in the column as a sequence, without applying a search condition to it. In the following example, all the data of the `INFO` (XML) column of the `CUSTOMER` table is returned within a top-level `<newdocelement>` element:

```
XQUERY (: Retrieve details of all customers :)
declare default element namespace "http://www.altova.com/xquery/databases/db2"
;
<newdocelement> {db2-fn:xmlcolumn("CUSTOMER.INFO")} </newdocelement>
```

The retrieved data can then be queried with XQuery constructs. In the example below, the XML data retrieved from the the `INFO` (XML) column of the `CUSTOMER` table is filtered using an XQuery construct so that only the profiles of customers from Toronto are retrieved.

```
XQUERY (: Retrieve details of Toronto customers :)
declare default element namespace "http://www.altova.com/xquery/databases/db2"
;
<newdocelement> {db2-fn:xmlcolumn("CUSTOMER.INFO")/customerinfo[addr/city=
'Toronto']} </newdocelement>
```

Note: In the example above, the document element of the XML files in each cell is `customerinfo` and the root node of the XML sequence returned by `db2-fn:xmlcolumn` is considered to be an abstract node above the `customerinfo` nodes.

`db2-fn:sqlquery`: The function takes an SQL Select statement as its argument and returns

a sequence of XML values. The retrieved sequence is then queried with XQuery constructs. In the following example, the INFO column is filtered for records in the CUSTOMER table that have a CID field with a value between 1000 and 1004. Note that while SQL is not case-sensitive, XQuery is.

```
XQUERY (: Retrieve details of customers by Cid:)
declare default element namespace "http://www.altova.com/xquery/databases/db2"
;

<persons>
   {db2-fn:sqlquery("SELECT info FROM customer WHERE CID>1000 AND CID<1004")/
   <person>
      <id>{data(@Cid)}</id>
      <name>{data(name)}</name>
   </person>}
</persons>
```

The XQuery document above returns the following output:

```
<persons xmlns="http://www.altova.com/xquery/databases/db2">
   <person>
      <id>1001</id>
      <name>Kathy Smith</name>
   </person>
   <person>
      <id>1002</id>
      <name>Jim Jones</name>
   </person>
   <person>
      <id>1003</id>
      <name>Robert Shoemaker</name>
   </person>
</persons>
```

Note the following points:

- The default element namespace declaration in the prolog applies for the entire XQuery document and is used for navigation of the XML document as well as for construction of new elements. This means that the XQuery selector name is expanded to <default-element-namespace>:name, and that constructed elements, such as persons, are in the default element namespace.
- The SQL Select statement is not case-sensitive.
- The WHERE clause of the Select statement should reference another database item—not a node inside the XML file being accessed.
- The "/" after the db2-fn:sqlquery function represents the first item of the returned sequence, and this item is the context node for further navigation.

Execute the XQuery

To execute the XQuery document, select the **XQuery Execution** command (**XSL/XQuery** menu). Alternatively, press **Alt+F10** or click the XQuery Execution icon  . The result of the execution is displayed in a new document.

7.3 XSLT and XQuery Debugger

Altova website: XSLT Debugger, XQuery Debugger

The XSLT and XQuery Debugger enables you to test and debug XSLT stylesheets and XQuery documents. The XSLT and XQuery Debugger interface presents simultaneous views of the XSLT/XQuery document, the result document, and the source XML document. You can then go step-by-step through the XSLT/XQuery document. The corresponding output is generated step-by-step, and, if a source XML file is displayed, the corresponding position in the XML file is highlighted for each step. At the same time, windows in the interface provide debugging information.

The XSLT and XQuery Debugger always opens within a **debugging session**. Debugging sessions can be of three types:

- XSLT 1.0, which uses the built-in Altova XSLT 1.0 engine
- XSLT 2.0, which uses the built-in Altova XSLT 2.0 engine
- XQuery, which uses the built-in Altova XQuery 1.0 engine

Which kind of debugging session is opened is determined automatically by the type of document from which the debugging session is opened (hereafter called the *active document* or *active file*). XSLT debugging sessions are opened from XSLT files (which version depends on the value of the `version` attribute of the `xsl:stylesheet` (or `xsl:transform`) element in the XSLT stylesheet (`"1.0"` for XSLT 1.0 and `"2.0"` for XSLT 2.0)). XQuery debugging sessions are opened from XQuery files. If the active file is an XML file, the selection depends on whether you choose to run an XSLT or XQuery file on the XML file; if the former, the selection further depends on whether the stylesheet is an XSLT 1.0 or XSLT 2.0 stylesheet.

This information is summarized in the table below.

Active File	Associated File	Debugging Session
XSLT 1.0	XML; (required)	XSLT 1.0 (using built-in Altova XSLT 1.0 engine)
XSLT 2.0	XML; (required)	XSLT 2.0 (using built-in Altova XSLT 2.0 engine)
XQuery	XML; (optional)	XQuery (using built-in Altova XQuery engine)
XML	XSLT 1.0, or XSLT 2.0, or XQuery; (required)	XSLT 1.0, XSLT 2.0, or XQuery. XSLT 1.0 or 2.0 depending on value of `version` attribute of `xsl:stylesheet` (or `xsl:transform`) element of XSLT stylesheet.

For details about the three Altova engines, please see the following sections:

- Altova XSLT 1.0 Engine
- Altova XSLT 2.0 Engine
- Altova XQuery 1.0 Engine

Automating XSLT and XQuery tasks with Altova XML 2012

Altova XML is a free application which contains Altova's XML Validator, XSLT 1.0, XSLT 2.0, and XQuery 1.0 engines. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

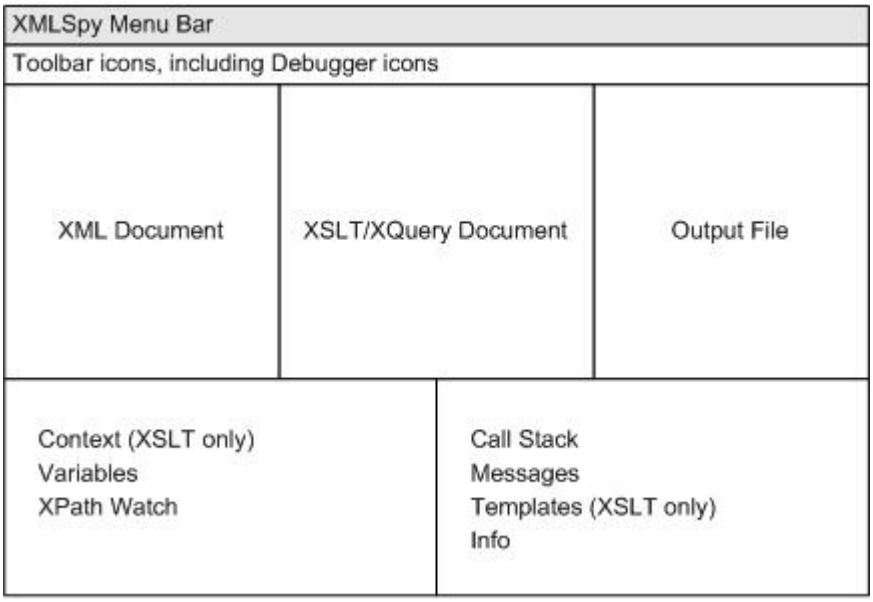
XSLT and XQuery tasks can therefore be automated with the use of Altova XML. For example,

you can create a batch file that calls Altova XML to transform a set of XML documents or to execute a set of XQuery documents. See the Altova XML documentation for details.

7.3.1 Mechanism and Interface

The broad mechanism used for debugging XSLT and XQuery files using the XSLT and XQuery Debugger is given below. Note that there is a difference between a debugging session and the debugger, even though both are started with the **XSL/XQuery | Start Debugger / Go** command. You must first start the debugging session, and then step through the XSLT or XQuery document with the debugger.

- Open a debugging session (with the **XSL/XQuery | Start Debugger / Go** command). The appropriate session (XSLT 1.0, XSLT 2.0, or XQuery) is selected on the basis of the active file (*see* XSLT and XQuery Debugger). The XSLT and XQuery Debugger works only in Text View and Grid View. If the view of the active document is not Text View or Grid View when you start the debugging session, you will be prompted for permission to change the view to Text View, which is the default view of the XSLT and XQuery Debugger. You can, in the Debugger Settings dialog, also choose to have this option set permanently.
- Step through the XSLT or XQuery document using the **Step Into**, **Step Out**, and **Step Over** commands in the **XSL/XQuery** menu. (If you click the **Start Debugger / Go** command at this point, the debugger will go through the entire transformation or execution, stopping only at breakpoints. If no breakpoint has been set, it will go through the transformation in one step, without showing any debug results.) If an XML file is associated with the session, the corresponding locations in the XML file are highlighted. Simultaneously, output for corresponding steps is generated in the result file and the result document is built up step-by-step. In this way, you can analyse what each statement of the XSLT or XQuery file does.



Alternatively to the view of the three documents (XML, XSLT/XQuery, Output) shown above, a view of two documents (XSLT/XQuery and Output), or a view of any one of the documents can be selected.

- While a debugging session is open, information windows in the interface provide information about various aspects of the transformation/execution (Variables, XPath Watch, Call Stack, Messages, Info, etc).
- While a debugging session is open, you can stop the debugger (not the same as

stopping the debugging session) to make changes to any of the documents. All the editing features that are available in your XMLSpy environment are also available while editing a file during a debugging session. When the debugger is stopped, the XSLT and XQuery Debugger interface stays open, and you have access to all the information in the information windows. After stopping the debugger in a debugging session, you can restart the debugger (from the beginning of the XSLT/XQuery document) within the same debugging session.

- Breakpoints can be set in the XSLT file to interrupt the processing at selected points. This speeds up debugging sessions since you do not have to step through each statement in the XSLT or XQuery document manually.
- Tracepoints can be set in the XSLT file. For instructions where a tracepoint is set, the value of that instruction is output when the instruction is reached.
- Stop a debugging session. This closes the XSLT and XQuery Debugger interface and returns you to your previous XMLSpy environment. The information in the information windows is no longer available. Breakpoint and tracepoint information, however, is retained in the respective files till the file is closed. (So if you start another debugging session involving a file containing breakpoints, the breakpoints will apply in the newly opened debugging session.)

Please note: The Debugger toolbar with Debugger icons appears automatically when a debugging session is started.

7.3.2 Commands and Toolbar Icons

Debugger commands are available in the **XSL/XQuery** menu and as toolbar icons. The debugger icons are automatically made available in the toolbar when a debugging session is opened. These icons are listed below.

Start Debugger/Go (Alt+F11)
Starts or continues processing the XSLT/XQuery document till the end. If breakpoints have been set, then processing will pause at that point. If the debugger session has not been started, then this button will start the session and stop at the first node to be processed. If the session is running, then the XSLT/XQuery document will be processed to the end, or until the next breakpoint is encountered. If tracepoints have been set, the value of the instruction for which the tracepoint was set is displayed in the Trace window when that instruction is reached.

View the active document only
Maximizes the window of the currently active document in the Debugger interface.

View XSLT/XQuery and Output
Displays the XSLT and Output documents in their windows, while hiding the XML document.

View XML, XSLT/XQuery and Output
Displays the XML, XSLT/XQuery, and Output documents. This is the default view when an XML document is associated for the debugging session.

Stop Debugger
Stops the debugger. This is not the same as stopping the debugger session in which the debugger is running. This is convenient if you wish to edit a document in the middle of a debugging session or to use alternative files within the same debugging session. After stopping the debugger, you must restart the debugger to start from the beginning of the XSLT/XQuery document.

Step into (F11)
Proceeds in single steps through all nodes and XPath expressions in the stylesheet. This command is also used to re-start the debugger after it has been stopped.

Step Over (Ctrl+F11)
Steps over the current node to the next node at the same level, or to the next node at the next higher level from that of the current node. This command is also used to re-start the debugger after it has been stopped.

Step Out (Shift+F11)
Steps out of the current node to the next sibling of the parent node, or to the next node at the next higher level from that of the parent node.

Show current execution node
Displays/selects the current execution node in the XSLT/XQuery document and the corresponding context node in the XML document. This is useful when you have clicked in other tabs which show or mark specific code in the XSLT stylesheet or XML file, and you want to return to where you were before you did this.

Restart Debugger
Clears the output window and restarts the debugging session with the currently selected files.

Insert/Remove Breakpoint (F9)
Inserts or removes a breakpoint at the current cursor position. Inline breakpoints can be defined for nodes in both the XSLT/XQuery and XML documents, and determine where the processing should pause. A dashed red line appears above the node when you set a breakpoint. Breakpoints cannot be defined on closing nodes, and breakpoints on attributes in XSLT documents will be ignored. This command is also available by right-clicking at the breakpoint location.

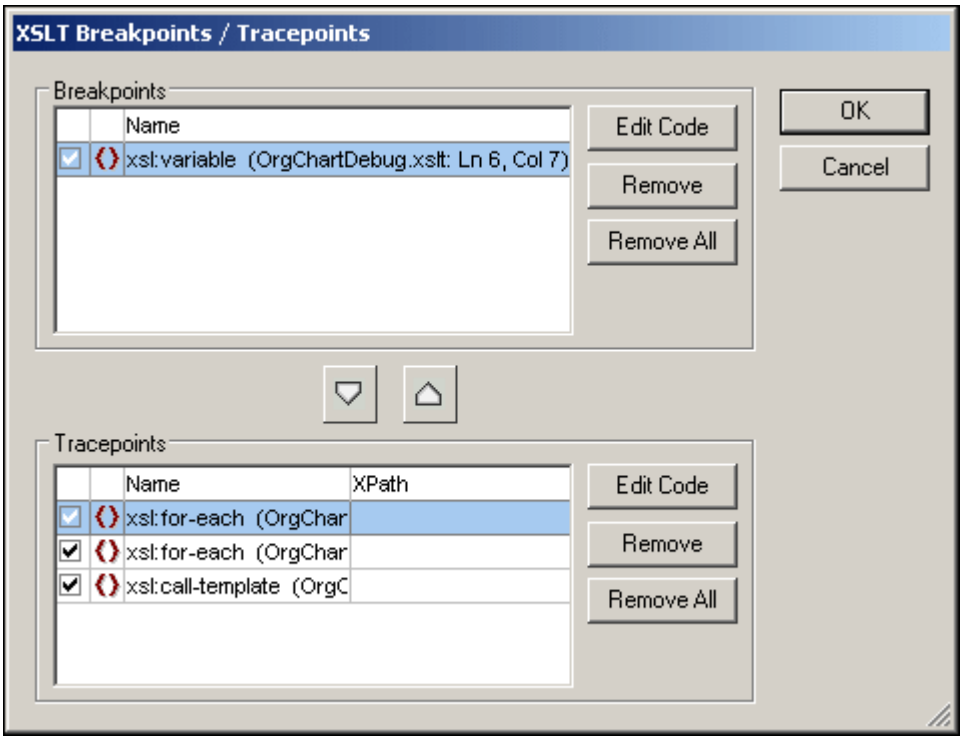
Insert/Remove Tracepoint (Shift+F9)
Inserts or removes a tracepoint at the current cursor position. Inline tracepoints can be defined for nodes in XSLT documents. During debugging, when a statement with a tracepoint is reached, the result of that statement is output in the Trace window. A dashed blue line appears above the node when you set a tracepoint. Tracepoints cannot be defined on closing nodes. This command is also available by right-clicking at the tracepoint location.

Enable/Disable Breakpoint (CTRL+F9)
This command (no toolbar icon exists) enables or disables already defined breakpoints. The red breakpoint highlight turns to gray when a breakpoint is disabled. The debugger does not stop at disabled breakpoints. To disable/enable a breakpoint, place the cursor in that node name and click the Enable/Disable Breakpoint command. This command is also available by right-clicking at the breakpoint location.

Enable/Disable Tracepoint (Shift+CTRL+F9)
This command (no toolbar icon exists) enables or disables already defined tracepoints. The blue tracepoint highlight turns to gray when a tracepoint is disabled. No output is made in the Trace window for disabled tracepoints. To disable/enable a tracepoint, place the cursor in that node name and click the Enable/Disable Tracepoint command. This command is also available by right-clicking at the tracepoint location.

End Debugger Session
Ends the debugging session and returns you to the normal XMLSpy view that was active before you started the debugging session. Whether the output documents that were opened for the debugging session stay open depends on a setting you make in the XSLT/XQuery Debugger Settings dialog.

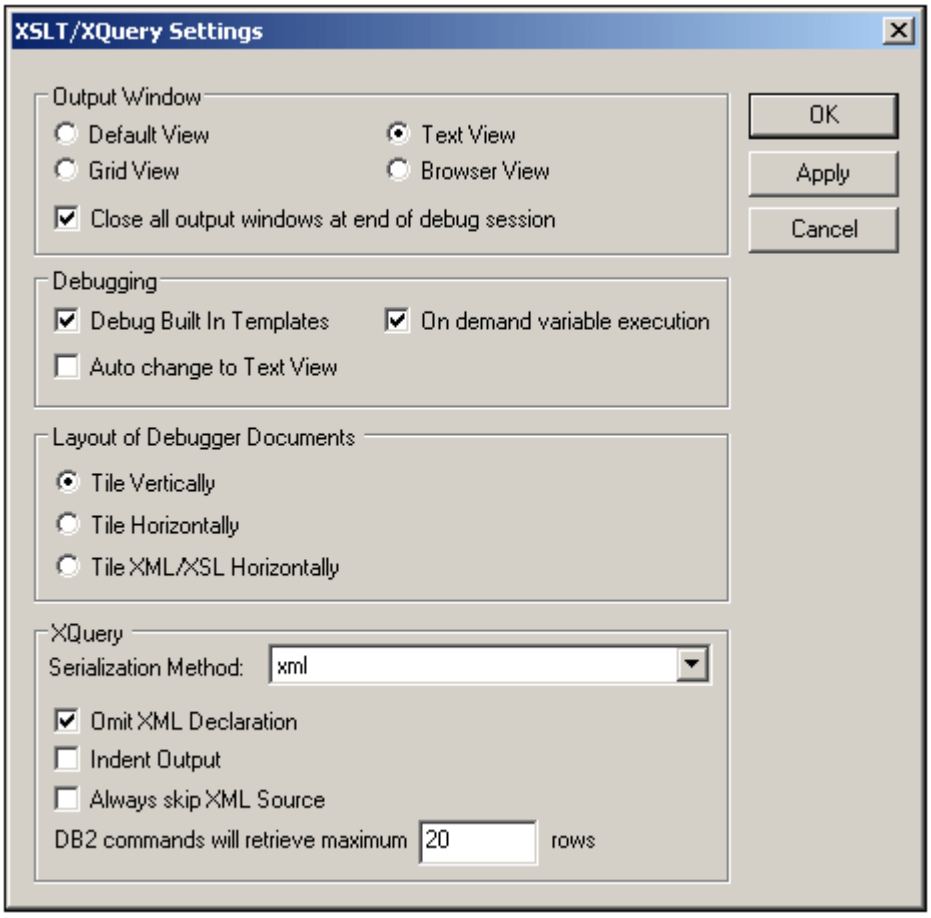
XSLT Breakpoints / Tracepoints Dialog
This command opens the XSLT/XQuery Breakpoints / Tracepoints dialog, which displays a list of all currently defined breakpoints/tracepoints (including disabled ones) in all files in the current debugging session.



The check boxes indicate whether a breakpoint/tracepoint is enabled (checked) or disabled. You can remove the highlighted breakpoint/tracepoint by clicking the corresponding **Remove** button and remove all breakpoints or tracepoints by clicking the corresponding **Remove All** button. The corresponding **Edit Code** button takes you directly to the selected breakpoint/tracepoint in the file.

7.3.3 XSLT/XQuery Settings

The XSLT and XQuery Debugger Settings dialog enables you to set debugging and output options that are applicable to all debugging sessions. To access the Settings dialog, click **XSL/XQuery | XSLT/XQuery Settings** or click the  icon in the toolbar. The different settings are described below.



Output Window
Sets the view of the output document window (Default, Text, Grid, or Browser). The Default View is that selected for the output file type in the File tab of the Options dialog (Tools | Options). For XSLT transformations, the output file type is defined in the XSLT file. For XQuery executions, the output file type is determined by the serialization format you choose in the XQuery setting of this dialog (*see below*).

The Close All Output Windows option gives you the opportunity to keep open the output document windows that were opened in the debugging session when the debugging session ends.

Debugging
The Debug Built-in Templates setting causes the debugger to **step into** built-in templates code whenever appropriate. It is not related to the **display** of built-in templates when clicking this type of template entry in the Templates tab, or if the callstack shows a node from the built-in template file.

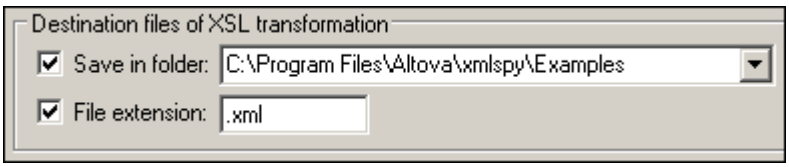
The XSLT Debugger works only in Text View or Grid View. The Auto Change to Text View option enables you to automatically switch to the Text View of a document for debugging if a document is not in Text View or Grid View. (The XQuery Debugger works in Text View only.) If the *On demand variable execution* check box is checked, the definition of a variable will be stepped into when the variable is called. Otherwise, the Debugger will not step into the variable definition when it encounters a call to a variable, but will carry on to the next step.

Layout of Debugger Documents
The Debugger Documents are the documents that are open in the Debugger. You can select whether these documents should be tiled vertically, horizontally, or XML/XSLT horizontally with the result document tiled vertically relative to the XML and XSLT.

XQuery
The serialization method determines two things: (i) the file format of the generated output file, and (ii) the rules followed in writing the output to the output file. The available options are HTML, Text, XHTML, and XML. The selection you make sets up an empty file of the selected file type when you start the debugger inside a debugging session. The file type is significant because it enables currently active XMLSpy features for that file type (such as validation for XML files).

You can choose to omit the XML declaration and to indent the output. The Always Skip XML Source option enables you to always skip the optional XML file association step when you start a debugging session from an XQuery file. For DB2 databases, you can specify the maximum number of rows to be retrieved.

Alternative output setting
In the Project Properties dialog, you can make XSLT transformation associations for a folder. One of these options is the destination folder of the XSLT transformation, for which you can select a file extension.



The file type selected here determines the file type of the output format for XML or XSLT files that belong to a project for which XSLT transformation properties have been defined.

7.3.4 Starting a Debugging Session

The simplest way to start a debugging session is to start one from an XSLT, XQuery, or XML file. If the required associated file (see Table of associated files) has already been assigned to the active file, then the debugging session is started immediately. Otherwise you are prompted to select the required associated file. Since XQuery files neither require nor contain an XML file association, you can choose to be prompted for an optional XML file association each time you start an XQuery debugging session from an XQuery file, or to not be prompted.

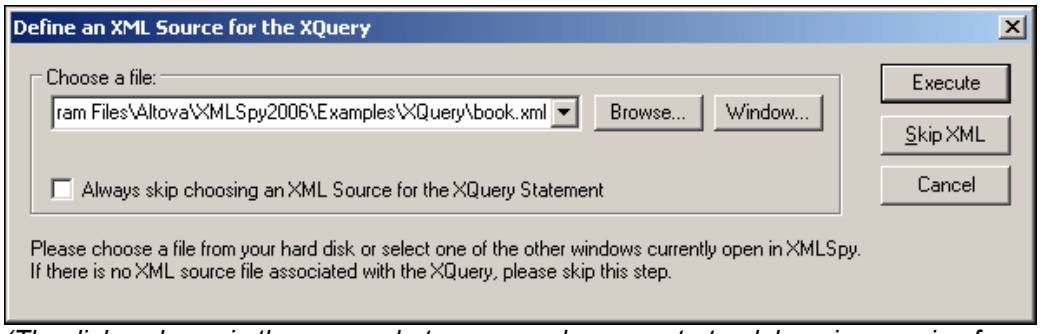
Predefined associations
Predefined associations are relevant only for XSLT debugging sessions, and refer to cases in which the associated file assignment is already present in the active file. To make an assignment in an XML or XSLT file, do the following:

- In XML files: Open the file, click **XSL/XQuery | Assign XSL**, and select the XSLT file.
- In XSLT files: Open the file, click **XSL/XQuery | Assign sample XML file...**, and select the XML file.

When you click **XSL/XQuery | Start Debugger/Go**, the debugging session is started directly, i.e. without you being prompted for any file to associate with the active file.

Direct assignment
If no predefined association is present in the active file, you are prompted for an association. When you select **XSL/XQuery | Start Debugger/Go**, the following happens:

- For XML files: You are prompted to select an XSLT or XQuery file.
- For XSLT files: You are prompted to select an XML file.
- For XQuery files: You are given the option of selecting an XML file, which you can skip.

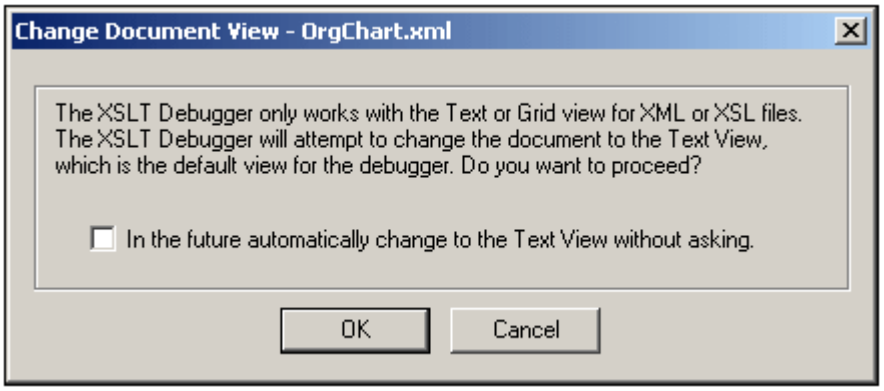


(The dialog shown in the screenshot appears when you start a debugging session from an XQuery file.)

After you select the required associated file or skip an optional association, the debugging session is started.

Alternative method of file association
In the Project Properties dialog, you can make predefined associations. Click **Project | Project properties**, and assign the required files by clicking the **Use this XSL** / **Use this XML** check box.

Debugger View
The XSLT and XQuery Debugger works only in Text View and Enhanced Grid View. If either your XML or XSLT file is open in some other view than Text or Grid View, or if an SPS file is associated with an XML file, the following dialog pops up when you start a debugging session involving one of these files.

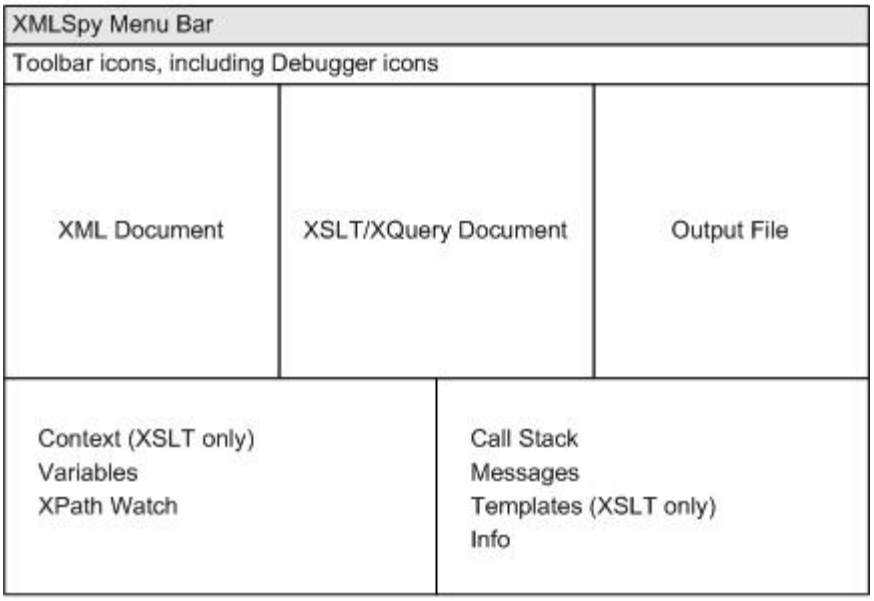


Clicking **OK** causes the document to open in Text View. Note that XQuery files are always displayed in Text View.

7.3.5 Information Windows

Information windows that are opened in the XSLT and XQuery Debugger interface during a debugging session contain information about various aspects of the XSLT transformation or XQuery execution. This information is important in helping you debug your XSLT and XQuery files.

There are eight information windows in XSLT debugging sessions and five information windows in XQuery debugging sessions. These windows are organized into two groups by default, which are located at the bottom of the XSLT and XQuery Debugger interface (*see illustration below*). These windows and the information they display are described in detail in this section.



The default layout of the XSLT and XQuery Debugger interface.

The first group of information windows displays the following windows as tabs in a single window:

- Context (for XSLT debugging sessions only)
- Variables
- XPath-Watch

The second group of information windows displays the following windows as tabs in a single window

- Call Stack
- Messages
- Templates (for XSLT debugging sessions only)
- Info
- Trace

In the default layout, therefore, there are two window groups, each having tabs for the different windows in them. One tab is active at a time. So, for example, to display information about Variables in the first information window group, click the **Variables** tab. This causes the Variables information window to be displayed and the Context and XPath-Watch information windows to be hidden. Note that in some tabs, you can use the information display as navigation tools: clicking an item can take you to that item in the XML, XSLT, or XQuery file. See the documentation of the respective information windows (Context, Call Stack, Templates)

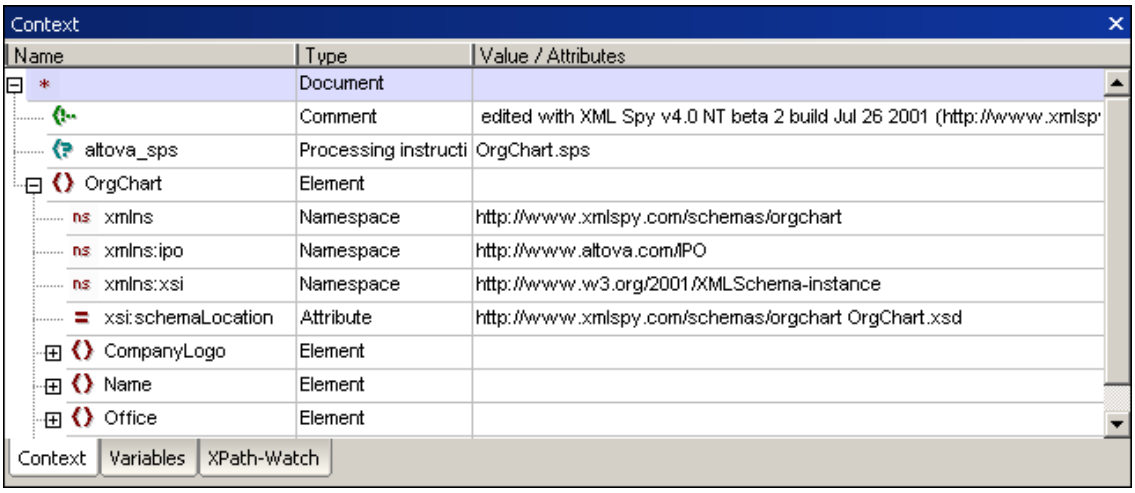
for details.

The two information window groups can be resized by dragging their borders. Individual windows can be dragged out of the containing group by clicking the tab name and dragging the window out of the group. A window can be added to a group by dragging its title bar onto the title bar of the group. Note that there is no reset button to return the layout to the default layout.

Context Window

The Context Window is available in XSLT debugging sessions only; it is not available in XQuery debugging sessions.

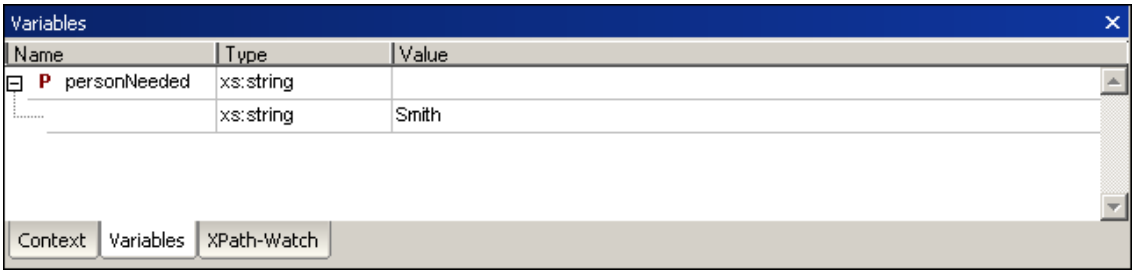
During the processing of the XSLT stylesheet, the processor's context is always within a template that matches some sequence (of nodes or atomic values). The Context Window displays the current processing context, which could be a sequence of nodes, a single node, or an atomic value (such as a string). Depending on the kind of a context item, its value or attribute/s is/are displayed. For example, if the context item is an element, the element's attributes are displayed. If the context item is an attribute or text node, the node's value is displayed.



Clicking an entry in the Context Window, displays that item in the XML document. If the XML document is not currently displayed in the interface, a window for the XML document will be opened.

Variables Window

The Variables Window is available in XSLT and XQuery debugging sessions. It displays the variables and parameters that are used in the XSLT/XQuery document when they are in scope, and their values.

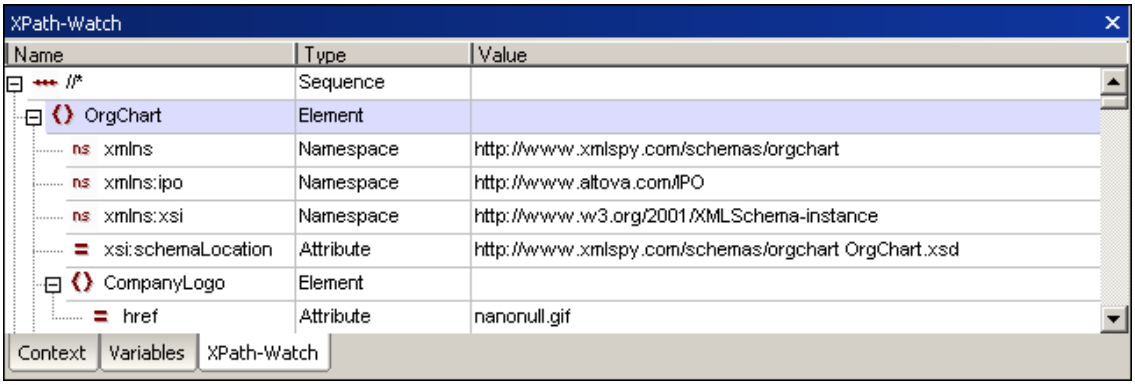


Parameters are indicated with P, global variables (declared at top-level of a stylesheet) are indicated with G, and local variables (declared within an XSLT template) are indicated with L. The type of the values of variables and parameters is also indicated by icons in the Value field. The following types are distinguished: Node Set, Node Fragment, String, Number, and Boolean.

XPath-Watch Window

The XPath-Watch Window is available in XSLT and XQuery debugging sessions.

It enables you to enter XPath expressions that you wish to evaluate in one or more contexts. As you step through the XSLT document, the XPath expression is evaluated in the current context and the result is displayed in the Value column.



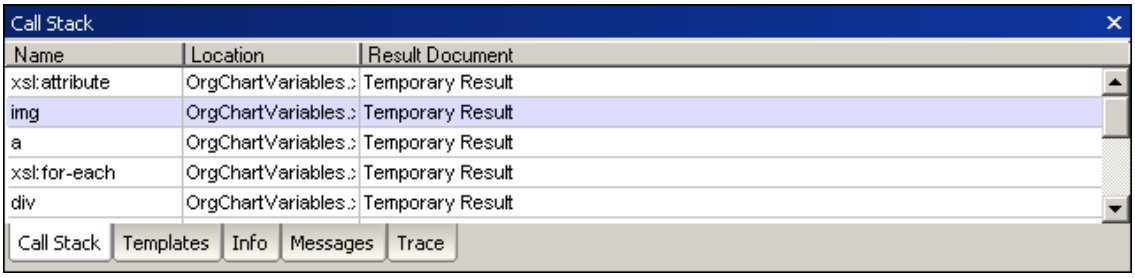
To enter an XPath expression, double-click in the text field under the Name column and enter the XPath. Alternatively, drag an XPath expression from a file and drop it into the XPath-Watch Window. Use expressions that are correct according to the XPath version that corresponds to the XSLT version of the XSLT stylesheet (XPath 1.0 for XSLT 1.0, and XPath 2.0 for XSLT 2.0).

Please note: If namespaces have been used in the XML file or XSLT file, you must use the correct namespace prefixes in your XPath expressions.

Call Stack Window

The Call Stack Window is displayed in XSLT and XQuery debugging sessions.

The Call Stack Window displays a list of previously processed XSLT templates and instructions, with the current template/instruction appearing at the top of the list.



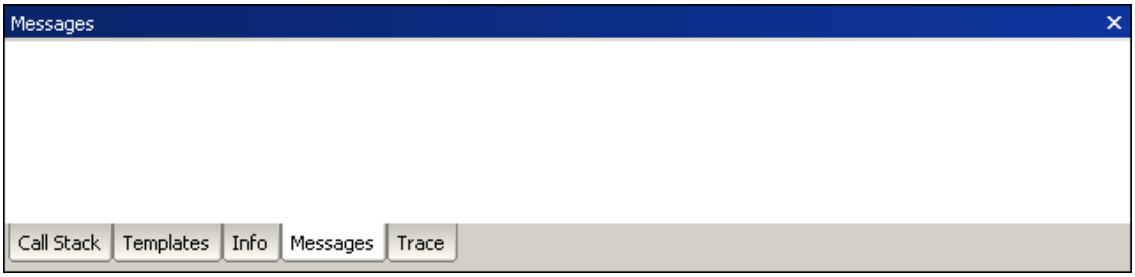
Clicking an entry in this window, causes the selected XSLT template/instruction to be displayed in the XSLT document window. Clicking a template/instruction that references a built-in template highlights the built-in template in a separate window that displays all built-in templates.

Messages Window

The Messages Window is displayed in XSLT and XQuery debugging sessions.

XSLT 1.0 and XSLT 2.0

In XSLT debugging sessions, the Messages tab displays error messages, the `xsl:message` instruction(s), or any error messages that may occur during debugging.



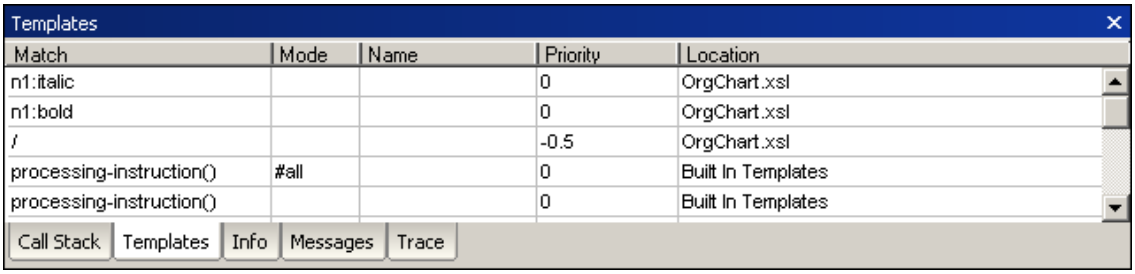
XQuery

In XQuery debugging sessions, the Messages Window displays error messages.

Templates Window

The Templates Window (*see screenshot*) is available in XSLT debugging sessions only; it is not available in XQuery debugging sessions.

The Templates Window displays the various templates used in the XSLT stylesheet, including built-in templates and named templates. Matched templates are listed by the nodes they match. Named templates are listed by their name. For both types of template, the mode, priority, and location of the template are displayed.

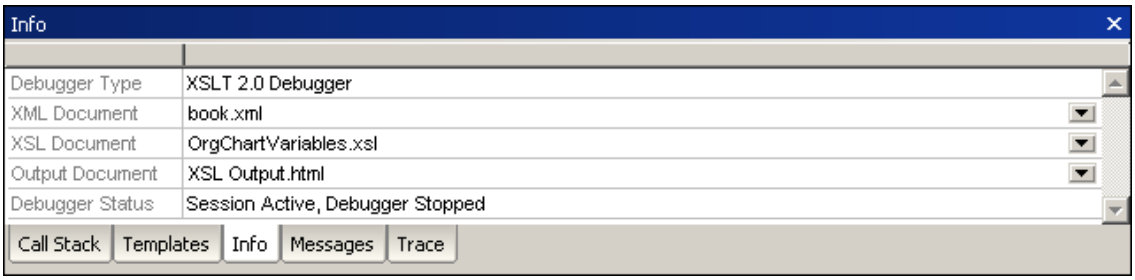


In the screenshot above, there are three matched templates in the XSLT stylesheet: a template which matches the document node **/**, and templates that match the `n1:italic` and `n1:bold` nodes. All the other templates are built-in templates (indicated with no entry in the Location field).

Clicking an entry in this window, causes the template to be highlighted in the XSLT document window. If you click a built-in template, the template is highlighted in a separate window that displays all the built-in templates.

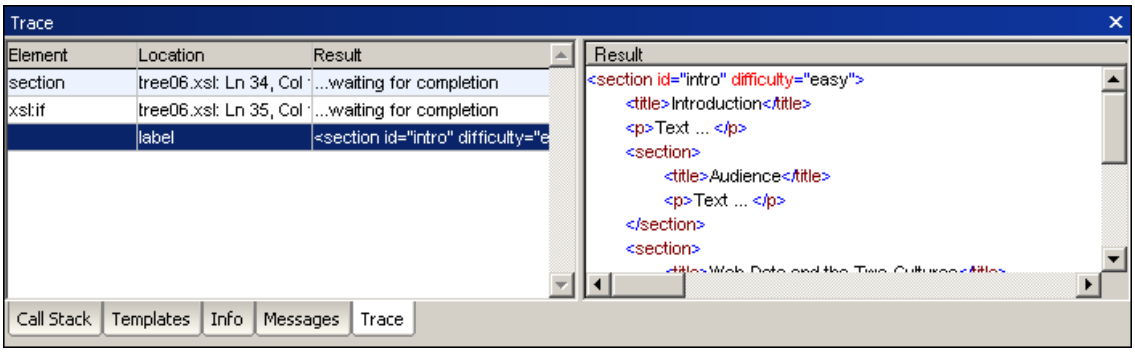
Info Window

The Info Window is available in XSLT and XQuery debugging sessions. It provides meta information about the current debugging session. This information includes what debugger is being used, the names of the source and output documents, and the status of the debugger.



Trace Window

The Trace Window is displayed in XSLT and XQuery debugging sessions.



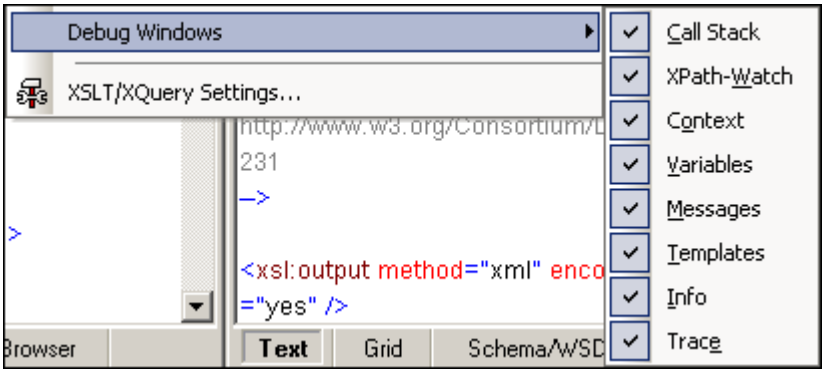
The Trace Window contains the element the tracepoint is set for, its location in the XSLT stylesheet and the result generated when that element is executed. Click on a row in the left side of the window to display the full result on the right.

Arranging the Info Windows

The Information Windows can be arranged inside the XSLT and XQuery Debugger interface. Windows can be docked in the interface, can float in it, and can be arranged as a collection of panes in a window. You can use the following mechanisms to arrange the windows.

Menu

In the **XSL/XQuery** menu, placing the cursor over the item **Debug Windows** pops up the list of Info Windows. You can hide or show individual windows by clicking the window.



This toggles the display of the window on and off.

Context Menu

The context menu can be accessed by right-clicking a window tab or title bar.

Click the required option to cause that window to float, be docked or be hidden.

Drag-and-drop
You can drag a window by its tab or title bar and place it at a desired location.

Additionally, you can dock the window in another window or in the interface using placement controls that appear when you drag a window:

- When you drag a window over another window, a circular placement control appears (*see screenshot below*). This control is divided into five placement sectors. Releasing the mouse key on any of these sectors docks the dragged window into the respective sector of the **target window**. The four arrow sectors dock the dragged window into the respective sides of the target window. The center button docks the dragged window as a tab of the target window. You can also dock a window as a tab in another window by dragging it to the tab bar and dropping it there.

- When you drag a window, a placement control consisting of four arrows appears. Each arrow corresponds to one side of the **Debugger interface**. Releasing a dragged window over one of these arrows docks the dragged window into one side of the Debugger interface.

You can also double-click the title bar of a window to toggle it between its docked and floating positions.

7.3.6 Breakpoints

The XSLT and XQuery Debugger enables you to define breakpoints in XSLT, XQuery, and XML documents. Breakpoints are displayed as a dashed red line (*shown in the screenshot below*).

Please note: It is possible to set a tracepoint and a breakpoint for the same instruction. This appears as a dashed blue and red line (*see screenshot*).


```
<!-- Local Variable reused -->
<xsl:variable name="OfficeName" select="n1:Name"/>
<!-- Display the company name if the varaible is true ********* -->
<xsl:if test="$Show_Company_Name">
    <h3>
        <xsl:value-of select="$OfficeName"/>
    </h3>
    <xsl:message>
        <xsl:text>Company Named Displayed</xsl:text>
    </xsl:message>
</xsl:if>
```

When you start the debugger within a debugging session, the debugging will pause at each encountered breakpoint. In this way, you can identify specific areas to debug, and restrict attention to these areas in either the XSLT, XQuery, and/or XML documents. You can set any number of breakpoints.

Please note: Breakpoints set for a document remain in that document until it is closed. However, if you switch to Schema View (for example, in the case of XSD documents), then the breakpoints are deleted; when you switch back to Text View or Grid View (from Schema View), there will be no breakpoint.

Breakpoints in XML documents

You can set breakpoints on any node in an XML document. The break in processing will occur at the start of that node.

Breakpoints in XSLT documents

You can set breakpoints at the following points in an XSLT document:

- At the beginning of templates and template instructions (e.g., `xsl:for-each`).
- On an XPath expression (XPath 1.0 or XPath 2.0).
- On any node in a literally constructed XML fragment. The break in processing will occur at the start of that node.

Breakpoints in XQuery documents

You can set breakpoints at the following points in an XQuery document:

- At the beginning of XQuery statements.
- In an XQuery expression.
- On any node in a literally constructed XML fragment. The break in processing will occur at the start of that node.

Inserting/removing breakpoints

To insert a breakpoint:

1. Place the cursor at the point in the document where you wish to insert the breakpoint (*see paragraphs above*). In XSLT debugging sessions, you can set breakpoints in both Text View and Grid View. XQuery debugging sessions are available only in Text View.
2. Do one of the following:
   - Select **XSL/XQuery | Insert/Remove Breakpoint**.
   - Press **F9**.

- Right-click and select **Insert/Remove Breakpoint**.

To remove a breakpoint:

1. Place the cursor at the point in the document containing the breakpoint.
2. Do one of the following:
   - Select **XSL/XQuery | Insert/Remove Breakpoint**.
   - Press **F9**.
   - Right-click and select **Insert/Remove Breakpoint**.

Alternatively, you can use the Breakpoints dialog to remove a breakpoint:

1. Select the menu option **XSL/XQuery | Breakpoints...**.
2. Click the breakpoint in the dialog box and click **Remove**.

The **Remove All** button deletes all the breakpoints from the dialog box (and all XSLT stylesheets).

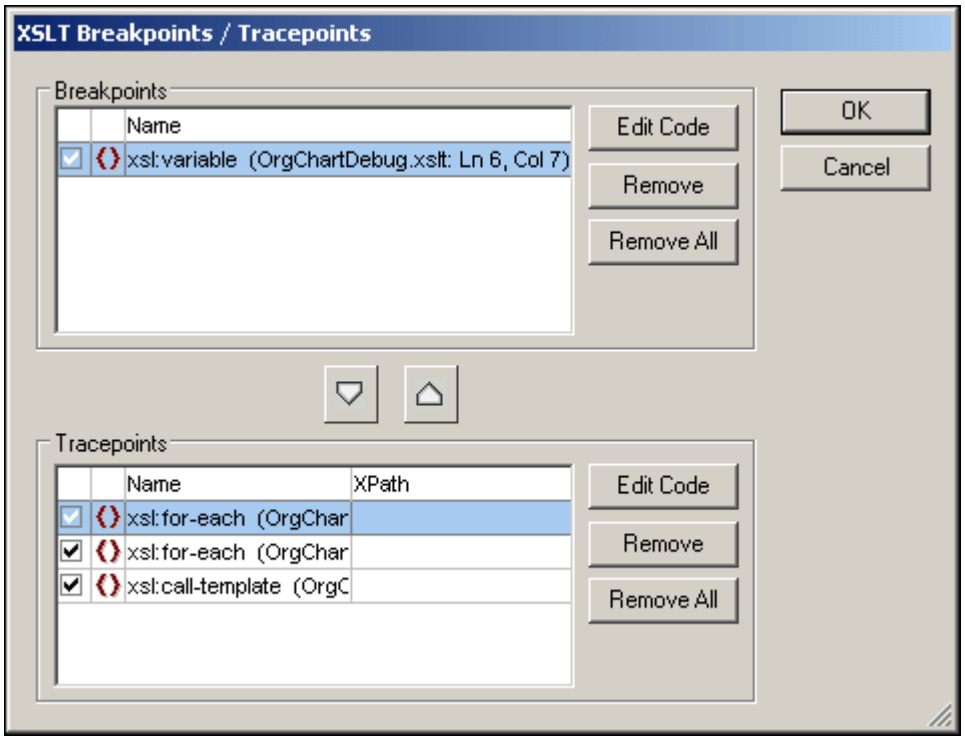
Disabling/enabling breakpoints:
After inserting breakpoints, you can disable them if you wish to skip over breakpoints without having to delete them. You can enable them again when necessary.

To disable a breakpoint:

1. Place the cursor in the node or expression containing the breakpoint.
2. Select **XSL/XQuery | Enable/Disable Breakpoint** (or press **Ctrl+F9**). The breakpoint changes from red to gray, indicating that it has been disabled.

Alternatively, you can use the Breakpoints dialog to disable a breakpoint:

1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoint...**. This opens the XSLT Breakpoints / Tracepoints dialog box which displays the currently defined breakpoints in all open XML source and XSLT stylesheet documents.



2. Remove the check mark of the breakpoints you wish to disable, and click **OK** to confirm. The breakpoint changes from red to gray, indicating that it has been disabled.

To enable a breakpoint:

1. Place the cursor in the node or expression containing the breakpoint.
2. Select **XSL/XQuery | Enable/Disable Breakpoint** (or press **Ctrl+F9**). The breakpoint changes from gray to red, indicating that it has been enabled.

Finding a specific breakpoint
To find a specific breakpoint:

1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoints...**. The XSLT Breakpoints / Tracepoints dialog appears.
2. Click the required breakpoint in the breakpoint list.
3. Click the **Edit Code** button. The Breakpoints dialog box is closed and the text cursor is placed directly in front of the breakpoint in Text view. In the Enhanced Grid view, the table cell containing the breakpoint is highlighted in red.

Continuing debugging after a breakpoint
To continue debugging after a breakpoint:

- Select the **XSL/XQuery | Step into** or **XSL/XQuery | Start Debugger/Go** command.

7.3.7 Tracepoints

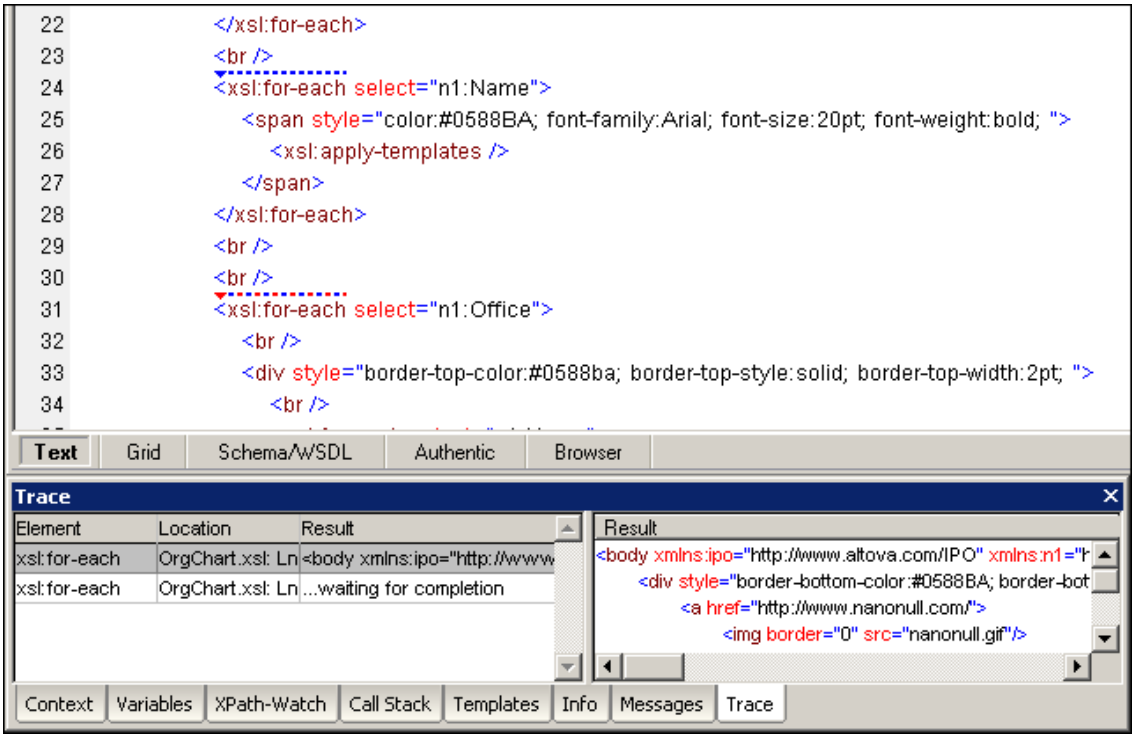
The XSLT and XQuery Debugger enables you to define tracepoints in XSLT documents.

Tracepoints allow you to trace content generated by an instruction or view the result of an XPath

expression at the point where the tracepoint is set without having to edit the XSLT stylesheet, for example, using the `xsl:message` element to output debugging messages.

Tracepoints are displayed as a dashed blue line in XSLT stylesheets (*shown in the screenshot below*).

Please note: It is possible to set a tracepoint and a breakpoint for the same instruction. This appears as a dashed blue and red line (*see screenshot*).



The debugger outputs the content generated by each instruction that has a tracepoint set for it. This output is visible in the Trace window. You can set any number of tracepoints in an XSLT stylesheet.

Please note: Tracepoints set for a document remain in that document until it is closed.

Tracepoints in XSLT documents

You can set tracepoints on XSL instructions and literal results in an XSLT stylesheet.

Tracepoints in XML and XQuery documents

You can set tracepoints in XML and XQuery documents, however, these tracepoints have no effect.

Inserting/removing tracepoints

To insert a tracepoint:

1. Place the cursor at the point in the XSLT document where you wish to insert the tracepoint. During debugging sessions, you can set tracepoints in both Text View and Grid View.
2. Do one of the following:

- Select **XSL/XQuery | Insert/Remove Tracepoint**.
- Press **Shift+F9**.
- Right-click and select **Insert/Remove Tracepoint**.

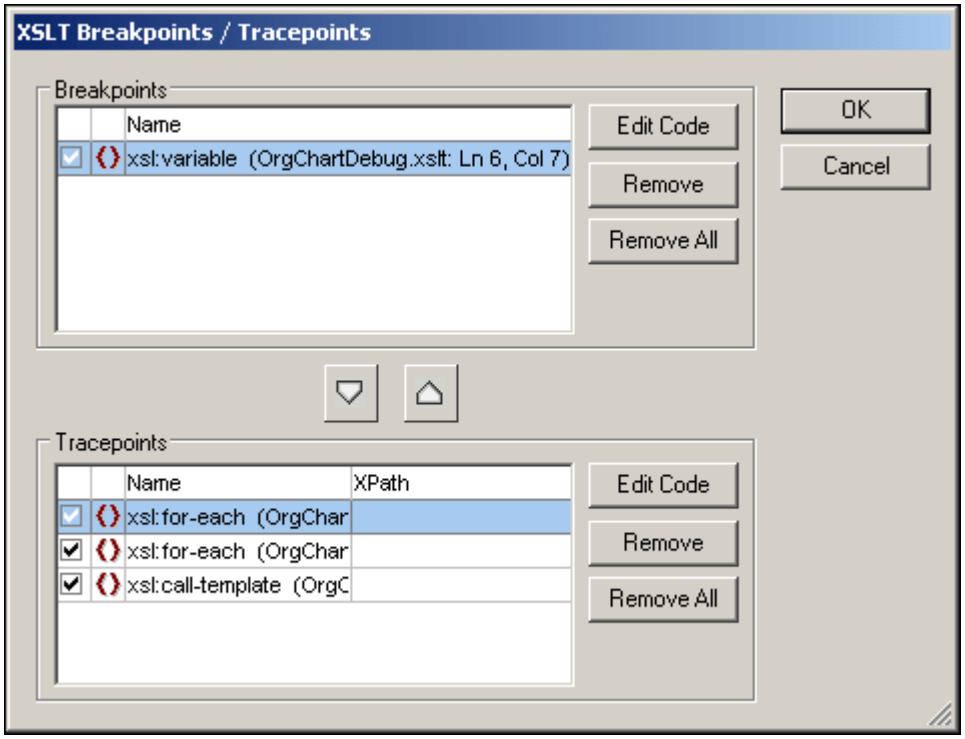
To remove a tracepoint:

1. Place the cursor at the point in the XSLT document containing the tracepoint.
2. Do one of the following:

   - Select **XSL/XQuery | Insert/Remove Tracepoint**.
   - Press **Shift+F9**.
   - Right-click and select **Insert/Remove Tracepoint**.

Alternatively, you can use the XSLT Breakpoints / Tracepoints dialog to remove a tracepoint:

1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoints...**.
2. Click the tracepoint in the dialog box (*see screenshot*) and click **Remove**.



The **Remove All** button in the Tracepoints pane deletes all the tracepoints from the dialog box (and from all XSLT stylesheets).

Setting an XPath for a tracepoint

You can set an XPath for a tracepoint. When you set an XPath for a tracepoint, the result of the evaluation of the XPath is displayed in the Trace window instead of the content generated by the statement for which the tracepoint is set. The XPath is evaluated relatively to the context node at the point where the tracepoint is set.

To set an XPath for a tracepoint:

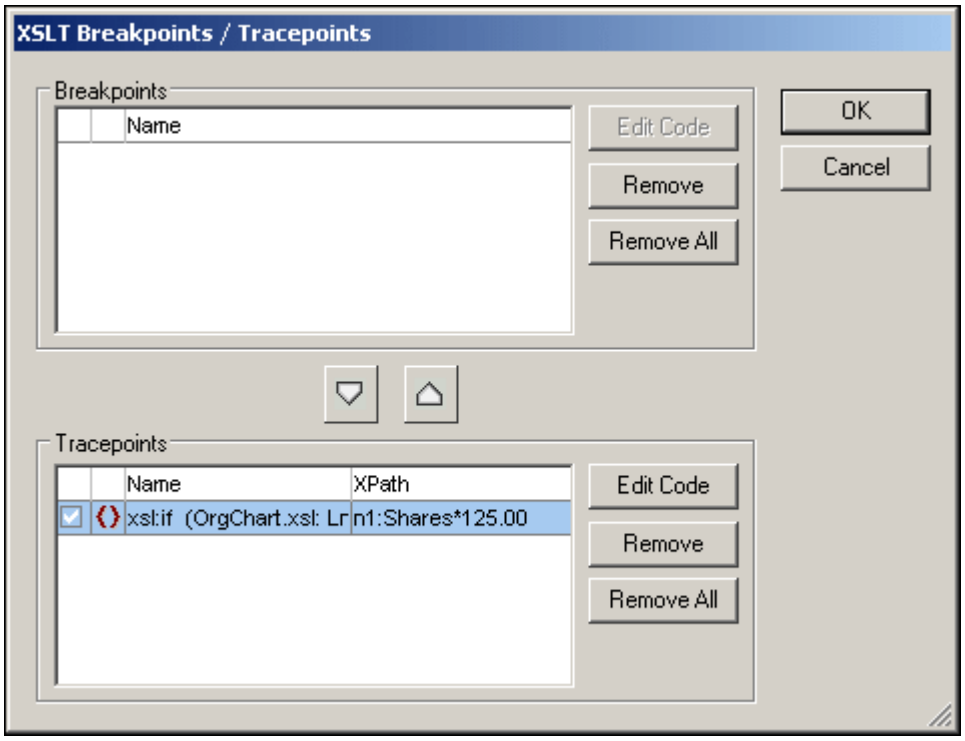
1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoints...**. This opens the XSLT Breakpoints / Tracepoints dialog box which displays the currently defined tracepoints in all open XSLT stylesheet documents.
2. Enter the XPath in the **XPath** column in the row that corresponds to the tracepoint.

Example:

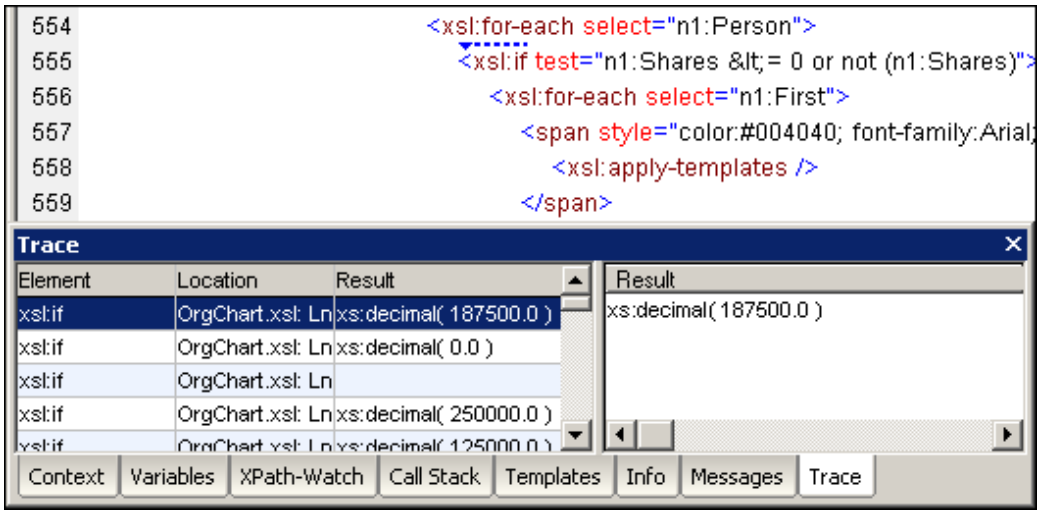
The following example uses the file `OrgChart.xsl`, which is found in the XMLSpy Examples folder.
The tracepoint is set such that the context node is Person. The Person element contains a Shares element. We want to display the number of shares that each person has, multiplied by 125 (the value of each share).

Do the following:

1. Open the file `OrgChart.xsl`.
2. Set a tracepoint at line 555.
3. Open the XSLT Breakpoints / Tracepoints dialog and enter the XPath `n1:Shares*125.00` for the tracepoint you just set.

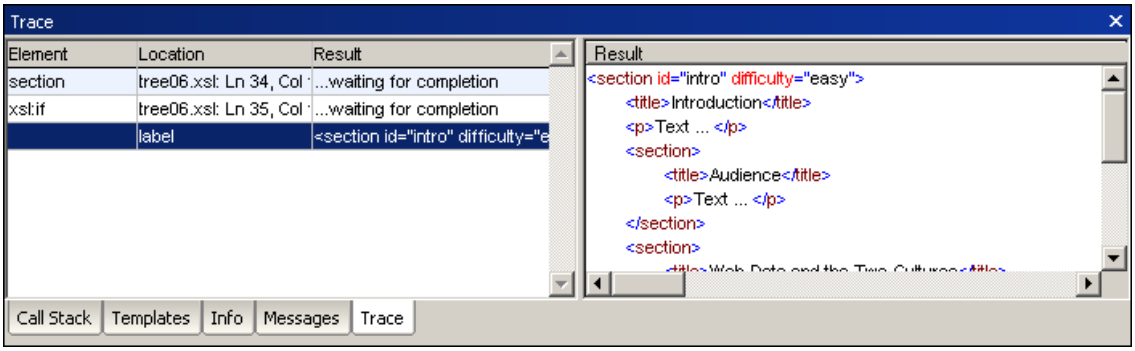


4. Start the Debugger. The results of the XPath you entered for the tracepoint appear in the Trace window.



The Trace window
Select **XSL/XQuery** | **Start Debugger/Go** to start debugging. The output of instructions for which tracepoints are set is displayed in the Trace window (*see screenshot*). Click a row in the Trace window to display the full result of that statement in the right side of the dialog (*see screenshot*).

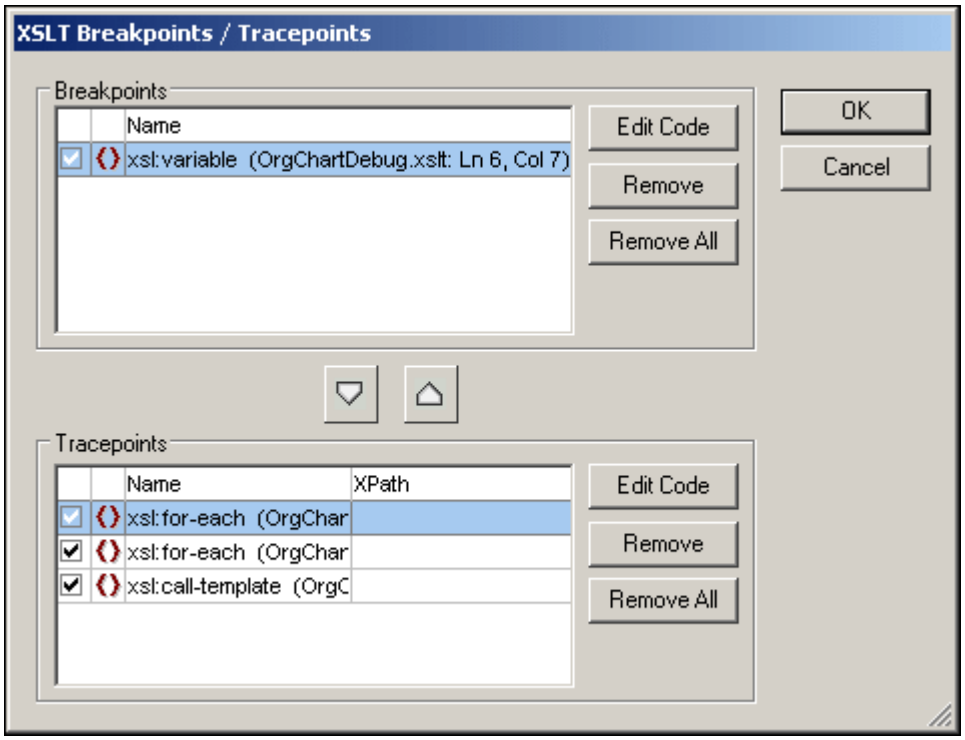
Please note: Results are displayed in the Trace window only after the traced instruction is completed.



Disabling/enabling tracepoints
After inserting tracepoints, you can disable them if you wish to skip over them without having to delete them. You can enable them again when necessary.

To disable a tracepoint:
1. Place the cursor at the point in the XSLT stylesheet containing the tracepoint.
2. Select **XSL/XQuery | Enable/Disable Tracepoint** (or press **Ctrl+Shift+F9**). The tracepoint changes from blue to gray, indicating that it has been disabled.

Alternatively, you can use the XSLT Breakpoints / Tracepoints dialog to disable a tracepoint:
1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoints...**. This opens the XSLT Breakpoints / Tracepoints dialog box which displays the currently defined tracepoints in all open XSLT stylesheet documents.



2. Remove the check mark of each tracepoint you wish to disable, and click **OK** to confirm. The tracepoints change from blue to gray, indicating that they have been disabled.

To enable a tracepoint:

1. Place the cursor at the point in the XSLT document containing the tracepoint.
2. Select **XSL/XQuery | Enable/Disable Tracepoint** (or press **Ctrl+Shift+F9**). The tracepoint changes from gray to blue, indicating that it has been enabled.

Finding a specific tracepoint

To find a specific tracepoint:

1. Select the menu option **XSL/XQuery | Breakpoints/Tracepoints...**. The XSLT Breakpoints / Tracepoints dialog appears.
2. Click the required tracepoint in the tracepoint list.
3. Click the **Edit Code** button. The XSLT Breakpoints / Tracepoints dialog box is closed and the text cursor is placed directly in front of the tracepoint in Text view of the XSLT document. In Enhanced Grid view, the table cell containing the tracepoint is highlighted in blue.

8 Authentic

Authentic View (*screenshot below*) is a graphical representation of your XML document. It enables XML documents to be displayed without markup and with appropriate formatting and data-entry features such as input fields, combo boxes, and radio buttons. Data that the user enters in Authentic View is entered into the XML file.

To be able to view and edit an XML document in Authentic View, the XML document must be associated with a **StyleVision Power Stylesheet (SPS),** which is created in Altova's StyleVision product. An SPS (. `sps` file) is, in essence, an XSLT stylesheet. It specifies an output presentation for an XML file that can include data-entry mechanisms. Authentic View users can, therefore, write data back to the XML file or DB. An SPS is based on a schema and is specific to it. If you wish to use an SPS to edit an XML file in Authentic View, you must use one that is based on the same schema as that on which the XML file is based.

Using Authentic View

- If an XML file is open, you can switch to Authentic View by clicking the **Authentic** button at the bottom of the Main Window. If an SPS is not already assigned to the XML file, you will be prompted to assign one to it. You must use an SPS that is based on the same schema as the XML file.
- A new XML file is created and displayed in Authentic View by selecting the **File | New** command and then clicking the "Select a StyleVision Stylesheet" button. This new file is a template file associated with the SPS you open. It can have a variable amount of starting data already present in it. This starting data is contained in an XML file (a Template XML File) that may optionally be associated with the SPS. After the Authentic View of an XML file is displayed, you can enter data in it and save the file.
- You can also open an SPS via the **Authentic | New Document** command. If a

Template XML File has been assigned to the SPS, then the data in the Template XML File is used as the starting data of the XML document template created in Authentic View.

In this section

This section contains an Authentic View tutorial, which shows you how to use Authentic View. It is followed by the section, Editing in Authentic View, which explains individual editing features in detail.

More information about Authentic View

For more information about Authentic View information, see (i) the section Editing Views | Authentic View in this documentation, which describes the Authentic View editing window, and (ii) the Authentic menu section of the User Reference part of this documentation.

8.1 Authentic View Tutorial

In Authentic View, you can edit XML documents in a graphical WYSIWYG interface (*screenshot below*), just like in word-processor applications such as Microsoft Word. In fact, all you need to do is enter data. You do not have to concern yourself with the formatting of the document, since the formatting is already defined in the stylesheet that controls the Authentic View of the XML document. The stylesheet (StyleVision Power Stylesheet, shortened to SPS in this tutorial) is created by a stylesheet designer using Altova's StyleVision product.

Editing an XML document in Authentic View involves two user actions: (i) editing the structure of the document (for example, adding or deleting document parts, such as paragraphs and headlines); and (ii) entering data (the content of document parts).

This tutorial takes you through the following steps:

- Opening an XML document in Authentic View. The key requirement for Authentic View editing is that the XML document be associated with an SPS file.
- A look at the Authentic View interface and a broad description of the central editing mechanisms.
- Editing document structure by inserting and deleting nodes.
- Entering data in the XML document.
- Entering (i) attribute values via the Attributes entry helper, and (ii) entity values.
- Printing the document.

Remember that this tutorial is intended to get you started, and has intentionally been kept simple. You will find additional reference material and feature descriptions in the Authentic View interface section.

Tutorial requirements
All **the files** you need for the tutorial are in the `C:\Documents and Settings\<username>\My Documents\Altova\<ProductName>\Examples` folder of your Altova application folder. These files are:

- `NanonullOrg.xml` (the XML document you will open)
- `NanonullOrg.sps` (the StyleVision Power Stylesheet to which the XML document is linked)
- `NanonullOrg.xsd` (the XML Schema on which the XML document and StyleVision Power Stylesheet are based, and to which they are linked)
- `nanonull.gif` and `Altova_right_300.gif` (two image files used in the tutorial)

Please note: At some points in the tutorial, we ask you to look at the XML text of the XML document (as opposed to the Authentic View of the document). If the Altova product edition you are using does not include a Text View (as with Authentic Desktop and Authentic Browser), then use a plain **text editor** like Wordpad or Notepad to view the text of the XML document.

Caution: We recommend that you use a copy of `NanonullOrg.xml` for the tutorial, so that you can always retrieve the original should the need arise.

8.1.1 Opening an XML Document in Authentic View

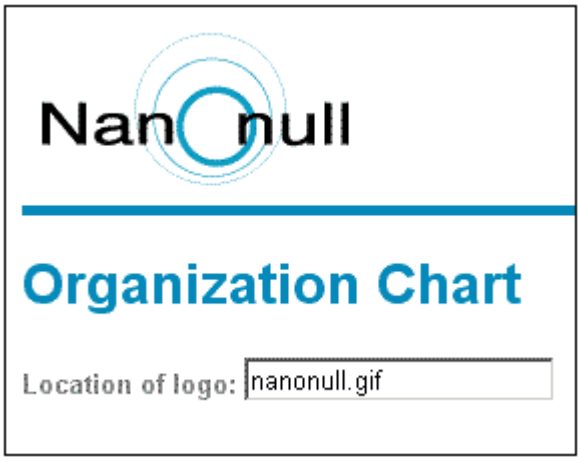
In Authentic View, you can edit an existing XML document or create and edit a new XML document. In this tutorial, you will open an existing XML document in Authentic View (described in this section) and learn how you can edit it (subsequent sections). Additionally, in this section is a description of how a new XML document can be created for editing in Authentic View.

Opening an existing XML document
The file you will open is `NanonullOrg.xml`. It is in the `Examples` folder of your Altova application. You can open `NanonullOrg.xml` in one of two ways:

- Click **File | Open** in your Altova product, then browse for `NanonullOrg.xml` in the dialog that appears, and click **Open**.
- Use Windows Explorer to locate the file, right-click, and select your Altova product as the application with which to open the file.

The file `NanonullOrg.xml` opens directly in Authentic View (*screenshot below).* This is because

1. The file already has a StyleVision Power Stylesheet (SPS) assigned to it, and
2. In the Options dialog (**Tools | Options**), in the View tab, the option to open XML files in Authentic View if an SPS file is assigned has been checked. (Otherwise the file would open in Text View.)



Remember: It is the SPS that defines and controls how an XML document is displayed in Authentic View. Without an SPS, there can be no Authentic View of the document.

Creating a new XML document based on an SPS
You can also create a new XML document that is based on an SPS. You can do this in two ways: via the **File | New** menu command and via the **Authentic | New Document** menu command. In both cases an SPS is selected.

Via File | New

1. Select **File | New**, and, in the Create a New Document dialog, select XML as the new file type to create.
2. Click **Select a STYLEVISION Stylesheet**, and browse for the desired SPS.

Via Authentic | New Document

1. Select **Authentic | New Document.**
2. In the Create a New Document dialog, browse for the desired SPS.

If a Template XML File has been assigned to the SPS, then the data in the Template XML File is used as the starting data of the XML document template created in Authentic View.

8.1.2 The Authentic View Interface

The Authentic View editing interface consists of a main window in which you enter and edit the document data, and three entry helpers. Editing a document is simple. If you wish to see the markup of the document, switch on the markup tags. Then start typing in the content of your document. To modify the document structure, you can use either the context menu or the Elements entry helper.

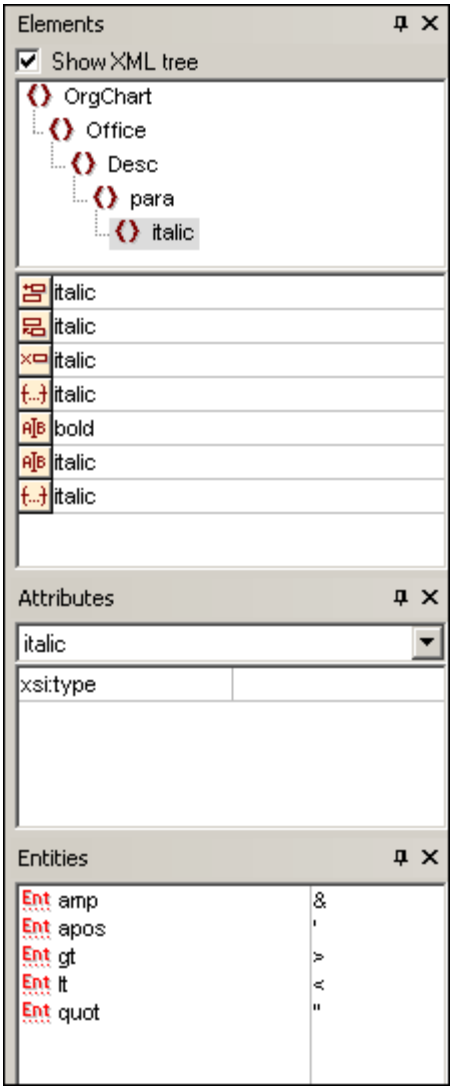
Displaying XML node tags (document markup)
An XML document is essentially a hierarchy of nodes. For example:

```
<DocumentRoot>
   <Person id="ABC001">
      <Name>Alpha Beta</Name>
      <Address>Some Address</Address>
      <Tel>1234567</Tel>
   </Person>
</DocumentRoot>
```

By default, the node tags are not displayed in Authentic View. You can switch on the node tags by selecting the menu item **Authentic | Show Large Markup** (or the  toolbar icon). Large markup tags contain the names of the respective nodes. Alternatively, you can select small markup (no node names in tags) and mixed markup (a mixture of large, small, and no markup tags, which is defined by the designer of the stylesheet; the default mixed markup for the document is no markup).

You can view the text of the XML document in the Text View of your Altova product or in a text editor.

Entry helpers
There are three entry helpers in the interface (*screenshot below*), located by default along the right edge of the application window. These are the Elements, Attributes, and Entity entry helpers.



Elements entry helper: The Elements entry helper displays elements that can be inserted and removed with reference to the current location of the cursor or selection in the Main Window.

Note that the entry helper is context-sensitive; its content changes according to the location of the cursor or selection. The content of the entry helper can be changed in one other way: when another node is selected in the XML tree of the Elements entry helper, the elements relevant to that node are displayed in the entry helper. The Elements entry helper can be expanded to show the XML tree by checking the Show XML Tree check box at the top of the entry helper (*see screenshot above*). The XML tree shows the hierarchy of nodes from the top-level element node all the way down to the node selected in the Main Window.

Attributes entry helper: The Attributes entry helper displays the attributes of the element selected in the Main Window, and the values of these attributes. Attribute values can be entered or edited in the Attributes entry helper. Element nodes from the top-level element down to the selected element are available for selection in the combo box of the Atributes entry helper. Selecting an element from the dropdown list of the combo box causes that element's attributes to be displayed in the entry helper, where they can then be edited.

Entities entry helper: The Entities entry helper is not context-sensitive, and displays all the entities declared for the document. Double-clicking an entity inserts it at the cursor location. How to add entities for a document is described in the section Authentic View Interface.

Context menu
Right-clicking at a location in the Authentic View document pops up a context menu relevant to that (node) location. The context menu provides commands that enable you to:

- Insert nodes at that location or before or after the selected node. Submenus display lists of nodes that are allowed at the respective insert locations.
- Remove the selected node (if this allowed by the schema) or any removable ancestor element. The nodes that may be removed (according to the schema) are listed in a submenu.
- Insert entities and CDATA sections. The entities declared for the document are listed in a submenu. CDATA sections can only be inserted withn text.
- Cut, copy, paste (including pasting as XML or text), and delete document content.

Note: For more details about the interface, see Authentic View Interface

8.1.3 Node Operations

There are two major types of nodes you will encounter in an Authentic View XML document: **element nodes** and **attribute nodes**. These nodes are marked up with tags, which you can switch on. There are also other nodes in the document, such as text nodes (which are not marked up) and CDATA section nodes (which are marked up, in order to delimit them from surrounding text).

The node operations described in this section refer only to element nodes and attribute nodes. When trying out the operations described in this section, it is best to have large markup switched on.

Note: It is important to remember that **only same- or higher-level elements** can be inserted before or after the selected element. Same-level elements are **siblings**. Siblings of a paragraph element would be other paragraph elements, but could also be lists, a table, an image, etc. Siblings could occur before or after an element. Higher-level elements are **ancestor** elements and siblings of ancestors. For a paragraph element, ancestor elements could be a section, chapter, article, etc. A paragraph in a valid XML file would already have ancestors. Therefore, adding a higher-level element in Authentic View, creates the new element as a sibling of the relevant ancestor. For example, if a section

element is inserted after a paragraph, it is created as a sibling of the section that contains the current paragraph element.

Carrying out node operations

Node operations can be carried out by selecting a command in the context menu or by clicking the node operation entry in the Elements entry helper. In some cases, an element or attribute can be added by clicking the Add Node link in the Authentic View of the document. In the special cases of elements defined as paragraphs or list items, pressing the Enter key when within such an element creates a new sibling element of that kind. This section also describes how nodes can be created and deleted by using the Apply Element, Remove Node, and Clear Element mechanisms.

Inserting elements

Elements can be inserted at the following locations:

- The cursor location within an element node. The elements available for insertion at that location are listed in a submenu of the context menu's **Insert** command. In the Elements entry helper, elements that can be inserted at a location are indicated with the icon. In the `NanonullOrg.xml` document, place the cursor inside the `para` element, and create `bold` and `italic` elements using both the context menu and Elements entry helper.
- Before or after the selected element or any of its ancestors, if allowed by the schema. Select the required element from the submenu/s that roll out. In the Elements entry helper, elements that can be inserted before or after the selected element are indicated with the and icons, respectively. Note that in the Elements entry helper, you can insert elements before/after the selected element only; you cannot insert before/after an ancestor element. Try out this command, by first placing the cursor inside the `para` element and then inside the table listing the employees.

Add Node link

If an element or attribute is included in the document design, and is not present in the XML document, an `Add Node` link is displayed at the location in the document where that node is specified. To see this link, in the line with the text, *Location of logo*, select the `@href` node within the `CompanyLogo` element and delete it (by pressing the **Delete** key). The `add @href` link appears within the `CompanyLogo` element that was edited (*screenshot below*). Clicking the link adds the `@href` node to the XML document. The text box within the `@href` tags appears because the design specifies that the `@href` node be added like this. You still have to enter the value (or content) of the `@href` node. Enter the text `nanonull.gif`.

If the content model of an element is ambiguous, for example, if it specifies that a sequence of child elements may appear in any order, then the `add...` link appears. Note that no node name

is specified. Clicking the link will pop up a list of elements that may validly be inserted.

Note: The Add Node link appears directly in the document template; there is no corresponding entry in the context menu or Elements entry helper.

Creating new elements with the Enter key
In cases where an element has been formatted as a paragraph or list item (by the stylesheet designer), pressing the Enter key when inside such a node causes a new node of that kind to be inserted after the current node. You can try this mechanism in the `NanonullOrg.xml` document by going to the end of a `para` node (just before its end tag) and pressing **Enter**.

Applying elements
In elements of mixed content (those which contain both text and child elements), some text content can be selected and an allowed child element be applied to it. The selected text becomes the content of the applied element. To apply elements, in the context menu, select Apply and then select from among the applicable elements. (If no elements can be applied to the selected text, then the Apply command does not appear in the context menu.) In the Elements entry helper, elements that can be applied for a selection are indicated with the  icon. In the `NanonullOrg.xml` document, select text inside the mixed content `para` element and experiment with applying the `bold` and `italic` elements.

The stylesheet designer might also have created a toolbar icon to apply an element. In the `NanonullOrg.xml` document, the `bold` and `italic` elements can be applied by clicking the bold and italic icons in the application's Authentic toolbar.

Removing nodes
A node can be removed if its removal does not render the document invalid. Removing a node causes a node and all its contents to be deleted. A node can be removed using the **Remove** command in the context menu. When the Remove command is highlighted, a submenu pops up which contains all nodes that may be removed, starting from the selected node and going up to the document's top-level node. To select a node for removal, the cursor can be placed within the node, or the node (or part of it) can be highlighted. In the Elements entry helper, nodes that can be removed are indicated with the  icon. A removable node can also be removed by selecting it and pressing the **Delete** key. In the `NanonullOrg.xml` document, experiment with removing a few nodes using the mechanisms described. You can undo your changes with **Ctrl +Z**.

Clearing elements
Element nodes that are children of elements with mixed content (both text and element children) can be cleared. The entire element can be cleared when the node is selected or when the cursor is placed inside the node as an insertion point. A text fragment within the element can be cleared of the element markup by highlighting the text fragment. With the selection made, select **Clear** in the context menu and then the element to clear. In the Elements entry helper, elements that can be cleared for a particular selection are indicated with the  icon (insertion point selection) and  icon (range selection). In the `NanonullOrg.xml` document, try the clearing mechanism with the `bold` and `italic` child elements of `para` (which has mixed content).

Tables and table structure
There are two types of Authentic View table:

- *SPS tables (static and dynamic)*. The broad structure of SPS table is determined by the stylesheet designer. Within this broad structure, the only structural changes you are allowed are content-driven. For example, you could add new rows to a dynamic SPS table.
- *XML tables*, in which you decide to present the contents of a particular node (say, one for person-specific details) as a table. If the stylesheet designer has enabled the creation of this node as an XML table, then you can determine the structure of the table and edit its contents. XML tables are discussed in detail in the Using tables in Authentic View section.

8.1.4 Entering Data in Authentic View

Data is entered into the XML document directly in the main window of Authentic View. Additionally for attributes, data (the value of the attribute) can be entered in the Attributes entry helper. Data is entered (i) directly as text, or (ii) by selecting an option in a data-entry device, which is then mapped to a predefined text entry.

Adding text content

You can enter element content and attribute values directly as text in the main window of Authentic View. To insert content, place the cursor at the location where you want to insert the text, and type. You can also copy text from the clipboard into the document. Content can also be edited using standard editing mechanisms, such as the **Caps** and **Delete** keys. For example, you can highlight the text to be edited and type in the replacement text with the **Caps** key on.

For example, to change the name of the company, in the `Name` field of `Office`, place the cursor after Nanonull, and type in `USA` to change the name from Nanonull, Inc. to Nanonull USA, Inc.

If text is editable, you will be able to place your cursor in it and highlight it, otherwise you will not be able to. Try changing any of the **field names** (not the field values), such as "Street", "City", or "State/Zip," in the address block. You are not able to place the cursor in this text because such text is not XML content; it is derived from the StyleVision Power Stylesheet.

Inserting special characters and entities

When entering data, the following type of content is handled in a special way:

- *Special characters that are used for XML markup* (ampersand, apostrophe, greater than, less than, and quotes). These characters are available as built-in entities and can be entered in the document by double-clicking the respective entity in the Entities entry helper. If these characters occur frequently (for example, in program code listings), then they can be entered within CDATA sections. To insert a CDATA section, right-click at the location where you wish to enter the CDATA section, and select **Insert CDATA Section** from the context menu. The XML processor ignores all markup characters within CDATA sections. This also means that if you want a special character inside a CDATA section, you should enter that character and not its entity reference.
- *Special characters that cannot be entered via the keyboard* should be entered by copying them from the character map of your system to the required location in the document.

- *A frequently used text string* can be defined as an entity, which appears in the Entities entry helper. The entity is inserted at the required locations by placing the cursor at each required location and double-clicking the entity in the entry helper. This is useful for maintenance because the value of the text string is held in one location; if the value needs to be changed, then all that needs to be done is to change the entity definition.

Note: When markup is hidden in Authentic View, an empty element can easily be overlooked. To make sure that you are not overlooking an empty element, switch large or small markup on.

Try using each type of text content described above.

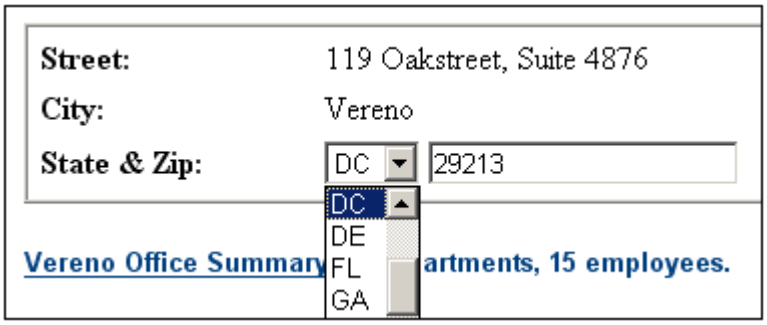
Adding content via a data-entry device

In the content editing you have learned above, content is added by directly typing in text as content. There is one other way that **element content** (or attribute values) can be entered in Authentic View: via data-entry devices.

Given below is a list of data-entry devices in Authentic View, together with an explanation of how data is entered in the XML file for each device.

Data-Entry Device	Data in XML File
Input Field (Text Box)	Text entered by user
Multiline Input Field	Text entered by user
Combo box	User selection mapped to value
Check box	User selection mapped to value
Radio button	User selection mapped to value
Button	User selection mapped to value

In the static table containing the address fields (*shown below*), there are two data-entry devices: an input field for the `Zip` field and a combo-box for the State field. The values that you enter in the text fields are entered directly as the XML content of the respective elements. For other data-entry devices, your selection is mapped to a value.



For the Authentic View shown above, here is the corresponding XML text:

```
<Address>
  <ipo:street>119 Oakstreet, Suite 4876</ipo:street>
  <ipo:city>Vereno</ipo:city>
  <ipo:state>DC</ipo:state>
  <ipo:zip>29213</ipo:zip>
</Address>
```

Notice that the combo-box selection `DC` is mapped to a value of `DC`. The value of the `Zip` field is entered directly as content of the `ipo:zip` element.

8.1.5 Entering Attribute Values

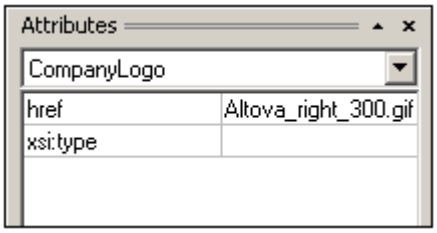
An attribute is a property of an element, and an element can have any number of attributes. Attributes have values. You may sometimes be required to enter XML data as an attribute value. In Authentic View, you enter attribute values in two ways:

- As content in the main window if the attribute has been created to accept its value in this way
- In the Attributes entry helper

Attribute values in the main window
Attribute values can be entered as normal text or as text in an input field, or as a user selection that will be mapped to an XML value. They are entered in the same way that element content is entered: see Entering Data in Authentic View. In such cases, the distinction between element content and attribute value is made by the StyleVision Power Stylesheet and the data is handled appropriately.

Attribute values in the Attributes Entry Helper
If you wish to enter or change an attribute value, you can also do this in the Attributes Entry Helper. First, the attribute node is selected in Authentic View, then the value of the attribute is entered or edited in the Attributes entry helper. In the `NanonullOrg.xml` document, the location of the logo is stored as the value of the `href` attribute of the `CompanyLogo` element. To change the logo to be used:

1. Select the `CompanyLogo` element by clicking a CompanyLogo tag. The attributes of the `CompanyLogo` element are displayed in the Attributes Entry Helper.
2. In the Attributes Entry Helper, change the value of the `href` attribute from `nanonull.gif` to `Altova_right_300.gif` (an image in the `Examples` folder).



This causes the Nanonull logo to be replaced by the Altova logo.

Note: Entities cannot be entered in the Attributes entry helper.

8.1.6 Adding Entities

An entity in Authentic View is typically XML data (but not necessarily), such as a single character; a text string; and even a fragment of an XML document. An entity can also be a binary file, such as an image file. All the entities available for a particular document are displayed in the Entities Entry Helper (*screenshot below*). To insert an entity, place the cursor at the location in the document where you want to insert it, and then double-click the entity in the Entities entry helper. Note that you cannot enter entities in the Attributes entry helper.

The ampersand character (&) has special significance in XML (as have the apostrophe, less than and greater than symbols, and the double quote). To insert these characters, entities are used so that they are not confused with XML-significant characters. These characters are available as entities in Authentic View.

In `NanonullOrg.xml`, change the title of Joe Martin (in Marketing) to Marketing Manager Europe & Asia. Do this as follows:

1. Place the cursor where the ampersand is to be inserted.
2. Double-click the entity listed as "amp". This inserts an ampersand (*screenshot below*).

Note: The Entities Entry Helper is not context-sensitive. All available entities are displayed no matter where the cursor is positioned. This does not mean that an entity can be inserted at all locations in the document. If you are not sure, then validate the document after inserting the entity: **XML | Validate XML** (**F8**).

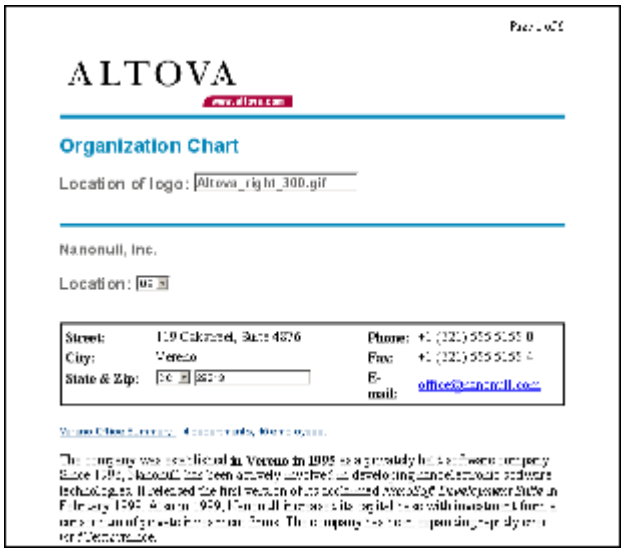
Defining your own entities
As a document editor, you can define your own document entities. How to do this is described in the section Defining Entities in Authentic View.

8.1.7 Printing the Document

A printout from Authentic View of an XML document preserves the formatting seen in Authentic View.

To print `NanonullOrg.xml`, do the following:

1. Switch to Hide Markup mode if you are not already in it. You must do this if you do not want markup to be printed.
2. Select **File | Print Preview** to see a preview of all pages. Shown below is part of a print preview page, reduced by 50%.



Notice that the formatting of the page is the same as that in Authentic View.

3. To print the file, click **File | Print**.

Note that you can also print a version of the document that displays markup. To do this, switch Authentic View to Show small markup mode or Show large markup mode, and then print.

8.2 Editing in Authentic View

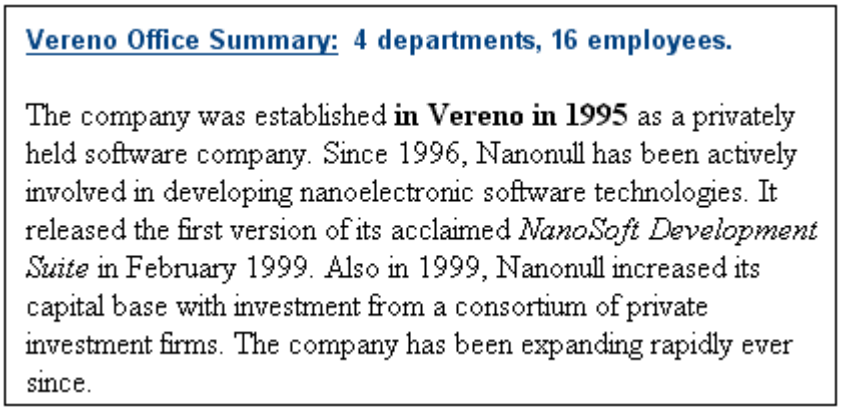
This section describes important features of Authentic View in detail. Features have been included in this section either because they are frequently used or because the mechanisms or concepts involved require explanation.

The section explains the following:

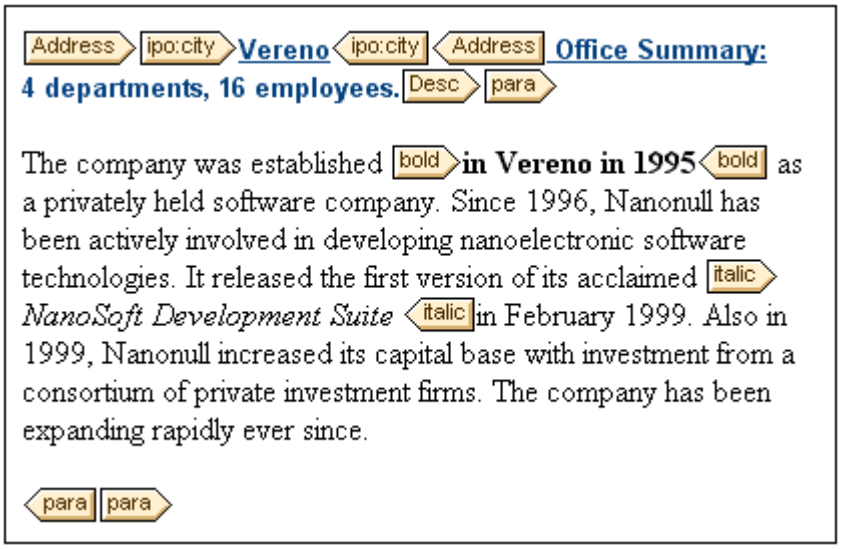
- There are three distinct types of tables used in Authentic View. The section Using tables in Authentic View explains the three types of tables (static SPS, dynamic SPS, and XML), and when and how to use them. It starts with the broad, conceptual picture and moves to the details of usage.
- The Date Picker is a graphical calendar that enters dates in the correct XML format when you click a date. See Using the Date Picker.
- An entity is shorthand for a special character or text string. You can define your own entities, which allows you to insert these special characters or text strings by inserting the corresponding entities. See Defining Entities for details.
- In the Enterprise and Professional editions of Altova products, Authentic View users can sign XML documents with digital XML signatures and verify these signatures.
- What image formats can be displayed in Authentic View.

8.2.1 Basic Editing

When you edit in Authentic View, you are editing an XML document. Authentic View, however, can hide the structural XML markup of the document, thus displaying only the content of the document (*first screenshot below*). You are therefore not exposed to the technicalities of XML, and can edit the document as you would a normal text document. If you wish, you could switch on the markup at any time while editing (*second screenshot below*).



An editable Authentic View document with no XML markup.

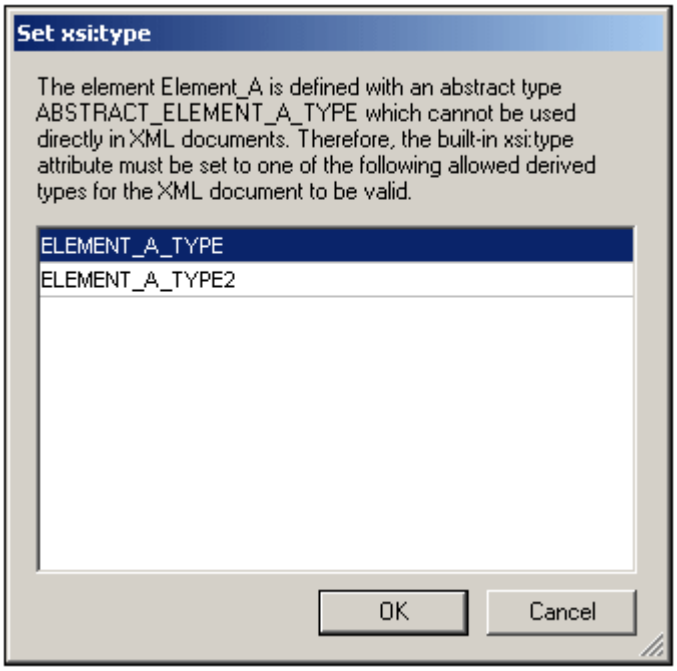


An editable Authentic View document with XML markup tags.

Inserting nodes

Very often you will need to add a new node to the Authentic XML document. For example, a new `Person` element might need to be added to an address book type of document. In such cases the XML Schema would allow the addition of the new element. All you need to do is right-click the node in the Authentic View document before which or after which you wish to add the new node. In the context menu that appears, select **Insert Before** or **Insert After** as required. The nodes available for insertion at that point in the document are listed in a submenu. Click the required node to insert it. The node will be inserted. All mandatory descendant nodes are also inserted. If a descendant node is optional, a clickable link, `Add NodeName`, appears to enable you to add the optional node if you wish to.

If the node being added is an element with an abstract type, then a dialog (*something like in the screenshot below*) appears containing a list of derived types that are available in the XML Schema.



Selecting one of the available derived types and clicking **OK** does the following:

- Sets the selected derived type as the value of the `xsi:type` attribute of the element
- Inserts the element together with the descendant nodes defined in the content model of the selected derived type.

The selected derived type can be changed subsequently by changing the value of the element's `xsi:type` attribute in the Attributes Entry Helper. When the element's type is changed in this way, all nodes of the previous type's content model are removed and nodes of the new type's content model are inserted.

Text editing

An Authentic View document will essentially consist of text and images. To edit the text in the document, place the cursor at the location where you wish to insert text, and type. You can copy, move, and delete text using familiar keystrokes (such as the **Delete** key) and drag-and-drop mechanisms. One exception is the **Enter** key. Since the Authentic View document is pre-formatted, you do not—and cannot—add extra lines or space between items. The **Enter** key in Authentic View therefore serves to append another instance of the element currently being edited, and should be used exclusively for this purpose.

Copy as XML or as text

Text can be copied and pasted as XML or as text.

- If text is pasted as XML, then the XML markup is pasted together with the text content of nodes. The XML markup is pasted even if only part of a node's contents has been copied. For the markup to be pasted it must be allowed, according to the schema, at the location where it is pasted.
- If text is pasted as text, XML markup is not pasted.

To paste as XML or text, first copy the text (**Ctrl+C**), right-click at the location where the text is to be pasted, and select the context menu command **Paste As | XML** or **Paste As | Text**. If the shortcut **Ctrl+V** is used, the text will be pasted in the default Paste Mode of the SPS. The default Paste Mode will have been specified by the designer of the SPS. For more details, see

the section Context Menus.

Alternatively, highlighted text can be dragged to the location where it is to be pasted. When the text is dropped, a pop-up appears asking whether the text is to be pasted as text or XML. Select the desired option.

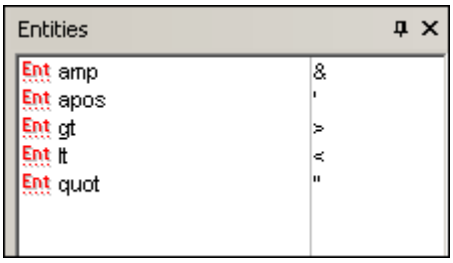
Text formatting
A fundamental principle of XML document systems is that content be kept separate from presentation. The XML document contains the content, while the stylesheet contains the presentation (formatting). In Authentic View, the XML document is presented via the stylesheet. This means that all the formatting you see in Authentic View is produced by the stylesheet. If you see bold text, that bold formatting has been provided by the stylesheet. If you see a list or a table, that list format or table format has been provided by the stylesheet. The XML document, which you edit in Authentic View contains only the content; it contains no formatting whatsoever. The formatting is contained in the stylesheet. What this means for you, the Authentic View user, is that you do not have to—nor can you—format any of the text you edit. You are editing content. The formatting that is automatically applied to the content you edit is linked to the semantic and/or structural value of the data you are editing. For example, an email address (which could be considered a semantic unit) will be formatted automatically in a certain way because of it is an email. In the same way, a headline must occur at a particular location in the document (both a structural and semantic unit) and will be formatted automatically in the way the stylesheet designer has specified that headlines be formatted. You cannot change the formatting of either email address or headline. All that you do is edit the content of the email address or headline.

In some cases, content might need to be specially presented; for example, a text string that must be presented in boldface. In all such cases, the presentation must be tied in with a structural element of the document. For example, a text string that must be presented in boldface, will be structurally separated from surrounding content by markup that the stylesheet designer will format in boldface. If you, as the Authentic View user, need to use such a text string, you would need to enclose the text string within the appropriate element markup. For information about how to do this, see the Insert Element command in the Elements Entry Helper section of the documentation.

Using RichEdit in Authentic View
In Authentic View, when the cursor is placed inside an element that has been created as a RichEdit component, the buttons and controls in the RichEdit toolbar (*screenshot below*) become enabled. Otherwise they are grayed out.

Select the text you wish to style and specify the styling you wish to apply via the buttons and controls of the RichEdit toolbar. RichEdit enables the Authentic View user to specify the font, font-weight, font-style, font-decoration, font-size, color, background color and alignment of text. The text that has been styled will be enclosed in the tags of the styling element.

Inserting entities
In XML documents, some characters are reserved for markup and cannot be used in normal text. These are the ampersand (&), apostrophe ('), less than (<), greater than (>), and quote (") characters. If you wish to use these characters in your data, you must insert them as entity references, via the Entities Entry Helper (*screenshot below*).



XML also offers the opportunity to create custom entities. These could be: (i) special characters that are not available on your keyboard, (ii) text strings that you wish to re-use in your document content, (iii) XML data fragments, or (iv) other resources, such as images. You can define your own entities within the Authentic View application. Once defined, these entities appear in the Entities Entry Helper and can then be inserted as in the document.

Inserting CDATA sections

CDATA sections are sections of text in an XML document that the XML parser does not process as XML data. They can be used to escape large sections of text if replacing special characters by entity references is undesirable; this could be the case, for example, with program code or an XML fragment that is to be reproduced with its markup tags. CDATA sections can occur within element content and are delimited by `<![CDATA[` and `]]>` at the start and end, respectively. Consequently the text string `]]>` should not occur within a CDATA section as it would prematurely signify the end of the section. In this case, the greater than character should be escaped by its entity reference (`>`). To insert a CDATA section within an element, place the cursor at the desired location, right-click, and select **Insert CDATA Section** from the context menu. To see the CDATA section tags in Authentic View, switch on the markup display. Alternatively, you could highlight the text that is to be enclosed in a CDATA section, and then select the **Insert CDATA section** command.

Note: CDATA sections cannot be inserted into input fields (that is, in text boxes and multiline text boxes). CDATA sections can only be entered within elements that are displayed in Authentic View as text content components.

Editing and following links

A hyperlink consists of two parts: the link text and the target of the link. You can edit the link text by clicking in the text and editing. But you cannot edit the target of the link. (The target of the link is set by the designer of the stylesheet (either by typing in a static target address or by deriving the target address from data contained in the XML document).) From Authentic View, you can go to the target of the link by pressing **Ctrl** and clicking the link text. (Remember: merely clicking the link will set you up for editing the link text.)

8.2.2 Tables in Authentic View

The three table types fall into two categories: SPS tables (static and dynamic) and CALS/HTML Tables.

SPS tables are of two types: static and dynamic. SPS tables are designed by the designer of the StyleVision Power Stylesheet to which your XML document is linked. You yourself cannot insert an SPS table into the XML document, but you can enter data into SPS table fields and add and delete the rows of dynamic SPS tables. The section on SPS tables below explains the features of these tables.

CALS/HTML tables are inserted by you, the user of Authentic View. Their purpose is to enable you to insert tables at any allowed location in the document hierarchy should you wish to do so.

The editing features of CALS/HTML Tables and the CALS/HTML Table editing icons are described below.

SPS Tables

Two types of SPS tables are used in Authentic View: static tables and dynamic tables.

Static tables are fixed in their structure and in the content-type of cells. You, as the user of Authentic View, can enter data into the table cells but you cannot change the structure of these tables (i.e. add rows or columns, etc) or change the content-type of a cell. You enter data either by typing in text, or by selecting from options presented in the form of check-box or radio button alternatives or as a list in a combo-box. After you enter data, you can edit it.

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Please note: The icons or commands for editing dynamic tables **must not** be used to edit static tables.

Dynamic tables have rows that represent a repeating data structure, i.e. each row has an identical data structure (not the case with static tables). Therefore, you can perform row operations: append row, insert row, move row up, move row down, and delete row. These commands are available under the **Authentic** menu and as icons in the toolbar (shown below).

To use these commands, place the cursor anywhere in the appropriate row, and then select the required command.

Administration

First	Last	Title	Ext	EMail	Shares	Leave		
						Total	Used	Left
Vernon	**Callaby**	Office Manager	581	v.callaby@nanonull.com	1500	25	4	21
Frank	Further	Accounts Receivable	471	f.further@nanonull.com	0	22	2	20
Loby	Matise	Accounting Manager	963	l.matise@nanonull.com	add Shares	25	7	18
Employees: 3 (20% of Office, 9% of Company)					**Shares: 1500 (13% of Office, 6% of Company)**			
Non-Shareholders: Frank Further, Loby Matise.								

To move among cells in the table, use the Up, Down, Left, and Right arrow keys. To move forward from one cell to the next, use the **Tab** key. Pressing the **Tab** key in the last cell of a row creates a new row.

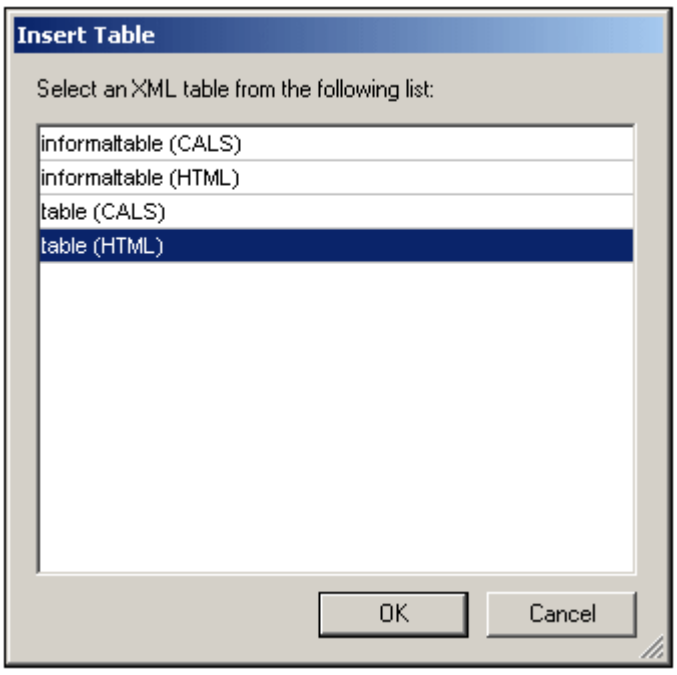
CALS/HTML Tables

CALS/HTML tables can be inserted by you, the user of Authentic View, for certain XML data structures that have been specified to show a table format. There are three steps involved when working with CALS/HTML tables: inserting the table; formatting it; and entering data. The commands for working with CALS/HTML tables are available as icons in the toolbar (see CALS/HTML table editing icons).

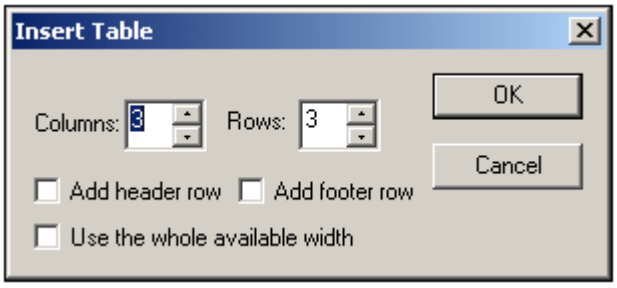
Inserting tables

To insert a CALS/HTML table do the following:

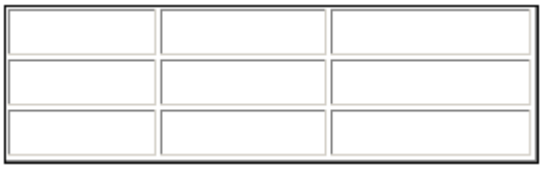
1. Place your cursor where you wish to insert the table, and click the  icon. (Note that where you can insert tables is determined by the schema.) The Insert Table dialog (*screenshot below*) appears. This dialog lists all the XML element data-structures for which a table structure has been defined. For example, in the screenshot below, the `informaltable` element and `table` element have each been defined as both a CALS table as well as an HTML table.



2. Select the entry containing the element and table model you wish to insert, and click **OK** .
3. In the next dialog (*screenshot below*), select the number of columns and rows, and specify whether a header and/or footer is to be added to the table and whether the table is to extend over the entire available width. Click **OK** when done.



For the specifications given in the dialog box shown above, the following table is created.



By using the **Table** menu commands, you can add and delete columns, and create row and column joins and splits. But to start with, you must create the broad structure.

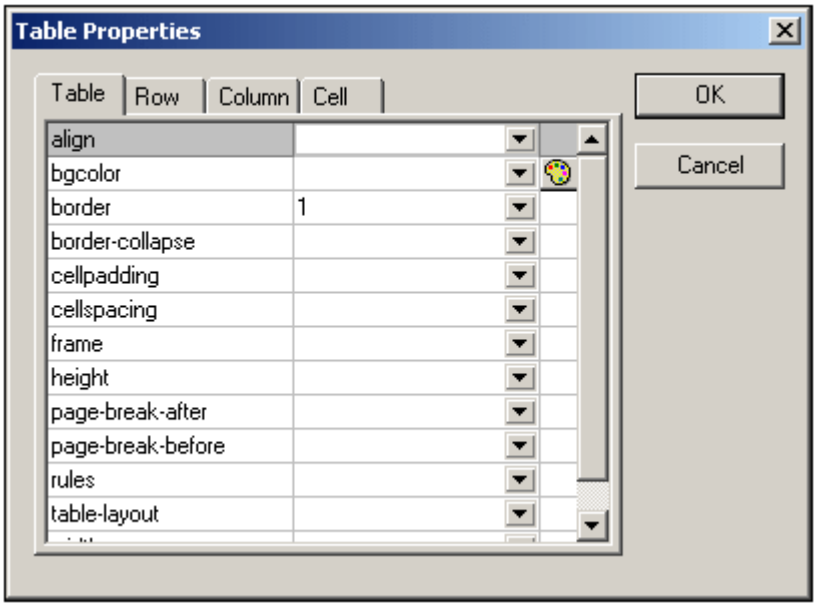
Formatting tables and entering data

The table formatting will already have been assigned in the document design. However, you might, under certain circumstances, be able to modify the table formatting. These circumstances are as follows:

- The elements corresponding to the various table structure elements must have the relevant CALS or HTML table properties defined as attributes (in the underlying XML Schema). Only those attributes that are defined will be available for formatting. If, in the design, values have been set for these attributes, then you can override these values in Authentic View.
- In the design. no `style` attribute containing CSS styles must have been set. If a style attribute containing CSS styles has been specified for an element, the `style` attribute has precedence over any other formatting attribute set on that element. As a result, any formatting specified in Authentic View will be overridden.

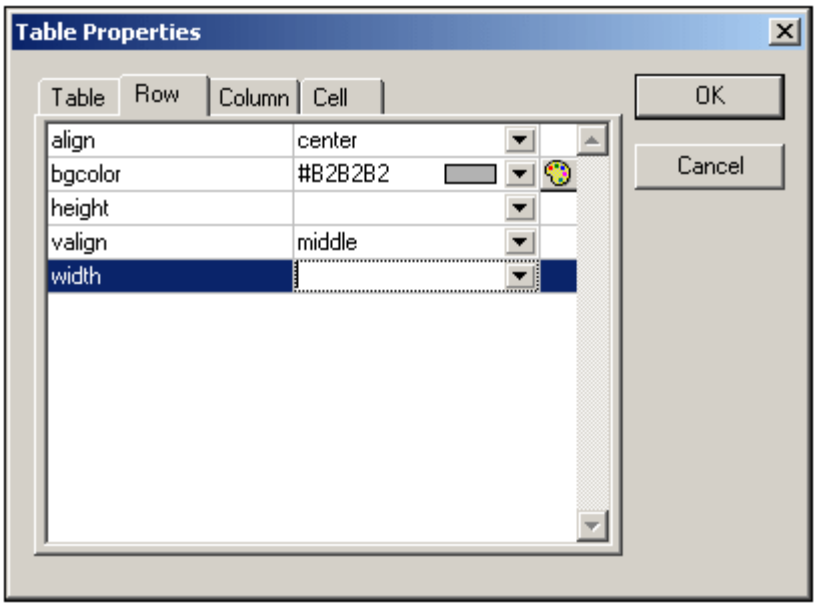
To format a table, row, column, or cell, do the following:

1. Place the cursor anywhere in the table and click the  (Table Properties) icon. This opens the Table Properties dialog (*see screenshot*), where you specify formatting for the table, or for a row, column, or cell.



2. Set the cellspacing and cellpadding properties to "0". Your table will now look like this:

3. Place the cursor in the first row to format it, and click the  (Table Properties) icon. Click the **Row** tab.



Since the first row will be the header row, set a background color to differentiate this row from the other rows. Note the Row properties that have been set in the figure above. Then enter the column header text. Your table will now look like this:

Name	Telephone	Email

Notice that the alignment is centered as specified.

4. Now, say you want to divide the "Telephone" column into the sub-columns "Office" and "Home", in which case you would need to split the horizontal width of the Telephone column into two columns. First, however, we will split the vertical extent of the header cell to make a sub-header row. Place the cursor in the "Telephone" cell, and click the  (Split vertically) icon. Your table will look like this:

Name	Telephone	Email

5. Now place the cursor in the cell below the cell containing "Telephone", and click the  (Split horizontally) icon. Then type in the column headers "Office" and "Home". Your table will now look like this:

Name	Telephone		Email
	Office	Home	

Now you will have to split the horizontal width of each cell in the "Telephone" column.

You can also add and delete columns and rows, and vertically align cell content, using the table-editing icons. The CALS/HTML table editing icons are described in the section titled, CALS/HTML Table Editing Icons.

Moving among cells in the table
To move among cells in the CALS/HTML table, use the Up, Down, Right, and Left arrow keys.

Entering data in a cell
To enter data in a cell, place the cursor in the cell, and type in the data.

Formatting text
Text in a CALS/HTML table, as with other text in the XML document, must be formatted using XML elements or attributes. To add an element, highlight the text and double-click the required element in the Elements Entry Helper. To specify an attribute value, place the cursor within the text fragment and enter the required attribute value in the Attributes Entry Helper. After formatting the header text bold, your table will look like this.

Name	Telephone		Email
	Office	Home	

The text above was formatted by highlighting the text, and double-clicking the element `strong`, for which a global template exists that specifies bold as the font-weight. The text formatting becomes immediately visible.

Please note: For text formatting to be displayed in Authentic View, a global template with the required text formatting must have been created in StyleVision for the element in question.

CALS/HTML Table Editing Icons

The commands required to edit CALS/HTML tables are available as icons in the toolbar, and are listed below. Note that no corresponding menu commands exist for these icons.

For a full description of when and how CALS/HTML Tables are to be used, see CALS/HTML Tables.

Insert table

The "Insert Table" command inserts a **CALS/HTML table** at the current cursor position.

Delete table

The "Delete table" command deletes the currently active table.

Append row

The "Append row" command appends a row to the end of the currently active table.

Append column

The "Append column" command appends a column to the end of the currently active table.

Insert row

The "Insert row" command inserts a row above the current cursor position in the currently active table.

Insert column

The "Insert column" command inserts a column to the left of the current cursor position in the currently active table.

Join cell left

The "Join cell left" command joins the current cell (current cursor position) with the cell to the left. The tags of both cells remain in the new cell, the column headers remain

unchanged and are concatenated.

Join cell right

The "Join cell right" command joins the current cell (current cursor position) with the cell to the right. The contents of both cells are concatenated in the new cell.

Join cell below

The "Join cell below" command joins the current cell (current cursor position) with the cell below. The contents of both cells are concatenated in the new cell.

Join cell above

The "Join cell above" command joins the current cell (current cursor position) with the cell above. The contents of both cells are concatenated in the new cell.

Split cell horizontally

The "Split cell Horizontally" command creates a new cell to the right of the currently active cell. The size of both cells, is now the same as the original cell.

Split cell vertically

The "Split cell Vertically" command creates a new cell below the currently active cell.

Align top

This command aligns the cell contents to the top of the cell.

Center vertically

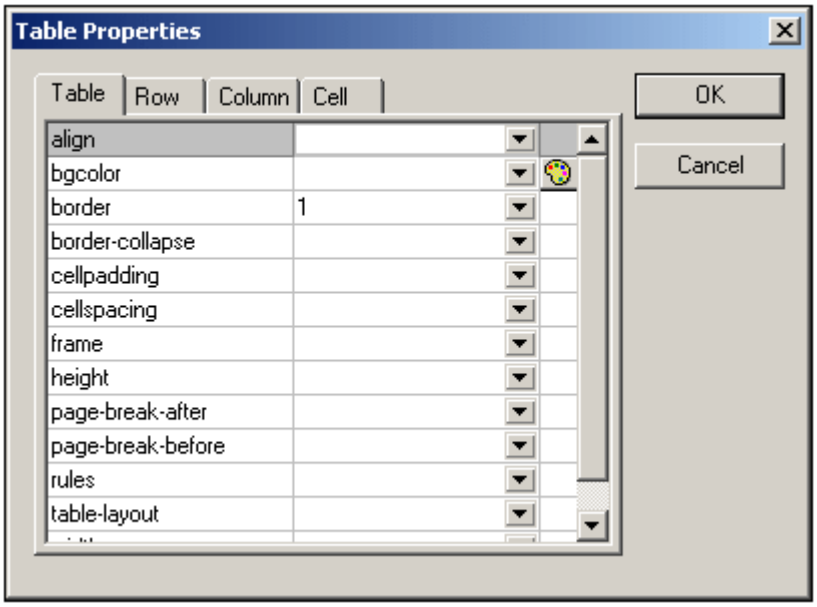
This command centers the cell contents.

Align bottom

This command aligns the cell contents to the bottom of the cell.

Table properties

The "Table properties" command opens the Table Properties dialog box. This icon is only made active for HTML tables, it cannot be clicked for CALS tables.



8.2.3 Editing a DB

In Authentic View, you can edit database (DB) tables and save data back to a DB. This section contains a full description of interface features available to you when editing a DB table. The following general points need to be noted:

- The number of records in a DB table that are displayed in Authentic View may have been deliberately restricted by the designer of the StyleVision Power Stylesheet in order to make the design more compact. In such cases, only that limited number of records is initially loaded into Authentic View. Using the DB table row navigation icons (*see* Navigating a DB Table), you can load and display the other records in the DB table.
- You can query the DB to display certain records.
- You can add, modify, and delete DB records, and save your changes back to the DB. See Modifying a DB Table.

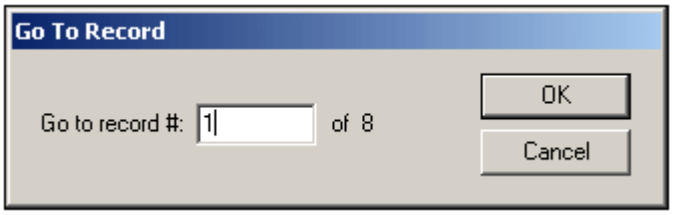
To open a DB-based StyleVision Power Stylesheet in Authentic View:

- Click **Authentic** | **Edit Database Data**, and browse for the required StyleVision Power Stylesheet.

Navigating a DB Table

The commands to navigate DB table rows are available as buttons in the Authentic View document. Typically, one navigation panel with either four or five buttons accompanies each DB table.

The arrow icons are, from left to right, Go to First Record in the DB Table; Go to Previous Record; Open the Go to Record dialog (*see screenshot*); Go to Next Record; and Go to Last Record.



To navigate a DB table, click the required button.

XML Databases
In the case of XML DBs, such as IBM DB2, one cell (or row) contains a single XML document, and therefore a single row is loaded into Authentic View at a time. To load an XML document that is in another row, use the **Authentic | Select New Row with XML Data for Editing** menu command.

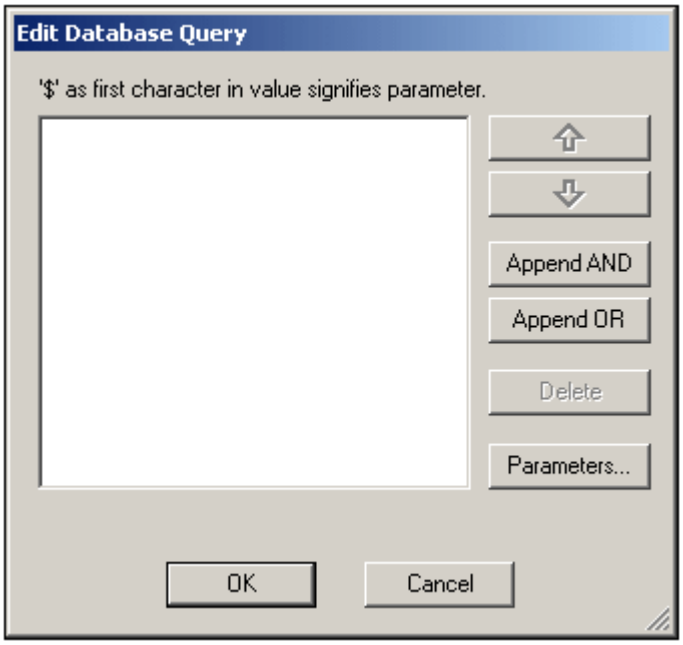
DB Queries

A DB query enables you to query the records of a table displayed in Authentic View. A query is made for an individual table, and only one query can be made for each table. You can make a query at any time while editing. If you have unsaved changes in your Authentic View document at the time you submit the query, you will be prompted about whether you wish to save **all** changes made in the document or discard **all** changes. Note that even changes made in other tables will be saved/discarded. After you submit the query, the table is reloaded using the query conditions.

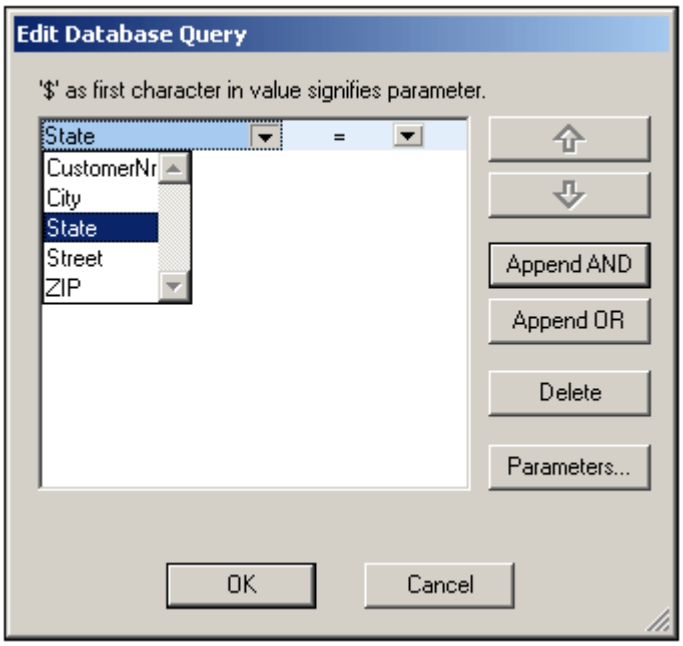
Please note: If you get a message saying that too many tables are open, then you can reduce the number of tables that are open by using a query to filter out some tables.

To create and submit a query:

1. Click the Query button  for the required table in order to open the Edit Database Query dialog (*see screenshot*). This button typically appears at the top of each DB table or below it. If a Query button is not present for any table, the designer of the StyleVision Power Stylesheet has not enabled the DB Query feature for that table.



2. Click the **Append AND** or **Append OR** button. This appends an empty criterion for the query (shown below).



4. Enter the expression for the criterion. An expression consists of: (i) a field name (available from the associated combo-box); (ii) an operator (available from the associated combo-box); and (iii) a value (to be entered directly). For details of how to construct expressions see the Expressions in criteria section.
5. If you wish to add another criterion, click the **Append AND** or **Append OR** button according to which logical operator (AND or OR) you wish to use to join the two criteria. Then add the new criterion. For details about the logical operators, see the section Re-ordering criteria in DB Queries.

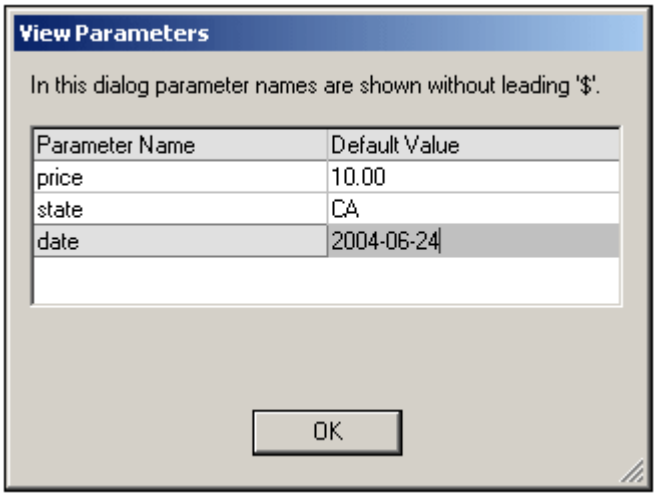
Expressions in criteria
Expressions in DB Query criteria consist of a field name, an operator, and a value. The **available field names** are the child elements of the selected top-level data table; the names of these fields are listed in a combo-box (*see screenshot above*). The **operators** you can use are listed below:

=	Equal to
<>	Not equal to
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to
LIKE	Phonetically alike
NOT LIKE	Phonetically not alike
IS NULL	Is empty
NOT NULL	Is not empty

If IS NULL or NOT NULL is selected, the Value field is disabled. **Values** must be entered without quotes (or any other delimiter). Values must also have the same formatting as that of the corresponding DB field; otherwise the expression will evaluate to `FALSE`. For example, if a criterion for a field of the `date` datatype in an MS Access DB has an expression `StartDate=25/05/2004`, the expression will evaluate to `FALSE` because the `date` datatype in an MS Access DB has a format of `YYYY-MM-DD`.

Using parameters with DB Queries
You can enter the name of a **parameter** as the value of an expression when creating queries. Parameters are variables that can be used instead of literal values in queries. When you enter it in an expression, its value is used in the expression. Parameters that are available have been defined by the SPS designer in the SPS and can be viewed in the View Parameters dialog (*see screenshot below*). Parameters have been assigned a default value in the SPS, which can be overridden by passing a value to the parameter via the command line (if and when the output document is compiled via the command line).

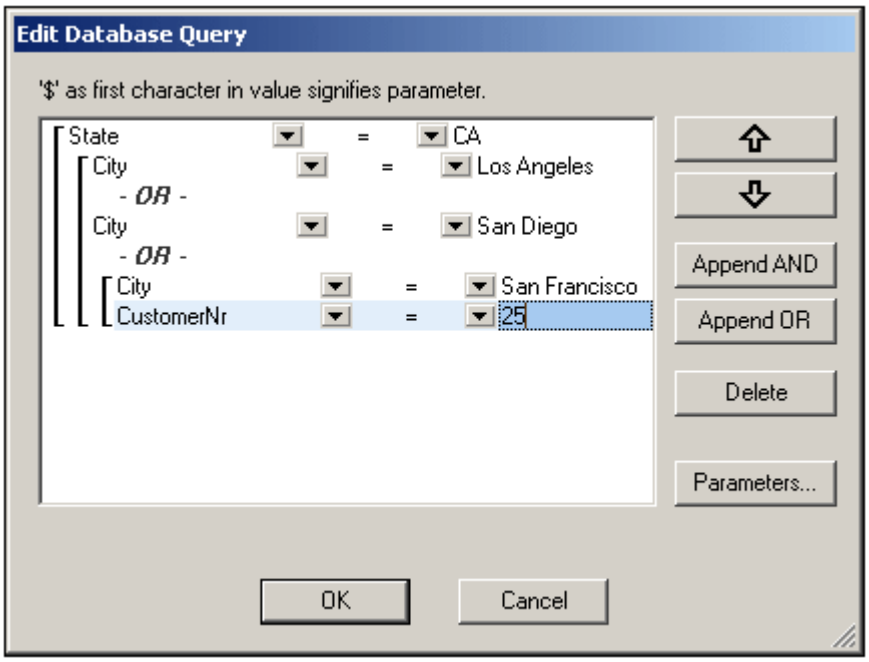
To view the parameters defined for the SPS, click the **Parameters** button in the Edit Database Query dialog. This opens the **View Parameters** dialog (*see screenshot*).



The View Parameters dialog contains **all** the parameters that have been defined for the stylesheet in the SPS and parameters must be edited in th stylesheet design.

Re-ordering criteria in DB Queries

The logical structure of the DB Query and the relationship between any two criteria or sets of criteria is indicated graphically. Each level of the logical structure is indicated by a square bracket. Two adjacent criteria or sets of criteria indicate the AND operator, whereas if two criteria are separated by the word `OR` then the OR operator is indicated. The criteria are also appropriately indented to provide a clear overview of the logical structure of the DB Query.



The DB Query shown in the screenshot above may be represented in text as:

```
State=CA AND ( City=Los Angeles OR City=San Diego OR ( City=San
Francisco AND CustomerNr=25))
```

You can re-order the DB Query by moving a criterion or set of criteria up or down relative to the other criteria in the DB Query. To move a criterion or set of criteria, do the following:

1. Select the criterion by clicking on it, or select an entire level by clicking on the bracket that represents that level.
2. Click the Up or Down arrow button in the dialog.

The following points should be noted:

- If the adjacent criterion in the direction of movement is at the same level, the two criteria exchange places.
- A set of criteria (i.e. criterion within a bracket) changes position within the same level; it does not change levels.
- An individual criterion changes position within the same level. If the adjacent criterion is further outward/inward (i.e. not on the same level), then the selected criterion will move outward/inward, **one level at a time**.

To delete a criterion in a DB Query, select the criterion and click **Delete**.

Modifying a DB Query

To modify a DB Query:

1. Click the Query button  . The Edit Database Query dialog box opens. You can now edit the expressions in any of the listed criteria, add new criteria, re-order criteria, or delete criteria in the DB Query.
2. Click **OK**. The data from the DB is automatically re-loaded into Authentic View so as to reflect the modifications to the DB Query.

Modifying a DB Table

Adding a record

To add a record to a DB table:

1. Place the cursor in the DB table row and click the  icon (to append a row) or the  icon (to insert a row). This creates a new record in the temporary XML file.
2. Click the **File | Save** command to add the new record in the DB. In Authentic View a row for the new record is appended to the DB table display. The `AltovaRowStatus` for this record is set to `A` (for Added).

When you enter data for the new record it is entered in bold and is underlined. This enables you to differentiate added records from existing records—if existing records have not been formatted with these text formatting properties. Datatype errors are flagged by being displayed in red.

The new record is added to the DB when you click **File | Save**. After a new record is saved to the DB, its `AltovaRowStatus` field is initialized (indicated with `---`) and the record is displayed in Authentic View as a regular record.

Modifying a record

To modify a record, place the cursor at the required point in the DB table and edit the record as required. If the number of displayed records is limited, you may need to navigate to the required record (see Navigating a DB Table).

When you modify a record, entries in all fields of the record are underlined and the `AltovaRowStatus` of all primary instances of this record is set to `U` (for Updated). All secondary instances of this record have their `AltovaRowStatus` set to `u` (lowercase). Primary and secondary instances of a record are defined by the structure of the DB—and correspondingly of the XML Schema generated from it. For example, if an Address table is included in a Customer table, then the Address table can occur in the Design Document in two types of instantiations: as the Address table itself and within instantiations of the Customer table. Whichever of these two types is modified is the type that has been primarily modified. Other types—there may be more than one other type—are secondary types. Datatype errors are flagged by being displayed in red.

The modifications are saved to the DB by clicking **File | Save**. After a modified record is saved to the DB, its `AltovaRowStatus` field is initialized (indicated with `---`) and the record is displayed in Authentic View as a regular record.

Please note:

- If even a single field of a record is modified in Authentic View, the entire record is updated when the data is saved to the DB.
- The date value `0001-01-01` is defined as a `NULL` value for some DBs, and could result in an error message.

Deleting a record

To delete a record:

1. Place the cursor in the row representing the record to be deleted and click the  icon. The record to be deleted is marked with a strikethrough. The `AltovaRowStatus` is set as follows: primary instances of the record are set to `D`; secondary instances to `d`; and records indirectly deleted to `X`. Indirectly deleted records are fields in the deleted record that are held in a separate table. For example, an Address table might be included in a Customer table. If a Customer record were to be deleted, then its corresponding Address record would be indirectly deleted. If an Address record in the Customer table were deleted, then the Address record in the Customer table would be primarily deleted, but the same record would be secondarily deleted in an independent Address table if this were instantiated.
2. Click **File | Save** to save the modifications to the DB.

Please note: Saving data to the DB resets the Undo command, so you cannot undo actions that were carried out prior to the save.

8.2.4 Working with Dates

There are two ways in which dates can be edited in Authentic View:

- Dates are entered or modified using the Date Picker.
- Dates are entered or modified by typing in the value.

The method the Authentic View user will use is defined in the SPS. Both methods are described in the two sub-sections of this section.

Note on date formats

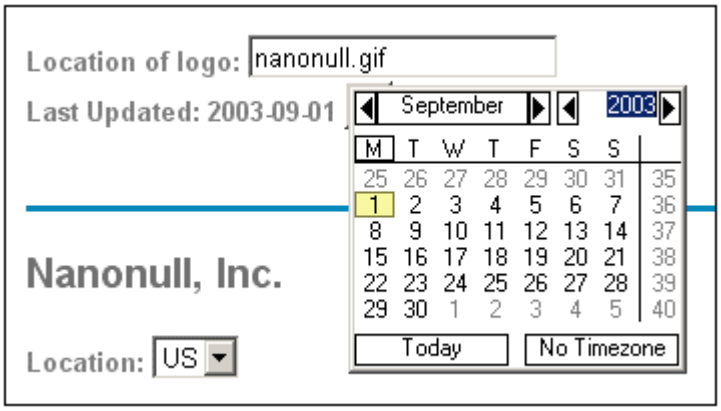
In the XML document, dates can be stored in one of several date datatypes. Each of these datatypes requires that the date be stored in a particular lexical format in order for the XML document to be valid. For example, the `xs:date` datatype requires a lexical format of `YYYY-MM-DD`. If the date in an `xs:date` node is entered in anything other than this format, then the XML document will be invalid.

In order to ensure that the date is entered in the correct format, the SPS designer can include the graphical Date Picker in the design. This would ensure that the date selected in the Date Picker is entered in the correct lexical format. If there is no Date Picker, the Authentic View should take care to enter the date in the correct lexical format. Validating the XML document could provide useful tips about the required lexical format.

Date Picker

The Date Picker is a graphical calendar used to enter dates in a standard format into the XML document. Having a standard format is important for the processing of data in the document. The Date Picker icon appears near the date field it modifies (*see screenshot*).

To display the Date Picker (*see screenshot*), click the Date Picker icon.

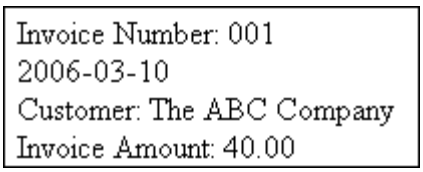


To select a date, click on the desired date, month, or year. The date is entered in the XML document, and the date in the display is modified accordingly. You can also enter a time zone if this is required.

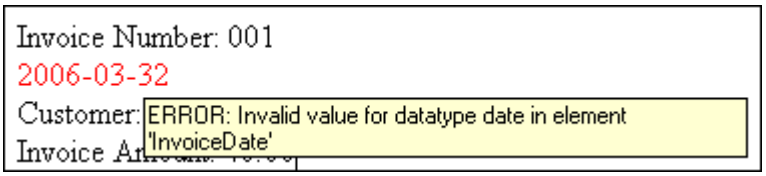
Text Entry

For date fields that do not have a Date Picker (*see screenshot*), you can edit the date directly by typing in the new value.

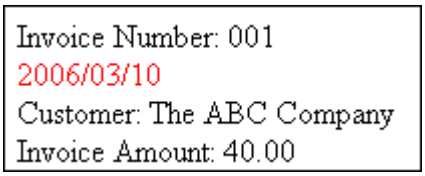
Please note: When editing a date, you must not change its format.



If you edit a date and change it such that it is out of the valid range for dates, the date turns red to alert you to the error. If you place the mouse cursor over the invalid date, an error message appears (*see screenshot*).



If you try to change the format of the date, the date turns red to alert you to the error (*see screenshot*).



8.2.5 Defining Entities

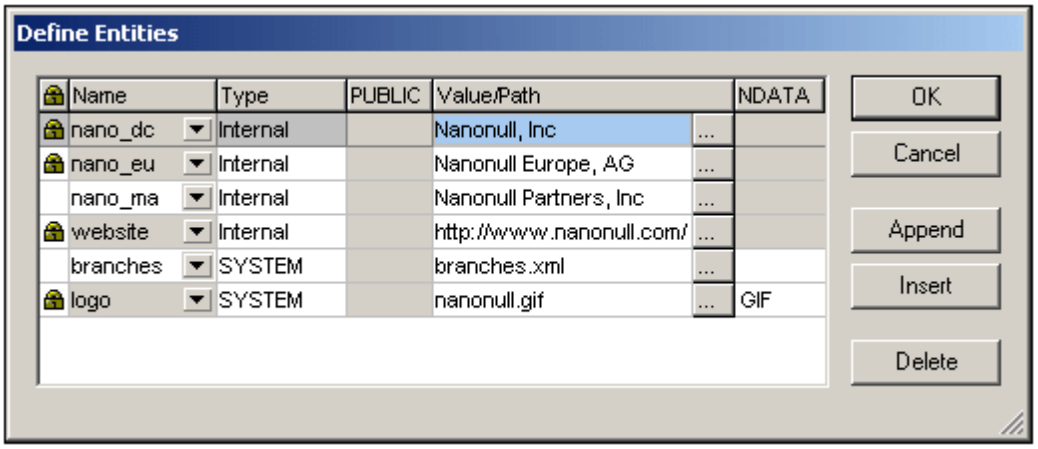
You can define entities for use in Authentic View, whether your document is based on a DTD or an XML Schema. Once defined, these entities are displayed in the Entities Entry Helper and in the **Insert Entity** submenu of the context menu. When you double-click on an entity in the Entities Entry Helper, that entity is inserted at the cursor insertion point.

An entity is useful if you will be using a text string, XML fragment, or some other external resource in multiple locations in your document. You define the entity, which is basically a short name that stands in for the required data, in the Define Entities dialog. After defining an entity you can use it at multiple locations in your document. This helps you save time and greatly enhances maintenance.

There are two broad types of entities you can use in your document: a **parsed entity**, which is XML data (either a text string or a fragment of an XML document), or an **unparsed entity**, which is non-XML data such as a binary file (usually a graphic, sound, or multimedia object). Each entity has a name and a value. In the case of parsed entities the entity is a placeholder for the XML data. The value of the entity is either the XML data itself or a URI that points to a `.xml` file that contains the XML data. In the case of unparsed entities, the value of the entity is a URI that points to the non-XML data file.

To define an entity:

1. Click **Authentic | Define XML Entities...**. This opens the Define Entities dialog (*screenshot below*).



2. Enter the name of your entity in the Name field. This is the name that will appear in the Entities Entry Helper.
3. Enter the type of entity from the drop-down list in the Type field. The following types are possible: An **Internal** entity is one for which the text to be used is stored in the XML document itself. Selecting **PUBLIC** or **SYSTEM** specifies that the resource is located outside the XML file, and will be located with the use of a public identifier or a system identifier, respectively. A system identifier is a URI that gives the location of the resource. A public identifier is a location-independent identifier, which enables some processors to identify the resource. If you specify both a public and system identifier, the public identifier resolves to the system identifier, and the system identifier is used.
4. If you have selected PUBLIC as the Type, enter the public identifier of your resource in the PUBLIC field. If you have selected Internal or SYSTEM as your Type, the PUBLIC field is disabled.
5. In the Value/Path field, you can enter any one of the following:
   - If the entity type is Internal, enter the text string you want as the value of your entity. Do not enter quotes to delimit the entry. Any quotes that you enter will be treated as part of the text string.
   - If the entity type is SYSTEM, enter the URI of the resource or select a resource on your local network by using the Browse button. If the resource contains parsed data, it must be an XML file (i.e., it must have a `.xml` extension). Alternatively, the resource can be a binary file, such as a GIF file.
   - If the entity type is PUBLIC, you must additionally enter a system identifier in this field.

6. The NDATA entry tells the processor that this entity is not to be parsed but to be sent to the appropriate processor. The NDATA field must therefore contain some value to indicate that the entity is an unparsed entity.

Dialog features
You can do the following in the Define Entities dialog:

- Append entities
- Insert entities
- Delete entities
- Sort entities by the alphabetical value of any column by clicking the column header; clicking once sorts in ascending order, twice in descending order.
- Resize the dialog box and the width of columns.
- Locking. Once an entity is used in the XML document, it is locked and cannot be edited in the Define Entities dialog. Locked entities are indicated by a lock symbol in the first column. Locking an entity ensures that the XML document valid with respect to entities. (The document would be invalid if an entity is referenced but not defined.)
- Duplicate entities are flagged.

Limitations of entities

- An entity contained within another entity is not resolved, either in the dialog, Authentic View, or XSLT output, and the ampersand character of such an entity is displayed in its escaped form, i.e. `&`.
- External unparsed entities that are not image files are not resolved in Authentic View. If an image in the design is defined to read an external unparsed entity and has its URI set to be an entity name (for example: `'logo'`), then this entity name can be defined in the Define Entities dialog (*see screenshot above*) as an external unparsed entity with a value that resolves to the URI of the image file (as has been done for the `logo` entity in the screenshot above).

8.2.6 XML Signatures

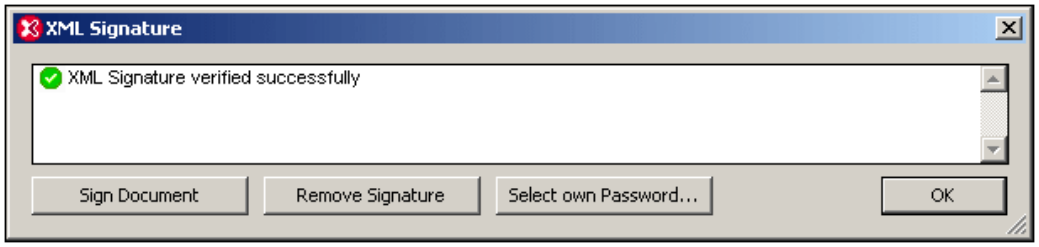
An SPS can be designed with an XML signature configured for Authentic View. When XML signatures are enabled in the SPS, the Authentic View user can digitally sign the Authentic XML file with the enabled signature. After the document has been signed, any modification to it will cause the verification of the signature to fail. Whenever a signed Authentic XML document is opened in the Authentic View of any Altova product, the verification process will be run on the document and the result of the verification will be displayed in a window.

Note: XML signatures can be used, and will be verified, in the Authentic View of Enterprise and Professional editions of the following Altova products: Authentic Desktop, Authentic Browser, XMLSpy, and StyleVision.

XML signature actions
The following Authentic View user actions for signatures are possible:

- *Choosing the certificate/password:* Signatures are authenticated with either a certificate or a password. The authentication object (certificate or password) is required when the signature is created and again when it is verified. If an Authentic XML document has a signature-enabled SPS assigned to it, the SPS might specify a default certificate or password for the signature. Whether a default certificate or password has been specified or not, the signature can be configured to allow the Authentic View user to select an own certificate/password. The Authentic View user can do this at any time in the XML Signature dialog (s*creenshot below*). Selecting an own certificate/password

overrides the default certificate/password. The own certificate/password is stored in memory and is used for the current session. If, after an own certificate/password has been selected, the Authentic View user closes the file or the application, the SPS reverts to its default setting for the certificate/password.



- *Signing the document:* The Authentic XML document can be signed either automatically or manually. Automatic signing will have been specified in the signature configuration by the SPS designer and causes the Authentic XML document to be signed automatically when it is saved. If the automatic-signing option has not been activated, the document can be signed manually. This is done by clicking the XML Signature toolbar icon  or the **Authentic | XML Signature** command, and, in the XML Signature dialog that then pops up (*screenshot above*), clicking the **Sign Document** button. Note that signing the document with an embedded signature would require the schema to allow the `Signature` element as the last child element of the root (document) element. Otherwise the document will be invalid against the schema. When signing the document, the authentication object and the placement of the signature are determined according to the signature configuration. You must ensure that you have access to the authentication information. For more information about this, consult your SPS designer.

- *Verifying the Authentic XML document:* If an SPS has XML Signatures enabled, the verification process will be run on the signature each time the Authentic View XML document is loaded. If the password or certificate key information is not saved with the SPS and signature, respectively, the Authentic View user will be prompted to enter the password or select a certificate for verification. Note that if an embedded signature is generated, it will be saved with the XML file when the XML file is saved. The generated signature must be explicitly removed (via the **Remove Signature** button of the XML Signature dialog; *see screenshot above*) if you do not wish to save it with the XML file. Similarly, if a detached signature is generated, it too must be explicitly removed if it is not required.

8.2.7 Images in Authentic View

Authentic View allows you to specify images that will be used in the final output document (HTML, RTF, PDF and Word 2007). You should note that some image formats might not be supported in some formats or by some applications. For example, the SVG format is supported in PDF, but not in RTF and would require a browser add-on for it to be viewed in HTML. So, when selecting an image format, be sure to select a format that is supported in the output formats of your document. Most image formats are supported across all the output formats (*see list below*).

Authentic View is based on Internet Explorer, and is able to display most of the image formats that your version of Internet Explorer can display. The following commonly used image formats are supported:

- GIF
- JPG
- PNG

- BMP
- WMF (Microsoft Windows Metafile)
- EMF (Enhanced Metafile)
- SVG (for PDF output only)

Relative paths
Relative paths are resolved relative to the SPS file.

8.2.8 Keystrokes in Authentic View

Enter key
In Authentic View the **Enter** key is used to append additional elements when it is in certain cursor locations. For example, if the chapter of a book may (according to the schema) contain several paragraphs, then pressing **Enter** inside the text of the paragraph causes a new paragraph to be appended immediately after the current paragraph. If a chapter can contain one title and several paragraphs, pressing **Enter** inside the chapter but outside any paragraph element (including within the title element) causes a new chapter to be appended after the current chapter (assuming that multiple chapters are allowed by the schema).

Please note: The **Enter** key does **not** insert a new line. This is the case even when the cursor is inside a text node, such as paragraph.

Using the keyboard
The keyboard can be used in the standard way, for typing and navigating. Note the following special points:

- The **Tab** key moves the cursor forward, stopping before and after nodes, and highlighting node contents; it steps over static content.
- The `add...` and `add Node` hyperlinks are considered node contents and are highlighted when tabbed. They can be activated by pressing either the spacebar or the **Enter** key.

8.3 Authentic Scripting

The **Authentic Scripting** feature provides more flexibility and interactivity to SPS designs. These designs can be created or edited in StyleVision Enterprise and Professional editions, and can be viewed in the Authentic View of the Enterprise and Professional editions of Altova products.

A complete listing of support for this feature in Altova products is given in the table below. Note, however, that in the trusted version of Authentic Browser plug-in, internal scripting is turned off because of security concerns.

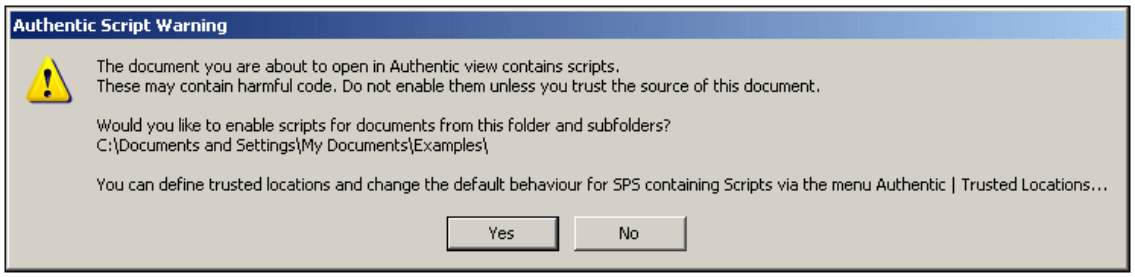
Altova Product	Authentic Scripts Creation	Authentic Scripts Enabled
StyleVision Enterprise	Yes	Yes
StyleVision Professional	Yes	Yes
StyleVision Standard *	No	No
XMLSpy Enterprise	No	Yes
XMLSpy Professional	No	Yes
XMLSpy Standard	No	No
AuthenticDesktop Enterprise	No	Yes
AuthenticDesktop Community	No	No
Authentic Browser Plug-in Community **	No	No
Authentic Browser Plug-in Enterprise Trusted ***	No	Yes
Authentic Browser Plug-in Enterprise Untrusted	No	Yes

* *No AuthenticView*
** *Both Trusted and Untrusted versions*
*** *Scripted designs displayed. No internal macro execution or event handling. External events fired.*

Authentic Scripts behave in the same way in all Altova products, so no product-specific code or settings are required.

Authentic Script Warning Dialog

If a PXF file, or an XML file linked to an SPS, contains a script and the file is opened or switched to Authentic View, then a warning dialog (*screenshot below*) pops up.



You can choose one of the following options:

- Click **Yes**. to add the folder containing the file to the Trusted Locations list for Authentic scripts. Subsequently, all files in the trusted folder will be opened In Authentic View without this warning dialog being displayed first. The Trusted Locations list can be accessed via the menu command **Authentic | Trusted Locations**, and modified.
- Click **No** to not add the folder containing the file to the Trusted Locations list. The file will be displayed in Authentic View with scripts disabled. The Authentic Script Warning dialog will appear each time this file is opened in Authentic View. To add the file's folder to the Trusted Locations list subsequently, open the Trusted locations dialog via the menu command **Authentic | Trusted Locations**, and add the folder or modify as required.

For a description of the Trusted Locations dialog, see the description of the **Authentic | Trusted Locations** menu command in the User Reference.

Note: When XMLSpy is accessed via its COM interface (see Programmers' Reference to see how this can be done), **the security check is not done** and the **Authentic Script Warning dialog is not displayed**.

How Authentic Scripting works

The designer of the SPS design can use Authentic Scripting in two ways to make Authentic documents interactive:

- By assigning scripts for user-defined actions (macros) to design elements, toolbar buttons, and context menu items.
- By adding to the design event handlers that react to Authentic View events.

All the scripting that is required for making Authentic documents interactive is done within the StyleVision GUI (Enterprise and Professional editions). Forms, macros and event handlers are created within the Scripting Editor interface of StyleVision and these scripts are saved with the SPS. Then, in the Design View of StyleVision, the saved scripts are assigned to design elements, toolbar buttons, and context menus. When an XML document based on the SPS is opened in an Altova product that supports Authentic Scripting (*see table above*), the document will have the additional flexibility and interactivity that has been created for it.

Documentation for Authentic Scripting

The documentation for Authentic Scripting is available in the documentation of StyleVision. It can be viewed online via the Product Documentation page of the Altova website.

9 HTML, CSS, JSON

XMLSpy provides intelligent editing features for HTML, CSS, and JSON documents. All three types of documents can be edited in Text View. Additionally, JSON documents can be edited in Grid View, and the active HTML document can be previewed in Browser View.

The intelligent editing features of each type of document is described separately in the sub-sections of this section: HTML, CSS, and JSON.

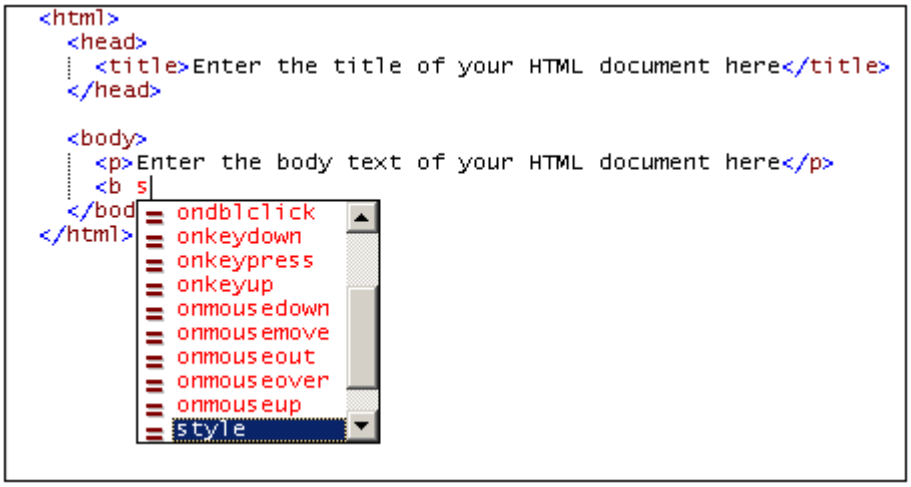
9.1 HTML

HTML documents can be edited in Text View, and the edited page can then be viewed immediately in Browser View. Text View provides a number of useful HTML editing features. These are described in detail in Text View, but the main features, as well as HTML-specific options, are listed below.

Support level
XMLSpy supports HTML 4.0 and HTML 5.0. Entry-helper and intelligent editing are available for the respective HTML versions. These features are described below.

Entry helpers
Elements, Attributes and Entities entry helpers are available when an HTML document is active. The entry helpers are context-sensitive; the items displayed in the entry helpers are those available at the current cursor location. Use the HTML entry helpers as described in Text View.

Auto-completion
As you type markup text into your HTML document, XMLSpy provides Auto-completion help. A pop-up containing a list of all nodes available at the cursor insertion point is displayed. As you type, the selection jumps to the first closest match in the list (*see screenshot below*). Click the selected item to insert it at the cursor insertion point.



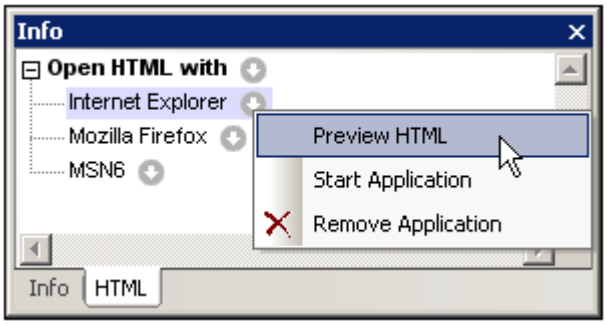
Auto-completion for elements appears when the left bracket of node tags is entered. When the start tag of an element node is entered in the document, the end tag is automatically inserted as well. This ensures well-formedness.

Auto-completion for attributes appears when a space is entered after the element name in a start tag. When you click an attribute name in the Auto-completion pop-up, the attribute is entered with quotes characters and the cursor positioned between the quotes.

The Entities entry helper contains character entities from the HTML 4.0 and HTML 5.0 entity sets, Latin-1, special characters, and symbols.

HTML Info window

The HTML Info window (*screenshot below*) lists applications that can be used to quickly access the active HTML file. For example, if an HTML file is active in XMLSpy, double-clicking the Mozilla Firefox item in the HTML Info Window starts an instance of Mozilla Firefox and loads the active HTML document in it.



Note the following usage points:

- The icon to the right of the *Open HTML With* item enables applications to be added to the *Open HTML With* list. All the browsers installed on the system, or any other application (such as a text editor), can be added via the menu commands accessed via the *Open HTML With* icon. The associated applications would typically be browser or editor applications.
- After an application has been added to the *Open HTML With* list (except when added with the **Add Installed Browsers** command), its name in the *Open HTML With* list can be changed by selecting it, pressing **F2**, and editing the name.
- The icons to the right of each application listed in the *Open HTML With* list each opens a menu containing commands to: (i) open the application; (ii) open the application and load the linked HTML file; (iii) remove the application from the list. Double-clicking an application name opens the linked HTML file in that application.
- Applications added to or removed from the *Open HTML With* list are also added to or removed from the CSS Info window.

Assigning a DTD

For XHTML documents, a DTD or XML Schema can be assigned via the **DTD/Schema** menu, which enables you to browse for the required DTD or XML Schema file. An XHTML document can be edited exactly like an XML document.

Browser View commands

Browser View commands are available in the **Browser** menu.

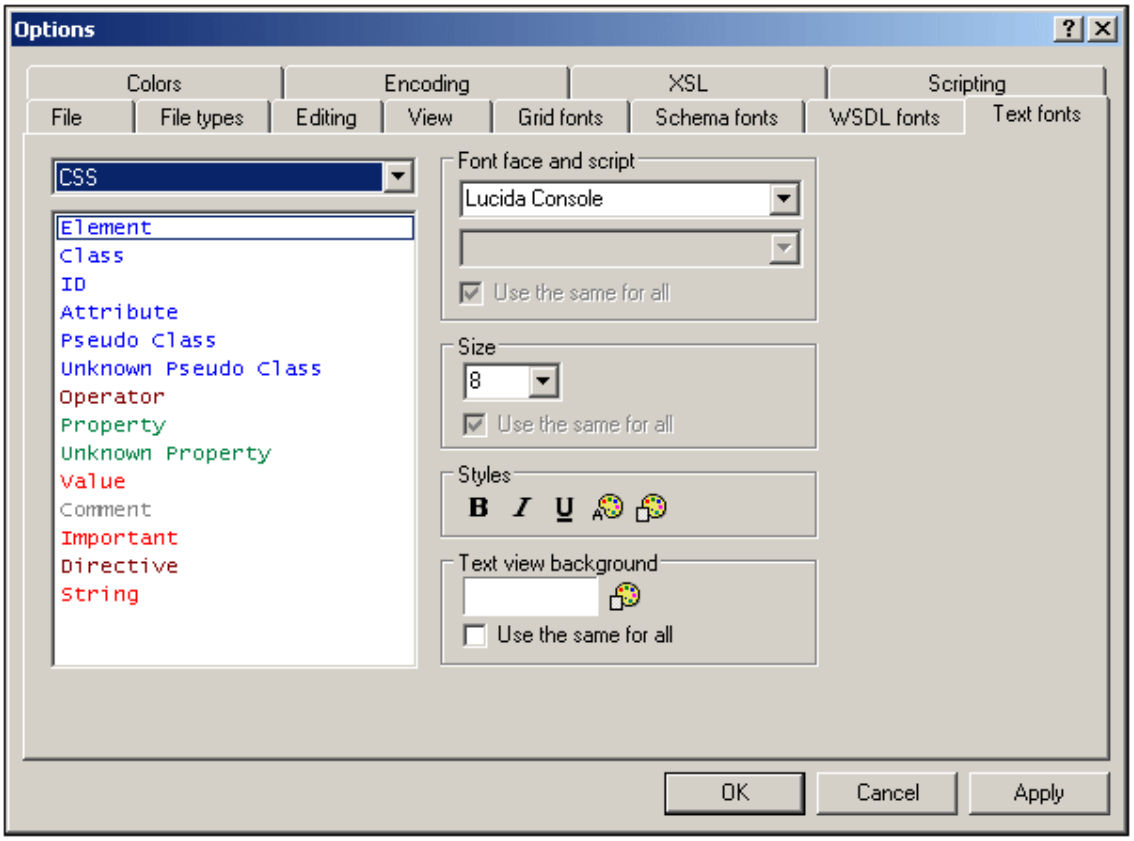
9.2 CSS

CSS documents can be edited using Text View's intelligent editing features. These features, as they apply to the editing of CSS documents, are listed below.

Syntax coloring: A CSS rule consists of a selector, one or more properties, and the values of those properties. These three components may be further sub-divided into more specific categories; for example, a selector may be a class, pseudo-class, ID, element, or attribute. Additionally, a CSS document can contain other items than rules: for example, comments. In Text View, each such category of items can be displayed in a different color (*screenshot below*) according to settings you make in the Options dialog (*see below*).

```
.header
{
    font-family: "Arial", sans-serif;
    font-weight: bold;
    color: red;
}
```

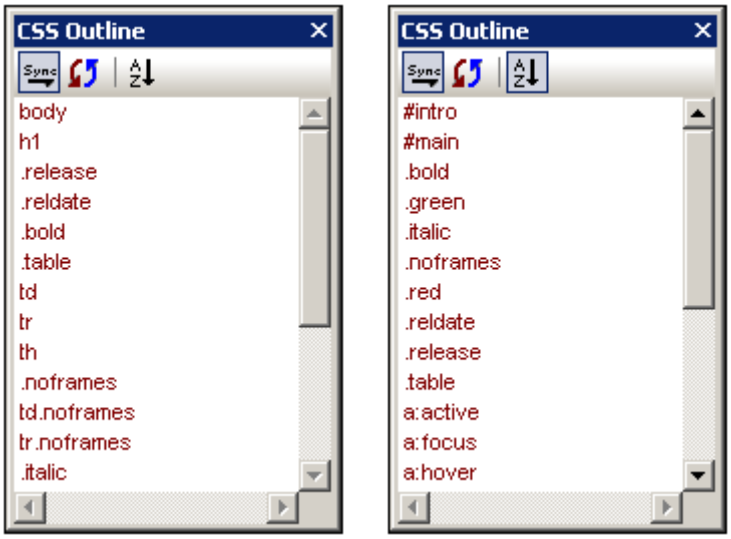
You can set the colors of the various CSS components in the Text Fonts tab of the Options dialog (*screenshot below*). In the combo box at top left, select CSS, and then select the required color (in the Styles pane) for each CSS item.



Folding margins: Each rule can be collapsed and expanded by clicking, respectively, the minus and plus icons to the left of the rule (*see screenshot above*). Note also that the pair of curly braces that delimit a rule (*screenshot above*) turns bold when the cursor is placed either before or after one of the curly braces. This indicates clearly where the definition of a particular rule starts and ends.

CSS outline: The CSS Outline entry helper (*screenshots below*) provides an outline of the document in terms of its selectors. Clicking a selector in the CSS Outline highlights it in the document. In the screenshot at left below, the selectors are unsorted and are listed in the order in which they appear in the document. In the screenshot at right, the Alphabetical Sorting feature has been toggled on (using the toolbar icon), and the selectors are sorted alphabetically.

You should note the following points: (i) For evaluating the alphabetical order of selectors, all parts of the selector are considered, including the period, hash, and colon characters; (ii) If the CSS document contains several selectors grouped together to define a single rule (e.g. `h4, h5, h6 {...}`), then each selector in the group is listed separately.



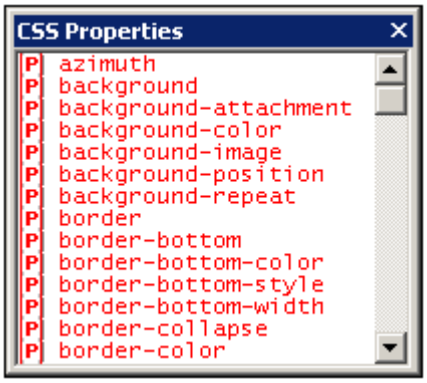
The icons in the toolbar of the CSS Outline entry helper, from left to right, do the following:

Toggles automatic synchronization (with the document) on and off. When auto-synchronization is switched on, selectors are entered in the entry helper even as you type them into the document.

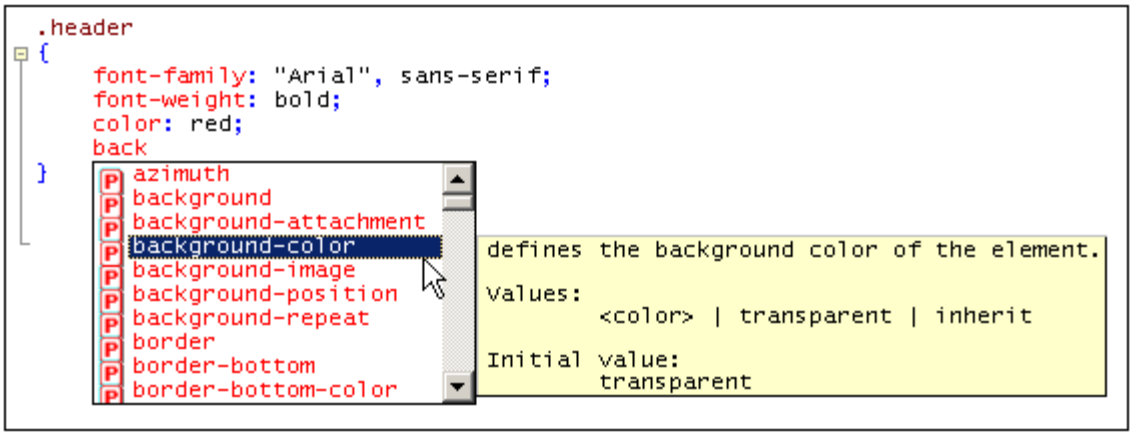
Synchronizes the entry helper with the current state of the document.

Toggles alphabetical sorting on and off. When off, the selectors are listed in the order in which they appear in the document. When sorted alphabetically, ID selectors appear first because they are prefaced by a hash (e.g. `#intro`).

Properties entry helper: The Properties entry helper (*screenshot below*) provides a list of all CSS properties, arranged alphabetically. A property can be inserted at the cursor insertion point by double-clicking the property.



Auto-completion of properties and tooltips for properties: As you start to type the name of a property, XMLSpy prompts you with a list of properties that begin with the letters you have typed (*screenshot below*). Alternatively, you can place the cursor anywhere inside a property name and then press **Ctrl+Space** to pop up the list of CSS properties.

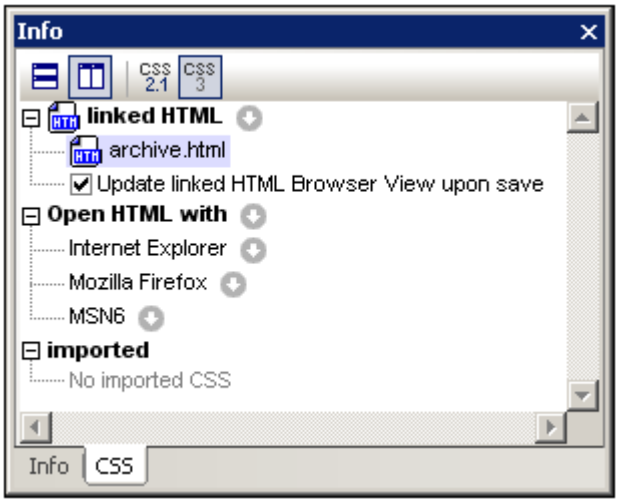


You can view a tooltip containing the definition of a property and its possible values by scrolling down the list or navigating the list with the Up and Down keys of your keyboard. The tooltip for the highlighted property is displayed. To insert a property, either press **Enter** when it is selected, or click it.

CSS Info window

When a CSS file is active, the CSS Info window (*screenshot below*) is enabled. The CSS Info window provides the following functionality:

- It enables you to switch between CSS 2.1 and CSS 3.0. The entry helpers and intelligent editing features of the GUI will be switched according to the CSS version selected in the toolbar of the Info window.
- It enables the CSS file to be linked to an HTML file. This functionality enables you to modify the CSS document and view the effect of changes immediately. Additionally, the linked HTML file can be opened in multiple browsers via the CSS Info window, thus enabling changes in the CSS document to be viewed in multiple browsers.
- The CSS Info window lists the imported CSS stylesheets, thus giving you an overview of the import structure of the active CSS stylesheet.



Note the following usage points:

- The toolbar of the Info window contains icons for CSS 2.1 and CSS 3.0. Select the version you want in order to switch entry helpers and intelligent editing features to the selected CSS version.
- Only one HTML file can be linked to the active CSS document. Do this by clicking the icon to the right of the *Linked HTML* item, then selecting the command **Set Link to HTML** and browsing for the required HTML file. The linked HTML file will be listed under the *Linked HTML* item in the Info window (*see screenshot below*). Creating this link does not modify the CSS document or the HTML document in any way. The link serves to set up an HTML file to which the active CSS document can be applied for testing.
- Double-clicking the Linked HTML file listing opens the HTML file in XMLSpy.
- The toolbar icons enable you to horizontally and vertically tile the CSS document and the HTML file.
- When changes to the CSS document are saved, the HTML file that is open in XMLSpy can be automatically updated. To enable these automatic updates, check the *Update Linked HTML Browser* check box. Note that these updates will only occur if the HTML file contains a reference to the CSS document being edited.
- To change the linked HTML file, select another HTML file via the **Set Link to HTML** command.
- To remove the link to the HTML file, click the icon to the right of the *Linked HTML* item and select the command **Remove Link**.
- The icon to the right of the *Open HTML With* item enables applications to be added to the *Open HTML With* list. All the browsers installed on the system, or any other application (such as a text editor), can be added via the menu commands accessed via the *Open HTML With* icon. The associated applications would typically be browser or editor applications.
- After an application has been added to the *Open HTML With* list (except when added with the **Add Installed Browsers** command), its name in the *Open HTML With* list can be changed by selecting it, pressing **F2**, and editing the name.
- The icons to the right of each application listed in the *Open HTML With* list each opens a menu containing commands to: (i) open the application; (ii) open the application and load the linked HTML file; (iii) remove the application from the list. Double-clicking an application name opens the linked HTML file in that application.
- Applications added to or removed from the *Open HTML With* list are also added to or removed from the HTML Info window.
- The *Imported* item displays a list of the CSS files imported by the active CSS document.

9.3 JSON

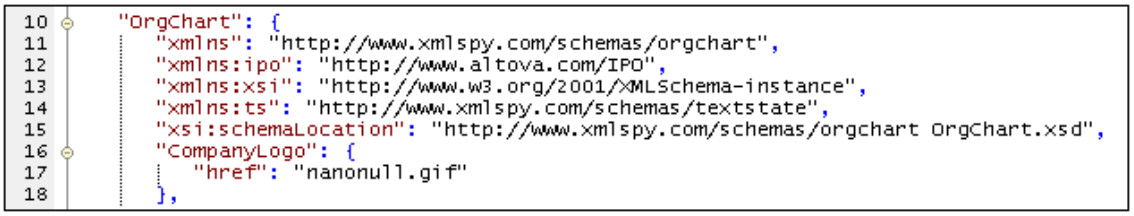
Altova website: JSON Editor

JSON documents can be edited using Grid View and the intelligent editing features of Text View.

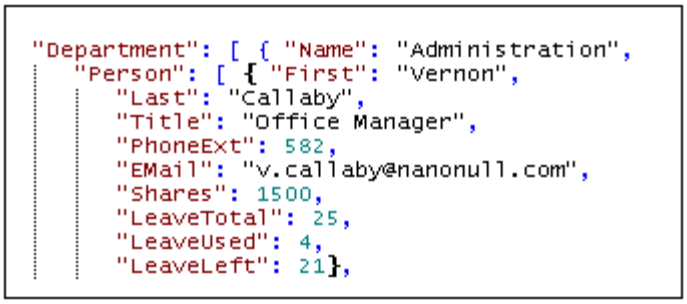
- Grid View provides a number of editing features that are very useful for editing large files; these features are described in the Grid View section.
- The Text View features, as they apply to the editing of JSON documents, are listed below.

Note: XMLSpy also provides conversion between JSON and XML in both directions. Clicking the Convert from/to JSON command in XMLSpy converts the active document to the other format.

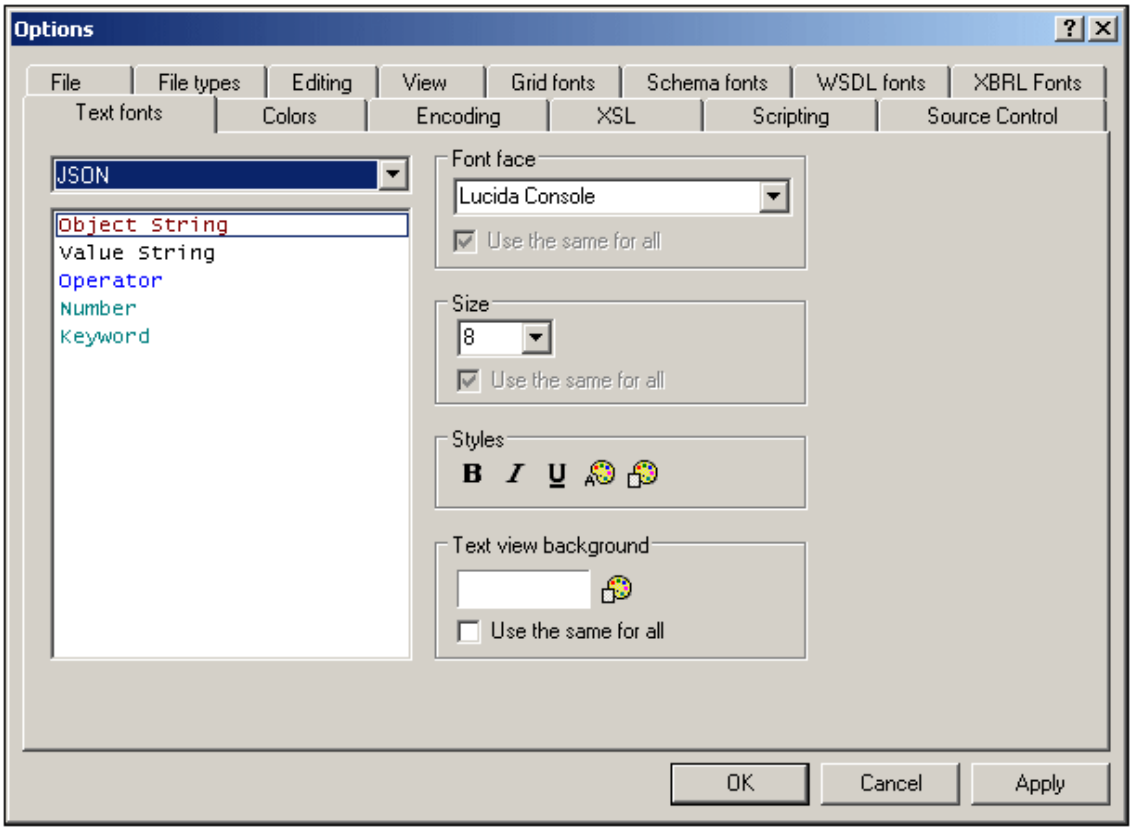
Folding margins: Each JSON element can be collapsed and expanded by clicking, respectively, the minus and plus icons to the left of the rule (*see screenshot below*). Note also that line-numbering is enabled.



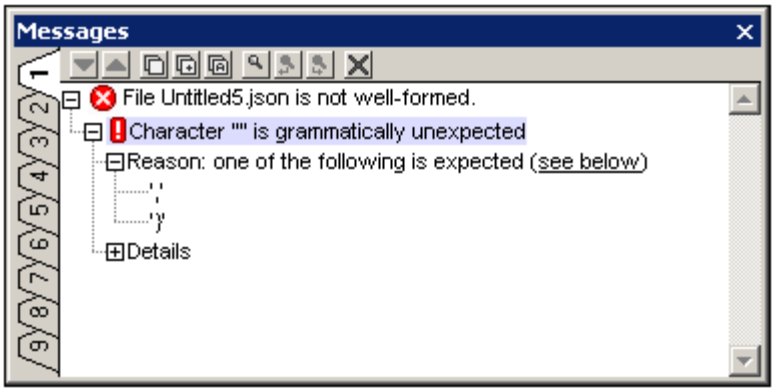
Structural marking: The pair of curly braces or square brackets that delimit a JSON element (*screenshot below*) turns bold when the cursor is placed either before or after one of the braces or brackets. This indicates where the definition of a particular element starts and ends.



Syntax coloring: A JSON document is made up of object strings, value strings, operators, numbers and keywords. In Text View, each category of items can be displayed in a different color (*screenshot above*) according to settings you make in the Options dialog (*screenshot below*). You can set the colors of the various JSON components in the Text Fonts tab of the Options dialog (*screenshot below*). In the combo box at top left, select JSON, and then select the required color (in the Styles pane) for each JSON item.



Syntax checking: The syntax of a JSON document can be checked by selecting the command **XML | Check Well-Formedness (F7)**. The results of te well-formed check are displayed in the Messages window (*screenshot below*).



The error message in the screenshot above points out an error in the document: Two double quotes (a closing quote followed by an opening quote) occur consecutively; syntactically a comma or a closing curly brace is required between the two quotes.

Converting between XML and JSON

The **Convert to/from JSON** command in the **Convert** menu converts an XML document, if it is the active document, to a JSON document. Also, if a JSON document is active, it can be converted to an XML document. For more information, see the User Reference.

10 Office Open XML, ZIP, EPUB

Office Open XML (OOXML), ZIP files, and EPUB files are similar in that both are packages containing other files. XMLSpy's Archive View provides an interface that enables you to view the internal structure of these packages, modify these structures, and access the files in the package for editing in XMLSpy. In the case of EPUB files, Archive View also enables you to directly view the EPUB book in the Browser View of XMLSpy.

Office Open XML (OOXML)

OOXML is a file format for describing documents, spreadsheets, and presentations. It was originally developed by Microsoft for the company's Office suite of products but is now an open ECMA specification.

Structure of an OOXML file

Each OOXML document is a package of multiple files that follows the Open Packaging Convention. A package consists of XML and other data files (such as image files) plus a relationships file that specifies the relationships among the various files in the package.

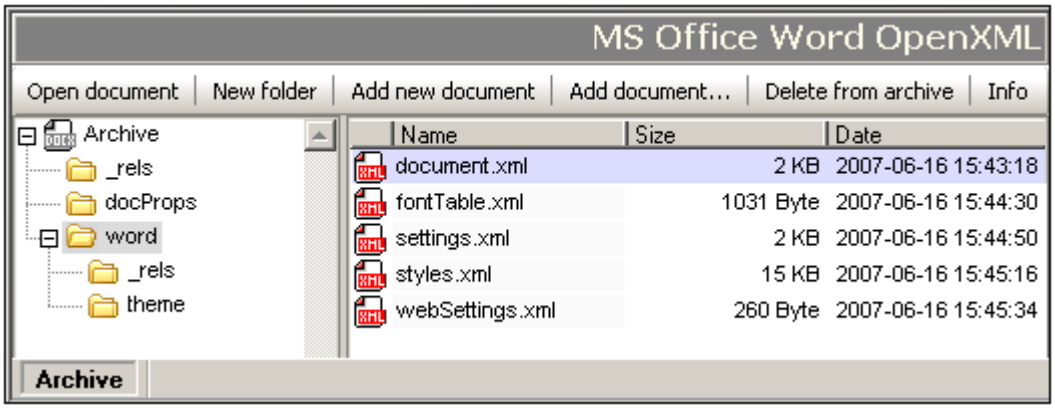
The internal structure and internal folder and file names of an OOXML file vary according to the document type. However, there is a common basic structure: an XML file called `[Content_Types].xml` at the root of the directory structure, and three directories: `_rels`, `docProps`, and a directory specific to the document type (in the case of `.docx` documents, for example, this folder would be called `word`; `xl` in `.xlsx` documents, and `ppt` in `.pptx` documents).

```
OOXML File
|-- File:     [Content_Types].xml
|-- Folder:   _rels
|-- Folder:   docProps
|-- Folder:   word/xl/ppt
```

- The `_rels` folder contains a `rels.xml` file, which specifies the relationships between the various files in the package.
- The `docProps` folder contains `app.xml` and `core.xml`, which describe key document properties.
- The `word`, `xl`, and `ppt` folders contain XML fies that hold the content of the document. For example, in the `word` folder, the file `document.xml` contains the core content of the document.

OOXML in XMLSpy's Archive View

In XMLSpy's Archive View (*screenshot below*), you can view and edit the contents of an OOXML file.



Folder View on the left-hand side shows the folders in the package, whereas the Main Window shows the files in the folder selected in Folder View. In Archive View, files and folders can be added to and deleted from the archive. Also, files can be opened quickly for editing in XMLSpy by double-clicking the file in Archive View.

Intelligent editing of OOXML's internal files
The XML documents within OOXML packages are based on standard schemas. XMLSpy provides intelligent editing support for OOXML documents, in the form of entry helpers, auto-completion, and validation.

ZIP files
ZIP files archive multiple files in a lossless data compression package. These files can be of various types. In XMLSpy's Archive View, ZIP files can be created, the internal structure modified, and files in the archive edited. These operations are described in the ZIP Files sub-section of this section.

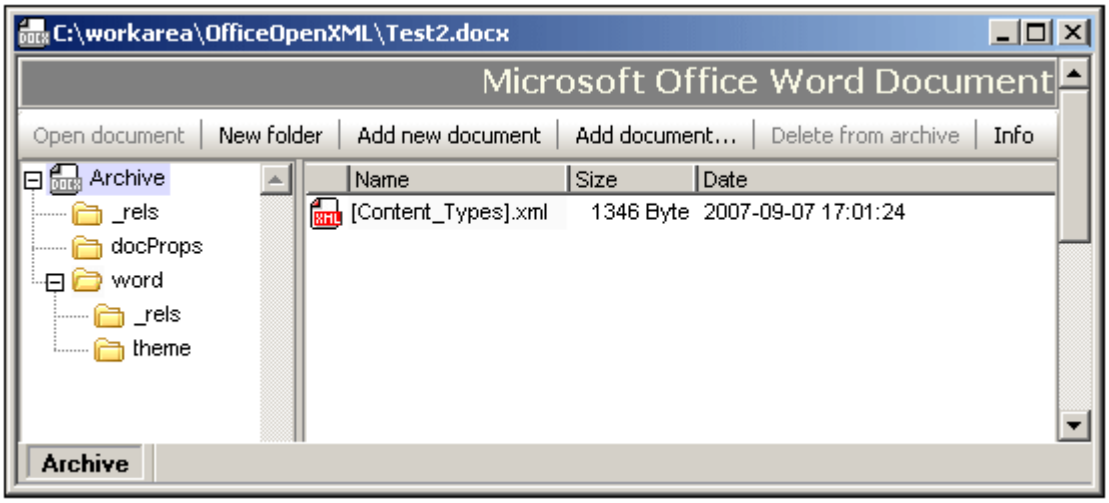
EPUB files
An EPUB file is a zipped group of files used for the distribution of digital publications (EPUB books). In Archive View, you can open EPUB files, create and edit EPUB files, preview the digital EPUB book, edit component files of the EPUB archive directly in XMLSpy, validate the EPUB file, and save the component files back to the EPUB archive. See the section, EPUB Files, for details.

10.1 Working with OOXML Files

This section describes how to work with OOXML documents in Archive View. The following procedures are discussed:

- Creating, opening, and saving OOXML files
- Editing the structure of an OOXML file
- Opening, editing, and saving internal OOXML documents
- Intelligent editing of internal OOXML documents
- Addressing documents in OOXML files
- Comparing OOXML archives

Creating, opening, and saving OOXML files
OOXML files are created via the Create New Document dialog (**File | New** command), in which you select the required file type (. `docx`, . `pptx`, or . `xlsx`). You are prompted for a file name and a location at which to save the file. The new file is created at the specified location and then opened in Archive View (*screenshot below*). Notice that the basic internal structure of the OOXML document has been created.



An existing OOXML file is opened in Archive View via the Open dialog (**File | Open**) of XMLSpy. OOXML files are saved with the **File | Save (Ctrl+S)** command. This command saves the structure and relationships of the OOXML file.

Editing the structure of an OOXML file
The contents of an OOXML file can be modified by adding and deleting folders and documents to it using Archive View functionality. After these structural changes have been made, the OOXML file must be saved (**File | Save**) for the modifications to take effect. You should note the following points:

- When a new folder or document is added using the command buttons in Archive View, it should be named immediately on its being created. It is not possible to rename a folder or document in Archive View.
- After a new document has been added to an archive folder, it is saved to the archive by saving it in its own window or by saving the OOXML file.

Opening, editing, saving internal OOXML documents

An internal OOXML document—that is, a document within an OOXML file package—is opened from Archive View by double-clicking it, or by selecting it in the Main Window and clicking the Open document command button. The document opens in a separate XMLSpy window. After editing it, simply save the document to save it back to the OOXML archive; there is no need to save the OOXML file itself.

Intelligent editing of internal OOXML documents

XMLSpy provides intelligent editing features for internal Office Open XML documents—that is, for documents within an OOXML file package. These features include entry helpers, auto-completion, and validation.

Addressing documents in OOXML files

Documents in OOXML files can be addressed using normal file paths plus the pipe character. For example, the file path:

```
C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\
\Examples\Office20XX\ExcelDemo.xlsx|zip\xl\tables\table1.xml
```

locates the file `table1.xml`, which is in the `xl\tables` folder of the OOXML file `ExcelDemo.xlsx` located in the `Examples\Office20XX` folder of the XMLSpy examples folder.

Comparing OOXML archives

When an OOXML file is open in Archive View, you can compare it with another archive by using the command **Tools | Compare Directories**.

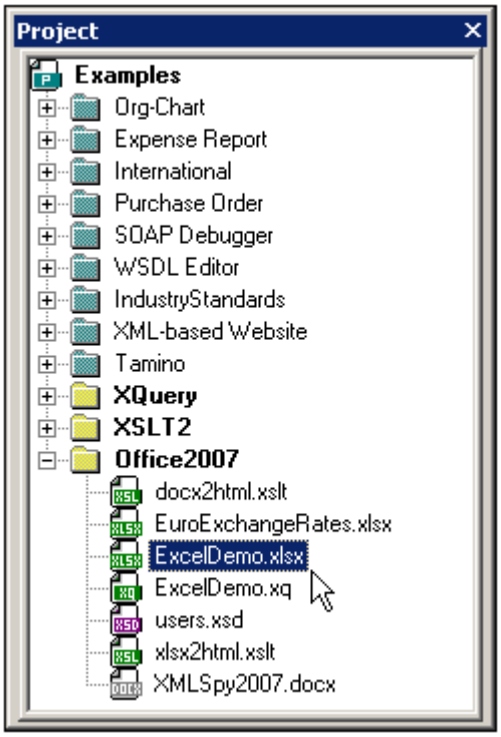
10.2 OOXML Example Files

In the `Examples\Office2007` folder of your XMLSpy application folder are the following example files:

- OOXML files: (i) a Word Open XML file (. `docx`), (ii) an Excel Open XML file (. `xlsx`), and (iii) a PowerPoint Open XML file (. `pptx`)
- XSLT files: (i) `docx2html. xslt` (to convert the sample . `docx` file to HTML), (ii) `xslx2html. xslt` (to convert the sample . `xslx` file to HTML), and (iii) `pptx2html. xslt` (to convert the sample . `pptx` file to HTML)
- An XQuery file: `ExcelDemo. xq` (to retrieve data from the . `xslx` file)

The XSLT and XQuery files are intended to demonstrate how XSLT and XQ can be used to access and transform data in OOXML files. To run the XSLT and XQuery documents, you can use any of the following options:

- Open the OOXML file in Archive View. In Folder View, select `Archive` and then click the menu command **XSL/XQuery | XSL Transformation** (for an XSLT transformation) or **XSL/XQuery | XQuery Execution** (for an XQuery execution). Browse for the XSLT or XQuery file and click **OK**.
- In the Project Window of XMLSpy, right-click the . `xlsx` or . `docx` file in the `Office2007` folder of the `Examples` project (*screenshot below*), and select the transformation command. Browse for the transformation file and click **OK**.



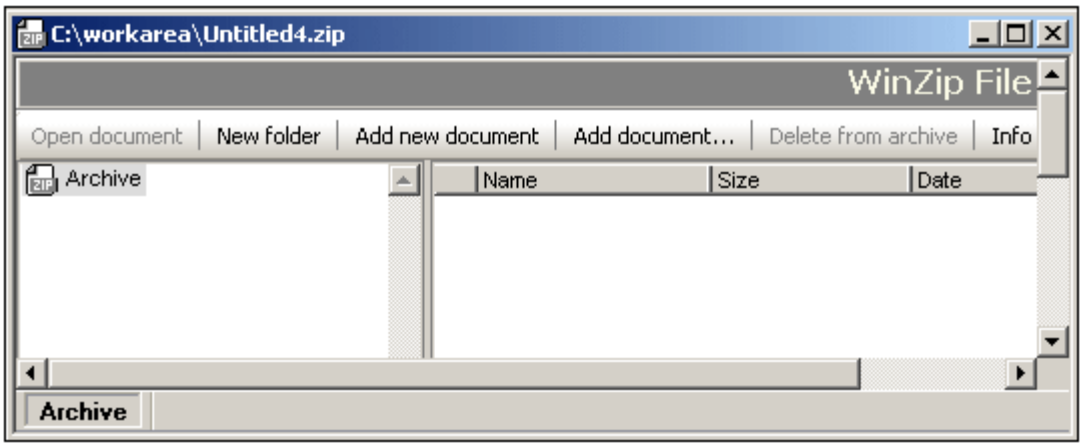
- Open the XSLT or XQuery file in XMLSpy and click the menu command **XSL/XQuery | XSL Transformation** and **XSL/XQuery | XQuery Execution**, respectively. When prompted for the XML file to transform, browse for the . `docx`, . `xlsx` , or . `pptx` file (according to whether the XSLT/XQ document is intended for Word or Excel).
- You can also run these operations using AltovaXML, which is a standalone package containing the Altova XSLT and XQuery Engines.

10.3 ZIP Files

In Archive View, you can create WinZip files, modify the internal structure of ZIP files (WinZip, WinRAR, etc), and edit files in the ZIP package directly in XMLSpy and save the files back to the ZIP archive.

Creating and saving a WinZip file

A WinZip file is created via the Create New Document dialog (**File | New** command), in which you select the file type `.zip`. An empty WinZip archive is created in a new window in XMLSpy (*screenshot below*). You must now save the ZIP file to the desired location with the **File | Save (Ctrl+S)** command. Add folders and files as described below, and then save the ZIP file to save your additions and changes.



An existing ZIP file is opened in Archive View via the Open dialog (**File | Open**) of XMLSpy.

Note: Creating a new ZIP file is different than creating a new OOXML file in that you are not prompted for a location to save the file before the archive is opened in Archive View. For the ZIP file to be saved from the empty archive that is opened in Archive View, you must explicitly use the **File | Save (Ctrl+S)** command..

Adding folders and files and modifying the archive structure

You can add folders (click the **New Folder** button), existing files (**Add Document**), and new files (**Add New Document**) to the selected Archive folder. Note that when you add a new folder or new document, you must immediately enter a name for the folder or file; it is not possible to rename folders in Archive View.

Addressing documents in ZIP files

Documents in ZIP files can be addressed using normal file paths plus the pipe character. For example, the file path:

```
C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\
\Examples\Test.zip| zip\TestFolder\MyFile.xml
```

locates the file `MyFile.xml`, which is in the `TestFolder` folder of the ZIP file `Test.zip` located in the `Examples` folder of the XMLSpy examples folder.

Comparing ZIP archives

When a ZIP file is open in Archive View, you can compare it with another archive by using the

command **Tools | Compare Directories**.

10.4 EPUB Files

An EPUB file is a zipped group of files conforming to the EPUB standard of the International Digital Publishing Forum (IDPF). This standard is the distribution and interchange standard for digital web publications. In Archive View, you can open EPUB files, view the EPUB file's digital publication in a preview tab, edit component files of the EPUB archive directly in XMLSpy, validate the EPUB file, and save the component files back to the EPUB archive.

Note: **(i)** XMLSpy supports EPUB 2.0.1. **(ii)** Sample EPUB files are available in the `Examples` project and in the `(My) Documents/Altova/XMLSpy2012/Examples` folder.

Terminology

In the descriptions below, terms are used as follows:

- ***EPUB file*** is used to indicate the EPUB file having the file extension `.epub`. This is the ZIP file that contains the whole archive and is the file that will be opened in Archive View
- An ***archive file*** is any one of the files contained in the EPUB archive
- ***EPUB book*** is the term used to indicate the digital publication generated by the zipped EPUB file

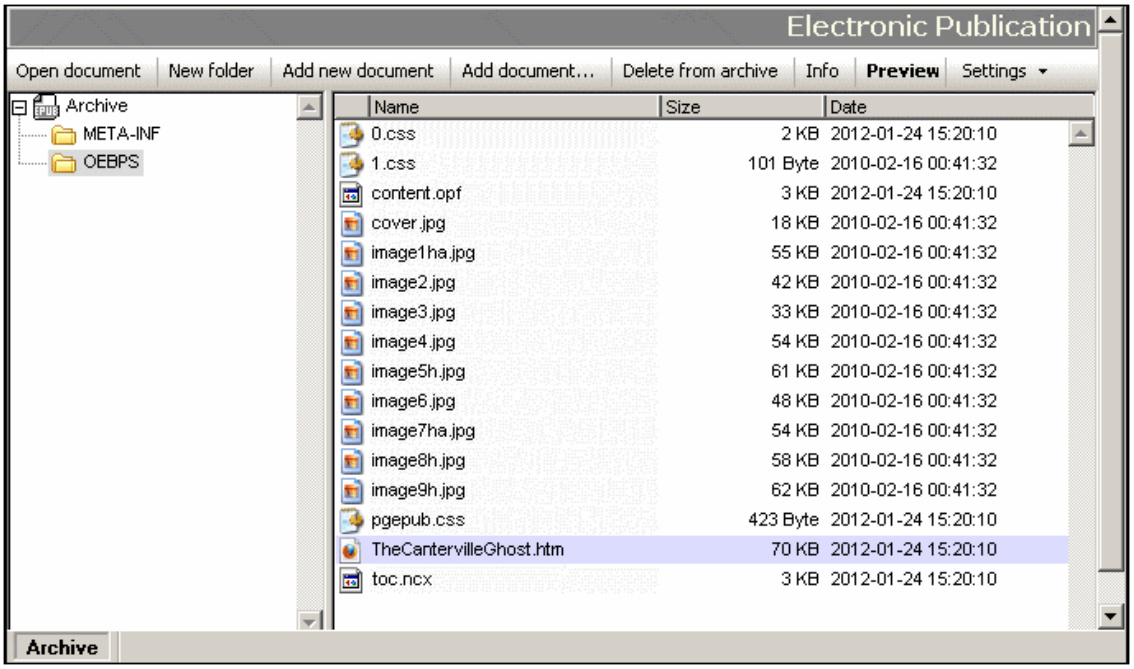
In this section

The description below of EPUB functionality in XMLSpy is structured into the following parts:

- Opening EPUB files in Archive View
- Creating a new EPUB file
- Previewing an EPUB book
- Modifying the contents and structure of an EPUB archive
- Editing archive files directly in XMLSpy
- Entry helpers for archive files
- Validating EPUB file

Opening EPUB files in Archive View

Select the menu command **File | Open**, navigate to the EPUB file, and click **Open**. The EPUB file opens in Archive View (*screenshot below*). Alternatively, you can right-click the EPUB file in Windows Explorer and select the context menu command to open the file with XMLSpy. If you have set XMLSpy to be the default editor of EPUB files, then double-clicking the EPUB file will open the file in Archive View.



Folder View on the left-hand side shows the folders in the archive, whereas the Main Window shows the files in the folder selected in Folder View. The EPUB archive will have the following structure and the following key components.

```
Archive
|-- Mimetype file
|
|-- META-INF folder
|     |-- container.xml
|
|-- DOCUMENT folder (In the screenshot above, OEBPS is the Document folder.)
      |-- Contains HTML, CSS, image files, plus OPF and NCX files
```

Creating a new EPUB file

To create a new EPUB file, select the menu command **File | New**. In the Create New Document dialog that pops up, select the file type `.epub`. In the Save As dialog that now pops up, give a name for your EPUB document and click **Save**. A skeleton EPUB archive containing all the folders and files of a valid EPUB archive (*see archive structure above*) will be created in a new window in Archive View. Add the folders and files you wish to add to the archive, as described below, and then save the EPUB file. To edit an archive file directly in XMLSpy, double-click the file in Archive View. The file will open in a new XMLSpy window. Edit it and then save it with the **File | Save (Ctrl+S)** command.

Previewing an EPUB book

To preview an EPUB book, make the EPUB file active in Archive View, then click the **Preview** button in the toolbar of Archive View. The EPUB book will open in an (Internet Explorer) browser window in XMLSpy. If any of the files that will be used for the preview—whether a content file or a structure-related file—has been modified but not yet saved, you will be prompted to save the file. If you do not save the modifications, the preview will use the previously saved data and might not be up-to-date. You can specify that all modified files be saved automatically before

previewing by toggling on this setting (via the **Settings** button in the the toolbar of Archive View).

Note the following:

- If the **Preview** button is clicked while a Preview window of that EPUB publication is still open, then the open Preview window will be updated and reloaded.
- Refreshing the Preview window will not update the Preview window. The **Preview** button of the corresponding EPUB file must be clicked to update the Preview window (*see previous point*).
- To close the preview, close the Preview window.

Note: Not all EPUB markup is supported in Internet Explorer, so previews could be distorted. Additionally, if the digital publication document is XML—and not HTML—the preview might not work. Newer versions of Internet Explorer provide improved handling of EPUB markup, so if you experience problems, try updating to the latest version of Internet Explorer.

Modifying the contents and structure of an EPUB archive
You can add folders (click the **New Folder** button), new files (**Add New Document**), and existing files (**Add Document**) to the selected archive folder. Note that when you add a new folder or new document, you must immediately enter a name for the folder or file; it is not possible to rename folders in Archive View. You can delete a file or folder by selecting it and clicking the **Delete from Archive** button.

After you have modified the archive you must save the EPUB file (**File | Save**) for the changes to be saved.

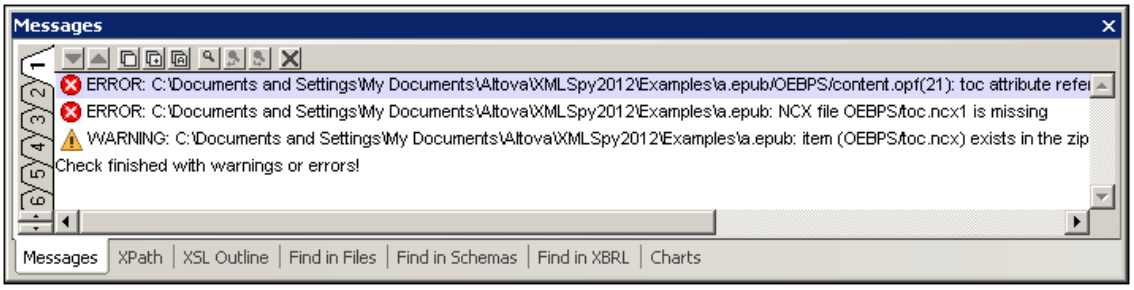
Editing archive files directly in XMLSpy
To edit an archive file directly in XMLSpy, double-click the file in Archive View. Alternatively, select the file in Archive View and click the Open Document button in the toolbar of Archive View.The file will open in a new XMLSpy window. Edit it and then save it with the **File | Save (Ctrl+S)** command.

Entry helpers for archive files
Entry helpers for standards-based archive files are available when these archive files are opened in XMLSpy. These archive files are:

- The OPF file, traditionally named `content.opf`, contains the EPUB book's metadata. It is based on the Open Packaging Format (OPF) specification.
- The NCX file (Navigation Control file for XML), traditionally named `toc.ncx`, contains the publication's table of contents. It is based on the NCX part of the OPF specification.
- The folder named `META-INF` must contain the file `container.xml`, which points to the file defining the contents of the book (the OPF file). The file `container.xml` specifies how the archive files should be organized according to rules in the Open Container Format (OCF) specification.

Validating an EPUB file
To validate an EPUB file, select the command **XML | validate XML (F8)**. The validation results

are displayed in the Messages window (*screenshot below*). If any of the archive files—whether a content file or a structure-related file—has been modified but not yet saved, you will be prompted to save the file. You must save the modified files in order to validate the EPUB file. You can specify that all modified files be saved automatically before validation by toggling on this setting (via the **Settings** button in the the toolbar of Archive View).



Error messages display: (i) the file in which the error was found, and, if applicable, the number of the line in which the error occurs; (ii) a description of the error. In the screenshot above, the highlighted error occurs in line 21 of the file `content.opf`. Clicking on the error line in the Messages window opens the relevant file and highlights the error.

Note: The EPUB validation engine is a Java utility, so Java must be installed on your machine for the validation engine to run.

11 Databases

XMLSpy enables you to connect to a variety of databases (DBs) and then perform operations such as querying the DB, importing the DB structure as an XML Schema, generating an XML data file from the DB, and exporting data to a DB. Each DB-related feature is available in XMLSpy as a menu command, and is described in the User Reference section of this documentation under the respective command. A complete list of these command is given below, with links to the respective descriptions.

In this section, we do the following:

- Describe how to connect to a database, which is an operation that is required for executing any of XMLSpy's DB-related commands; and
- List DBs that have been successfully tested for use with XMLSpy.

Note: If you are using the 64-bit version of XMLSpy, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

XMLSpy's DB-related features
XMLSpy's DB-related features are executed with commands in the DB and Convert menus.

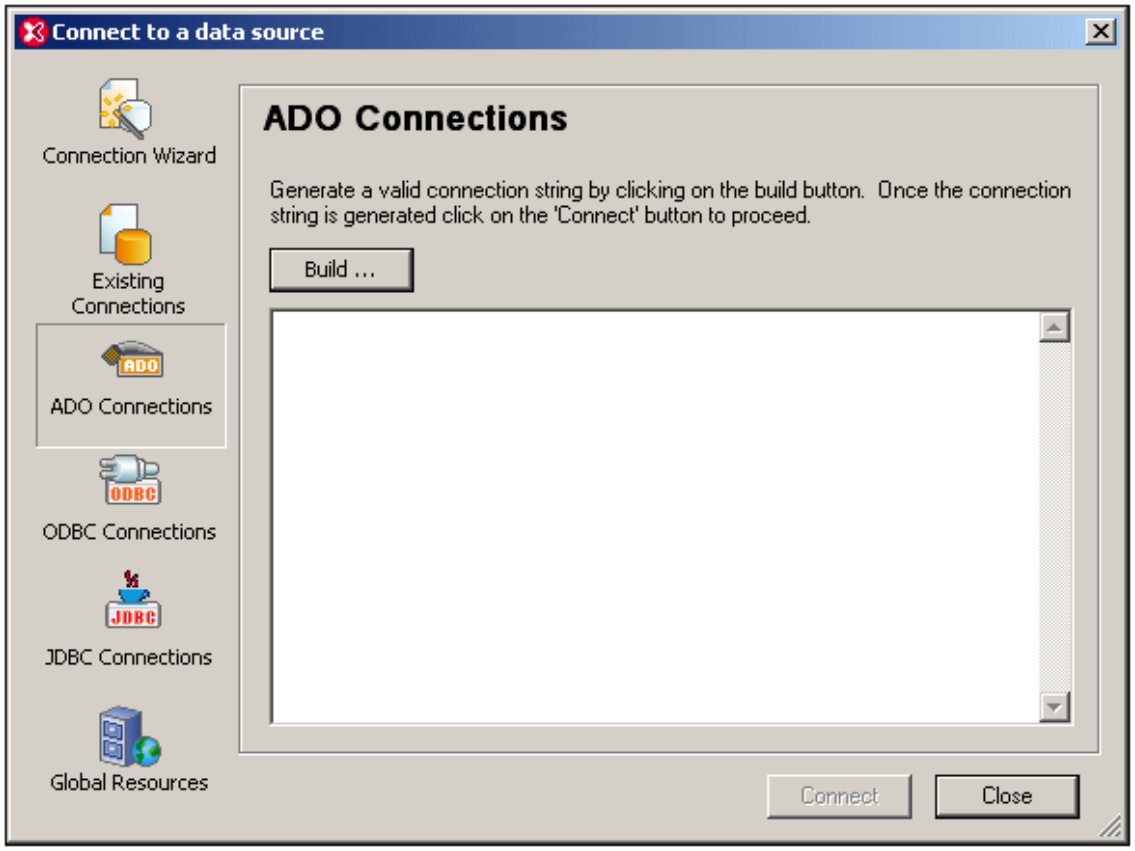
- *Query Database:* In the **DB** menu. Loads the structure of the DB in a separate Database Query window and enables queries to the DB. Results are displayed in the Database Query window.
- *IBM DB2:* In the **DB** menu. IBM DB2 is an XML DB, and XMLSpy enables management of the XML Schemas of the XML DB as well as editing and validation of the XML DB.
- *Oracle XML DB*: In the **DB** menu. Provides a range of functionality for Oracle XML DBs, including XML Schema management, database querying, and generation of XML files based on DB schemas.
- *Import Database Data*: In the **Convert** menu. Imports DB data into an XML file.
- *Create XML Schema from DB Structure*: In the **Convert** menu. Generates an XML Schema that is based on the structure of the DB.
- *DB Import Based on XML Schema*: In the **Convert** menu. With an XML Schema document active in XMLSpy, a DB connection is made and the data of a selected DB table can be imported. The resulting XML document will have a structure based on the XML Schema that was active when the DB connection was made.
- *Create DB Structure from XML Schema*: In the **Convert** menu. DB tables with no data are created based on the structure of an existing XML Schema.
- *Export to Database*: In the **Convert** menu. Data from an XML document can be exported to a DB. Existing DB tables can be updated with the XML data, or new tables can be created that contain the XML data.

Datatype conversions
When converting data between XML documents and DBs, datatypes must necessarily be converted to types appropriate for the respective formats. The way XMLSpy converts datatypes is given in the appendices Datatypes in DB-Generated XML Schemas and Datatypes in DBs Generated from XML Schemas.

Altova DatabaseSpy
Altova's DatabaseSpy is a multi-database query and DB design tool that offers additional DB functionality to that available in XMLSpy. For more details about Altova DatabaseSpy, visit the Altova website.

11.1 Connecting to a Data Source

A number of commands and icons in the **DB** and **Convert** menus require a connection to a database. XMLSpy enables you to connect to a variety of databases (*see list below*). It uses the Connect to Data Source dialog (for commands in the **Convert** menu, *screenshot below*) or Quick Connect dialog (for the **DB | Query Database** command) to set up and make the connection. Both dialogs are essentially the same; they guide you through the same connection steps. In this section, we describe how the mechanism behind these two dialogs works. In descriptions of the **DB** or **Convert** commands that require a database connection, refer to this section for information on making the connection.



The options for connecting to the database are:

- Using a Connection Wizard that guides you through the connection process
- Using an existing connection
- Using an ADO Connection
- Using an ODBC Connection
- Using a JDBC Connection
- Using a global resource

Each option is described in the subsections of this section. The descriptions in this section explain only the connection mechanism. The dialogs that appear subsequent to the connection process are dependent on the specific command being executed, and these dialogs are therefore described in the sections relating to that specific command. For example, if you are looking for a description of the command **Convert | Import Database Data**, the description for the connection process is in this section, but the selection of DB tables is described in the section **Convert | Import Database Data**.

Note: If you are using the 64-bit version of XMLSpy, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

11.1.1 Connection Wizard

In the Connect to Data Source dialog, when the **Connection Wizard** button is selected, the Connection Wizard (*screenshot below*) pops up. The Connection Wizard helps you to connect to the most commonly used types of databases. In this section, we go through the connection to a Microsoft Access database and an IBM DB2 database.

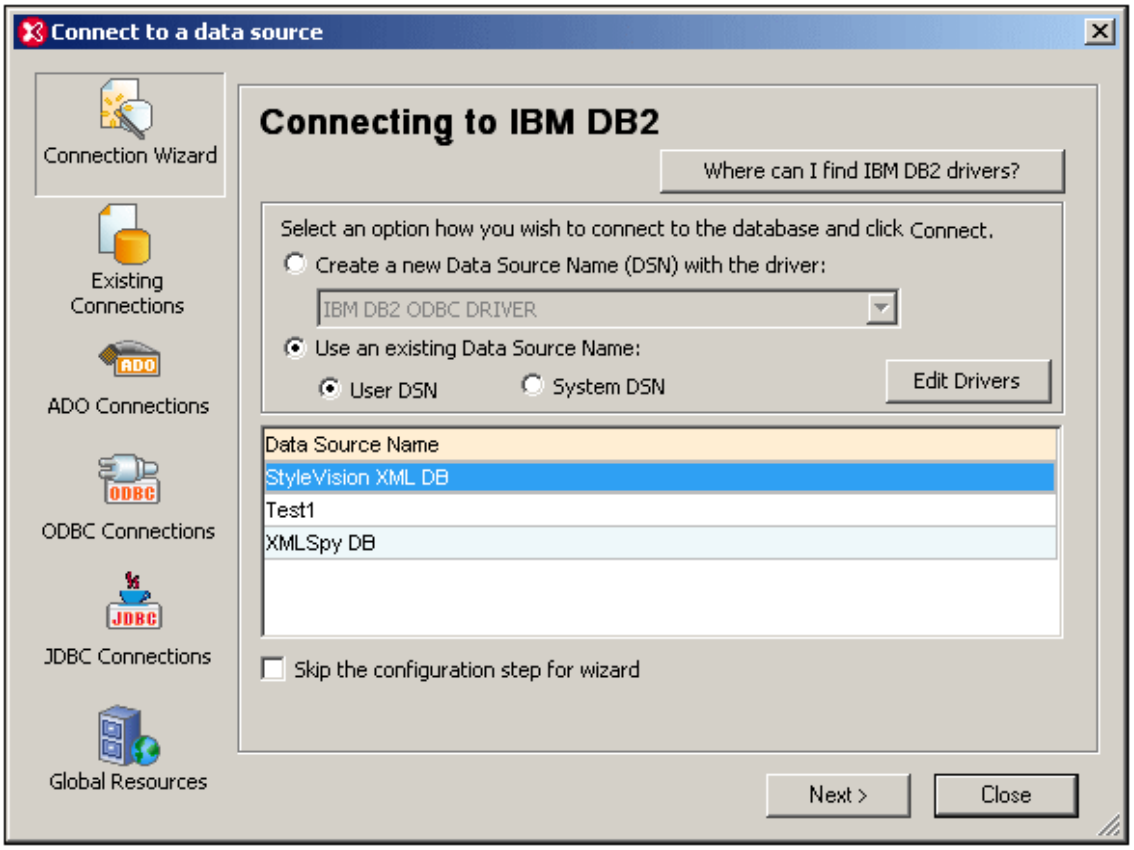
MS Access

Carry out the following steps to connect to an MS Access database. Select Microsoft Access (ADO) (*screenshot below*), and click **Next**.

In the Connect to MS Access dialog that pops up, browse for the MS Access database, and click **Next**. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

IBM DB2

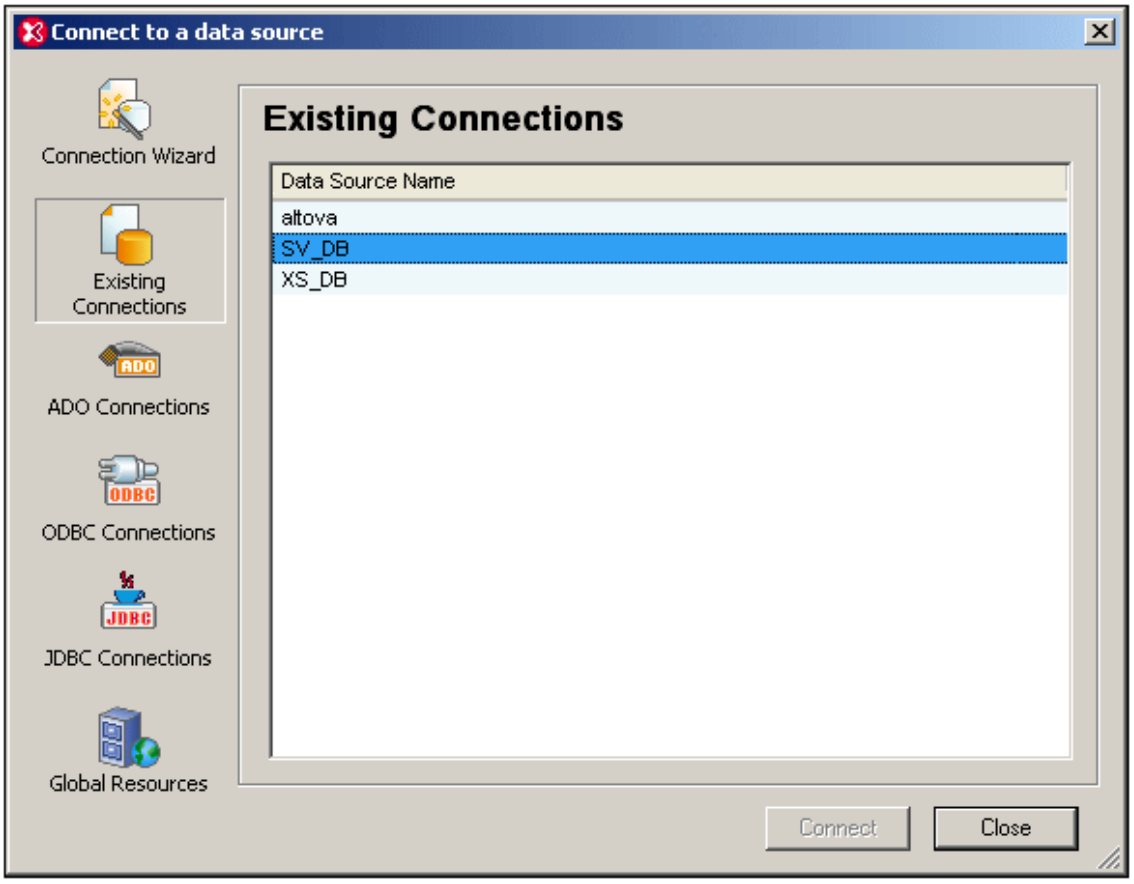
In the first screen of the Connection Wizard (*see first screenshot in this section*), select IBM DB2 and click **Next**. The Configuration dialog (*screenshot below*) pops up. The wizard will then guide you in configuring the connection to the IBM DB2 database and making the connection. These steps consist essentially of selecting the appropriate driver to connect to the DB, then locating the DB, and entering user information that enables you to connect.



In the Configuration dialog above, select an existing data source, or create a new data source with an appropriate driver (additional drivers can be added to the list of available drivers by clicking the **Edit Drivers** button and selecting the required drivers). In the following screen you will be prompted for user information (ID and password). Clicking **OK** will establish the connection with the database. Also see ODBC Connections for more details. For information about subsequent dialogs, refer to the description of the command being executed.

11.1.2 Existing Connections

In the Connect to Data Source dialog, when the **Existing Connections** button is selected, the Existing Connections pane opens (*screenshot below*), showing all the connections that are currently established.

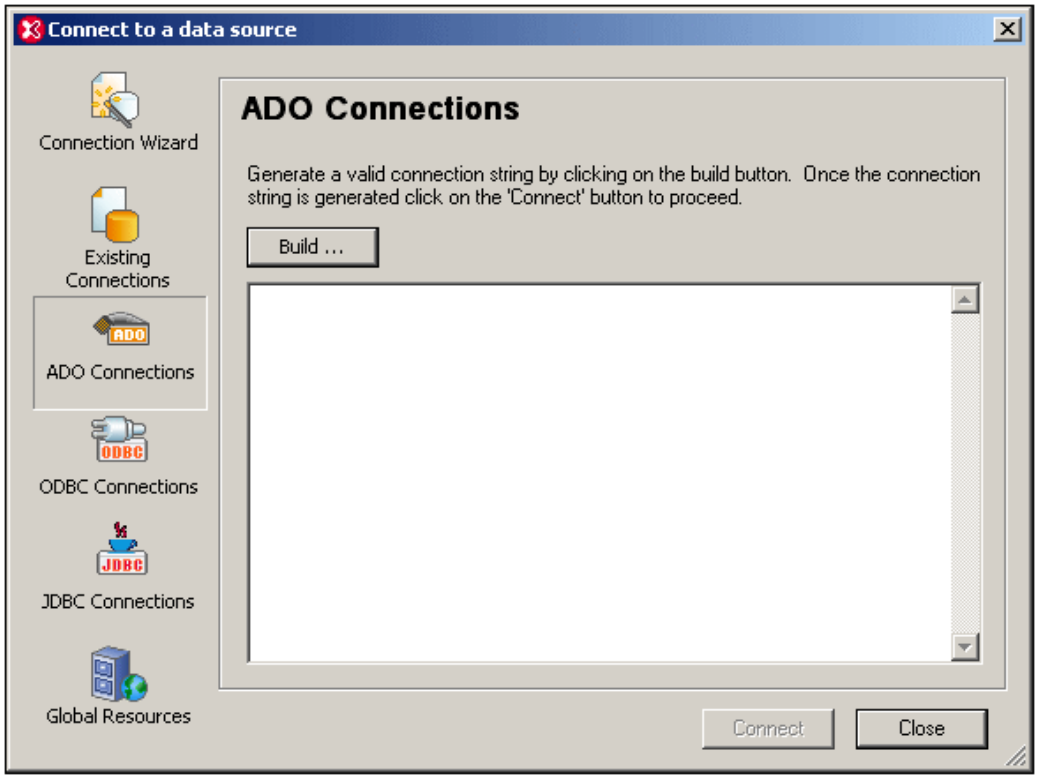


Select the required database and click **Connect**. The connection to the database is established. For information about subsequent dialogs, refer to the description of the command being executed.

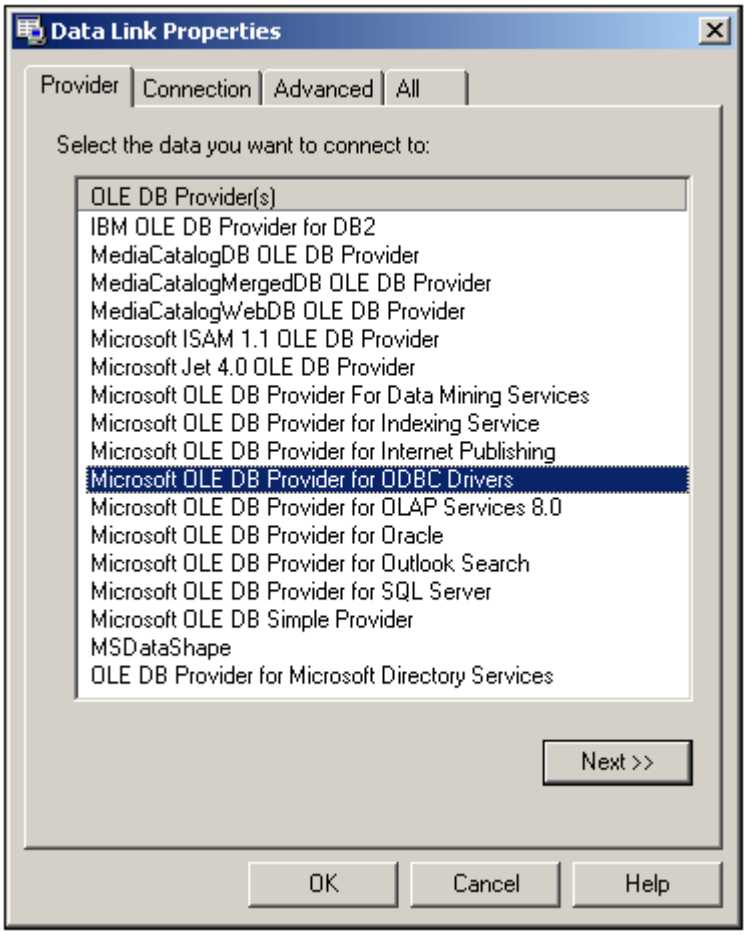
11.1.3 ADO Connections

The ADO Connections option enables you to connect to a DB via ADO. In this section, the connection via ADO is described using an IBM DB2 database as the target DB. Where options are different if another type of database is the target DB, these differences are noted.

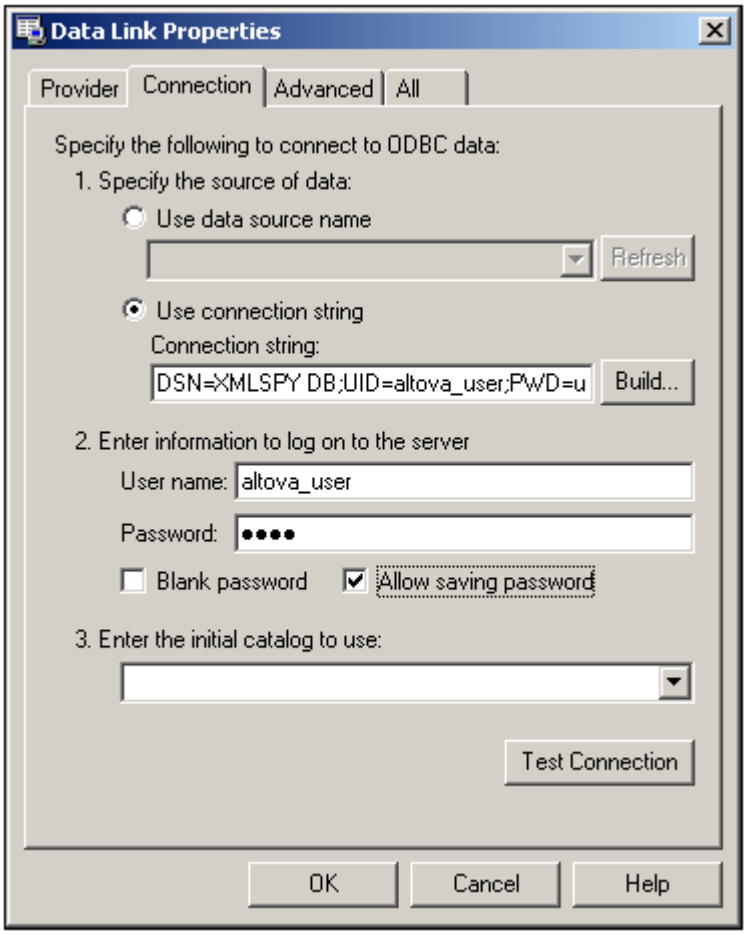
1. In the Connect to Data Source dialog, select ADO Connections. The ADO Connections box appears (*screenshot below*).



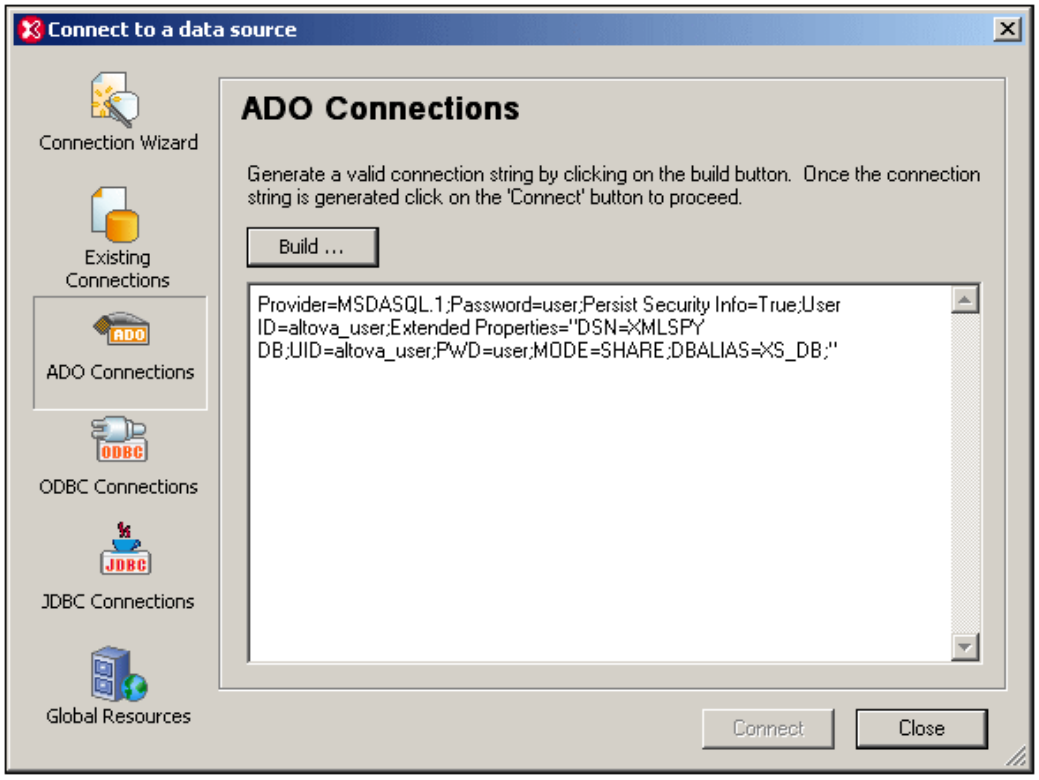
2. Click the **Build** button. The Data Link Properties dialog (*screenshot below*) opens.



3. Select Microsoft OLE DB Provider for ODBC Drivers from the list and click **Next**. The Connection tab is activated. (For Microsoft SQL DBs, we recommend *Microsoft OLE DB Provider for SQL Server*; for Oracle, MySQL, Sybase, and IBM DB2 DBs, *Microsoft OLE DB Provider for ODBC Drivers*.)



4. Build a connection string via the **Build** button (the dialog which pops up prompts you for a data source and user information). In the case of some databases (such as Microsoft SQL Server), you do not build a connection string but instead select the server and database from combo box listings.
5. If login information is required, enter a user name and password, and check the Allow Saving Password check box.
6. Click **OK**. The Data Link Properties dialog closes. The connection string appears in the ADO Connections box (*screenshot below*).



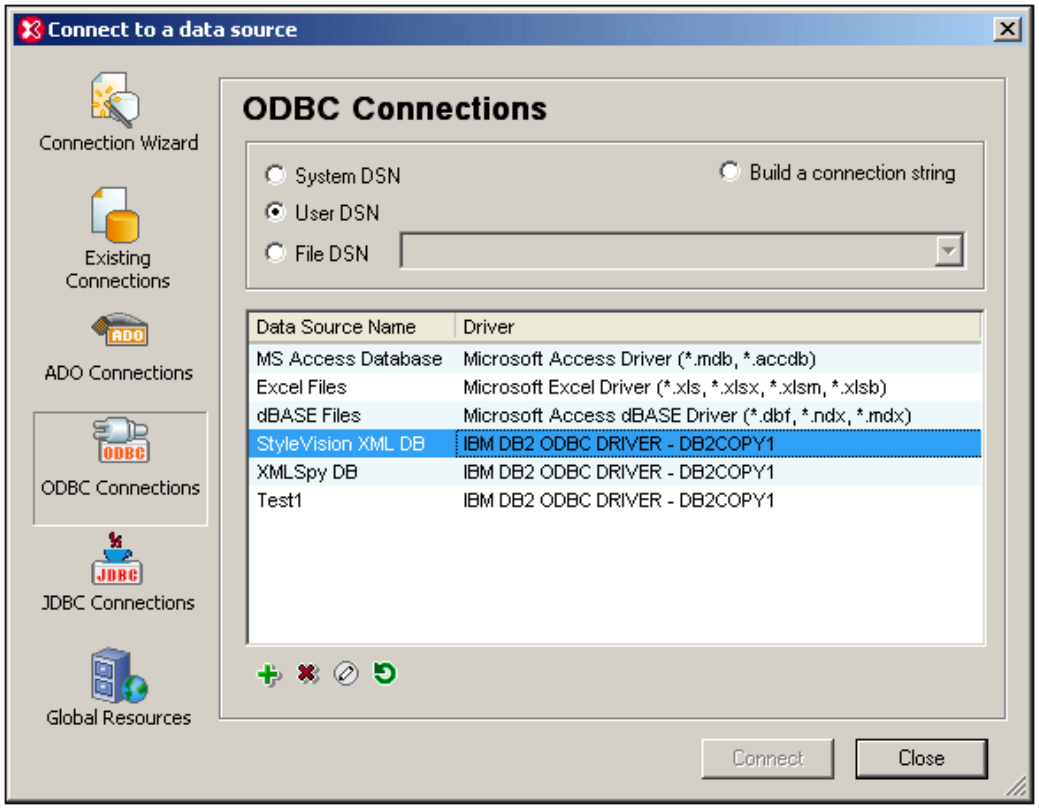
7. Click the **Connect** button. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

Note: For an ADO connection to MS SQL Server via the SQL Server Native Client 10.0 driver the following property values must be set in the *All* tab of the Data Link Properties dialog: (i) Set the property value of Integrated Security to a space character; (ii) Set the property value of Persist Security Info to `true`.

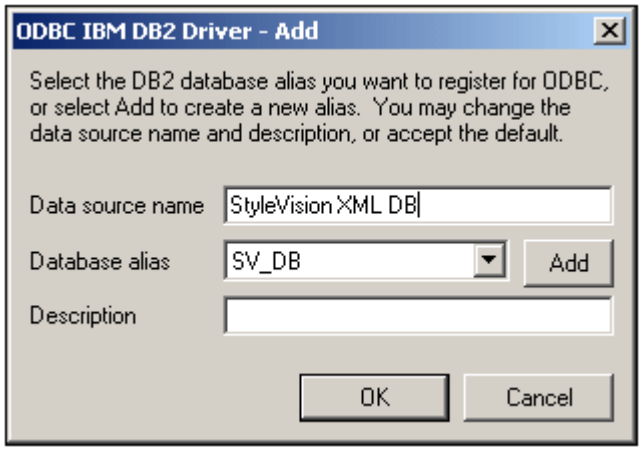
11.1.4 ODBC Connections

This section describes how to connect to a DB via ODBC. The steps listed below describe a connection to an IBM DB2 database, but apply also to other types of databases that can be connected via ODBC. To connect using an ODBC connection, do the following:

1. In the Connect to Data Source dialog, select **ODBC Connections**.



2. Select one of the options for specifying a Data Source Name (DSN). If you select System DSN or User DSN, the available DSNs are displayed in the Data Source pane. If you select File DSN, you are prompted to browse for the DSN file. Alternatively, you can build a connection string to the DB by selecting the Build a Connection String option.
3. If you wish to add a DSN to those in the Data Source pane, click the Create a New DSN icon  .
4. In the Create an ODBC DSN dialog that appears, select the required driver, then click the **User DSN** or **System DSN** button.
5. In the dialog that appears (*screenshot below*), select the DB alias and give it a DSN.



6. Click **OK** to finish. The DB is added as a Data Source to the list in the Data Source pane.
7. After you have selected the DataSource (via the System DSN or User DSN option), or

selected a DSN File (File DSN option), or built a connection string (Connection String option), click **Connect**.

8. When you are prompted for your user ID and password, enter these and then click **OK**. The connection is established. For information about subsequent dialogs, refer to the description of the command being executed.

Note: The listing in the data source pane (when the System DSN or User DSN option is selected) can be edited using the *Edit Selected DSN*, *Remove Selected DSN*, and *Refresh Listed DSNs* icons at the bottom of the ODBC Connections screen.

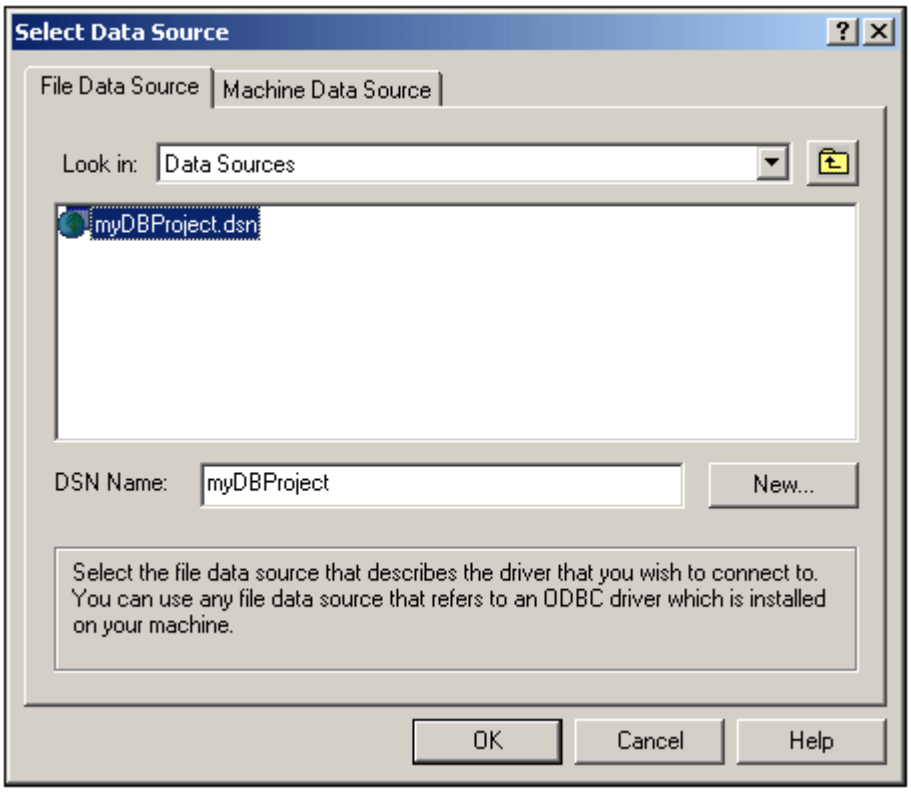
Edit selected DSN.

Remove selected DSN.

Refresh listed DSNs.

Building a connection string

In the ODBC Connections screen, when you select the Build a Connection String radio button and click the **Build** button that appears, the Select Data Source dialog (*screenshot below*) pops up. You can either select a File DSN (in the File Data Source tab), or select a data source that is available on your machine (listed in the Machine Data Source tab).



Clicking **OK** pops up a dialog that prompts for user information, including the User ID and password. When you click **OK** in this dialog, the connection string is entered in the ODBC Connections screen.

11.1.5 JDBC Connections

This section describes how to connect to a DB via JDBC. The steps listed below describe a connection to an IBM DB2 database, but they apply also to other types of databases that can be connected to via JDBC.

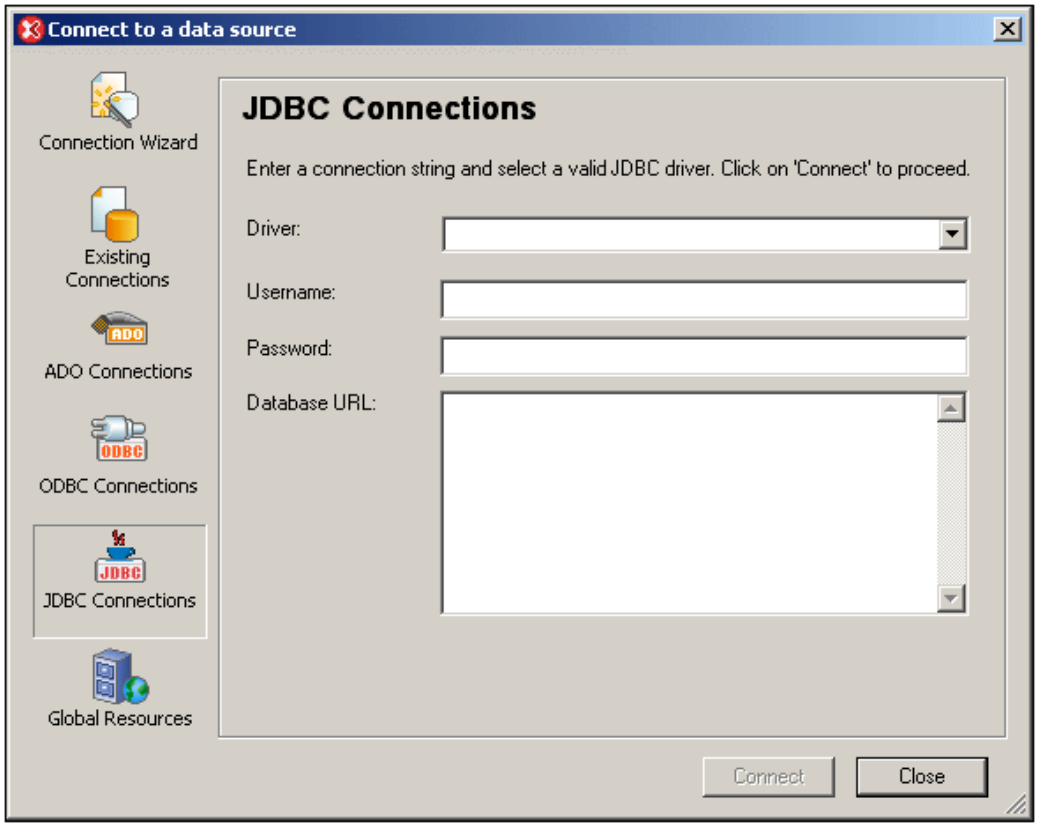
Pre-connection steps
Before connecting to the DB via JDBC, you must do the following:

1. Ensure that the Java Runtime Environment (JRE) is installed. If it isn't installed, then install it. Use a 32-bit JRE for a 32-bit machine or a 64-bit JRE for a 64-bit machine.
2. Install a JDBC driver. No special installation setup is required. All you need to do is copy the driver to a local directory, for example, `c:\jdbc`. Note that JDBC drivers (which are Jar files) are platform-independent.
3. Set up the `CLASSPATH` to include the location where the JDBC driver is located. (The application reads the `CLASSPATH` environment variable to locate the JDBC driver.) To access and edit the `CLASSPATH`, do the following: Click **Start | Control Panel | System | Advanced | Environment Variables**. In the Environment Variables dialog that appears, select either the `CLASSPATH` user environment variable or the `CLASSPATH` system environment variable and click the **Edit** button. Add the path to the JDBC driver to the `CLASSPATH`. For example: `CLASSPATH=C:\jdbc\sqljdbc.jar;C:\jdbc\db2jcc.jar;.`
4. Log off and then log on again to make the `CLASSPATH` changes active.

Note: Installing the complete IBM DB2 or Oracle client will automatically populate the `CLASSPATH` with the JDBC drivers of the respective packages. For more details, see the summaries below.

Connecting via JDBC
To connect using a JDBC connection, do the following:

1. In the Connect to a Data Source dialog, select **JDBC Connections**. The JDBC Connections pane (*screenshot below*) appears.



2. Select a JDBC driver from the *Driver* dropdown list (all detected drivers, i.e. those in the `CLASSPATH` environment variable, are listed). Enter a connection string in the *Database URL* text box and a user name and password as required. Given below is the connection string syntax for commonly used databases, each with an example connection string.

Oracle

```
jdbc:oracle:thin:[user/password]@//[host][:port]/SID
jdbc:oracle:thin:@//abcd234/ORA11
```

IBM DB2

```
jdbc:db2://host_name:port/dbname
jdbc:db2://MyDB2:50000/boz
```

MySQL

```
jdbc:mysql://host_name:port/dbname
jdbc:mysql://MyDB2:3306/moz
```

MSSQL

```
jdbc:sqlserver://host:port;databasename=name;user=name;password=Pwd
jdbc:sqlserver://abcd38:1433;databasename=coz
jdbc:sqlserver://Q5;DatabaseName=coz;SelectMethod=Cursor
```


PostgreSQL	`jdbc:postgresql://host:port/database`
	`jdbc:postgresql://abc993:5432/qanoz`
Sybase	`jdbc:sybase:Tds:host:port/dbname`
	`jdbc:sybase:Tds:abc12:2048/QUE`

3. Click the **Connect** button. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

Step-by-step: MSSQL, MySQL, PostGre, and other non-XML DBs
Given below is a step-by-step guide for connecting to a non-XML DB via JDBC:

1. JDBC JAR files (driver files): Copy the files to any local location. Then add the full path and filename to the Windows `CLASSPATH` variable. For example:
   `C:\jdbc\sqljdbc.jar; C:\jdbc\db2jcc.jar;.`
2. Log off and log on to make the `CLASSPATH` changes active.
3. Start XMLSpy and access the Connect to a Data Source dialog.
4. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file `altovadb.jar` is present in the folder: `C:\Program Files\Altova\Common2012\jar`.
5. Connect to a database as described in the section *Connecting via JDBC* above.

Step-by-step: Oracle
Given below is a step-by-step guide for connecting to an Oracle DB via JDBC. If you don't need the XML and XDB features of the Oracle DB, follow the instructions in the step-by-step guide for non-XML DBs. The installation folder of the Oracle client is indicated in the steps below by the placeholder: `%ORACLE_HOME%`.

1. Install Oracle client software with OCI and ODBC features enabled. If an Oracle client is already installed check if the two jar files below are present:

   ```
   %ORACLE_HOME%\LIB\xmlparserv2.jar
   %ORACLE_HOME%\RDBMS\jlib\xdb.jar
   ```

2. Add the following files to the Windows `CLASSPATH` environment variable:

   ```
   %ORACLE_HOME%\jdbc\lib\ojdbc6.jar
   %ORACLE_HOME%\LIB\xmlparserv2.jar
   %ORACLE_HOME%\RDBMS\jlib\xdb.jar
   ```

3. Log off and log on to make the `CLASSPATH` changes active.
4. Start XMLSpy and access the Connect to a Data Source dialog.
5. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file `altovadb.jar` is present in the folder: `C:\Program Files\Altova\Common2012\jar`.
6. Connect to a database as described in the section *Connecting via JDBC* above.

Step-by-step: IBM DB2

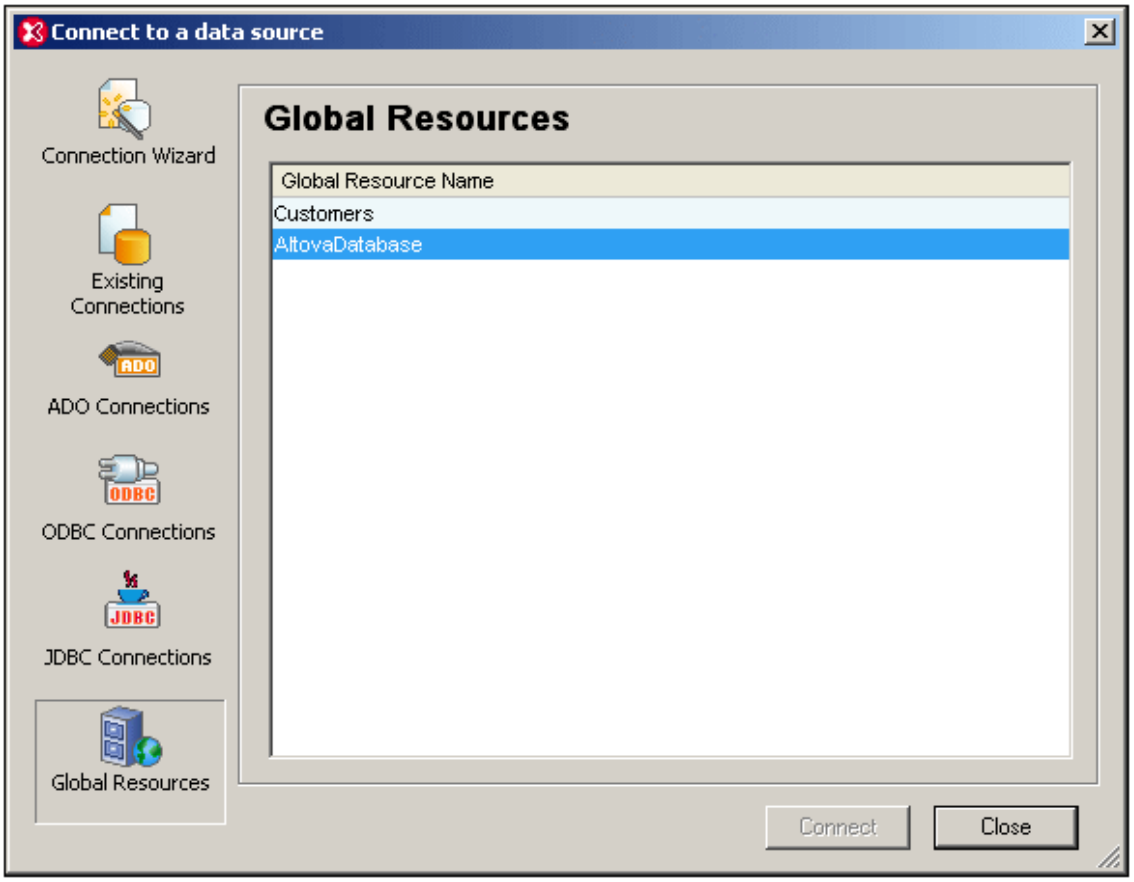
Given below is a step-by-step guide for connecting to an IBM DB2 database via JDBC.

1. If an IBM DB2 client has already been installed, nothing needs to be done since the `CLASSPATH` will have been set by the installation process.
2. If no IBM DB2 client has been installed, add the IBM DB2 JDBC driver jar files `db2jcc.jar` and `db2jcc_license_cu.jar` to the Windows `CLASSPATH`. Log off and log on to make the `CLASSPATH` changes active.
3. Start XMLSpy and access the Connect to a Data Source dialog.
4. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file `altovadb.jar` is present in the folder: `C:\Program Files\Altova\Common2012\jar`.
5. Connect to a database as described in the section *Connecting via JDBC* above.

Note: When databases are connected to via JDBC, due to insufficient information returned by the drivers: (i) data editing is not possible for tables without a primary key; (ii) Execute for data-editing in SQL Editor will not work.

11.1.6 Global Resources

In the Connect to Data Source dialog, when the **Global Resources** button is selected, the Global Resources pane opens (*screenshot below*), showing all the database-type global resources that are defined in the currently active Global Resources XML File.



Select the required global resource and click **Connect**. The connection to the database is established. For information about subsequent dialogs, refer to the description of the command

being executed.

11.2 Supported Databases

Altova XMLSpy fully supports the databases listed below. While Altova endeavors to support other ODBC/ADO databases, successful connection and data processing have only been tested with the listed databases.

The available root object for each of the supported databases is also listed.

Database (natively supported)	Root Object
MS SQL Server 2000, 2005, and 2008	database
MS SQL Server 2005 and 2008	schema
Oracle 9i, 10g, and 11g	schema
MS Access 2003 and 2007	database
MySQL 4.x and 5.x	database
IBM DB2 8.x and 9	schema
Sybase 12	database
IBM DB2 for i 5.4 and i 6.1	schema
PostgreSQL 8.0, 8.1, 8.2, 8.3	database

Note: If you are using the 64-bit version of XMLSpy, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

12 Altova Global Resources

Altova Global Resources is a collection of aliases for file, folder, and database resources. Each alias can have multiple configurations, and each configuration maps to a single resource

Therefore, when a global resource is used as an input, the global resource can be switched among its configurations. This is done easily via controls in the GUI. For example, if an XSLT stylesheet for transforming an XML document is assigned via a global resource, then we can set up multiple configurations for the global resource, each of which points to a different XSLT file. After setting up the global resource in this way, switching the configuration would switch the XSLT file used for the transformation.

A global resource can not only be used to switch resources within an Altova application, but also to generate and use resources from other Altova applications. So, files can be generated on-the-fly in one Altova application for use in another Altova application. All of this tremendously eases and speeds up development and testing. For example, an XSLT stylesheet in XMLSpy can be used to transform an XML file generated on-the-fly by an Altova MapForce mapping.

Using Altova Global Resources involves two processes:

- Defining Global Resources: Resources are defined and the definitions are stored in an XML file. These resources can be shared across multiple Altova applications.
- Using Global Resources: Within an Altova application, files can be located via a global resource instead of via a file path. The advantage is that the resource being used can be instantly changed by changing the active configuration in XMLSpy.

Global resources in other Altova products
Currently, global resources can be defined and used in the following individual Altova products: XMLSpy, StyleVision, MapForce, and DatabaseSpy.

12.1 Defining Global Resources

Altova Global Resources are defined in the Manage Global Resources dialog, which can be accessed in two ways:

- Click Tools in the menu bar to pop up the **Tools** menu (*screenshot below*), and select the command **Global Resources**. This pops up the Global Resources dialog.

- Click the menu command **Tools | Customize** to display the Customize dialog. Then select the **Toolbars** tab and check the Global Resources option. This switches on the display of the Global Resources toolbar (*screenshot below*).

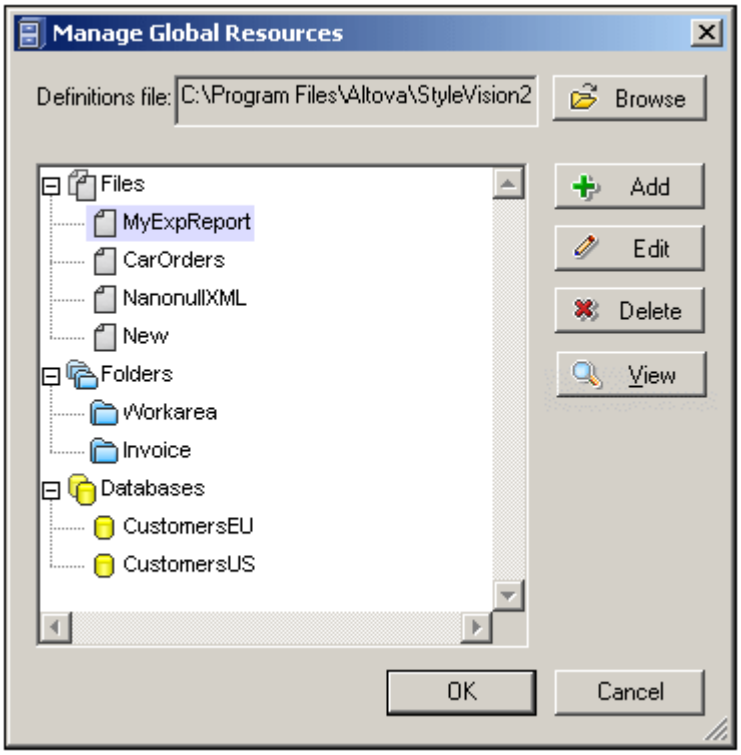
  

  Once the toolbar is displayed, click the Manage Global Resources icon. This pops up the Global Resources dialog.

The Global Resources XML File
Information about global resources that you define is stored in an XML file. By default, this XML file is called `GlobalResources.xml`, and it is stored in the `\Altova\` sub-folder of the (My) documents folder. This file is set as the default Global Resources XML File for all Altova applications. As a result, a global resource defined in any application will be available to all Altova applications—assuming that all applications use this file.

You can also re-name the file and save it to any location, if you wish. Consequently, you may have multiple Global Resources XML files. However, only one of these Global Resources XML File can be active at any time, and only the definitions contained in this file will be available to the application.

To select a Global Resources XML file to be the active file, in the Manage Global Resources dialog (*screenshot below*), browse for it in the Definitions File entry and select it.

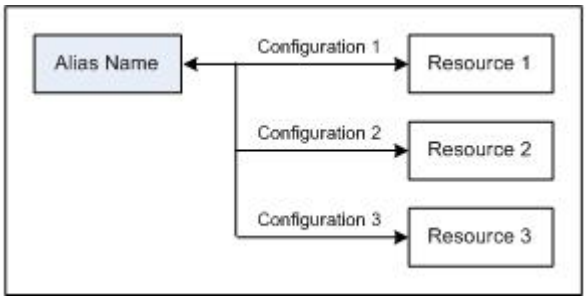


Managing global resources: adding, editing, deleting
In the Manage Global Resources dialog (*screenshot above*), you can add a global resource to the selected Global Resources XML File, or edit or delete a selected global resource. The Global Resources XML File organizes the aliases you add into a list of several sections: files, folders, and databases (*see screenshot above*).

To add a global resource, click the **Add** button and define the global resource in the **Global Resource** dialog that pops up (*see description below*). After you define a global resource and save it, the global resource (or alias) is added to the library of global definitions in the selected Global Resources XML File. To edit a global resource, select it and click **Edit**. This pops up the **Global Resource** dialog, in which you can make the necessary changes (see the descriptions of files, folders, and databases in the sub-sections of this section). To delete a global resource, select it and click **Delete**.

After you finish adding, editing, or deleting, make sure to click **OK** in the **Manage Global Resources** dialog to save your modifications to the Global Resources XML File.

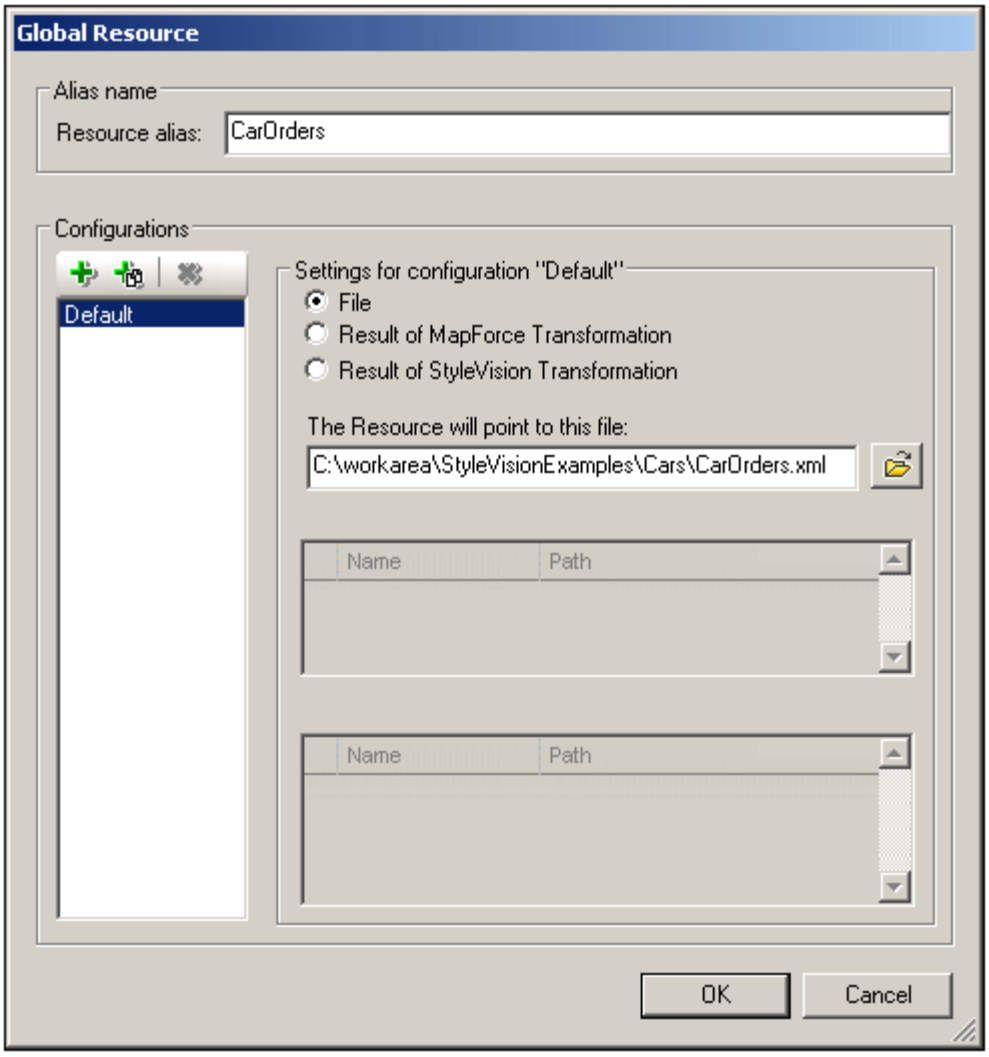
Adding a global resource
Creating a global resource involves mapping one alias name to one or more resources (file, folder, or database). Each mapping is called a configuration. A single alias name can therefore be associated with several resources via different configurations (*screenshot below*).



In the **Manage Global Resources** dialog (*screenshot above*), when you click the **Add** button, you can select whether you wish to add a file-type, folder-type, or database-type resource. How to add and edit each type of resource is described in the sub-sections of this section.

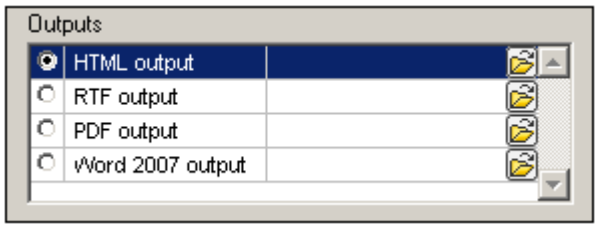
12.1.1 Files

In the Global Resource dialog for Files (*screenshot below*), you can add a file resource as follows:



1. Enter an alias name.

2. The Configurations pane will have a configuration named Default (*screenshot above*). This Default configuration cannot be deleted nor have its name changed. You can enter as many additional configurations for the selected alias as you like. Add a configuration by clicking the **Add Configuration** icon and, in the **Add Configuration** dialog which pops up, enter the configuration name. Click **OK**. The new configuration will be listed in the Configurations pane. Repeat for as many configurations as required for this particular alias (global resource). You can also copy a configuration (using the Add Configuration as Copy icon) and then modify it.
3. Select one of the configurations in the Configurations pane and then define the resource to which this configuration will map. In the Settings for Configuration X pane, you can select whether the resource is a file, or the result of either an Altova MapForce or Altova StyleVision transformation. After selecting the resource type by clicking its radio button, browse for the file, MapForce file, or StyleVision file. Where multiple inputs or outputs for the transformation are possible, a selection of the options will be presented. For example, if the Result of StyleVision Transformation was selected as the resource type, the output options are displayed according to the what edition of StyleVision is installed (*the screenshot below shows the outputs for Enterprise Edition*).

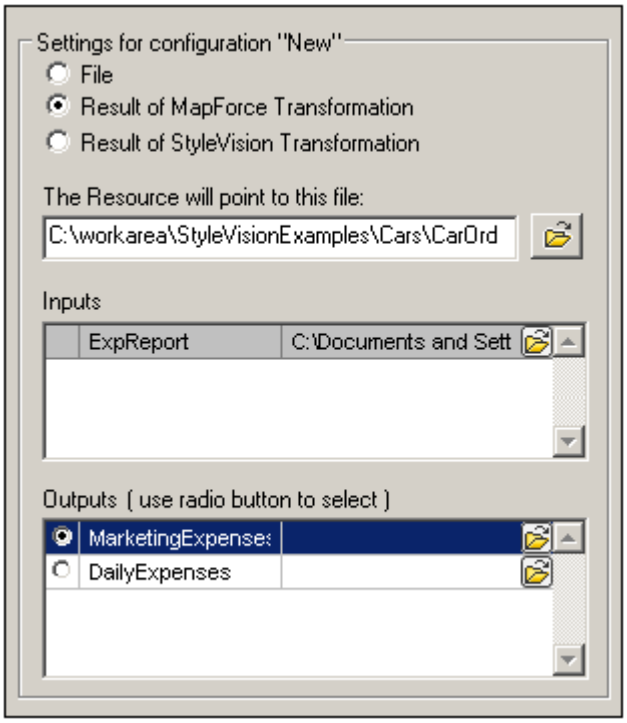


   Select the radio button of the desired option (in the screenshot above, 'HTML output' is selected). The result of a transformation can itself be saved as a global resource or as a file path (click the icon and select, respectively, Global Resource or Browse). If neither of these two saving options is selected, the transformation result will be loaded as a temporary file when the global resource is invoked.
4. Specify a resource for each configuration (that is, repeat Step 3 above for the various configurations you have created).
5. Click **OK** in the Global Resource dialog to save the alias and all its configurations as a global resource. The global resource will be listed under Files in the Manage Global Resources dialog.

Selecting Result of MapForce transformations as a global resource

Altova MapForce maps one or more (already existing) schemas to one or more (new) schemas designed by the MapForce user. XML files corresponding to the input schemas are used as data sources, and an output XML file based on the user-designed schema can be generated by MapForce. This generated output file (Result of MapForce Transformation) is the file that will be used as a global resource.

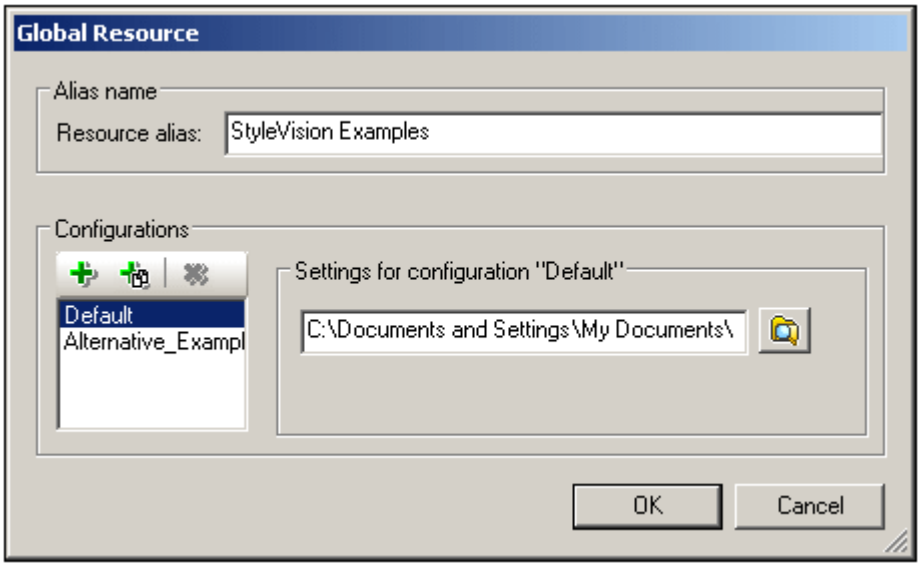
In a MapForce transformation that has multiple output schemas, you can select which one of the output schemas should be used for the global resource by clicking its radio button (*screenshot below*). The XML file that is generated for this schema can be saved as a global resource or as a file path (click the icon and select, respectively, Global Resource or Browse). If neither of these options is selected, a temporary XML file is created when the global resource is used.



Note that each Input can also be saved as a global resource or as a file path (click the icon and select, respectively, Global Resource or Browse).

12.1.2 Folders

In the Global Resource dialog for Folders (*screenshot below*), you can add a folder resource as follows:



Enter an alias name.

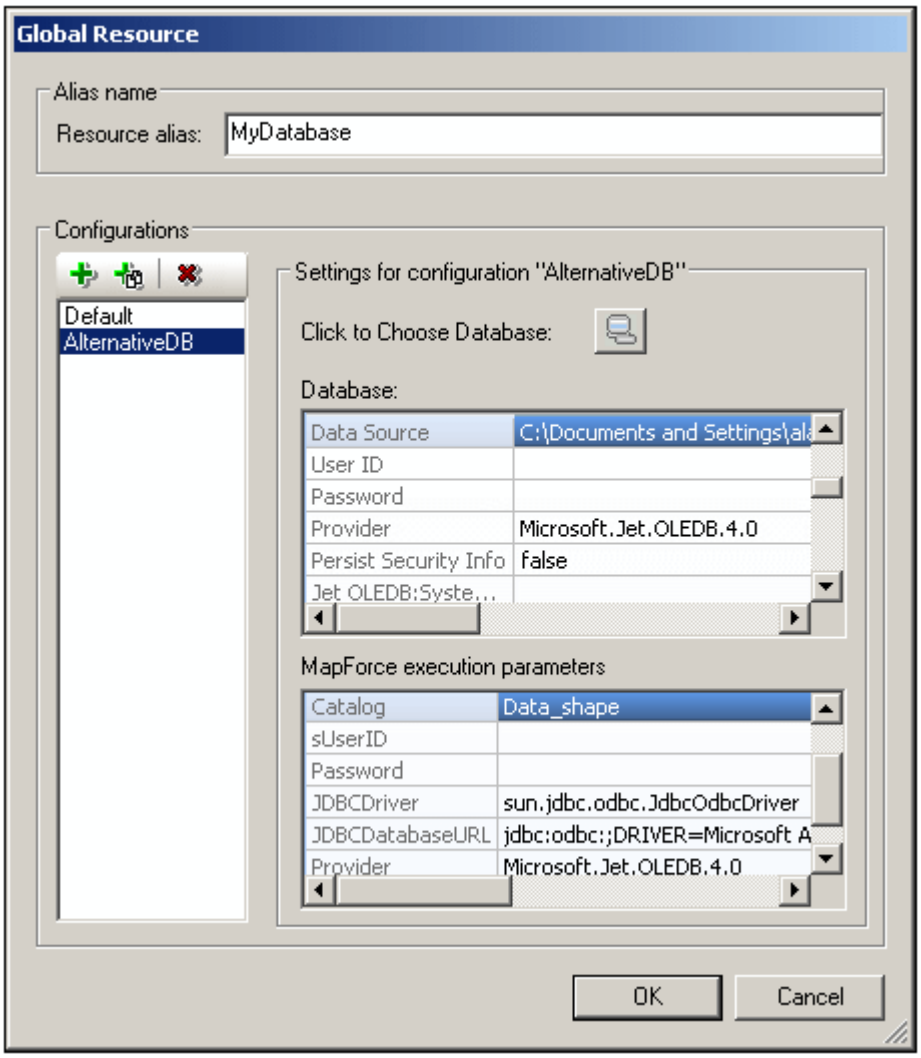
1. The Configurations pane will have a configuration named Default (*screenshot above*). This Default configuration cannot be deleted nor have its name changed. You can enter as many additional configurations for the selected alias as you like. Add a configuration by clicking the **Add Configuration** icon and, in the **Add Configuration** dialog

which pops up, enter the configuration name. Click **OK**. The new configuration will be listed in the Configurations pane. Repeat for as many configurations as required for this particular alias (global resource).

2. Select one of the configurations in the Configurations pane and browse for the folder you wish to create as a global resource.
3. Specify a folder resource for each configuration (that is, repeat Step 3 above for the various configurations you have created).
4. Click **OK** in the Global Resource dialog to save the alias and all its configurations as a global resource. The global resource will be listed under Folders in the Manage Global Resources dialog.

12.1.3 Databases

In the Global Resource dialog for Databases (*screenshot below*), you can add a database resource as follows:



To define a database-type global resource:

1. Enter an alias name.
2. The Configurations pane will have a configuration named Default (*screenshot above*). This Default configuration cannot be deleted nor have its name changed. You can enter as many additional configurations for the selected alias as you like. Add a configuration

by clicking the **Add Configuration** icon and, in the **Add Configuration** dialog which pops up, enter the configuration name. Click **OK**. The new configuration will be listed in the Configurations pane. Repeat for as many configurations as required for this particular alias (global resource).

3. Select one of the configurations in the Configurations pane and click the **Choose Database** icon. This pops up the Create Global Resources Connection dialog (*screenshot below*).

4. Select whether you wish to create a connection to the database using the Connection Wizard, an existing connection, an ADO Connection, or an ODBC Connection. Complete the definition of the connection method as described in the section Connecting to a Database. You can use either the Connection Wizard, ADO Connections, or ODBC Connections. If a connection has already been made to a database from XMLSpy, you can click the Existing Connections icon and select the DB from the list of connections that is displayed.
5. If you connect to a database server, you will be prompted to select a DB Root Object on the server. The Root Object you select will be the Root Object that is loaded when this configuration is used. If you choose not to select a Root Object, then you can select the Root Object at the time the global resource is loaded.
6. Specify a database resource for each configuration (that is, repeat Steps 3 and 4 above for the various configurations you have created).
7. Click **OK** in the **Global Resource** dialog to save the alias and all its configurations as a global resource. The global resource will be listed under databases in the Manage Global resources dialog.

12.1.4 Copying Configurations

The Manage Global resources dialog allows you to duplicate existing configurations for all types of resources. To do so, select a configuration and click the **Copy Configuration** icon. Then select or enter a configuration name and click **OK**. This creates a copy of the selected

configuration which you can now change as required.

12.2 Using Global Resources

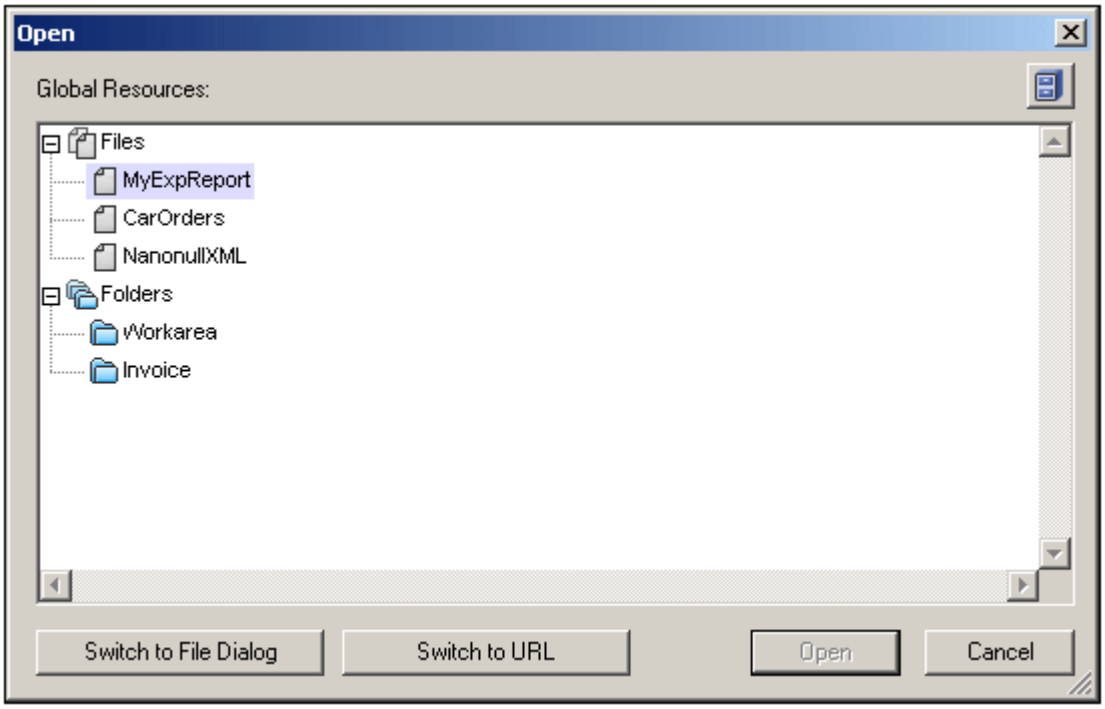
There are several types of global resources (file-type, folder-type , and database-type). Particular scenarios in XMLSpy allow the use of particular types of global resources. For example, you can use file-type or folder-type global resources for a Working XML File or a CSS file. Or you can use a database-type resource to create a new DB-based SPS. The various scenarios in which you can use global resources in XMLSpy are listed in this section: Files and Folders and Databases.

Selections that determine which resource is used
There are two application-wide selections that determine what global resources can be used and which global resources are actually used at any given time:

- *The active Global Resources XML File* is selected in the Global Resource dialog. The global-resource definitions that are present in the active Global Resources XML File are available to all files that are open in the application. Only the definitions in the active Global Resources XML File are available. The active Global Resources XML File can be changed at any time, and the global-resource definitions in the new active file will immediately replace those of the previously active file. The active Global Resources XML File therefore determines: (i) what global resources can be assigned, and (ii) what global resources are available for look-up (for example, if a global resource in one Global Resource XML File is assigned but there is no global resource of that name in the currently active Global Resources XML File, then the assigned global resource (alias) cannot be looked up).
- *The active configuration* is selected via the menu item **Tools | Active Configuration** or via the Global Resources toolbar. Clicking this command (or drop-down list in the toolbar) pops up a list of configurations across all aliases. Selecting a configuration makes that configuration active application-wide. This means that wherever a global resource (or alias) is used, the resource corresponding to the active configuration of each used alias will be loaded. The active configuration is applied to all used aliases. If an alias does not have a configuration with the name of the active configuration, then the default configuration of that alias will be used. The active configuration is not relevant when assigning resources; it is significant only when the resources are actually used.

12.2.1 Assigning Files and Folders

In this section, we describe how file-type and folder-type global resources are assigned. File-type and folder-type global resources are assigned differently. In any one of the usage scenarios below, clicking the **Switch to Global Resources** button pops up the Open Global Resource dialog (*screenshot below*).



Selecting a *file-type global resource* assigns the file. Selecting a *folder-type global resource* causes an Open dialog to open, in which you can brows for the required file. The path to the selected file is entered relative to the folder resource. So if a folder-type global resource were to have two configurations, each pointing to different folders, files having the same name but in different folders could be targeted via the two configurations. This could be useful for testing purposes.

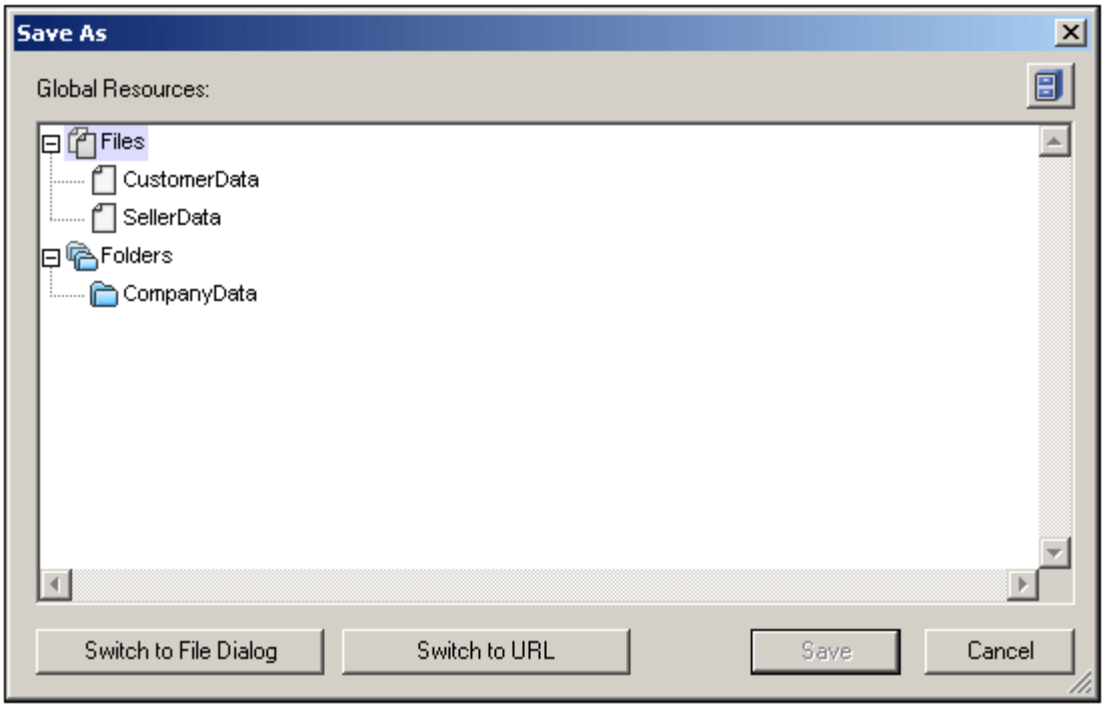
In the Open Global Resource dialog, you can switch to the file dialog or the URL dialog by clicking the respective button at the bottom of the dialog. The **Manage Global Resources** icon in the top right-hand corner pops up the **Manage Global Resources** dialog.

Usage scenarios
File-type and folder-type global resources can be used in the following scenarios:

- Opening global resources
- Saving as global resource
- Assigning files for XSLT transformations
- XSLT transformation and XQuery executions
- Assigning an SPS

Opening global resources
A global resource can be opened in XMLSpy with the **File | Open (Switch to Global Resource)** command and can be edited. In the case of a file-type global resource, the file is opened directly. In the case of a folder-type global resource, an Open dialog pops up with the associated folder selected. You can then browse for the required file in descendant folders. One advantage of addressing files for editing via global resources is that related files can be saved under different configurations of a single global resource and accessed merely by changing configurations. Any editing changes would have to be saved before changing the configuration.

Saving as global resource
A newly created file can be saved as a global resource. Also, an already existing file can be opened and then saved as a global resource. When you click the **File | Save** or **File | Save As** commands, the Save dialog appears. Click the **Switch to Global Resource** button to access the available global resources (*screenshot below*), which are the aliases defined in the current Global Resources XML File.



Select an alias and the click Save. If the alias is a file alias, the file will be saved directly. If the alias is a folder alias, a dialog will appear that prompts for the name of the file under which the file is to be saved. In either case the file will be saved to the location that was defined for the currently active configuration.

Note: Each configuration points to a specific file location, which is specified in the definition of that configuration. If the file you are saving as a global resource does not have the same filetype extension as the file at the current file location of the configuration, then there might be editing and validation errors when this global resource is opened in XMLSpy. This is because XMLSpy will open the file assuming the filetype specified in the definition of the configuration.

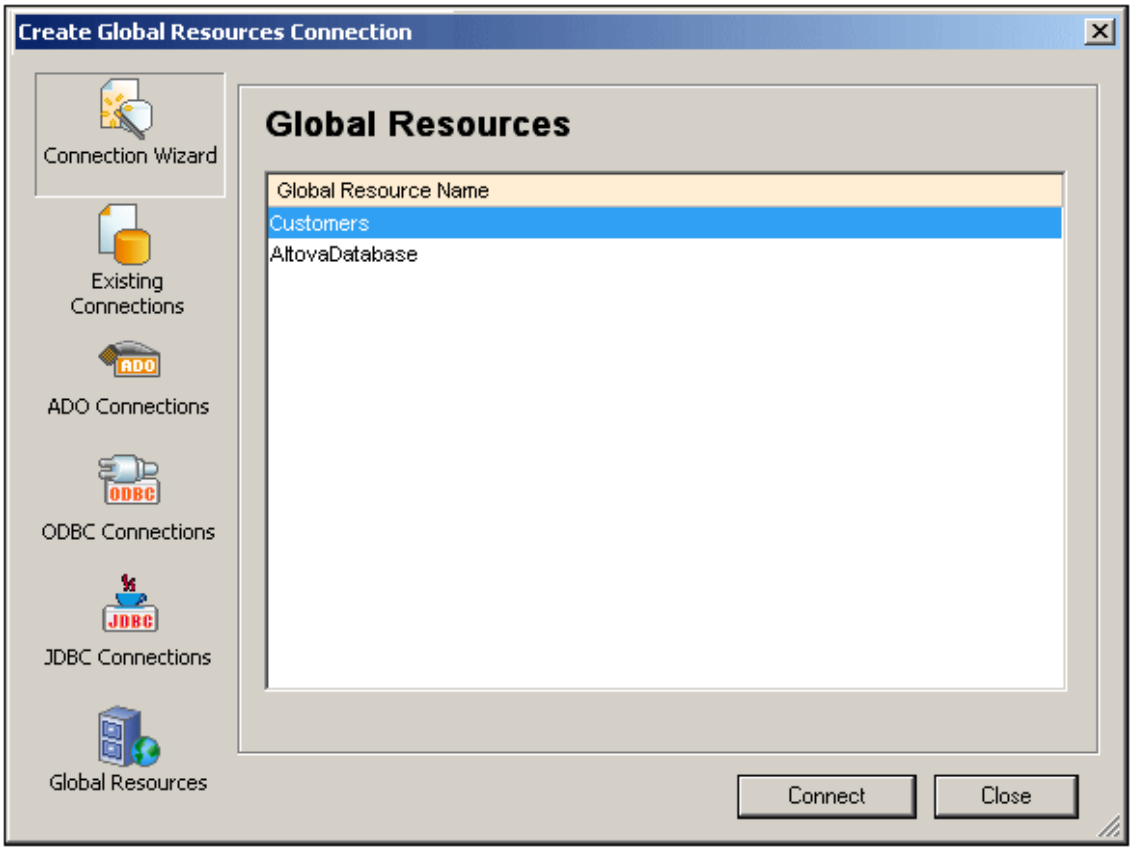
Assigning files for XSLT transformations
XSLT files can be assigned to XML documents and XML files to XSLT documents via global resources.. When the commands for assigning XSLT files (**XSL/XQuery | Assign XSL** and **XSL/XQuery | Assign XSL:FO**) and XML files (**XSL/XQuery | Assign Sample XML**) are clicked the assignment dialog pops up. Clicking the **Browse** button pops up the Open dialog, in which you can switch to the Open Global Resource dialog and select the required global resource. A major advantage of using a global resource to specify files for XSLT transformations is that the XSLT file (or XML file) can be changed for a transformation merely by changing the active configuration in XMLSpy; no new file assignments have to be made each time a transformation is required with a different file. When an XSLT transformation is started, it will use the file/s associated with the active configuration.

XSLT transformations and XQuery executions
Clicking the command **XSL/XQuery | XSL Transformation**, **XSL/XQuery | XSL:FO Transformation**, or **XSL/XQuery | XQuery Execution** pops up a dialog in which you can browse for the required XSLT, XQuery, or XML file. Click the **Browse** button and then the **Switch to Global Resource** button to pop up the Open Global Resource dialog (*screenshot at top of section*). The file that is associated with the currently active configuration of the selected global resource is used for the transformation.

Assigning an SPS
When assigning a StyleVision stylesheet to an XML file (**Authentic | Assign StyleVision Stylesheet**), you can select a global resource to locate the stylesheet. Click the **Browse** button and then the **Switch to Global Resource** button to pop up the Open Global Resource dialog (*screenshot at top of section*). With a global resource selected as the assignment, the Authentic View of the XML document can be changed merely by changing the active configuration in XMLSpy.

12.2.2 Assigning Databases

When a command is executed that imports data or a data structure (as an XML Schema) from a DB into XMLSpy (for example, with the **Convert | Import Database Data** command), you can select the option to use a global resource (*screenshot below*). Other commands where a database-type global resource can be used are database-related commands in the menu.



When you click the Global Resources icon in the Open Database dialog, all the database-type

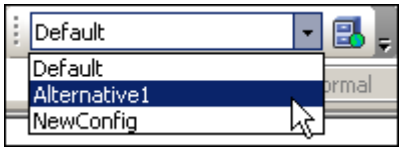
global resources that have been defined in the currently active Global Resources XML File are displayed. Select the required global resource and click **Connect**. If the selected global resource has more than one configuration, then the database resource for the currently active configuration (check **Tools | Active Configuration** or the Global Resources toolbar) is used, and the connection is made. You must now select the data structures and data to be used as described in Creating an XML Schema from a DB and Importing DB data.

12.2.3 Changing Configurations

One global resource configuration can be active at any time, and it is active application-wide. This means that the active configuration is active for all aliases in all currently open files. If an alias does not have a configuration with the name of the active configuration, then the default configuration of that alias will be used.

As an example of how to change configurations, consider the case in which an XSLT file has been assigned to an XML document via a global resource with multiple configurations. The XSLT file can be switched merely by changing the configuration of the global resource. This can be done in two ways:

- When you hover over the menu command **Tools | Active Configuration**, a submenu with a list of all configurations in the Global Resources XML File pops out. Select the required configuration.
- In the combo box of the Global Resources toolbar (*screenshot below*), select the required configuration. (The Global Resources toolbar can be toggled on and off with the menu command **Tools | Customize | Toolbars | Global Resources**.)

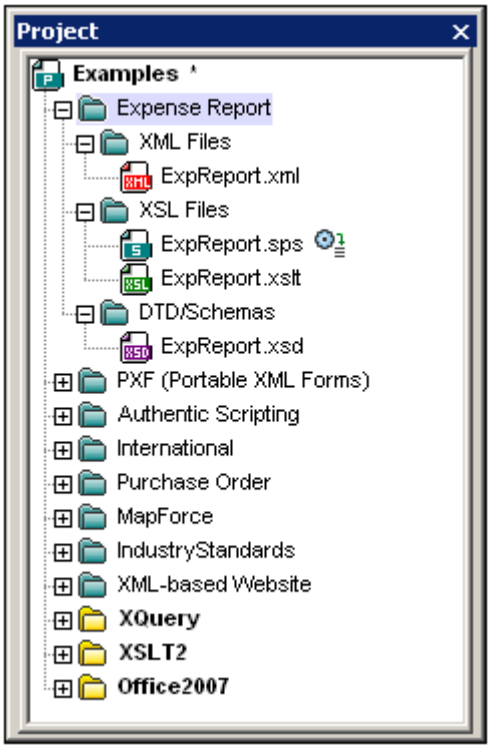


The XSLT file will be changed immediately.

In this way, by changing the active configuration, you can change source files that are assigned via a global resource.

13 Projects

A project is a collection of files that are related to each other in some way you determine. For example, in the screenshot below, a project named `Examples` collects the files for various examples in separate example folders, each of which can be organized further into sub-folders. Within the `Examples` project, for instance, the `OrgChart` example folder is organized further into sub-folders for XML, XSL, and Schema files.

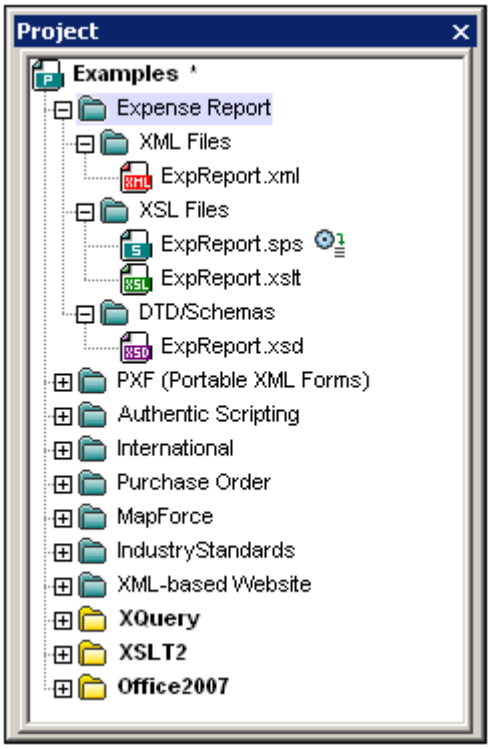


Projects thus enable you to gather together files that are used together and to access them quicker. Additionally, you can define schemas and XSLT files for individual folders, thus enabling the batch processing of files in a folder.

This section describes how to create and edit projects and how to use projects.

13.1 Creating and Editing Projects

Projects are managed via the Project Window (*screenshot below*) and the Project menu. One project can be open at a time in the application. The open project is displayed in the Project Window.

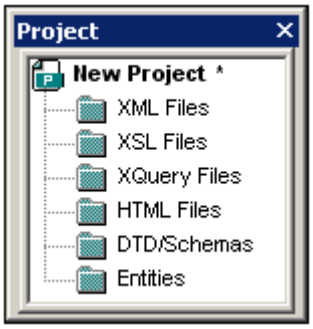


Creating new projects, opening existing projects
A new project is created with the menu command **Project | New Project**. An existing project is opened with the menu command **Project | Open Project**. The newly opened project (whether new or existing) replaces the previously opened project in the Project Window. If the previously opened project contains unsaved changes (indicated by an asterisk next to the folder name; *see screenshot below*), you are asked whether you wish to save these changes.

Naming and saving projects
A new project is named when you save it. A project is saved with the **Project | Save Project** command and has the . `spp` file extension. After a project has been modified, the project must be saved for the modifications to be stored. Note that a project (indicated by the top-level folder in the Project Window) can only be re-named by changing its name in Windows File Explorer; the name cannot be changed in the GUI. (The names of sub-folders, however, can be changed in the GUI.)

Project structure
A project has a tree structure of folders and files. Folders and files can be created at any level and to an unlimited depth. Do this by selecting a folder in the Project Window and then using the commands in the **Project** menu or context menu to add folders, files, or resources. Folders, files, and resources that have been added to a project can be deleted or dragged to other locations in the project tree.

When a new project is created, the default project structure organizes the project by file type (XML, XSL, etc) (*see screenshot below*).



File-type extensions are associated with a folder via the property definitions for that folder. When a file is added to a folder, it is automatically added to the appropriate child folder according to the file-type extension. For each folder, you can define what file-type extensions are to be associated with it.

What can be added to a project

Folder, files, and other resources can be added either to the top-level project folder or to a folder at any level in the project. There are three types of folders: (i) project folders; (ii) external folders; (iii) external web folders.

To add an object, select the relevant folder and then the required command from the **Project** menu or context menu of the selected folder. The following objects are available for addition to a project folder

- *Project folders* (green) are folders that you add to the project in order to structure the project's contents. You can define what file extensions are to be associated with a project folder (in the properties of that folder). When files are added to a folder, they are automatically added to the first child folder that has that file's extension associated with it. Consequently, when multiple files are added to a folder, they will be distributed by file extension among the child folders that have the corresponding file-extension associations.
- *External folders* (yellow) are folders in a file system. When an external folder is added to a folder, the external folder and all its files, sub-folders, and sub-folder files are included in the project. Defining file extensions on an external folder serves to filter the files available in the project.
- *External web folders* are like external folders, except that they are located on a web server and require user authentication to access. Defining file extensions on an external web folder serves to filter the files available in the project.
- *Files* can be added to a folder by selecting the folder and then using one of the three Add-File commands: (i) **Add Files**, to select the file/s via an Open dialog; (ii) **Add Active File**, to add the file that is active in the Main Window; (iii) **Add Active and Related Files**, additionally adds files related to an active XML file, for example, an XML Schema or DTD. Note that files associated by means of a processing instruction (for example, XSLT files), are not considered to be related files.
- *Global Resources* are aliases for file, folder, and database resources. How they are defined and used is described in the section on Global Resources.
- *URLs* identify a resource object via a URL.
- *An Altova Scripting Project*, which is a `.asprj` file, can be assigned to an XMLSpy project. This will make macros and other scripts available to the project. How to create a Scripting Project and assign one to an XMLSpy project is described in the section, Scripting.

Project properties
The properties of a folder are stored in the Properties dialog of that folder. It is accessed by first selecting the folder and then the **Properties** command in the **Project** menu or context menu (obtained by right-clicking the folder). Note that properties can be defined not only for the top-level project folder, but also for folders at various levels of the project hierarchy. The following properties of a folder can be defined and edited in the Properties dialog:

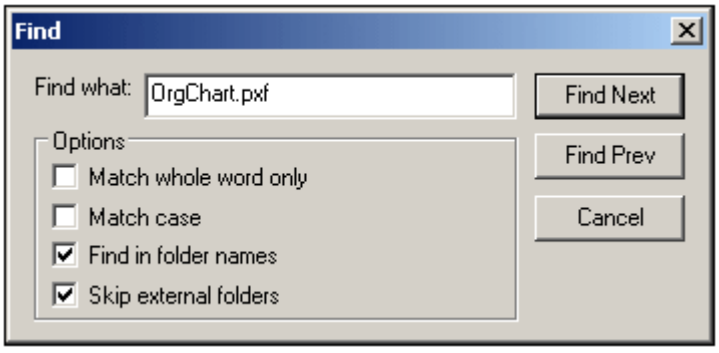
- *Folder name*: cannot be edited for the top-level project folder (for which, instead of a name, a filepath is displayed).
- *File extensions*: cannot be edited for the top-level project.
- *Validation*: specifies the DTD or XML Schema file that should be used to validate XML files in a folder.
- *Transformations*: specifies (i) the XSLT files to be used for transforming XML files in the folder, and (ii) the XML files to be transformed with XSLT files in the folder.
- *Destination files*: for the output of transformations, specifies the file extension and the folder where the files are to be saved.
- *SPS files for Authentic View*: specifies the SPS files to be used so that XML files in a folder can be viewed and edited in Authentic View.

Source control in projects
Source control systems that are compatible with Microsoft Visual Source-Safe are supported in projects. How to use this feature is described in the User Reference section of the manual.

Saving projects
Any changes you make to a project, such as adding or deleting a file, or modifying a project property, must be saved with the **Save Project** command.

Find in project
You can search for project files and folders using their names or a part of their name. If the search is successful, files or folders that are located are highlighted one by one.

To start a search, activate the Project window by clicking it (or in it), then select the command **Edit | Find** (or the shortcut **Ctrl+F**). In the Find dialog that pops up (*screenshot below*) enter the text string you wish to search for and select or deselect the search options (*explained below*) according to your requirements.



The following search options are available:

- Whole-word matching is more restricted since the entire string must match an entire word in the file or folder name. In file names, the parts before and after the dot (without the dot) are each treated as a word.

- It can be specified that casing in the search string must exactly match the text string in the file or folder name.
- Folder names can be included in the search. Otherwise, only file names are searched.
- External folders can be included or excluded from the search. External folders are actual folders on the system or network, as opposed to project folders, which are created within the project and not on the system.

If the search is successful, the first matching item is highlighted in the Project sidebar. You can then browse through all the returned matching items by clicking the **Find Next** and **Find Prev** buttons in the Find dialog.

Refreshing projects
If a change is made to an external folder, this change will not be reflected in the Project Window till the project is refreshed.

13.2 Using Projects

Projects are very useful for organizing your workspace, applying settings to multiple files, and for setting up and executing batch commands. Using projects can therefore greatly help speed up and ease your work.

Benefits of using projects
The following list lists the benefits of using projects.

- Files and folders can be grouped into folders by file extension or any other desired criterion.
- Schemas and XSLT files can be assigned to a folder. This can be useful if you wish to quickly validate or transform a single XML file using different schema or XSLT files. Add the XML file to different folders and define different schemas and XSLT files for the different folders.
- Batch processing can be applied to individual folders. The commands available for batch processing are listed below.
- Output folders can be specified for transformations.

Organizing resources for quick access
Folder and file resources can be organized into a tree structure, giving you a clear overview of the various folders and files in your project, and enabling you to quickly access any and all files in a project. Simply double-click a file in the Project window to open it. You can quickly add files and folders to a project as required and delete unwanted files and folders. When you wish to work with another project, close the project currently open in the Project Window and open the required project.

Batch processing
The commands for batch processing of files in a folder, whether the top-level project folder or a folder at any other level, are **available in the context menu of that folder** (obtained by right-clicking the folder). The steps for batch processing are as follows:

1. Define the files to be used for validation or transformation in the Properties dialog of that folder.
2. Specify the folder in which the output of transformations should be saved. If no output folder is specified for a folder, the output folder of the next ancestor folder in the project tree is used.
3. Use the commands in the context menu for batch execution. If you use the corresponding commands in the XML, DTD/Schema, or XSL/XQuery menus, the command will be executed only on the document active in the Main Window, not on any project folder in the Project Window.

The following commands in the context menu of a project folder (top-level or other) are available for batch processing:

- *Well-formed check*: If any error is detected during the batch execution, it is reported in the Messages Window.
- *Validation*: If any error is detected during the batch execution, it is reported in the Messages Window.
- *Transformations*: Transformation outputs are saved to the folder specified as the output folder in the Properties dialog of that folder. If no folder is specified, the output folder of the next ancestor project folder is used. If no ancestor project folder has an output folder defined, a document window is opened and the results of each transformation is displayed successively in this document window. An XSL-FO transformation transforms an XML document or FO document to PDF.

- *Generate DTD / XML Schema*: Before the schemas are generated, you are prompted to specify an output folder. The generated schema files are saved to this folder and displayed in separate windows in the GUI.

Note: To execute batch commands use the context menu of the relevant folder in the Project Window. Do not use the commands in the XML, DTD/Schema, or XSL/XQuery menus. These commands will be executed on the document active in the Main Window.

14 File/Directory Comparisons

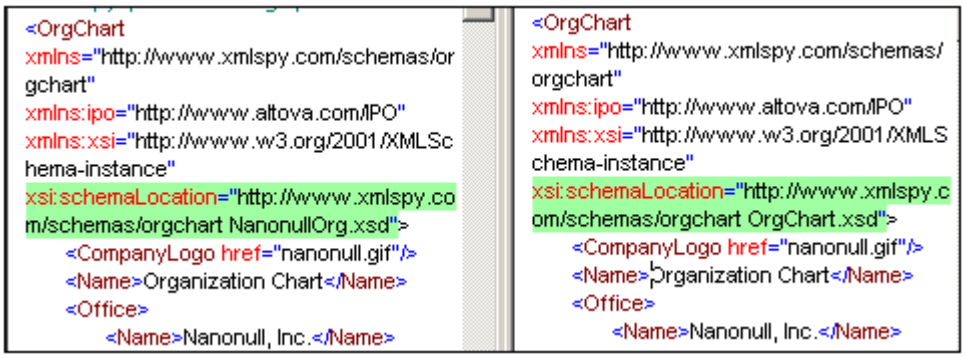
XMLSpy provides a File Comparison feature and a Directory Comparison feature that are linked to each other. File Comparisons and Directory Comparisons are started with the **Compare Open File With** and **Compare Directories** commands in the **Tools** menu, respectively. Comparison options for file comparisons can be defined in the Settings dialog, which is accessed by clicking the **Compare Options** command in the **Tools** menu.

Each of these commands is described in detail in the User Reference section. In the sub-sections of this section we provide an overview of the File Comparisons and Directory Comparisons mechanisms.

14.1 File Comparisons

The File Comparisons feature enables you to compare the active file with another file, which is selected via an Open File dialog or via a global resource. The following points provide an overview of the mechanism. For details, see the User Reference section.

- The settings current in the Compare Options dialog when a File Compare session is started are the settings that will be active for that session.
- You can choose to compare the files as XML files (where document structure is also evaluated) or as Text files. This choice is made by selecting, in the Settings dialog, either (i) Grid View or Text View (Textual Comparison Only unchecked) for XML comparisons, or (ii) Text View (Textual Comparison Only checked) for text comparisons.
- The two files appear in adjacent panes in the selected view (Grid View or Text View) and the differences are highlighted in both files (*screenshot below*).

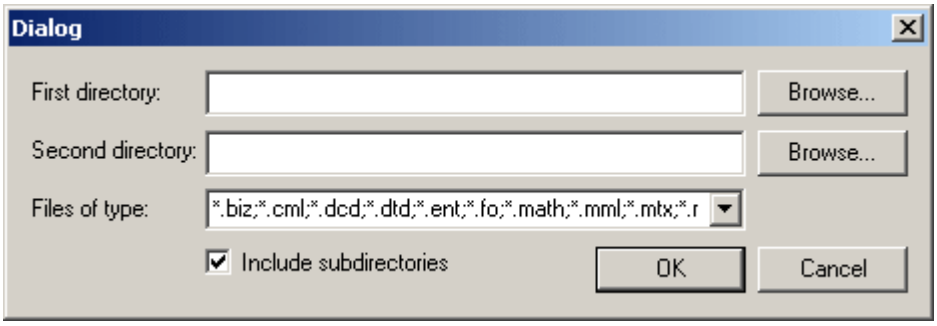


A Compare Files control window also pops up which enables you to navigate through the differences and to merge them.

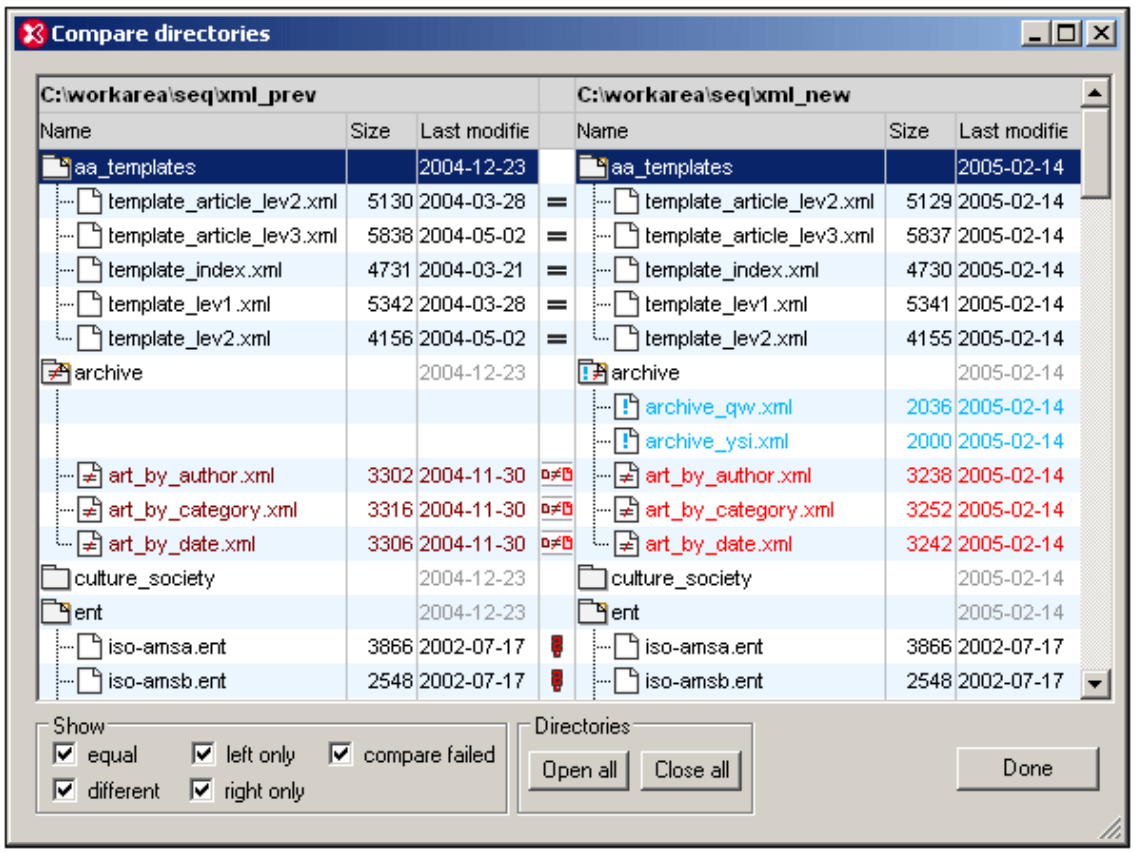
The Settings dialog offers several options for specifying what aspects of the XML documents should be considered for the comparison, and what aspects ignored. For more details, see the Compare Options section in the User Reference.

14.2 Directory Comparisons

The Directory Comparisons feature enables you to compare directories, each of which you select via separate Browse for Folder dialogs. You can also select whether sub-directories are to be compared or not, and what file types should be considered for the directory comparison.



Directories are compared to indicate missing files and whether files of the same name are different or not. The comparisons between files are based on the settings in the Settings dialog. The results of the directory comparison are displayed in a separate window (*screenshot below*).



For details about how to read the symbols and manage the view in the Compare Directories window, see the description of the **Compare Directories** command in the User Reference. You can then double-click a file row to directly start a file comparison.

15 Source Control

Project files can be placed under source control. A variety of source control systems are supported and Altova has tested support with a large number of drivers and source control systems. The tested systems are listed in the section, Supported Source Control Systems.

Since XMLSpy implements the Microsoft Source Code Control Interface (MSSCCI) v1.1 – v1.3, multiple source control systems, including Microsoft SourceSafe and other compatible repositories, are supported.

Note: The **64-bit** version of XMLSpy automatically supports any of the supported 32-bit source control programs mentioned in this documentation. When using a 64-bit version of XMLSpy with a 32-bit source control program, the "Perform background status updates every... ms" option (Tools | Options) is automatically **grayed-out** and cannot be selected!

Overview of the Source Control feature
The mechanism for placing files in a XMLSpy project under source control is as follows:

1. In XMLSpy, a project folder containing the files to be placed under source control is created. Typically, the project folder will correspond to a local folder in which the project files are located. The path to the local folder is referred to as the local path.
2. In the source control system's database (also referred to as source control or repository), a folder is created that will contain the files to be placed under source control.
3. Project files are added to source control using the command **Project | Source Control | Add to Source Control**.
4. Source control actions, such as checking in to, checking out from , and removing files from source control, can be carried out by using the commands in the **Project | Source Control** submenu. The commands in this submenu are listed and described in the Project menu section of the User Reference.

Note: If you wish to change the current source control provider, this can be done in any of two ways: (i) via the Source Control options (**Tools | Options | Source Control**), or (ii) in the Change Source Control dialog (**Project | Source Control | Change Source Control**).

Note: Note that a Source Control project is not the same as an XMLSpy project. Source Control projects are directory dependent, while XMLSpy projects are logical constructions without direct directory dependence.

Registry entry and plug-ins
Microsoft has defined a Registry entry, where all Source Control-compatible programs can register themselves. This is the entry for XMLSpy:

```
HKEY_LOCAL_MACHINE\SOFTWARE\SourceCodeControlProvider\InstalledSCCProviders
```

Note that Source Control (SC) plug-ins are not automatically installed by all SC products. Please read the documentation supplied with your specific SC software for more information about plug-ins.

In this section
This section as organized as follows:

- Supported Source Control Systems lists the Source Control Systems (SCSs) that are supported by XMLSpy. Systems are listed alphabetically by server, and for each server the supported clients are also listed.
- Installing Source Control Systems contains notes about how to install the various SCSs.
- SCSs and Altova DiffDog Differencing describes how various Source Control Systems can be set up to carry out differencing with Altova DiffDog.

Menu commands
The menu commands for using Source Control Systems are in the submenu **Project | Source Control** and are described in the User Reference section.

Resource / Speed issues
Very large source control databases might be introducing a speed/resource penalty when automatically performing background status updates.

You might be able to speed up your system by disabling (or increasing the interval of) the "Perform background status updates every xxx seconds" field in the Source Control tab accessed through **Tools | Options**.

15.1 Supported Source Control Systems

The list below shows the Source Control Servers (SCSs) supported by XMLSpy, together with their respective Source Control Client/s (SCCs). The list is organized alphabetically by SCS. Please read the notes following the list for information about support levels.

AccuRev

Version: AccuRev 4.7.0 Windows

Clients:
- AccuBridge for Microsoft SCC 2008.2

Bazaar

Version: Bazaar 1.9 Windows

Clients:
- Aigenta Unified SCC 1.0.6

Borland StarTeam 2008

Version: StarTeam 2008 Release 2

Clients:
- Borland StarTeam Cross-Platform Client 2008 R2

Codice Software Plastic SCM

Version: Codice Software Plastic SCM Professional 2.7.127.10 (Server)

Clients:
- Codice Software Plastic SCM Professional 2.7.127.10 (SCC Plugin)

Collabnet Subversion 1.5

Version: 1.5.4

Clients:
- Aigenta Unified SCC 1.0.6
- PushOK SVN SCC 1.5.1.1
- PushOK SVN SCC x64 version 1.6.3.1
- TamTam SVN SCC 1.2.24

ComponentSoftware CS-RCS (PRO)

Version: ComponentSoftware CS-RCS (PRO) 5.1

Clients:
- ComponentSoftware CS-RCS (PRO) 5.1

Dynamsoft SourceAnywhere for VSS

Version: Dynamsoft SourceAnywhere for VSS 5.3.2 Standard/Professional Server

Clients:
- Dynamsoft SourceAnywhere for VSS 5.3.2 Client

Dynamsoft SourceAnywhere Hosted

Version: Server hosted in a Bell Data Center

Clients:
- Dynamsoft SourceAnywhere Hosted Client (22252)

Dynamsoft SourceAnywhere Standalone

Version: SourceAnywhere Standalone 2.2 Server

Clients:
- Dynamsoft SourceAnywhere Standalone 2.2 Client

IBM Rational ClearCase 7

Version: 7.0.1 (LT)

Clients:
- IBM Rational ClearCase 7.0.1 (LT)

March-Hare CVSNT 2.5

Version: 2.5.03.2382

Clients:
- Aigenta Unified SCC 1.0.6

March-Hare CVS Suite 2008

Version: Server 2008 [3321]

Clients:
- Jalindi Igloo 1.0.3
- March-Hare CVS Suite Client 2008 (3321)
- PushOK CVS SCC NT 2.1.2.5
- PushOK CVS SCC x64 version 2.2.0.4
- TamTam CVS SCC 1.2.40

Mercurial

Version: Mercurial 1.0.2 for Windows

Clients:
- Sergey Antonov HgSCC 1.0.1

Microsoft SourceSafe 2005

Version: 2005 with CTP

Clients:
- Microsoft SourceSafe 2005 with CTP

Microsoft Visual Studio Team System 2008 Team Foundation Server

Version: 2008

Clients:
- Microsoft Team Foundation Server 2008 MSSCCI Provider

Perforce 2008

Version: P4S 2008.1

Clients:
- Perforce P4V 2008.1

PureCM

Version: PureCM Server 2008/3a

Clients:
- PureCM Client 2008/3a

QSC Team Coherence Version Manager

Version: QSC Team Coherence Server 7.2.1.35

Clients:
- QSC Team Coherence Client 7.2.1.35

Qumasoft QVCS Enterprise

Version: QVCS Enterprise 2.1.18

Clients:
- Qumasoft QVCS Enterprise 2.1.18

Qumasoft QVCS Pro

Version: 3.10.18

Clients:
- Qumasoft QVCS Pro 3.10.18

Reliable Software Code Co-Op

Version: Code Co-Op 5.1a

Clients:
- Reliable Software Code Co-Op 5.1a

Seapine Surround SCM

Version: Surround SCM Client/Server for Windows 2009.0.0

Clients:
- Seapine Surround SCM Client 2009.0.0

Serena Dimensions

Version: Dimensions Express/CM 10.1.3 for Win32 Server

Clients:
- Serena Dimensions 10.1.3 for Win32 Client

Softimage Alienbrain

Version: Alienbrain Server 8.1.0.7300

Clients:
- Softimage Alienbrain Essentials/Advanced Client 8.1.0.7300

SourceGear Fortress

Version: 1.1.4 Server

Clients:
- SourceGear Fortress 1.1.4 Client

SourceGear SourceOffsite

Version: SourceOffsite Server 4.2.0

Clients:
- SourceGear SourceOffsite Client 4.2.0 (Windows)

SourceGear Vault

Version: 4.1.4 Server

Clients:
- SourceGear Vault 4.1.4 Client

VisualSVN Server 1.6

Version: 1.6.2

Clients:
- Aigenta Unified SCC 1.0.6
- PushOK SVN SCC 1.5.1.1
- PushOK SVN SCC x64 version 1.6.3.1
- TamTam SVN SCC 1.2.24

Note the following:

- Altova has implemented the Microsoft Source Code Control Interface (MSSCCI) v1.1 – v1.3 in XMLSpy, and has tested support for the drivers and revision control systems listed above. It is expected that XMLSpy will continue to support these products if, and when, they are updated.
- Source Control plugins not listed in the table above, but that adhere to the MSCCI 1.1-1.3 specification, should also work together with XMLSpy.

15.2 Installing Source Control Systems

This section gives information on how to install and set up the various supported Source Control Systems.

AccuBridge for Microsoft SCC 2008.2
http://www.accurev.com/

1. Install AccuRev client software, run the installer and specify the server you want to connect to (hostname and port) then create a workspace.
2. Install the AccuBridge SCC provider. Extract the ZIP archive into the <AccuRev installation dir>\bin directory.

   Register the AccuRev.dll and SccAcc.dll as follows:
3. Open a command prompt window (if you work with Vista, start Windows Explorer, go to C:\Windows\System32, right click and run cmd.exe “As administrator”).
4. Go to the <installation AccuRev dir>\bin directory.
5. Enter the following command at the command prompt:
   - Regsvr32 AccuRev.dll
   - Regsvr32 SccAcc.dll
6. Run the SwitchScc.exe program and set AccuRev as the provider.
7. Perform a Windows log off and log in again.

Aigenta Unified SCC 1.0.6
http://aigenta.com/products/UnifiedScc.aspx

Requirements: source control client. Aigenta Unified SCC works with:

- subversion command line client 1.5.4 at http://subversion.tigris.org
- CVSNT 2.5 (client) at http://www.cvsnt.org
- Bazaar 1.9 Windows (and related pre-requisites)at http://bazaar-vcs.org/ (http://bazaar-vcs.org/WindowsInstall)

A standard installation will work correctly with Altova products.

Borland StarTeam Cross-Platform Client 2008 R2
http://www.borland.com/us/products/starteam

To install the Borland StarTeam Microsoft SCC integration run the setup program and choose to install the SCC API Integration. Altova products can now connect to the repository by specifying the server address, the end point, user and password to log on, your project and working path.

Codice Software Plastic SCM Professional 2.7.127.10 (SCC Plugin)
http://www.codicesoftware.com/xpproducts.aspx

A standard installation will work correctly with Altova products. It is sufficient to install the “client” and the “Visual Studio SCC plug-in” components.

ComponentSoftware CS-RCS (PRO) 5.1
http://www.componentsoftware.com/Products/RCS

1. To install ComponentSoftware CS-RCS (PRO) start the setup and choose the option “Workstation Setup”.
2. Specify your repository tree root and when the installation is finished, restart your machine as requested.
3. Use the “ComponentSoftware RCS Properties” to choose, or create, a project and to specify a work folder.

Dynamsoft SourceAnywhere for VSS 5.3.2 Client
http://www.dynamsoft.com/Products/SAW_Overview.aspx

A standard installation will work correctly with Altova products. To integrate with Altova products you do not need to install the plug-in for Adobe DreamWeaver CS3. After the installation, establish a server connection and set a working folder.

Dynamsoft SourceAnywhere Hosted Client (22252)
http://www.dynamsoft.com/Products/SourceAnywhere-Hosting-Version-Control-Source-Control.aspx

A standard installation will work correctly with Altova products. To integrate with the Altova products you do not need to install the plug-in for Adobe DreamWeaver CS3.

Dynamsoft SourceAnywhere Standalone 2.2 Client
http://www.dynamsoft.com/Products/SourceAnywhere-SourceSafe-VSS.aspx

A standard installation will work correctly with Altova products. To integrate with the Altova products you do not need to install the plug-in for Adobe DreamWeaver CS3. After the installation, establish a server connection and set a working folder.

IBM Rational ClearCase 7.0.1 (LT)
http://www-01.ibm.com/software/awdtools/clearcase/

To install IBM Rational ClearCase LT run the setup.

- You will be asked to update the version of the InstallShield scripting engine if it is older than version 10.5, choose “Update it if necessary”. The update runs prior to the installation starting.
- Choose the default option “Enterprise deployment, create a network release area and customize it using Siteprep”.

To integrate with Altova products, it is sufficient to install only the client. Check only the client check box.

- Provide a server name and the license server element(s) following the examples provided by the installer (port@server_name).
- Provide a configuration description name by editing a name you like and insert the path to a Release area. This path must specify a shared folder.
- You can create a new folder on your machine, share it, and use it as a Release Area. (In Vista, you must set the Network discovery to "on" in Network and Sharing Center to set this path.) The Release Area is now created, some files are copied into it and a shortcut is created with the name **sitedefs.lnk**.
- When all files are copied, continue by clicking the shortcut from Windows Explorer. A

new setup will start to install the client.
- When setup starts, choose the option “Install IBM Rational ClearCase LT”.
- Keep clicking “Next”, accept the “Software License Agreement” and start the installation.

In **Vista**, the second setup could generate the internal error: 2739. In this case, start Windows Explorer and go to C:\Windows\System32.
- Right click and run “cmd.exe” “As Administrator”. A command window pops up.
- Type “regsvr32 jscript.dll”.
- Launch the setup again.

To work with files stored in ClearCase, you should create a view that points to your ClearCase project.

Jalindi Igloo 1.0.3
http://www.jalindi.com/igloo/

To use Jalindi Igloo with Altova products it is sufficient to run the setup to install Jalindi Igloo. Note that if you uninstall Jalindi Igloo, all other installed SCC Provider Windows registry keys (if any) are deleted as well and are not longer available.

When working with Altova products, setting the “Auto Commit” Mode is recommended.
- Auto Commit Mode is found in the advanced Source Control options.
- After defining a workspace, you can start to work.

March-Hare CVS Suite Client 2008 (3321)
http://www.march-hare.com/cvsnt/en.asp

A “typical” installation will work correctly with Altova products.

Mercurial
see under Sergey Antonov HgScc 1.0.1

Microsoft SourceSafe 2005 with CTP
http://msdn.microsoft.com/en-us/vstudio/aa718670.aspx

A standard installation of Microsoft Source Safe 2005 will work correctly with Altova products.

Microsoft Team Foundation Server 2008 MSSCCI Provider
http://www.microsoft.com/downloads

Requirements: Visual Studio 2008 Team Explorer, or Visual Studio 2008 with Team Explorer 2008. A standard installation will work correctly with Altova products.

Perforce P4V 2008.1

http://www.perforce.com/

The Perforce Visual Client (P4V) offers a choice:

- To install all client features (default behavior)
- To install only the “SCC Plug-in (P4SCC)” feature.

The default installation will work correctly with all Altova products.

If the “SCC Plug-in (P4SCC)” feature is chosen:

- Two SCC functions “Show differences” and “Source control manager” will not work.
- The “Show differences” functionality and the possibility to launch the source control manager will not work, because they rely on the non-installed features” Visual Merge Tool” and “Visual Client (P4V)” respectively.
- The differencing functionality will need 3rd party software, while the launch of the source control manager will only be possible after the explicit installation of the “Visual Client (P4V)".
- After starting your Perforce Visual Client installation, specify your own client configuration settings (server name, Text Editing Application, User Name).
- When the installation is finished, do not forget to create a new workspace or to select an existing one.

PureCM Client 2008/3a

http://www.purecm.com/

A standard installation will work correctly with Altova products. After the installation, start the PureCM client to register a server.

PushOK CVS SCC NT 2.1.2.5

http://www.pushok.com/soft_cvs.php

A standard installation is sufficient for using PushOK CVS SCC NT.

- After installation is complete, make sure your copy of the CVS proxy plug-in is correctly registered.
- After defining a workspace, you can start to work.

PushOK CVS SCC x64 version 2.2.0.4

http://www.pushok.com/soft_cvs.php

A standard installation is sufficient for using PushOK CVS SCC.

- After installation is complete, make sure your copy of the CVS proxy plug-in is correctly registered.
- After defining a workspace, you can start to work.

PushOK SVN SCC 1.5.1.1

http://www.pushok.com/soft_svn.php

A standard installation of PushOK SVN SCC is sufficient for use with Altova products. When installing under Vista, it is possible that the COM library **svncom.dll** cannot be registered. In this case, finish the installation, and then register the library manually by following these steps:

1. Start a command window using the option "Run as administrator".
2. Enter: cd “C:\Program Files\PushOK Software\SVNSCC\svn”

3. Type the command > regsvr32 svncom.dll.

PushOK SVN SCC x64 version 1.6.3.1
http://www.pushok.com/soft_svn.php

A standard installation of PushOK SVN SCC is sufficient for use with Altova products. When installing under Vista, it is possible that the COM library **svncom.dll** cannot be registered. In this case, finish the installation, and then register the library manually by following these steps:

1. Start a command window using the option "Run as administrator".
2. Enter: cd "C:\Program Files\PushOK Software\SVNSCC\svn"
3. Type the command > regsvr32 svncom.dll.

QSC Team Coherence Client 7.2.1.35
http://www.teamcoherence.com

A standard installation will work correctly with Altova products.

- If the server is installed on the client machine, a default connection is created after the client installation.
- If the server resides on a different machine, you need to change the "HOSTNAME" property in the Connection Properties dialog of Team Coherence client, to point to the relevant machine.

Qumasoft QVCS Enterprise 2.1.18
http://www.qumasoft.com/

Requirements: J2SE 1.5 or later http://www.oracle.com/technetwork/java/index.html

To install Qumasoft QVCS-Enterprise client, run the installer. If your operating system is **Vista**, you must modify the installation directory from the default value "C:\Program Files\QVCS-Enterprise Client" to "C:\QVCS-Enterprise Client". This must be done as Vista does not let applications write to the C:\Program Files area. Edit the "**setEnv.cmd**" file that resides in the installation directory so that the JAVA_HOME environment variable points to the location of your JVM.

If you work with **Vista** you might have problem when saving the file.

1. If this is the case, start Windows Explorer and go to C:\Windows\System32.
2. Right click and run "cmd.exe" "As Administrator".
3. A command window pops up.
4. Type "cd <installation folder of the QVCS –Enterprise client>"
5. Type "Notepad setEnv.cmd" and then edit the file and save it.
6. From the installation directory of the Qumasoft QVCS-Enterprise client run the batch file "gui.bat".
7. Add a server from the "Server menu" specifying the requested name, IP address and ports, log in and define a local workspace.

Qumasoft QVCS Pro 3.10.18
http://www.qumasoft.com/

To install Qumasoft QVCS-Pro run the installer.

- If your operating system is **Vista**, you must modify the installation directory from the default value “C:\Program Files\QVCSBin“ to “C:\QVCSBin”. This must be done as Vista does not let applications write to the C:\Program Files area.
- After installation is finished, launch the QVCS 3.10 client, create a new user and enable **Ide integration** by selecting the submenu “Ide Integration” in the Admin menu and adding QVCS as a Version Control Tool.
- Create a project and set a workspace.

Reliable Software Code Co-Op 5.1a
http://www.relisoft.com/co_op/index.htm

A standard installation will work correctly with Altova products.

Seapine Surround SCM Client 2009.0.0
http://www.seapine.com/surroundscm.html

A standard installation will work correctly with Altova products. After installation, a server connection must be established.

Serena Dimensions 10.1.3 for Win32 Client
http://www.serena.com/products/dimensions-cm/index.html

Supported Versions: Dimensions Express/CM 10.1.3 for Win32 Client

- Perform a “Typical” installation of the Serena Dimension client.
- Specify the WEB client hostname and port number as requested.

Sergey Antonov HgSCC 1.0.1 for Mercurial SCS
http://www.newsupaplex.pp.ru/hgscc_news_eng.html

A standard installation will work correctly with Altova products.

Softimage Alienbrain Essentials/Advanced Client 8.1.0.7300
http://www.alienbrain.com/

- Perform a “typical” installation of the Alienbrain Client Software, then install the Alienbrain Microsoft Visual Studio Integration. To work with Altova products you do not need to install Microsoft Visual Studio.
- The first time you try to open a project from VCS, or to add a project to VCS you will be asked to enter some user settings, e.g. to specify your server and choose the project database you want to connect to.

SourceGear Fortress 1.1.4 Client
http://www.sourcegear.com/fortress

A standard installation of SourceGear Fortress client will work with Altova products.

SourceGear SourceOffsite Client 4.2.0 (Windows)
http://www.sourcegear.com/sos/

A standard installation of SourceOffsite client will work with Altova products.

SourceGear Vault 4.1.4 Client
http://www.sourcegear.com/vault

A standard installation of SourceGear Vault client will work correctly with Altova products.

TamTam CVS SCC 1.2.40
http://www.daveswebsite.com/software/tamtam/

Requirements: CVSNT 2.5 (client) at http://www.cvsnt.org. A standard installation will work correctly with Altova products.

- To connect to the CVS repository you need to install CVSNT.
- In the Altova product open the "Source control" Advanced options and enter the path to the **cvs.exe** executable.

TamTam SVN SCC 1.2.24
http://www.daveswebsite.com/software/tamtamsvn/

Requirements: subversion command line client 1.5.4 at http://subversion.tigris.org . A standard installation will work correctly with Altova products.

- To connect to the SVN repository you need to install the subversion command line client and specify the path to the executable **svn.exe** in the Altova product Source control options.
- After starting XMLSpy, you must register the SCC provider.

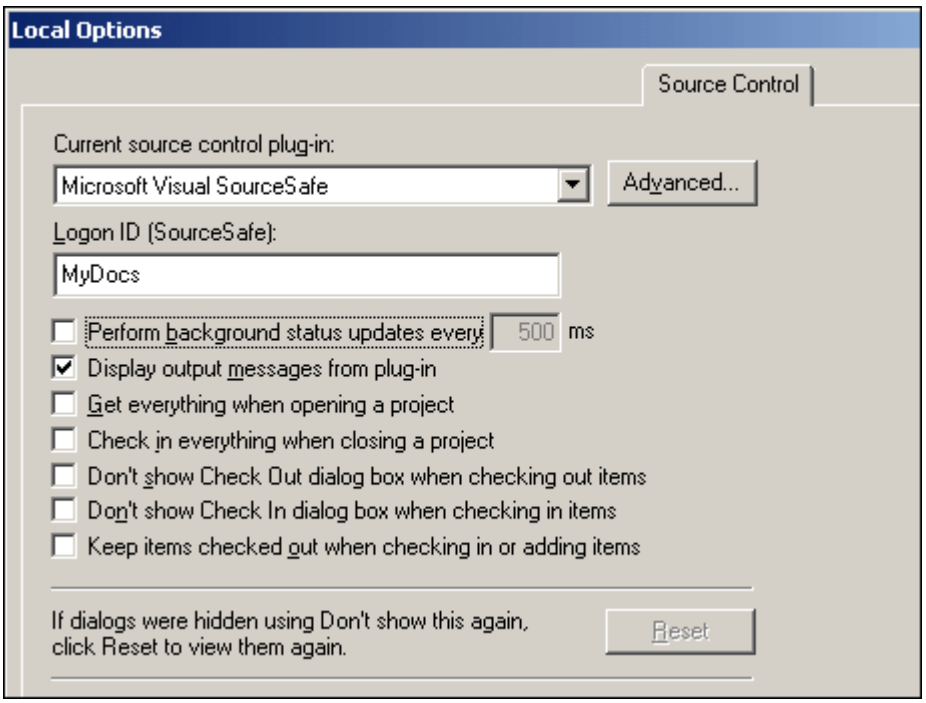
On a **Vista** machine the SCC registration could fail.

- If this is the case, use Windows explorer and browse to the directory that contains the Altova application executable.
- Right click and run the Altova executable "As Administrator".
  The SCC registration will now be successful.

15.3 SCSs and Altova DiffDog Differencing

You can configure certain Source Control Systems so that they use Altova DiffDog as their differencing tools. The systems that support this feature are listed below, together with the setup steps for each. In XMLSpy, you access the setup process via the Source Control tab of the Options dialog (**Tools | Options**, *screenshot below*).

When using a 64-bit version of XMLSpy with a 32-bit source control program, the "Perform background status updates every... ms" option (Tools | Options) is automatically **grayed-out** and cannot be selected!



The "Perform background status updates every xx ms" check box is unchecked per default, which means that status updates are not performed at all. Activate the check box and enter a value in the field, if you want to perform status updates every xx ms. For 64-bit versions using 32-bit source control plugins, this option has no effect.

In the Source Control tab, select the required Source Control System and then click the **Advanced** button. The dialog box that opens will be different for each Source Control System. For the setup process, note the following:

- If you have performed a standard installation of Altova DiffDog, the file path to the Altova DiffDog executable is:
  `c:\program files\altova\diffdog2012\DiffDog.exe`
  If Altova DiffDog is installed elsewhere on your system, insert the appropriate value when the filepath is required.

Aigenta Unified SCC 1.0.6
http://aigenta.com/products/UnifiedScc.aspx

The following steps will integrate Altova DiffDog into Aigenta Unified SCC:

1. Click the **Advanced** button of the Source Control tab.
2. Select the *Comparison and merging tab* and specify the full DiffDog filepath as comparison tool.

Borland StarTeam Cross-Platform Client 2008 R2
http://www.borland.com/us/products/starteam

The following steps integrate Altova DiffDog into Borland Star Team:
1. Use the StarTeam client personal options (**Tools | Personal options | File | Alternate applications**)
2. Compare utility: Enter the DiffDog full path.
3. Compare utility options: `$file1 $file2.`

ComponentSoftware CS-RCS (PRO) 5.1
http://www.componentsoftware.com/Products/RCS

The following steps will integrate Altova DiffDog into ComponentSoftware CS-RCS (Pro):
1. Go to the ComponentSoftware CS-RCS Properties.
2. In the *File Types* tab, choose a file extension and edit it.
3. Enter/select the value *Custom Tool* for the "Difference Analysis Tool", and browse to insert the DiffDog full path.

Dynamsoft SourceAnywhere for VSS 5.3.2 Client
http://www.dynamsoft.com/Products/SAW_Overview.aspx

The following steps will integrate Altova DiffDog into Dynamsoft SourceAnywhere for VSS:
1. Go to the Dynamic SourceAnywhere For VSS client Options.
2. Specify the DiffDog full path as External application for diff/merge, with the arguments: `%FIRST_FILE%" "%SECOND_FILE%.`

Warning: Do not perform these settings from the Altova product options, as there is no possibility of inserting the external application parameters.

Dynamsoft SourceAnywhere Hosted Client (22252)
http://www.dynamsoft.com/Products/SourceAnywhere-Hosting-Version-Control-Source-Control.aspx

Dynamsoft SourceAnywhere Standalone 2.2 Client
http://www.dynamsoft.com/Products/SourceAnywhere-SourceSafe-VSS.aspx

The following steps will integrate Altova DiffDog into Dynamsoft SourceAnywhere Hosted and Dynamsoft SourceAnywhere Standalone:
1. Click the **Advanced** button of the Source Control tab.
2. Specify the DiffDog full path as External program application for diff/merge with arguments `%FIRST_FILE%" "%SECOND_FILE%.`

Jalindi Igloo 1.0.3
http://www.jalindi.com/igloo/

The following steps will integrate Altova DiffDog into Jalindi Igloo:
1. Start the **Show differences** command in XMLSpy.

2. Open the **Show Differences or Merge Files** panel.
3. Set the *External Diff Command* by entering the DiffDog full file path as the External Diff EXE path.

Warning: When using the default diff editor CvsConflictEditor, you might have problems comparing files with excessively long lines. We recommended that you "pretty print" all files (particularly `.ump` files) before storing them in the repository. This limits the line length, thus avoiding problems with the CVSConflictEditor.

March-Hare CVS Suite Client 2008 (3321)
http://www.march-hare.com/cvsnt/en.asp

The following steps will integrate Altova DiffDog into Marc-Hare CVS Suite 2008:
1. Go to the TortoiseCVS Preferences and choose the Tools tab.
2. Specify the DiffDog full path as Diff application, and the parameters `%1 %2` as two-way differencing parameters.

Mercurial
see under Sergey Antonov HgScc 1.0.1

Microsoft SourceSafe 2005 with CTP
http://msdn.microsoft.com/en-us/vstudio/aa718670.aspx

The following steps will integrate Altova DiffDog into Microsoft SourceSafe 2005:
1. Click the **Advanced** button of the Source Control tab.
2. Click the Custom Editors tab and enter `C:\Program Files\Altova\DiffDog2012\DiffDogexe %1 %2` in the Command Line field.
3. In the Operation combo box, select *File Difference*.

Microsoft Team Foundation Server 2008 MSSCCI Provider
http://www.microsoft.com/downloads

Requirements: Visual Studio 2008 Team Explorer *or* Visual Studio 2008 *with* Team Explorer 2008. The following steps will integrate Altova DiffDog into Microsoft Visual Studio Team System 2008 Team Foundation Server MSSCCI Provider:
1. In the manager (Visual Studio 2008 Team Explorer or Visual Studio 2008) options, configure Altova DiffDog as new user tool
2. Choose Visual Studio Team Foundation Server source as the plug-in.
3. Configure a new user tool specifying: (i) the extensions of the files you wish to compare with DiffDog; and (ii) the DiffDog full file path.

Perforce P4V 2008.1
http://www.perforce.com/

The following steps will integrate Altova DiffDog into Perforce 2008:
1. Click the **Advanced** button of the Source Control tab.
2. Choose the tab Diff in the Preferences panel.
3. Check as default differencing application the field “Other application” and enter the DiffDog full file path.

PushOK CVS SCC NT 2.1.2.5,
PushOK SVN SCC 1.5.1.1
PushOK CVS SCC x64 version 2.2.0.4
PushOK SVN SCC x64 version 1.6.3.1
http://www.pushok.com/soft_cvs.php

The following steps will integrate Altova DiffDog into PushOK CVS NT and PushOK SVN SCC:

1. Click the **Advanced** button of the Source Control tab.
2. Choose the CVS Executables tab.
3. Select the value *External merge/compare tool* into the Diff/Merge field.
4. Insert the DiffDog full file path.
5. Edit the value `%first %second` into the "2 way diff cmd" field.

Warning: When using the default differencing editor CvsConflictEditor, you might have problems comparing files with excessively long lines. We recommended that you "pretty print" all files (particularly `.ump` files) before storing them in the repository. This limits the line length, thus avoiding problems with the CVSConflictEditor.

QSC Team Coherence Client 7.2.1.35
http://www.teamcoherence.com

The following steps will integrate Altova DiffDog into Team Coherence Version Manager:

1. Go to Team Coherence client Options “Difference Viewer”.
2. Specify as the Default Difference Viewer application, the DiffDog full file path.
3. Specify as parameters: `"$LF $RF"`.

Warning: It is possible that the new settings will only be applied after a Windows log off.

Qumasoft QVCS Enterprise 2.1.18
http://www.qumasoft.com/

The following steps will integrate Altova DiffDog into Qumasoft QVCS-Enterprise:

1. Add the Qumasoft QVCS-Enterprise installation directory to the Path environment variable.
2. Use the QVCS Enterprise User Preferences.
3. In Utilities, enable the checkbox, Use External Visual Compare Tool.
4. Specify as Visual Compare Command Line:
   `<DiffDog full path> “file1Name file2Name”`

Qumasoft QVCS Pro 3.10.18
http://www.qumasoft.com/

The following steps will integrate Altova DiffDog into Qumasoft QVCS-Pro:

1. Use the QVCS 3.10 client preferences.
2. In Utilities, specify the DiffDog full path as the visual compare utility with parameters “%s %s “.

Seapine Surround SCM Client 2009.0.0
http://www.seapine.com/surroundscm.html

The following steps will integrate Altova DiffDog into Seapine Surround SCM:
1. Go to the Surround SCM client user options (Diff/Merge) section.
2. Edit the Diff/Merge settings to compare with a selected application.
3. Enter the DiffDog full path with the parameters “%1” “%2”.
4. Restart the Surround SCM client and the Altova products.

Sergey Antonov HgSCC 1.0.1
http://www.newsupaplex.pp.ru/hgscc_news_eng.html

The following steps will integrate Altova DiffDog into Mercurial:
1. Click the **Advanced** button of the Source Control tab.
2. Select differencing tool “custom”, and specify the DiffDog full path.

SourceGear Fortress 1.1.4 Client
http://www.sourcegear.com/fortress

SourceGear Vault 4.1.4 Client
http://www.sourcegear.com/vault

The following steps will integrate Altova DiffDog into SourceGear Fortress and SourceGear Vault:
1. Click the **Advanced** button of the Source Control tab.
2. Set the Diff/Merge Vault options by specifying as the differencing program the DiffDog full path and using the Arguments:
   /ro1 /ro2 /title1:"%LEFT_LABEL%" /title2:"%RIGHT_LABEL%" "%LEFT_PATH%" "%RIGHT_PATH%"

SourceGear SourceOffsite Client 4.2.0 (Windows)
http://www.sourcegear.com/sos/

The following steps will integrate DiffDog into SourceGear SourceOffsite:
1. Click the **Advanced** button of the Source Control tab.
2. Specify as “External Programs”, “Application for comparing files” the DiffDog full path.

TamTam CVS SCC 1.2.40,
TamTam SVN SCC 1.2.24
http://www.daveswebsite.com/software/tamtam/

The following steps will integrate Altova DiffDog into TamTam CVS SCC and TamTam SVN SCC:
1. Click the **Advanced** button of the Source Control tab.
2. Specify the DiffDog full file path as the external tool for Diff/Merge and Conflict.

Warning: The default differencing editor CvsConflictEditor, has problems comparing files with excessively long lines. We recommended that you "pretty print" all files (particularly `.ump` files) before storing them in the repository. This limits the line length, avoiding problems with the CVSConflictEditor.

16 XMLSpy in Visual Studio

XMLSpy can be integrated into the Microsoft Visual Studio IDE versions 2005, 2008, and 2010. This unifies the best of both worlds, integrating advanced XML editing capabilities with the advanced development environment of Visual Studio.

In this section, we describe:

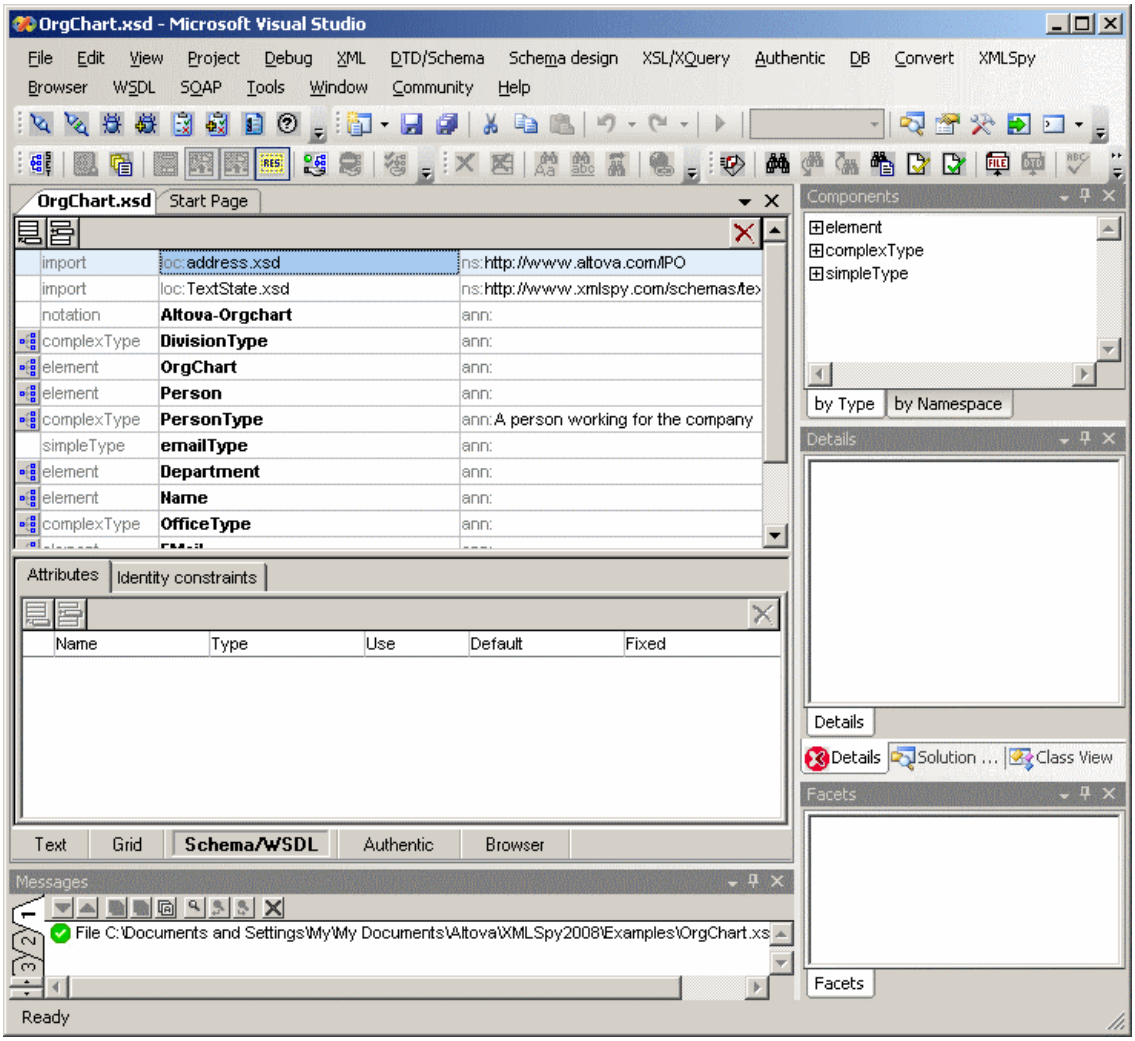
- The broad installation process and the integration of the XMLSpy plugin in Visual Studio.
- Differences between the Visual Studio version and the standalone version.
- XMLSpy's Debuggers in Visual Studio.
- Known issues.

Note: The screenshots in this section are of Visual Studio version 2005. If you are using another version, there could be differences between the screenshots and your version.

16.1 Installing the XMLSpy Plugin

To install the XMLSpy Plugin for Visual Studio, you need to do the following:

- Install Microsoft Visual Studio
- Install XMLSpy (Enterprise or Professional Edition)
- Download and run the XMLSpy integration package for Microsoft Visual Studio. This package is available on the XMLSpy (Enterprise and Professional Editions) download page at www.altova.com. (**Please note:** You must use the integration package corresponding to your XMLSpy version (current version is 2012).)



Once the integration package has been installed, you will be able to use XMLSpy in the Visual Studio environment.

How to enable the plug-in
If the plug-in was not automatically enabled during the installation process, do the following:

1. Navigate to the directory where the Visual Studio IDE executable was installed, for example in `C:\Program Files\MS Visual Studio\Common7\IDE`
2. Enter the following command on the command-line `devenv.exe /setup`.
3. Wait for the process to terminate normally before starting to use the application within Visual Studio.

Note: The screenshots in this section are of Visual Studio version 2005. If you are using another version, there could be differences between the screenshots and your version.

16.2 Differences with XMLSpy Standalone

This section lists the ways in which the Visual Studio versions differ from the standalone versions of XMLSpy. The listing starts with features that are unsupported in the Visual Studio version, and continues with a listing of other ways in which the Visual Studio version differs from the standalone version.

Unsupported features in Visual Studio
The following XMLSpy features are not available in Visual Studio:

- The Scripting environment (**Tools | XMLSpy Options | Scripting**) is currently not supported.
- Separate browser window (an option in the **Tools | Options | View** tab) is not supported. This means the the Text View and Browser View are always in the same window.
- The text state icons of Authentic View are not supported.
- All Source Control functionality.
- All comparison functionality (available in the **Tools** menu of the standalone version).

Additional XMLSpy menus in Visual Studio
The following commands are specific to XMLSpy in Visual Studio:

- **View | XMLSpy Tool Windows**
- **View | XMLSpy View**
- **XMLSpy** (includes Global Resources menu items)
- **Tools** | **XMLSPY Options**

Entry helpers (Tool windows in Visual Studio)
The entry helpers of XMLSpy are available as Tool windows in Visual Studio. The following points about them should be noted. (For a description of entry helpers and the XMLSpy GUI, see the section, Introduction.)

- You can drag entry helper windows to any position in the development environment.
- Right-clicking an entry helper tab allows you to further customize your interface. Entry helper configuration options are: dockable, hide, floating, and auto-hide.

Same functionality, different command
Some functionality of XMLSpy is available in Visual Studio under differently named commands. These are:

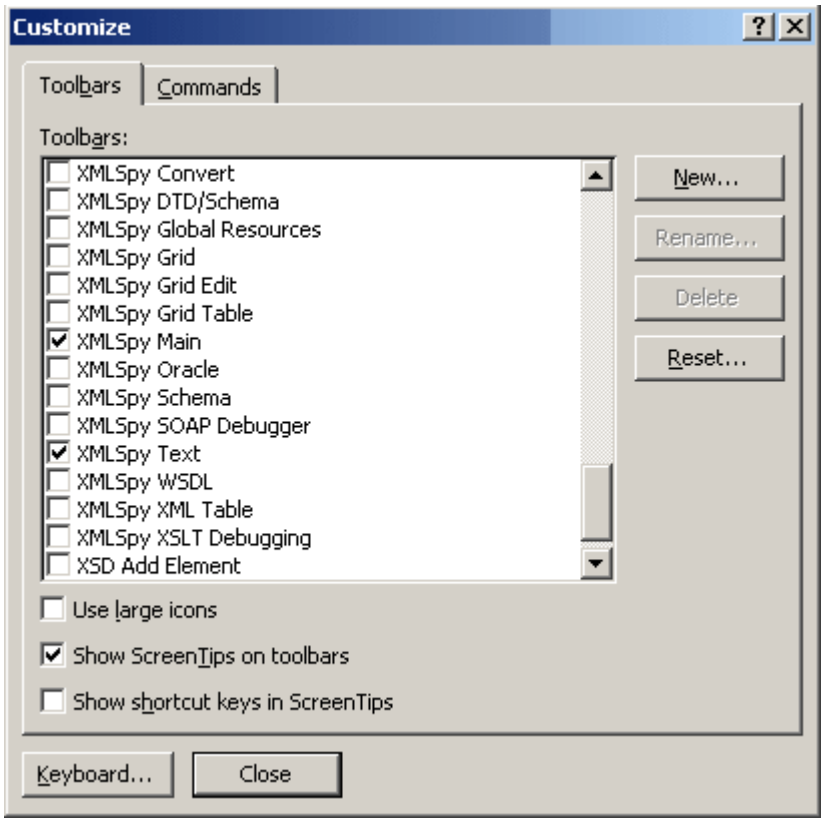
XMLSpy	*Visual Studio*	*Functionality*
File | Open | Switch to URL	File | Open | Website	Opens file from URL
Switch to URL | Save	File | Save XMLSpy File to URL	Saves file to URL

XMLSpy commands as Visual Studio commands
Some XMLSpy commands are present as Visual Studio commands in the Visual Studio GUI. These are:

- ***Undo, Redo:*** These Visual Studio commands affect all actions in the Visual Studio

development environment.

- ***Projects:*** XMLSpy projects are handled as Visual Studio projects.
- ***Customize Toolbars, Customize Commands:*** The Toolbars and Commands tabs (*screenshot below*) in the Customize dialog (**Tools | Customize**) contain both visual Studio commands as well as XMLSpy commands.



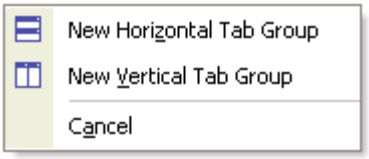
- ***Views:*** In the **View** menu, the two commands, **XMLSpy Tool Windows** and **XMLSpy View**, contain options to toggle on entry helper windows and other sidebars, switch between the editing views, and toggle certain editing guides on and off.
- ***XMLSpy Help:*** This XMLSpy menu appears as a submenu in Visual Studio's **Help** menu.

Note: The screenshots in this section are of Visual Studio version 2005. If you are using another version, there could be differences between the screenshots and your version.

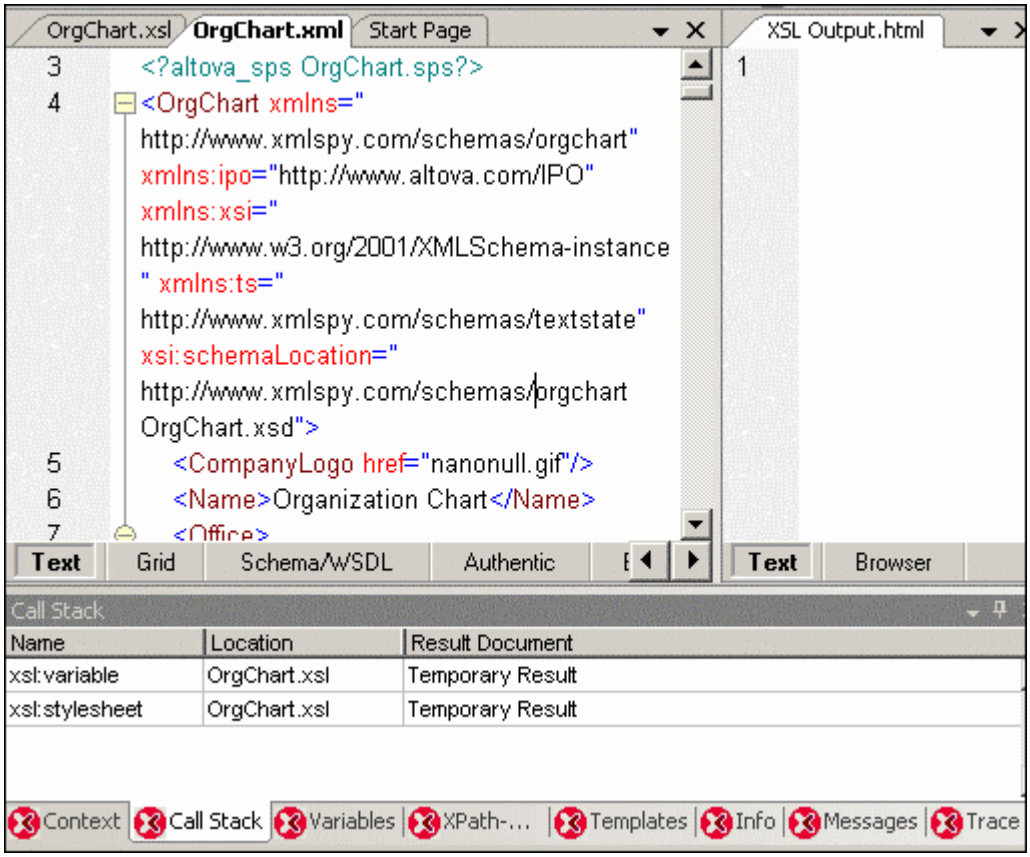
16.3 XMLSpy's Debuggers in Visual Studio

XMLSpy contains an XSLT/XQuery Debugger (*Enterprise and Professional editions*) and a SOAP Debugger (*Enterprise edition*). A debugger process involves the display of more than one file (for example, XML, XSLT, and XSLT output files), all of which are displayed in Visual Stuio as a single tabbed group. To make the debugging easier to follow, you can create one or more additional tab groups in Visual Studio. Do this as follows:

1. Click the tab you wish to separate from the single tabbed group, then drag and drop it somewhere in the currently active tab. This opens a pop-up menu which allows you to define the type of tab you want to create.



2. Select **New Vertical Tab Group**. This creates a new tab containing just the selected tab (*screenshot below*).



Note: The screenshots in this section are of Visual Studio version 2005. If you are using another version, there could be differences between the screenshots and your version.

16.4 Known Issues

This section describes known issues relating to the different editions of MS Visual Studio and XMLSpy.

17 XMLSpy in Eclipse

Eclipse 3.x is an open source framework that integrates different types of applications delivered in the form of plugins.

The XMLSpy Plugin for Eclipse enables you to access the functionality of XMLSpy from within the Eclipse 3.5 / 3.6 / 3.7 Platform. It is available on Windows platforms. In this section, we describe how to install the XMLSpy Plugin for Eclipse and how to set up the XMLSpy perspective and XMLSpy Debugger perspectives. After you have done this, components of the XMLSpy GUI and XMLSpy menu commands will be available within the Eclipse GUI.

Note:

- Source Control functionality, which is available in the standalone version, is not supported in the Eclipse version.

17.1 Installing the XMLSpy Plugin for Eclipse

Before installing the XMLSpy Plugin for Eclipse, ensure that the following are already installed:

- XMLSpy Enterprise or Professional Edition.
- Java Runtime Environment (JRE) version 1.5 or higher, which is required for Eclipse. JRE5 is recommended. See the Eclipse website for more information.
- Eclipse Platform 3.5 / 3.6 / 3.7.

After these have been installed, you can install the XMLSpy Plugin for Eclipse, which is contained in the XMLSpy Integration Package (*see below*). (**Please note:** You must use the integration package corresponding to your XMLSpy version (current version is 2012).)

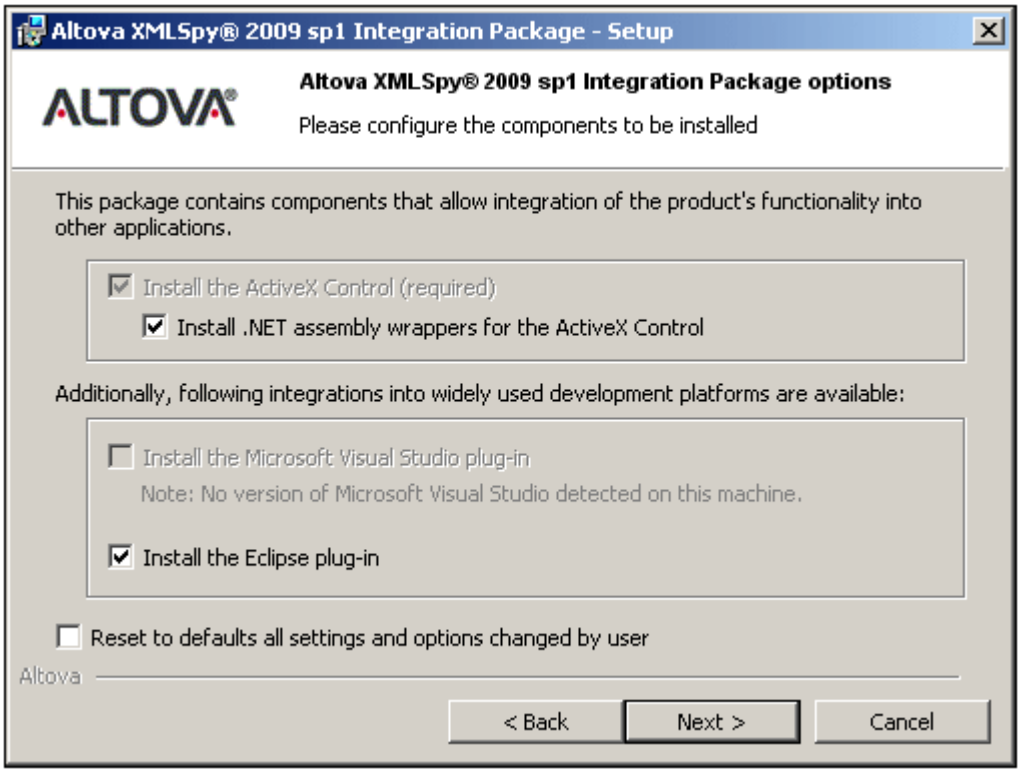
Note on JRE
If, on opening a document in Eclipse, you receive the following error message:

```
java.lang.UnsupportedClassVersionError: com/altova/....
(Unsupported major.minor version 49.0)
```

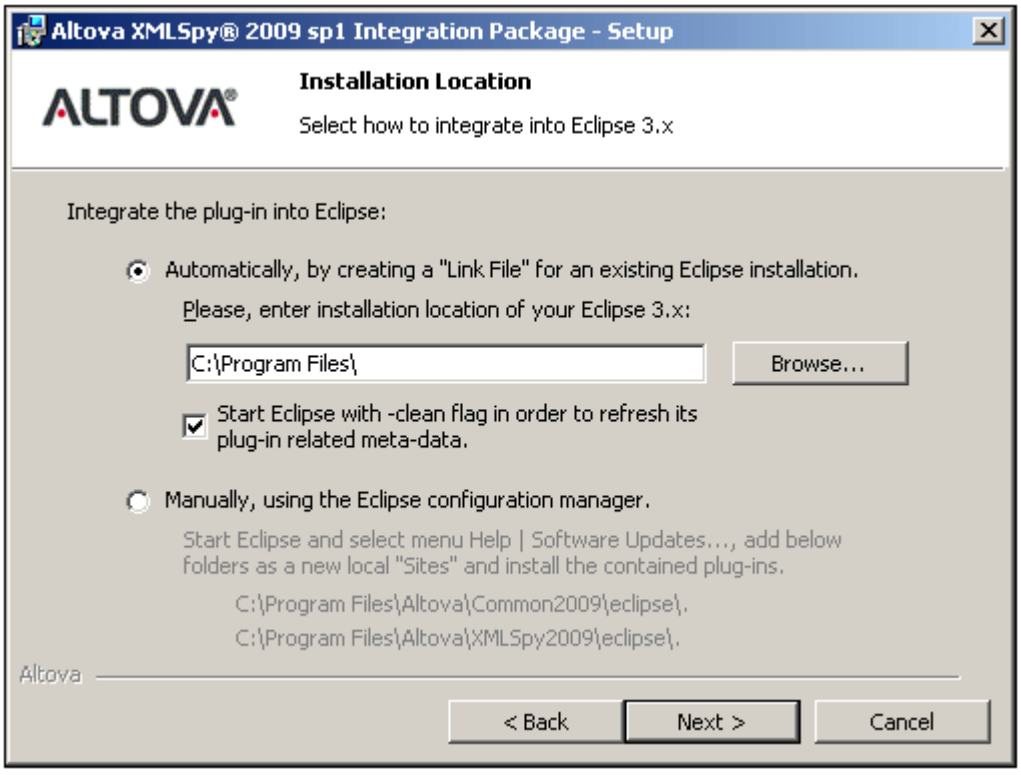
it indicates that Eclipse is using an older JRE. Since Eclipse uses the `PATH` environment variable to find a `javaw.exe`, the problem can be solved by fixing the `PATH` environment variable so that a newer version is found first. Alternatively, start Eclipse with the command line parameter `-vm`, supplying the path to a `javaw.exe` of version 1.5 or higher.

XMLSpy Integration Package
The XMLSpy Plugin for Eclipse is contained in the XMLSpy Integration Package and is installed during the installation of the XMLSpy Integration Package. Install as follows:

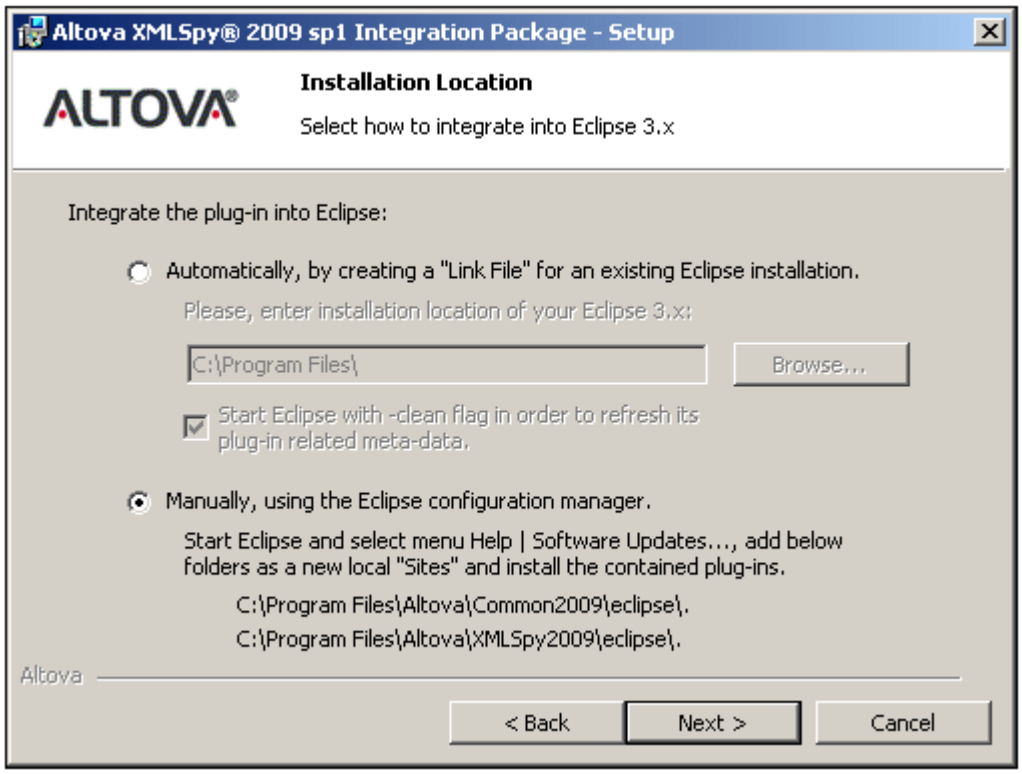
1. Ensure that XMLSpy, JRE, and Eclipse are already installed (*see above*).
2. From the Components Download page of the Altova website, download and install the XMLSpy Integration Package. There are two important steps during the installation; these are described in Steps 3 and 4 below.
3. During installation of the XMLSpy Integration Package, a dialog will appear asking whether you wish to install the XMLSpy Plugin for Eclipse (*see screenshot below*). Check the option and then click **Next**.



4. In the next dialog ((Eclipse) Installation Location, *screenshot below*), you can choose whether the Install Wizard should integrate the XMLSpy Plugin into Eclipse during the installation (the "Automatic" option) or whether you will integrate the XMLSpy Plugin into Eclipse (via the Eclipse GUI) at a later time.



We recommend that you let the Installation Wizard do the integration. Do this by checking the Automatic option and then browsing for the folder in which the Eclipse executable (`eclipse.exe`) is located. Click **Next** when done. If you choose to manually integrate XMLSpy Plugin for Eclipse in Eclipse, select the Manually option (*screenshot below*). See the section below for instructions about how to manually integrate from within Eclipse.

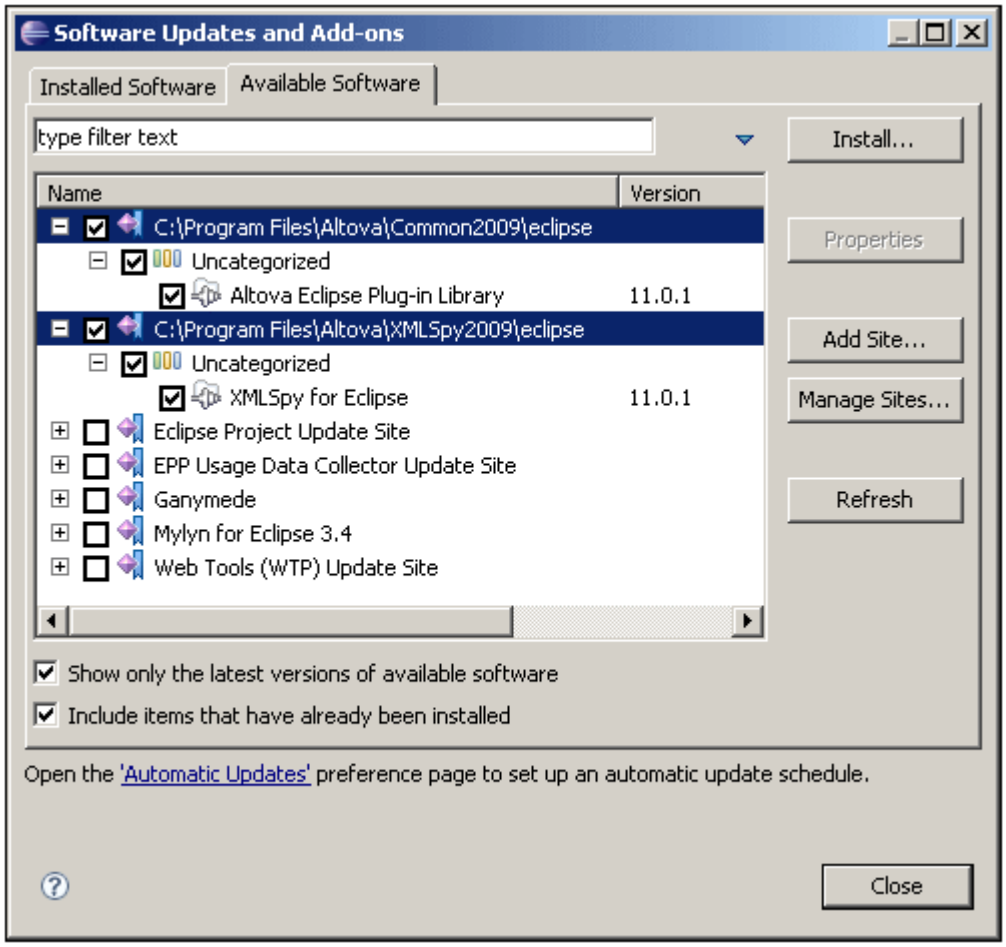


5. Complete the installation. If you set up automatic integration, the XMLSpy Plugin for Eclipse will be integrated in Eclipse and will be available when you start Eclipse the next time. Otherwise, you will have to manually integrate the plug-in (*see below*).

Manually integrating the XMLSpy plug-in in Eclipse

To manually integrate the XMLSpy Plugin for Eclipse, do the following:

1. In Eclipse, click the menu command **Help | Install New Software**.
2. In the Software Updates and Add-Ons dialog that pops up, click the Available Updates tab (*screenshot below*).
3. Click the **Add Site** button.
4. In the Add Site dialog that pops up, click the **Local** button.
5. Browse for the folder `c:\Program Files\Altova\Common2012\eclipse`, select it, and click **OK**.
6. Repeat Steps 3 to 5, this time selecting the folder `c:\Program Files\Altova\XMLSpy 2012\eclipse`.
7. The two added folders are displayed in the Available Software tab (*screenshot below*). Check the top-level check box of each folder to select the plug-ins, and click the **Install** button.



8. An Installation review dialog box allowing you to confirm that the checked items will be installed opens.
9. Click **Next** to continue.The Review License dialog opens.
10. Read the license terms and, if you accept them, click *I accept the terms...*. Then click **Finish** to complete the installation.

If there are problems with the plug-in (missing icons, for example), start Eclipse with the `-clean` flag.

Currently installed version
To check the currently installed version of the XMLSpy Plugin for Eclipse, select the Eclipse menu option **Help | About Eclipse Platform**. Then select the XMLSpy icon.

17.2 XMLSpy Entry Points in Eclipse

The following entry points in Eclipse can be used to access XMLSpy functionality:

- XMLSpy Perspective, which provides XMLSpy's GUI features within the Eclipse GUI.
- XMLSpy toolbar buttons, which provides access to XMLSpy Help and the Create New Document functionality.

XMLSpy Perspective
In Eclipse, a perspective is a configured GUI view with attendant functionality. When the XMLSpy Plugin for Eclipse is integrated in Eclipse, a default XMLSpy perspective is automatically created. This perspective is a GUI that includes XMLSpy's GUI elements: its editing views, menus, entry helpers, and other sidebars.

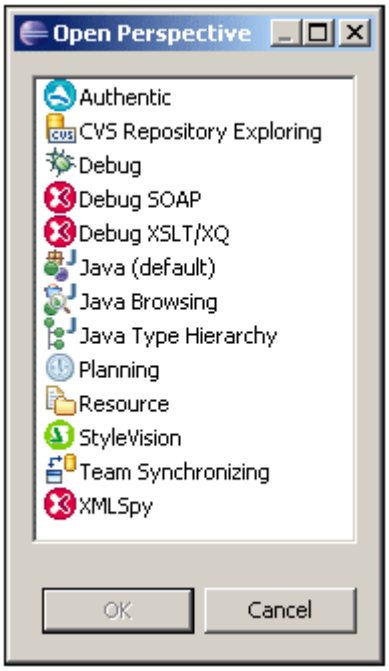
When a file having a filetype associated with XMLSpy is opened (. `xml`, for example), this file can be edited in the XMLSpy perspective. Similarly, a file of another filetype can be opened in another perspective in Eclipse. Additionally, for any active file, you can switch the perspective, thus allowing you to edit or process that file in another environment. There are therefore two main advantage of perspectives:

1. Being able to quickly change the working environment of the active file, and
2. Being able to switch between files without having to open a new development environment (the associated environment is available in a perspective)

Working with the XMLSpy perspective involves the following:

- Switching to the XMLSpy perspective.
- Setting preferences for the XMLSpy perspective.
- Customizing the XMLSpy perspective.

Switching to the XMLSpy perspective
In Eclipse, select the command **Window | Open Perspective | Other**. In the dialog that pops up (*screenshot below*), select **XMLSpy**, and click **OK**.



The empty window or the active document will now have the XMLSpy perspective. This is how the user switches the perspective via the menu. To access a perspective faster from another perspective, the required perspective can be listed in the **Open Perspective** submenu, above the **Other** item; this setting is in the customization dialog.

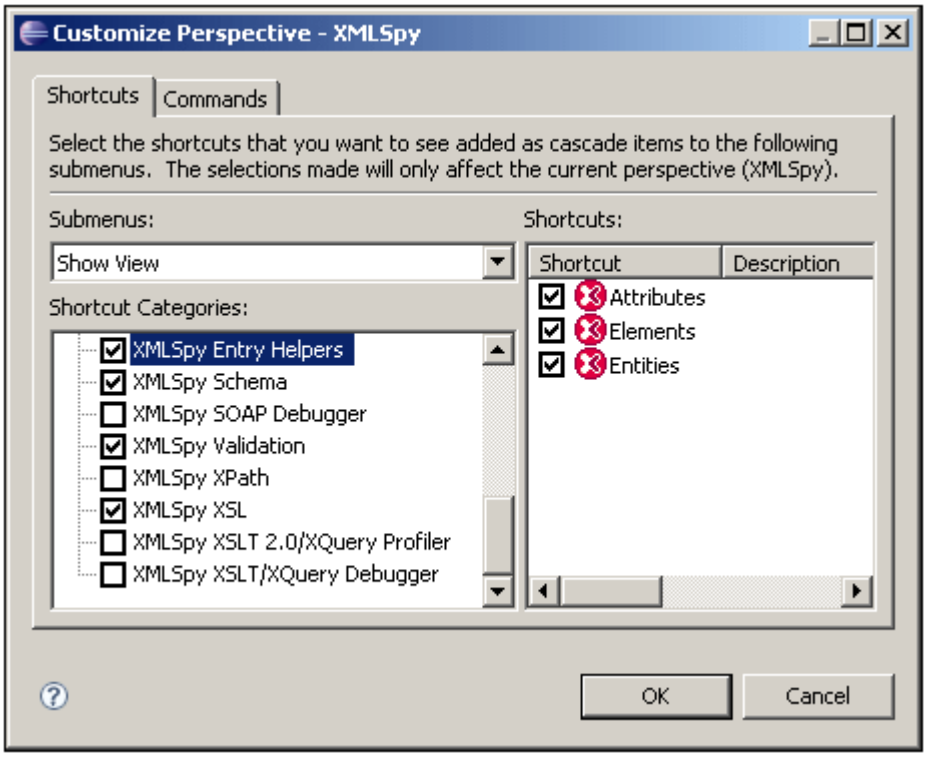
Perspectives can also be switched when a file is opened or made active. The perspective of the application associated with a file's filetype will be automatically opened when that file is opened for the first time. Before the perspective is switched, a dialog appears asking whether you wish to have the default perspective automatically associated with this filetype. Check the *Do Not Ask Again* option if you wish to associate the perspective with the filetype without having to be prompted each time a file of this filetype is opened, and then click **OK**.

Setting preferences for the XMLSpy perspective

The preferences of a perspective include: (i) a setting to automatically change the perspective when a file of an associated filetype is opened (*see above*), and (ii) options for including or excluding individual XMLSpy toolbars. To access the Preferences dialog, select the command **Window | Preferences**. In the list of perspectives in the left pane, select XMLSpy, then select the required preferences. Finish by clicking **OK**.

Customizing the XMLSpy perspective

The customization options enable you to determine what shortcuts and commands are included in the perspective. To access the Customize Perspective dialog of a perspective (*screenshot below shows dialog for the XMLSpy perspective*), make the perspective active (in this case the XMLSpy perspective), and select the command **Window | Customize Perspective**.



In the Shortcuts tab of the Customize Perspective dialog, you can set shortcuts for submenus. Select the required submenu in the Submenus combo box. Then select a shortcut category, and check the shortcuts you wish to include for the perspective.

In the Commands tab, you can add command groups. To display the commands in a command group, select the required command group from among the available command groups (displayed in the Command Groups pane). The commands in this group are displayed in a tree in the right-hand side pane, ordered hierarchically in the menu in which it will appear. If you wish to include the command group, check its check box.

Click **OK** to complete the customization and for the changes to take effect.

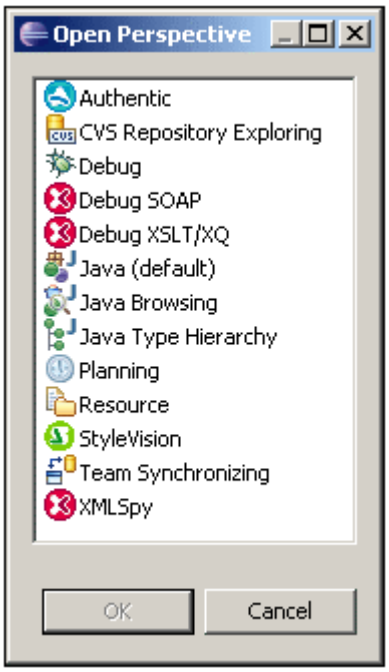
XMLSpy toolbar buttons
Two XMLSpy-related buttons are created automatically in the toolbar (*screenshot below*).

These are for: (i) opening the XMLSpy Help, and (ii) creating new XMLSpy documents .

17.3 XMLSpy's Debugger Perspectives

There are two debuggers in the Enterprise edition of XMLSpy (XSLT/XQuery and SOAP), and one debugger in the Professional edition of XMLSpy (XSLT/XQuery). Perspectives for these debuggers are available in Eclipse according to the XMLSpy edition that is currently installed.

To switch to a debugger perspective, select the command **Window | Open Perspective | Other**. In the dialog that pops up (*screenshot below*), select the debugger (for example, Debug XSLT/XQ), and click **OK**.



The empty window or the active document will now have the perspective of the selected debugger. This is how the user switches the perspective via the menu. To access a perspective faster from another perspective, the required perspective can be listed in the **Open Perspective** submenu, above the **Other** item; this setting is in the customization dialog.

For a description of how to use the debuggers, see the respective sections in this documentation: XSLT and XQuery, and WSDL and SOAP.

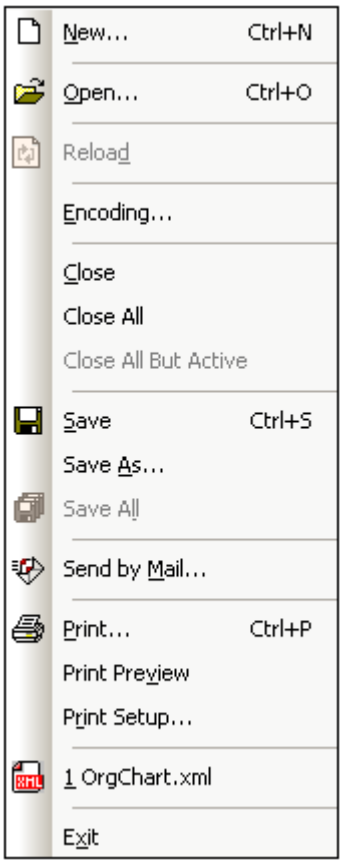
18 User Reference

The **User Reference** section contains a complete description of all XMLSpy menu commands and explains their use in general. We have tried to be comprehensive. If, however, you have questions which are not covered in the User Reference or other parts of this documentation, please look up the FAQs and Discussion Forums on the Altova website. If you cannot find a suitable answer at these locations, please do not hesitate to contact the Altova Support Center.

Standard Windows commands, such as (**Open**, **Save**, **Cut**, **Copy** and **Paste**) are in the File and Edit menus. These menus additionally contain XML- and Internet-related commands.

18.1 File Menu

The **File** menu contains commands relevant to manipulating files, in the order common to most Windows software products.

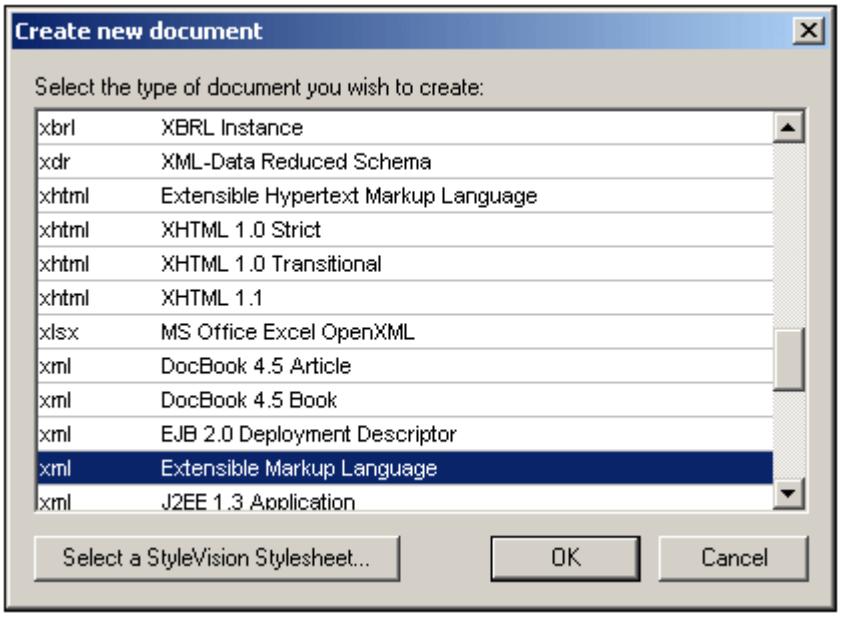


In addition to the standard New, Open, Save, Print, Print Setup, and Exit commands, XMLSpy offers a range of XML- and application-specific commands.

18.1.1 New

Ctrl+N

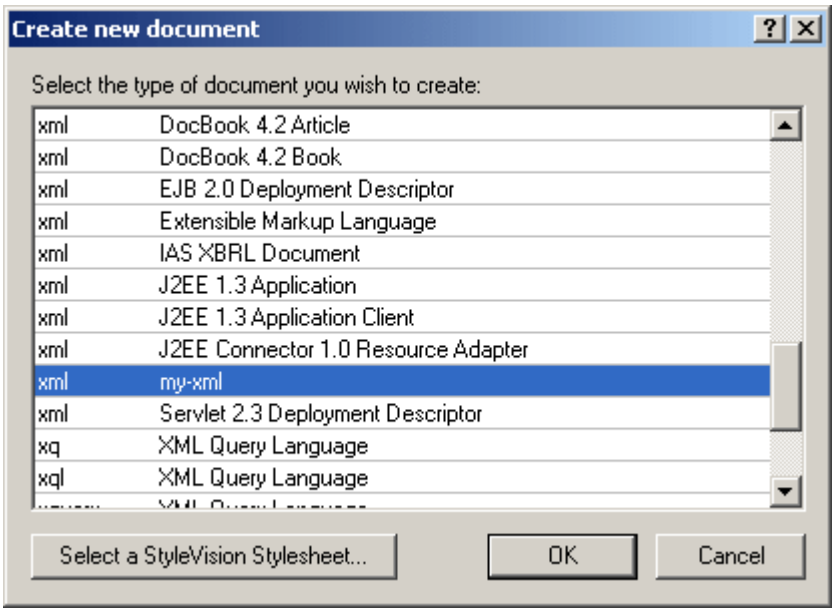
The **New** command is used to create a new document. Clicking **New** opens the Create New Document dialog, in which you can select the type of document you wish to create. If the document type you wish to create is not listed, select XML and change the file extension when you save the file. Note that you can add new file types to the list in this dialog using the Tools | Options | File types tab.



Creating templates for new documents
You can create multiple templates for various file types. These templates can then be opened directly from the Create New Document dialog and edited. To create your own template so that it appears in the list of documents in the Create New Document dialog, you first create the template document and then save it to the folder that contains all the templates.

Do the following:

1. Open the **XMLSpy\Template** folder using Windows Explorer or your preferred navigation tool, and select a rudimentary template file from among the files named **new.xxx** (where .xxx is a file extension, such as .xml and .xslt).
2. Open the file in XMLSpy, and modify the file as required. This file will be the template file.
3. When you are done, select **File | Save as...** to save the file back to the \Template folder with a suitable name, say my-xml.xml. You now have a template called my-xml, which will appear in the list of files in the Create New Document dialog.

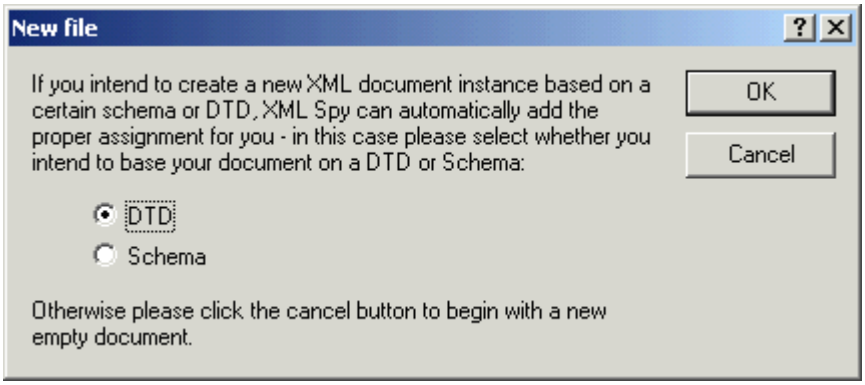


4. To open the template, select **File | New**, and then the template (`my-xml`, in this case).

Please note: To delete a template, delete the template file from the template folder.

Assigning a DTD/XML Schema to a new XML document
When you create a new document of a certain type that is based on a standard schema (DTD or XML Schema), the document is automatically opened with the correct DTD or XML Schema association. For example, an XHTML file will be opened with the DTD `http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd` associated with it. And an XML Schema (`.xsd`) file is associated with the `http://www.w3.org/2001/XMLSchema` schema document.

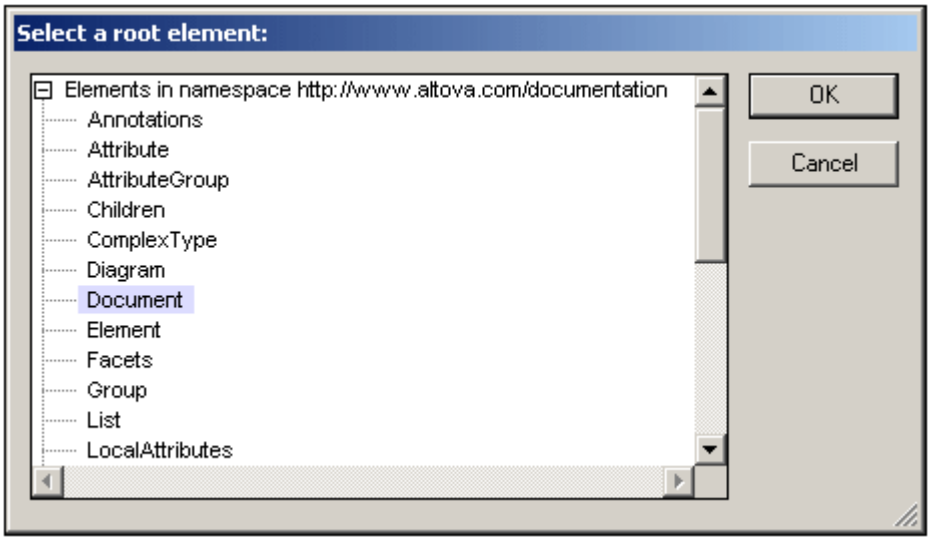
If you are creating a new file for which the schema is not known (for example, an XML file), then you are prompted to associate a schema (DTD or XML Schema) with the document that is to be created.



If you choose to associate a DTD or XML Schema with your document, clicking **OK** in the New File dialog enables you to browse for the schema. Clicking **Cancel** in this dialog will create a new file that is not associated with any schema.

Specifying the document element of a new XML document

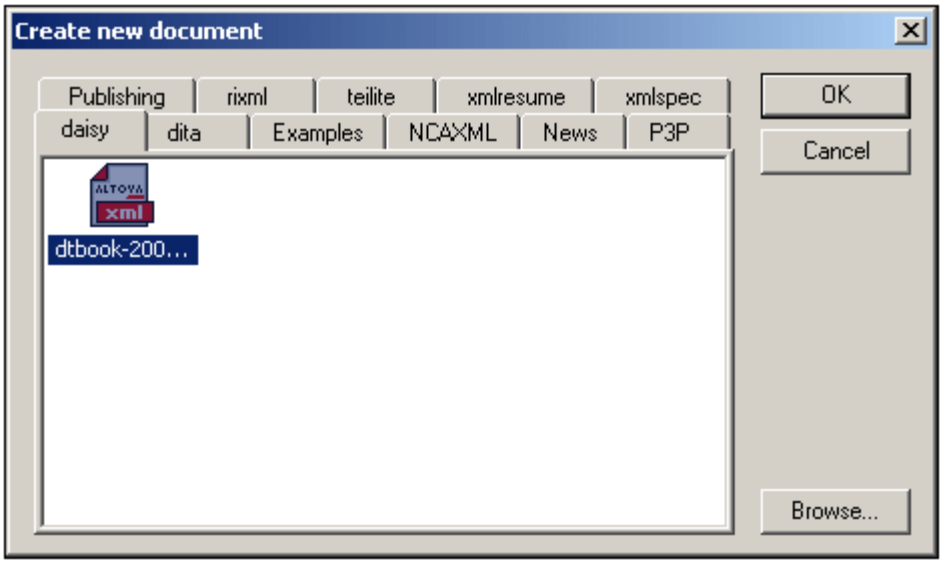
If you select an XML Schema, there can be more than one global element in it, all of which are potential document (or root) elements. You can select which of these is to be the root element of the XML document in the Select a Root Element dialog, which pops up if you select Schema in the New File dialog and if the XML Schema has more than one global element.



The new XML document is created with this element as its document element.

Assigning a StyleVision Power Stylesheet when creating a new document

When a new XML document is created, you can associate a StyleVision Power Stylesheet (`.sps` file) to view the document in Authentic View. In the Create New Document dialog (*see screenshot above*), when you click the **Select StyleVision Stylesheet**, the Create New Document dialog (*shown below*) appears.



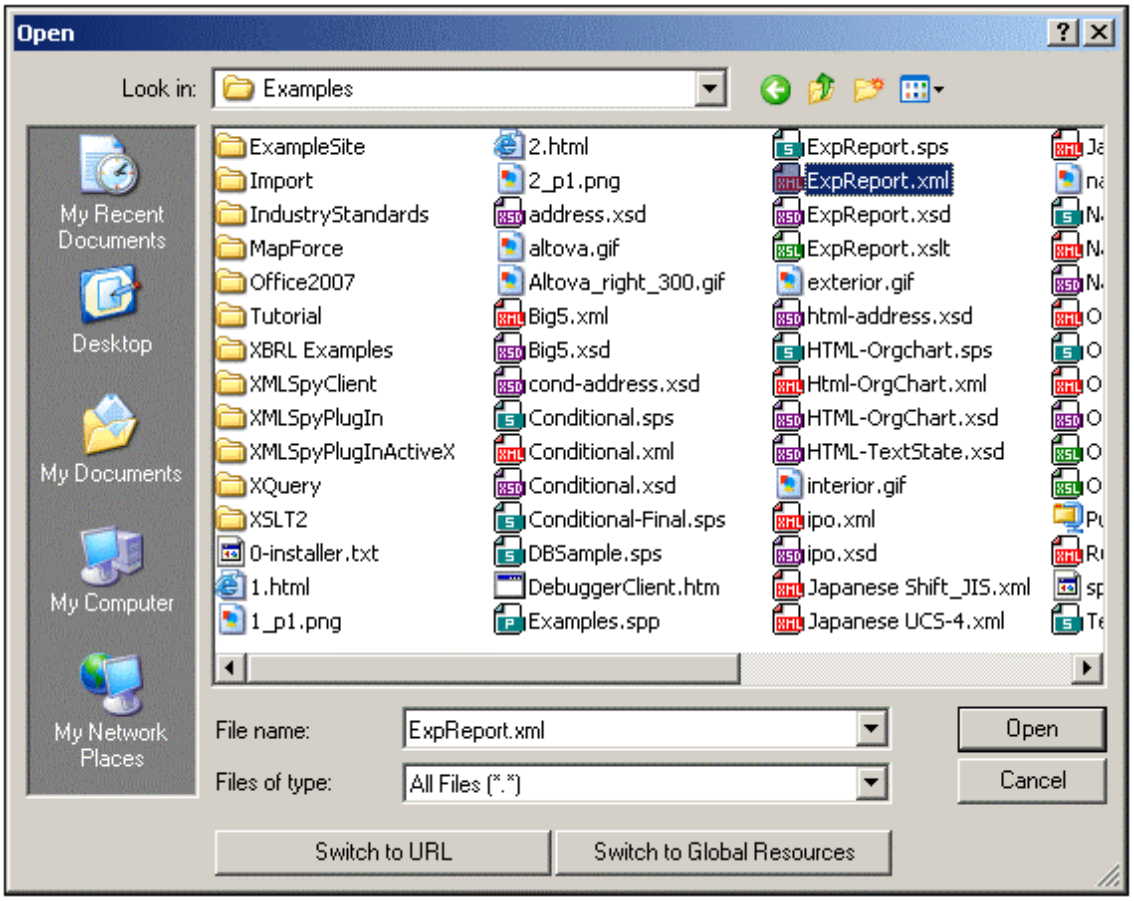
You can browse for the required StyleVision Power Stylesheet in the folder tabs displayed in the New dialog. Alternatively, you can click the **Browse** button to navigate for and select the StyleVision Power Stylesheet. The tabs that appear in the New dialog correspond to folders in the `sps/Template` folder of your application folder.

18.1.2 Open

Ctrl+O

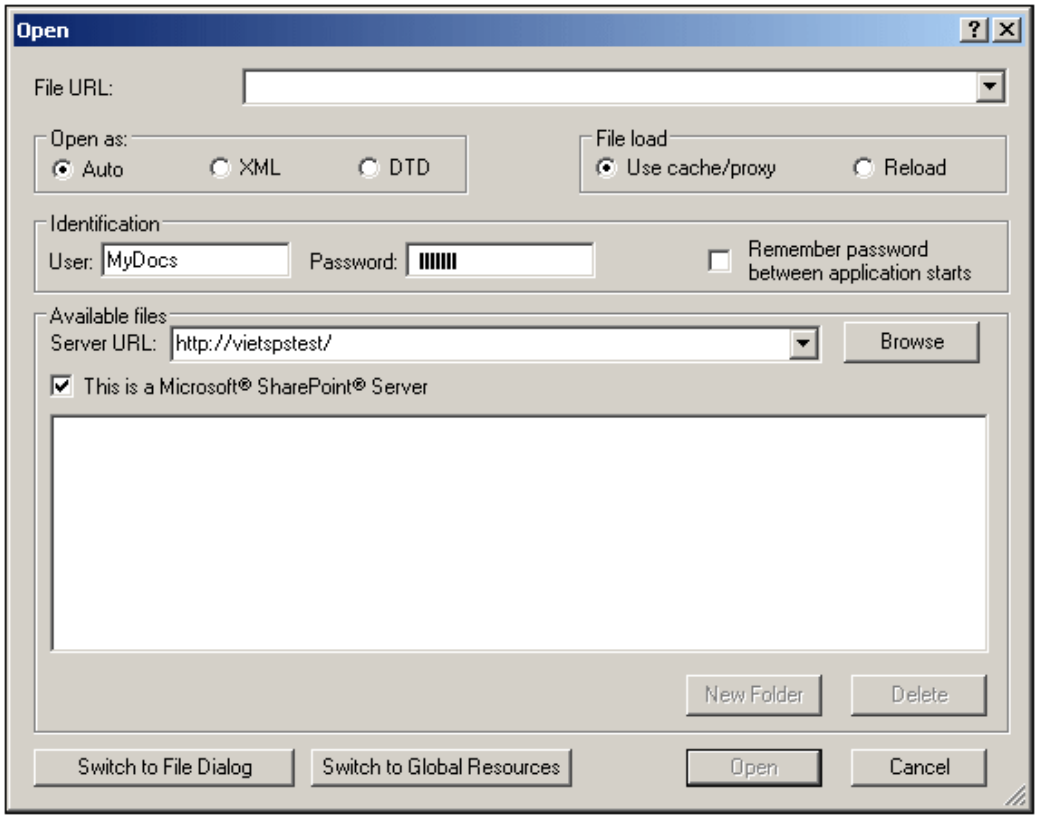
The **Open** command pops up the familiar Windows Open dialog, and allows you to open any XML-related document or text document. In the Open dialog, you can select more than one file to open. Use the Files of Type combo box to restrict the kind of files displayed in the dialog box. (The list of available file types can be configured in the File Types tab of the Options dialog (**Tools | Options**).) When an XML file is opened, it is checked for well-formedness. If the file is not well-formed, you will get a file-not-well-formed error. Fix the error and select the menu command **XML | Check Well-Formedness (F7)** to recheck. If you have opted for automatic validation upon opening and the file is invalid, you will get an error message. Fix the error and select the menu command **XML | Validate XML (F8)** to revalidate.

Selecting files via URLs and Global Resources
In several File Open and File Save dialogs, you can choose to select the required file or save a file via a URL or a global resource (*see screenshot below*). Select the **Switch to URL** or **Switch to Global Resource** to go to one of these selection processes.

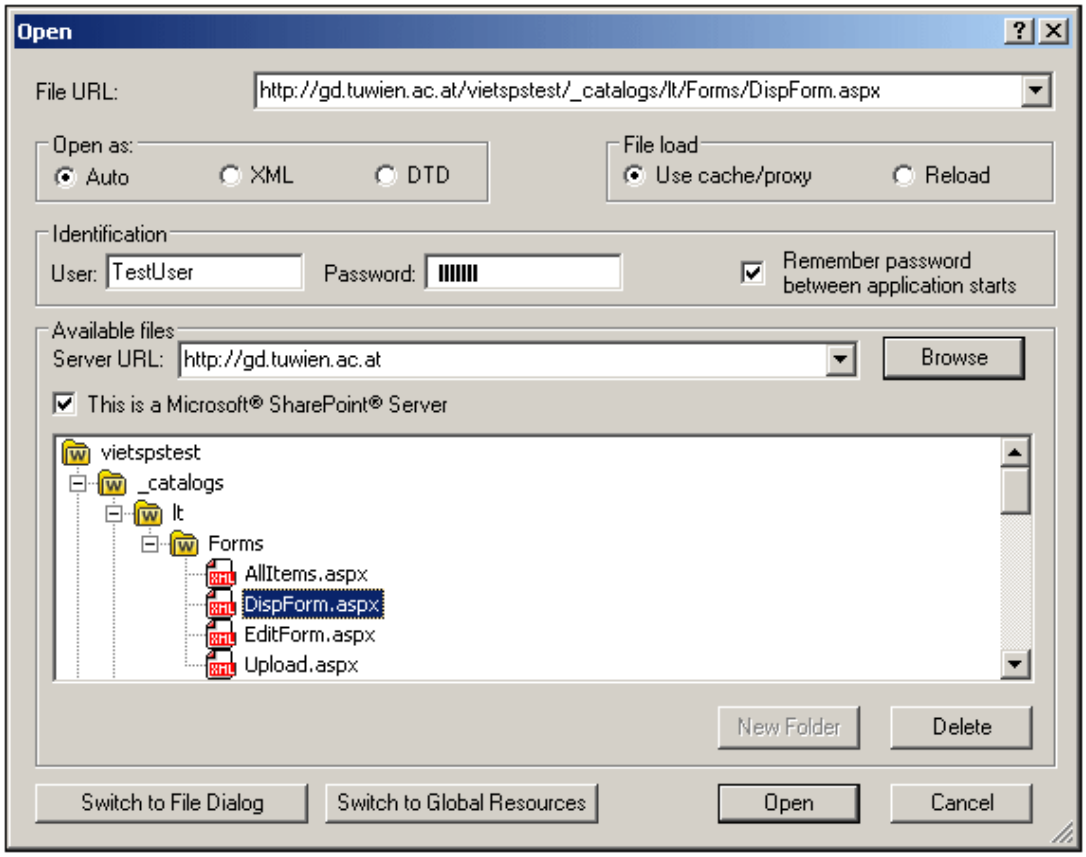


Selecting files via URLs
To select a file via a URL, do the following:

1. Click the **Switch to URL** command. This switches to the URL mode of the Open dialog (*screenshot below*).



2. Enter the URL you want to access in the *Server URL* field (*screenshot above*). If the server is a Microsoft® SharePoint® Server, check the *Microsoft® SharePoint® Server* check box. See the Microsoft® SharePoint® Server Notes below for further information about working with files on this type of server.
3. If the server is password protected, enter your User-ID and password in the *User* and *Password* fields.
4. Click **Browse** to view and navigate the directory structure of the server.
5. In the folder tree, browse for the file you want to load and click it.



The file URL appears in the File URL field (*screenshot above*). The **Open** button only becomes active at this point.

6. Click the **Open** button to load the file. The file you open appears in the main window.

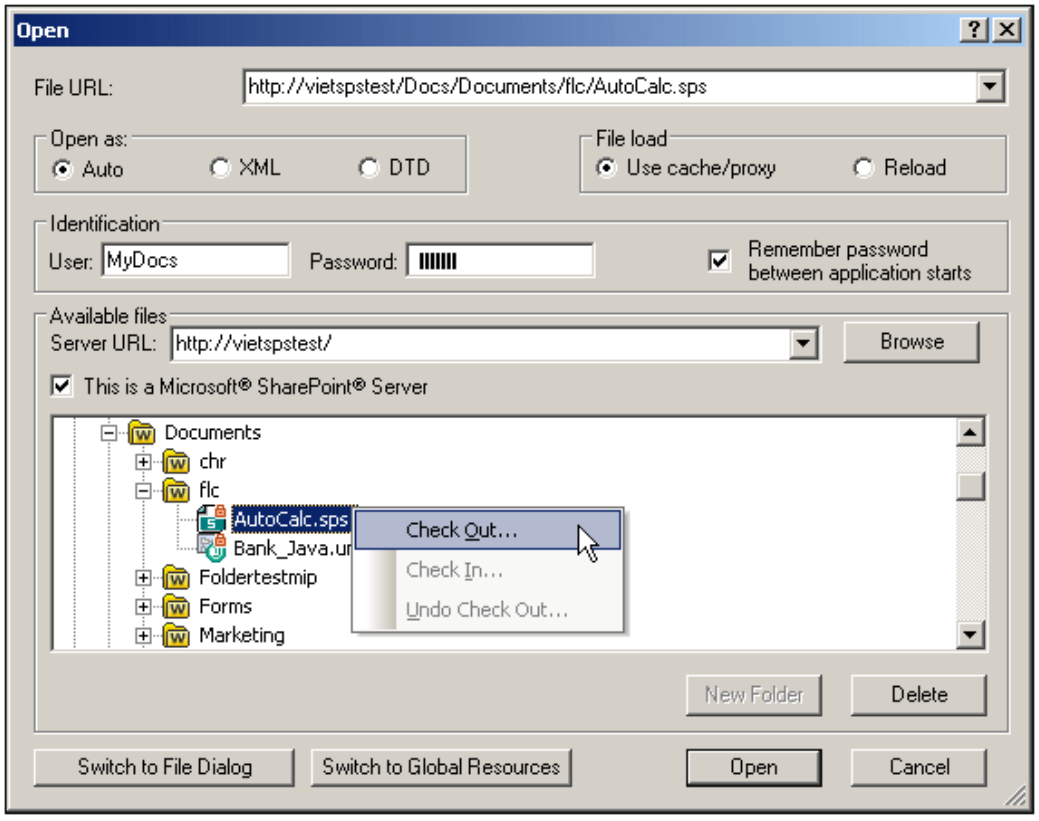
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

Note: To give you more control over the loading process, you can choose to load the file through the local cache or a proxy server (which considerably speeds up the process if the file has been loaded before). Alternatively, you may want to reload the file if you are working, say, with an electronic publishing or database system; select the **Reload** option in this case

Microsoft® SharePoint® Server Notes

Note the following points about files on Microsoft® SharePoint® Servers:

- In the directory structure that appears in the Available Files pane (*screenshot below*), file icons have symbols that indicate the check-in/check-out status of files.



Right-clicking a file pops up a context menu containing commands available for that file (*screenshot above*).

- The various file icons are shown below:

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

- After you check out a file, you can edit it in your Altova application and save it using **File | Save (Ctrl+S)**.
- You can check-in the edited file via the context menu in the Open URL dialog (*see screenshot above*), or via the context menu that pops up when you click the file tab in the Main Window of your application (*screenshot below*).

- When a file is checked out by another user, it is not available for check out.
- When a file is checked out locally by you, you can undo the check-out with the Undo Check-Out command in the context menu. This has the effect of returning the file unchanged to the server.
- If you check out a file in one Altova application, you cannot check it out in another Altova application. The file is considered to be already checked out to you. The available commands at this point in any Altova application supporting Microsoft® SharePoint® Server will be: **Check In** and **Undo Check Out**.

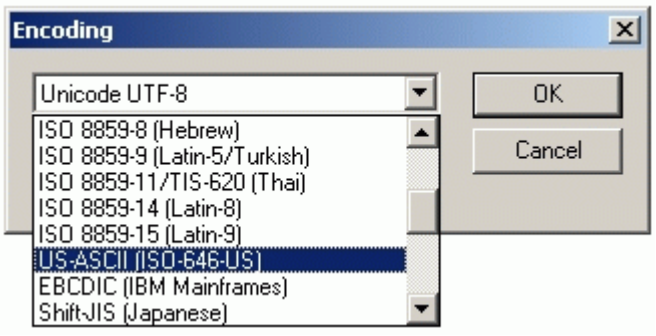
Opening and saving files via Global Resources
To open or save a file via a global resources, click **Switch to Global Resource**. This pops up a dialog in which you can select the global resource. These dialogs are described in the section, Using Global Resources. For a general description of Global Resources, see the Global Resources section in this documentation.

18.1.3 Reload

The **Reload** command allows you to reload open documents. This is useful if an open document has been modified outside XMLSpy. If a modification occurs, XMLSpy asks whether you wish to reload the file. If you reload, then any changes you may have made to the file since the last save will be lost. This option can be changed in the Options dialog (Tools | Options).

18.1.4 Encoding

The **Encoding** command lets you view the current encoding of the active document (XML or non-XML) and to select a different encoding with which the active document will be saved the next time.



In XML documents, if you select a different encoding than the one in use before, the encoding specification in the XML declaration will be adjusted accordingly. For two-byte and four-byte character encodings (UTF-16, UCS-2, and UCS-4) you can also specify the byte-order to be used for the file. Another way to change the encoding of an XML document is to directly edit the encoding attribute of the document's XML declaration.

Default encodings for existing and new XML and non-XML documents can be set in the Encoding tab of the Options dialog.

Note: When saving a document, XMLSpy automatically checks the encoding specification and opens a dialog box if it cannot recognize the encoding entered by the user. Also, if your document contains characters that cannot be represented in the selected encoding, you will get a warning message when you save your file.

18.1.5 Close, Close All, Close All But Active

The **Close** command closes the active document window. If the file was modified (indicated by an asterisk * after the file name in the title bar), you will be asked if you wish to save the file first.

The **Close All** command closes all open document windows. If any document has been modified (indicated by an asterisk * after the file name in the title bar), you will be asked if you wish to save the file first.

The **Close All But Active** command closes all open document windows except the active document window. If any document has been modified (indicated by an asterisk * after the file name in the title bar), you will be asked if you wish to save the file first.

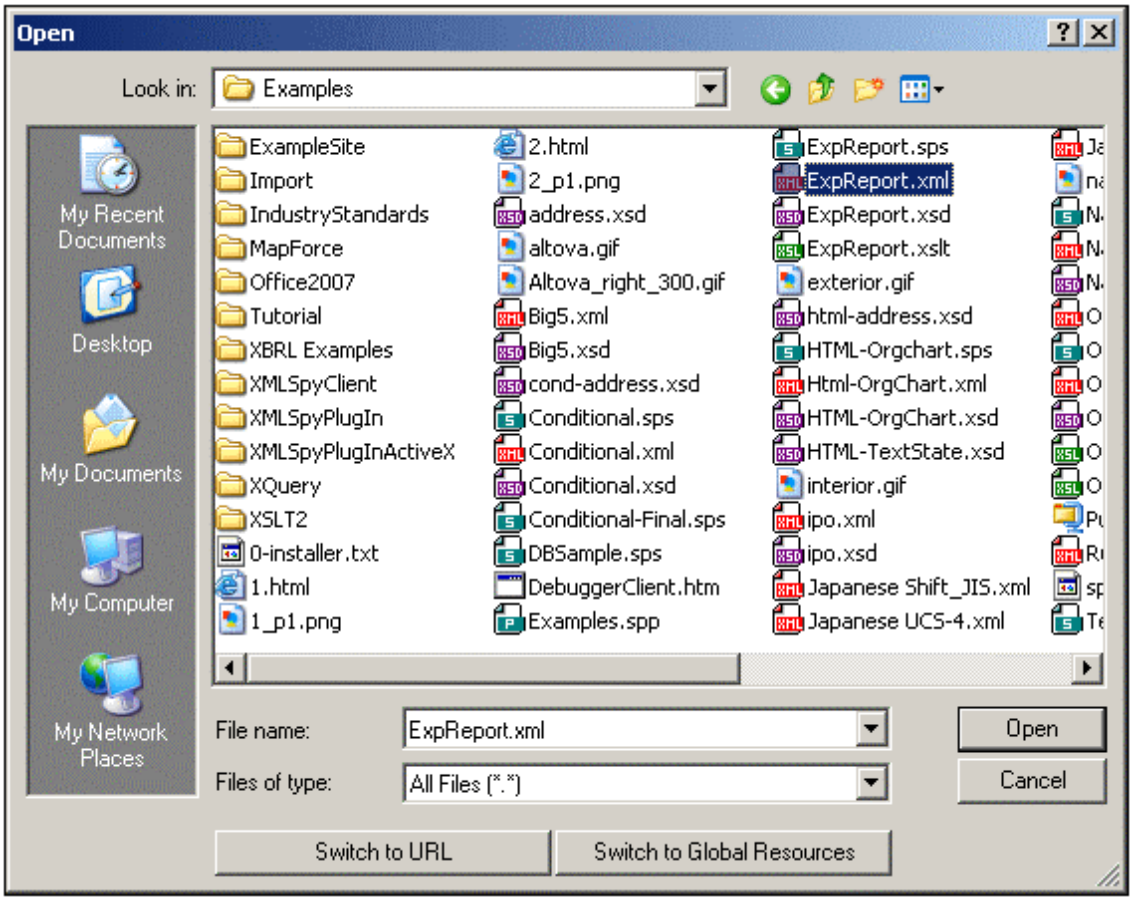
18.1.6 Save, Save As, Save All

The **Save (Ctrl+S)**  command saves the contents of the active document to the file from which it has been opened. When saving a document, the file is automatically checked for well-formedness. The file will also be validated automatically if this option has been set in the File tab of the Options dialog (**Tools | Options**). The XML declaration is also checked for the encoding specification, and this encoding is applied to the document when the file is saved.

The **Save As** command pops up the familiar Windows Save As dialog box, in which you enter the name and location of the file you wish to save the active file as. The same checks and validations occur as for the **Save** command.

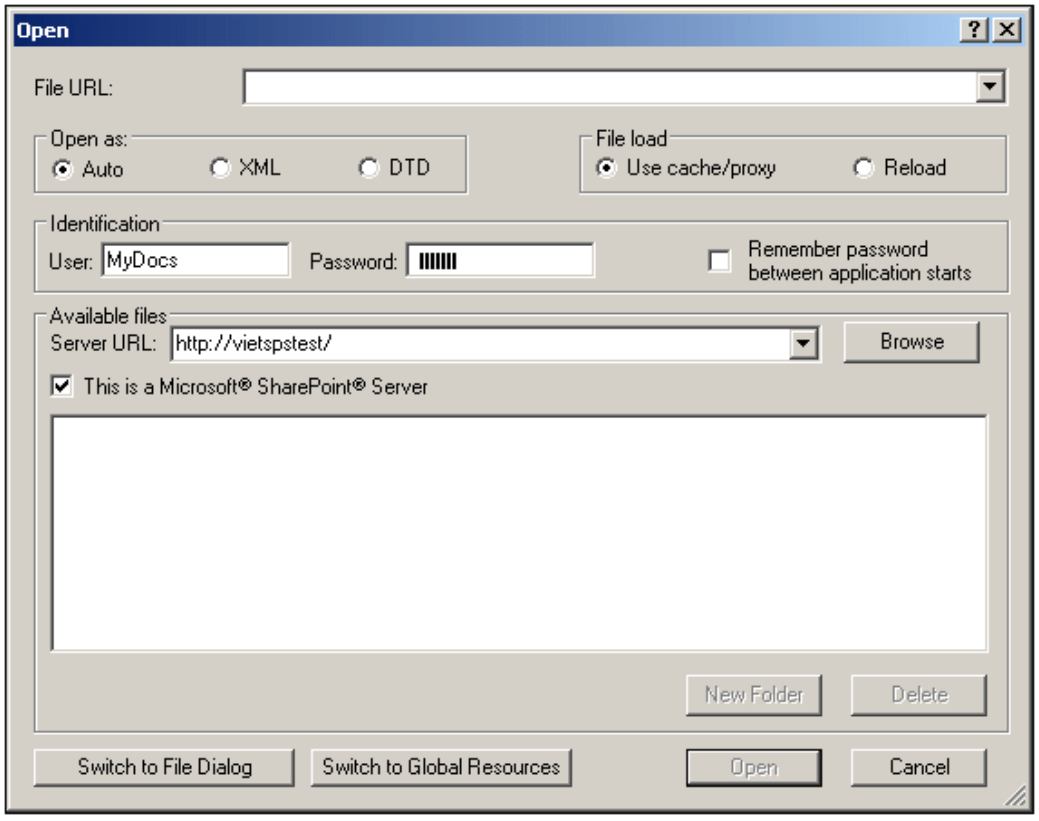
The **Save All**  command saves all modifications that have been made to any open documents. The command is useful if you edit multiple documents simultaneously. If a document has not been saved before (for example, after being newly created), the Save As dialog box is presented for that document.

Selecting files via URLs and Global Resources
In several File Open and File Save dialogs, you can choose to select the required file or save a file via a URL or a global resource (*see screenshot below*). Select the **Switch to URL** or **Switch to Global Resource** to go to one of these selection processes.

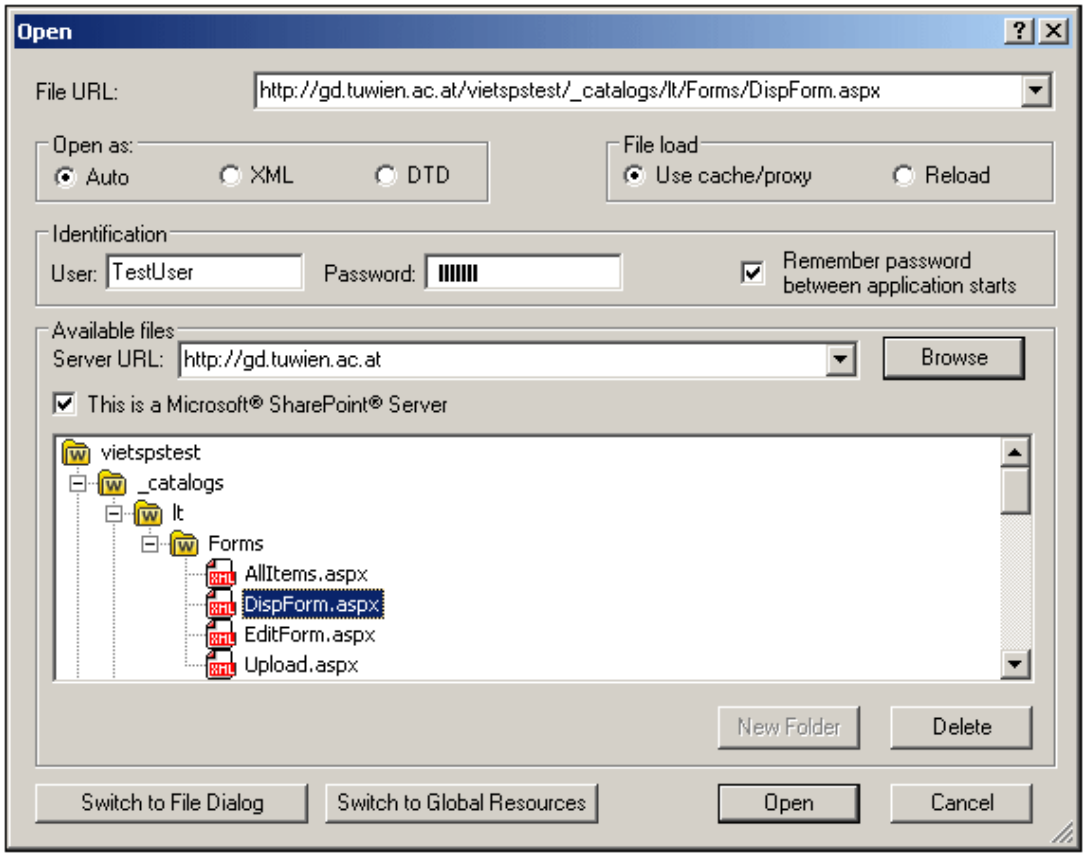


Selecting files via URLs
To select a file via a URL, do the following:

1. Click the **Switch to URL** command. This switches to the URL mode of the Open dialog (*screenshot below*).



2. Enter the URL you want to access in the *Server URL* field (*screenshot above*). If the server is a Microsoft® SharePoint® Server, check the *Microsoft® SharePoint® Server* check box. See the Microsoft® SharePoint® Server Notes below for further information about working with files on this type of server.
3. If the server is password protected, enter your User-ID and password in the *User* and *Password* fields.
4. Click **Browse** to view and navigate the directory structure of the server.
5. In the folder tree, browse for the file you want to load and click it.



The file URL appears in the File URL field (*screenshot above*). The **Open** button only becomes active at this point.

6. Click the **Open** button to load the file. The file you open appears in the main window.

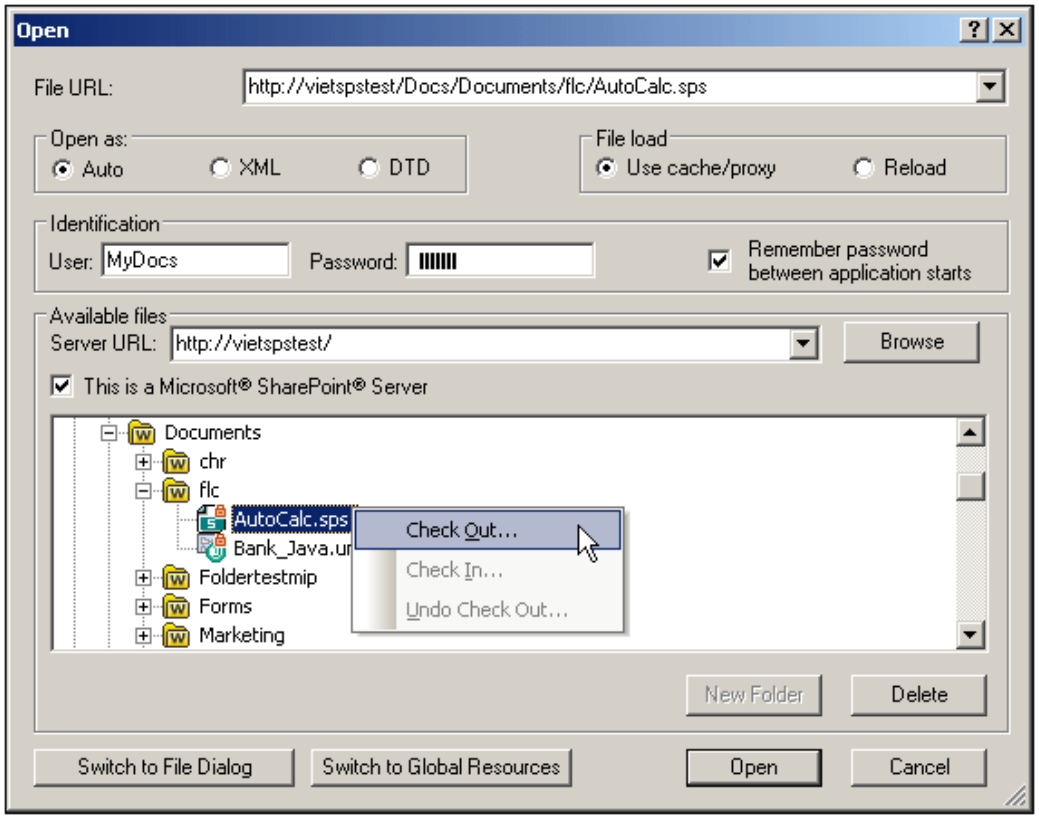
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

Note: To give you more control over the loading process, you can choose to load the file through the local cache or a proxy server (which considerably speeds up the process if the file has been loaded before). Alternatively, you may want to reload the file if you are working, say, with an electronic publishing or database system; select the **Reload** option in this case

Microsoft® SharePoint® Server Notes

Note the following points about files on Microsoft® SharePoint® Servers:

- In the directory structure that appears in the Available Files pane (*screenshot below*), file icons have symbols that indicate the check-in/check-out status of files.



Right-clicking a file pops up a context menu containing commands available for that file (*screenshot above*).

- The various file icons are shown below:

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

- After you check out a file, you can edit it in your Altova application and save it using **File | Save (Ctrl+S)**.
- You can check-in the edited file via the context menu in the Open URL dialog (*see screenshot above*), or via the context menu that pops up when you click the file tab in the Main Window of your application (*screenshot below*).

- When a file is checked out by another user, it is not available for check out.
- When a file is checked out locally by you, you can undo the check-out with the Undo Check-Out command in the context menu. This has the effect of returning the file unchanged to the server.
- If you check out a file in one Altova application, you cannot check it out in another Altova application. The file is considered to be already checked out to you. The available commands at this point in any Altova application supporting Microsoft® SharePoint® Server will be: **Check In** and **Undo Check Out**.

Opening and saving files via Global Resources
To open or save a file via a global resources, click **Switch to Global Resource**. This pops up a dialog in which you can select the global resource. These dialogs are described in the section, Using Global Resources. For a general description of Global Resources, see the Global Resources section in this documentation.

18.1.7 Send by Mail

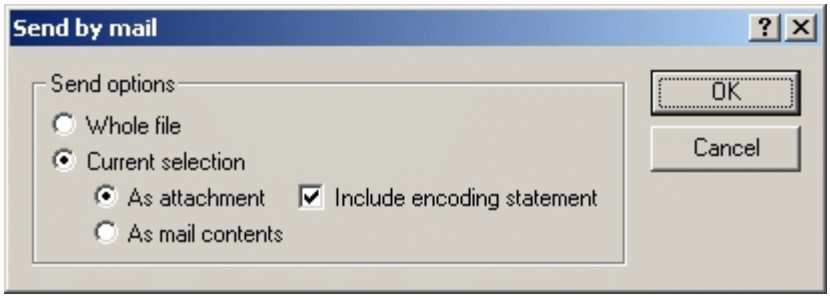
The **Send by Mail...** command lets you send XML document/s or selections from an XML document by e-mail. You can do any of the following:

- Send an XML document as an attachment or as the content of an e-mail.
- Send a selection in an XML document as an attachment or as the content of an e-mail.
- Send a group of files (selected in the Project Window) as an attachment to an e-mail.
- Send a URL (selected in the Project Window) as an attachment or as a link.

Please note: To use this function you must have a MAPI compliant e-mail system.

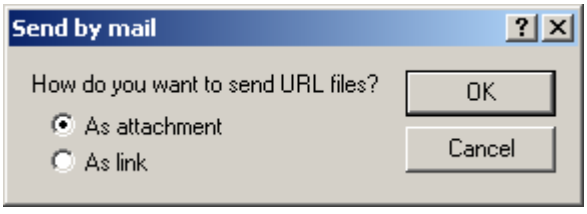
Sending documents and document fragments
To send an XML document:

1. Make that document the active document in the Main Window. If you wish to send a selection or a group of files from a project, make the selection in the document or select the required files in the Project.
2. Click **Send by Mail...**. The following dialog opens:



3. Make the required choices and click **OK**. The selected documents/contents/URLs are attached to the e-mail or content is inserted into the e-mail.

Sending URLs by mail
To send one or more URLs, select the URLs in the Project Window, and click **Send by Mail...**. The following dialog opens:



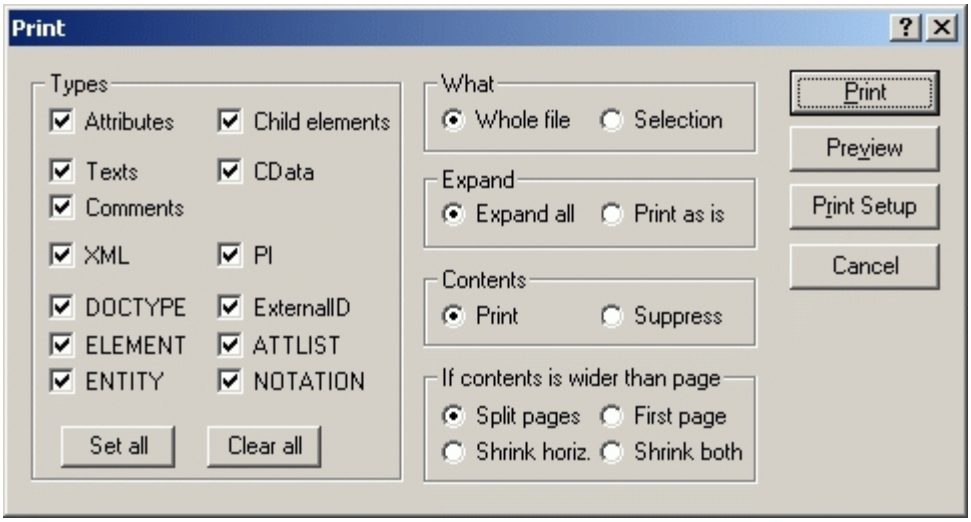
Select how the URL is to be sent and click **OK**.

18.1.8 Print

Ctrl+P

The **Print** command opens the Print dialog box, in which you can select printer options. The currently active document, as seen in the current view, can then be printed.

Clicking the **Print** command in Grid View opens a Print options dialog (*screenshot below*), which enables you to set printing options for the XML document. Clicking **Print** in this dialog takes you to the Print dialog for printer options.



The available options for Grid View printing are described below:

- In the Types pane, you select the items you wish to have appear in the output.
- For the What option, you specify whether the current selection or the entire file is to be printed.
- The Expand option allows you to print the document as is, or with all descendant elements expanded fully.
- The Contents option enables you to choose between printing contents of all nodes or printing node names only.
- In the If Contents Are Wider Than Page pane, you select what to do if contents are wider than the page. The Split Pages option prints the entire document at normal size, splitting contents over pages both horizontally and vertically. The pages could then be glued together to form a poster. The First Page option prints only the first, left-hand page of the print area. The area that overflows horizontally is not printed. This option is useful if most of the important information in your Grid View of the document is contained on the left side. The Shrink Horizontally option reduces the size of the output (proportionally) until it fits horizontally on the page; the document may run on for several pages. The Shrink Both option shrinks the document in both directions until it fits exactly on one sheet.
- The Print button prints the document with the selected options.
- The Preview button opens a print preview window that lets you view the final output before committing it to paper.
- The Print Setup button opens the Print Setup dialog box and allows you to adjust the paper format, orientation, and other printer options for this print job only. Also see the Print Setup command.

Note: You can change column widths in Grid View to optimize the print output.

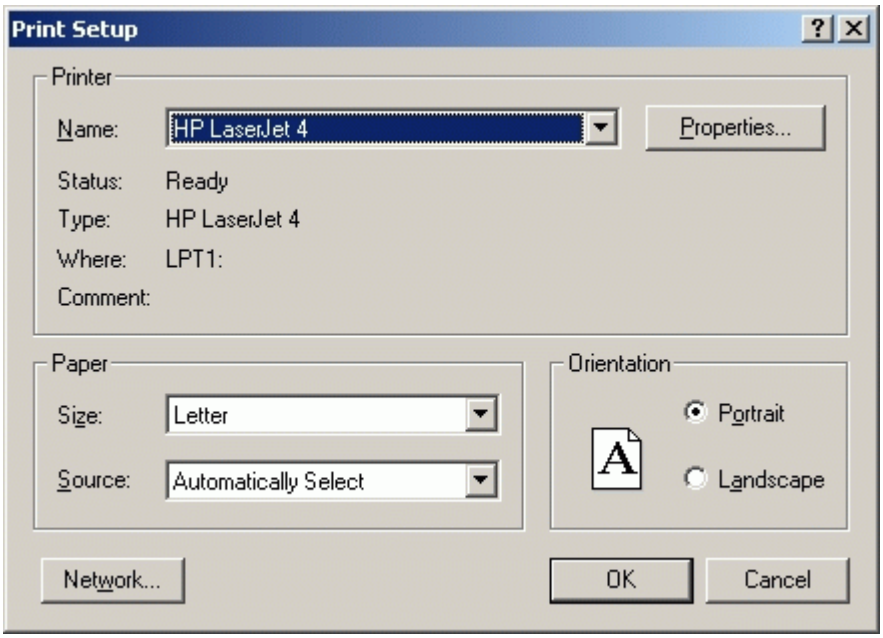
Program logo
If you have a purchased license, you can turn off the program logo, copyright notice, and registration details when printing a document from XMLSpy. This option is available in the View tab of the Options dialog.

18.1.9 Print Preview, Print Setup

The **Print Preview** command opens the Print dialog box. Click the **Preview** button to display a print preview of the currently active document. In Print Preview mode, the Print Preview toolbar at top left of the preview window provides print- and preview-related options.

The preview can be magnified or miniaturized using the the **Zoom In** and **Zoom Out** buttons. When the page magnification is such that an entire page length fits in a preview window, then the **One Page / Two Page** button toggles the preview to one or two pages at a time. The **Next Page** and **Previous Page** buttons can be used to navigate among the pages. The toolbar also contains buttons to print all pages and to close the preview window.

The **Print Setup** command, displays the printer-specific Print Setup dialog box, in which you specify such printer settings as paper format and page orientation. These settings are applied to all subsequent print jobs.



The screenshot above shows the Print Setup dialog in which an HP LaserJet 4 printer attached to a parallel port (LPT1) is selected.

Note: To enable background colors and images in Print Preview, do the following: (i) In the **Tools** menu of Internet Explorer, click **Internet Options**, and then click the Advanced tab; (ii) In the Settings box, under Printing, select the *Print background colors and images* check box, and (iii) Then click **OK**.

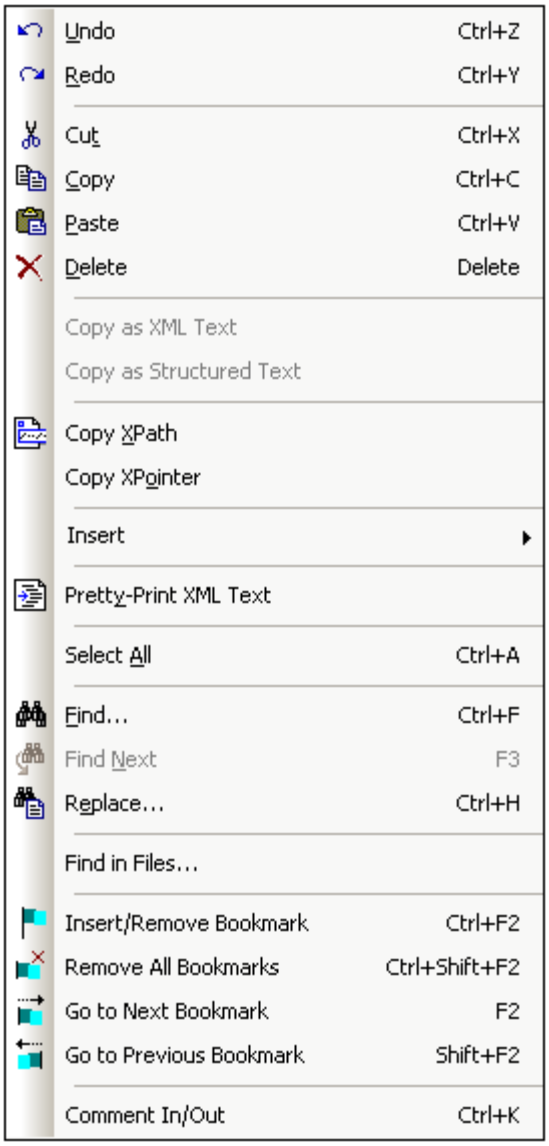
18.1.10 Recent Files, Exit

The **File** menu displays a list of the nine most recently used files, with the most recently opened file shown at the top of the list. You can open any of these files by clicking its name. To open a file in the list using the keyboard, press **ALT+F** to open the **File** menu, and then press the number of the file you want to open.

The **Exit** command is used to quit XMLSpy. If you have any open files with unsaved changes, you are prompted to save these changes. XMLSpy also saves modifications to program settings and information about the most recently used files.

18.2 Edit Menu

The **Edit** menu contains commands for editing documents in XMLSpy.



In addition to the standard Undo, Redo, Cut, Copy, Paste, Delete, Select All, Find, Find next and Replace commands, XMLSpy offers special commands to:

- copy the selection to the clipboard as XML-Text,
- copy as structured text
- copy an XPath selector to the selected item to the clipboard.
- insert and remove bookmarks, and to navigate to bookmarks.

18.2.1 Undo, Redo

The **Undo** (**Ctrl+Z**) command contains support for unlimited levels of Undo. Every action can be undone and it is possible to undo one command after another. The Undo history is retained

after using the Save command, enabling you go back to the state the document was in before you saved your changes.

The **Redo** (**Ctrl+Y**) command allows you to redo previously undone commands, thereby giving you a complete history of work completed. You can step back and forward through this history using the Undo and Redo commands.

18.2.2 Cut, Copy, Paste, Delete

The **Cut** (**Shift+Del** or **Ctrl+X**) command copies the selected text or items to the clipboard and deletes them from their present location.

The **Copy** (**Ctrl+C**) command copies the selected text or items to the clipboard. This can be used to duplicate data within XMLSpy or to move data to another application.

Please note: There are two different commands for copying elements to the clipboard in textual form: Copy as XML-Text and Copy as Structured Text. You can use the Editing tab on the Tools | Options dialog to choose which of these two operations should be performed when using the copy command.

The **Paste** (**Ctrl+V**) command inserts the contents of the clipboard at the current cursor position.

The **Delete** (**Del**) command deletes the currently selected text or items without placing them in the clipboard.

18.2.3 Copy as XML Text

The **Copy as XML-Text** command lets you exchange data easily with other products that allow data manipulation on the XML source layer. While editing your document in Grid View, you may occasionally want to copy some elements to the clipboard in their XML-Text representation:

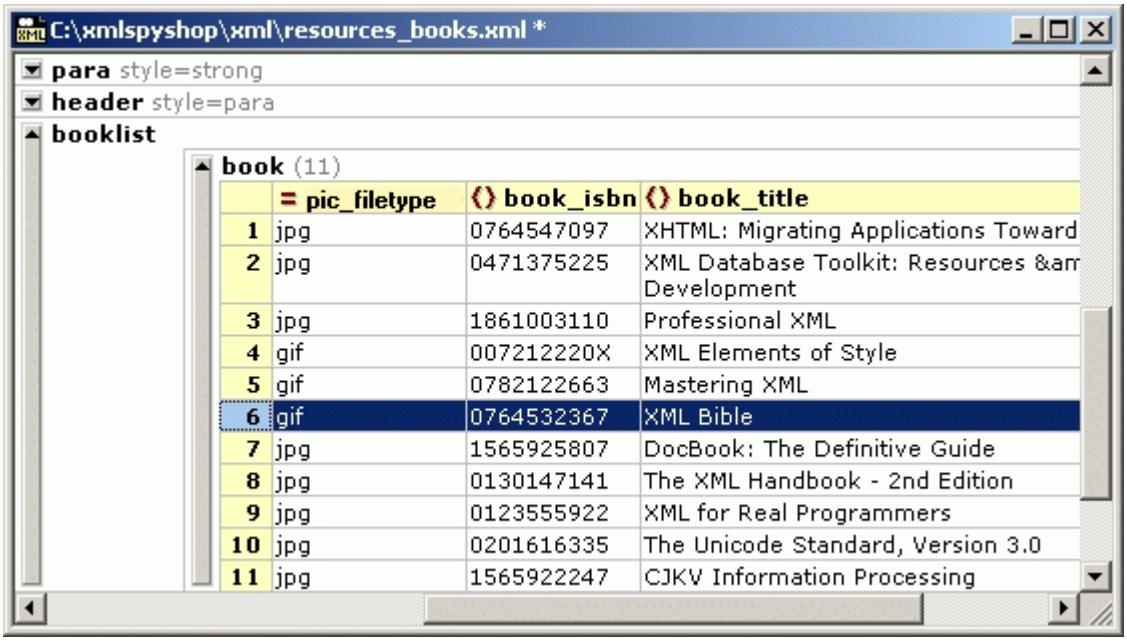
```
<row>
    <para align="left">
        <bold>Check the FAQ</bold>
    </para>
    <para>
        <link mode="internal">
            <link_section>support</link_section>
            <link_subsection>faq30</link_subsection>
            <link_text>XMLSPY 4.0 FAQ</link_text>
        </link>
        <link mode="internal">
            <link_section>support</link_section>
            <link_subsection>faq25</link_subsection>
            <link_text>XMLSPY 3.5 FAQ</link_text>
        </link>
    </para>
</row>
```

The **Copy as XML-Text** command automatically formats text using the currently active settings

for saving a file. These settings can be modified in the Save File section of the File tab of the Options dialog (**Tools | Options**).

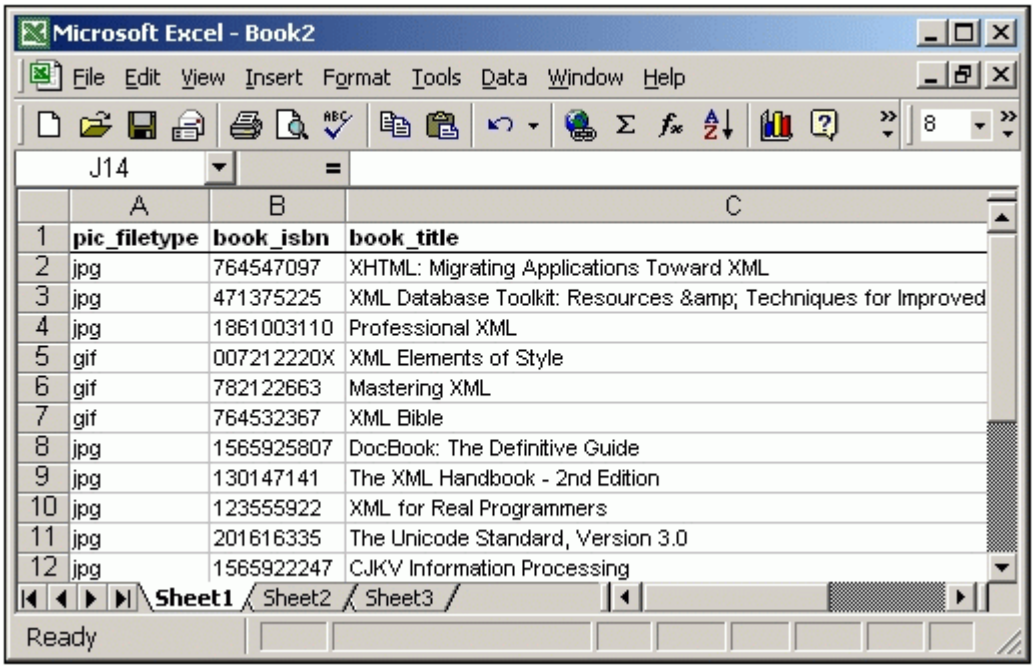
18.2.4 Copy as Structured Text

The **Copy as Structured Text** command copies elements to the clipboard as they appear on screen. This command is useful for copying table-like data from Grid View. The copied data can be used within XMLSpy as well as in third-party products, enabling you to transfer XML data to spreadsheet-like applications (such as Microsoft Excel).



	= pic_filetype	{} book_isbn	{} book_title
1	jpg	0764547097	XHTML: Migrating Applications Toward
2	jpg	0471375225	XML Database Toolkit: Resources &am Development
3	jpg	1861003110	Professional XML
4	gif	007212220X	XML Elements of Style
5	gif	0782122663	Mastering XML
6	gif	0764532367	XML Bible
7	jpg	1565925807	DocBook: The Definitive Guide
8	jpg	0130147141	The XML Handbook - 2nd Edition
9	jpg	0123555922	XML for Real Programmers
10	jpg	0201616335	The Unicode Standard, Version 3.0
11	jpg	1565922247	CJKV Information Processing

If you copy this table and paste it into Excel, the data will appear in the following way:



	A	B	C
1	pic_filetype	book_isbn	book_title
2	jpg	764547097	XHTML: Migrating Applications Toward XML
3	jpg	471375225	XML Database Toolkit: Resources & Techniques for Improved
4	jpg	1861003110	Professional XML
5	gif	007212220X	XML Elements of Style
6	gif	782122663	Mastering XML
7	gif	764532367	XML Bible
8	jpg	1565925807	DocBook: The Definitive Guide
9	jpg	130147141	The XML Handbook - 2nd Edition
10	jpg	123555922	XML for Real Programmers
11	jpg	201616335	The Unicode Standard, Version 3.0
12	jpg	1565922247	CJKV Information Processing

Please note: The results of this command depend on the way the information is currently laid out on screen. For example, if the XML fragment used as an example for the Copy as XML-Text command were in the Table View of Grid View, the copied text would result in the following:

```
row
   para
       align    bold    link
       left     Check the FAQ
           link
              mode       link_section    link_subsection   link_text
              internal   support         faq30             XMLSPY 3.5 FAQ
              internal   support         faq25             XMLSPY 2.5 FAQ
```

In normal Grid View, the data copied to the clipboard would look as below.

```
row
    para
        align    left
        bold     Check the FAQ
    para
        link
            mode              internal
            link_section      support
            link_subsection   faq30
            link_text         XMLSPY 3.5 FAQ
        link
            mode              internal
            link_section      support
            link_subsection   faq25
            link_text         XMLSPY 2.5 FAQ
```

18.2.5 Copy XPath

The **Copy XPath** command is available in Text View and Grid View, and creates an XPath expression that selects the currently selected node/s and copies the expression to the clipboard. This enables you to paste the expression into a document (for example, in an XSLT document). All expressions start from the document root.

The XPath expression is resolved differently in Grid View and Text View. In Grid View, if a single element is highlighted, the XPath expression will select not that specific element but all elements of that name at that hierarchical level of the document. In Text View that specific element is selected. For example, if an element called `LastName` of the third `Person` element of the second `Company` element is selected, the XPath expressions would be as follows:

- Grid View: `/Companies/Company/Person/LastName`
- Text View: `/Companies/Company[2]/Person[3]/LastName`

Note: In Grid View the **Copy XPath** command can also be accessed via the context menu.

18.2.6 Copy XPointer

The **Copy XPointer** command is available in Text View and Grid View. It creates an element() scheme XPointer for the currently selected node/s and copies it to the clipboard. This enables you to paste the XPointer into a document (for example, in the `xpointer` attribute of an XInclude element in an XML document).

The element() scheme of XPointer returns results in the form `element(/1/3)`, which selects the third child of the document element (or root element). You should note the following points:

- Attributes cannot be represented using the element() scheme. If an attribute is selected, the following happens: In Grid View, the **Copy XPointer** command is disabled; in Text View, the XPointer of the element "parent" of that attribute is generated.
- Multiple elements cannot be selected. If selected in Grid View, the **Copy XPointer** command is disabled. In Text View, the XPointer of the parent element of the selection is generated.

Note: In Grid View the **Copy XPointer** command can also be accessed via the context menu.

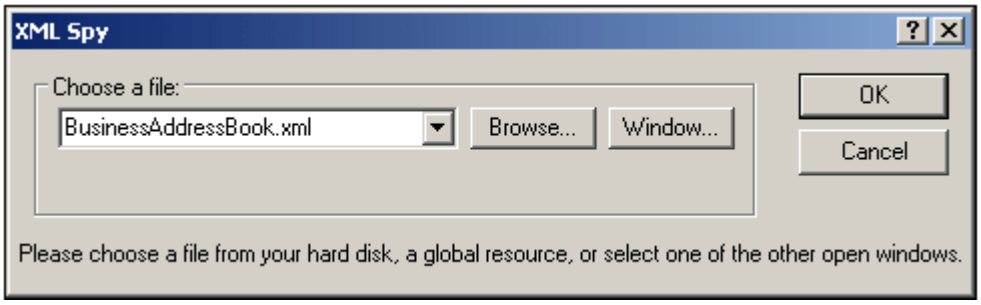
18.2.7 Insert

Mousing over or selecting the **Insert** command rolls out a submenu with three commands, which are described below:

- Insert File Path
- Insert XInclude
- Insert Encoded External File

Insert File Path

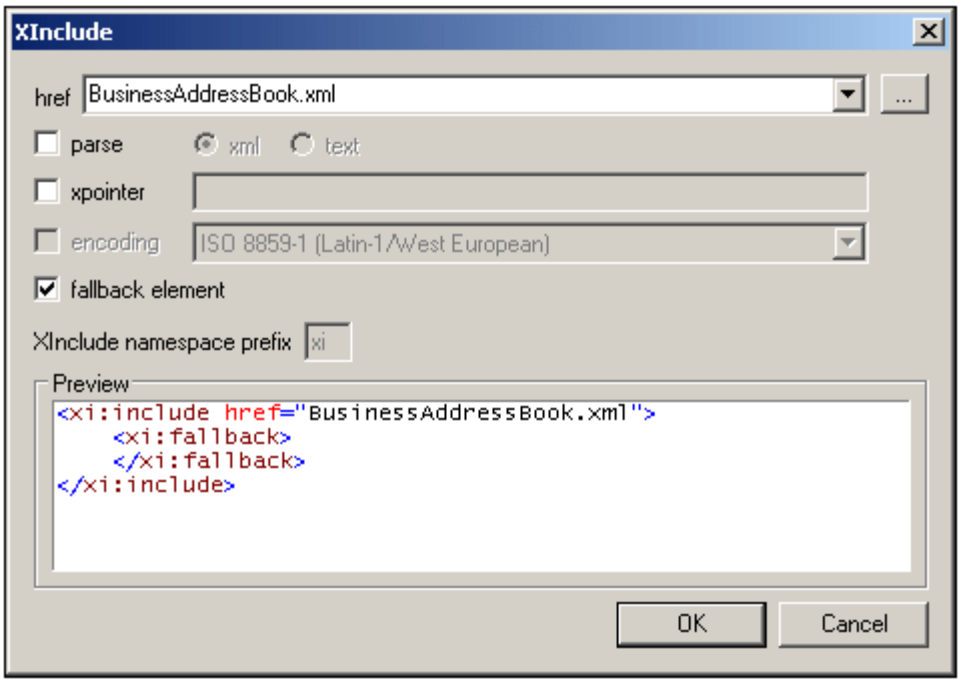
The **File Path** command is enabled in the Text View and Grid View of documents of any file type. Using it, you can insert the path to a file at the cursor selection point. Clicking the command pops up a dialog (*screenshot below*) in which you select the required file.



The required file can be selected in one of the following ways: (i) by browsing for the file, URL, or global resource (use the **Browse** button); (ii) by selecting the window in which the file is open (the **Window** button). When done, click **OK**. The path to the selected file will be inserted in the active document at the cursor selection point.

Insert XInclude

The **XInclude** command is available in Text View and Grid View, and enables you to insert a new XInclude element at the cursor selection point in Text View, or before the selected item in both Text View and Grid View. If in Grid View the current selection is an attribute, the XInclude element is inserted after the attribute and before the first child element of the attribute's parent element. Selecting this command pops up the XInclude dialog (*screenshot below*).



The XML file to be included is entered in the `href` text box (alternatively, you can browse for the file by clicking the **Browse (...)** button to the right of the text box). The filename will be entered in the XML document as the value of the `href` attribute. The `parse`, `xpointer`, and `encoding` attributes of the XInclude element (`xi:include`), and the `fallback` child element of `xi:include` can also be inserted via the dialog. Do this by first checking the appropriate check box and then selecting/entering the required values. In the case of the `fallback` element, checking its check box only inserts the empty element. The content of the `fallback` element must be added subsequently in one of the editing views.

The parse attribute determines whether the included document is to be parsed as XML or text. (XML is the default value and therefore need not be specified.) The xpointer attribute identifies a specific fragment of the document located with the href attribute; it is this fragment that will be included. The encoding attribute specifies the encoding of the included document so that XMLSpy can transcode this document (or the part of it to be included) into the encoding of the including document. The contents of the fallback child element replace the xi:include element if the document to be included cannot be located.

Here is an example of an XML document that uses XInclude to include two XML documents:

```
<?xml version="1.0" encoding="UTF-16"?>
<AddressBook xsi:schemaLocation="http://www.altova.com/sv/myaddresses
AddressBook.xsd"
       xmlns="http://www.altova.com/stylevision/tutorials/myaddresses"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:xi="http://www.w3.org/2001/XInclude">
       <xi:include href="BusinessAddressBook.xml"/>
       <xi:include href="PersonalAddressBook.xml"/>
</AddressBook>
```

When this XML document is parsed, it will replace the two XInclude elements with the files specified in the respective href attributes.

xml:base

When the XML validator of XMLSpy reads an XML document and encounters the include element in the XInclude namespace (hereafter xi:include), it replaces this element (xi:include) with the XML document named in the href attribute of the xi:include element. The document element (root element) of the included XML document (or the element identified by an XPointer) will be included with an attribute of xml:base in order to preserve the base URIs of the included element. If the resulting XML document (containing the included XML document/s or tree fragment/s) must be valid according to a schema, then the document element of the included document (or the top-level element of the tree fragment) must be created with a content model that allows an attribute of xml:base. If, according to the schema, the xml:base attribute is not allowed on this element, then the resulting document will be invalid. How to define an xml:base attribute in an element's content model using XMLSpy's Schema View is described in the xml: Prefixed Attributes section of the Schema View section of the documentation.

XPointers

XMLSpy supports XPointers in XInclude. The relevant W3C recommendations are the XPointer Framework and XPointer element() Scheme recommendations. The use of an XPointer in an XInclude element enables a specific part of the XML document to be included, instead of the entire XML document. XPointers are used within an XInclude element as follows:

```
       <xi:include href="PersonalAddressBook.xml" xpointer="element(usa)"/>
       <xi:include href="BusinessAddressBook.xml" xpointer="element(/1/1)"/>
       <xi:include href="BobsAddressBook.xml" xpointer="element(usa/3/1)"/>
       <xi:include href="PatsAddressBook.xml" xpointer="
element(usa)element(/1/1)"/>
```

In the element() scheme of XPointer, an NCName or a child sequence directed by integers may be used.

- In the first xi:include element listed above, the xpointer attribute uses the element scheme with an NCName of usa. According to the XPointer Framework, this NCName identifies the element that has an ID of usa.
- In the second xi:include listed above, the xpointer attribute with a value of element

`(/1/1)` identifies, in the first step, the first child element of the document root (which, if the document is well-formed, will be its document (or root) element). In the second step, the first child element of the element located in the previous step is located; in our example, this would be the first child element of the document element.

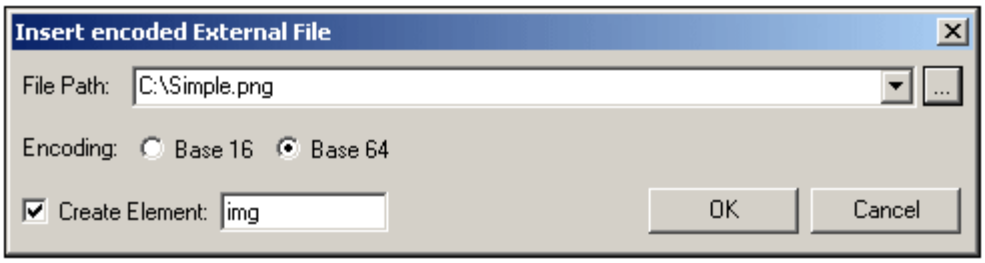
- The `xpointer` attribute of the third `xi:include` listed above uses a combination of NCName and child sequence. This XPointer locates the first child element of the third child element of the element having an ID of `usa`.
- If you are not sure whether your first XPointer will work, you can back it up with a second one as shown in the fourth `xi:include` listed above: `xpointer="element(usa)element(/1/1)"`. Here, if there is no element with an ID of `usa`, the back-up XPointer specifies that the first child element of the document element is to be selected. Additional backups are also allowed. Individual XPointers may not be separated, or they may be separated by whitespace: for example, `xpointer="element(usa)element(addresses/1) element(/1/1)"`.

Note: The namespace binding context is not used in the element() scheme because the element() scheme does not support qualified names.

Insert Encoded External File

The **Encoded External File** command is available in Text View and Grid View. It enables an external file to be included as encoded Base-16 or Base-64 text at any location in the XML document. This feature enables external files to be embedded in the XML document.

Clicking the **Insert | Encoded External File** command pops up the Insert Encoded External File dialog (*screenshot below*).



You can browse for or enter the name of the external file to be encoded and embedded. Either a Base-16 or Base-64 encoding must be specified. If you wish to enclose the encoded text in an element, then check the Create Element check box and specify the name of the desired element in the Create Element text box. If the Create Element check box is not checked, then the encoded text will be inserted directly at the cursor location.

On clicking **OK**, the encoded text of the selected file is inserted at the cursor location, with an enclosing element if this has been specified.

```
<img ext="png" encoding="xs:base64Binary">
  iVBORw0KGgoAAAANSUhEUgAAABAAAAAQAQMAAAAlPW0iAAAABlBMVEUAAAD/
  //+l2Z/dAAAAM0lEQVR4nGP4/5/h/1+G/58ZDrAz3D/McH8yw83NDDeNGe4U
  g9C9zwz3gVLMDA/A6P9/AFGGFyjOXZtQAAAAAElFTkSuQmCC
</img>
```

The listing above shows the encoded text of a PNG image file. An `img` element was created around the encoded text.

18.2.8 Pretty-Print XML Text

The **Pretty-Print XML Text** command reformats your XML document in Text View. Two formatting options are available, depending upon whether the *Use Indentation* check box in the View tab of the Options dialog (**Tools | Options**) is checked or not:

- *Use Indentation* checked: The document is reformatted to give a structured display, indenting each deeper level in the hierarchy by an additional amount of the specified indentation space. This enables a clearer view of the document structure.
- *Use Indentation* unchecked: The document is reformatted so that each new line is left-aligned.

To set up a structured, indented view of the XML document, do the following:

1. In the View tab of the Options dialog (**Tools | Options**), check the *Use Indentation* check box.
2. In the Text View Settings dialog (**View | Text View Settings**), set the tab size you want for the indentation of the pretty-printed text.
3. In the File tab of the Options dialog (**Tools | Options**), enter the elements for which no output formatting (indentation) is wanted.
4. Click the **Pretty-Print XML Text** command (this command).

To reformat the document so that all lines are left-aligned, uncheck the *Use Indentation* check box.

Note the following points:

1. The XML document must be well-formed for this command to work.
2. Pretty-printing adds spaces or tabs to the document when the document is saved.
3. If pretty-printing has been switched on (Tools | Options | View | Use Indentation) and if you change from Text View to Grid View and back to Text View, then the document will be pretty-printed automatically. There is no need to select the Pretty-Print XML Text command.

18.2.9 Select All

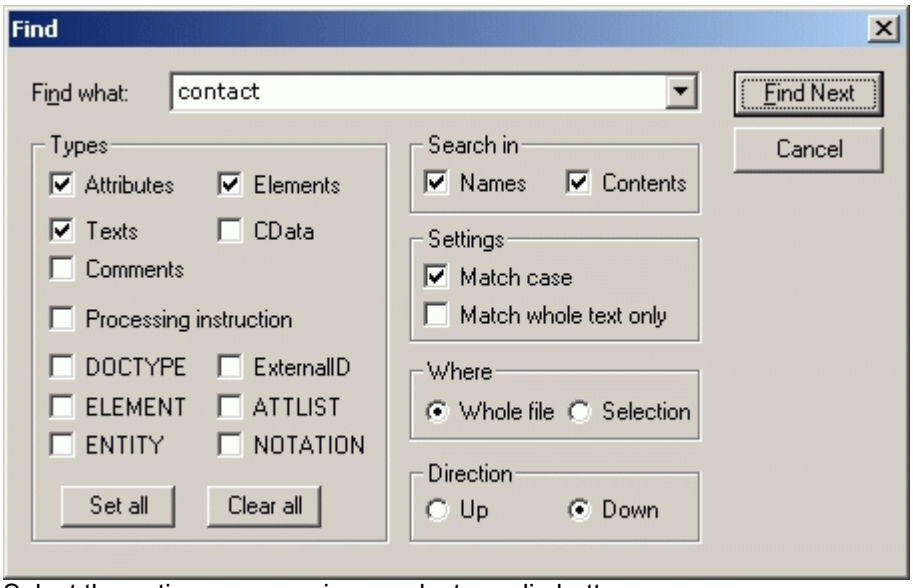
Ctrl+A

The **Select All** command selects the contents of the entire document.

18.2.10 Find, Find Next

The **Find** command (**Ctrl+F**)  pops up the Find dialog, in which you can specify the string you want to find and other options for the search. Depending on the view you are using, the Find dialog displays different options. To find text, enter the text in the Find What text box or use the combo box to select from one of the last 10 search criteria, and then specify the options for the search.

Grid View
In Grid View, the following dialog box appears. The options available are described below.

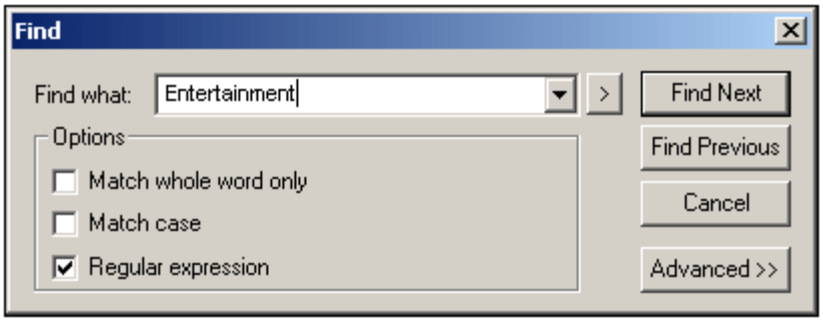


Select the options you require or select a radio button.

- The Types pane allows you to select what XML document nodes or components you wish to include in the search. This enables you to skip particular node types. The Set All button activates all the type check boxes; the Clear All button deactivates all the type check boxes.
- The Search In pane allows you to define whether the names of a node, the contents of a node, or both should be searched for the input text string.
- The Settings pane enables you to define whether the search should be case-sensitive and/or match the entire input string.
- The Where pane allows you to define the scope of the search.
- The Direction option specifies the search direction.

Text View

In Text View, the following dialog box appears. The options available are described below.

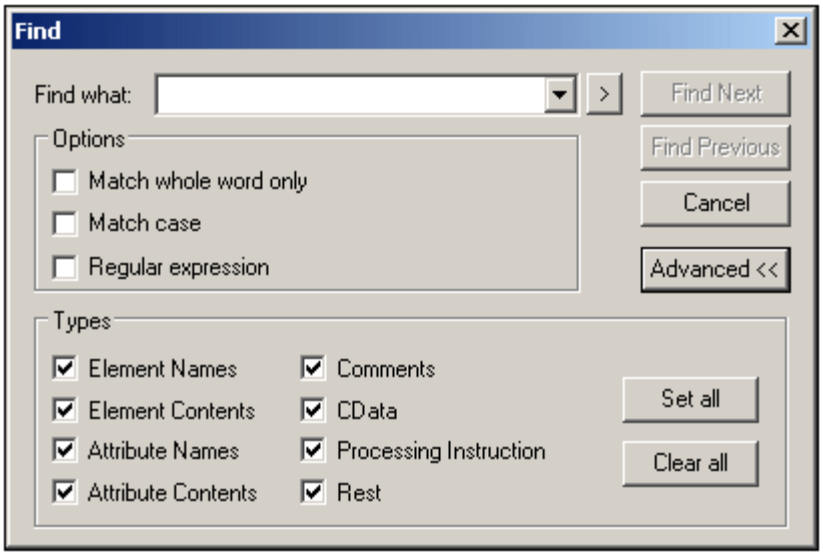


The following Find options are available:

- Match whole word only: Only the exact words in the text will be matched. For example, for the find string `fit`, with Match Whole Word checked, only the word `fit` will match the find string; the `fit` in `fitness`, for example, would not.
- Match case: Case-sensitive search (Address is not the same as address).
- Regular expression: Searches for text specified by the regular expression you enter in the text box. See Regular expressions for a description of regular expressions.

Clicking the **Advanced** button opens the Types pane (*screenshot below*), in which you can

select the type of node to search.

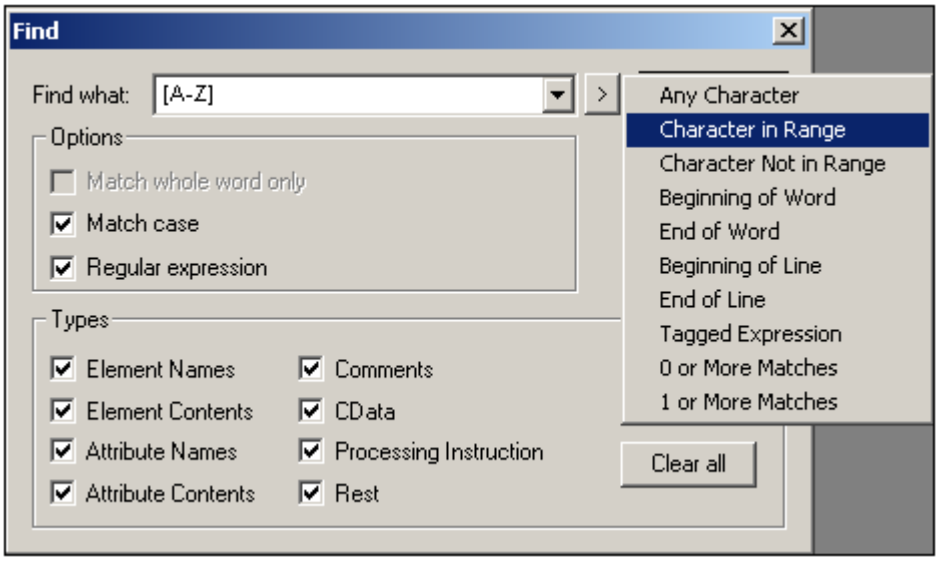


Please note:

- The Find dialog is modeless, which means that it can remain open while you continue to use Text View. Pressing Enter while the dialog box is open, closes the dialog box. If text is marked prior to opening the dialog box, then the marked text is automatically inserted into the Find What text box.
- Once the Find dialog is closed, you can repeat the current search by pressing F3 for a forward search, or Shift+F3 for a backward search.
- The unfold button to the right of the Find What combo box, opens a secondary window which you can use to enter regular expressions.

Regular expressions

You can use regular expressions to further refine your search criteria. A pop-up list is available to help you build regular expressions. To access this list, click the **>** button to the right of the input field for the search term.



Clicking on the required expression description inserts the corresponding expression syntax in

the input field. Given below is a list of regular expression syntax characters.

.	Matches any character. This is a placeholder for a single character.
\(	Marks the start of a region for tagging a match.
\)	Marks the end of a tagged region.
\n	Where n is 1 through 9 refers to the first through ninth tagged region when replacing. For example, if the search string was Fred\([1-9]\)XXX and the replace string was Sam\1YYY, when applied to Fred2XXX this would generate Sam2YYY.
\<	Matches the start of a word.
\>	Matches the end of a word.
\x	Allows you to use a character x, that would otherwise have a special meaning. For example, \[would be interpreted as [and not as the start of a character set.
[...]	Indicates a set of characters, for example, [abc] means any of the characters a, b or c. You can also use ranges, for example [a-z] for any lower case character.
[^...]	The complement of the characters in the set. For example, [^A-Za-z] means any character except an alphabetic character.
^	Matches the start of a line (unless used inside a set, see above).
$	Matches the end of a line. Example: A+$ to find one or more A's at end of line.
*	Matches 0 or more times. For example, Sa*m matches Sm, Sam, Saam, Saaam and so on.
+	Matches 1 or more times. For example, Sa+m matches Sam, Saam, Saaam and so on.

Note: Regular expressions are not supported in the Replace field.

The **Find Next** command (**F3**)  repeats the last Find command to search for the next occurrence of the requested text.

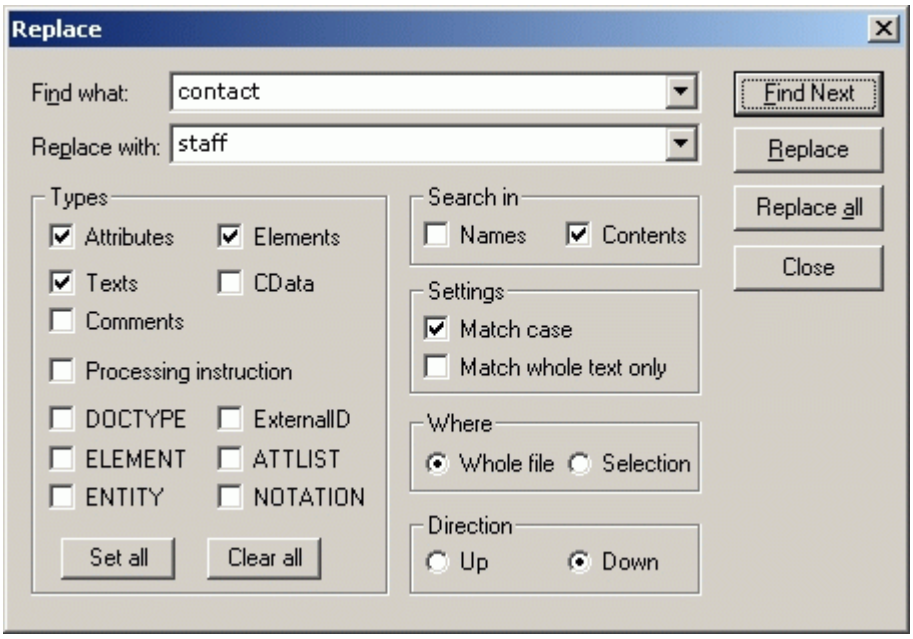
The **Find** and **Find Next** commands can also be used to find file and folder names when a project is selected in the Project window.

18.2.11 Replace

 **Ctrl+H**

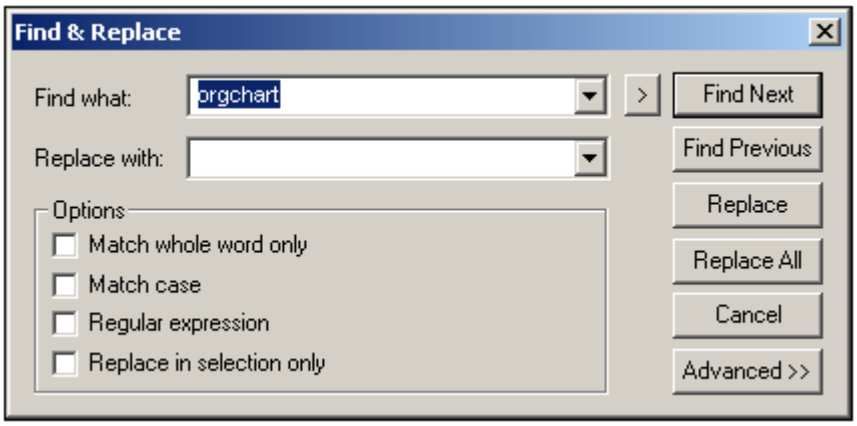
The **Replace** command enables you to find and replace one text string with another text string. It features the same options as the Find... command. Depending on the view you are using, the Replace dialog displays different find options. You can replace each item individually, or you can use the **Replace All** button to perform a global search-and-replace operation.

Grid View
The screenshot below shows the various find options.

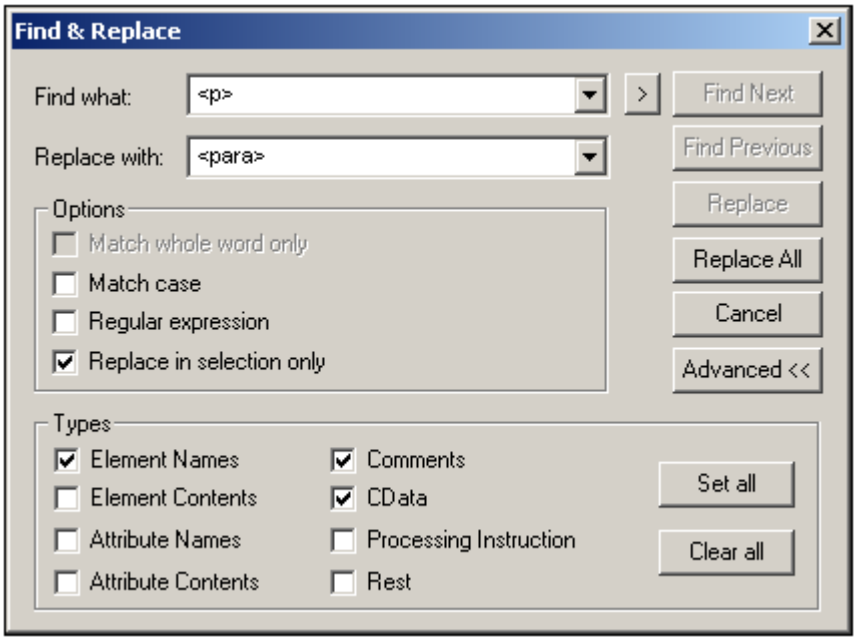


These options are described in the Find... section.

Text view
In Text View, selecting the Replace... command opens the Find & Replace dialog shown below. The options are the same as for the Find... dialog. The Replace In Selection only option carries out the find and replace operation only within the text selection.



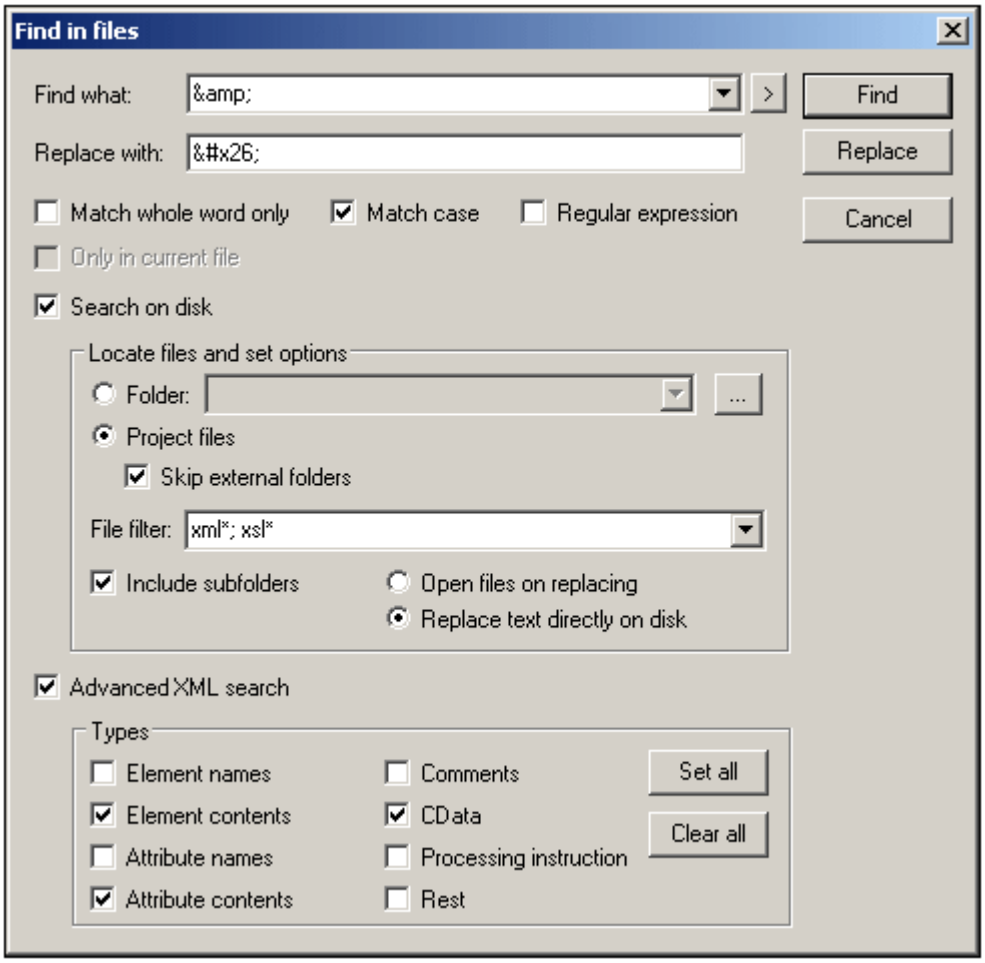
Clicking the **Advanced** button opens the Types options (see Find... for details).



Please note: When using the **Replace all** command, each replacement is recorded as a single operation, so **Replace all** can be undone step-by-step.

18.2.12 Find in Files

The **Find in Files** command is a powerful way to find and replace text quickly among a large number of files. Clicking the command pops up the Find in Files dialog (*screenshot below*). The **Find in Files** command is different from the **Find** command in that it searches all the specified locations for the Find string at once and executes replace actions at once. A report is then displayed in the Find in Files output window. In the case of the **Find** command, however, the user enters the search string and goes through the (single) active document one found item at a time.



Find criteria

There are two broad find criteria: (i) what to find, and (ii) where to look? For a description of how to set the text that is to be searched (what to find), see the description of the **Find** command. If the text entered in the Find What text box is a regular expression, then the Regular Expression check box must be checked. An entry helper for regular expressions can be accessed by clicking the > button. The use of regular expressions for searching is explained in the section about the **Find** command.

To specify what node types and parts of an XML document should be searched, check the Advanced XML Search check box and then check the required node types.

You can specify what files should be searched by checking either the *Only in Current File* check box or the *Search on Disk* check box. If you choose to search on disk, you can select a folder or a project to search (after checking the Search On Disk check box). When a project folder is selected, external folders added to the project can be skipped. The files to be searched can be filtered by file extension and a star (`xml*` or `xsl*`, for example). The separator between two file extensions can be a comma or a semi-colon (`xml*;xsl*`, for example). The star character can also be used as a wildcard.

The instances of the Find string at all the search locations are listed in the Find in Files output bar. Clicking on one of the listed items opens that file in Text View and highlights the item.

Replace

You should note that clicking the **Replace** button replaces all the instances of the Find string with the Replace string. If Open Files On Replacing was checked in the Find in Files dialog, then the file will be opened in Text View; otherwise the replacement is done silently. All the replaced strings are listed in the Find in Files output bar. Clicking on one of the listed items opens that file in Text View and highlights the item.

Note: Regular expressions are not supported in the Replace field.

18.2.13 Bookmark Commands

Insert/Remove Bookmark

The **Insert/Remove Bookmark** command (**Ctrl+F2**)  inserts a bookmark at the current cursor position, or removes the bookmark if the cursor is in a line that has been bookmarked previously. This command is only available in Text View.

Bookmarked lines are displayed in one of the following ways:

- If the bookmarks margin has been enabled, then a solid blue ellipse appears to the left of the text in the bookmark margin.
- If the bookmarks margin has not been enabled, then the complete line containing the cursor is highlighted.

The **F2** key cycles through all the bookmarks in the document.

Remove All Bookmarks

The **Remove All Bookmarks** command (**Ctrl+Shift+F2**)  removes all the currently defined bookmarks. This command is only available in Text View. Note that the **Undo** command does not undo the effects of this command.

Goto Next Bookmark

The **Goto Next Bookmark** command (**F2**)  places the text cursor at the beginning of the next bookmarked line. This command is only available in the Text View.

Goto Previous Bookmark

The **Goto Previous Bookmark** command (**Shift+F2**)  places the text cursor at the beginning of the previous bookmarked line. This command is only available in the Text View.

18.2.14 Comment In/Out

The **Comment In/Out** command is available in Text View and is used to comment and uncomment XML text fragments. Text in an XML document can be commented out using the XML start-comment and end-comment delimiters, respectively <! -- and -->. In XMLSpy, these comment delimiters can be easily inserted using the **Comment In/Out** menu command.

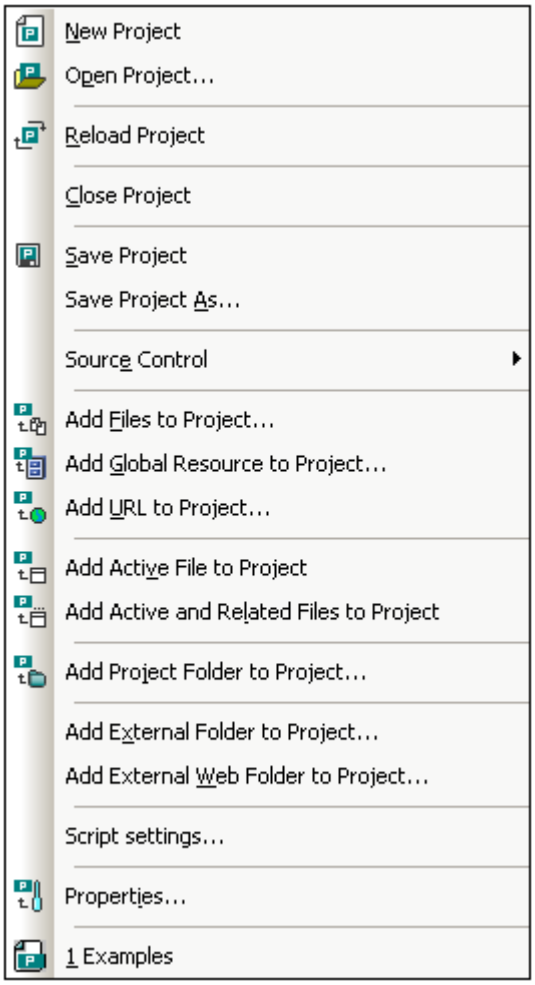
To comment out a block of text, select the text to be commented out and then select the command **Comment In/Out**, either from the **Edit** menu or the context menu that you get on right-clicking the selected text. The commented text will be grayed out (*see screenshot below*).

```
<Department>
    <Name>Administration</Name>
    <Person>
    <Person>
    <Person>
    <!--<Person>
        <First
        <Last></Last>
        <PhoneExt></PhoneExt>
        <EMail></EMail>
        <LeaveTotal></LeaveTotal>
        <LeaveUsed></LeaveUsed>
        <LeaveLeft></LeaveLeft>
    </Person>-->
</Department>
```

To uncomment a commented block of text, select the commented block **excluding** the comment delimiters, and select the command **Comment In/Out**, either from the **Edit** menu or the context menu that you get on right-clicking the selected text. The comment delimiters will be removed and the text will no longer be grayed out.

18.3 Project Menu

XMLSpy uses the familiar tree view to manage multiple files or URLs in XML projects. Files and URLs can be grouped into folders by common extension or any arbitrary criteria, allowing for easy structuring and batch manipulation.



Please note: Most project-related commands are also available in the context menu, which appears when you right-click any item in the project window.

Absolute and relative paths
Each project is saved as a project file, and has the `.spp` extension. These files are actually XML documents that you can edit like any regular XML File. In the project file, absolute paths are used for files/folders on the same level or higher, and relative paths for files/folders in the current folder or in sub-folders. For example, if your directory structure looks like this:

```
| -Folder1
|      |
|      | -Folder2
|             |
|             | -Folder3
|                    |
|                    | -Folder4
```

If your .spp file is located in Folder3, then references to files in Folder1 and Folder2 will look something like this:

```
c:\Folder1\NameOfFile.ext
c:\Folder1\Folder2\NameOfFile.ext
```

References to files in Folder3 and Folder4 will look something like this:

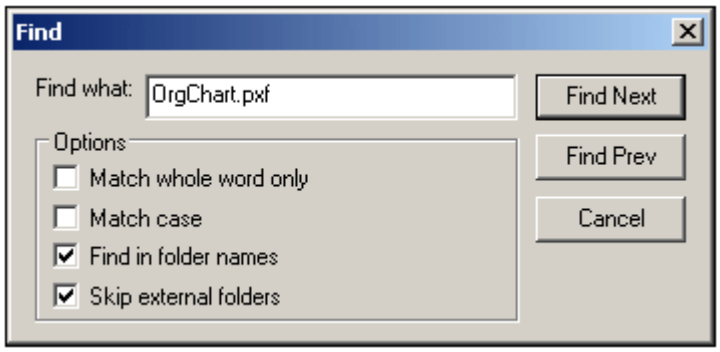
```
.\NameOfFile.ext
.\Folder4\NameOfFile.ext
```

If you wish to ensure that all paths will be relative, save the .spp files in the root directory of your working disk.

Drag-and-drop
In the Project window, a folder can be dragged to another folder or to another location within the same folder. A file can be dragged to another folder, but cannot be moved within the same folder (within which files are arranged alphabetically). Additionally, files and folders can be dragged from Windows File Explorer to the Project window.

Find in project
You can search for project files and folders using their names or a part of their name. If the search is successful, files or folders that are located are highlighted one by one.

To start a search, select the project folder in the Project sidebar that you wish to search, then select the command **Edit | Find** (or the shortcut **Ctrl+F**). In the Find dialog that pops up (*screenshot below*) enter the text string you wish to search for and select or deselect the search options (*explained below*) according to your requirements.



The following search options are available:

- Whole-word matching is more restricted since the entire string must match an entire word in the file or folder name. In file names, the parts before and after the dot (without the dot) are each treated as a word.
- It can be specified that casing in the search string must exactly match the text string in the file or folder name.
- Folder names can be included in the search. Otherwise, only file names are searched.
- External folders can be included or excluded from the search. External folders are actual folders on the system or network, as opposed to project folders, which are created within the project and not on the system.

If the search is successful, the first matching item is highlighted in the Project sidebar. You can then browse through all the returned matching items by clicking the **Find Next** and **Find Prev**

buttons in the Find dialog.

Refreshing projects
If a change is made to an external folder, this change will not be reflected in the Project Window till the project is refreshed.

Global resources in the context menu
When you right-click a folder in the Project window, in the context menu that appears, you can select the **Add Global Resource** menu item to add a global resource. The menu command itself pops up the Choose Global Resource dialog, which lists all the file-type and folder-type global resources in the currently active Global Resources XML File. Select the required global resource, and it will be added to the selected project folder.

Projects and source control providers
If you intend to add an XMLSpy project to a source control repository, please ensure that the project files position in the hierarchical file system structure is one which enables you to add files only from below it (taking the root directory to be the top of the directory tree).

In other words, the directory where the **project file** is located, essentially represents the **root directory** of the project within the source control repository. Files added from above it (the project root directory) will be added to the XMLSpy project, but their location in the repository may be an unexpected one—if they are allowed to be placed there at all.

For example, given the directory structure show above, if a project file is saved in `Folder3` and placed under source control:

- Files added to Folder1 may not be placed under source control,
- Files added to Folder2 are added to the root directory of the repository, instead of to the project folder, but are still under source control,
- Files located in Folder3 and Folder4 work as expected, and are placed under source control.

18.3.1 New Project

The **New Project** command creates a **new** project in XMLSpy. If you are currently working with another project, a prompt appears asking if you want to close all documents belonging to the current project.

18.3.2 Open Project

The **Open Project...** command opens an existing project in XMLSpy. If you are currently working with another project, the previous project is closed first.

18.3.3 Reload Project

The **Reload Project** command reloads the current project from disk. If you are working in a multi-user environment, it can sometimes become necessary to reload the project from disk, because other users might have made changes to the project.

Please note: Project files (. `spp` files) are actually XML documents that you can edit like any regular XML File.

18.3.4 Close Project

The **Close Project** command **closes** the active project. If the project has been modified, you will be asked whether you want to save the project first. When a project is modified in any way, an asterisk is added to the project name in the Project Window.

18.3.5 Save Project, Save Project As

The **Save Project** command **saves** the current project. You can also save a project by making the project window active and clicking the  icon.

The **Save Project As** command **saves** the current project with a new name that you can enter when prompted for one.

18.3.6 Source Control

XMLSpy supports Microsoft SourceSafe and other compatible repositories. The Source Control Systems supported by XMLSpy are listed in the section Supported Source Control Systems. How to install theses systems is described in the section, Installing Source Control Systems. This section describes the commands in the **Project | Source Control** submenu, which are used to work with the Source Control System from within XMLSpy.

Overview of the Source Control feature
The mechanism for placing files in a XMLSpy project under source control is as follows:

1. In XMLSpy, an application project folder containing the files to be placed under source control is created. Typically, the application project folder will correspond to a local folder in which the project files are located. The path to the local folder is referred to as the local path.
2. In the source control system's database (also referred to as source control or repository), a folder is created that will contain the files to be placed under source control.
3. Application project files are added to source control using the command **Project | Source Control | Add to Source Control**.
4. Source control actions, such as checking in to, checking out from, and removing files from source control, can be carried out by using the commands in the **Project | Source Control** submenu. The commands in this submenu are listed in the sub-sections of this

section.

Note: If you wish to change the current source control provider, this can be done in any of two ways: (i) via the Source Control options (**Tools | Options | Source Control**), or (ii) in the Change Source Control dialog (**Project | Source Control | Change Source Control**).

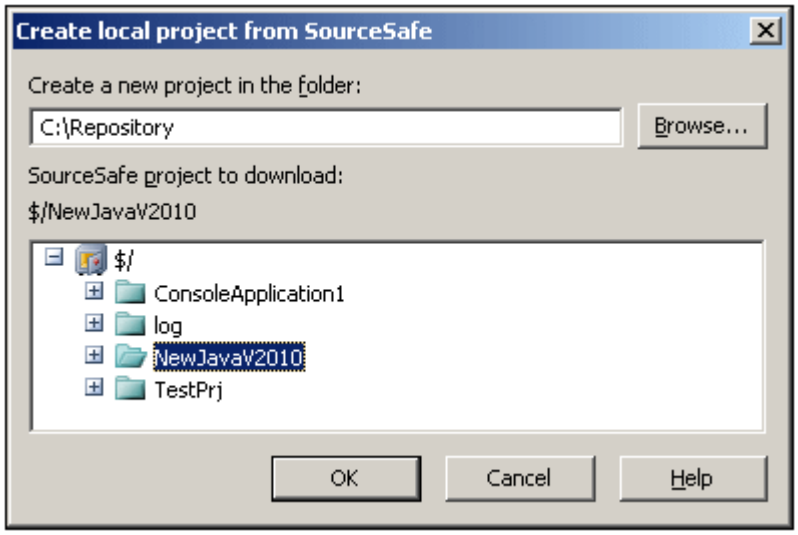
Note: Note that a Source Control project is not the same as an XMLSpy project. Source Control projects are directory-dependent, while XMLSpy projects are logical constructions without direct directory dependence.

For additional information, see the section, Source Control.

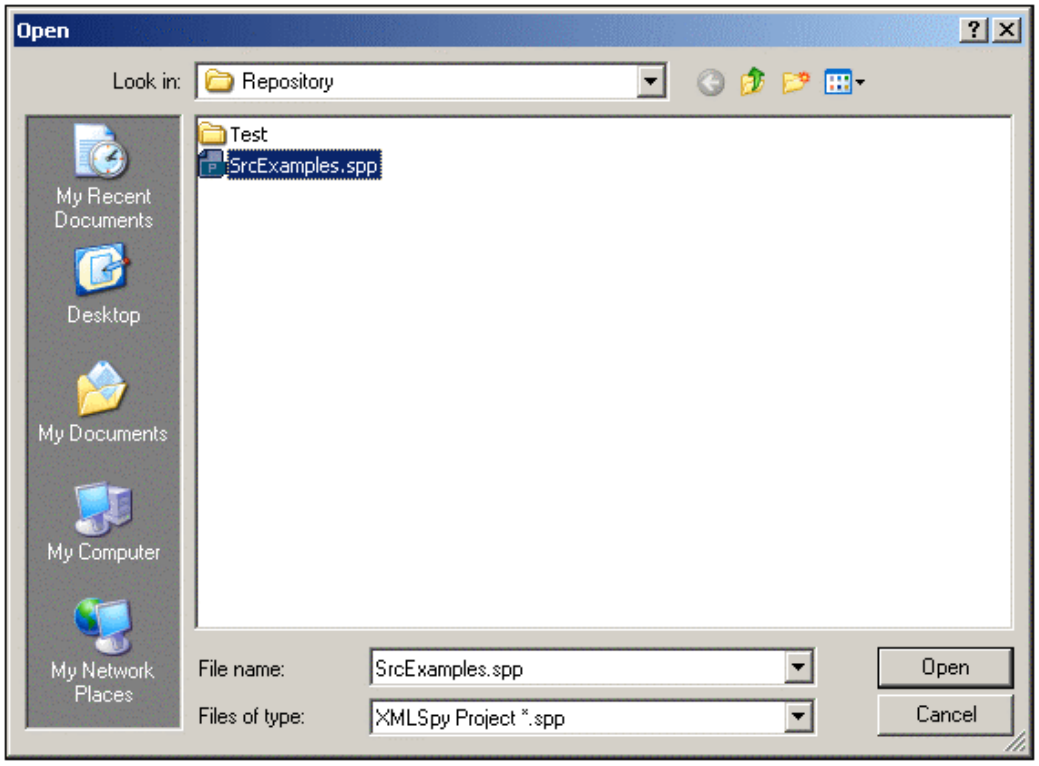
Open from Source Control

The **Open from Source Control** command creates an existing source control project locally. This command is enabled only if an XMLSpy project has previously been added to source control using the menu option Add to Source Control.

1. Select **Project | Source Control | Open from Source Control**. Enter your login details in the Login dialog that appears.
2. The Create Local Project from SourceSafe dialog box appears (*screenshot below*). Select the folder to contain the local project. This folder becomes the Working Folder or Checkout Folder (in the screenshot below: `C:\Repository`).



3. Select the source control project you want to download. In the screenshot above, the source control project folder, `NewJavaV2010`, has been selected. Files in the source control project folder will be downloaded to the local folder. If the local folder you have specified does not exist, a dialog box opens prompting you to create it. Click **Yes** to confirm the new folder.
4. The Open dialog now pops up (*screenshot below*).



5. Click the application project file you wish to create and click **Open**. The selected application project will open in XMLSpy, and the file is placed under source control.

Source control symbols
Folders and files display certain symbols, the meanings of which are given below.

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

Enable Source Control

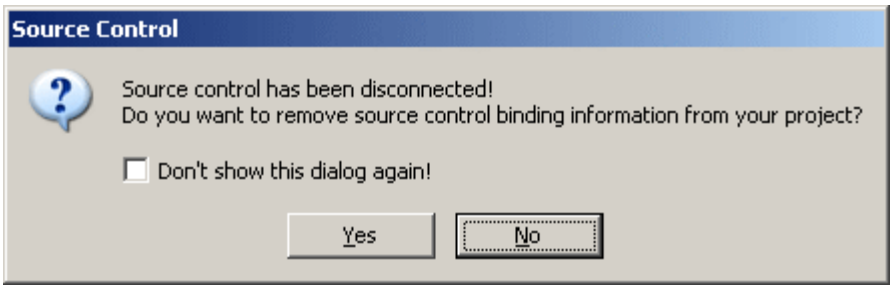
The **Enable Source Control** command allows you to enable or disable source control for a XMLSpy project. Selecting this option on any file or folder, enables/disables source control for the whole project.

Enabling Source Control for a project
To enable source control for a project, do the following:

1. Click on any file or folder in the Project window.
2. Select the menu option **Project | Source Control | Enable Source Code Control**. The previous check in/out status of the various files are retrieved and displayed in the Project window.

Disabling Source Control for a project

To disable source control for a project, select the menu option **Project | Source Control | Enable Source Control**. You are now prompted if you want to remove the binding information from the project (*see screenshot below*).



To provisionally disable source control for the project select **No**. To permanently disable source control for the project select **Yes**.

Get Latest Version

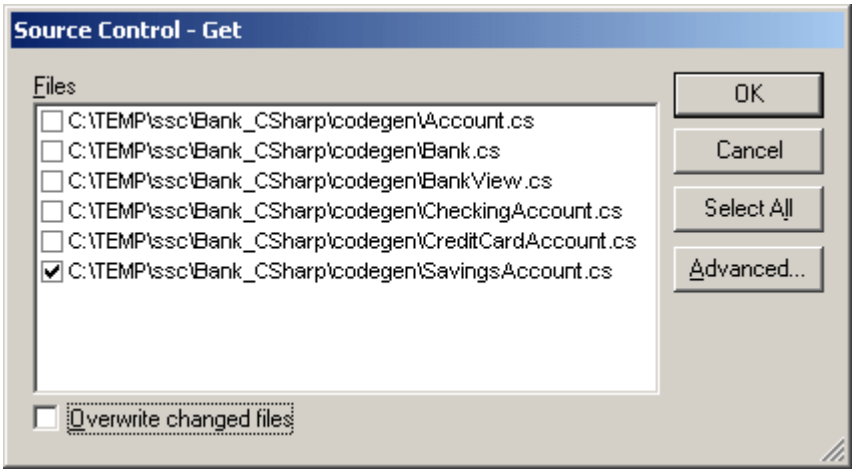
The **Get Latest Version** command retrieves and places the latest source control version of the selected file(s) in the working directory. The files are retrieved as read-only and are not checked out. No further options are available when using this command.

To get the latest version of a file, do the following:

1. Select the file(s) you want to get the latest version of in the Model Tree.
2. Select **Project** | **Source Control** | **Get Latest Version**.

Get

The **Get** command retrieves read-only copies of the selected files and places them in the working folder. By default, the files are not checked-out for editing. To get a file, select it in the Project window (multiple files can be selected) and then select the **Get** command. This pops up the Get dialog (*screenshot below*). Check the files you want to get.



Overwrite changed files check box
Overwrites those files that have been changed locally with those from the source control

database.

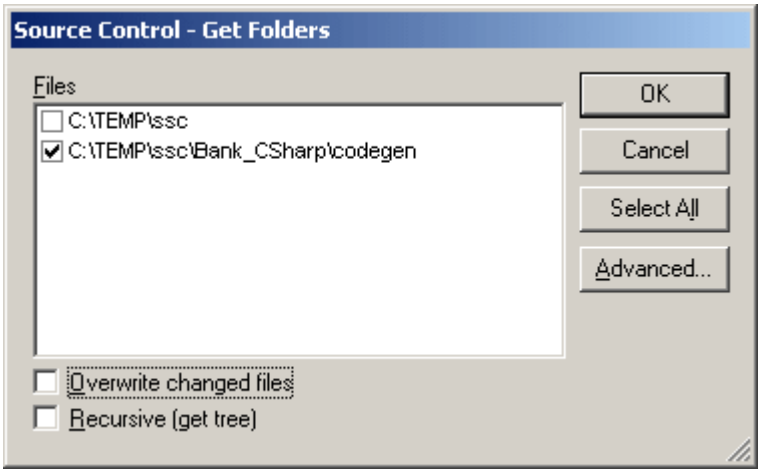
Select All
Selects all the files in the list box.

Advanced
Allows you to define the *Replace writable* and *Set timestamp* options in the respective combo boxes.

The *Make writable* check box removes the read-only attribute of the retrieved files.

Get Folders

The **Get Folders** command retrieves read-only copies of files in the selected folders and places them in the working folder. By default, the files are not checked-out for editing. To get a folder, s elect it in the Project window and then select the **Get Folders** command. This pops up the Get Folders dialog (*screenshot below*). Check the foldersyou want to get.



Overwrite changed files check box
Overwrites those files that have been changed locally with those from the source control database.

Recursive (get tree) check box
Retrieves all files of the folder tree below the selected folder.

Select All
Selects all the files in the list box.

Advanced
Allows you to define the *Replace writable* and *Set timestamp* options in the respective combo boxes.

The *Make writable* check box removes the read-only attribute of the retrieved files.

Check Out

The **Check Out** command checks out the latest version of the selected files and places writable copies in the working directory. The files are flagged as checked out for all other users. To check out files, do the following:

1. Select the file or folder you want to check out in the Model Tree.
2. Select **Project | Source Control | Check Out**.
3. In the Check Out dialog that pops up, select the files to check out, then click **OK**.

Note the following points:

- You can change the number of files to check out by activating the individual check boxes in the Files list box.
- The *Checkout local version* option checks out only the local versions of files, not those from the source control database.
- The following items can be checked out: (i) single files (in the Project window, click the required file to select it; use **Ctrl+Click** to select multiple files, use **Ctrl+Click**); (ii) folders (in the Project window, click the required folder to select it; use **Ctrl+Click** to select multiple folders).
- Checked out files and folders are indicated with a red check mark.

Advanced
Allows you to define the *Replace writable* and *Set timestamp* options in the respective combo boxes.

The *Make writable* check box removes the read-only attribute of the retrieved files.

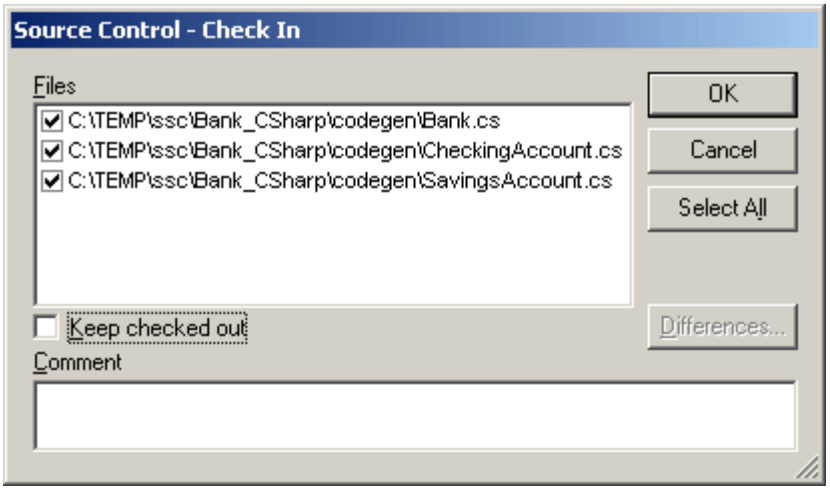
Source control symbols
Folders and files display certain symbols, the meanings of which are given below.

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

Check In

The Check In command checks in previously checked out files (that is, your locally updated files) and places them in the source control database. To check in files, do the following:

1. Select the files in the Model Tree.
2. Select **Project | Source Control | Check In**.
3. In the Check In dialog that pops up, select the files to check in, then click **OK**.



Note the following points:

- As a shortcut for the Check In command, right-click a checked out item in the project window and select **Check In** from the context menu.
- The following items can be checked in: (i) single files (in the Project window, click the required file to select it; use **Ctrl+Click** to select multiple files, use **Ctrl+Click**); (ii) folders (in the Project window, click the required folder to select it; use **Ctrl+Click** to select multiple folders).
- The lock symbol denotes that the file/folder is under source control, but is currently not checked out.
- The **Differences** button is enabled when a line in the Files pane is selected. Clicking it enables you to see differences between two file versions.

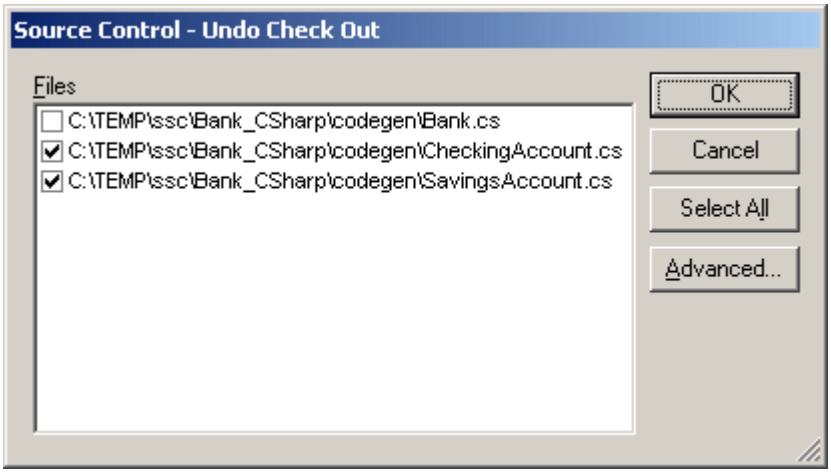
Source control symbols
Folders and files display certain symbols, the meanings of which are given below.

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

Undo Check Out

The **Undo Check Out** command rejects changes made to previously checked out files (that is, your locally updated files) and retains the old files from the source control database. To undo a check out, do the following:

1. Select the files in the Project window.
2. Select **Project | Source Control | Undo Check Out**.
3. In the Undo Check Out dialog that pops up, select the files for which check out should be undone, then click **OK**.



Check out of the following items can be undone: (i) single files (in the Project window, click the required file to select it; use **Ctrl+Click** to select multiple files, use **Ctrl+Click**); (ii) folders (in the Project window, click the required folder to select it; use **Ctrl+Click** to select multiple folders).

Advanced

Allows you to define the *Replace writable* and *Set timestamp* options in the respective combo boxes.

The *Make writable* check box removes the read-only attribute of the retrieved files.

Source control symbols

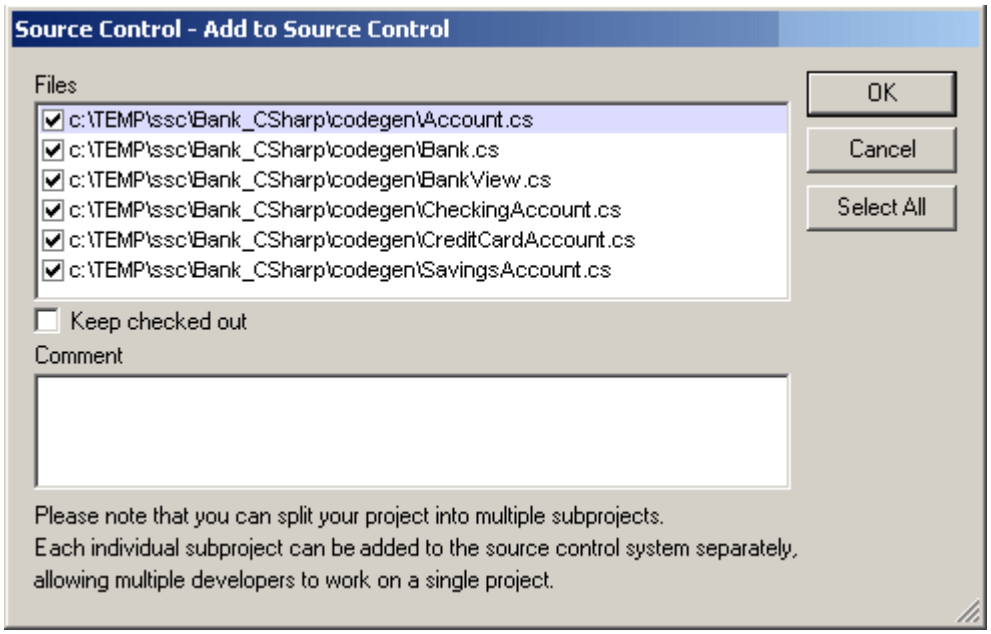
Folders and files display certain symbols, the meanings of which are given below.

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

Add to Source Control

The **Add to Source Control** command adds the selected files in a project folder to the source control database and places them under source control. To add files to source control, do the following:

1. In the Project window, click a file and select the menu option **Project | Source Control | Add to Source Control**. If you select a folder, the files in that folder will be added to source control.
2. In the Add to Source Control dialog that pops up, ensure that the files to be added are checked. If the file to be added should be kept checked out, check the *Keep checked out* check box. Then click **OK**.



The lock symbol now appears next to each of the files placed under source control. If the files are checked out they will be shown with a red check symbol.

Source control symbols

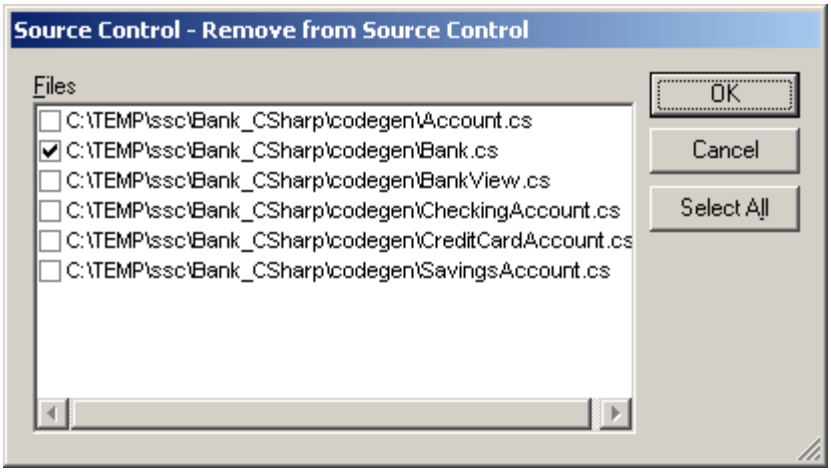
Folders and files display certain symbols, the meanings of which are given below.

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

Remove from Source Control

The **Remove from Source Control** command removes previously added files from the source control database. These files will be visible in the Project window but cannot be checked in or out. Use the **Add to Source Control** command to place them back under source control. To remove files from the source control provider, do the following:

1. In the Project window, select the files you wish to remove.
2. Select **Project | Source Control | Remove from Source Control**.
3. In the Remove from Source Control dialog that pops up, select the files to remove, then click **OK**.

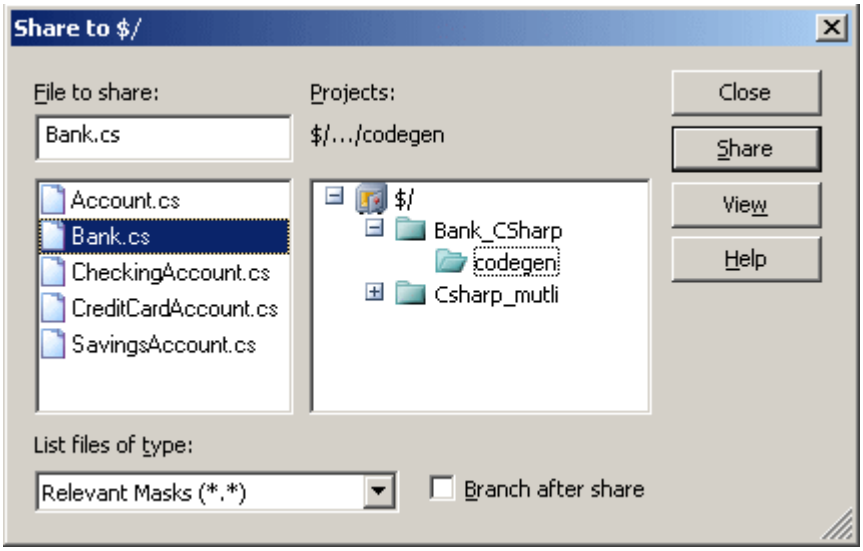


The following items can be removed from source control: (i) single files (in the Project window, click the required file to select it; use **Ctrl+Click** to select multiple files, use **Ctrl+Click**); (ii) folders (in the Project window, click the required folder to select it; use **Ctrl+Click** to select multiple folders).

Share from Source Control

To use the **Share from Source Control** command you must have the Check in/out rights to the project you are sharing from. To share a file from source control, do the following:

1. In the Project window, select the file you want to share and select **Project | Source Control | Share from Source Control**.
2. In the *Projects* list, select the project folder that contains the file you want to share.



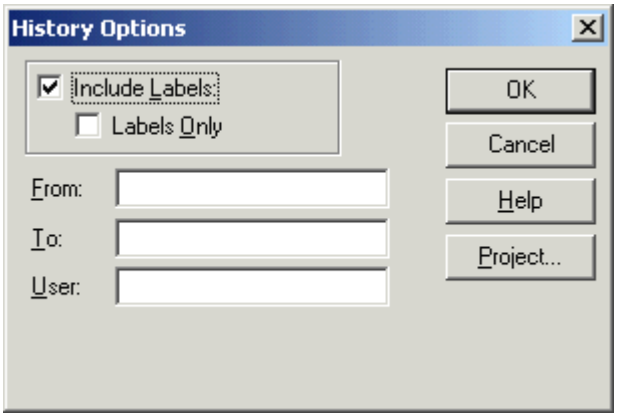
3. In the *Files to share* list box, select the file you want to share and click the **Share** button. The file will be removed from the *Files to share* list.
4. Click the **Close** button to continue.

Branch after share
The *Branch After Share* option shares the file and creates a new branch to create a separate version.

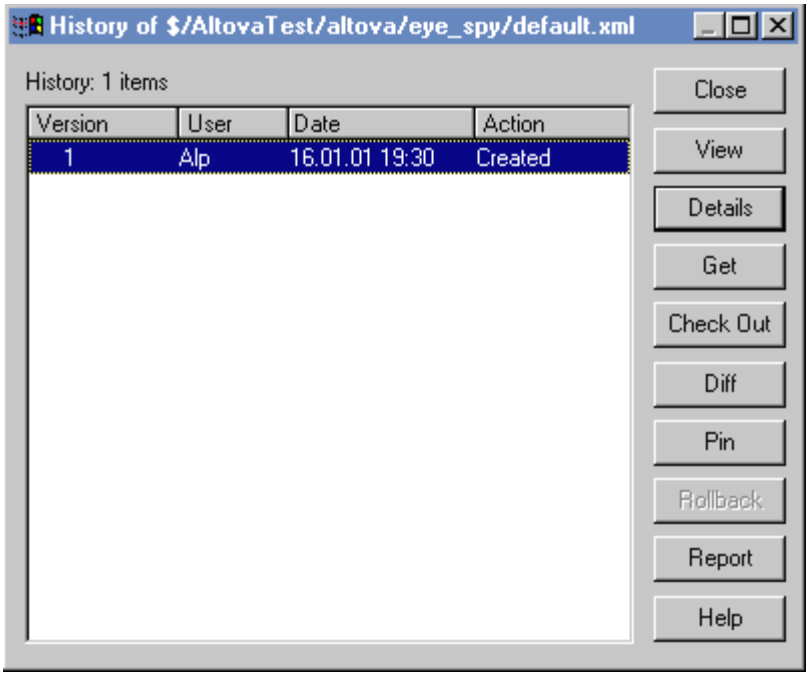
Show History

The **Show History** command displays the history of a file under source control and allows you to view detailed history info of previous versions of a file, view differences and retrieve previous versions of the file. To show the history of a file, do the following:

1. Click on the file in the Project window.
2. Select the menu option **Project | Source control | Show History**. A dialog box prompting for more information may appear (this example uses Visual Source-Safe).



3. Select the appropriate entries and confirm with **OK**.



This dialog box provides various way of comparing and getting specific versions of the file in question. Double-clicking an entry in the list opens the History Details dialog box for that file. The buttons in the dialog provide the following functionality:

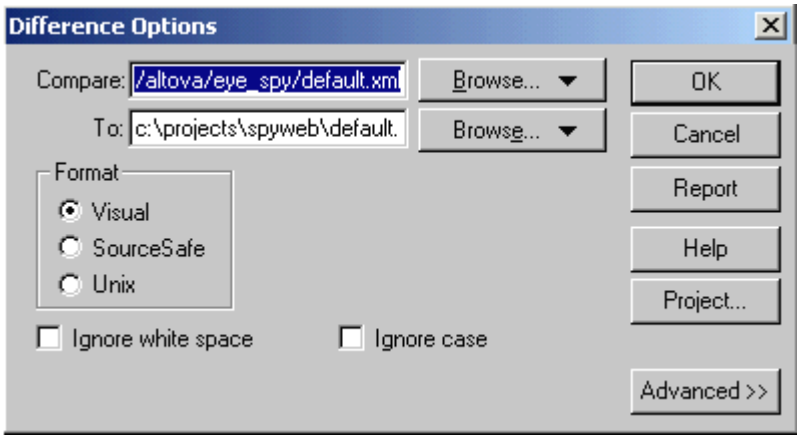
- ***Close:*** closes this dialog box.
- ***View:*** opens a further dialog box in which you can select the type of viewer with which you wish to see the file.
- ***Details:*** opens a dialog box in which you can see the properties of the currently active file.
- ***Get:*** allows you to retrieve one of the previous versions of the file in the version list and place it in the working directory.
- ***Check Out:*** allows you to check out a previous version of the file.
- ***Diff:*** opens the Difference options dialog box, which allows you to define the difference options when viewing the differences between two file versions. Use **CTRL+Click** to mark two file versions in this window, then click Diff to view the differences between them.
- ***Pin:*** pins or unpins a version of the file, allowing you to define the specific file version to use when differencing two files.
- ***Rollback:*** rolls back to the selected version of the file.
- ***Report:*** Generates a history report which you can send to the printer, file, or clipboard.
- ***Help:*** opens the online help of the source control provider plugin.

Show Differences

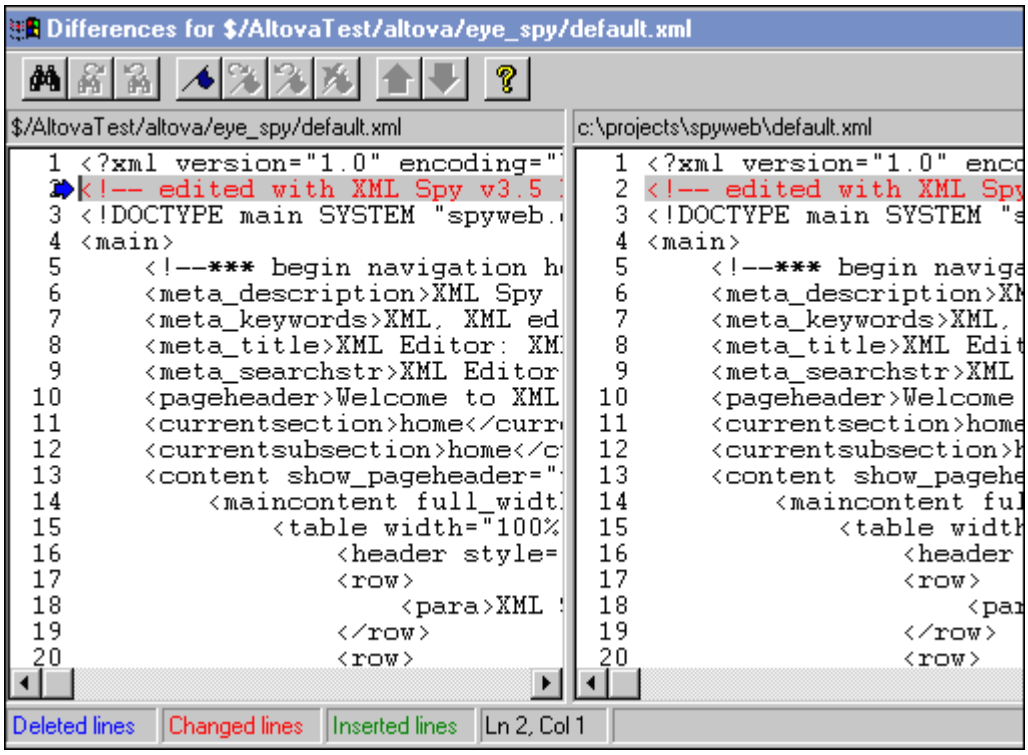
The **Show Differences** command displays the differences between the file currently in the source control repository and the **checked in/out** file of the same name in the working directory. If you have "pinned" one of the files in the history dialog box, then the pinned file will be used in the "Compare" text box. Any two files can be selected using the Browse buttons.

To show the differences between two files, do the following:

1. Check out a file from your project. Click on the file in the project window.
2. Select the menu option **Project | Source control | Show Differences**. A dialog box prompting for more information may appear at this time.



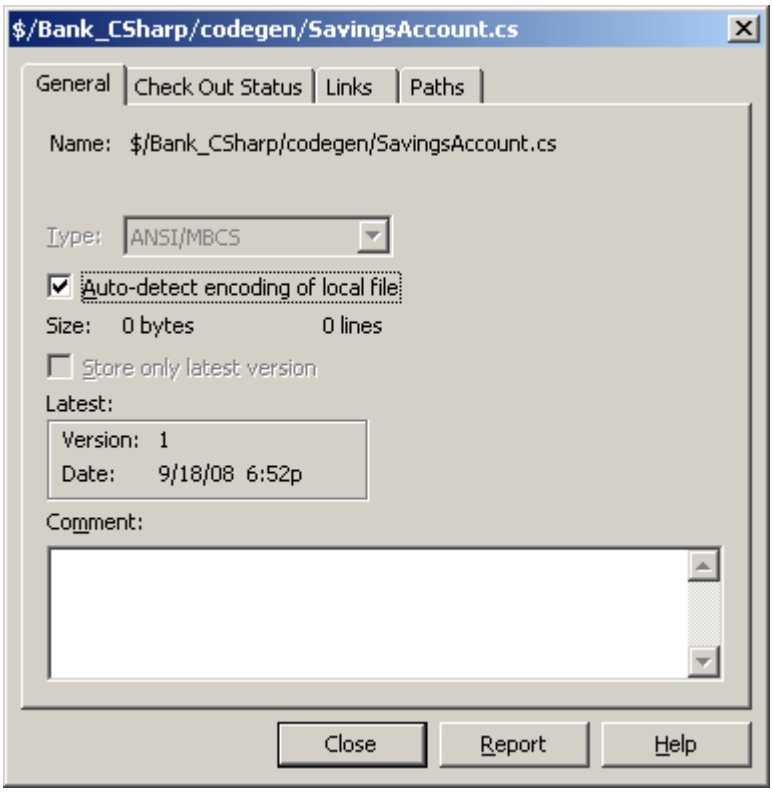
3. Select the appropriate entries and confirm with **OK**.



The differences between the two files are highlighted in both windows (this example uses MS Source-Safe).

Show Properties

The **Show Properties** command displays the properties of the currently selected file (*screenshot below*). The properties displayed depends on the source control provider you use.



Note that this command can only be used on single files.

Refresh Status

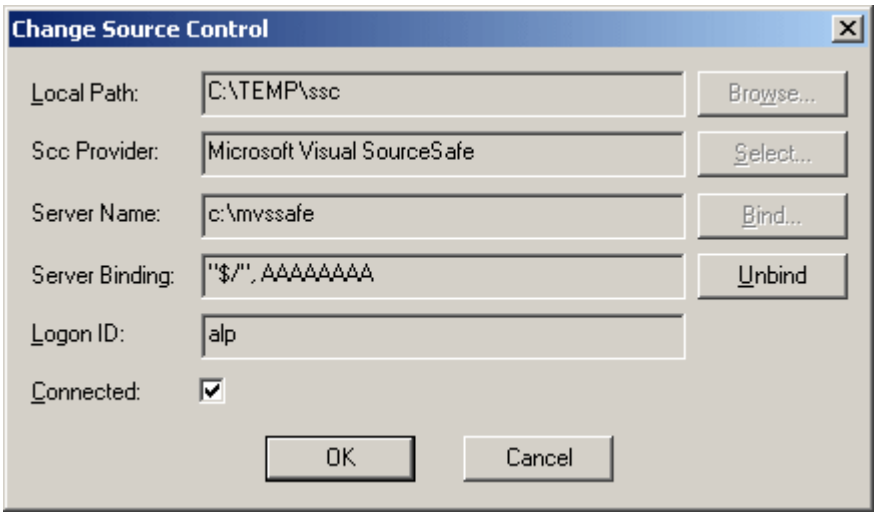
The **Refresh Status** command refreshes the status of all project files independent of their current status.

Source Control Manager

The **Source Control Manager** command starts your source control software with its native user interface.

Change Source Control

The **Change Source Control** command pops up the Change Source Control dialog box (*screenshot below*), which enables you to change the source control provider that you are using. Click the **Unbind** button first, then click the **Select** button to select the new source control provider.



After you have selected the source control provider, you will need to create a binding between the local folder and the folder on the source control server. The local folder is that entered in the Local Path text box. To select a folder on the source control server, click the **Bind** button. This enables you to log on to the server and then navigate to the required folder on the source control server. Click **OK** when done.

18.3.7 Add Files to Project

The **Project** | **Add Files to Project** command adds files to the current project. Use this command to add files to any folder in your project. You can either select a single file or any group of files (using **Ctrl+ click**) in the Open dialog box. If you are adding files to the project, they will be distributed among the respective folders based on the File Type Extensions defined in the Project Properties dialog box.

18.3.8 Add Global Resource to Project

The **Project** | **Add Global Resource to Project** command pops up the Choose Global Resource dialog, in which you can select a global resource of file or folder type to add to the project. If a file-type global resource is selected, then the file is added to the appropriate folder based on the File Type Extensions defined in the Project Properties dialog box. If a folder-type global resource is selected, that folder will be opened in a file-open dialog and you will be prompted to select a file; the selected file is added to the appropriate folder based on the File Type Extensions defined in the Project Properties dialog box. For a description of global resources, see the Global Resources section in this documentation.

18.3.9 Add URL to Project

The **Project** | **Add URL to Project** command adds a URL to the current project. URLs in a project cause the target object of the URL to be included in the project. Whenever a batch operation is performed on a URL or on a folder that contains a URL object, XMLSpy retrieves

the document from the URL, and performs the requested operation.

18.3.10 Add Active File to Project

The **Project** | **Add Active File to Project** command adds the active file to the current project. If you have just opened a file from your hard disk or through an URL, you can add the file to the current project using this command.

18.3.11 Add Active And Related Files to Project

The **Project** | **Add Active and Related Files to Project** command adds the currently active XML document and all related files to the project. When working on an XML document that is based on a DTD or Schema, this command adds not only the XML document but also all related files (for example, the DTD and all external parsed entities to which the DTD refers) to the current project.

Please note: Files referenced by processing instructions (such as XSLT files) are not considered to be related files.

18.3.12 Add Project Folder to Project

The **Project** | **Add Project Folder to Project** command adds a new folder to the current project. Use this command to add a new folder to the current project or a sub-folder to a project folder. You can also access this command from the context-menu when you right-click on a folder in the project window.

Note: A project folder can be dragged and dropped into another project folder or to any other location in the project. Also, a folder can be dragged from Windows (File) Explorer and dropped into any project folder.

Note: Project folders are green, while external folders are yellow.

18.3.13 Add External Folder to Project

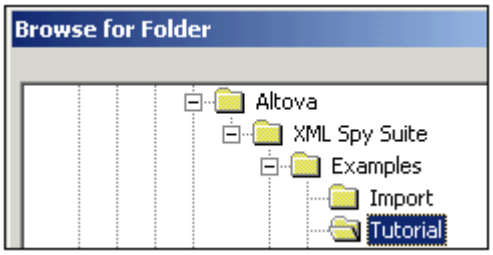
The **Project** | **Add External Folder to Project** command adds a new external folder to the current project. Use this command to add a local or network folder to the current project. You can also access this command from the context-menu when you right-click a folder in the project window.

Note: External folders are yellow, while project folders are green.

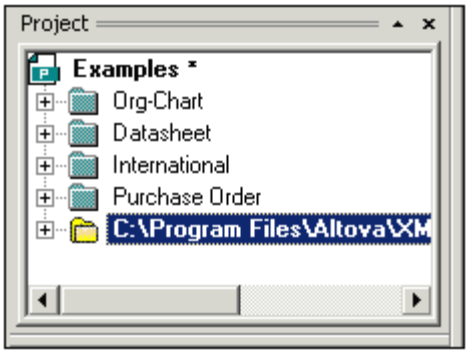
Note: Files contained in external folders cannot be placed under source control.

Adding external folders to projects
To add an external folder to the project:

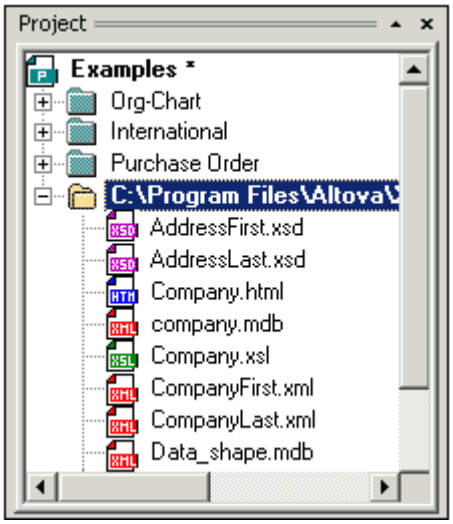
1. Select the menu option **Project | Add External Folder to Project**.
2. Select the folder you want to include from the Browse for Folder dialog box, and click **OK** to confirm.



The selected folder now appears in the project window.

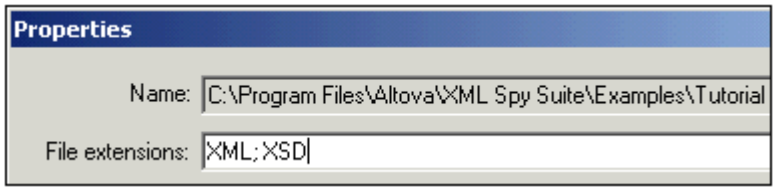


3. Click the plus icon to view the folder contents.

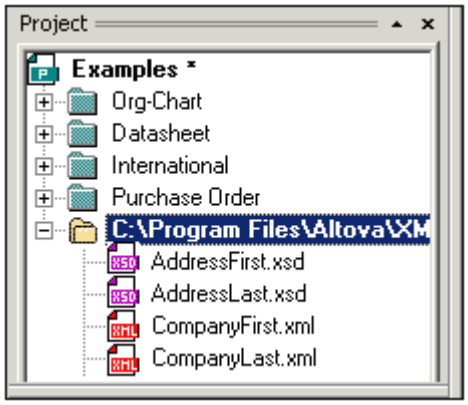


Filtering contents of folders
To filter the contents of the folder:

1. Right-click the local folder, and select the popup menu option **Properties**. This opens the Properties dialog box.



2. Click in the **File extensions** field and enter the file extensions of the file types you want to see. You can separate each file type with a **semicolon** to define multiple types (XML and Schema XSDs in this example).
3. Click **OK** to confirm.



The Project window now only shows the XML and XSD files of the tutorial folder.

Validating external folders
To validate and check an external folder for well-formedness:

1. Select the file types you want to see or check from the external folder,
2. Click the folder and click the **Check well-formedness** or **Validate** icon (hotkeys **F7** or **F8**). All the files visible under the folder are checked. If a file is malformed or invalid, then this file is opened in the Main Window, allowing you to edit it.
3. Correct the error and run the validation process once more to recheck.

Updating a project folder
You might add or delete files in the local or network directory at any time. To update the folder view, right-click the external folder, and select the popup menu option **Refresh external folder**.

Deleting external folders and files in them
Select an external folder and press the **Delete** key to delete the folder from the Project window. Alternatively, right-click the external folder and select the **Delete** command. Each of these actions only deletes the external folder from the Project window. The external folder is not deleted from the hard disk or network.

To delete a file in an external folder, you have to delete it physically from the hard disk or network. To see the change in the project, refresh the external folder contents (right-click the external folder and select **Refresh**).

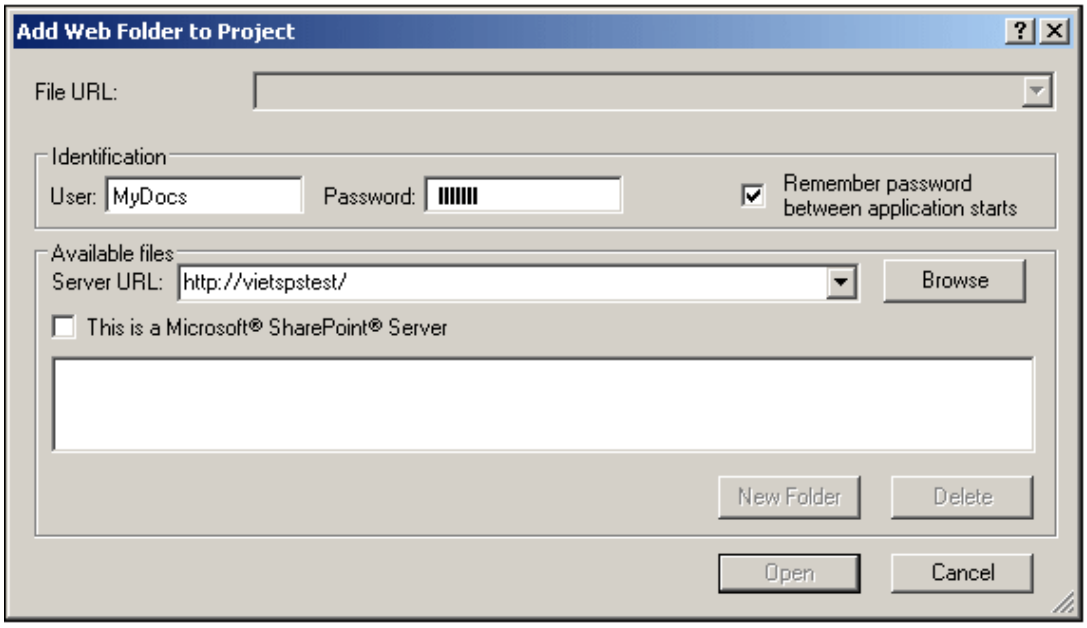
Note: An external folder can be dragged and dropped into a project folder or to any other location in the project (but not into another external folder). Also, an external folder can be dragged from Windows (File) Explorer and dropped into any location in the project window except into another external folder.

18.3.14 Add External Web Folder to Project

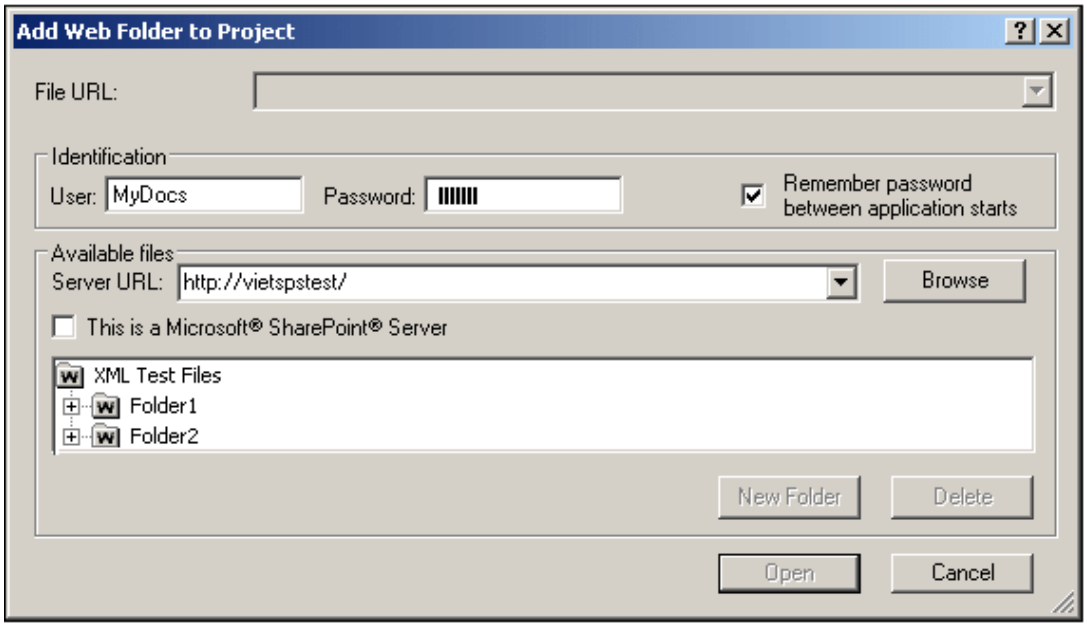
This command adds a new external web folder to the current project. You can also access this command from the context-menu when you right-click a folder in the project window. Note that files contained in external folders cannot be placed under source control.

Adding an external web folder to the project
To add an external web folder to the project, do the following:

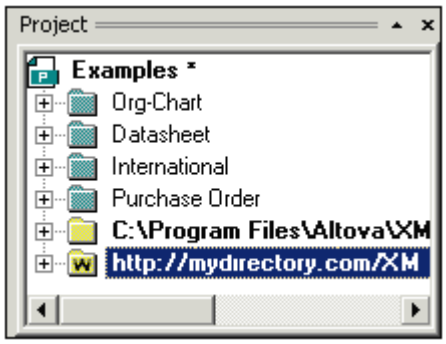
1. Select the menu option **Project | Add External Web Folder to Project**. This opens the Add Web Folder to Project dialog box (*screenshot below*).



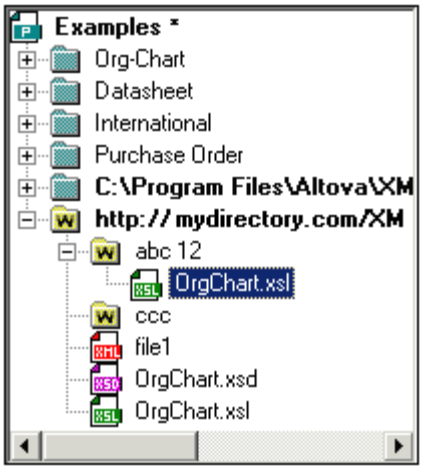
2. Click in the Server URL field and enter the URL of the server URL. If the server is a Microsoft® SharePoint® Server, check this option. See the *Folders on a Microsoft® SharePoint® Server* section below for further information about working with files on this type of server.
3. If the server is password-protected, enter your User ID and password in the *User* and *Password* fields.
4. Click **Browse** to connect to the server and view the available folders.



5. Click the folder you want to add to the project view. The **Open** button only becomes active once you do this. The URL of the folder now appears in the File URL field.
6. Click **Open** to add the folder to the project.



7. Click the plus icon to view the folder contents.



Filtering folder contents
To filter the contents of a folder, right-click the folder and select **Properties** from the context menu. In the Properties dialog that pops up, click in the *File Extensions* field and enter the file extensions of the file types you want to see (for example, XML and XSD files). Separate each file type with a semicolon (for example: `xml; xsd; sps`). The Project window will now show that folder only with files having the specified extension.

Validating and checking a folder for well-formedness
To check the files in a folder for well-formedness or to validate them, select the folder and then click the **Check well-formedness**  or **Validate**  icon (hotkeys **F7** or **F8**, respectively). All the files that are visible in the folder are checked. If a file is malformed or invalid, then this file is opened in the main window, allowing you to edit it. Correct the error and restart the process to recheck the rest of the folder. Note that you can select discontinuous files in the folder by holding **Ctrl** and clicking the files singly. Only these files are then checked when you press **F7** or **F8**.

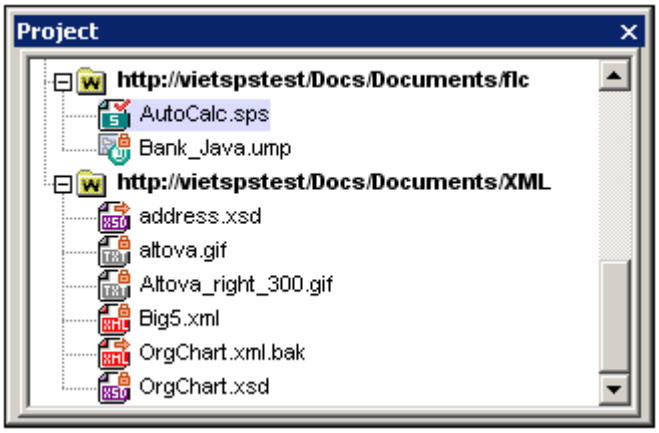
Updating the contents of the project folder
Files may be added or deleted from the web folder at any time. To update the folder view, right-click the external folder and select the context menu option **Refresh**.

Deleting folders and files
Since it is the Web folder that has been added to the project, it is only the Web folder (and not files within it) that can be deleted from the project. You can delete a Web folder from a project, by either (i) right-clicking the folder and selecting **Delete**, or (ii) selecting the folder and pressing the **Delete** key. This only deletes the folder from the Project view; it does not delete anything on the web server.

Note: Right-clicking a single file and pressing the **Delete** key does not delete a file from the Project window. You have to delete it physically on the server and then refresh the contents of the external folder.

Folders on a Microsoft® SharePoint® Server
When a folder on a Microsoft® SharePoint® Server has been added to a project, files in the folder can be checked out and checked in via commands in the context menu of the file listing in the Project window (*see screenshot below*). To access these commands, right-click the file you wish to work with and select the command you want (**Check Out**, **Check In**, **Undo Check Out**).

The User ID and password can be saved in the properties of individual folders in the project, thereby enabling you to skip the verification process each time the server is accessed.



In the Project window (*screenshot below*), file icons have symbols that indicate the check-in/ check-out status of files. The various file icons are shown below:

	Checked in. Available for check-out.
	Checked out by another user. Not available for check-out.
	Checked out locally. Can be edited and checked-in.

The following points should be noted:

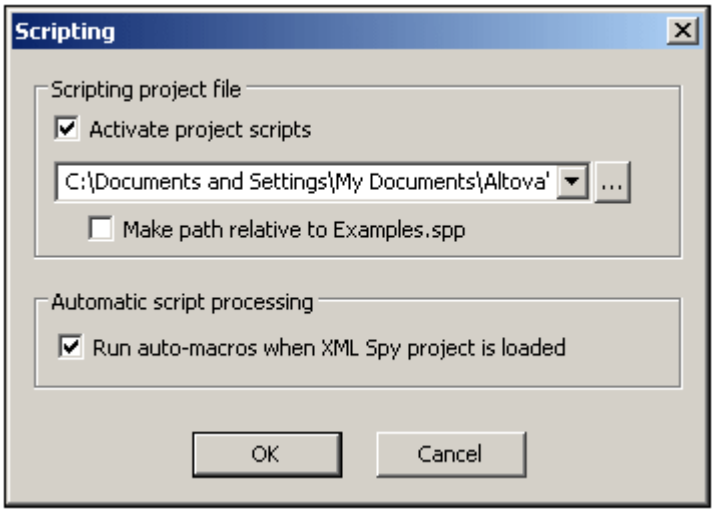
- After you check out a file, you can edit it in your Altova application and save it using **File | Save (Ctrl+S)**.
- You can check-in the edited file via the context menu in the Project window (*see screenshot above*), or via the context menu that pops up when you right-click the file tab in the Main Window of your application (*screenshot below*).

- When a file is checked out by another user, it is not available for check out.
- When a file is checked out locally by you, you can undo the check-out with the Undo Check-Out command in the context menu. This has the effect of returning the file unchanged to the server.
- If you check out a file in one Altova application, you cannot check it out in another Altova application. The file is considered to be already checked out to you. The available commands at this point in any Altova application supporting Microsoft® SharePoint® Server will be: **Check In** and **Undo Check Out**.

18.3.15 Script Settings

A scripting project is assigned to an XMLSpy project as follows:

1. In the XMLSpy GUI, open the required application project.
2. Select the menu command **Project | Script Settings**. The Scripting dialog (*screenshot below*) opens.



3. Check the *Activate Project Scripts* check box and select the required scripting project (`.asprj` file). If you wish to run Auto-Macros when the XMLSpy project is loaded, check the *Run Auto-Macros* check box.
4. Click **OK** to finish.

Note: To deactivate (that is, unassign) the scripting project of an XMLSpy project, uncheck the *Activate Project Scripts* check box.

18.3.16 Properties

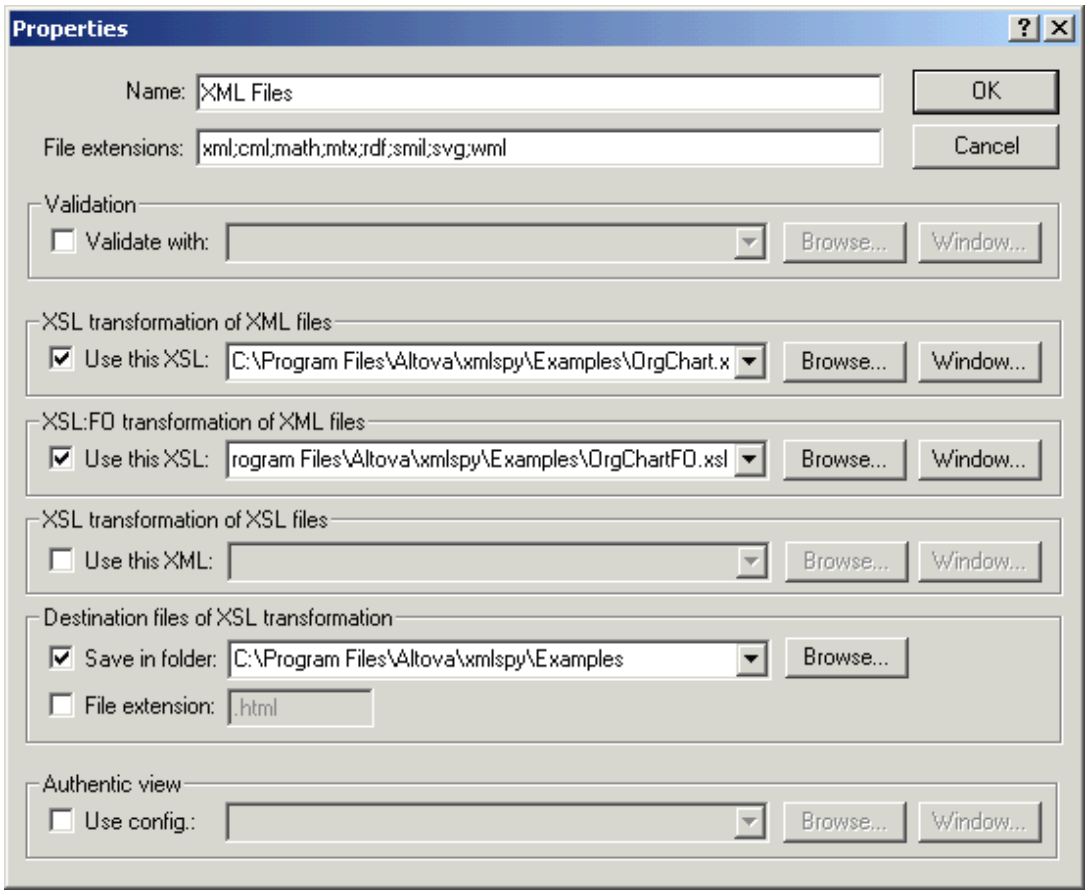
The **Project** | **Project Properties** command lets you define important settings for any of the specific folders in your project.

To define the Project Properties for a folder:

1. Right-click on the folder you want to define the properties for.
2. Select the **Properties...** command from the context menu.

Please note:

If your project file is under source control, a prompt appears asking if you want to check out the project file (*.spp). Click **OK** if you want to edit settings and be able to save them.



The files specified in the **Use this xxx** entry will take precedence over any local assignment directly within the XML file. For example, the `OrgChart.xsl` file (in the **Use this XSL** entry), will always be used when transforming any of the XML files in the **XML Files** folder. Also, such specified files for individual folders take precedence over files specified for ancestor folders.

File extensions
The File extensions help to determine the automatic file-to-folder distribution that occurs when you add new files to the project (as opposed as to one particular folder).

User ID and password for external folders
Among the properties of external folders (including external Web folders) you can save the User ID and password that might be required for accessing the server.

Validate
Define the DTD or Schema document that should be used to validate all files in the current folder (Main Pages in this example).

XSL transformation of XML files
You can define the XSL Stylesheet to be used for XSL Transformation of all files in the folder.

If you are developing XSL Stylesheets yourself, you can also assign an example XML document to be used to preview the XSL Stylesheet in response to an XSL Transformation command issued from the stylesheet document, instead of the XML instance document.

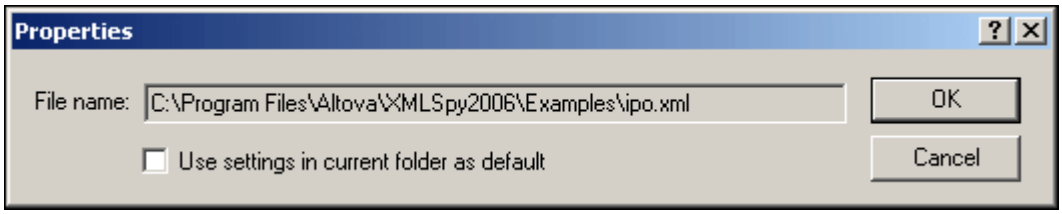
XSL:FO transformation of XML files
You can define the XSL Stylesheet, containing XSL:FO markup, to be used for XSL:FO

Transformation of all files in the folder.

Destination files of XSL transformation
For batch XSL Transformations, you can define the destination directory the transformed files should be placed in.

If you have added one file or URL to more than one folder in your project, you can use the Properties dialog to set the default folder whose settings should be used when you choose to validate or transform the file in non-batch mode. To do this, use the **Use settings in current folder as default** check box (*see screenshot*).

To access the Properties dialog and check this check box:
1. Copy an XML file in a project to a different folder.
2. Right-click the copied file in the Project window and select **Properties** from the context menu.



Authentic View
The "Use config." option allows you to select a StyleVision Power Stylesheet (SPS file) when editing XML files using Authentic View, in the current folder. After you have associated the schema, SPS, and XML files with each other, and entered them in a project, changing the location of any of the files could cause errors among the associations.

To avoid such errors, it is best to finalize the locations of your schema, SPS, and XML files before associating them with each other and assigning them to a project.

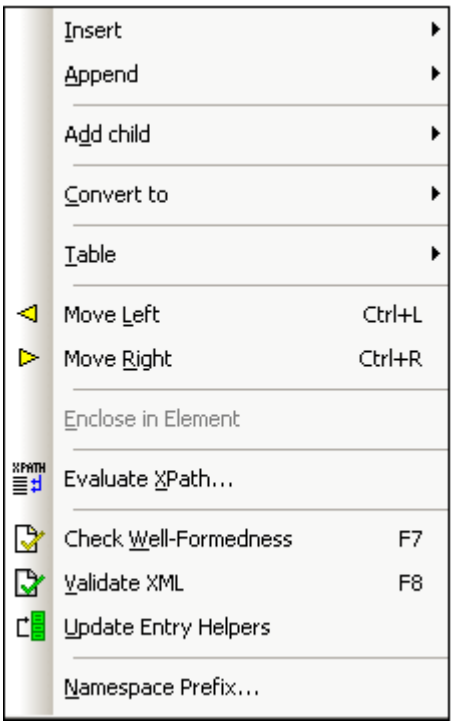
18.3.17 Most Recently Used Projects

This command displays the file name and path for the nine most recently used projects, allowing quick access to these files.

Also note, that XMLSpy can automatically open the last project that you used, whenever you start XMLSpy. (**Tools | Options | File** tab, Project | Open last project on program start).

18.4 XML Menu

The **XML** menu contains commands commonly used when working with XML documents. You will find commands to insert or append elements, modify the element hierarchy, set a namespace prefix, as well as to evaluate XPaths in the context of individual XML documents.

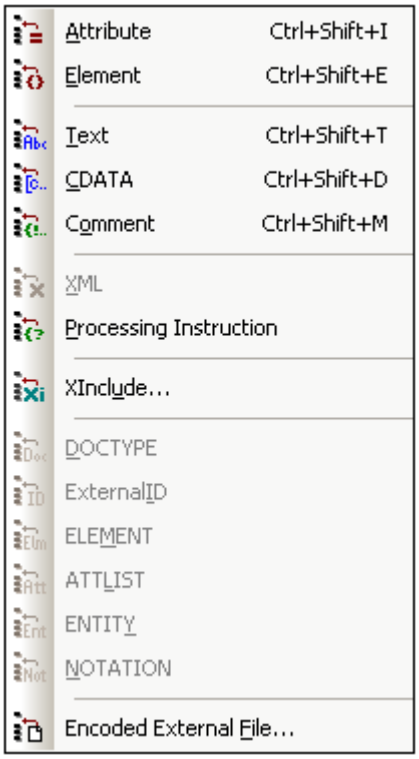


Among the most frequently used XML tasks are checks for the well-formedness of documents and validity of XML documents. Commands for these tasks are in this menu.

18.4.1 Insert

The **XML** | **Insert** command, though enabled in all views, can be used in Grid View only. It has a submenu (*see screenshot*) with which you can insert:

- The XML declaration and node types (Attribute, Element, Text, CDATA, Comment, Processing Instruction) in XML documents;
- DOCTYPE declarations and external DTD declarations in XML documents;
- DTD declarations (ELEMENT, ATTLIST, ENTITY, and NOTATION) in DTD documents and internal DTD declarations of XML documents.



Insert Attribute

Ctrl+Shift+I

The **XML** | **Insert | Attribute** command is available in Grid View only, and inserts a new attribute before the selected item. An inserted attribute may appear a few lines before the current item in Grid View. This is because attributes immediately follow their parent element in Grid View and precede all child elements of that parent element.

Insert Element

Ctrl+Shift+E

The **XML** | **Insert | Element** command is available in Grid View only, and inserts a new element before the selected item. If the current selection is an attribute, the new element is before the first child element of the attribute's parent element.

Insert Text

Ctrl+Shift+T

The **XML** | **Insert | Text** command is available in Grid View only, and inserts a new text row before the selected item. If the current selection is an attribute, the text row is inserted after the attribute and before the first child element of the attribute's parent element.

Insert CDATA

 **Ctrl+Shift+D**

The **XML** | **Insert | Cdata** command is available in Grid View only, and inserts a new CDATA block before the selected item. If the current selection is an attribute, the CDATA block is inserted after the attribute and before the first child element of the attribute's parent element.

Insert Comment

 **Ctrl+Shift+M**

The **XML** | **Insert | Comment** command is available in Grid View only, and inserts a new comment before the selected item. If the current selection is an attribute, the new comment row is inserted after the attribute and before the first child element of the attribute's parent element.

Insert XML

The **XML** | **Insert | XML** command is available in Grid View only, and inserts a row for the XML declaration before the selected item. You must insert the child attributes of the XML declaration and the values of this attribute. An XML declaration must look something like this:

```
<?xml version="1.0" encoding="UTF-8"?>
```

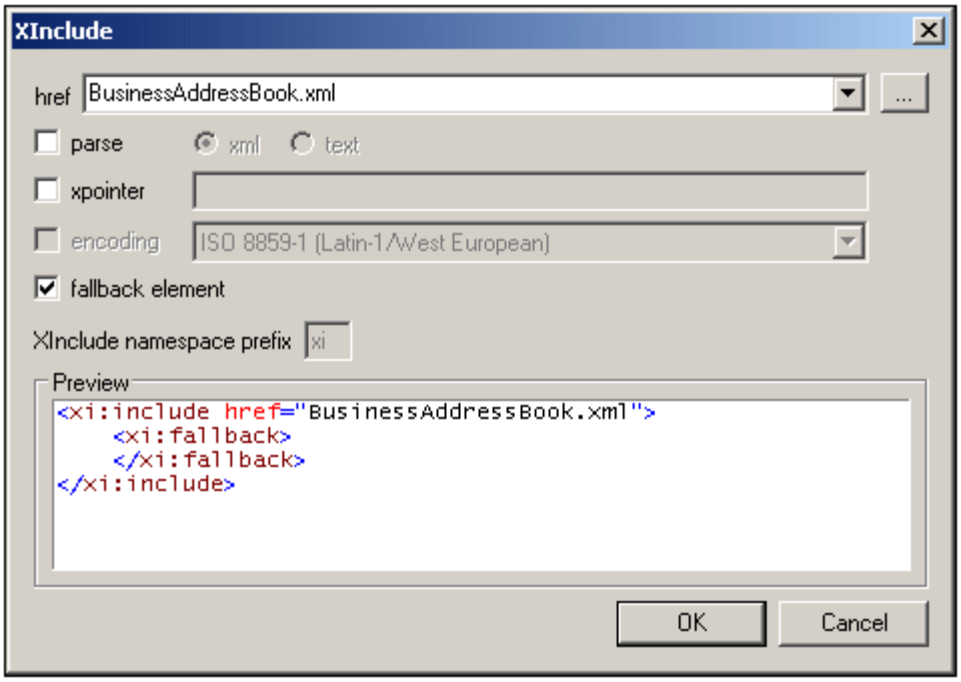
Please note: Since an XML document may only contain one XML declaration at the very top of the file, this command should only be used with the topmost row selected and if an XML declaration does not already exist.

Insert Processing Instruction

The **XML** | **Insert | Processing Instruction** command is available in Grid View only, and inserts a new processing instruction (PI) before the selected item. If the current selection is an attribute, the PI is inserted after the attribute and before the first child element of the attribute's parent element.

Insert XInclude

The **XML** | **Insert | XInclude** command is available in Grid View only, and enables you to insert a new XInclude element before the selected item. If the current selection is an attribute, the XInclude element is inserted after the attribute and before the first child element of the attribute's parent element. Selecting this command pops up the XInclude dialog (*screenshot below*).



The XML file to be included is entered in the `href` text box (alternatively, you can browse for the file by clicking the **Browse (...)** button to the right of the text box). The filename will be entered in the XML document as the value of the `href` attribute. The `parse`, `xpointer`, and `encoding` attributes of the XInclude element (`xi:include`), and the `fallback` child element of `xi:include` can also be inserted via the dialog. Do this by first checking the appropriate check box and then selecting/entering the required values. In the case of the `fallback` element, checking its check box only inserts the empty element. The content of the `fallback` element must be added subsequently in one of the editing views.

The `parse` attribute determines whether the included document is to be parsed as XML or text. (XML is the default value and therefore need not be specified.) The `xpointer` attribute identifies a specific fragment of the document located with the `href` attribute; it is this fragment that will be included. The `encoding` attribute specifies the encoding of the included document so that XMLSpy can transcode this document (or the part of it to be included) into the encoding of the including document. The contents of the `fallback` child element replace the `xi:include` element if the document to be included cannot be located.

Here is an example of an XML document that uses XInclude to include two XML documents:

```
<?xml version="1.0" encoding="UTF-16"?>
<AddressBook xsi:schemaLocation="http://www.altova.com/sv/myaddresses
AddressBook.xsd"
       xmlns="http://www.altova.com/stylevision/tutorials/myaddresses"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:xi="http://www.w3.org/2001/XInclude">
       <xi:include href="BusinessAddressBook.xml"/>
       <xi:include href="PersonalAddressBook.xml"/>
</AddressBook>
```

When this XML document is parsed, it will replace the two XInclude elements with the files specified in the respective `href` attributes.

xml:base

When the XML validator of XMLSpy reads an XML document and encounters the `include` element in the XInclude namespace (hereafter `xi:include`), it replaces this element (`xi:include`) with the XML document named in the `href` attribute of the `xi:include` element. The document element (root element) of the included XML document (or the element identified by an XPointer) will be included with an attribute of `xml:base` in order to preserve the base URIs of the included element. If the resulting XML document (containing the included XML document/s or tree fragment/s) must be valid according to a schema, then the document element of the included document (or the top-level element of the tree fragment) must be created with a content model that allows an attribute of `xml:base`. If, according to the schema, the `xml:base` attribute is not allowed on this element, then the resulting document will be invalid. How to define an `xml:base` attribute in an element's content model using XMLSpy's Schema View is described in the xml: Prefixed Attributes section of the Schema View section of the documentation.

XPointers

XMLSpy supports XPointers in XInclude. The relevant W3C recommendations are the XPointer Framework and XPointer element() Scheme recommendations. The use of an XPointer in an XInclude element enables a specific part of the XML document to be included, instead of the entire XML document. XPointers are used within an XInclude element as follows:

```
<xi:include href="PersonalAddressBook.xml" xpointer="element(usa)"/>
<xi:include href="BusinessAddressBook.xml" xpointer="element(/1/1)"/>
<xi:include href="BobsAddressBook.xml" xpointer="element(usa/3/1)"/>
<xi:include href="PatsAddressBook.xml" xpointer="
element(usa)element(/1/1)"/>
```

In the element() scheme of XPointer, an NCName or a child sequence directed by integers may be used.

- In the first `xi:include` element listed above, the `xpointer` attribute uses the element scheme with an NCName of `usa`. According to the XPointer Framework, this NCName identifies the element that has an ID of `usa`.
- In the second `xi:include` listed above, the `xpointer` attribute with a value of `element(/1/1)` identifies, in the first step, the first child element of the document root (which, if the document is well-formed, will be its document (or root) element). In the second step, the first child element of the element located in the previous step is located; in our example, this would be the first child element of the document element.
- The `xpointer` attribute of the third `xi:include` listed above uses a combination of NCName and child sequence. This XPointer locates the first child element of the third child element of the element having an ID of `usa`.
- If you are not sure whether your first XPointer will work, you can back it up with a second one as shown in the fourth `xi:include` listed above: `xpointer="element(usa)element(/1/1)"`. Here, if there is no element with an ID of `usa`, the back-up XPointer specifies that the first child element of the document element is to be selected. Additional backups are also allowed. Individual XPointers may not be separated, or they may be separated by whitespace: for example, `xpointer="element(usa)element(addresses/1) element(/1/1)"`.

Note: The namespace binding context is not used in the element() scheme because the element() scheme does not support qualified names.

Insert DOCTYPE

The **XML** | **Insert** | **DOCTYPE** command is available in the Grid View of an XML file when a top-level node is selected. It appends a DOCTYPE declaration at the top of the XML document. You must enter the name of the DOCTYPE, and this name must be the same as the name of the document element.

After you have entered the name of the DOCTYPE, you can enter the declarations you wish to use in the internal DTD subset.

Please note:

- A DOCTYPE declaration may only appear between the XML declaration and the XML document element.
- You could use the Assign DTD command instead to create a DOCTYPE statement that refers to an external DTD document.

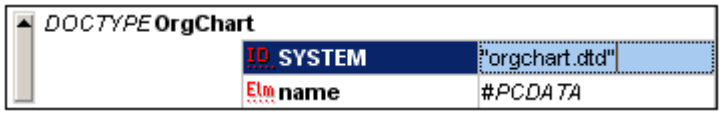
Insert ExternalID

A DOCTYPE declaration in an XML file can contain a reference to an external resource containing DTD declarations. This resource is referenced either through a public or system identifier. For example:

```
<!DOCTYPE doc_element_name PUBLIC "publicID" "systemID">
<!DOCTYPE doc_element_name SYSTEM "systemID">
```

A system identifier is a URI that identifies the external resource. A public identifier is location-independent and can be used to dereference the location of an external resource. For example, in your XMLSpy installation, URIs for popular DTDs and XML Schemas are listed in the catalog files named `catalog.xml` in the various schema folders in `C:\Program Files\Altova\Common2012\Schemas\`. A public identifier in an XML document can be used to dereference a DTD listed in these catalog files.

The **XML** | **Insert** | **ExternalID** command is available when a "child" item of the DOCTYPE declaration in an XML file is selected in Grid View. This command inserts a Grid View row for an external identifier (`PUBLIC` or `SYSTEM`). You must enter the type of identifier and its value.



The Text View corresponding to the screenshot of the Grid View shown above looks something like this:

```
<!DOCTYPE OrgChart SYSTEM "orgchart.dtd" [
 <!ELEMENT name (#PCDATA)>
]>
```

Please note: A row for External-ID can be added as a child when the DOCTYPE item is selected, or it can be inserted or appended when one of the child items of the DOCTYPE item is selected, for example, the ELEMENT declaration `name` in the example above.

Insert ELEMENT

The **XML** | **Insert | ELEMENT** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It inserts an ELEMENT declaration before the selected declaration.

Insert ATTLIST

The **XML** | **Insert | ATTLIST** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It inserts an ATTLIST declaration before the selected declaration.

Insert ENTITY

The **XML** | **Insert | ENTITY** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It inserts an ENTITY declaration before the selected declaration.

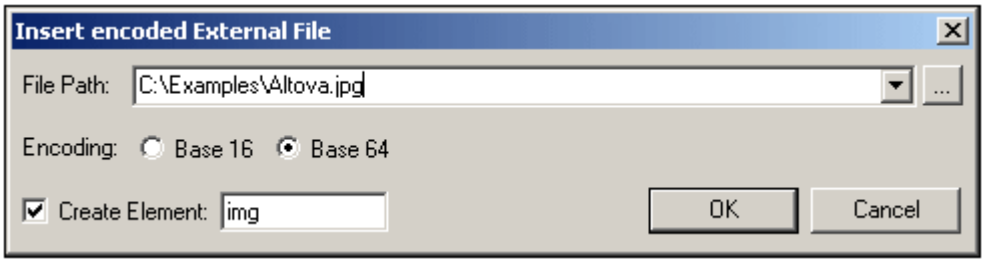
Insert NOTATION

The **XML** | **Insert | NOTATION** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It inserts a NOTATION declaration before the selected declaration.

Insert Encoded External File

The **XML** | **Insert | Encoded External File** command is available in Grid View only. It inserts a binary encoded file, such as an image file, as encoded characters. The encoded external file is inserted before the Grid View selection.

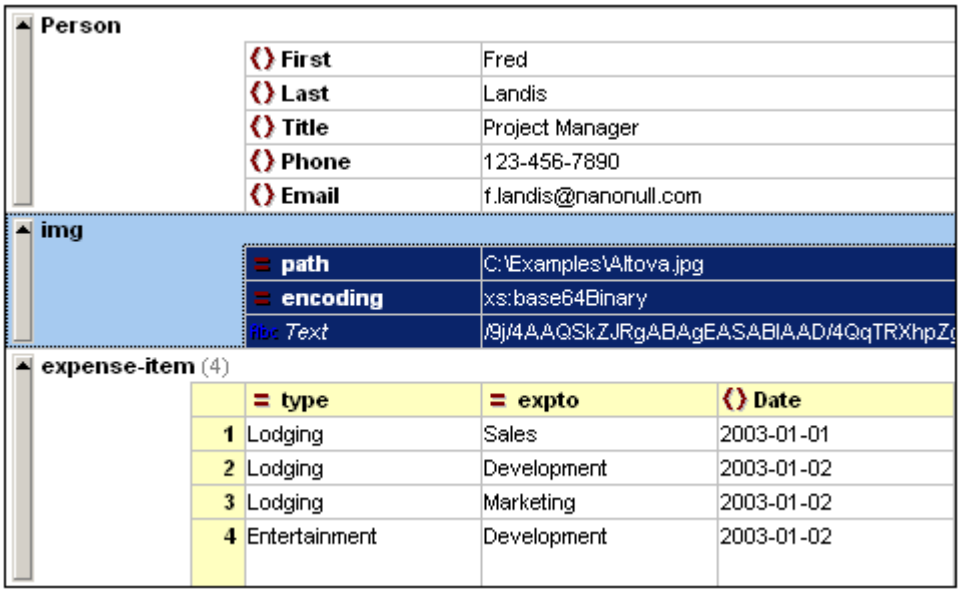
On clicking the command, the Insert Encoded External File dialog (*screenshot below*) pops up. In it you enter the path to the file, select the encoding you want, and specify whether the encoded file is to be inserted in an element or not.



You can browse for or enter the name of the external file to be encoded and embedded. Either a Base-16 or Base-64 encoding must be specified. If you wish to enclose the encoded text in an element, then check the Create Element check box and specify the name of the desired element in the Create Element text box. If the Create Element check box is not checked, then the encoded text will be inserted directly at the cursor location.

On clicking **OK**, the encoded text of the selected file is inserted at the cursor location, with an enclosing element if this has been specified.

The encoded file is inserted in Grid View (*the highlighted element in the screenshot below*).



In Text View, the file will be inserted as below.

```
<img ext="jpg" encoding="xs:base64Binary">
  iVBORw0KGgoAAAANSUhEUgAAABAAAAAQAQMAAAAlPW0iAAAABlBMVEUAAAD/
  //+l2Z/dAAAAM0lEQVR4nGP4/5/h/1+G/58ZDrAz3D/McH8yw83NDDeNGe4U
  g9C9zwz3gVLMDA/A6P9/AFGGFyjOXZtQAAAAAElFTkSuQmCC
</img>
```

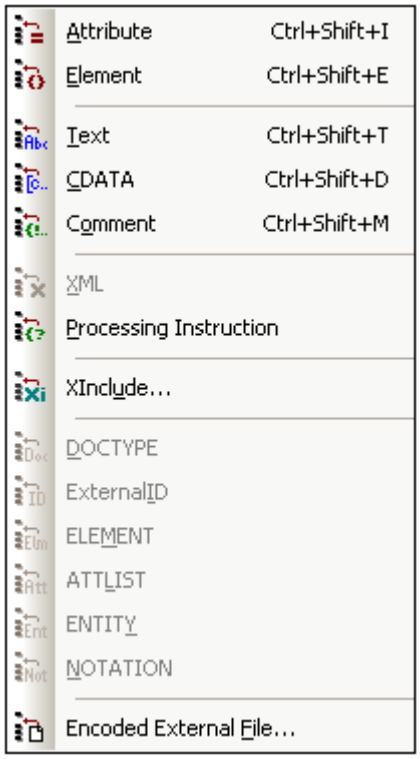
The listing above shows the encoded text of a JPG image file. An `img` element was created around the encoded text.

18.4.2 Append

The **XML** | **Append** command, though enabled in all views, can be used in Grid View only. It opens a submenu (*see screenshot*) with which you can append:

- The XML declaration and node types (Attribute, Element, Text, CDATA, Comment,

Processing Instruction) in XML documents;
- DOCTYPE declarations and external DTD declarations in XML documents
- DTD declarations (ELEMENT, ATTLIST, ENTITY, and NOTATION) in DTD documents and internal DTD declarations of XML documents.



Append Attribute

Ctrl+I

The **XML** | **Append** | **Attribute** command is available in Grid View only, and appends a new attribute.

Append Element

Ctrl+E

The **XML** | **Append** | **Element** command is available in Grid View only, and appends an element node after the last sibling element of the selected element. If an attribute node is selected, then the element node is appended after the last child of the selected attribute's parent element.

Append Text

Ctrl+T

The **XML** | **Append** | **Text** command is available in Grid View only, and appends a text block after the last sibling element of the selected element. If an attribute node is selected, then the text block is appended after the last child of the selected attribute's parent element.

Append CDATA

 **Ctrl+D**

The **XML** | **Append** | **Cdata** command is available in Grid View only, and appends a CDATA node after the last sibling of any selected node other than an attribute node. If an attribute node is selected, then the CDATA section is appended after the last child of the selected attribute's parent element.

Append Comment

 **Ctrl+M**

The **XML** | **Append** | **Comment** command is available in Grid View only, and appends a comment node after the last sibling of any selected node other than an attribute node. If an attribute node is selected, then the comment node is appended after the last child of the selected attribute's parent element.

Append XML

The **XML** | **Append** | **XML** command inserts a new XML declaration `<?xml version="1.0" encoding="UTF-8"?>` as the first item in a document.

Please note: An XML document may contain only one XML declaration, which must appear at the very top of the file.

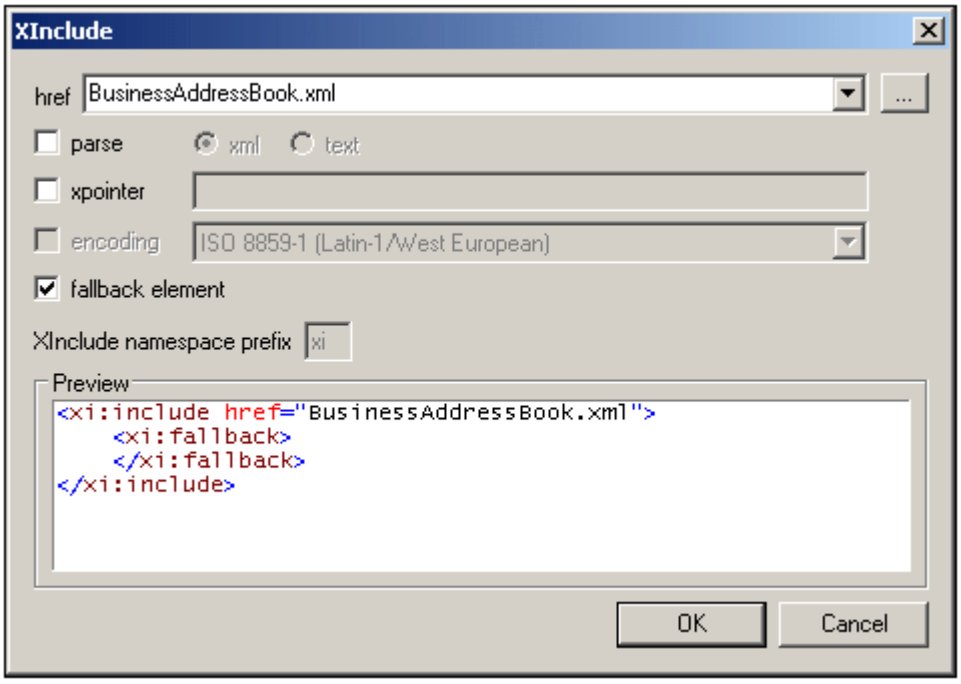
Append Processing Instruction

The **XML** | **Append** | **Processing Instruction** command is available in Grid View only, and appends a processing instruction node after the last sibling of any selected node other than an attribute node. If an attribute node is selected, then the processing instruction node is appended after the last child of the selected attribute's parent element.

Append XInclude

The **XML | Append | XInclude** command is available in Grid View only, and enables you to append an XInclude element after the last sibling of any selected node other than an attribute

node. If the current selection is an attribute, the XInclude element is appended after the the last child of the selected attribute's parent element. Selecting this command pops up the XInclude dialog (*screenshot below*).



The XML file to be included is entered in the `href` text box (alternatively, you can browse for the file by clicking the **Browse (...)** button to the right of the text box). The filename will be entered in the XML document as the value of the `href` attribute. The `parse`, `xpointer`, and `encoding` attributes of the XInclude element (`xi:include`), and the `fallback` child element of `xi:include` can also be inserted via the dialog. Do this by first checking the appropriate check box and then selecting/entering the required values. In the case of the `fallback` element, checking its check box only inserts the empty element. The content of the `fallback` element must be added subsequently in one of the editing views.

The `parse` attribute determines whether the included document is to be parsed as XML or text. (XML is the default value and therefore need not be specified.) The `xpointer` attribute identifies a specific fragment of the document located with the `href` attribute; it is this fragment that will be included. The `encoding` attribute specifies the encoding of the included document so that XMLSpy can transcode this document (or the part of it to be included) into the encoding of the including document. The contents of the `fallback` child element replace the `xi:include` element if the document to be included cannot be located.

Here is an example of an XML document that uses XInclude to include two XML documents:

```
<?xml version="1.0" encoding="UTF-16"?>
<AddressBook xsi:schemaLocation="http://www.altova.com/sv/myaddresses
AddressBook.xsd"
       xmlns="http://www.altova.com/stylevision/tutorials/myaddresses"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:xi="http://www.w3.org/2001/XInclude">
       <xi:include href="BusinessAddressBook.xml"/>
       <xi:include href="PersonalAddressBook.xml"/>
</AddressBook>
```

When this XML document is parsed, it will replace the two XInclude elements with the files specified in the respective `href` attributes.

xml:base
When the XML validator of XMLSpy reads an XML document and encounters the `include` element in the XInclude namespace (hereafter `xi:include`), it replaces this element (`xi:include`) with the XML document named in the `href` attribute of the `xi:include` element. The document element (root element) of the included XML document (or the element identified by an XPointer) will be included with an attribute of `xml:base` in order to preserve the base URIs of the included element. If the resulting XML document (containing the included XML document/s or tree fragment/s) must be valid according to a schema, then the document element of the included document (or the top-level element of the tree fragment) must be created with a content model that allows an attribute of `xml:base`. If, according to the schema, the `xml:base` attribute is not allowed on this element, then the resulting document will be invalid. How to define an `xml:base` attribute in an element's content model using XMLSpy's Schema View is described in the xml: Prefixed Attributes section of the Schema View section of the documentation.

XPointers
XMLSpy supports XPointers in XInclude. The relevant W3C recommendations are the XPointer Framework and XPointer element() Scheme recommendations. The use of an XPointer in an XInclude element enables a specific part of the XML document to be included, instead of the entire XML document. XPointers are used within an XInclude element as follows:

```
<xi:include href="PersonalAddressBook.xml" xpointer="element(usa)"/>
<xi:include href="BusinessAddressBook.xml" xpointer="element(/1/1)"/>
<xi:include href="BobsAddressBook.xml" xpointer="element(usa/3/1)"/>
<xi:include href="PatsAddressBook.xml" xpointer="
element(usa)element(/1/1)"/>
```

In the element() scheme of XPointer, an NCName or a child sequence directed by integers may be used.

- In the first `xi:include` element listed above, the `xpointer` attribute uses the element scheme with an NCName of `usa`. According to the XPointer Framework, this NCName identifies the element that has an ID of `usa`.
- In the second `xi:include` listed above, the `xpointer` attribute with a value of `element(/1/1)` identifies, in the first step, the first child element of the document root (which, if the document is well-formed, will be its document (or root) element). In the second step, the first child element of the element located in the previous step is located; in our example, this would be the first child element of the document element.
- The `xpointer` attribute of the third `xi:include` listed above uses a combination of NCName and child sequence. This XPointer locates the first child element of the third child element of the element having an ID of `usa`.
- If you are not sure whether your first XPointer will work, you can back it up with a second one as shown in the fourth `xi:include` listed above: `xpointer="element(usa)element(/1/1)"`. Here, if there is no element with an ID of `usa`, the back-up XPointer specifies that the first child element of the document element is to be selected. Additional backups are also allowed. Individual XPointers may not be separated, or they may be separated by whitespace: for example, `xpointer="element(usa)element(addresses/1) element(/1/1)"`.

Note: The namespace binding context is not used in the element() scheme because the element() scheme does not support qualified names.

Append DOCTYPE

The **XML** | **Append** | **DOCTYPE** command is available in the Grid View of an XML file when a top-level node is selected. It appends a DOCTYPE declaration at the top of the XML document. You must enter the name of the DOCTYPE, and this name must be the same as the name of the document element.

After you have entered the name of the DOCTYPE, you can enter the declarations you wish to use in the internal DTD subset.

Please note:

- A DOCTYPE declaration may only appear between the XML declaration and the XML document element.
- You could use the Assign DTD command instead to create a DOCTYPE statement that refers to an external DTD document.

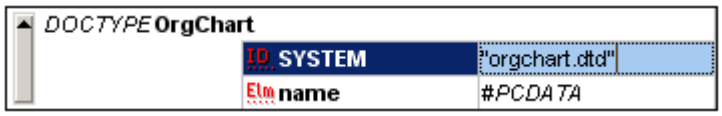
Append ExternalID

A DOCTYPE declaration in an XML file can contain a reference to an external resource containing DTD declarations. This resource is referenced either through a public or system identifier. For example:

```
<!DOCTYPE doc_element_name PUBLIC "publicID" "systemID">
<!DOCTYPE doc_element_name SYSTEM "systemID">
```

A system identifier is a URI that identifies the external resource. A public identifier is location-independent and can be used to dereference the location of an external resource. For example, in your XMLSpy installation, URIs for popular DTDs and XML Schemas are listed in the catalog files named `catalog.xml` in the various schema folders in `C:\Program Files\Altova\Common2012\Schemas\`. A public identifier in an XML document can be used to dereference a DTD listed in these catalog files.

The **XML** | **Append** | **ExternalID** command is available when a "child" item of the DOCTYPE declaration in an XML file is selected in Grid View. This command inserts a Grid View row for an external identifier (`PUBLIC` or `SYSTEM`). You must enter the type of identifier and its value.



The Text View corresponding to the screenshot of the Grid View shown above looks something like this:

```
<!DOCTYPE OrgChart SYSTEM "orgchart.dtd" [
 <!ELEMENT name (#PCDATA)>
]>
```

Please note: A row for External-ID can be added as a child when the DOCTYPE item is selected, or it can be inserted or appended when one of the child items of the DOCTYPE item is selected, for example, the ELEMENT declaration `name` in the example above.

Append ELEMENT

The **XML** | **Append** | **ELEMENT** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It appends an ELEMENT declaration to the list of declarations.

Append ATTLIST

The **XML** | **Append** | **ATTLIST** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It appends an ATTLIST declaration to the list of declarations.

Append ENTITY

The **XML** | **Append** | **ENTITY** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It appends an ENTITY declaration to the list of declarations.

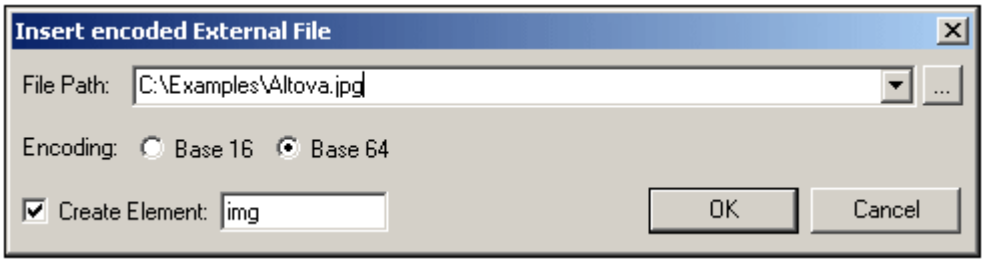
Append NOTATION

The **XML** | **Append** | **NOTATION** command is available in Grid View only, for DTD documents or when an item in the DOCTYPE declaration of an XML document is selected. It appends a NOTATION declaration to the list of declarations.

Append Encoded External File

The **XML** | **Append | Encoded External File** command is available in Grid View only. It appends a binary encoded file, such as an image file, as encoded characters. The encoded external file is appended after the Grid View selection.

On clicking the command, the Insert Encoded External File dialog (*screenshot below*) pops up. In it you enter the path to the file, select the encoding you want, and specify whether the encoded file is to be inserted in an element or not.



You can browse for or enter the name of the external file to be encoded and embedded. Either a Base-16 or Base-64 encoding must be specified. If you wish to enclose the encoded text in an element, then check the Create Element check box and specify the name of the desired element in the Create Element text box. If the Create Element check box is not checked, then the encoded text will be inserted directly at the cursor location.

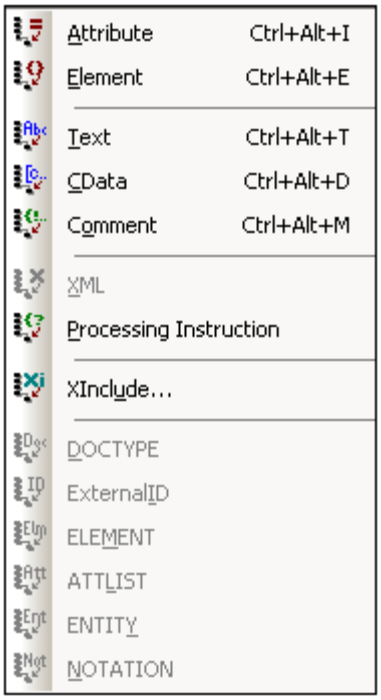
On clicking **OK**, the encoded text of the selected file is inserted at the cursor location, with an enclosing element if this has been specified.

The encoded file is appended in Grid View.

18.4.3 Add Child

The **XML** | **Add Child** command, though enabled in all views, can be used in Grid View only. It opens a submenu (*see screenshot*) with which you can add the following child items to the currently selected element.

- The XML declaration and node types (Attribute, Element, Text, CDATA, Comment, Processing Instruction) in XML documents;
- DOCTYPE declarations and external DTD declarations in XML documents
- DTD declarations (ELEMENT, ATTLIST, ENTITY, and NOTATION) in DTD documents and internal DTD declarations of XML documents.



Add Child Attribute

Ctrl+Alt+I

The **XML** | **Add Child | Attribute** command is available in Grid View only and when an element node is selected. It inserts a new attribute as a child of the selected element node.

Add Child Element

Ctrl+Alt+E

The **XML** | **Add Child | Element** command is available in Grid View only. It inserts a new element as a child of the selected node.

Add Child Text

Ctrl+Alt+T

The **XML** | **Add Child | Text** command is available in Grid View only, and inserts new text content as a child of the selected item.

Add Child CDATA

Ctrl+Alt+D

The **XML** | **Add Child | Cdata** command is available in Grid View only, and inserts a new CDATA section as a child of the selected item.

Add Child Comment

Ctrl+Alt+M

The **XML** | **Add Child | Comment** command is available in Grid View only, and inserts a new Comment node as a child of the selected item.

Add Child XML

The **XML** | **Add Child | XML** command is available in Grid View only and when the file is **empty** . It inserts a new XML declaration `<?xml version="1.0" encoding="UTF-8"?>` as the first item in a document.

Please note: An XML document may contain only one XML declaration, which must appear at

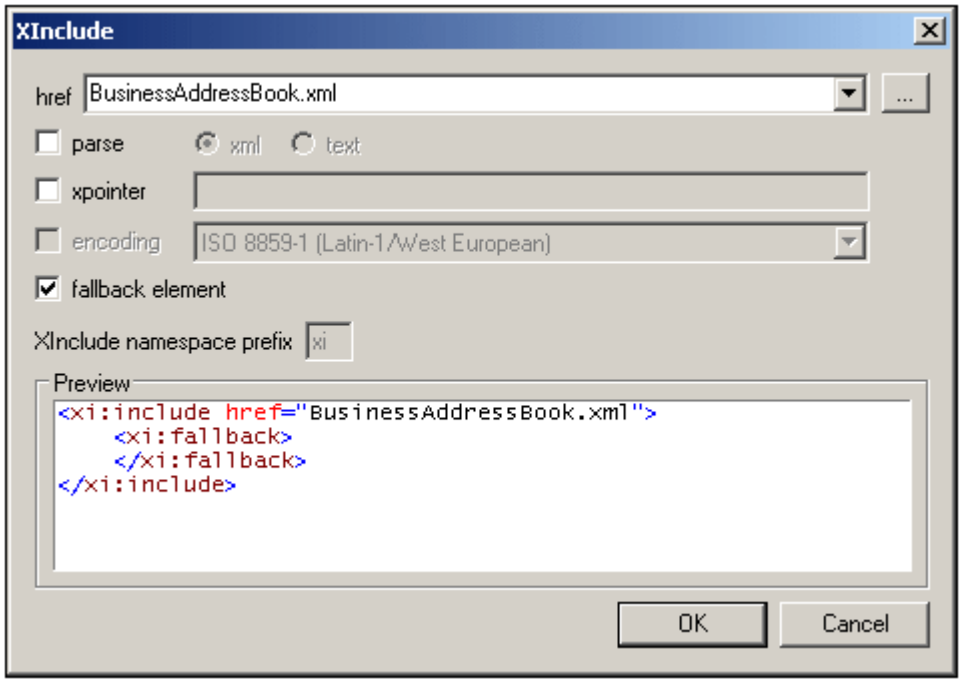
the very top of the file.

Add Child Processing Instruction

The **XML** | **Add Child | Processing Instruction** command is available in Grid View only and inserts a new Processing Instruction (PI) as a child of the selected item.

Add Child XInclude

The **XML | Add Child | XInclude** command is available in Grid View only, and enables you to insert an XInclude element as a child of the selected item. Selecting this command pops up the XInclude dialog (*screenshot below*).



The XML file to be included is entered in the `href` text box (alternatively, you can browse for the file by clicking the **Browse (...)** button to the right of the text box). The filename will be entered in the XML document as the value of the `href` attribute. The `parse`, `xpointer`, and `encoding` attributes of the XInclude element (`xi:include`), and the `fallback` child element of `xi:include` can also be inserted via the dialog. Do this by first checking the appropriate check box and then selecting/entering the required values. In the case of the `fallback` element, checking its check box only inserts the empty element. The content of the `fallback` element must be added subsequently in one of the editing views.

The `parse` attribute determines whether the included document is to be parsed as XML or text. (XML is the default value and therefore need not be specified.) The `xpointer` attribute identifies a specific fragment of the document located with the `href` attribute; it is this fragment that will be included. The `encoding` attribute specifies the encoding of the included document so that

XMLSpy can transcode this document (or the part of it to be included) into the encoding of the including document. The contents of the `fallback` child element replace the `xi:include` element if the document to be included cannot be located.

Here is an example of an XML document that uses XInclude to include two XML documents:

```
<?xml version="1.0" encoding="UTF-16"?>
<AddressBook xsi:schemaLocation="http://www.altova.com/sv/myaddresses
AddressBook.xsd"
       xmlns="http://www.altova.com/stylevision/tutorials/myaddresses"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:xi="http://www.w3.org/2001/XInclude">
       <xi:include href="BusinessAddressBook.xml"/>
       <xi:include href="PersonalAddressBook.xml"/>
</AddressBook>
```

When this XML document is parsed, it will replace the two XInclude elements with the files specified in the respective `href` attributes.

`xml:base`

When the XML validator of XMLSpy reads an XML document and encounters the `include` element in the XInclude namespace (hereafter `xi:include`), it replaces this element (`xi:include`) with the XML document named in the `href` attribute of the `xi:include` element. The document element (root element) of the included XML document (or the element identified by an XPointer) will be included with an attribute of `xml:base` in order to preserve the base URIs of the included element. If the resulting XML document (containing the included XML document/s or tree fragment/s) must be valid according to a schema, then the document element of the included document (or the top-level element of the tree fragment) must be created with a content model that allows an attribute of `xml:base`. If, according to the schema, the `xml:base` attribute is not allowed on this element, then the resulting document will be invalid. How to define an `xml:base` attribute in an element's content model using XMLSpy's Schema View is described in the xml: Prefixed Attributes section of the Schema View section of the documentation.

XPointers

XMLSpy supports XPointers in XInclude. The relevant W3C recommendations are the XPointer Framework and XPointer element() Scheme recommendations. The use of an XPointer in an XInclude element enables a specific part of the XML document to be included, instead of the entire XML document. XPointers are used within an XInclude element as follows:

```
       <xi:include href="PersonalAddressBook.xml" xpointer="element(usa)"/>
       <xi:include href="BusinessAddressBook.xml" xpointer="element(/1/1)"/>
       <xi:include href="BobsAddressBook.xml" xpointer="element(usa/3/1)"/>
       <xi:include href="PatsAddressBook.xml" xpointer="
element(usa)element(/1/1)"/>
```

In the element() scheme of XPointer, an NCName or a child sequence directed by integers may be used.

- In the first `xi:include` element listed above, the `xpointer` attribute uses the element scheme with an NCName of `usa`. According to the XPointer Framework, this NCName identifies the element that has an ID of `usa`.
- In the second `xi:include` listed above, the `xpointer` attribute with a value of `element(/1/1)` identifies, in the first step, the first child element of the document root (which, if the document is well-formed, will be its document (or root) element). In the second step, the first child element of the element located in the previous step is located; in our example, this would be the first child element of the document element.

- The `xpointer` attribute of the third `xi:include` listed above uses a combination of NCName and child sequence. This XPointer locates the first child element of the third child element of the element having an ID of `usa`.
- If you are not sure whether your first XPointer will work, you can back it up with a second one as shown in the fourth `xi:include` listed above: `xpointer="element(usa)element(/1/1)"`. Here, if there is no element with an ID of `usa`, the back-up XPointer specifies that the first child element of the document element is to be selected. Additional backups are also allowed. Individual XPointers may not be separated, or they may be separated by whitespace: for example, `xpointer="element(usa)element(addresses/1) element(/1/1)"`.

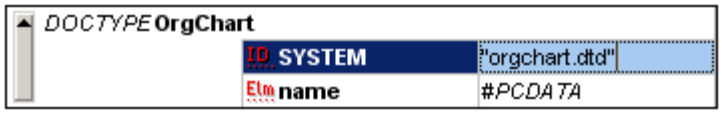
Note: The namespace binding context is not used in the element() scheme because the element() scheme does not support qualified names.

Add Child DOCTYPE

The **XML** | **Add Child | DOCTYPE** command is only available in the Grid View of an **empty** document. It inserts a DOCTYPE declaration in an XML document. The DOCTYPE declaration can be used to declare an internal DTD subset.

Add Child ExternalID

The **XML** | **Add Child | ExternalID** command is available only when the DOCTYPE declaration of an XML file is selected in Grid View. This command inserts a Grid View row for an external identifier (`PUBLIC` or `SYSTEM`). You must enter the type of identifier and its value.



The Text View corresponding to the screenshot of the Grid View shown above looks something like this:

```
<!DOCTYPE OrgChart SYSTEM "orgchart.dtd" [
 <!ELEMENT name (#PCDATA)>
]>
```

Please note: A row for External-ID can be added as a child when the DOCTYPE item is selected, or it can be inserted or appended when one of the child items of the DOCTYPE item is selected, for example, the ELEMENT declaration `name` in the example above.

Add Child ELEMENT

The **XML** | **Add Child | ELEMENT** command is available in Grid View only, for DTD documents, or when the DOCTYPE declaration of an XML document is selected. It appends an ELEMENT declaration to the list of declarations.

Add Child ATTLIST

The **XML** | **Add Child | ATTLIST** command is available in Grid View only, for DTD documents, or when the DOCTYPE declaration of an XML document is selected. It appends an ATTLIST declaration to the list of declarations.

Add Child ENTITY

The **XML** | **Add Child | ENTITY** command is available in Grid View only, for DTD documents, or when the DOCTYPE declaration of an XML document is selected. It appends an ENTITY declaration to the list of declarations.

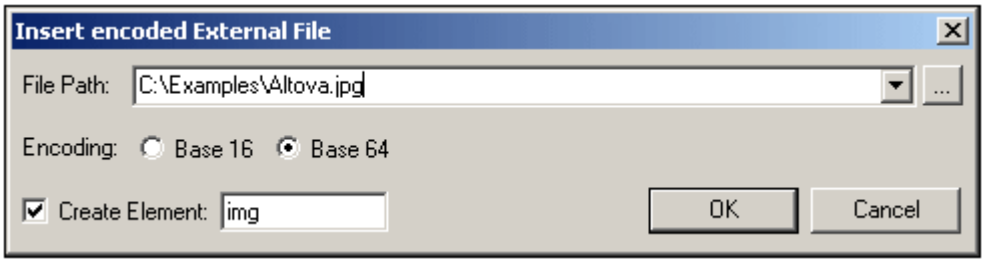
Add Child NOTATION

The **XML** | **Add Child | NOTATION** command is available in Grid View only, for DTD documents, or when the DOCTYPE declaration of an XML document is selected. It appends an NOTATION declaration to the list of declarations.

Add Child Encoded External File

The **XML** | **Add Child | Encoded External File** command is available in Grid View only. It adds a binary encoded file as a child node. The encoded external file is inserted as a child of the Grid View selection.

On clicking the command, the Insert Encoded External File dialog (*screenshot below*) pops up. In it you enter the path to the file, select the encoding you want, and specify whether the encoded file is to be inserted in an element or not.

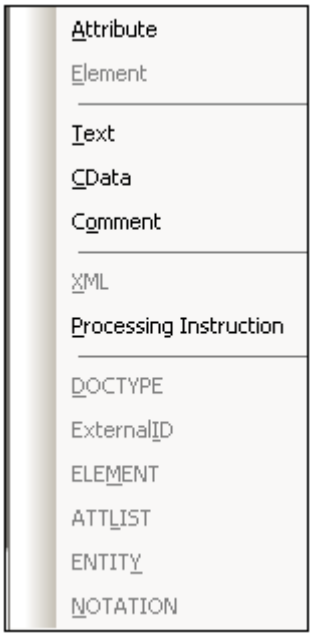


On clicking **OK**, the encoded text of the selected file is inserted at the cursor location, with an enclosing element if this has been specified.

The encoded file is added as a child in Grid View.

18.4.4 Convert To

The **XML** | **Convert to** command converts a selected item in Grid View to a different item type. This operation is available only in Grid View on individual items that do not contain any child node. Placing the cursor over the **Convert to** command displays a submenu (*see screenshot*) which contains the items to which the selected item can be converted.



Please note: If the operation you select would result in a loss of data (for example, converting an attribute to a comment would result in a loss of the attribute name), a warning dialog box will appear.

Convert To Attribute

The **XML** | **Convert to | Attribute** command converts the selected item to a attribute.

Convert To Element

The **XML** | **Convert to | Element** command converts the selected item to an element.

Convert To Text

The **XML** | **Convert to | Text** command converts the selected item into text content.

Convert To CDATA

The **XML** | **Convert to | Cdata** command converts the selected item into a CDATA segment.

Convert To Comment

The **XML** | **Convert to | Comment** command converts the selected item into a comment.

Convert To XML

The **XML** | **Convert to | XML** command converts the selected item to an XML declaration:

`<?xml version="1.0" encoding="UTF-8"?>`.

Please note: Each XML document may only contain one XML declaration and it must appear at the very top of the file.

Convert To Processing Instruction

The **XML** | **Convert to | Processing Instruction** command converts the selected item to a new Processing Instruction (PI).

Convert To DOCTYPE

The **XML** | **Convert to | DOCTYPE** command converts the selected item to a DOCTYPE declaration (in an XML file).

Please note: A DOCTYPE declaration may only appear at the top of an XML instance document between the XML Declaration and the document element of the XML document.

Convert To ExternalID

The **XML** | **Convert to | ExternalID** command converts the selected item to an external DTD reference in a DOCTYPE declaration (`PUBLIC` or `SYSTEM` identifier).

Convert To ELEMENT

The **XML** | **Convert to | ELEMENT** command converts the selected item to an element declaration in a DOCTYPE declaration or in an external DTD.

Convert To ATTLIST

The **XML** | **Convert to | ATTLIST** command converts the selected item to an attribute list declaration in a DOCTYPE declaration or in an external DTD.

Convert To ENTITY

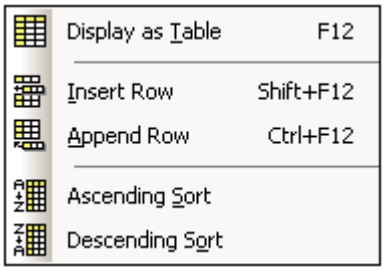
The **XML** | **Convert to | ENTITY** command converts the selected item to an entity declaration in a DOCTYPE declaration or in an external DTD.

Convert To NOTATION

The **XML** | **Convert to | NOTATION** command converts the selected item to a notation declaration in a DOCTYPE declaration or in an external DTD.

18.4.5 Table

The **XML** | **Table** command, though enabled in all views, can be used only in Grid View. It displays a submenu with all the commands relevant to the Database/Table View of Grid View.



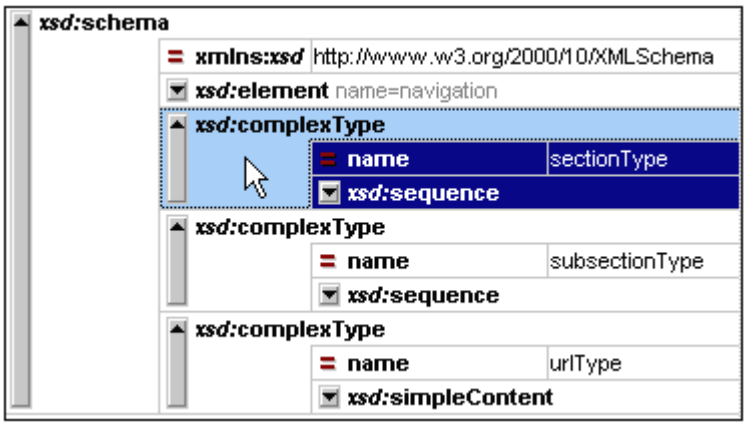
Display as Table

F12

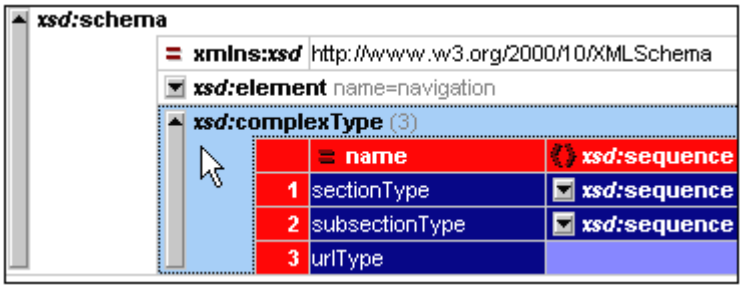
The **XML** | **Table | Display as Table** command allows you to switch between the standard Grid View and Database/Table View (or Table View) of a document element. The Table View enables you to view repeated elements as a table in which the rows represent the occurrences while the columns represent child nodes (including comments, CDATA sections, and PIs).

To switch to Table View:

1. Select any one occurrence of the repeating element you wish to view as a table.



2. Click **XML | Table | Display as Table** or **F12** or the toolbar icon.



The element is displayed as a table and the toolbar icon is activated.

To switch from the Table View of a document element to the normal Grid View of that element, select the table or any of its rows or columns, and click the toolbar icon. That table element switches to Grid View.

Note: Table View colors can be set in the Colors tab of the Options dialog (**Tools | Options | Colors**)

Insert Row

Shift+F12

The **XML** | **Table | Insert Row** command is enabled in Database/Table View when a row or cell is selected. It inserts a new row before the selected row. The new row corresponds to an occurrence of the table element. Mandatory child elements are created for the new element

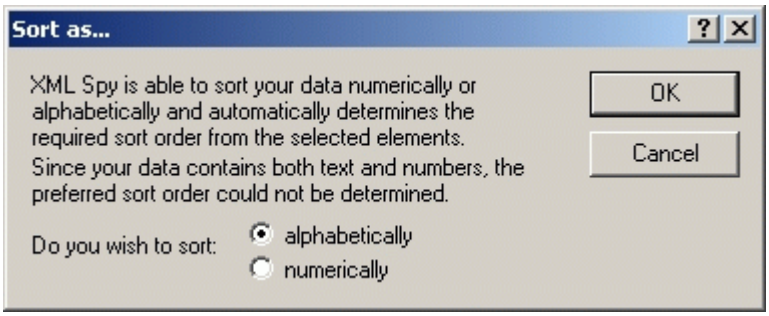
Append Row

Ctrl+F12

The **XML** | **Table | Append Row** command is enabled in Database/Table View when a row or cell is selected. It appends a new row after the last row of the table. The new row corresponds to an occurrence of the table element. Mandatory child elements are created for the new element

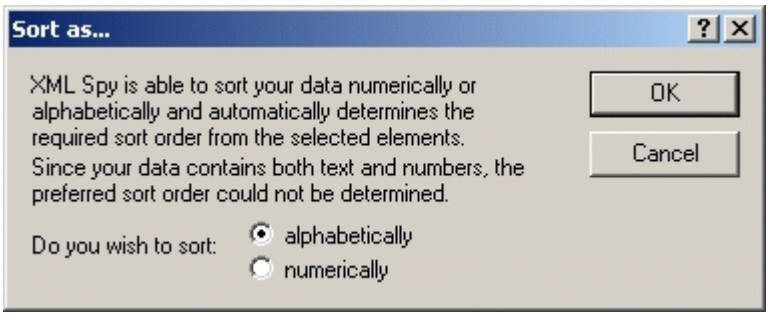
Ascending Sort

The **XML** | **Table | Ascending Sort** command is enabled in Database/Table View when a column or cell is selected. It sorts the column in either alphabetic or numeric ascending order. XMLSpy tries to automatically determine what kind of data is used in the column, and sorts on alphabetic or numeric order, as required. In case of uncertainty, you will be prompted for the sort method to use (*see screenshot*).



Descending Sort

The **XML** | **Table | Descending Sort** command is enabled in Database/Table View when a column or cell is selected. It sorts the column in either alphabetic or numeric descending order. XMLSpy tries to automatically determine what kind of data is used in the column, and sorts on alphabetic or numeric order, as required. In case of uncertainty, you will be prompted for the sort method to use (*see screenshot*).



18.4.6 Move Left

Ctrl+L

The **XML** | **Move Left** command is available in Grid View only. It moves the selected node to the left by one level, thereby changing a child element into a sibling of its parent. This command is often referred to as the **Promote** command.

18.4.7 Move Right

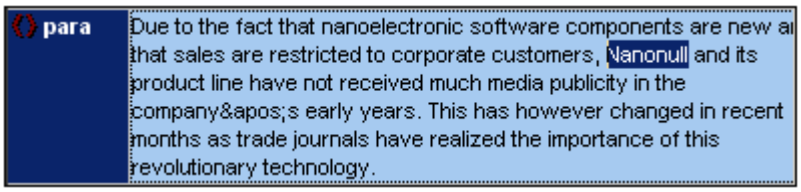
Ctrl+R

The **XML** | **Move Right** command is available in Grid View only. It moves the selected node to the right by one level, thereby turning it into a child element of the preceding sibling element. This command is often referred to as the **Demote** command.

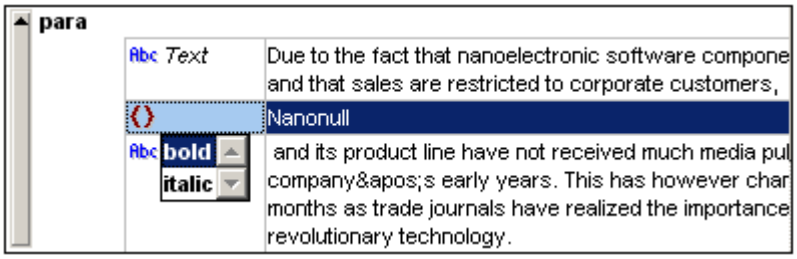
18.4.8 Enclose in Element

The **XML** | **Enclose in Element** command is enabled in Grid View only. It encloses a selected text range in a new element. The new element is created inline around the selected text. If you are editing a document based on a Schema or DTD, you will automatically be presented with a list of valid choices for the name of the element in which the text is to be enclosed.

For example, in the screenshot below, the text `Nanonull` in the `para` element is highlighted.



When you select the command **XML | Enclose in Element**, the text Nanonull is enclosed in a newly created inline element and a list appears offering a choice of `bold` or `italic` for the name of the element. These elements are defined in the schema as children of `para`.



The selection you make will be the name of the new element. Alternatively, you can enter some other name for the element.

18.4.9 Evaluate XPath

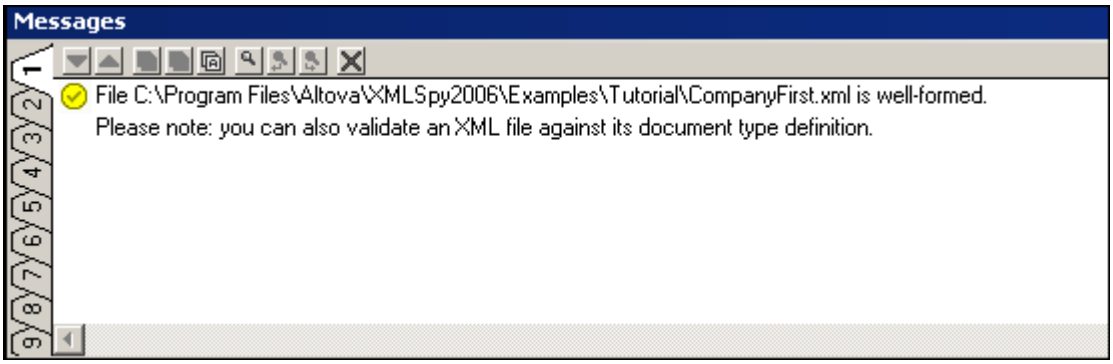
The **XML** | **Evaluate XPath** command opens the Output Windows if these are not open and activates the XPath tab in the Output Windows. In the XPath tab, you can evaluate an XPath expression on the active document and see the results in the Output Window.

18.4.10 Check Well-Formedness

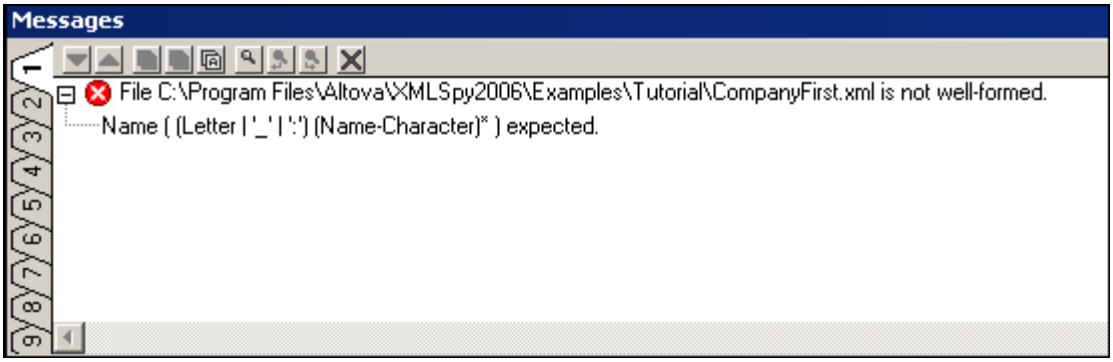
F7

The **XML** | **Check well-formedness (F7)** command checks the active document for well-formedness by the definitions of the XML 1.0 specification. Every XML document **must** be well-formed. XMLSpy checks for well-formedness whenever a document is opened or saved, or when the view is changed from Text to any other view. You can also check for well-formedness at any time while editing by using this command.

If the well-formedness check succeeds when you explicitly invoke the check, a message is displayed in the Validation window:



If an error is encountered during the well-formedness check, a corresponding error message is displayed:



Please note: The output of the Messages window has 9 tabs. The validation output is always displayed in the active tab. Therefore, you can check well-formedness in tab1 for one schema file and keep the result by switching to tab 2 before validating the next schema document (otherwise tab 1 is overwritten with the validation result).

It is generally not permitted to save a malformed XML document, but XMLSpy gives you a Save Anyway option. This is useful when you want to suspend your work temporarily (in a not well-formed condition) and resume it later.

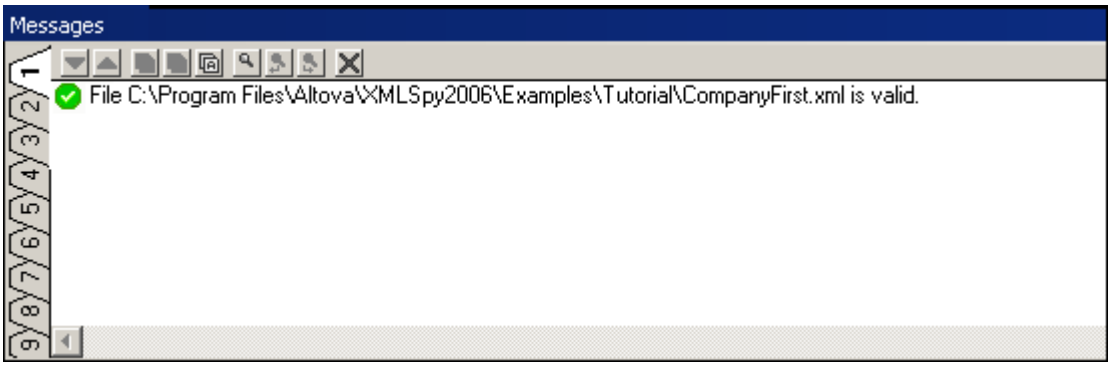
Please note: You can also use the **Check well-formedness** command on any file, folder, or group of files in the active project window. Click on the respective item, and then on the Check Well-Formedness icon.

18.4.11 Validate XML

F8

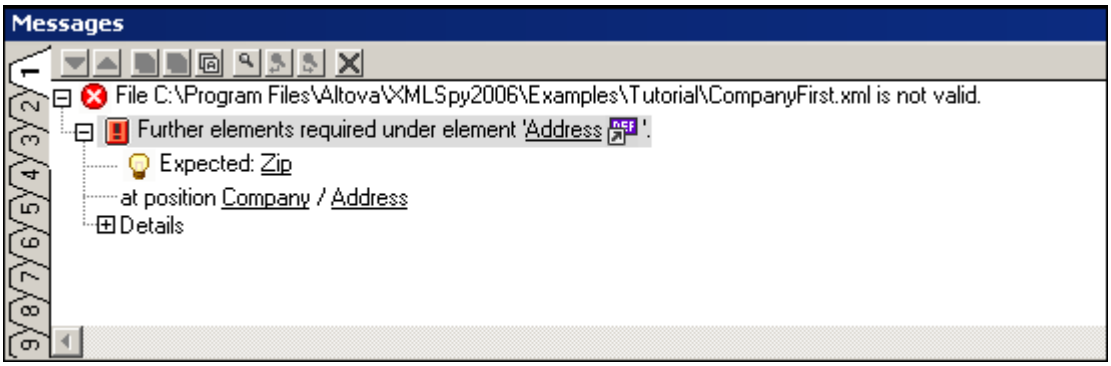
The **XML** | **Validate (F8)** command enables you to validate XML documents against DTDs, XML Schemas, and other schemas. Validation is automatically carried out when you switch from Text View to any other view. You can specify that a document be automatically validated when a file is opened or saved (**Tools | Options | File**). The **Validate** command also carries out a well-formedness check before checking validity, so there is no need to use the Check Well-Formedness command before using the **Validate** command.

If a document is valid, a successful validation message is displayed in the Validation window:



Otherwise, a message that describes the error is displayed.

Please note: You can click on the links in the error message to jump to the spot in the XML file where the error was found.



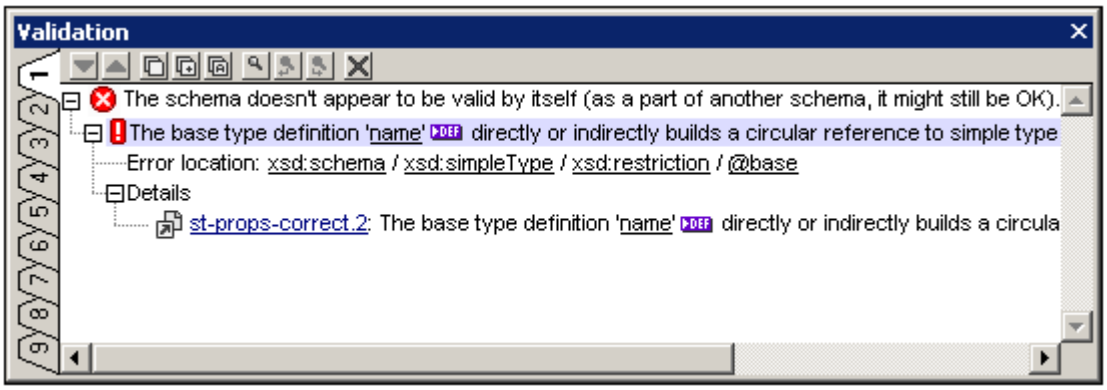
Please note: The output of the Validation window has 9 tabs. The validation output is always displayed in the active tab. Therefore, you can check well-formedness in tab1 for one schema file and keep the result by switching to tab 2 before validating the next schema document (otherwise tab 1 is overwritten with the validation result).

The command is normally applied to the active document. But you can also apply the command to a file, folder, or group of files in the active project. Select the required file or folder in the Project Window (by clicking on it), and click **XML | Validate** or **F8**. Invalid files in a project will be opened and made active in the Main Window, and the File Is Invalid error message will be displayed.

Validating XML documents
To validate an XML file, make the XML document active in the Main Window, and click **XML | Validate** or **F8**. The XML document is validated against the schema referenced in the XML file. If no reference exists, an error message is displayed in the Messages Window. As long as the XML document is open, the schema is kept in memory (see Flush Memory Cache in the DTD/ Schema menu).

Validating schema documents (DTDs and XML Schema)
XMLSpy supports major schema dialects, including DTD and XML Schema. To validate a schema document, make the document active in the Main Window, and click **XML | Validate** or **F8**.

Schema validation messages in the Validation window
If the schema (DTD or XML Schema) is valid, a successful validation message is displayed in the Validation window; the Validation window pops up at the bottom of the application window. If the schema is not valid, one or more error messages are displayed in the Validation window (*screenshot below*).



The error message is divided into three parts:

1. A description of the error. The description contains links to the relevant declarations or definitions.
2. The location of the error within the schema structure. Clicking a node in the location path highlights that node in the document.
3. Details of the error provides more information about the error and contains a link to the relevant paragraph in the relevant specification (the XML specification for DTD validation; and XML Schema specification for XML Schema validation).

Please note: When the validation is done in Text View, clicking a link in the Validation window highlights the corresponding declaration or definition in Text View. When the validation is done in Schema View, the corresponding declaration or definition is highlighted either in the design window of Schema View or in the relevant entry helper window.

Catalogs
XMLSpy supports a subset of the OASIS XML catalogs mechanism. The catalog mechanism enables XMLSpy to retrieve commonly used schemas (as well as stylesheets and other files) from local user folders. This increases the overall processing speed, enables users to work offline (that is, not connected to a network), and improves the portability of documents (because URIs need to be changed in the catalog files only.) The catalog mechanism in XMLSpy works as follows:

- XMLSpy loads a file called `RootCatalog.xml`, which contains a list of catalog files that will be looked up. You can enter as many catalog files to look up, each in a `nextCatalog` element in `RootCatalog.xml`.
- The catalog files included in `RootCatalog.xml` are looked up and the URIs are resolved according to the mappings specified in the catalog files. You should take care not to duplicate mappings, as this could lead to errors.
- Two catalog files are supplied with XMLSpy. How these work is described in the section Catalogs in XMLSpy.
- The `PUBLIC` or `SYSTEM` identifier in the `DOCTYPE` statement of your XML file will be used for the catalog lookup. For popular schemas, the `PUBLIC` identifier is usually pre-defined, thus requiring only the URI in the catalog file to be changed when XML documents are used on multiple machines.

When writing your `CustomCatalog.xml` file (or other custom catalog file), use only the following

subset of the OASIS catalog in order for XMLSpy to process the catalog correctly. Each of the elements in the supported subset can take the `xml:base` attribute, which is used to specify the base URI of that element.

```
<catalog...>
...
<public publicId="PublicID of Resource" uri="URL of local file"/>
<system systemId="SystemID of Resource" uri="URL of local file"/>
<rewriteURI uriStartString="StartString of URI to rewrite"
rewritePrefix="String to replace StartString"/>
<rewriteSystem systemIdStartString="StartString of SystemID"
rewritePrefix="Replacement string to locate resource locally"/>
<uri name="filename" uri="URL of file identified by filename"/>
...
</catalog>
```

Please note:

- The `catalog.xml` file in the `%AltovaCommonFolder%\Schemas\schema` folder contains references to DTDs that implement older XML Schema specifications. You should not validate your XML Schema documents against any of these schemas. The referenced DTD files are included solely to provide XMLSpy with entry helper info for editing purposes should you wish to create documents according to these older recommendations. *Also see next point.*
- If you create a custom file extension for a particular schema (for example, the `.myhtml` extension for (HTML) files that are to be valid according to the HTML DTD), then you can enable intelligent editing for files with these extensions by adding a line of text to `CustomCatalog.xml`. For the example extension mentioned, you should add the element `<spy:fileExtHelper ext="myhtml" uri="schemas/xhtml/xhtml1-transitional.dtd"/>` as a child of the `<catalog>` element. This would enable intelligent editing (auto-completion, entry helpers, etc) of `.myhtml` files in XMLSpy according to the XHTML 1.0 Transitional DTD.
- For more information on catalogs, see the XML Catalogs specification.

Automating validation with Altova XML 2012

AltovaXML is a free application which contains Altova's XML Validator, XSLT 1.0, XSLT 2.0, and XQuery 1.0 engines. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

Validation tasks can therefore be automated with the use of Altova XML. For example, you can create a batch file that calls AltovaXML to perform validation on a set of documents and sends the output to a text file. See the AltovaXML documentation for details.

18.4.12 Update Entry Helpers

The **XML** | **Update Entry Helpers** command updates the Entry Helper windows by reloading the underlying DTD or Schema. If you have modified the XML Schema or DTD that an open XML document is based upon, it is advisable to update the Entry Helpers so that the intelligent editing information reflects the changes in the schema.

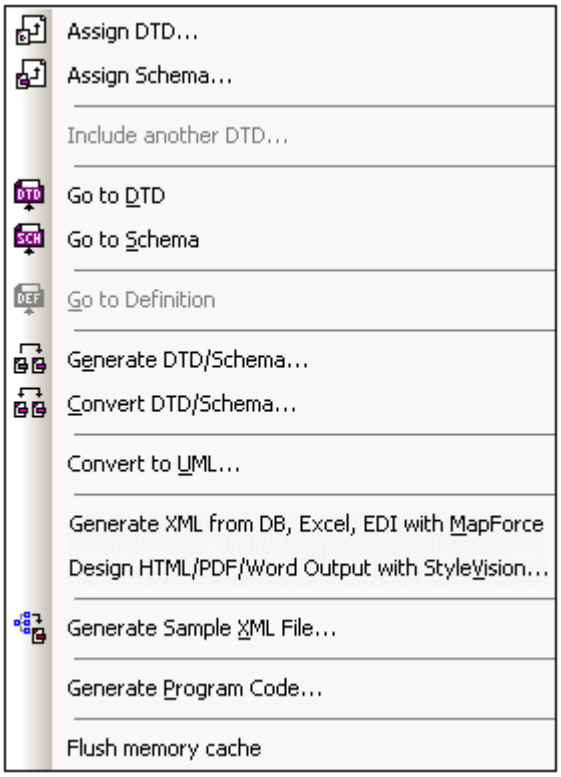
18.4.13 Namespace Prefix.

The **XML** | **Namespace Prefix...** command is available in Grid View and opens a dialog box in which you can set the namespace prefix of the selected element or attribute, and, in the case of elements, of its descendants as well.

You can choose to set the namespace prefix on either elements, attributes, or both. The namespace prefix is applied to the selected element or attribute, and, if an element is selected, to descendant nodes of the selected element.

18.5 DTD/Schema Menu

The **DTD/Schema** menu contains commands that let you work efficiently with DTDs and XML Schemas.



This section contains a complete description of all the commands in this menu.

18.5.1 Assign DTD

The **DTD/Schema | Assign DTD...** command is enabled when an XML file is active. It assigns a DTD to an XML document, thus allowing the document to be validated and enabling intelligent editing for the document. The command opens the Assign File dialog to let you specify the DTD file you wish to assign. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button). Note that you can make the path of the assigned DTD file relative by clicking the Make Path Relative To... check box. When you are done, your XML document will contain a DOCTYPE declaration that references the assigned DTD. The DOCTYPE declaration will look something like this:

```
<! DOCTYPE main SYSTEM "http: //link. xmlspy. com/spyweb. dtd">
```

Please note: A DTD can be assigned to a new XML file at the time the file is created.

18.5.2 Assign Schema

The **DTD/Schema | Assign Schema...** command is enabled when an XML document is active. It assigns an XML Schema to an XML document, thus allowing the document to be validated and enabling intelligent editing for the document. The command opens the Assign File dialog to let you specify the XML Schema file you wish to assign. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button). Note that you can make the path of the assigned file relative by clicking the Make Path Relative To... check box. When you are done, your XML document will contain an XML Schema assignment with the required namespaces. The schema assignment will look something like this:

```
xmlns="http://www.xmlspy.com/schemas/icon/orgchart"
xmlns:xsi="http://www.w3.org/1999/XMLSchema-instance"
xsi:schemaLocation="http://www.xmlspy.com/schemas/icon/orgchart
   http://schema.xmlspy.com/schemas/icon/orgchart.xsd"
```

18.5.3 Include Another DTD

The **DTD/Schema | Include another DTD...** command allows you to include another Document Type Definition (DTD) or external parsed entity into the internal subset of a document type definition, or in any DTD document. This is done by defining a corresponding external parsed entity declaration and using that entity in the following line:

```
<!ENTITY % navigation.dtd SYSTEM "S:\xml\navigation.dtd">
%navigation.dtd;
```

The command opens the Assign File dialog to let you specify the DTD file you want to include in your DTD.

Please note: This command is enabled in Grid View only.

18.5.4 Go to DTD

The **DTD/Schema | Go to DTD** command opens the DTD on which the active XML document is based. If no DTD is assigned, then an error message is displayed.

18.5.5 Go to Schema

The **DTD/Schema | Go to Schema** command opens the XML Schema on which the active XML document is based. If no XML Schema is assigned, then an error message is displayed.

18.5.6 Go to Definition

The **DTD/Schema | Go to Definition** command displays the exact definition of an element or attribute in the corresponding Document Type Definition or Schema document.

To see the item definition in Grid View

1. Click left on the item.
2. Select the menu item **DTD/Schema | Go to Definition,** or click on the icon.

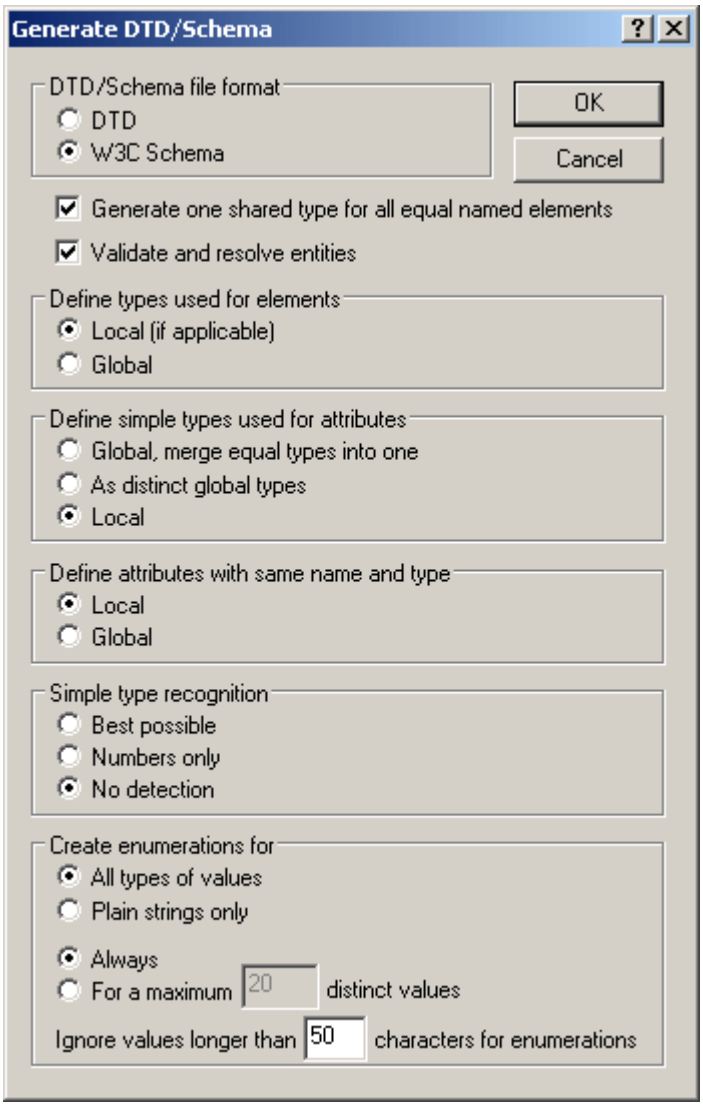
To see the item definition in Schema View

- Use CTRL + Double click on the item you want to see the definition of, or
- Click the item and select menu option **DTD/Schema | Go to Definition,** or click on the icon.

  In both cases, the corresponding DTD or Schema file is opened, and the item definition is highlighted.

18.5.7 Generate DTD/Schema

The **DTD/Schema | Generate DTD/Schema** command generates a new DTD or W3C XML Schema from an XML document (or from a set of XML documents contained in a folder in the project window). This command is useful when you want to generate a DTD or XML Schema from XML documents.



If you generate an XML Schema, the following options are available:

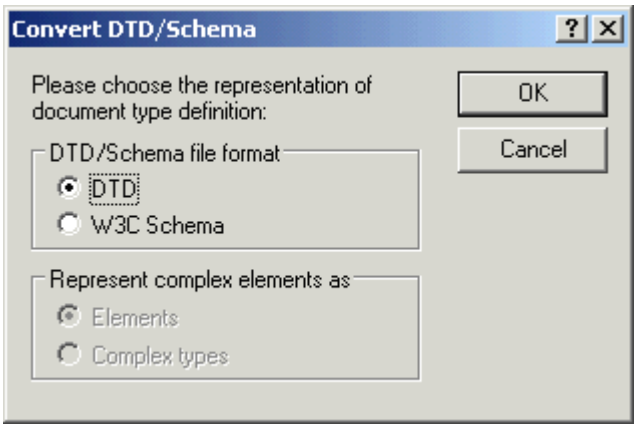
- ***Elements***: The type of elements can be defined locally or globally (*Define types for elements*). If elements have the same name, a common type can be declared for use in the definition of these elements (*Generate one shared type*).
- ***Atributes***: The simple types of attributes (*Define simple types for attributes*) can be defined as (i) common global types; (ii) distinct global types; (iii) local types. Attributes with the same name and type can be defined either locally or globally.
- ***Simple type recognition***: The recognition of types (*Simple type recognition*) can be set to: (i) best possible; (ii) recognition of number datatypes only; (iii) no datatype recognition, in which case all datatypes are set to `xs:string`.
- ***Entity resolution***: In the XML document, entities may appear in element content and attribute values. Whether they are resolved or not (*Validate and resolve entities*) is therefore significant for enumeration values. Furthermore, some entities (especially parsed entities that contain markup) can affect the content model differently depending on whether they are resolved or not. Note that the XML document will be validated for being correct XML before the schema is generated. If the document is invalid, the schema generation process will be discontinued.
- ***Enumerations***: All types of values, or string values only, can be enumerated.

If you generate a DTD, the entity resolution and enumeration options are available.

The Generate DTD/Schema command normally operates on the active main window, but you can also use the **Generate DTD/Schema** command on any file, folder, or group of files in the active project window.

18.5.8 Convert DTD/Schema

The **DTD/Schema | Convert DTD/Schema...** command converts a DTD into an XML Schema and vice versa. If you select W3C Schema, you must also specify how to represent complex elements, as elements or as complex types.



Converting a DTD to XML Schema
When you convert a DTD to XML Schema, XMLSpy makes a few assumptions because of the limited information available. Most notably, the values of certain DTD components are treated literally rather than having their semantics parsed. This is because the program cannot know which of several possible usages is intended. In these cases, you should modify the generated conversion.

In any case, you should carefully examine the generated conversion to see if you can enhance it. A few areas in which improvements may be required are given below.

Attribute Datatyping
DTDs allow for only 10 attribute datatypes, whereas XML Schemas, for instance, allow for 44 datatypes plus derived datatypes. You may wish to enhance a generated XML Schema, for example, by using a more restrictive datatype. Note that when an XML Schema is converted to DTD datatype information will be lost.

Namespaces
DTDs are not namespace-aware. As a result, if namespaces are to be specified in a DTD they must be hard-coded into element and attribute names. This could pose challenging problems when converting from one schema to another.

Entities
XML Schema does not have equivalents for the general entity declarations of DTDs. When XMLSpy converts a DTD to an XML Schema, it ignores entity declarations.

Unparsed data declarations

DTDs and XML Schemas use different mechanisms for handling unparsed data. This is explained in more detail below.

DTDs use the following mechanism:

1. A notation is declared consisting of a name and an identifier, e.g.
   ```
   <! NOTATION gif SYSTEM "image/gif">
   ```
2. You declare the entity, e.g.
   ```
   <! ENTITY cover_img SYSTEM "graphics/cover_img. gif" NDATA gif>
   ```
3. Typically, you specify an attribute type of `ENTITY` on the relevant attribute, e.g.
   ```
   <! ELEMENT img EMPTY>
   <! ATTLIST img format ENTITY #REQUIRED>
   ```

In XML Schema, the corresponding mechanism is as follows:

1. Declare a notation. This functions in the same way as for the DTD.
   ```
   <xs: notation name="gif" public="image/gif"/>
   ```
   Note that the `public` attribute is mandatory and holds the identifier. An optional `system` attribute holds the system identifier and is usually an executable that can deal with resources of the notation type.
2. You associate the notation declaration with a given attribute value using the `NOTATION` datatype.
   - You cannot, however, use the `NOTATION` datatype directly, but must derive another datatype from the `NOTATION` datatype.
     ```
     <xs: simpleType name="formatType">
       <xs: restriction base="xs: NOTATION">
         <xs: enumeration value="gif"/>
         <xs: enumeration value="jpeg"/>
       </xs: restriction>
     </xs: simpleType>
     ```
   - You associate the attribute with the datatype derived from the `NOTATION` datatype, e.g.
     ```
     <xs: complexType name="imgType">
       <xs: attribute name="height"/>
       <xs: attribute name="width"/>
       <xs: attribute name="location"/>
       <xs: attribute name="format" type="formatType"
       use="required"/>
     </xs: complexType>
     <xs: element name="img" type="imgType"/>
     ```

When you convert a DTD to an XML Schema using the Convert DTD/Schema command, XMLSpy does the following:

- Something like
  ```
  <! ATTLIST image format ENTITY #REQUIRED
  ...>
  ```
  is converted to
  ```
  <xs: attribute name="format" type="xs: ENTITY" use="required"/>
  ```
- And
  ```
  <! NOTATION gif SYSTEM "image/gif">
  ```
  is converted to
  ```
  <xs: notation name="gif" system="image/gif"/>
  ```

You should therefore make the following modifications:

1. In notations like `<xs:notation name="gif" system="image/gif"/>` replace `system` with `public`, and add an optional system identifier if required.
2. Derive a datatype from the `NOTATION` datatype as described above for `formatType`.
3. Associate the derived datatype with the relevant attribute.

Please note: According to the XML Schema specification, you do not need to—or cannot, depending on your viewpoint—declare an external entity.

Converting an XML Schema to a DTD
When you convert an XML Schema to a DTD, the **namespace prefixes** used in the XML Schema—not the namespace URIs or the namespace declarations—are carried through to the names of the corresponding elements and attributes in the DTD.

Note the following points:

1. Since XML parsers ignore namespaces when validating an XML document against a DTD, the namespace declarations themselves are not converted.
2. The `elementFormDefault` and the `attributeFormDefault` attributes of the `xs:schema` element determine what elements and attributes have their prefixes included in the conversion process. If set to `unqualified`, then only globally declared elements and attributes, respectively, include prefixes in the conversion. If set to `qualified`, all element and attribute names have their prefixes included in the conversion.
3. Prefixes are converted to their corresponding string value plus a colon. Elements and attributes in default namespaces are converted to elements and attributes with names that begin with the string: `default_NS_X`, where `X` is an integer (starting with 1 and having a maximum value equal to the number of default namespaces used in the XML Schema).
4. In the DTD, element names are composed of parameter entities. This enables you to easily change the prefix in the DTD should the prefix in the XML document ever need to change. Parameter entity definitions can be changed either in the DTD document itself or by overriding the parameter entity definitions in the XML document's internal DTD subset.

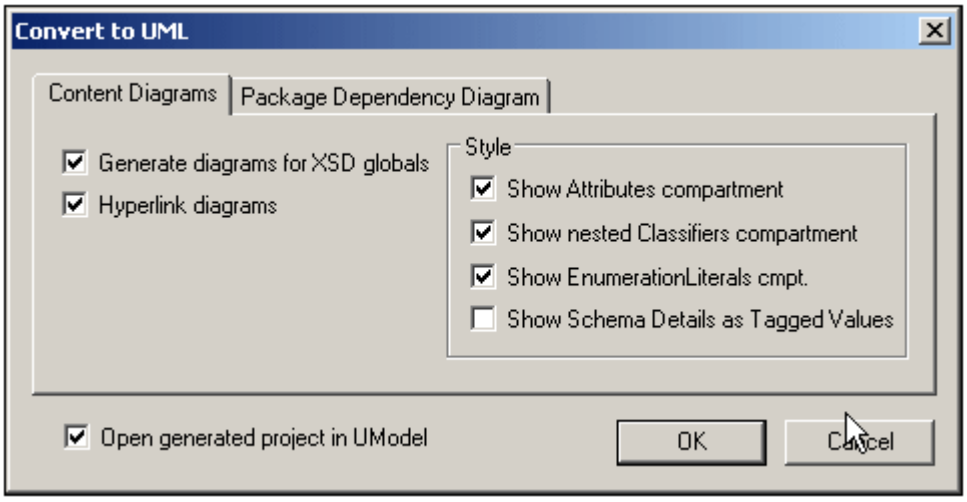
Please note: Namespaces have no semantic value in DTDs, and namespace prefixes carried over from the XML Schema become merely a lexical part of the name of the element or attribute defined in the DTD.

18.5.9 Convert to UML

The **DTD/Schema | Convert to UML** command converts a W3C XML Schema to an Altova UModel Project (`.ump`) document (hereafter UModel project). UMP is the native format of Altova UModel, Altova's UML modeling application. UMP files can then be viewed and edited in Altova UModel.

To convert a schema to UML, do the following:

1. With the schema open, click the **Convert to UML** command. This pops up the Convert to UML dialog (*screenshot below*).



2. In the Content Diagrams tab, select the option Generate Diagrams for XSD Globals. This will generate, in the UModel project, a content model diagram for each global component.
3. Select the required options from those available in the dialog. These options are explained below.
4. If you wish to view the created project in UModel immediately, select the option to open the project in UModel. Otherwise leave this option unselected.
5. Click **OK**.
6. In the Save As dialog that appears, browse for the destination folder, then enter the name of the UMP file, and click **Save**.

Convert to UML options
The following options are available in the Convert to UML dialog.

In the ***Content Diagrams*** tab:

- *Hyperlink diagrams* creates in each diagram a link to the entry of that global component in the Model Tree view, thus enabling the component to be quickly located in the schema hierarchy.
- In the *Style* pane, the show compartments options enables various compartments to be either shown or hidden.

In the ***Package Dependency Diagram*** tab:

- The *Generate Diagram* option determines whether a package dependency diagram is generated. A package dependency diagram provides an overview of the entire package, showing the relationships of package components to one another. Note that the other options in this tab will be enabled only if the Generate Diagram option is selected.
- Selecting the *Hyperlink Package to Diagram* option creates a link from the package diagram to the Model Tree View.
- Four options are available for the layout of the package dependencies diagram: (i) unorganized layout (Autolayout option unselected); (ii) hierarchical layout (Autolayout and Hierarchical options selected); iii) block (Autolayout and Block options selected); and (iv) evenly spaced (Autolayout and Force Directed options selected). The layout can be modified by editing the diagram in UModel.

Note: The Convert to UML feature supports W3C XML Schemas only.

18.5.10 Generate XML from DB, Excel, EDI with MapForce

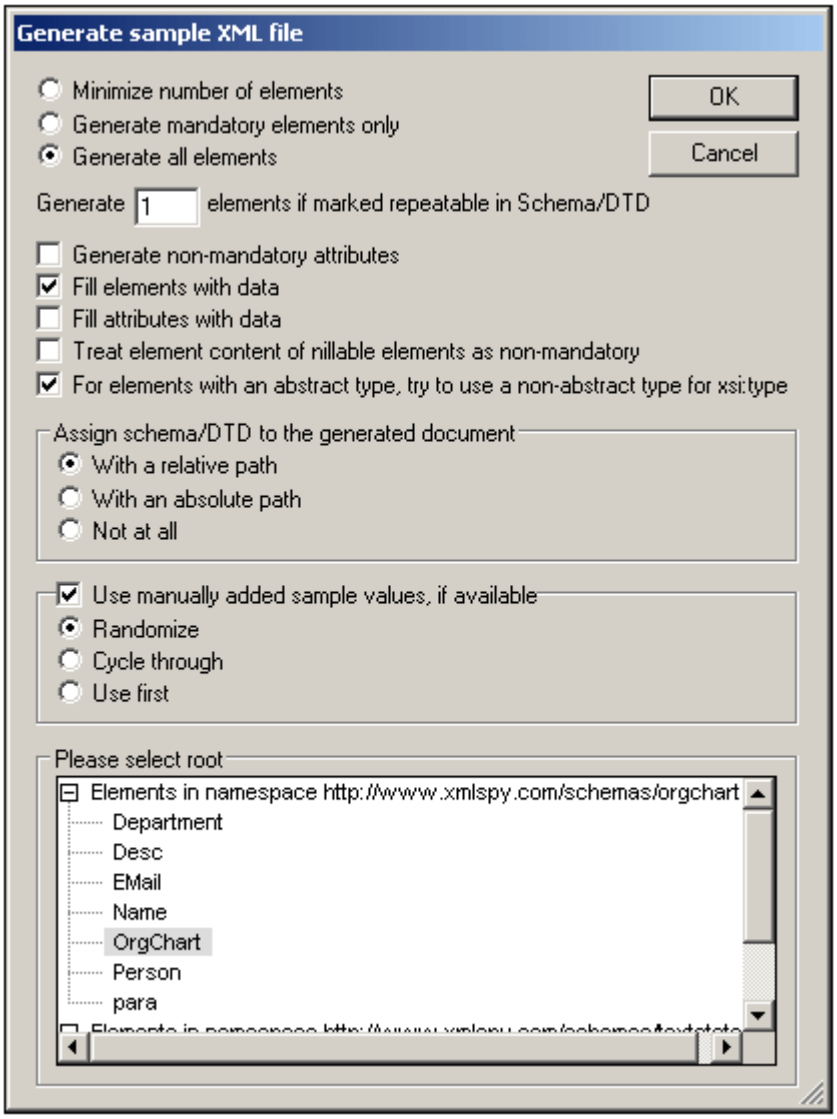
The **DTD/Schema | Generate XML from DB, Excel, EDI with MapForce** command launches Altova's MapForce if the application is installed. MapForce enables you to map a schema to another DTD, XML Schema, or database and to generate XML.

18.5.11 Design HTML/PDF/Word Output with StyleVision...

The **DTD/Schema | Design HTML/PDF Output in StyleVision...** command launches Altova's StyleVision if the application is installed. StyleVision enables you to design stylesheets for HTML, PDF, and RTF output.

18.5.12 Generate Sample XML File

The **DTD/Schema | Generate Sample XML File** command generates an XML file based on the currently active schema (DTD or XML Schema) in the main window.



Elements to be generated
One of the following choices can be selected: (i) minimize the number of elements, which generates the minimum number of elements required to create a valid file; (ii) generate mandatory elements only; (iii) generate all elements (whether mandatory or non-mandatory). If elements are defined as being repeatable, the number of elements to be generated (for each of these repeatable elements) can be specified.

Generate non-mandatory attributes
Activating this option generates not only mandatory attributes, but also the non-mandatory attributes, defined in the schema.

Generate X elements if marked repeatable in Schema/DTD
Activating this option generates the number of repeatable elements you enter in the text box.

Fill elements and attributes with data
Activating this option inserts the data type descriptors/values for the respective elements/attributes. For example: `Boolean = 1`, `xsd:string = string`, Max/Min inclusive = the value defined in the schema.

Nillable elements and abstract types
The contents of nillable elements can be treated as non-mandatory, and elements with an abstract type can use a non-abstract type for its `xsi:type` attribute.

Schema assignment for the generated XML file
The schema used to generate the XML file can be assigned to the generated XML file with a relative or absolute path.

Use manually added sample values if available
If the schema component has sample values assigned to it, then these will be used as the value or content of that component. For individual components, sample values are assigned in the Facets Entry Helper, in the Samples tab. Which value from the available sample values is selected for a single file generation can be specified:

- A random selection.
- Each sample value in turn for each instance of the component. For each file generation, the cycle starts anew.
- The first value always.

Root element
If the schema contains more than one global element, these are listed, and the root element required for the sample XML file can be selected from the list.

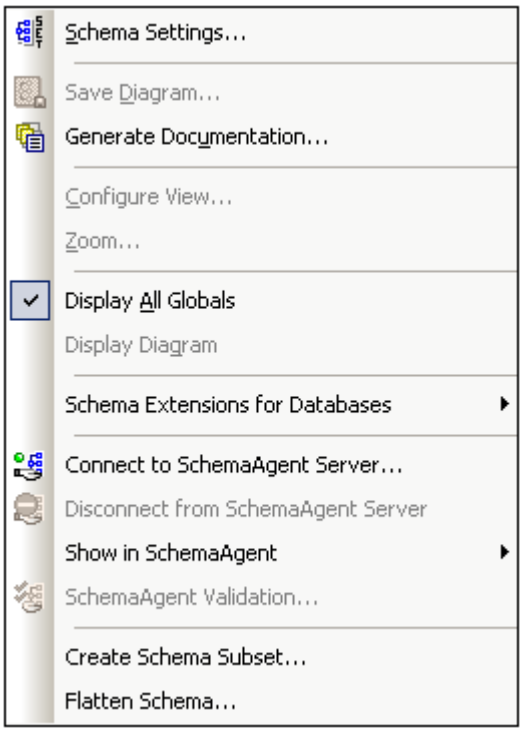
18.5.13 Flush Memory Cache

The **DTD/Schema | Flush Memory Cache** command flushes all cached schema (DTD and XML Schema) documents from memory. To speed up validation and intelligent editing, XMLSpy caches recently used schema documents and external parsed entities in memory. Information from these cached documents is also displayed when the Go to Definition command is invoked.

Flush the memory cache if memory is tight on your system, or if you have used documents based on different schemas recently.

18.6 Schema Design Menu

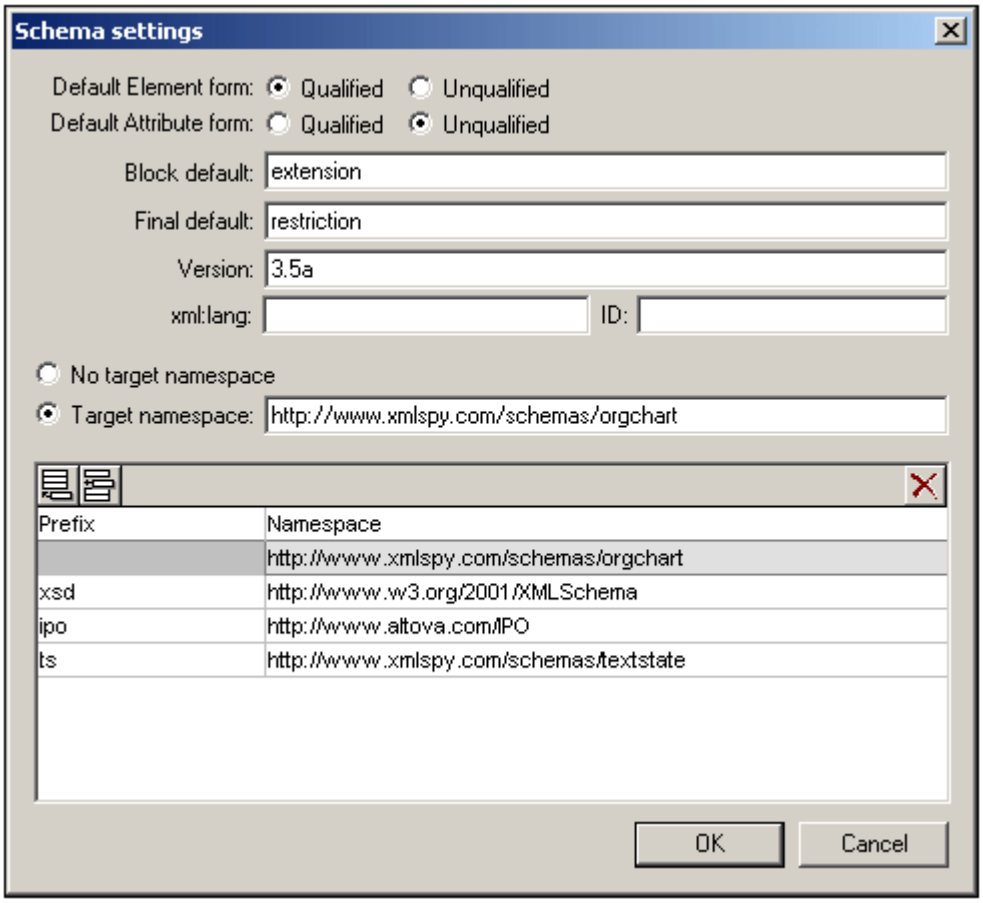
The **Schema Design** menu enables you to configure the Schema View of XMLSpy. This view enables you to design XML Schemas in a GUI. It is available when an XML Schema document is active in Schema View.



The commands available in this menu are described in this section.

18.6.1 Schema Settings

The **Schema Design** | **Schema Settings** command lets you define global settings for the active schema. These settings are attributes and their values of the XML Schema document element, `xs:schema`.



You can make the following settings in this dialog:

- The `elementFormDefault` and `attributeFormDefault` attributes of the xs:schema element can each be set to `qualified` or `unqualified`.
- The `blockDefault`, `finalDefault`, and `version` attributes can be entered in their respective fields.
- The target namespace for the XML instance document can be set by selecting the `Target Namespace` radio button, and entering the `target namespace` in the field. If you declare a target namespace, you must define that namespace for use in the schema document. Do this by entering a namespace line in the Namespace list in the bottom pane. You can define a prefix for this namespace, or let this namespace be the default namespace (by leaving the prefix field blank as shown in the screenshot above).

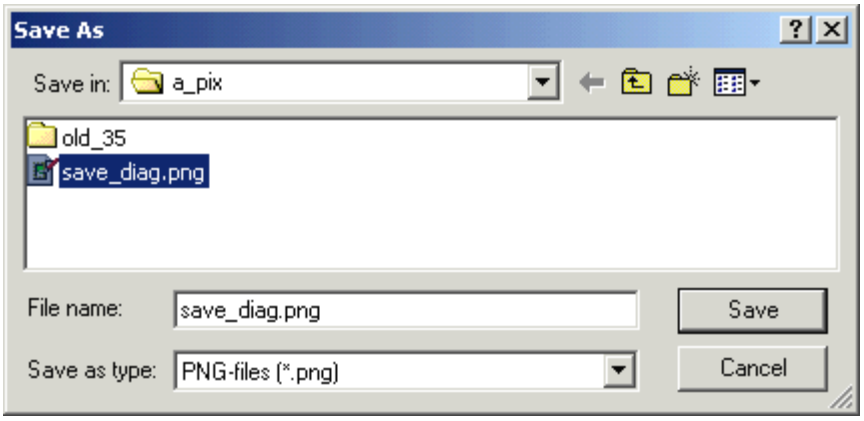
The Text View of the schema settings shown in the screenshot above will look something like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema
targetNamespace="http://www.xmlspy.com/schemas/Altova/orgc
hart" xmlns="http://www.xmlspy.com/schemas/Altova/orgchart"
xmlns:xsd="http://www.w3.org/2000/10/XMLSchema"
elementFormDefault="unqualified"
attributeFormDefault="unqualified" blockDefault="extension"
finalDefault="restriction" version="3.5a">
    <xsd:notation name="Altova-Orgchart"
public="http://www.xmlspy.com/schemas/Altova/orgchart"/>
    <xsd:complexType name="DivisionType">
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string">
                <xsd:annotation>
                    <xsd:documentation>Division Name
```

Please note: These settings apply to the active schema document only.

18.6.2 Save Diagram

The **Schema Design | Save Diagram...** command saves the diagram of the Content Model currently displayed in the Main Window in PNG format to any desired location.



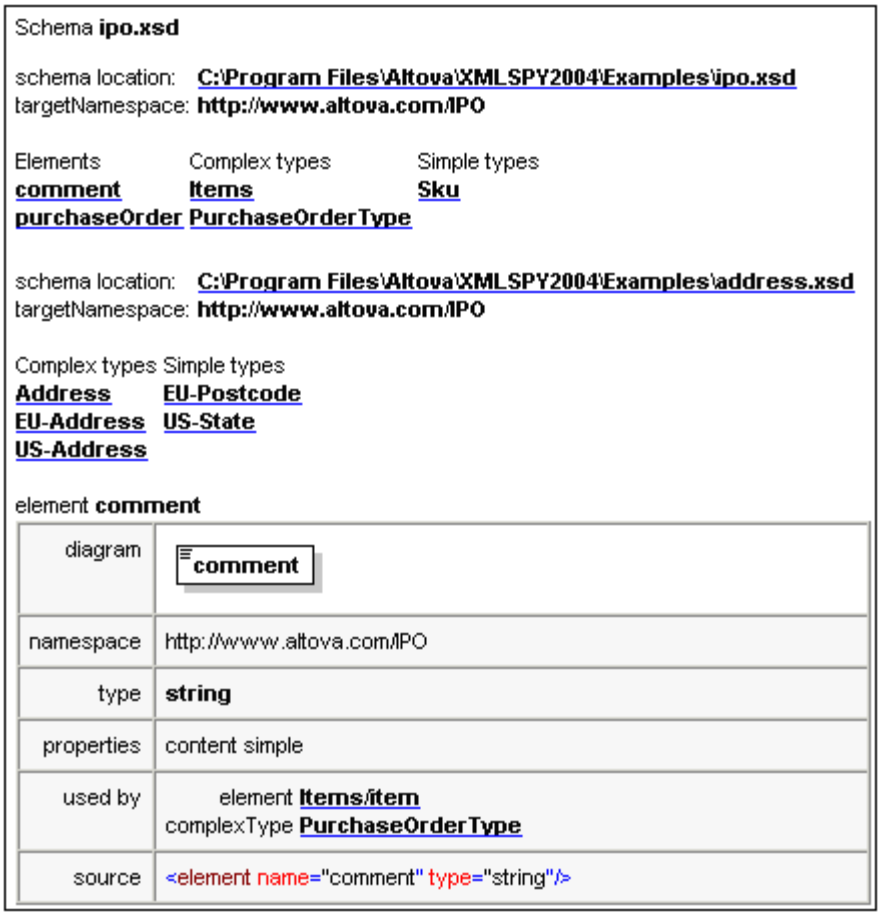
18.6.3 Generate Documentation

The **Schema Design | Generate Documentation** command generates detailed documentation about your schema (*see screenshot below*) in HTML, MS Word, RTF or PDF. The documentation generated by this command can be freely altered and used; permission from Altova to do so is not required. Documentation is generated for components you select in the Schema Documentation dialog (which appears when you select the Generate Documentation command). Related elements (child elements, complex types, etc.) are typically hyperlinked in the onscreen output, enabling you to navigate from component to component. Components with a content model also have links to the content model definitions. Note that schema documentation is also generated for **included and imported schema components**. The various documentation-generation options are described in the section, Documentation Options.

Note: In order to generate documentation in MS Word format, you must have MS Word (version 2000 or later) installed.

You can either use XMLSpy's fixed standard design for the generated document, or you can use a StyleVision SPS for the design. Using a StyleVision SPS enables you to customize the design of the generated documentation as well as to generate PDF as an additional output format. How to work with an SPS is explained in the section, User-Defined Design.

Note: In order to use an SPS to generate schema documentation, you must have StyleVision installed on your machine.


Schema **ipo.xsd**

schema location: **C:\Program Files\Altova\XMLSPY2004\Examples\ipo.xsd**
targetNamespace: **http://www.altova.com/IPO**

Elements	Complex types	Simple types
comment	**Items**	**Sku**
purchaseOrder	**PurchaseOrderType**	

schema location: **C:\Program Files\Altova\XMLSPY2004\Examples\address.xsd**
targetNamespace: **http://www.altova.com/IPO**

Complex types	Simple types
Address	**EU-Postcode**
EU-Address	**US-State**
US-Address	

element **comment**

diagram	comment
namespace	http://www.altova.com/IPO
type	**string**
properties	content simple
used by	element **Items/item** complexType **PurchaseOrderType**
source	<element name="comment" type="string"/>

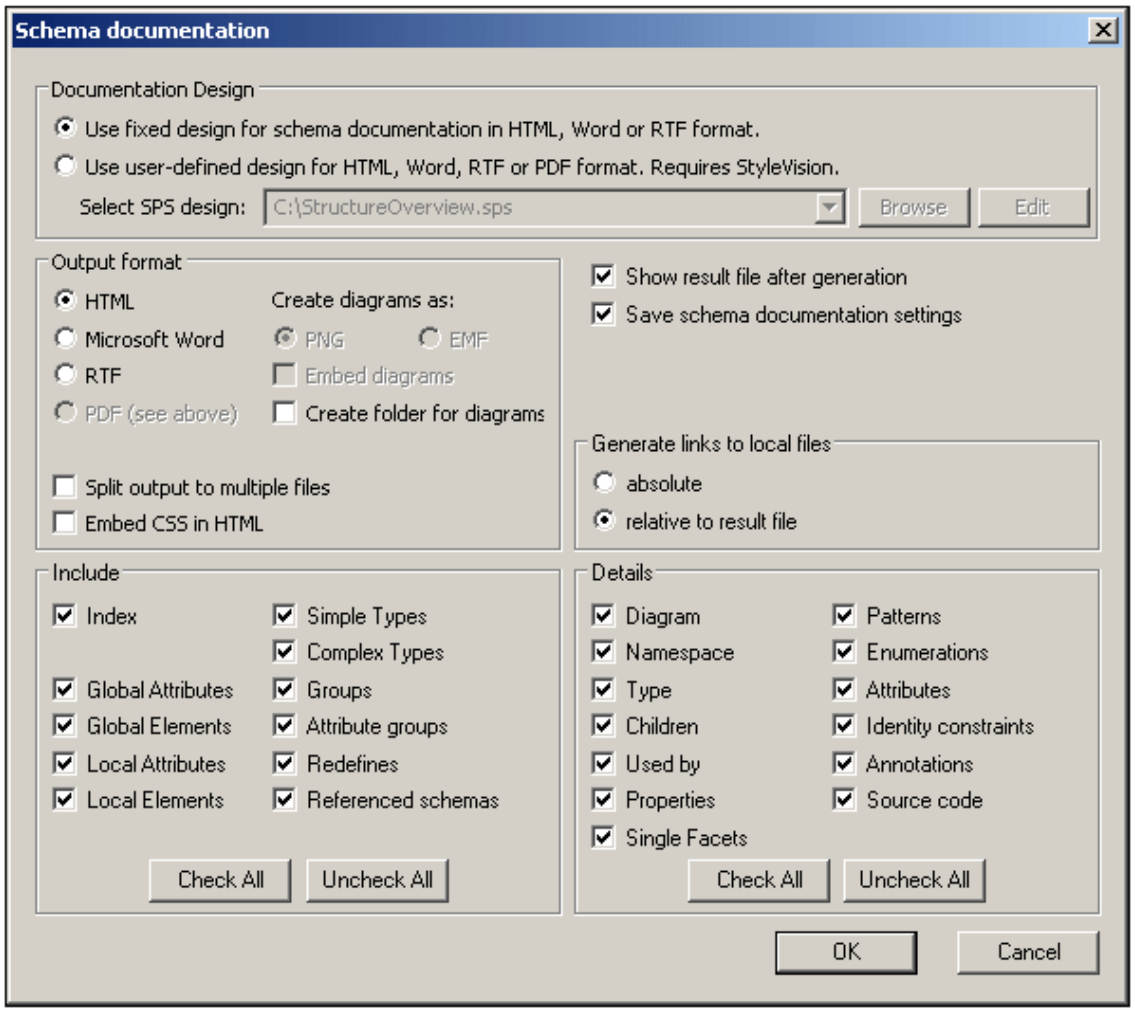
The screenshot above shows generated schema documentation with an index (all related schemas with their global components organized by component type) at the top of the document.

Note: When generating documentation for W3C schema documents, XMLSpy uses application-internal versions of these documents. Consequently, other locations of these documents are not considered, and redefinitions and other schema modifications will not be reflected in the documentation.

Documentation Options

The **Schema Design | Generate Documentation** command pops up the Schema Documentation dialog (*screenshot below*), in which you can select options for the documentation.

In the Documentation Design pane of the dialog you can select whether to use the fixed XMLSpy design for the generated documentation or whether to use a customized design created in a StyleVision SPS. Select the option you want. Note that PDF output is available only for documentation generated with a StyleVision SPS, not for documentation generated using a fixed design. How to work with a user-defined design is described in the section, User-Defined Design.



The other options in the Schema Documentation dialog are explained below:

- The required format is specified in the Output Format pane: either HTML, Microsoft Word, RTF, or PDF. (The PDF output format is only available if you use a StyleVision SPS to generate the documentation.) On clicking **OK**, you will be prompted for the name of the output file and the location to which it should be saved.
- Microsoft Word documents are created with the . `doc` file extension when generated using a fixed design, and with a . `docx` file extension when generated using a StyleVision SPS.
- The documentation can be generated either as a single file or be split into multiple files. When multiple files are generated, each file corresponds to a component. What components are included in the output is specified using the check boxes in the Include pane. In fixed designs, links between multiple documents are created automatically.
- For HTML output, the CSS style definitions can be either saved in a separate CSS file

or embedded in the HTML file (in the <head> element). If a separate CSS file is created, it will be given the same name as the HTML file, but will have a .css extension. Check or uncheck the *Embed CSS in HTML* check box to set the required option.

- The *Embed Diagrams* option is enabled for the MS Word, RTF, and PDF output options. When this option is checked, diagrams are embedded in the result file, either in PNG or EMF format. Otherwise diagrams are created as PNG or EMF files, which are displayed in the result file via object links.
- When the output is HTML, all diagrams are created as document-external PNG files. If the *Create folder for diagrams* check box is checked, then a folder will be created in the same folder as the HTML file, and the PNG files will be saved inside it. This folder will have a name of the format *HTMLFilename*_diagrams. If the *Create folder for diagrams* check box is unchecked, the PNG files will be saved in the same folder as the HTML file.
- Links to local files (such as diagram image files and external CSS file) can be relative or absolute. In the *Generate links to local files* pane, select the appropriate radio button according to the option you prefer.
- In the Include pane, you select which items you want to include in the documentation. The Index option lists all related schemas at the top of the file, with their global components organized by component type. The **Check All** and **Uncheck All** buttons enable you to quickly select or deselect all the options in the pane.
- The Details pane lists the details that may be included for each component. Select the details you wish to include in the documentation. The **Check All** and **Uncheck All** buttons enable you to quickly select or deselect all the options in the pane.
- The *Show Result File* option is enabled for all output options. When this option is checked, the result files are displayed in Browser View (HTML output), MS Word (MS Word output), and the default applications for .rtf files (RTF output) and .pdf files (PDF output). You can also select whether links in the output document are absolute or relative.

Parameter values
If the StyleVision SPS contains one or more parameter definitions, then on clicking **OK**, a dialog pops up listing all the parameters defined in the SPS. You can enter parameter values in this dialog to override the default parameter values that were assigned in the SPS.

User-Defined Design

Instead of the fixed standard XMLSpy design, you can create a customized design for schema documentation. The customized design is created in a StyleVision SPS, which is a design template for the output document.

Creating the SPS
A StyleVision Power Stylesheet (or SPS) is created using Altova's StyleVision product. An SPS for generating schema documentation must be based on an XML Schema that specifies the structure of the schema documentation. This schema is called SchemaDocumentation.xsd, and it is delivered with your XMLSpy package. It is stored in the folder: C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\Documentation\Schema.

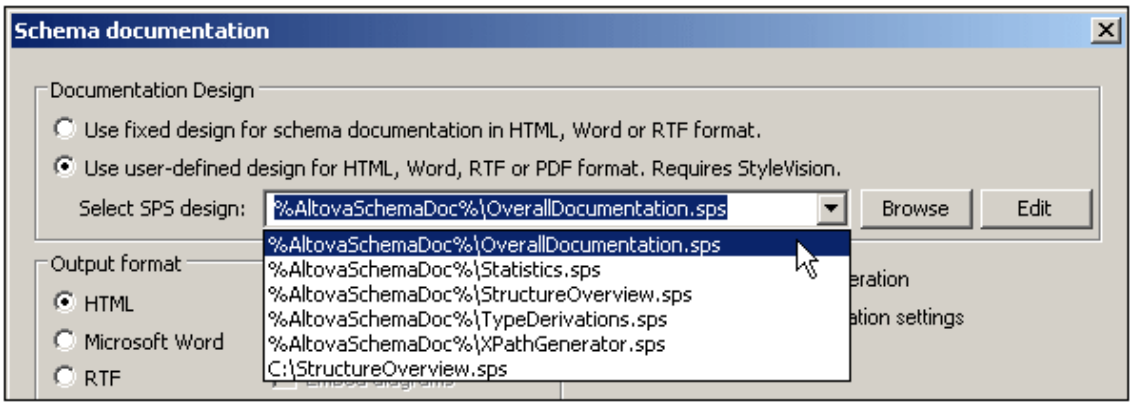
When creating the SPS design in StyleVision, nodes from the SchemaDocumentation.xsd schema are placed in the design template and assigned styles and properties. Additional components, like links, tables and images, can also be added to the SPS design. In this way, the entire output document can be designed in the SPS. How to create an SPS design in StyleVision is described in detail in the StyleVision user manual.

The advantage of using an SPS for generating schema documentation is that you have complete control over the schema documentation design. Note also that PDF output of the

schema documentation is available only if a user-defined SPS is used; PDF output is not available if the fixed XMLSpy design is used.

Specifying the SPS to use for schema documentation
After an SPS has been created, it can be used to generate schema documentation. The SPS you wish to use for generating the schema documentation is selected in the Schema Documentation dialog (accessed via the **Schema Design | Generate Documentation** command). In the Documentation Design pane of this dialog (*see screenshot below*), select the *Use User-Defined Design* radio button. You can then click the **Browse** button and browse for the SPS you want. Click the dialog's **OK** button, and, in the Save dialog that pops up, select the folder for, and enter the name of, the output file.

Note: The SPS file must correctly locate the schema on which it is based: `SchemaDocumentation.xsd` (*see above*).



The following editable SPS designs for schema documentation generation are delivered with XMLSpy. They are in the (My Documents) folder: `C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2011\Documentation\Schema\`. They are:

- `OverallDocumentation.sps`, which generates full documentation about the schema
- `Statistics.sps`, which lists the number of global and local elements, attributes and attribute groups, and simple and complex types for the main schema and for each schema file independently
- `StructureOverview.sps`, which outputs a structure of global elements and complex types up to a configurable depth
- `TypeDerivations.sps`, which lists simple and complex types and all their directly and indirectly derived types in the form of a tree
- `XPathGenerator.sps`, which generates all possible XPath statements up to a configurable depth

These files, together with other SPS files you have recently browsed for, will be available in the combo box of the *Use User-Defined* option (*see screenshot above*).

Clicking the **Edit** button in the Documentation Design pane launches StyleVision and opens the selected SPS in a StyleVision window. In order to preview the result document in StyleVision, you will need a Working XML file. A sample XML file for this purpose, called `OrgChart.xml`, is supplied with your application and is located in the (My Documents) folder:

`C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\Documentation\Schema\SampleData`

Note: In order to use an SPS to generate schema documentation, you must have StyleVision

installed on your machine.

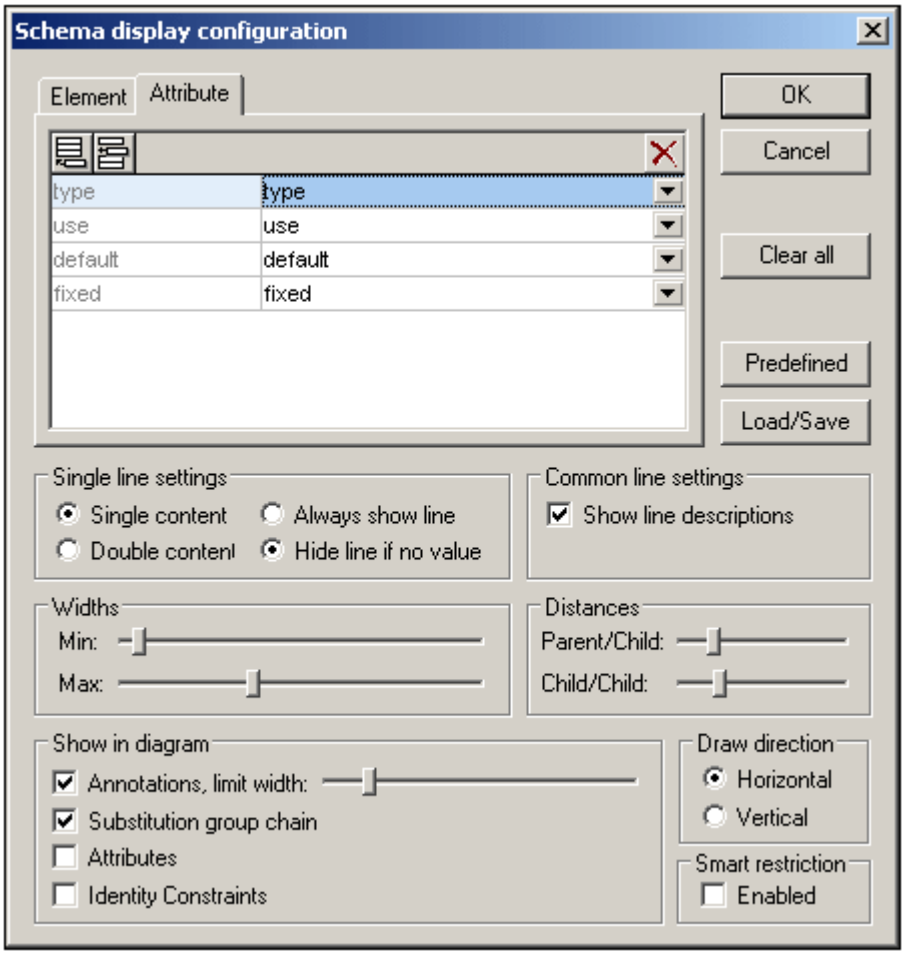
18.6.4 Configure View

The **Schema Design | Configure view** command is active in Content Model View and allows you to configure the Content Model View. Clicking the command opens the Schema Display Configuration dialog at the bottom right of the XMLSpy window, enabling you to see the effect of your settings as you enter them in the dialog. The settings take effect when you click the **OK** button of the dialog, and apply to the Content Model View of all XML Schema files that are opened subsequently. These settings also apply to the schema documentation output and printer output.

Defining property descriptor lines for the content model
You can define what properties of elements and attributes are displayed in the Content Model View. These properties appear as grid lines in component boxes.

To define property descriptor lines:

1. Select **Schema Design | Configure view**. The Schema display configuration dialog appears.
2. In the **Element** or **Attribute** tab, click the Append  or Insert  icon to add a property descriptor line. The line is added in the dialog and to element boxes in the Content Model View.
3. From the combo box, select the property you want to display. *See screenshot.*
4. Repeat steps 2 and 3 for as many properties as required.



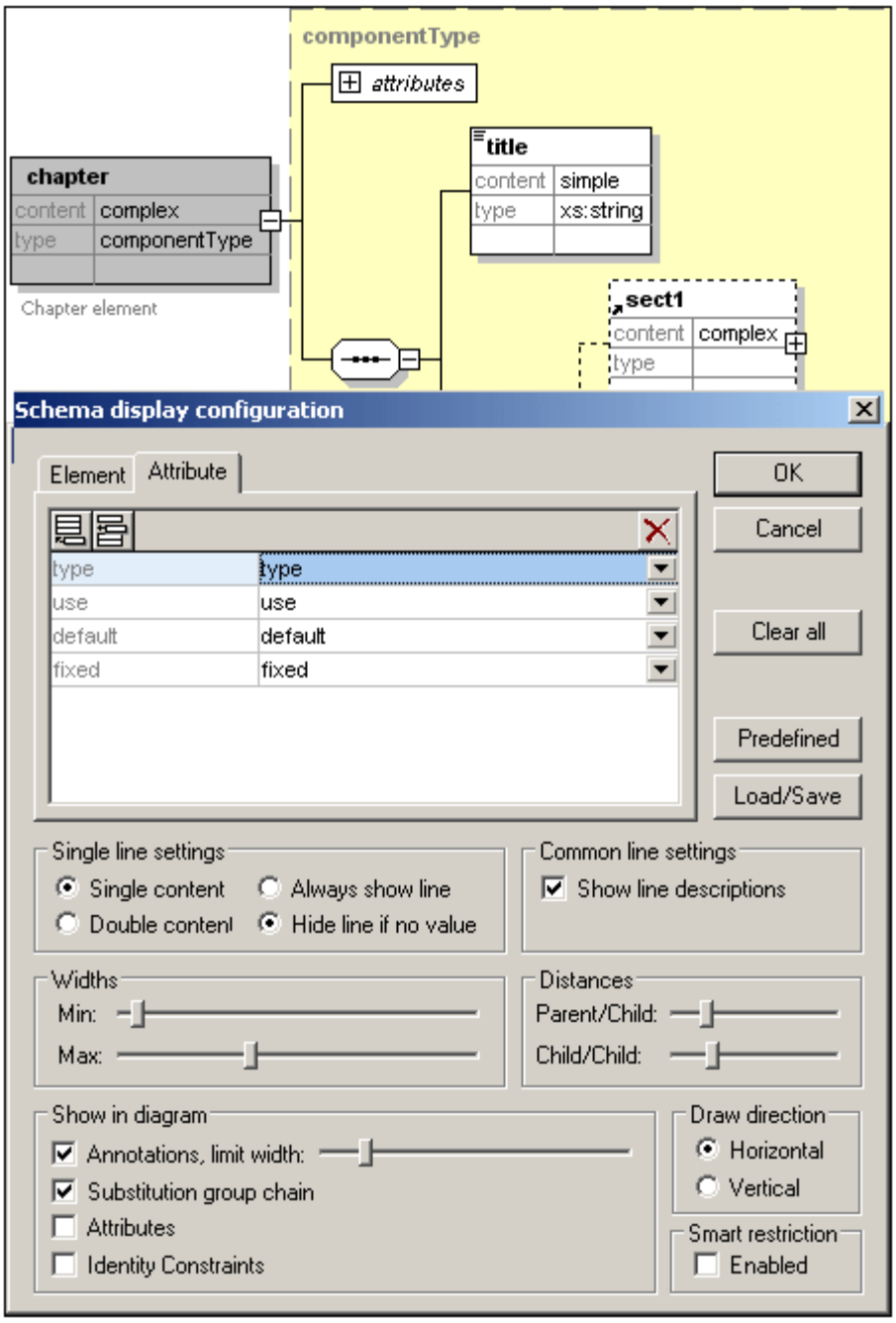
The Content Model View is updated, showing the defined property descriptor lines for all elements for which they exist.

Please note:

- For attributes, the configuration you define appears only when attributes are displayed in the diagram (as opposed to them being displayed in a pane below the Content Model View).
- The configured view applies to all Content Model Views opened after the configuration is defined.

Deleting a property descriptor line from the Content Model View
To delete individual property descriptor lines, in the Schema Display Configuration dialog, select the property descriptor line you want to delete, and click the Delete icon .

Settings for configuring the Content Model View
The Content Model View can be configured using settings in the Schema Display Configuration dialog. How to define what property descriptor lines are displayed in Content Model View has been described above. The other settings are described below.



Single line settings
You can define whether a property descriptor line is to contain single or double content, and whether individual lines must appear for every element or only for elements that contain that property. Use the appropriate radio buttons to define your settings. Note that these two settings can be set for individual lines separately (select the required line and make the setting).

Common line settings
This option toggles the line descriptions (i.e. the name of the property) on and off.

Widths
These sliders enable you to set the minimum and maximum size of the element rectangles in Content Model View. Change the sizes if line descriptor text is not fully visible or if you want to standardize your display.

Distances
These sliders let you define the horizontal and vertical distances between various elements onscreen.

Show in diagram
The Annotations check box toggles the display of annotation text on or off, as well as the annotation text width with the slider. You can also toggle the display of the substitution groups on or off. The Attributes and Identity Constraints appear in the Content Model diagram if their check boxes are selected; otherwise they appear as tabs in a pane at the bottom of the Content Model window.

Draw direction
These options define the orientation of the element tree on screen, horizontal or vertical.

Editing the content model in the diagram itself
You can change element properties directly in the content model diagram. To do this, double-click the property you wish to edit and start entering data. If a selection is available, a drop-down list appears, from which you can select an option. Otherwise, enter a value and confirm with **Enter**.

Buttons in the Schema display configuration dialog
This dialog has the following buttons:

- The **Load/Save** button allows you to load and save the settings you make here.
- The **Predefined** button, resets the display configuration to default values.
- The **Clear all** button empties the list box of all entries.

Enabling smart restrictions
To enable smart restrictions, check the Enable Schema Restrictions check box.

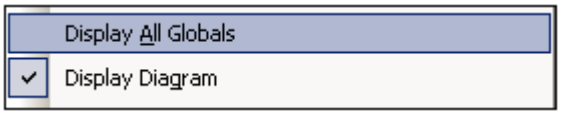
18.6.5 Zoom

The **Schema Design | Zoom** command controls the zoom factor of the Content Model View. This feature is useful if you have a large content model and wish to zoom out so that the entire content model fits in the Main Window. You can zoom between 10% and 200% of actual size.

To zoom in and out, either drag the slider or click in the entry box and enter a percentage value.

18.6.6 Display All Globals

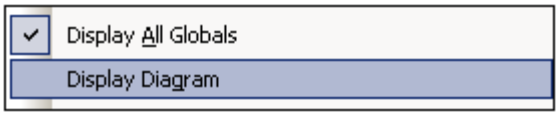
The **Schema Design | Display All Globals** command switches from Content Model View to Schema Overview to display all global components in the schema. It is a toggle with the Display Diagram command. The currently selected toggle is indicated with a check mark to its left (*see screenshot*).



Alternatively, you could use the **Display All Globals** icon  at the top of the Content Model View to switch to the Schema Overview.

18.6.7 Display Diagram

The **Schema Design | Display Diagram** command switches to the Content Model View of the selected global component—if the selected component has a content model. Global components that have a content model (complex types, elements, and element groups) are indicated with the  icon to its left. The Display Diagram command is a toggle with the Display All Globals command. The currently selected toggle is indicated with a check mark to its left (*screenshot below*).



Alternatively, you could use the following methods to switch to Content Model View:

- Click the  icon next to the component, the content model of which you want to display.
- Double-click a component name in the Component Navigator Entry Helper (at top right).

18.6.8 Schema Extensions for Databases

This menu item pops out a sub-menu containing commands for Oracle and MS SQL Server schema extensions.

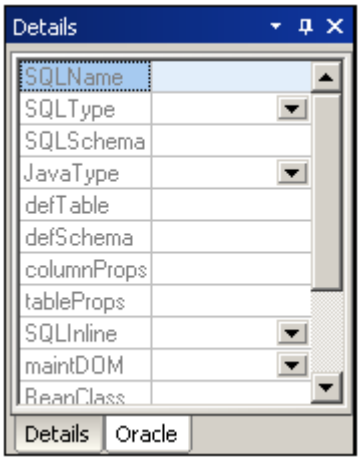
- Enable Oracle Schema Extensions
- Oracle Schema Settings
- Enable Microsoft SQL Server Schema Extensions
- Named Schema Relationships
- Unnamed Element Relationships

Enable Oracle Schema Extensions

XMLSpy provides support for Oracle schema extensions for use with Oracle 9i Project XDB. Using these schema extensions allows you to configure and customize how Oracle 9i Project XDB stores XML documents. These XML documents are then accessible through SQL queries and legacy tools. Please see the Oracle Website for more information.

When you select the **Schema Design | Enable Oracle Schema Extensions** command, the following occurs:

- The XDB namespace is declared on the `schema` element: `xmlns:xdb="http://xmlns.oracle.com/xdb"`.
- An Oracle tab is created in the Details Entry Helper, enabling you to add attributes—including XDB-specific attributes—to schema elements such as `xsd:complexType` and `xsd:element`.

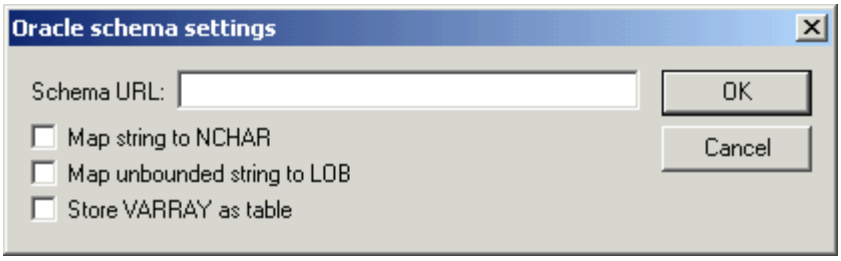


Oracle extensions can be defined for complex types, elements, and attributes. Use the Entry Helper as you normally would in XMLSpy.

Please note: This menu command can be toggled on and off, that is, extensions can be enabled or disabled. When Oracle extensions are enabled, the command is displayed with a check mark to its left. Disabling Oracle extensions (by clicking the enabled command) deletes the XDB namespace declaration and all XDB extensions in the file. A warning message appears since this action cannot be undone.

Oracle Schema Settings

The **Schema Design | Oracle Schema Settings** command allows you to define global settings for Oracle schema extensions.



In order to access this dialog, Oracle schema extensions must be enabled (using the Enable Oracle Schema Extensions command).

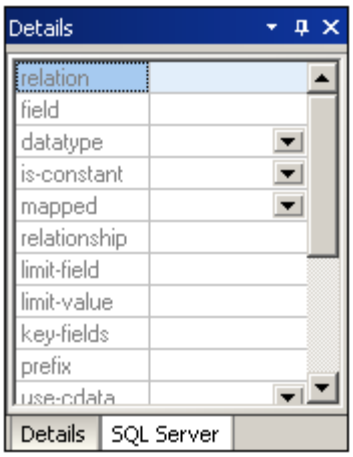
Enable Microsoft SQL Server Schema Extensions

XMLSpy provides support for Microsoft SQL Server 2000 schema extensions for use with Microsoft SQL Server. Using these schema extensions allows you to configure and customize how Microsoft SQL Server stores XML documents. These XML documents are then accessible

through SQL queries and legacy tools. Please see the Microsoft Website for more information.

When you select the **Schema Design | Enable Microsoft SQL Server Schema Extensions** command, the following occurs:

- The SQL Server namespace is declared on the `schema` element: `xmlns:sql="urn:schemas-microsoft-com:mapping-schema"`.
- An SQL Server tab is created in the Details Entry Helper, enabling you to add attributes to schema elements such as `xsd:element`.



Where SQL Server extensions can be defined for a schema component, the SQL Server tab is available in the Details Entry Helper when the component is selected. Use the Entry Helper as you normally would in XMLSpy.

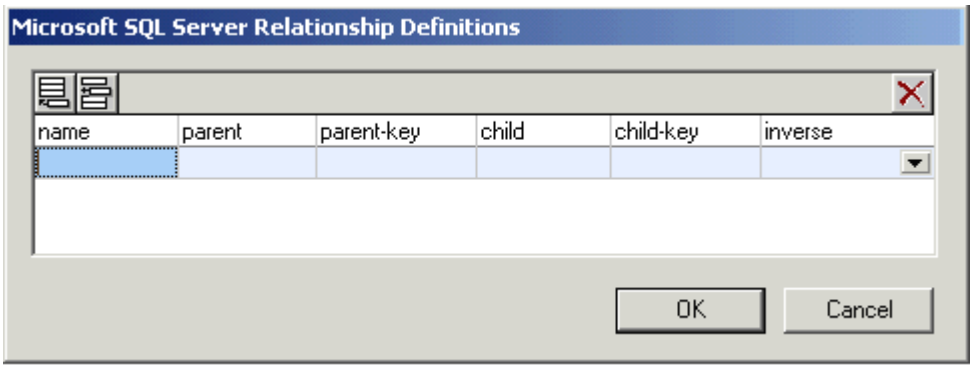
Please note: This menu command can be toggled on and off, that is, extensions can be enabled or disabled. When SQL Server extensions are enabled, the command is displayed with a check mark to its left. Disabling SQL Server extensions (by clicking the enabled command) deletes the SQL Server namespace declaration and all SQL extensions in the file. A warning message appears since this action cannot be undone.

Named Schema Relationships

The **Schema Design | Named Schema Relationships** command allows the definition of named relationships to provide the information needed to create the document hierarchy. You have to have previously enabled the SQL Server schema extensions, using the menu option "Enable SQL Server Schema Extensions", to be able to access this menu option.

To create a named schema relationship:

1. Click the insert  or append icon  , to add a new row to the dialog box.
2. Click the field and enter the corresponding relationship name.
3. Click **OK** to confirm.



This generates a SQL relationship element, placing it just after the namespace declaration.

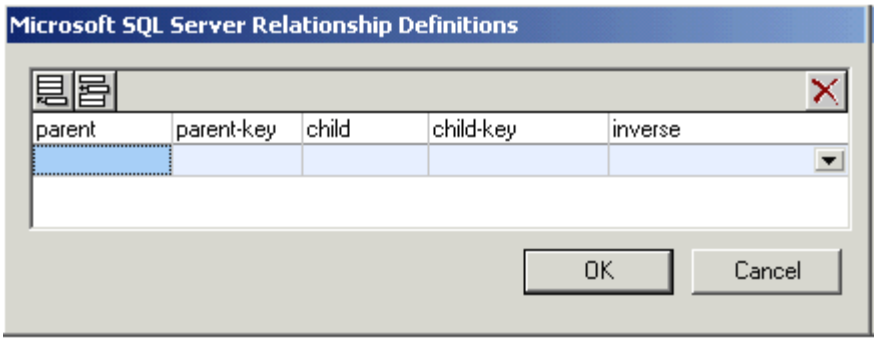
Please note: Click the delete icon, to delete a row from the dialog box.

Unnamed Element Relationships

The **Schema Design | Unnamed Element Relationships** command allows the definition of unnamed relationships to provide the information needed to create the document hierarchy. You have to have previously enabled the SQL Server schema extensions, using the menu option **Enable Microsoft SQL Server Schema Extensions**, to be able to access this menu option.

To create an unnamed schema relationship:

1. Click the insert or append icon, to add a new row to the dialog box.
2. Click the field and enter the corresponding relationship name.
3. Click **OK** to confirm.



This generates a SQL relationship element for the currently selected schema element.

Please note: Click the delete icon, to delete a row from the dialog box.

18.6.9 Connect to SchemaAgent Server

The **Schema Design | Connect to SchemaAgent Server** command is enabled when an XML Schema document is active and it enables you to connect to a SchemaAgent Server. You are

able to connect to a SchemaAgent server only if a licensed Altova SchemaAgent product is installed on your machine. When you click this command, the Connect to SchemaAgent Server dialog (*screenshot below*) opens:

You can use either the local server (the SchemaAgent server that is packaged with Altova SchemaAgent) or a network server (the Altova SchemaAgent Server product, which is available free of charge). If you select **Work Locally**, the local server of SchemaAgent will be started when you click **OK** and a connection with it will be established. If you select **Connect to Network Server**, the selected SchemaAgent Server must be running in order for a connection to be made.

When connected to SchemaAgent Server, XMLSpy acts as a SchemaAgent client, and provides powerful and enhanced schema editing and management functionality. For details about SchemaAgent, the installation of SchemaAgent Server, and how to connect to SchemaAgent Server, see SchemaAgent in the DTD and XML Schema section of this user manual. For more information about installing and working with these two products, see the SchemaAgent user manual that is delivered with these products.

After you connect to SchemaAgent Server, a message appears in the bar at the top of the Main Window with information about the connection. You now have full access to all schemas and schema components in the search path/s (folder/s) defined for the SchemaAgent server to which XMLSpy is connected.

Please note: In order for the connection to succeed, you must have Altova's SchemaAgent Client product installed with a valid license on the same machine as that on which XMLSpy is installed.

18.6.10 Disconnect from SchemaAgent Server

The **Disconnect from SchemaAgent Server** command is enabled when a connection to a SchemaAgent Server has been made successfully. Selecting this command disconnects XMLSpy from the SchemaAgent Server.

18.6.11 Show in SchemaAgent

The **Show in SchemaAgent** menu item causes the active schema and, optionally, linked schemas to be displayed in the Altova product SchemaAgent. (This product must be installed on the same machine as XMLSpy if you wish to use SchemaAgent functionality). The schema/s are opened in a new SchemaAgent Design in SchemaAgent.

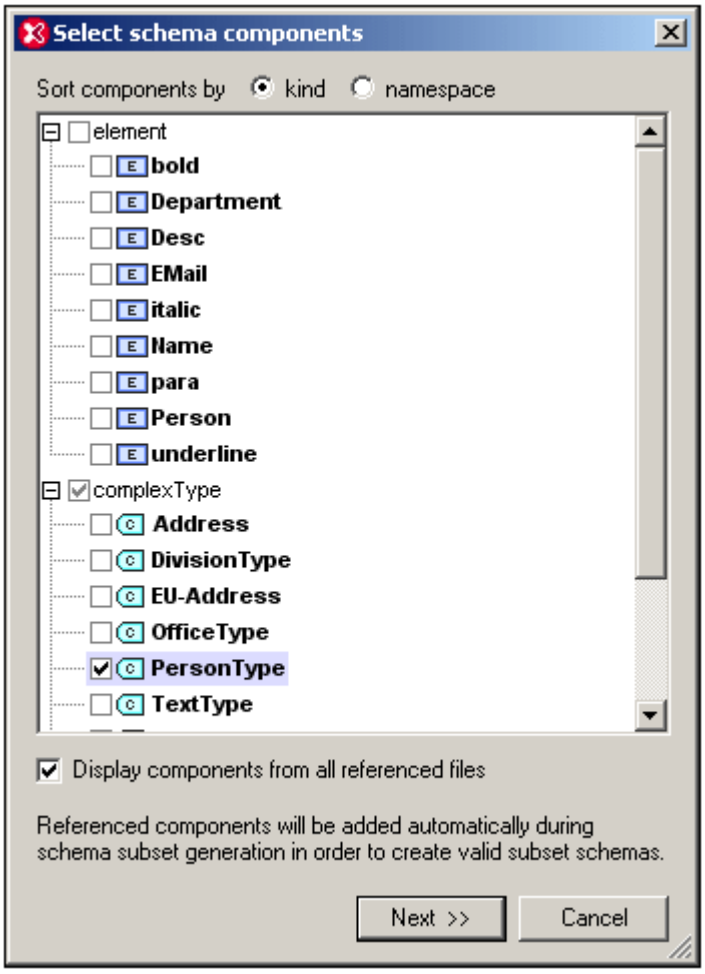
Mousing over the **Show in SchemaAgent** menu item pops out a submenu with options about what schemas to show in SchemaAgent. These options are described in SchemaAgent in the DTD and XML Schema section of this user manual.

18.6.12 SchemaAgent Validation

The **SchemaAgent Validation** command enables you to validate the currently active schema as well as schemas related to the currently active schema. This feature is described in detail in the SchemaAgent Validation section in the Schema View section of this user manual.

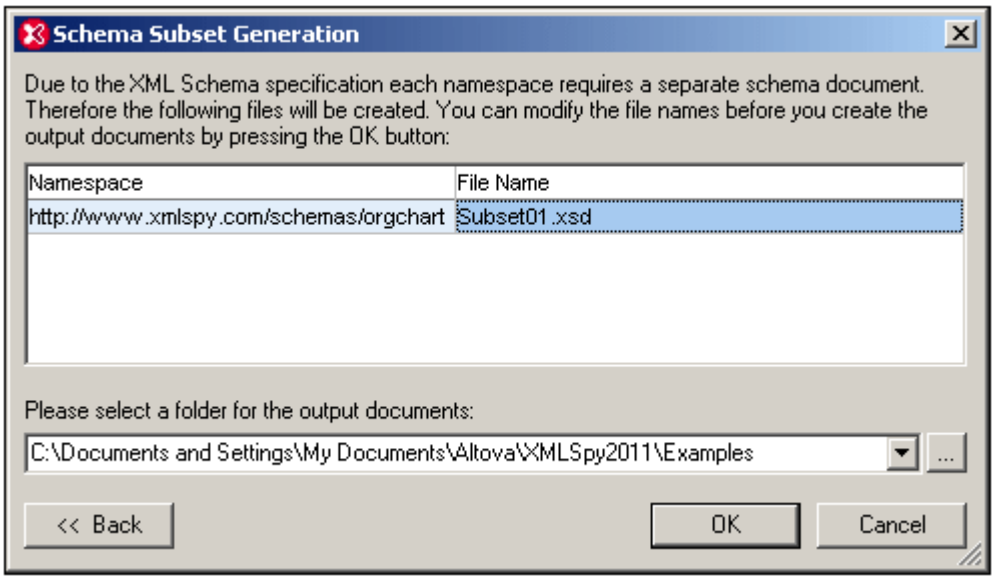
18.6.13 Create Schema Subset

The **Create Schema Subset**. command pops up the Select Schema Components dialog (*screenshot below*). In this dialog, you check the component or components you wish to create as a single schema subset, then click **Next**. (Note that a check box below the pane enables components from all referenced files to also be listed for selection.)



In the Schema Subset Generation dialog that now appears (*screenshot below*), enter the name/

s you want the file/s of the schema subset package to have. You must also specify the folder in which the new schema subset files are to be saved. A schema subset package could have multiple files if one or more of the components being created is an imported component in the original schema. A separate schema file is created for each namespace in the schema subset. The filenames displayed in the dialog are, by default, the names of the original files. But since you are not allowed to overwrite the original files, use new filenames if you wish to save the files in the same folder as the original files.

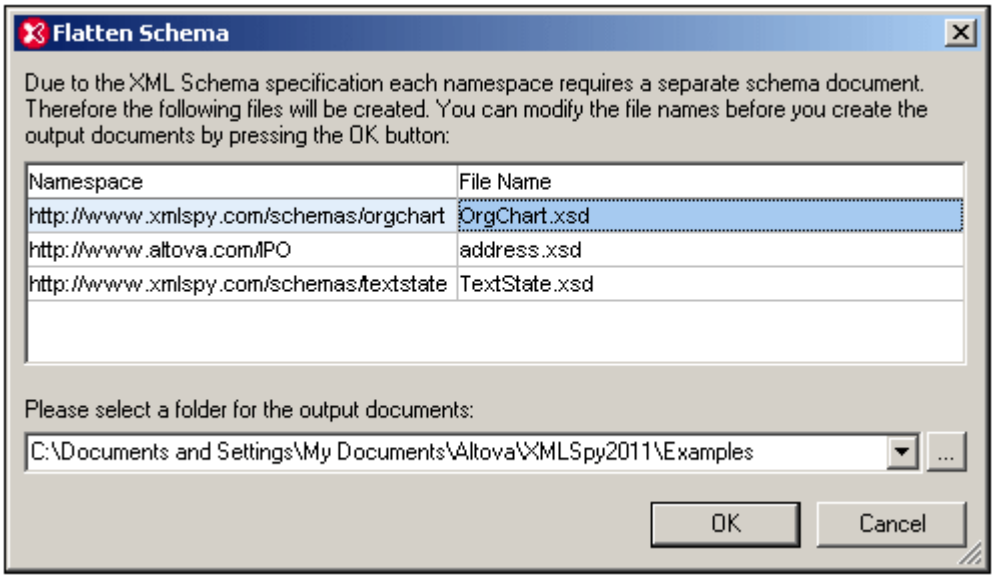


On clicking **OK**, the schema subset file with the namespace corresponding to that of the active file is opened in Schema View. Any other files in the package are created but not opened in Schema View.

18.6.14 Flatten Schema

Flattening the active schema in Schema View is the process of: (i) adding the components of all included schemas as global components of the active schema, and (ii) deleting the included schemas.

To flatten the active schema, select the command **Schema Design | Flatten Schema**. This pops up the Flatten Schema dialog (*screenshot below*), which contains the names of separate files, one for each namespace that will be in the flattened schema. These default names are the same as the original filenames. But since you are not allowed to overwrite the original files, the filenames must be changed if you wish to save in the same folder as the active file. You can browse for a folder in which the flattened schema and its associated files will be saved.



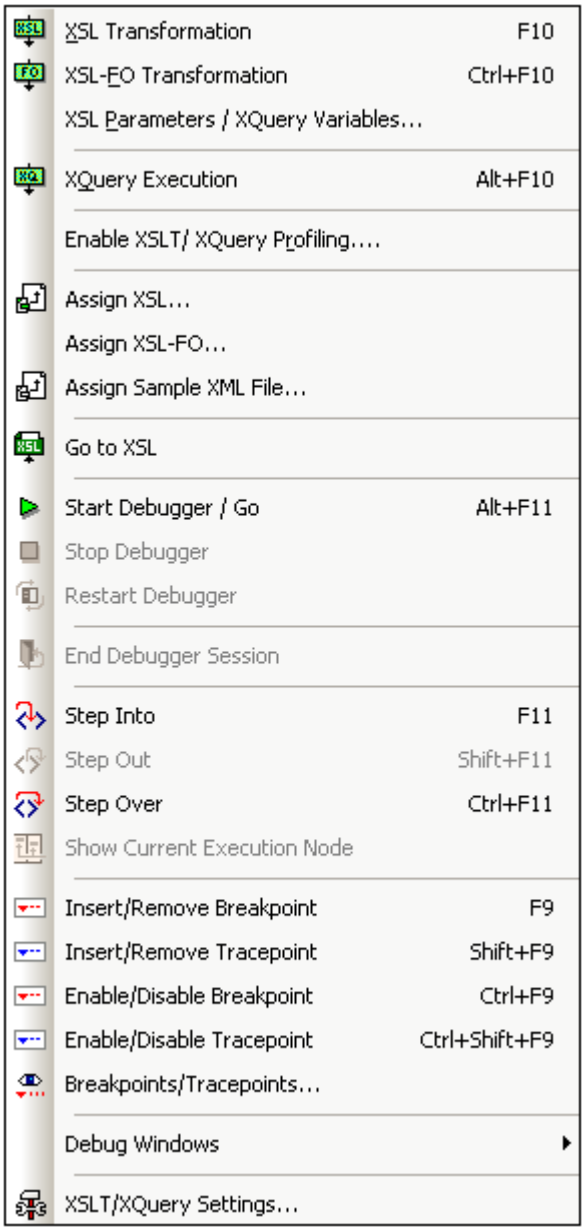
On clicking **OK**, the flattened schema file will be opened in Schema View.

18.7 XSL/XQuery Menu

The XSL Transformation language lets you specify how an XML document should be converted into other XML documents or text files. One kind of XML document that is generated with an XSLT document is an FO document, which can then be further processed to generate PDF output. XMLSpy contains built-in XSLT processors (for XSLT 1.0 and XSLT 2.0) and can link to an FO processor on your system to transform XML files and generate various kinds of outputs. The location of the FO processor must be specified in the XSL tab of the Options dialog (Tools | Options) in order to be able to use it directly from within the XMLSpy interface.

XMLSpy also has a built-in XQuery engine, which can be used to execute XQuery documents (with or without reference to an XML document).

Commands to deal with all the above transformations are accessible in the **XSL/XQuery** menu. In addition, this menu also contains commands to work with the Altova XSLT/XQuery Debugger.



18.7.1 XSL Transformation

F10

The **XSL/XQuery | XSL Transformation** command transforms an XML document using an assigned XSLT stylesheet. The transformation can be carried out using the appropriate built-in Altova XSLT Engine (Altova XSLT 1.0 Engine for XSLT 1.0 stylesheets; Altova XSLT 2.0 Engine for XSLT 2.0 stylesheets), the Microsoft-supplied MSXML module, or an external XSLT processor. The processor that is used in conjunction with this command is specified in the XSL tab of the Options dialog (**Tools | Options**).

If your XML document contains a reference to an XSLT stylesheet, then this stylesheet is used

for the transformation. (An XSLT stylesheet can be assigned to an XML document using the Assign XSL command. If the XML document is part of a project, an XSLT stylesheet can be specified on a per-folder basis in the Project Properties dialog. Right-click the project folder/s or file/s you wish to transform and select XSL Transformation.) If an XSLT stylesheet has not been assigned to an XML file, you are prompted for the XSLT stylesheet to use. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

Automating XSLT transformations with AltovaXML 2012

AltovaXML is a free application which contains Altova's XML Validator, XSLT 1.0, XSLT 2.0, and XQuery 1.0 engines. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

XSLT transformation tasks can therefore be automated with the use of AltovaXML. For example, you can create a batch file that calls AltovaXML to transform a set of documents. See the AltovaXML documentation for details.

Transformations to ZIP files

In order to enforce output to a ZIP file, including Open Office XML (OOXML) files such as `.docx`, one must specify the ZIP protocol in the file path of the output file. For example:

```
filename.zip|zip/filename.xxx
filename.docx|zip/filename.xxx
```

Note: The directory structure might need to be created before running the transformation. If you are generating files for an Open Office XML archive, you would need to zip the archive files in order to create the top-level OOXML file (for example, `.docx`).

18.7.2 XSL-FO Transformation

Ctrl+F10

FO is an XML format that describes paged documents. An FO processor, such as the Apache XML Project's FOP, takes an FO file as input and generates PDF as output. So, the production of a PDF document from an XML document is a two-step process.

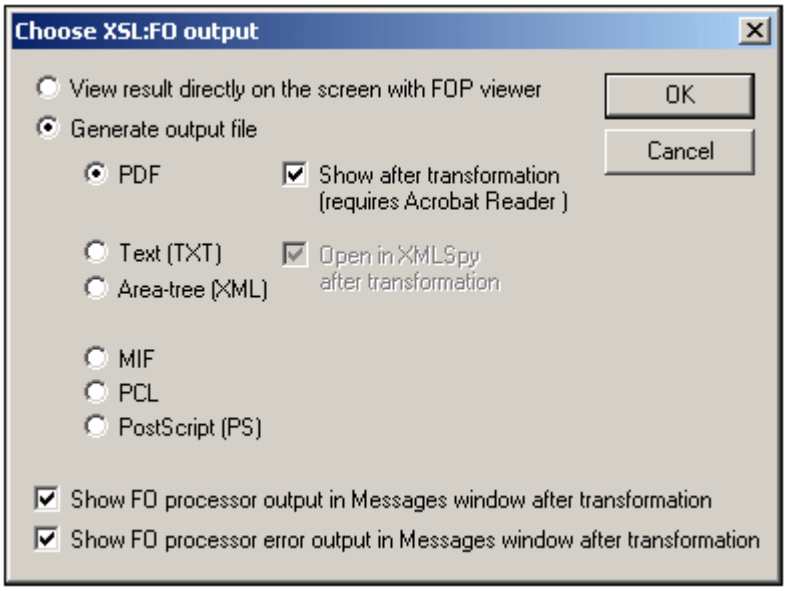
1. The XML document is transformed to an FO document using an XSLT (aka XSL-FO) stylesheet.
2. The FO document is processed by an FO processor to generate PDF (or some alternative output).

The **XSL/XQuery | XSL:FO Transformation** command transforms an XML document or an FO document to PDF.

- If the **XSL:FO Transformation** command is executed on a source XML document, then both of the steps listed above are executed, in sequence, one after the other. If the XSLT (or XSL-FO) stylesheet required to transform to FO is not referenced in the XML document, you are prompted to assign one for the transformation (*screenshot below*). Note that you can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button). The transformation from XML to XSL-FO is carried out by the XSLT processor specified in the XSL tab of the Options dialog (**Tools | Options**). By default the selected XSLT processor is XMLSpy's built-in XSLT processor. The resultant FO document is directly

processed with the FO processor specified in the XSL tab of the Options dialog (**Tools | Options**).
- If the **XSL:FO Transformation** command is executed on an FO document, then the document is processed with the FO processor specified in the XSL tab of the Options dialog (**Tools | Options**).

XSL:FO Transformation output
The **XSL:FO Transformation** command pops up the Choose XSL:FO Output dialog (*screenshot below*). (If the active document is an XML document without an XSLT assignment, you are first prompted for an XSLT file.)



You can view the output of the FO processor directly on screen using FOP viewer or you can generate an output file in any one of the following formats: PDF, text, an XML area tree, MIF PCL, or PostScript. You can also switch on messages from the FO processor to show (i) the processor's standard output message in the Messages window; and (ii) the processor's error messages in the Messages window. To switch on either these two options, check the appropriate check box at the bottom of the dialog.

Please note:
- The Apache FOP processor can be downloaded free of charge using the link at the Altova Download Center. After downloading and installing FOP, you must set the path to the FOP batch file in the XSL tab of the Options dialog (**Tools | Options**).
- The XSL:FO Transformation command can not only be used on the active file in the Main Window but also on any file or folder you select in the active project. To do this, right-click and select **XSL:FO Transformation**. The XSLT stylesheet assigned to the selected project folder is used.

18.7.3 XSL Parameters / XQuery Variables

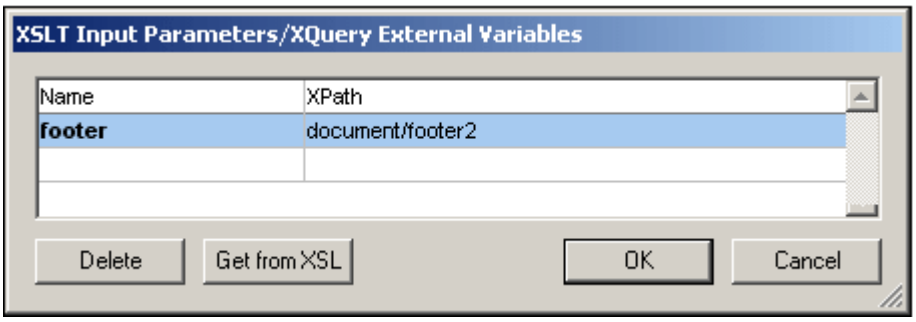
The **XSL/XQuery | XSL Parameters/XQuery Variables** command opens the XSLT Input Parameters/XQuery External Variables dialog (*see screenshot*). You can enter the name of one or more parameters you wish to pass to the XSLT stylesheet, or one or more external XQuery variables you wish to pass to the XQuery document, and their respective values. These parameters are used as follows in XMLSpy:

- When the **XSL Transformation** command in the XSL/XQuery menu is used to transform an XML document, the parameter values currently saved in the dialog are passed to the selected XSLT document and used for the transformation.
- When the **XQuery Execution** command in the XSL/XQuery menu is used to process an XQuery document, the XQuery external variable values currently saved in the dialog are passed to the XQuery document for the execution.

Please note: Parameters or variables that you enter in the XSLT Input Parameters/XQuery External Variables dialog are only passed on to the built-in Altova XSLT engine. Therefore, if you are using MSXML or another external engine that you have configured, these parameters are not passed to this engine.

Using XSLT Parameters

The value you enter for the parameter can be an XPath expression without quotes or a text string delimited by quotes. If the active document is an XSLT document, the **Get from XSL** button will be enabled. Clicking this button inserts parameters declared in the XSLT into the dialog together with their default values. This enables you to quickly include declared parameters and then change their default values as required.



Please note: Once a set of parameter-values is entered in the XSLT Input Parameters/XQuery External Variables dialog, it is used for all subsequent transformations until it is explicitly deleted or the application is restarted. Parameters entered in the XSLT Input Parameters/XQuery External Variables dialog are specified at the application-level, and will be passed to the respective XSLT document for every transformation that is carried out via the IDE from that point onward. This means that:

- parameters are not associated with any particular document
- any parameter entered in the XSLT Input Parameters/XQuery External Variables dialog is erased once XMLSpy has been closed.

Usage example for XSLT parameters

In the following example, we select the required document footer from among three possibilities in the XML document (`footer1`, `footer2`, `footer3`).

```
<?xml version="1.0" encoding="UTF-8"?>
<document xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:noNamespaceSchemaLocation="C:\workarea\footers\footers.xsd">
   <footer1>Footer 1</footer1>
   <footer2>Footer 2</footer2>
   <footer3>Footer 3</footer3>
   <title>Document Title</title>
   <para>Paragraph text.</para>
   <para>Paragraph text.</para>
</document>
```

The XSLT file contains a local parameter called `footer` in the template for the root element. This parameter has a default value of `footer1`. The parameter value is instantiated subsequently in the template with a `$footer` value in the definition of the footer block.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
   xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
   xmlns:fo="http://www.w3.org/1999/XSL/Format">
   ...
   <xsl:param name="footer" select="document/footer1" />
   ...
   <xsl:template match="/">
      <fo:root>
         <xsl:copy-of select="$fo:layout-master-set" />
         <fo:page-sequence master-reference="default-page"
            initial-page-number="1" format="1">
            <fo:static-content flow-name="xsl-region-after"
               display-align="after">
               ...
               <fo:inline color="#800000" font-size="10pt" font-weight="bold">
                  <xsl:value-of select="$footer"/>
               </fo:inline>
               ...
            </fo:static-content>
         </fo:page-sequence>
      </fo:root>
   </xsl:template>
</xsl:stylesheet>
```

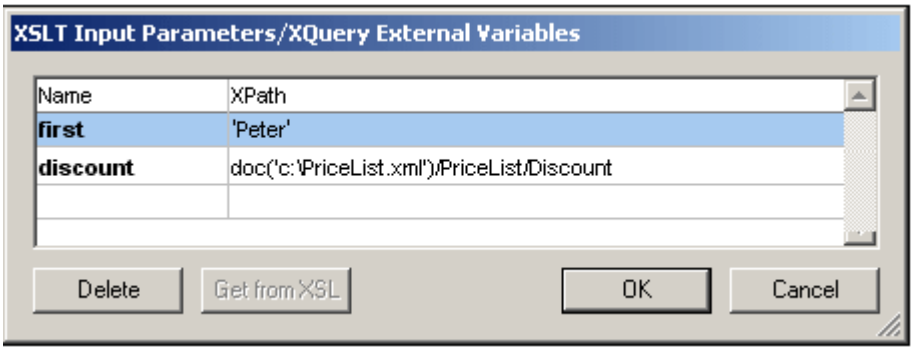
In the XSLT Input Parameters dialog, a new value for the `footer` parameter can be entered, such as the XPath: `document/footer2` (*see screenshot above*) or a text string. During transformation, this value is passed to the `footer` parameter in the template for the root element and is the value used when the footer block is instantiated.

Note:

- If you use the **XSL:FO Transformation** command (**XSL/XQuery | XSL:FO Transformation**), parameters entered in the XSLT Input Parameters/XQuery External Variables dialog are **not** passed to the stylesheet. In order for these parameters to be used in PDF output, first transform from XML to FO using the XSLT Transformation command (**XSL/XQuery | XSL Transformation**), and then transform the FO to PDF using the **XSL:FO Transformation** command (**XSL/XQuery | XSL:FO Transformation**).
- If you use an XSLT processor other than the built-in Altova XSLT Engines, parameters you enter using the Input Parameters dialog will not be passed to the external processor.

Using external XQuery variables

The value you enter for an external XQuery variable could be an XPath expression without quotes or a text string delimited by quotes. The datatype of the external variable is specified in the variable declaration in the XQuery document.



Note: Once a set of external XQuery variables are entered in the XSLT Input Parameters/XQuery External Variables dialog, they are used for all subsequent executions until they are explicitly deleted or the application is restarted. Variables entered in the XSLT Input Parameters/XQuery External Variables dialog are specified at the application-level, and will be passed to the respective XQuery document for every execution that is carried out via the IDE from that point onward. This means that:

- Variables are not associated with any particular document
- Any variable entered in the XSLT Input Parameters/XQuery External Variables dialog is erased once the application (XMLSpy) has been closed down.

Usage example for external XQuery variables
In the following example, a variable `$first` is declared in the XQuery document and is then used in the return clause of the FLWOR expression:

```
xquery version "1.0";
declare variable $first as xs:string external;
let $last := "Jones"
return concat( $first, " ", $last )
```

This XQuery returns `Peter Jones`, if the value of the external variable (entered in the XSLT Input Parameters/XQuery External Variables dialog) is `Peter`. Note the following:

- The `external` keyword in the variable declaration in the XQuery document indicates that this variable is an external variable.
- Defining the static type of the variable is optional. If a datatype for the variable is not specified in the variable declaration, then the variable value is assigned the type `xs:untypedAtomic`.
- If an external variable is declared in the XQuery document, but no external variable of that name is passed to the XQuery document, then an error is reported.
- If an external variable is declared and is entered in the XSLT Input Parameters/XQuery External Variables dialog, then it is considered to be in scope for the XQuery document being executed. If a new variable with that name is declared within the XQuery document, the new variable temporarily overrides the in-scope external variable. For example, the XQuery document below returns `Paul Jones` even though the in-scope external variable `$first` has a value of `Peter`.

```
xquery version "1.0";
declare variable $first as xs:string external;
let $first := "Paul"
let $last := "Jones"
return concat( $first, " ", $last )
```

Note: It is not an error if an external XQuery variable (or XSLT parameter) is defined in the XSLT Input Parameters/XQuery External Variables dialog but is not used in the XQuery

document. Neither is it an error if an XSLT parameter (or external XQuery variable) is defined in the XSLT Input Parameters/XQuery External Variables dialog but is not used in an XSLT transformation.

18.7.4 XQuery Execution

The **XSL/XQuery | XQuery Execution** command executes an XQuery document. It can be invoked when an XQuery or XML file is active. When invoked from an XML file, it opens a dialog asking for an XQuery file to associate with the XML file. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

Automating XQuery executions with AltovaXML 2012

AltovaXML is a free application which contains Altova's XML Validator, XSLT 1.0, XSLT 2.0, and XQuery 1.0 engines. It can be used from the command line, via a COM interface, in Java programs, and in .NET applications to validate XML documents, transform XML documents using XSLT 1.0 and 2.0 stylesheets, and execute XQuery documents.

XQuery execution tasks can therefore be automated with the use of AltovaXML. For example, you can create a batch file that calls AltovaXML to execute a set of XQuery documents. See the AltovaXML documentation for details.

18.7.5 Assign XSL

The **XSL/XQuery | Assign XSL...** command assigns an XSLT stylesheet to an XML document. Clicking the command opens a dialog to let you specify the XSLT file you want to assign. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

An `xml-stylesheet` processing instruction is inserted in the XML document:

```
<?xml-stylesheet type="text/xsl"
   href="C:\workarea\recursion\recursion.xslt"?>
```

Please note: You can make the path of the assigned file relative by clicking the **Make Path Relative To...** check box.

18.7.6 Assign XSL-FO

The **XSL/XQuery | Assign XSL:FO...** command assigns an XSLT stylesheet for transformation to FO to an XML document. The command opens a dialog to let you specify the XSL or XSLT file you want to assign and inserts the required processing instruction into your XML document:

```
<?xmlspyxslfo C:\Program Files\Altova\xmlspy\Examples\OrgChartFO.xsl?>
```

You can make the path of the assigned file relative by clicking the Make Path Relative To... check box. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

Please note: An XML document may have two XSLT files assigned to it: one for standard XSLT transformations, a second for an XSLT transformation to FO.

18.7.7 Assign Sample XML File

The **XSL/XQuery | Assign Sample XML File** command assigns an XML file to an XSLT document. The command inserts a processing instruction naming an XML file to be processed with this XSLT file when the XSL Transformation is executed on the XSLT file:

```
<?altova_samplexml C:\workarea\html2xml\article.xml?>
```

Please note: You can make the path of the assigned file relative by clicking the Make Path Relative To... check box. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

18.7.8 Go to XSL

The **XSL/XQuery | Go to XSL** command opens the associated XSLT document. If your XML document contains a stylesheet processing instruction (i.e. an XSLT assignment) such as this:

```
<?xml-stylesheet type="text/xsl" href="Company.xsl"?>
```

then the **Go to XSL** command opens the XSLT document in XMLSpy.

18.7.9 Start Debugger / Go

Alt+F11

The **XSL/XQuery | Start Debugger/Go** command starts or continues processing the XSLT/XQuery document till the end. If breakpoints have been set, then processing will pause at that point. If tracepoints have been set, output for these statements will be displayed in the Trace window when the closing node of the statement with the tracepoint has been reached. If the debugger session has not been started, then this button will start the session and stop at the first node to be processed. If the session is running, then the XSLT/XQuery document will be processed to the end, or until the next breakpoint is encountered.

18.7.10 Stop Debugger

The **XSL/XQuery | Stop Debugger** command stops the debugger. This is not the same as stopping the debugger **session** in which the debugger is running. This is convenient if you wish to edit a document in the middle of a debugging session or to use alternative files within the same debugging session. After stopping the debugger, you must restart the debugger to start from the beginning of the XSLT/XQuery document.

18.7.11 Restart Debugger

The **XSL/XQuery | Restart Debugger** command clears the output window and restarts the debugging session with the currently selected files.

18.7.12 End Debugger Session

The **XSL/XQuery | End Debugger Session** command ends the debugging session and returns you to the normal XMLSpy view that was active before you started the debugging session. Whether the output documents that were opened for the debugging session stay open depends on a setting you make in the XSLT/XQuery Debugger Settings dialog.

18.7.13 Step Into

 **F11**

The **XSL/XQuery | Step Into** command proceeds in single steps through all nodes and XPath expressions in the stylesheet. This command is also used to re-start the debugger after it has been stopped.

18.7.14 Step Out

 **Shift+F11**

The **XSL/XQuery | Step Out** command steps out of the current node to the next sibling of the parent node, or to the next node at the next higher level from that of the parent node.

18.7.15 Step Over

 **Ctrl+F11**

The **XSL/XQuery | Step Over** command steps over the current node to the next node at the same level, or to the next node at the next higher level from that of the current node. This command is also used to re-start the debugger after it has been stopped.

18.7.16 Show Current Execution Node

The **XSL/XQuery | Show Current Execution Node** command displays/selects the current execution node in the XSLT/XQuery document and the corresponding context node in the XML document. This is useful when you have clicked in other tabs which show or mark specific code

in the XSLT stylesheet or XML file, and you want to return to where you were before you did this.

18.7.17 Insert/Remove Breakpoint

F9

The **XSL/XQuery | Insert/Remove Breakpoint** command inserts or removes a breakpoint at the current cursor position. Inline breakpoints can be defined for nodes in both the XSLT/XQuery and XML documents, and determine where the processing should pause. A dashed red line appears above the node when you set a breakpoint. Breakpoints cannot be defined on closing nodes, and breakpoints on attributes in XSLT documents will be ignored. This command is also available by right-clicking at the breakpoint location.

18.7.18 Insert/Remove Tracepoint

Shift+F9

The **XSL/XQuery | Insert/Remove Tracepoint** command inserts or removes a tracepoint at the current cursor position in an XSLT/XQuery document. For statements with a tracepoint, during debugging, the value of the statement is displayed in the Trace window when the closing node of that statement is reached. A dashed blue line appears above the node when you set a tracepoint. Tracepoints cannot be defined on closing nodes. This command is also available by right-clicking at the tracepoint location.

18.7.19 Enable/Disable Breakpoint

Ctrl+F9

The **XSL/XQuery | Enable/Disable Breakpoint** command (no toolbar icon exists) enables or disables already defined breakpoints. The red breakpoint highlight turns to gray when the breakpoint is disabled. The debugger does not stop at disabled breakpoints. To disable/enable a breakpoint, place the cursor in that node name and click the **Enable/Disable Breakpoint** command. This command is also available by right-clicking at the location where you want to enable/disable the breakpoint.

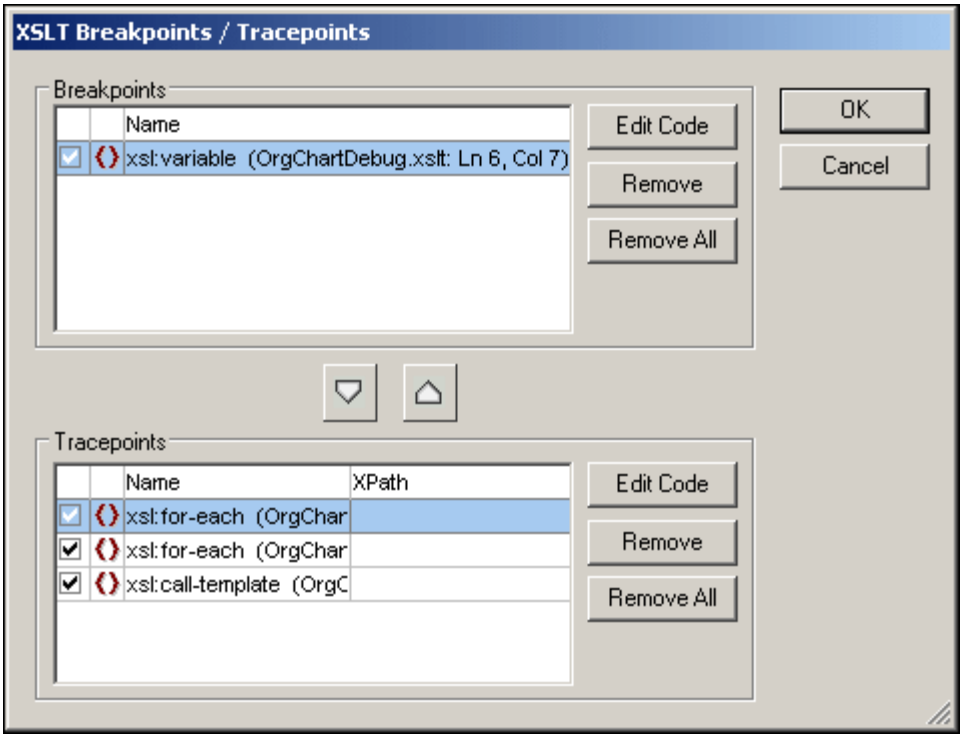
18.7.20 Enable/Disable Tracepoint

Ctrl+Shift+F9

The **XSL/XQuery | Enable/Disable Tracepoint** command (no toolbar icon exists) enables or disables already defined tracepoints. The blue tracepoint highlight turns to gray when the tracepoint is disabled. No output is displayed for statements with disabled tracepoints. To disable/enable a tracepoint, place the cursor in that node name and click the **Enable/Disable Tracepoint** command. This command is also available by right-clicking at the location where you want to enable/disable the tracepoint.

18.7.21 Breakpoints/Tracepoints

The **XSL/XQuery | Breakpoints/Tracepoints...** command opens the XSLT Breakpoints / Tracepoints dialog, which displays a list of all currently defined breakpoints and tracepoints (including disabled breakpoints and tracepoints) in all files in the current debugging session.



The check boxes indicate whether a breakpoint or tracepoint is enabled (checked) or disabled. You can remove the highlighted breakpoint or tracepoint by clicking the corresponding **Remove** button, and remove all breakpoints by clicking the corresponding **Remove All** button. The **Edit Code** button takes you directly to that breakpoint/tracepoint in the file.

Use the down arrow  to move the highlighted breakpoint to the **Tracepoints** pane and the up arrow  to move the highlighted tracepoint to the **Breakpoints** pane.

In the **XPath** column in the Tracepoints pane, you can set an XPath for each tracepoint.

18.7.22 Debug Windows

Placing the cursor over the **XSL/XQuery | Debug Windows** command pops out a submenu with a list of the various Information Windows of the XSLT/XQuery Debugger. Selecting an Information Window from this list shows/hides that Information Window in the XSLT/XQuery Debugger interface. This command can be used to effect only when a debugging session is in progress.

18.7.23 XSLT/XQuery Settings

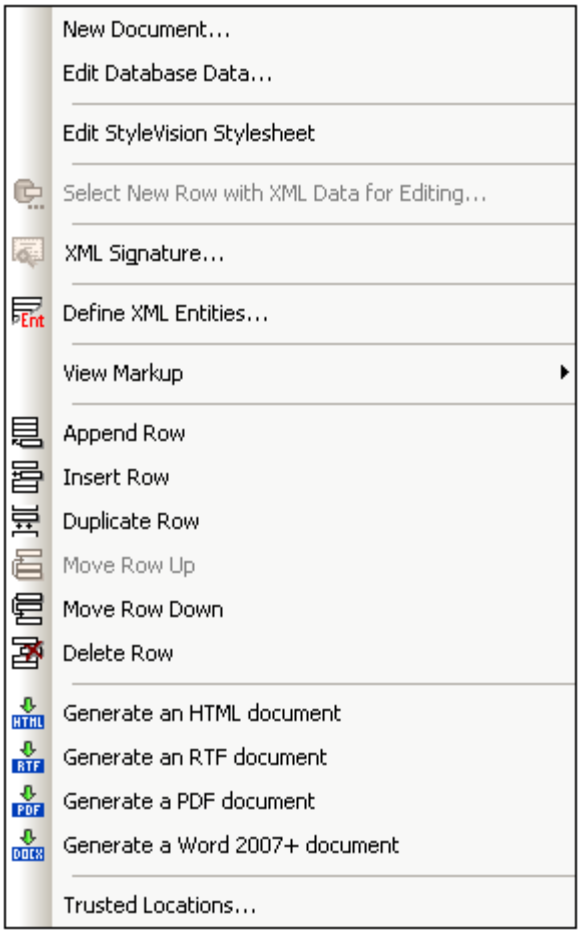
The **XSL/XQuery | XSLT/XQuery Settings** command opens the XSLT/XQuery Settings dialog, which enables you to set user options for the Debugger. See the XSLT/XQuery Debugger section for details.

18.8 Authentic Menu

Authentic View enables you to edit XML documents **based on StyleVision Power Stylesheets (.sps files) created in Altova's StyleVision product!** These stylesheets contain information that enables an XML file to be displayed graphically in Authentic View. In addition to containing display information, StyleVision Power Stylesheets also allow you to write data to the XML file. This data is dynamically processed using all the capability available to XSLT stylesheets and instantly produces the output in Authentic View.

Additionally, StyleVision Power Stylesheets can be created to display an editable XML view of a database. The StyleVision Power Stylesheet contains information for connecting to the database, displaying the data from the database in Authentic View, and writing back to the database.

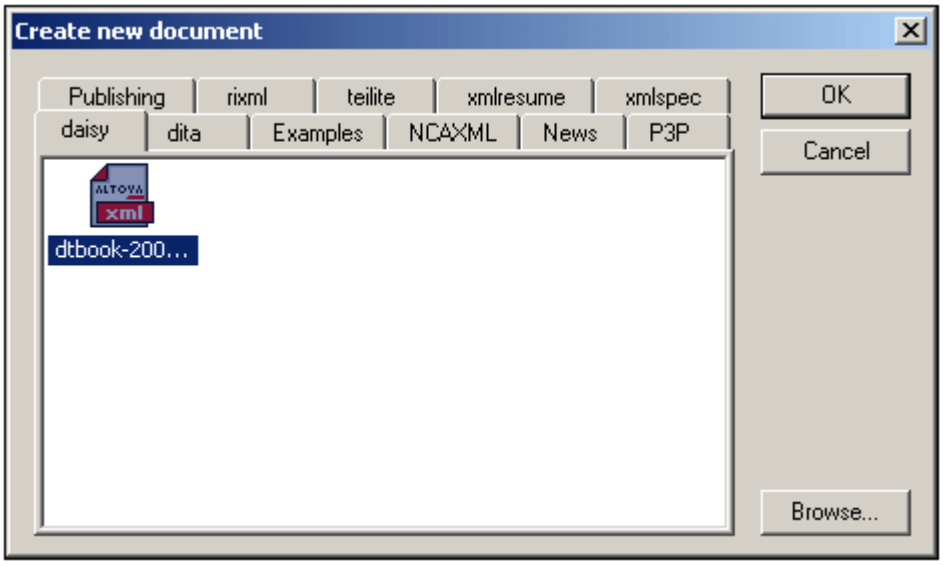
The **Authentic** menu contains commands relevant to editing XML documents in Authentic View . For a tutorial on Authentic View, see the Tutorials section.



18.8.1 New Document

The **Authentic** | **New Document...** command enables you to open a new XML document template in Authentic View. The XML document template is based on a StyleVision Power Stylesheet (.sps file), and is opened by selecting the StyleVision Power Stylesheet.

Clicking the **New Document...** command opens the Create New Document dialog.



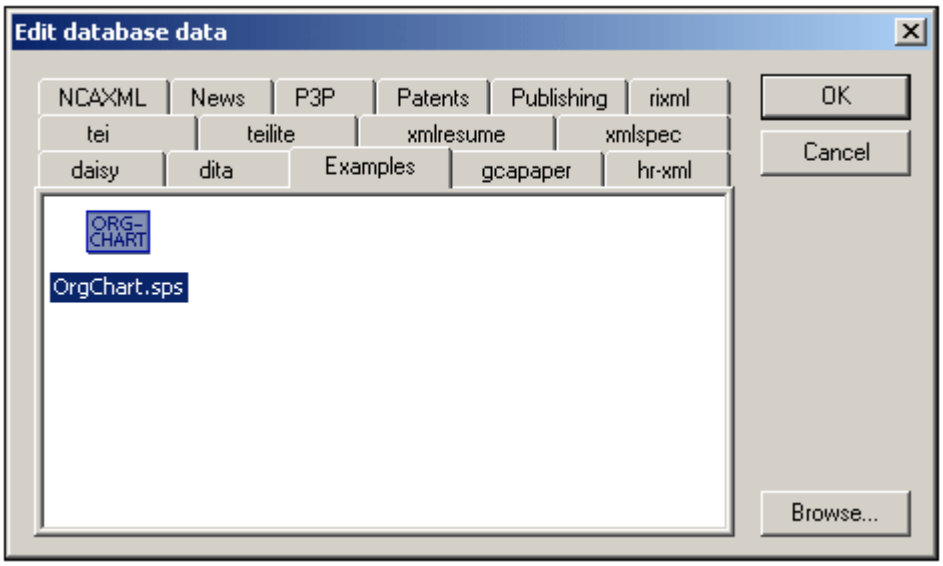
Browse for the required SPS file, and select it. This opens an XML document template in Authentic View.

Note: StyleVision Power Stylesheets are created using Altova StyleVision. The StyleVision Power Stylesheet has a Template XML File assigned to it. The data in this XML file provides the starting data of the new document template that is opened in Authentic View.

18.8.2 Edit Database Data

The **Authentic** | **Edit Database Data...** command enables you to open an editable view of a database (DB) in Authentic View. All the information about connecting to the DB and how to display the DB and accept changes to it in Authentic View is contained in a StyleVision Power Stylesheet. It is such a DB-based StyleVision Power Stylesheet that you open with the **Edit Database Data...** command. This sets up a connection to the DB and displays the DB data (through an XML lens) in Authentic View.

Clicking the **Edit Database Data...** command opens the Edit Database Data dialog.



Browse for the required SPS file, and select it. This connects to the DB and opens an editable view of the DB in Authentic View. The design of the DB view displayed in Authentic View is contained in the StyleVision Power Stylesheet.

Please note: If, with the **Edit Database Data...** command, you attempt to open a StyleVision Power Stylesheet that is not based on a DB or to open a DB-based StyleVision Power Stylesheet that was created in a version of StyleVision prior to the StyleVision 2005 release, you will receive an error.

Please note: StyleVision Power Stylesheets are created using Altova StyleVision.

18.8.3 Assign/Edit a StyleVision Stylesheet

Assign a StyleVision Stylesheet

The **Assign a StyleVision Stylesheet** command assigns a StyleVision Power Stylesheet (SPS) to an **XML document** to enable the viewing and editing of that XML document in Authentic View. The StyleVision Power Stylesheet that is to be assigned to the XML file must be based on the same schema as that on which the XML file is based.

To assign a StyleVision Power Stylesheet to an XML file:

1. Make the XML file the active file and select the **Authentic** | **Assign a StyleVision Stylesheet...** command.
2. The command opens a dialog box in which you specify the StyleVision Power Stylesheet file you wish to assign to the XML.
3. Click **OK** to insert the required SPS statement into your XML document. Note that you can make the path to the assigned file relative by clicking the **Make path relative to ...** check box. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).

```
<?xml version="1.0" encoding="UTF-8"?>
<?altova_sps HTML-Orgchart.sps?>
```

In the example above, the StyleVision Power Stylesheet is called `HTML_Orgchart.sps`, and it is located in the same directory as the XML file.

Please note: Previous versions of Altova products used a processing instruction with a target or name of `xmlspysps`, so a processing instruction would look something like `<?xmlspysps`

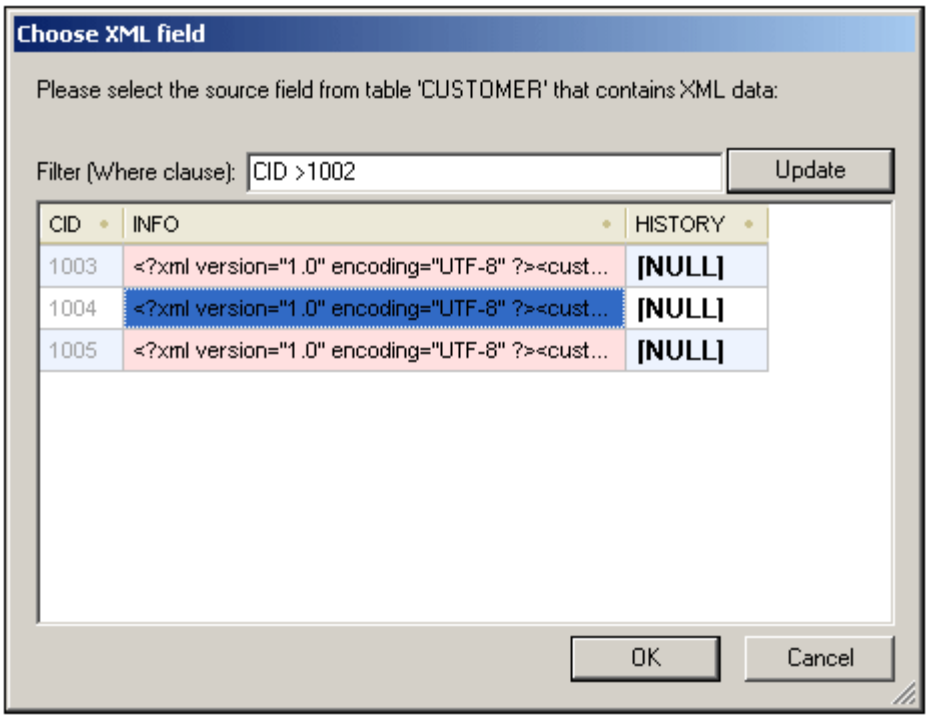
`HTML-Orgchart.sps?>`. These older processing instructions are still valid with Authentic View in current versions of Altova products.

Edit StyleVision Stylesheet
The **Authentic** | **Edit StyleVision Stylesheet** command starts StyleVision and allows you to edit the StyleVision Power Stylesheet immediately in StyleVision.

18.8.4 Select New Row with XML Data for Editing

The **Select New Row with XML Data for Editing** command enables you to select a new row from the relevant table in an XML DB, such as IBM DB2. This row appears in Authentic View, can be edited there, and then saved back to the DB.

When an XML DB is used as the XML data source, the XML data that is displayed in Authentic View is the XML document contained in one of the cells of the XML data column. The **Select New Row with XML Data for Editing** command enables you to select an XML document from another cell (or row) of that XML column. Selecting the **Select New Row...** command pops up the Choose XML Field dialog (*screenshot below*), which displays the table containing the XML column.

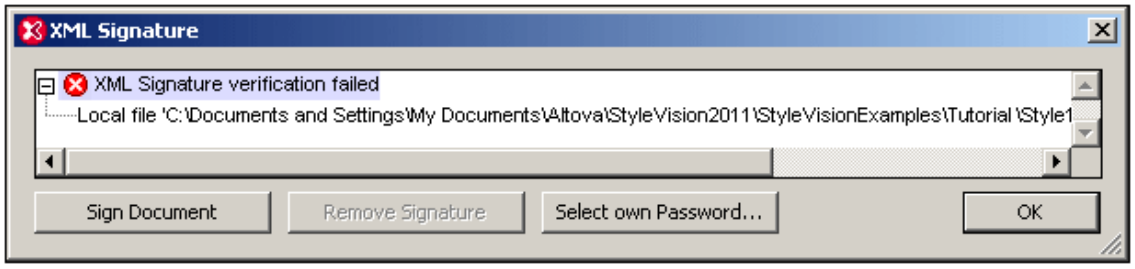


You can enter a filter for this table. The filter should be an SQL `WHERE` clause (just the condition, without the `WHERE` keyword, for example: `CID>1002`). Click **Update** to refresh the dialog. In the screenshot above, you can see the result of a filtered view. Next, select the cell containing the required XML document and click **OK**. The XML document in the selected cell (row) is loaded into Authentic View.

18.8.5 XML Signature

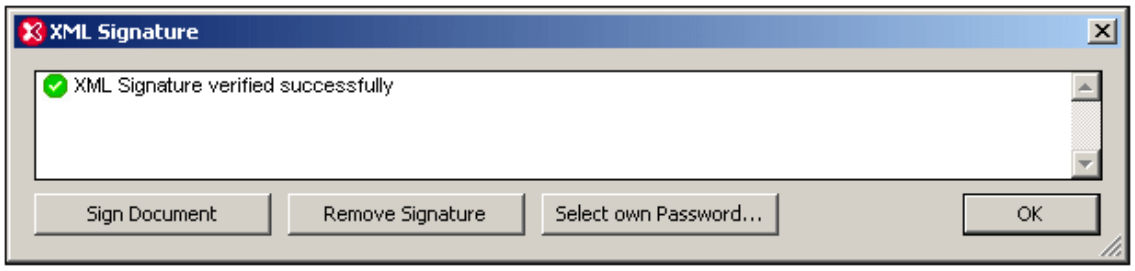
The **XML Signature** command is available in Authentic View when the associated SPS has XML Signatures enabled. The **XML Signature** command is also available as the XML Signature toolbar icon  in the Authentic toolbar.

Verification and own certificate/password
Clicking the **XML Signature** command starts the signature verification process. If no signature is present in the document, a message to that effect is displayed in the XML Signature dialog (*see screenshot below*), and the dialog will have a button that enables the Authentic View user to sign the document.



If the **Select Own Certificate** or **Select Own Password** button is present in this dialog, it means that the Authentic View has been given the option of selecting an own certificate/ password. (Whether a certificate or password is to be chosen has been decided by the SPS designer at the time the signature was configured. The signature will be either certificate-based or password-based.) Clicking either of these buttons, if present in the dialog, enables the Authentic View user to browse for a certificate or to enter a password. The Authentic View user's selection is stored in memory and is valid for the current session only. If, after selecting a certificate or password, the document or application is closed, the certificate/password setting reverts to the setting originally saved with the SPS.

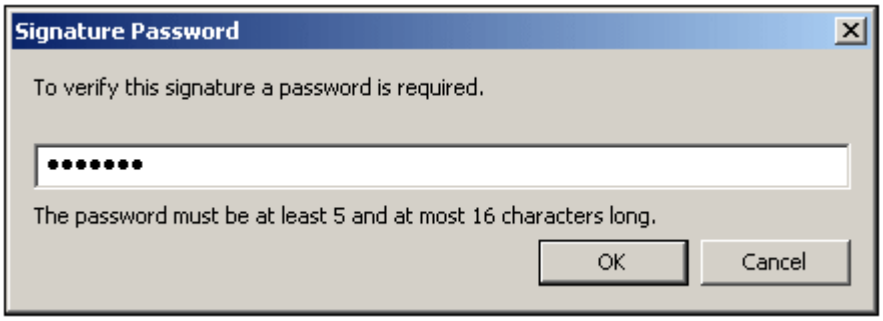
Verification and authentication information
If the verification process is run on a signed document, two general situations are possible. First: If the authentication information is available (in the signature or the SPS), then the verification process is executed directly and the result is displayed (*screenshot below*).



Authentication information is either the signing certificate's key information or the signing password. The SPS designer will have specified whether the certificate's key information is saved in the signature when the XML document is signed, or, in the case of a password-based signature, whether the password is saved in the SPS. In either of these cases, the authentication is available. Consequently the verification process will be run directly, without requiring any input from the Authentic View user.

The second possible general situation occurs when authentication information is not available in

the signature (certificate's key information) or SPS file (password). In this situation, the Authentic View user will be asked to supply the authentication information: a password (*see screenshot below*) or the location of a certificate.



18.8.6 Define XML Entities

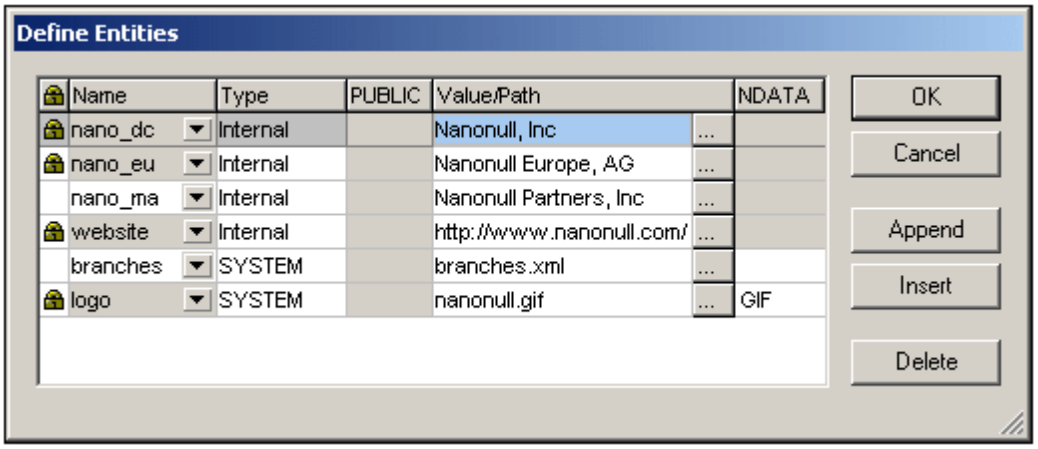
You can define entities for use in Authentic View, whether your document is based on a DTD or an XML Schema. Once defined, these entities are displayed in the Entities Entry Helper and in the **Insert Entity** submenu of the context menu. When you double-click on an entity in the Entities Entry Helper, that entity is inserted at the cursor insertion point.

An entity is useful if you will be using a text string, XML fragment, or some other external resource in multiple locations in your document. You define the entity, which is basically a short name that stands in for the required data, in the Define Entities dialog. After defining an entity you can use it at multiple locations in your document. This helps you save time and greatly enhances maintenance.

There are two broad types of entities you can use in your document: a **parsed entity**, which is XML data (either a text string or a fragment of an XML document), or an **unparsed entity**, which is non-XML data such as a binary file (usually a graphic, sound, or multimedia object). Each entity has a name and a value. In the case of parsed entities the entity is a placeholder for the XML data. The value of the entity is either the XML data itself or a URI that points to a `.xml` file that contains the XML data. In the case of unparsed entities, the value of the entity is a URI that points to the non-XML data file.

To define an entity:

1. Click **Authentic | Define XML Entities...**. This opens the Define Entities dialog.



2. Enter the name of your entity in the **Name** field. This is the name that will appear in the Entities Entry Helper.

3. Enter the type of entity from the drop-down list in the **Type** field. Three types are possible. An **Internal** entity is one for which the text to be used is stored in the XML document itself. Selecting **PUBLIC** or **SYSTEM** specifies that the resource is located outside the XML file, and will be located with the use of a public identifier or a system identifier, respectively. A system identifier is a URI that gives the location of the resource. A public identifier is a location-independent identifier, which enables some processors to identify the resource. If you specify both a public and system identifier, the public identifier resolves to the system identifier, and the system identifier is used.
4. If you have selected PUBLIC as the Type, enter the public identifier of your resource in the PUBLIC field. If you have selected Internal or SYSTEM as your Type, the PUBLIC field is disabled.
5. In the **Value/Path** field, you can enter any one of the following:
   - If the entity type is Internal, enter the text string you want as the value of your entity. Do not enter quotes to delimit the entry. Any quotes that you enter will be treated as part of the text string.
   - If the entity type is SYSTEM, enter the URI of the resource or select a resource on your local network by using the **Browse** button. If the resource contains parsed data, it must be an XML file (i.e. it must have a `.xml` extension). Alternatively, the resource can be a binary file, such as a GIF file.
   - If the entity type is PUBLIC, you must additionally enter a system identifier in this field.
6. The NDATA entry tells the processor that this entity is not to be parsed but to be sent to the appropriate processor. The NDATA field should therefore be used with unparsed entities only.

Dialog features
You can append, insert, and delete entities by clicking the appropriate buttons. You can also sort entities on the alphabetical value of any column by clicking the column header; clicking once sorts in ascending order, twice in descending order. You can also resize the dialog box and the width of columns.

Once an entity is used in the XML document, it is locked and cannot be edited in the Define Entities dialog. Locked entities are indicated by a lock symbol in the first column. Locking an entity ensures that the XML document valid with respect to entities. (The document would be invalid if an entity is referenced but not defined.)

Duplicate entities are flagged.

Limitations

- An entity contained within another entity is not resolved, either in the dialog, Authentic View, or XSLT output, and the ampersand character of such an entity is displayed in its escaped form, i.e. `&`.
- External entities are not resolved in Authentic View, except in the case where an entity is an image file and it is entered as the value of an attribute which has been defined in the schema as being of type `ENTITY` or `ENTITIES`. Such entities are resolved when the document is processed with an XSLT generated from the SPS.

18.8.7 View Markup

The **View Markup** command has a submenu with options to control markup in the Authentic XML document. These options are described below.

The **Hide Markup** command hides markup symbols in Authentic View.

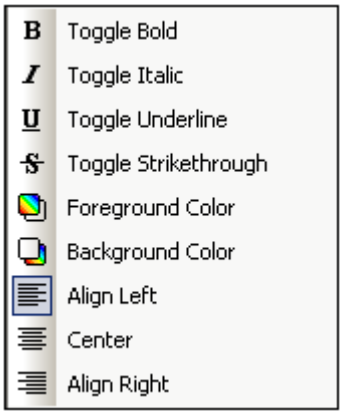
The **Show Small Markup** command shows small markup symbols in Authentic View.

The **Show Large Markup** command shows large markup symbols in Authentic View.

The **Show Mixed Markup** command shows mixed markup symbols in Authentic View. The person who designs the StyleVision Power Stylesheet can specify either large markup, small markup, or no markup for individual elements/attributes in the document. The Authentic View user sees this customized markup in mixed markup viewing mode.

18.8.8 RichEdit

Mousing over the RichEdit command pops out a submenu containing the RichEdit markup commands (*screenshot below*). The menu commands in this submenu are enabled only in Authentic View and when the cursor is placed inside an element that has been created as a RichEdit component in the SPS design.



The text-styling properties of the RichEdit menu will be applied to the selected text when a RichEdit command is clicked. The Authentic View user can specify the font, font-weight, font-style, font-decoration, font-size, color, background color and alignment of the selected text.

18.8.9 Append/Insert/Duplicate/Delete Row

The **Append Row** command appends a row to the current table in Authentic View.

The **Insert Row** command inserts a row into the current table in Authentic View.

The **Duplicate Row** command duplicates the current table row in Authentic View.

The **Delete Row** command deletes the current table row in Authentic View.

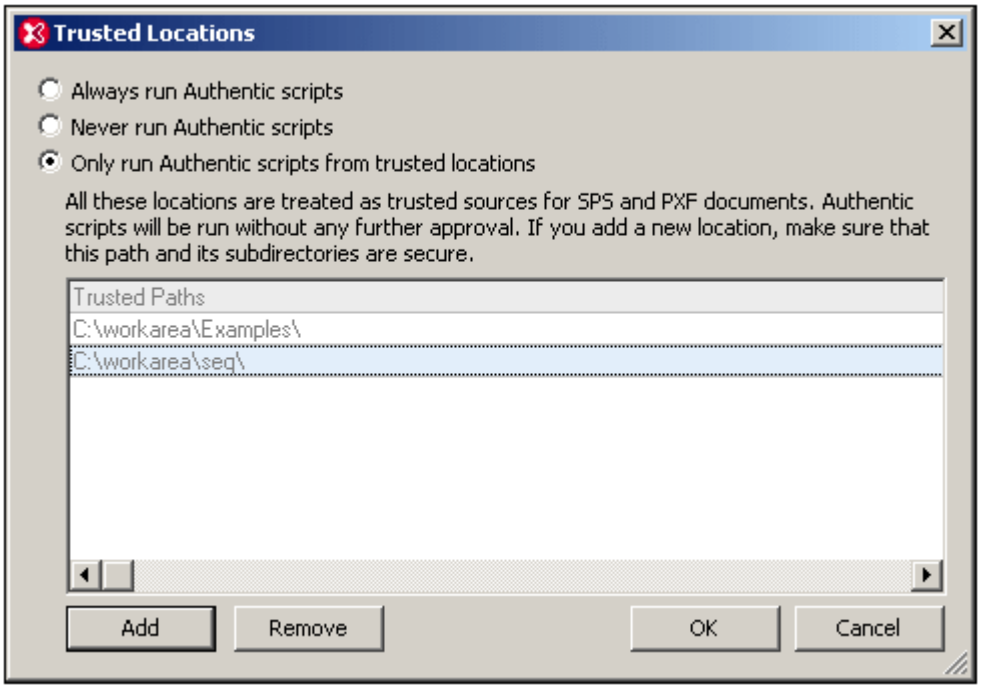
18.8.10 Move Row Up/Down

The **Move Row Up** command moves the current table row up by one row in Authentic View.

The **Move Row Down** command moves the current table row down by one row in Authentic View.

18.8.11 Trusted Locations

The Trusted Locations command pops up the Trusted Locations dialog (*screenshot below*), in which you can specify the security settings for scripts in an SPS. When an XML file based on a script-containing SPS is switched to Authentic View, the script will be allowed to run or not depending on the settings you make in this dialog.



The three available options are:

- Authentic scripts are always run when a file is opened in Authentic View.
- Authentic scripts are never run when a file is opened in Authentic View.
- Only Authentic scripts in trusted locations are run. The list of trusted (folder) locations is shown in the bottom pane. Use the **Add** button to browse for a folder and add it to the list. To remove an entry from the list, select an entry in the Trusted Locations list and click **Remove**.

18.9 DB Menu

The **DB** menu contains the following menu items:

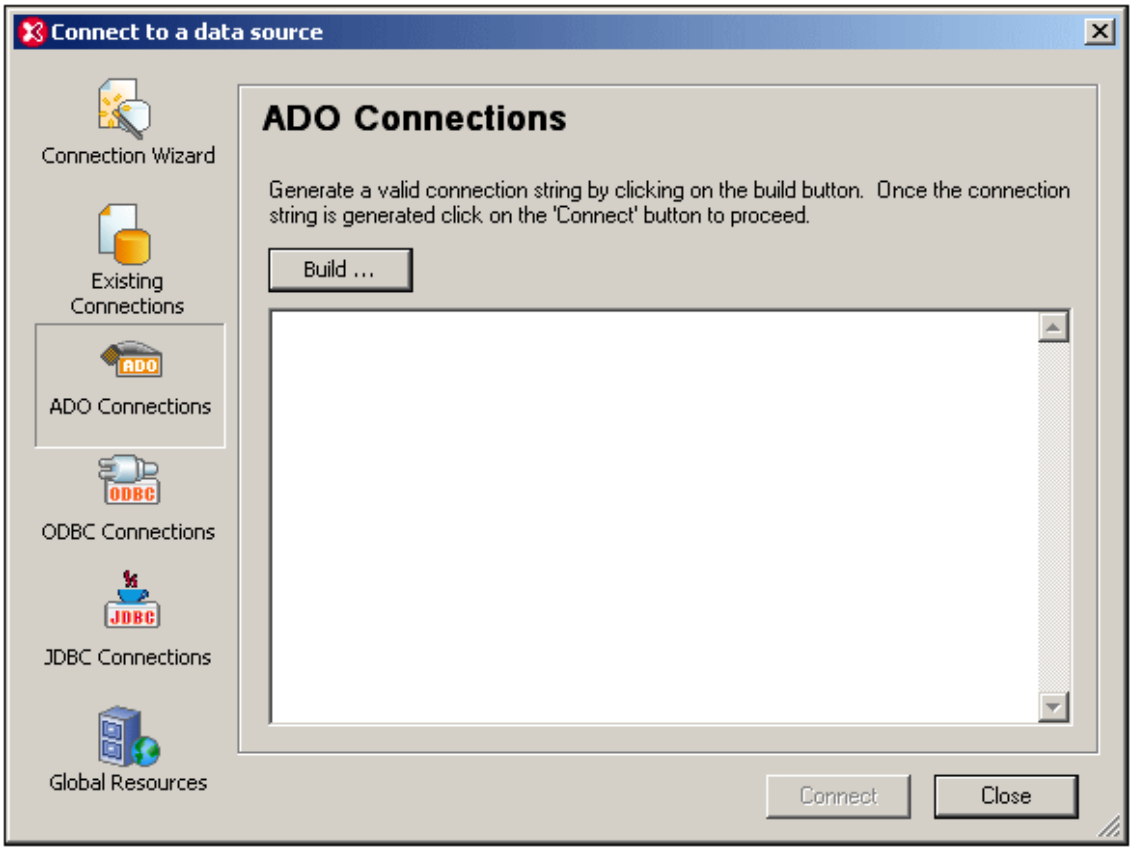
- Query Database, which enables you to query a variety of databases.
- IBM DB2, which contains commands that provide support for DB2-specific functionality.
- SQL Server, which contains commands for managing SQL Server databases.
- Oracle databases, which contains command for working with Oracle databases.

Since all the operations described in this section require a connection to a database, this section also includes a sub-section called Connecting to a Data Source.

Note: If you are using the 64-bit version of XMLSpy, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

18.9.1 Connecting to a Data Source

A number of commands and icons in the **DB** and **Convert** menus require a connection to a database. XMLSpy enables you to connect to a variety of databases (*see list below*). It uses the Connect to Data Source dialog (for commands in the **Convert** menu, *screenshot below*) or Quick Connect dialog (for the **DB | Query Database** command) to set up and make the connection. Both dialogs are essentially the same; they guide you through the same connection steps. In this section, we describe how the mechanism behind these two dialogs works. In descriptions of the **DB** or **Convert** commands that require a database connection, refer to this section for information on making the connection.



The options for connecting to the database are:

- Using a Connection Wizard that guides you through the connection process
- Using an existing connection
- Using an ADO Connection
- Using an ODBC Connection
- Using a JDBC Connections
- Using a global resource

Each option is described in the subsections of this section. The descriptions in this section explain only the connection mechanism. The dialogs that appear subsequent to the connection process are dependent on the specific command being executed, and these dialogs are therefore described in the sections relating to that specific command. For example, if you are looking for a description of the command **Convert | Import Database Data**, the description for the connection process is in this section, but the selection of DB tables is described in the section **Convert | Import Database Data**.

Supported databases
The following databases are supported. After connecting to the database, the available root objects for each of the supported databases is as follows:

Database (natively supported)	Root Object
MS SQL Server 2000, 2005, and 2008	database
MS SQL Server 2005 and 2008	schema
Oracle 9i, 10g, and 11g	schema
MS Access 2003 and 2007	database
MySQL 4.x and 5.x	database
IBM DB2 8.x and 9	schema
Sybase 12	database
IBM DB2 for i 5.4 and i 6.1	schema
PostgreSQL 8.0, 8.1, 8.2, 8.3	database

Note: XMLSpy fully supports the databases listed above. While Altova endeavors to support other ODBC/ADO databases, successful connection and data processing have only been tested with the listed databases.

Connection Wizard

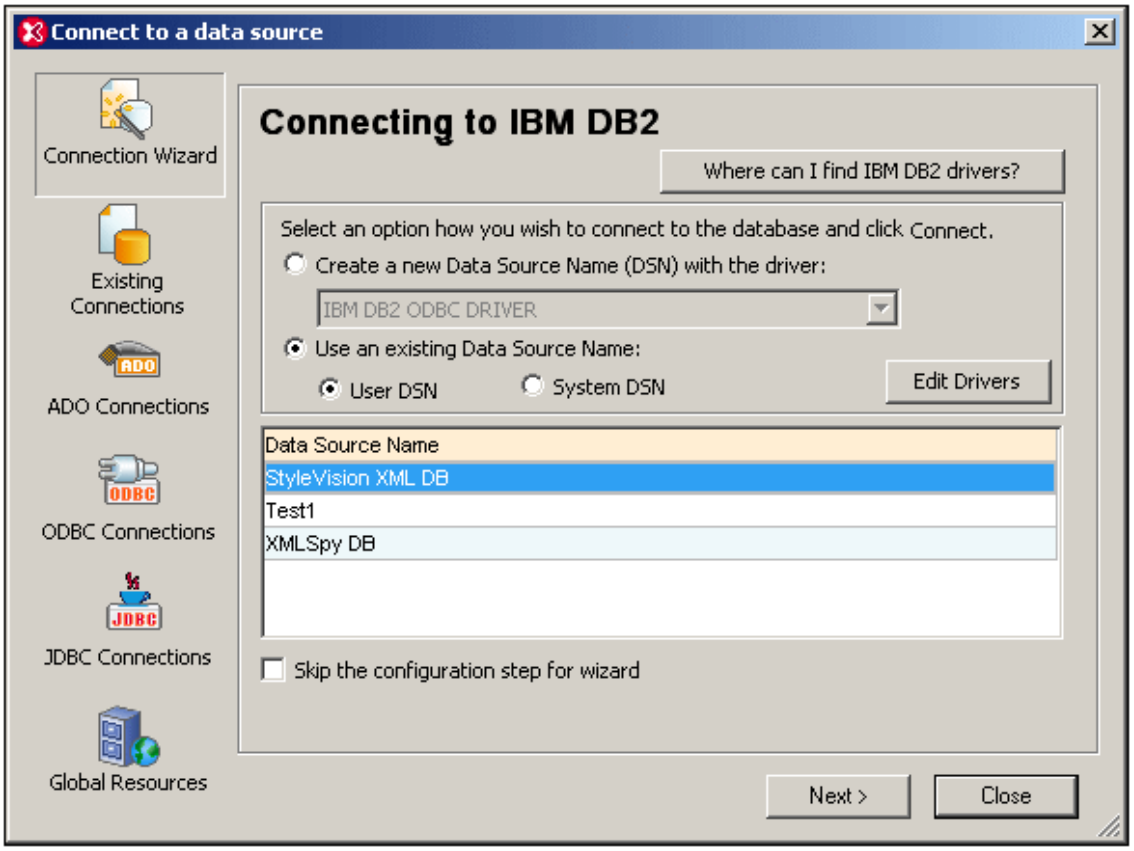
In the Connect to Data Source dialog, when the **Connection Wizard** button is selected, the Connection Wizard (*screenshot below*) pops up. The Connection Wizard helps you to connect to the most commonly used types of databases. In this section, we go through the connection to a Microsoft Access database and an IBM DB2 database.

MS Access
Carry out the following steps to connect to an MS Access database. Select Microsoft Access (ADO) (*screenshot below*), and click **Next**.

In the Connect to MS Access dialog that pops up, browse for the MS Access database, and click **Next**. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

IBM DB2

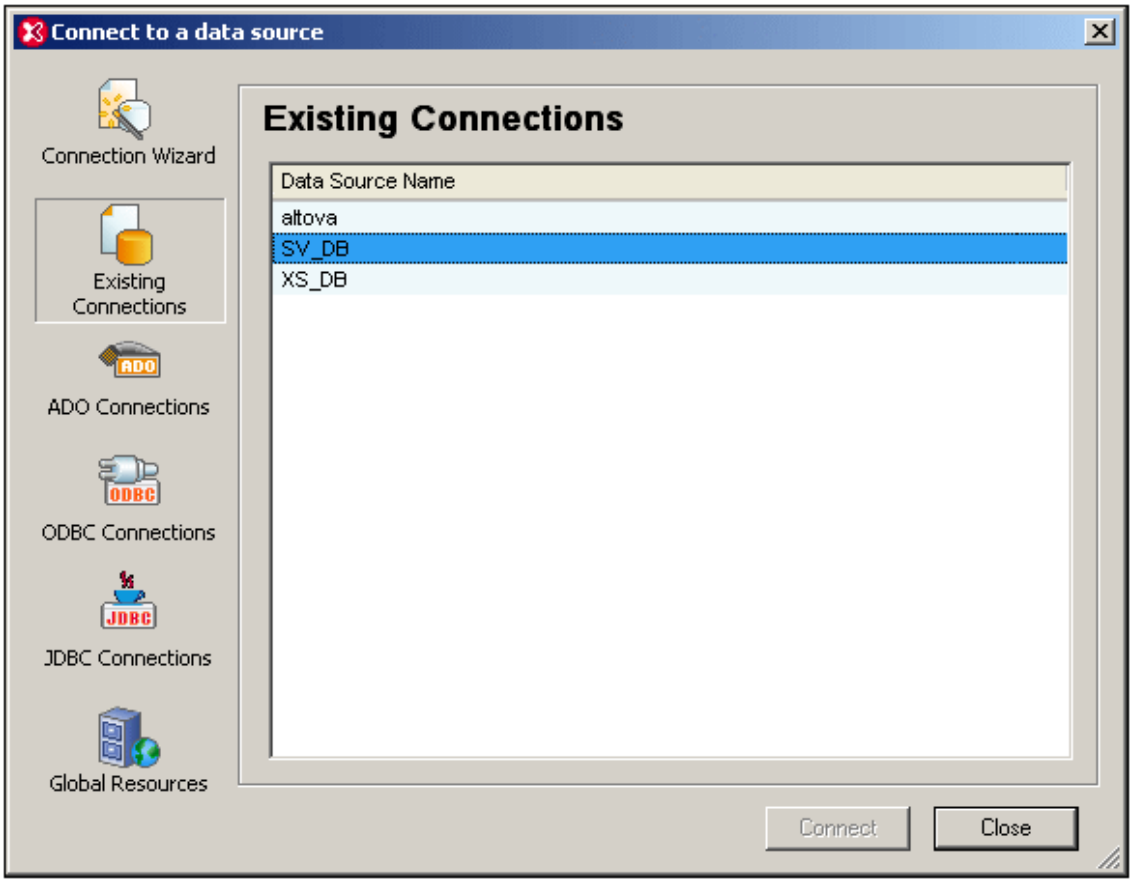
In the first screen of the Connection Wizard (*see first screenshot in this section*), select IBM DB2 and click **Next**. The Connection dialog (*screenshot below*) pops up. The wizard will then guide you in configuring the connection to the IBM DB2 database and making the connection. These steps consist essentially of selecting the appropriate driver to connect to the DB, then locating the DB, and entering user information that enables you to connect.



In the Configuration dialog above, select an existing data source, or create a new data source with an appropriate driver (additional drivers can be added to the list of available drivers by clicking the **Edit Drivers** button and selecting the required drivers). In the following screen you will be prompted for user information (ID and password). Clicking **OK** will establish the connection with the database. For information about subsequent dialogs, refer to the description of the command being executed.

Existing Connections

In the Connect to Data Source dialog, when the **Existing Connections** button is selected, the Existing Connections pane opens (*screenshot below*), showing all the connections that are currently established.

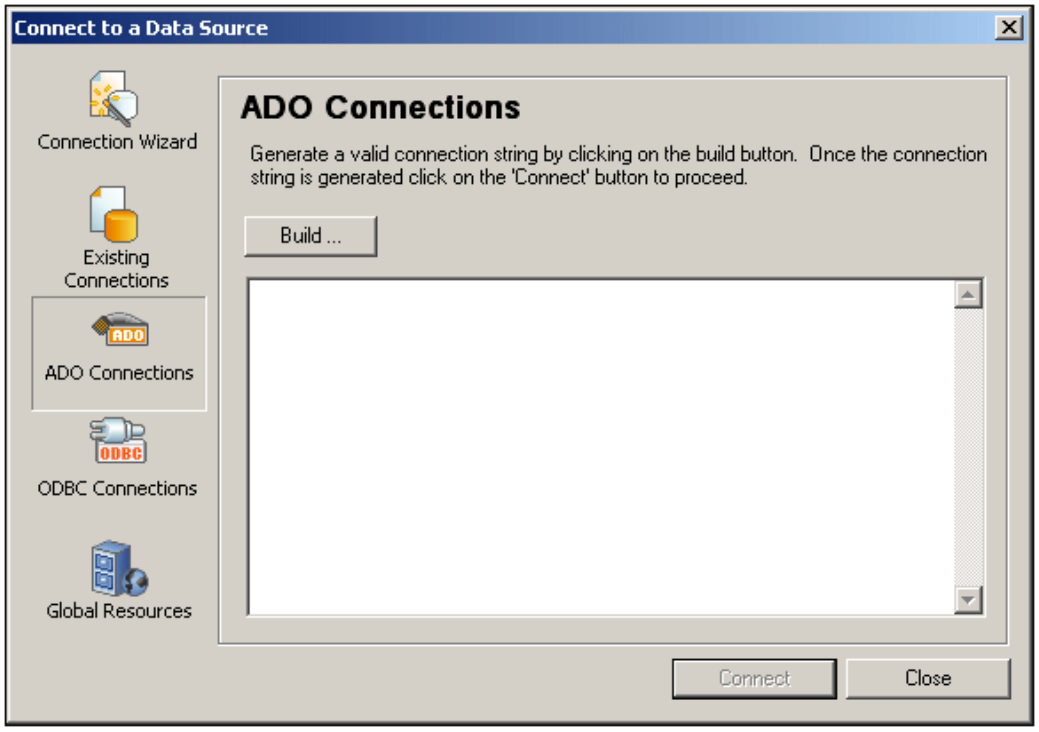


Select the required database and click **Connect**. The connection to the database is established. For information about subsequent dialogs, refer to the description of the command being executed.

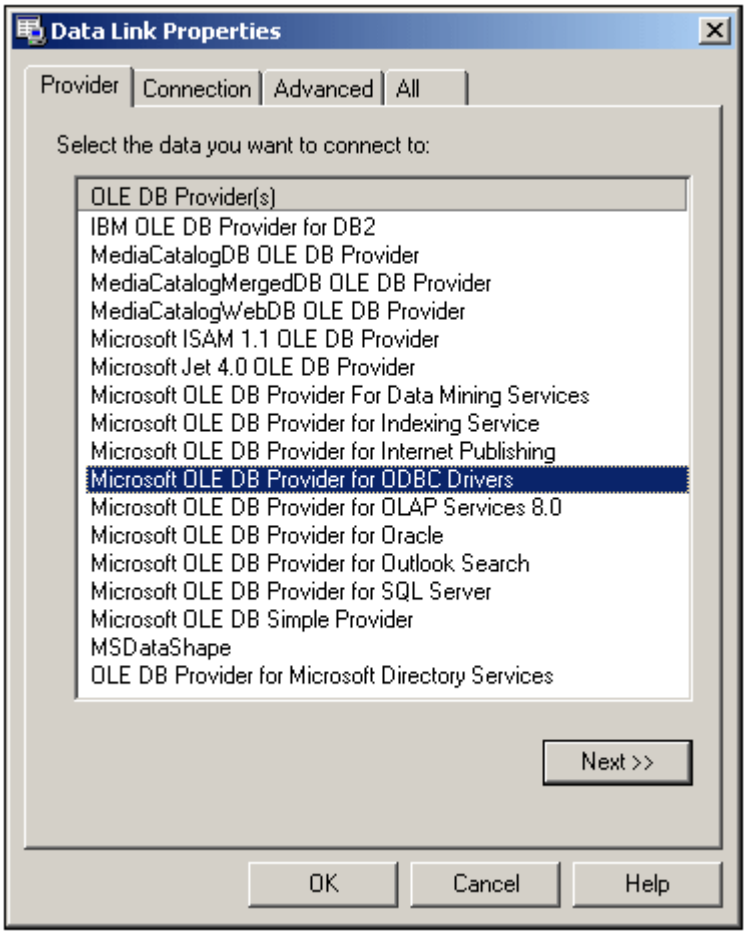
ADO Connections

The ADO Connections option enables you to connect to a DB via ADO. In this section, the connection via ADO is described using an IBM DB2 database as the target DB. Where options are different if another type of database is the target DB, these differences are noted.

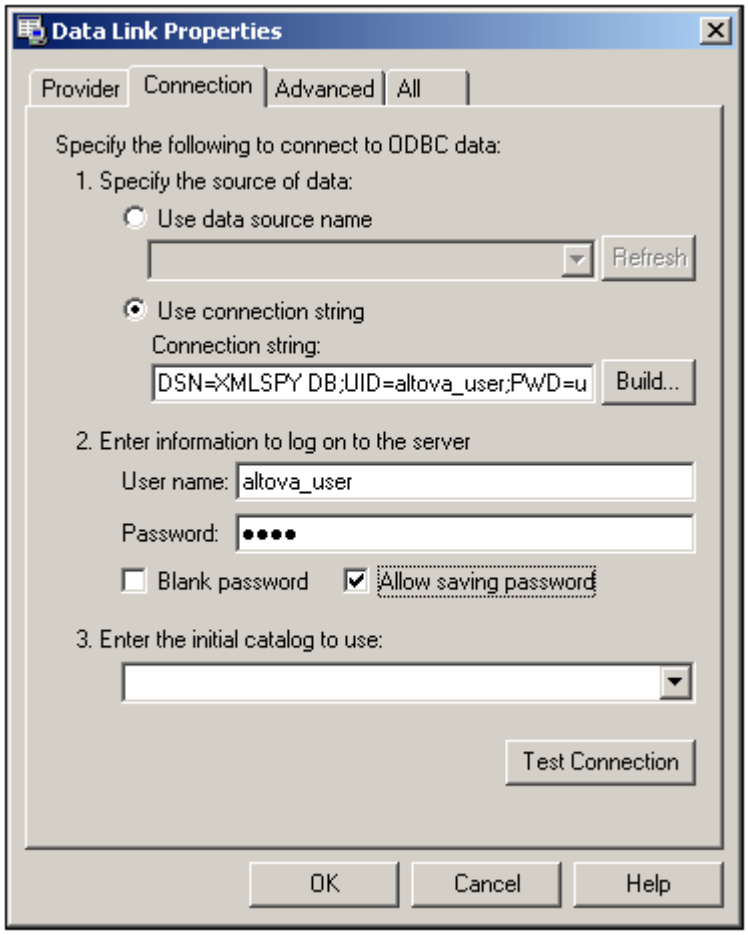
1. In the Connect to Data Source dialog, select ADO Connections. The ADO Connections box appears (*screenshot below*).



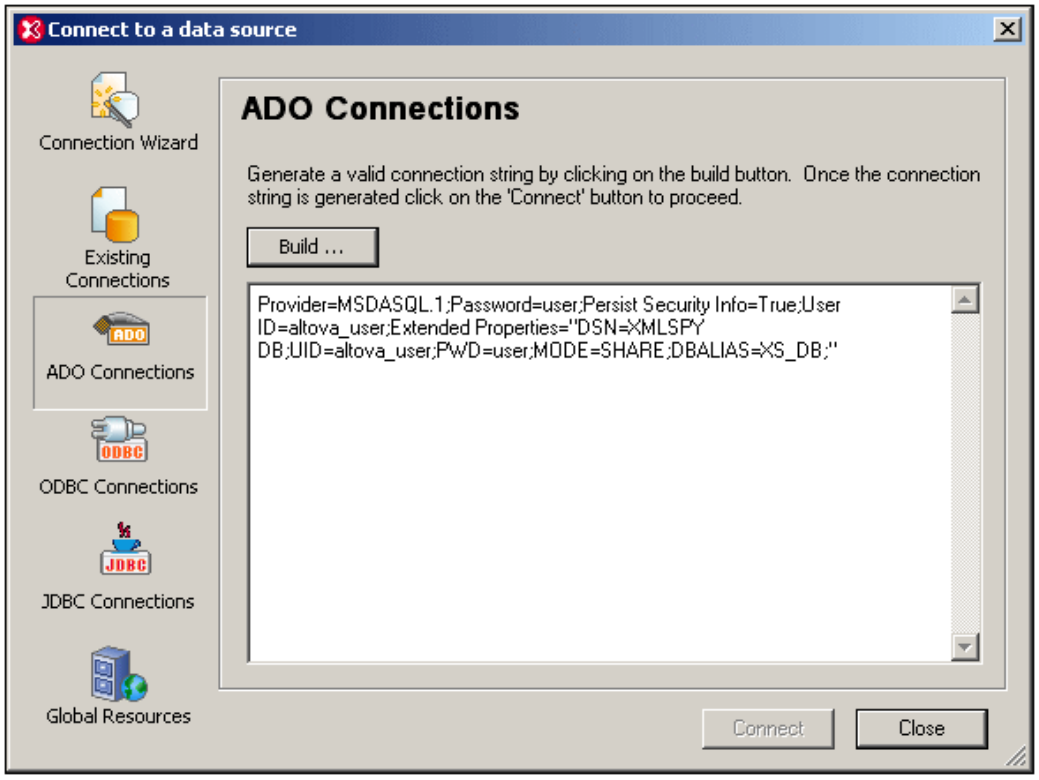
2. Click the **Build** button. The Data Link Properties dialog (*screenshot below*) opens.



3. Select Microsoft OLE DB Provider for ODBC Drivers from the drop-down list and click **Next**. The Connection tab is activated. (For Microsoft SQL DBs, we recommend *Microsoft OLE DB Provider for SQL Server*; for Oracle, MySQL, Sybase, and IBM DB2 DBs, *Microsoft OLE DB Provider for ODBC Drivers*.)



4. Build a connection string via the **Build** button (the dialog which pops up prompts you for a data source and user information). In the case of some databases (such as Microsoft SQL Server), you do not build a connection string but instead select the server and database from combo box listings.
5. If login information is required, enter a user name and password, and check the Allow Saving Password check box.
6. Click **OK**. The Data Link Properties dialog closes. The connection string appears in the ADO Connections box (*screenshot below*).

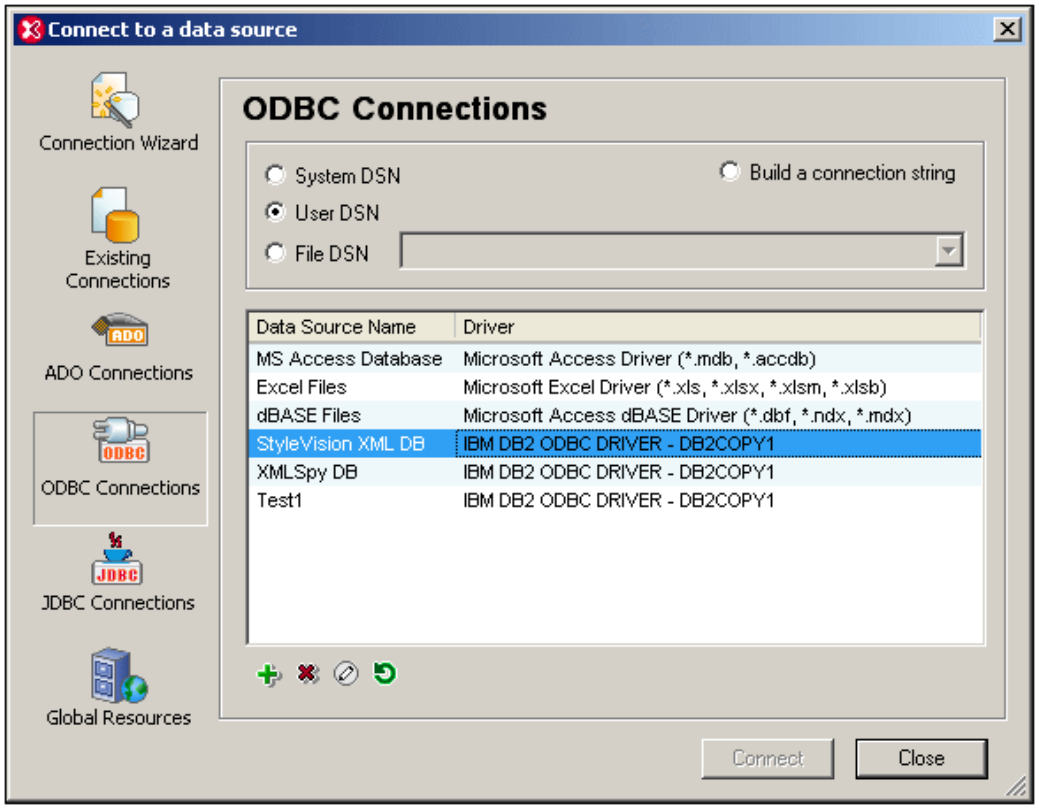


7. Click the **Connect** button. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

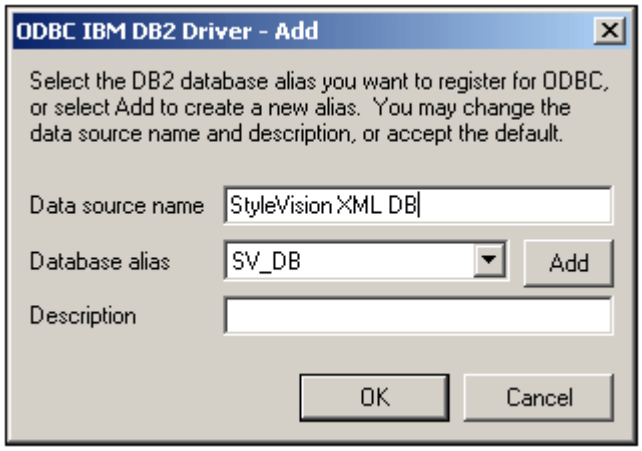
ODBC Connections

This section describes how to connect to a DB via ODBC. The steps listed below describe a connection to an IBM DB2 database, but apply also to other types of databases that can be connected via ODBC. To connect using an ODBC connection, do the following:

1. In the Connect to Data Source dialog, select **ODBC Connections**.



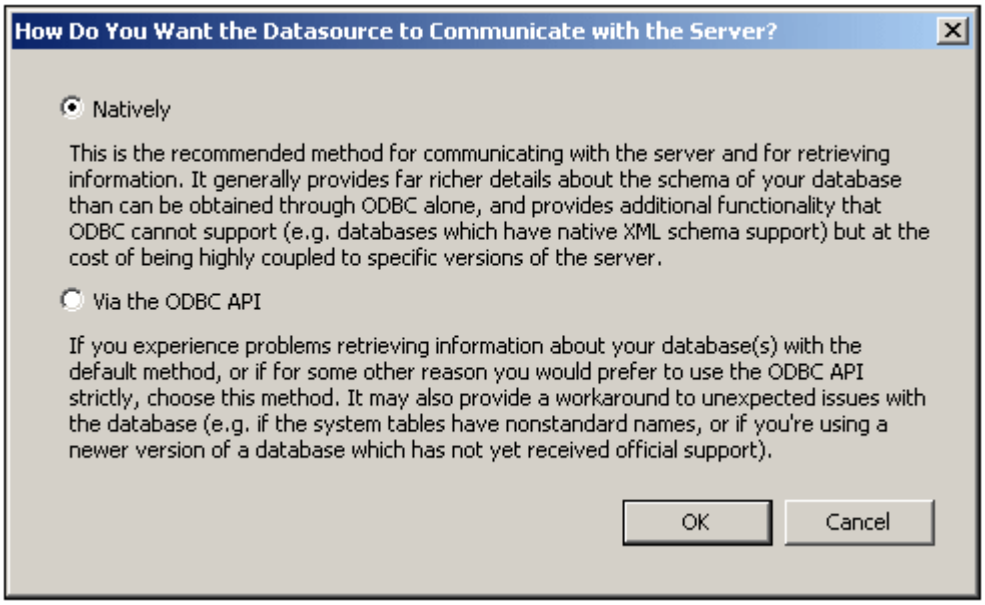
2. Select one of the options for specifying a Data Source Name (DSN). If you select System DSN or User DSN, the available DSNs are displayed in the Data Source pane. If you select File DSN, you are prompted to browse for the DSN file. Alternatively, you can build a connection string to the DB by selecting the Build a Connection String option.
3. If you wish to add a DSN to those in the Data Source pane, click the Create a New DSN icon  .
4. In the Create an ODBC DSN dialog that appears, select the required driver, then click the **User DSN** or **System DSN** button.
5. In the dialog that appears (*screenshot below*), select the DB alias and give it a DSN.



6. Click **OK** to finish. The DB is added as a Data Source to the list in the Data Source pane.
7. After you have selected the DataSource (via the System DSN or User DSN option), or

selected a DSN File (File DSN option), or built a connection string (Connection String option), click **Connect**.

8. When you are prompted for your user ID and password, enter these and then click **OK**.
9. You will be asked to choose between connecting to the the database either natively or via the ODBC API (*see screenshot below*).



Select the *Natively* option, unless there are difficulties with the connection or if you prefer to use the ODBC API. Then click **OK**. The connection is established. For information about subsequent dialogs, refer to the description of the command being executed.

Note: The listing in the data source pane (when the System DSN or User DSN option is selected) can be edited using the *Edit Selected DSN*, *Remove Selected DSN*, and *Refresh Listed DSNs* icons at the bottom of the ODBC Connections screen.

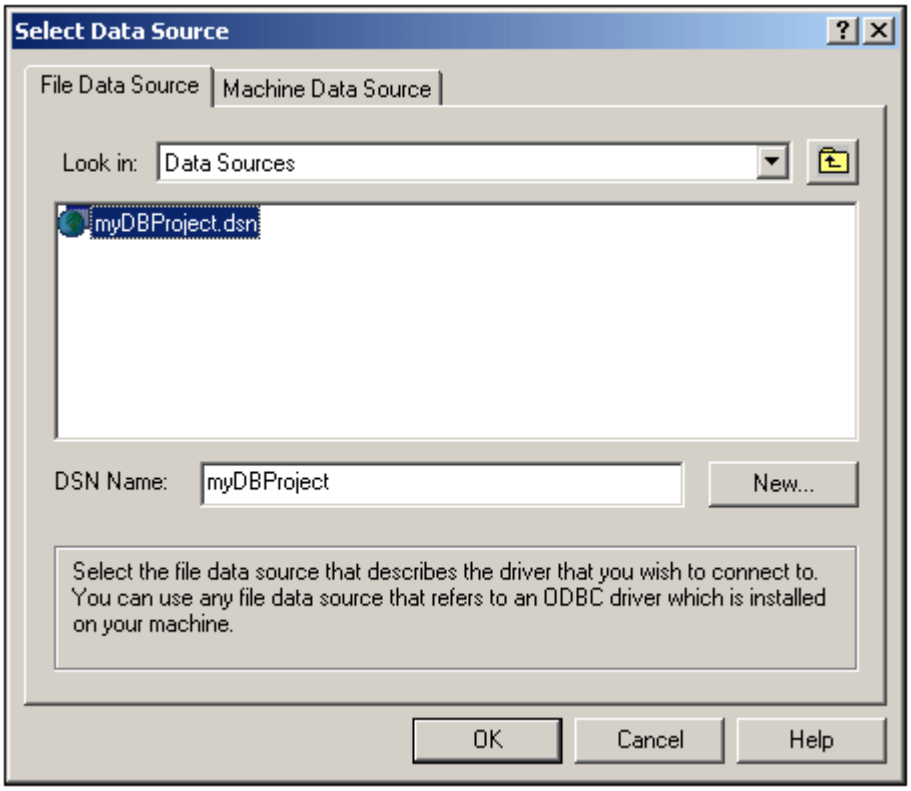
 Edit selected DSN.

 Remove selected DSN.

 Refresh listed DSNs.

Building a connection string

In the ODBC Connections screen, select the Build a Connection String radio button and then click the **Build** button. The Select Data Source dialog (*screenshot below*) pops up. You can either select a File DSN (in the File Data Source tab), or select a data source that is available on your machine (listed in the Machine Data Source tab).



Clicking **OK** pops up a dialog that prompts for user information, including the User ID and password. When you click **OK** in this dialog, the connection string is entered in the ODBC Connections screen.

JDBC Connections

This section describes how to connect to a DB via JDBC. The steps listed below describe a connection to an IBM DB2 database, but they apply also to other types of databases that can be connected to via JDBC.

Pre-connection steps

Before connecting to the DB via JDBC, you must do the following:

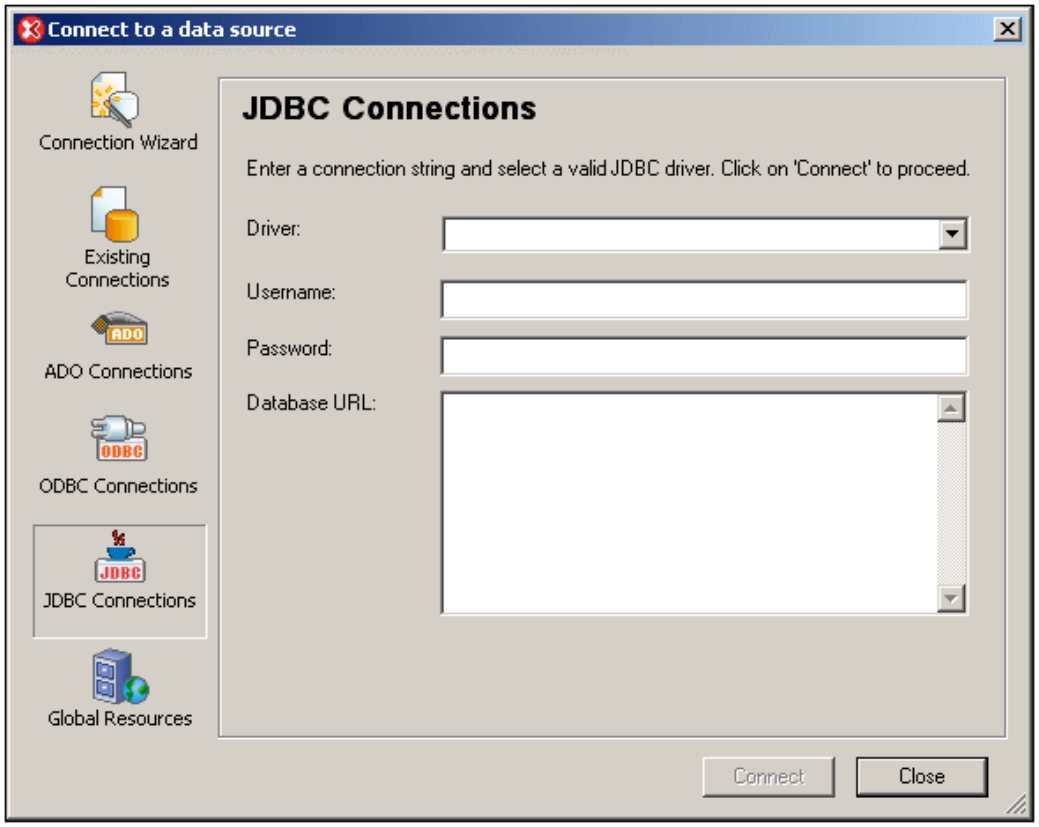
1. Ensure that the Java Runtime Environment (JRE) is installed. If it isn't installed, then install it. Use a 32-bit JRE for a 32-bit machine or a 64-bit JRE for a 64-bit machine.
2. Install a JDBC driver. No special installation setup is required. All you need to do is copy the driver to a local directory, for example, `c:\jdbc`. Note that JDBC drivers (which are Jar files) are platform-independent.
3. Set up the `CLASSPATH` to include the location where the JDBC driver is located. (The application reads the `CLASSPATH` environment variable to locate the JDBC driver.) To access and edit the `CLASSPATH`, do the following: Click **Start | Control Panel | System | Advanced | Environment Variables**. In the Environment Variables dialog that appears, select either the `CLASSPATH` user environment variable or the `CLASSPATH` system environment variable and click the **Edit** button. Add the path to the JDBC driver to the `CLASSPATH`. For example: `CLASSPATH=C:\jdbc\sqljdbc.jar;C:\jdbc\db2jcc.jar;.`
4. Log off and then log on again to make the `CLASSPATH` changes active.

Note: Installing the complete IBM DB2 or Oracle client will automatically populate the `CLASSPATH` with the JDBC drivers of the respective packages. For more details, see the summaries below.

Connecting via JDBC

To connect using a JDBC connection, do the following:

1. In the Connect to a Data Source dialog, select **JDBC Connections**. The JDBC Connections pane (*screenshot below*) appears.



2. Select a JDBC driver from the *Driver* dropdown list (all detected drivers, i.e. those in the `CLASSPATH` environment variable, are listed). Enter a connection string in the *Database URL* text box and a user name and password as required. Given below is the connection string syntax for commonly used databases, each with an example connection string.

Oracle

```
jdbc:oracle:thin:[user/password]@//[host][:port]/SID
jdbc:oracle:thin:@//abcd234/ORA11
```

IBM DB2

```
jdbc:db2://host_name:port/dbname
jdbc:db2://MyDB2:50000/boz
```


MySQL `jdbc:mysql://host_name:port/dbname`

`jdbc:mysql://MyDB2:3306/moz`

MSSQL `jdbc:sqlserver://host:port;databasename=name;user=name;password=Pwd`

`jdbc:sqlserver://abcd38:1433;databasename=coz`

`jdbc:sqlserver://Q5;DatabaseName=coz;SelectMethod=Cursor`

PostgreSQL `jdbc:postgresql://host:port/database`

`jdbc:postgresql://abc993:5432/qanoz`

Sybase `jdbc:sybase:Tds:host:port/dbname`

`jdbc:sybase:Tds:abc12:2048/QUE`

3. Click the **Connect** button. The connection to the data source is established. For information about subsequent dialogs, refer to the description of the command being executed.

Step-by-step: MSSQL, MySQL, PostGre, and other non-XML DBs
Given below is a step-by-step guide for connecting to a non-XML DB via JDBC:

1. JDBC JAR files (driver files): Copy the files to any local location. Then add the full path and filename to the Windows `CLASSPATH` variable. For example:
   `C:\jdbc\sqljdbc.jar; C:\jdbc\db2jcc.jar;.`
2. Log off and log on to make the `CLASSPATH` changes active.
3. Start XMLSpy and access the Connect to a Data Source dialog.
4. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file `altovadb.jar` is present in the folder: `C:\Program Files\Altova\Common2012\jar`.
5. Connect to a database as described in the section *Connecting via JDBC* above.

Step-by-step: Oracle
Given below is a step-by-step guide for connecting to an Oracle DB via JDBC. If you don't need the XML and XDB features of the Oracle DB, follow the instructions in the step-by-step guide for non-XML DBs. The installation folder of the Oracle client is indicated in the steps below by the placeholder: `%ORACLE_HOME%`.

1. Install Oracle client software with OCI and ODBC features enabled. If an Oracle client is already installed check if the two jar files below are present:

   ```
   %ORACLE_HOME%\LIB\xmlparserv2.jar
   %ORACLE_HOME%\RDBMS\jlib\xdb.jar
   ```

2. Add the following files to the Windows `CLASSPATH` environment variable:

   ```
   %ORACLE_HOME%\jdbc\lib\ojdbc6.jar
   ```

```
%ORACLE_HOME%\LIB\xmlparserv2.jar
%ORACLE_HOME%\RDBMS\jlib\xdb.jar
```

3. Log off and log on to make the CLASSPATH changes active.
4. Start XMLSpy and access the Connect to a Data Source dialog.
5. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file altovadb.jar is present in the folder: C:\Program Files\Altova\Common2012\jar.
6. Connect to a database as described in the section *Connecting via JDBC* above.

Step-by-step: IBM DB2

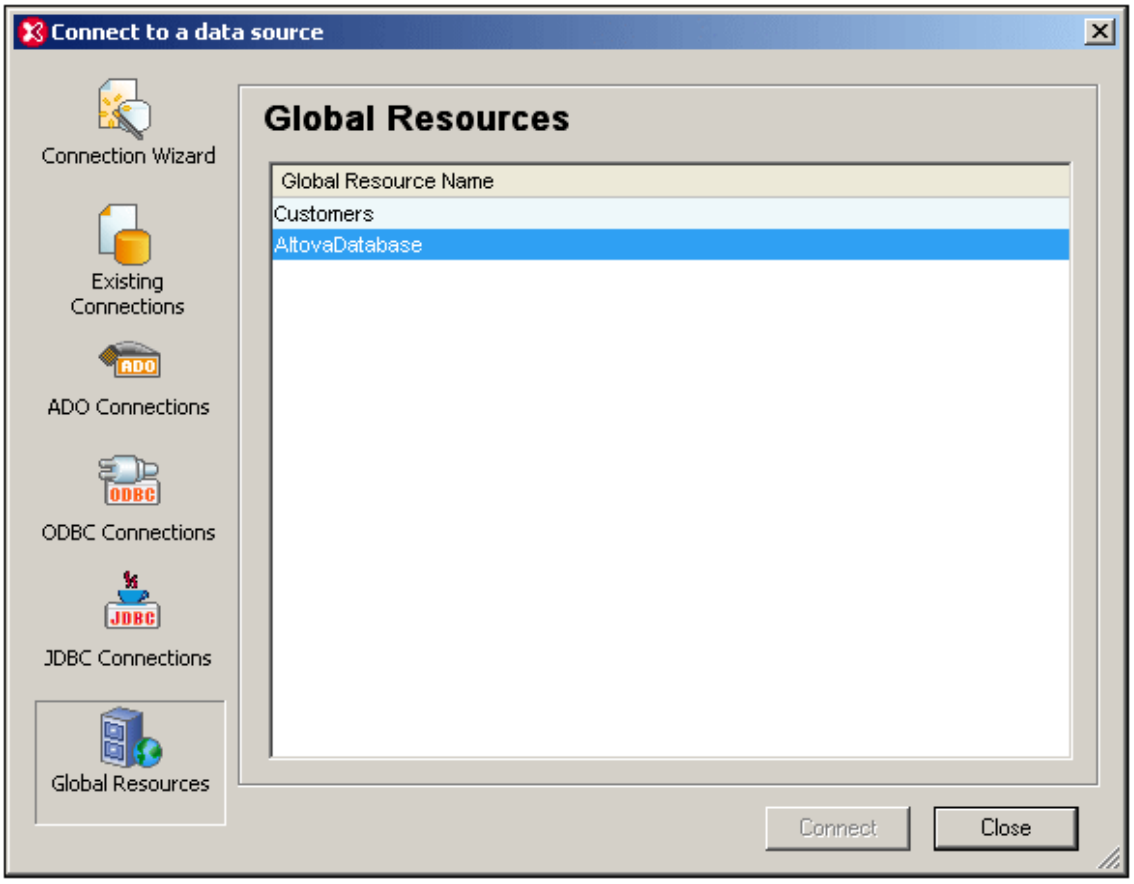
Given below is a step-by-step guide for connecting to an IBM DB2 database via JDBC.

1. If an IBM DB2 client has already been installed, nothing needs to be done since the CLASSPATH will have been set by the installation process.
2. If no IBM DB2 client has been installed, add the IBM DB2 JDBC driver jar files db2jcc.jar and db2jcc_license_cu.jar to the Windows CLASSPATH. Log off and log on to make the CLASSPATH changes active.
3. Start XMLSpy and access the Connect to a Data Source dialog.
4. The JDBC Connections pane lists, in the *Driver* dropdown box, the detected JDBC drivers. If the dropdown box is empty, make sure that the file altovadb.jar is present in the folder: C:\Program Files\Altova\Common2012\jar.
5. Connect to a database as described in the section *Connecting via JDBC* above.

Note: When databases are connected to via JDBC, due to insufficient information returned by the drivers: (i) data editing is not possible for tables without a primary key; (ii) Execute for data-editing in SQL Editor will not work.

Global Resources

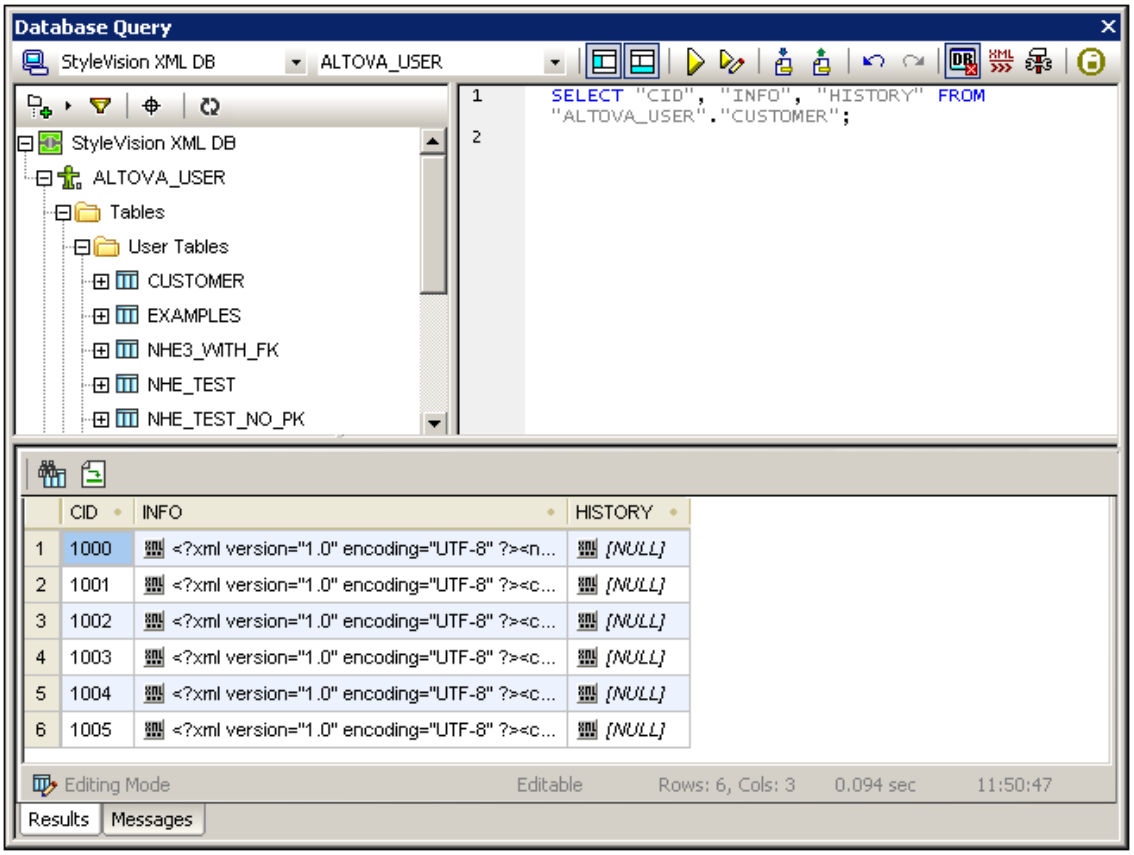
In the Connect to Data Source dialog, when the **Global Resources** button is selected, the Global Resources pane opens (*screenshot below*), showing all the database-type global resources that are defined in the currently active Global Resources XML File.



Select the required global resource and click **Connect**. The connection to the database is established. For information about subsequent dialogs, refer to the description of the command being executed.

18.9.2 Query Database

The **Query Database** command opens the Database Query window (*screenshot below*). Once the Query Window is open, its display can be toggled on and off by clicking either the **DB | Query Database** command or the Query Database toolbar icon  .



Overview of the Database Query window
The Database Query window consists of three parts:

- A **Browser pane** at top left, which displays connection info and database tables.
- A **Query pane** at top right, in which the query is entered.
- A tabbed **Results/Messages pane**. The Results pane displays the query results in what we call the Result Grid. The Messages pane displays messages about the query execution, including warnings and errors.

The Database Query window has a toolbar at the top. At this point, take note of the two toolbar icons below. The other toolbar icons are described in the section, Query Pane: Description and Features.


Toggles the Browser pane on and off.


Toggles the Results/Messages pane on and off.

Overview of the Query Database mechanism
The Query Database mechanism is as follows. It is described in detail in the sub-sections of this section

1. A connection to the database is established via the Database Query window. Supported databases include: MS Access 2000 and 2003; Microsoft SQL Server; Oracle; MySQL; Sybase; and IBM DB2.
2. The connected database or parts of it are displayed in the Browser pane, which can be

configured to suit viewing requirements.
3. A query written in a syntax appropriate to the database to be queried is entered in the Query pane, and the query is executed.
4. The results of the query can be viewed through various filters, edited, and saved back to the DB.

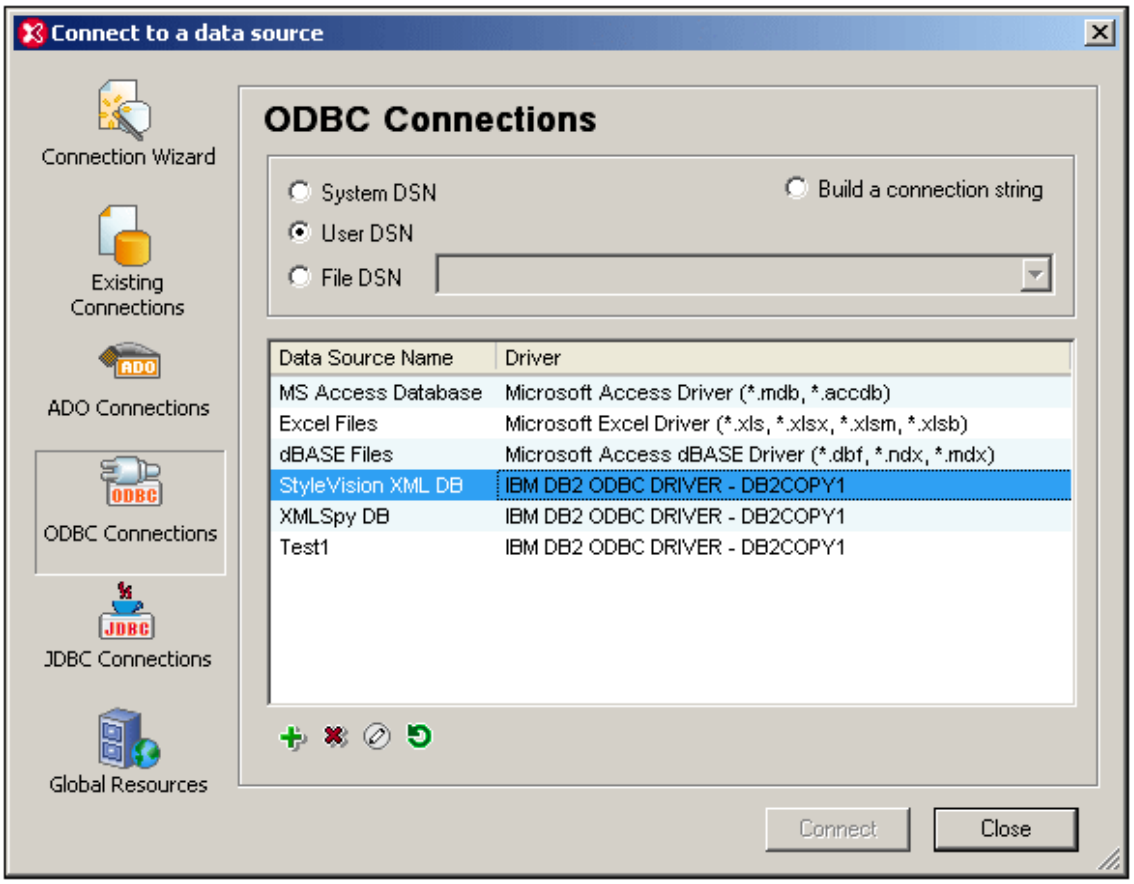
Data Sources

In order to query a database, you have to first connect to the required database This section describes how to:

- Connect to a database, and
- Select the required data source and root object from among multiple existing connections.

Connecting to a database

When you click the **Query Database** command for the first time in a session (or when no database connection exists), the Quick Connect dialog (*screenshot below*) pops up to enable you to connect to a database. To make connections subsequently, click the Quick Connect icon  in the Database Query window.



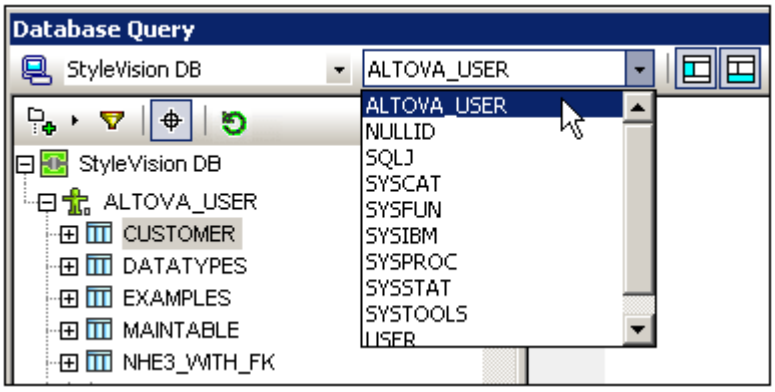
How to connect to a database via the Quick Connect dialog is described in the section Connecting to a Data Source.

The following databases are supported. After connecting to the database, the available root objects for each of the supported databases is as follows:

Database (natively supported)	Root Object
MS SQL Server 2000, 2005, and 2008	database
MS SQL Server 2005 and 2008	schema
Oracle 9i, 10g, and 11g	schema
MS Access 2003 and 2007	database
MySQL 4.x and 5.x	database
IBM DB2 8.x and 9	schema
Sybase 12	database
IBM DB2 for i 5.4 and i 6.1	schema
PostgreSQL 8.0, 8.1, 8.2, 8.3	database

Note: XMLSpy fully supports the databases listed above. While Altova endeavors to support other ODBC/ADO databases, successful connection and data processing have only been tested with the listed databases.

Selecting the required data source
All the existing connections and the root objects of each are listed, respectively, in two combo boxes in the toolbar of the Database Query window (*screenshot below*).



In the screenshot above, the database with the name `StyleVision DB` has been selected. Of the available root objects for this database, the root object `ALTOVA_USER` has been selected. The database and the root object are then displayed in the Browser pane.

Browser Pane: Viewing the DB Objects

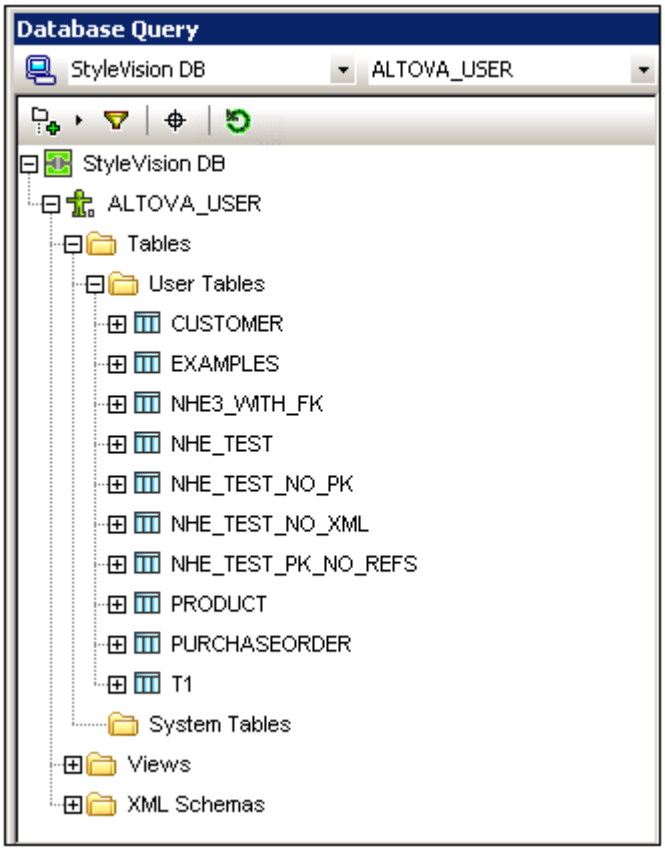
The Browser pane provides an overview of objects in the selected database. This overview includes database constraint information, such as whether a column is a primary or foreign key. In IBM DB2 version 9 databases, the Browser additionally shows registered XML schemas in a separate folder.

This section describes the following:

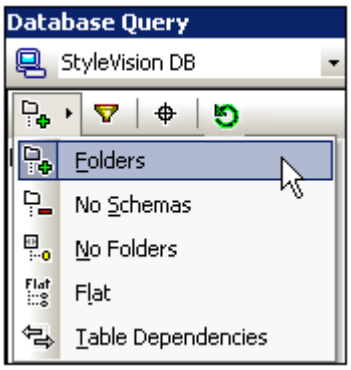
- The layouts available in the Browser pane.
- How to filter database objects.
- How to find database objects.

Browser pane layouts

The default Folders layout displays database objects hierarchically. Depending on the selected object, different context menu options are available when you right-click an item.



To select a layout for the Browser, click the Layout icon in the toolbar of the Browser pane and select the layout from the drop-down list (*screenshot below*). Note that the icon changes with the selected layout.



The available layouts are:

- *Folders:* Organizes database objects into folders based on object type in a hierarchical tree, this is the default setting.
- *No Schemas:* Similar to the Folders layout, except that there are no database schema folders; tables are therefore not categorized by database schema.
- *No Folders:* Displays database objects in a hierarchy without using folders.
- *Flat:* Divides database objects by type in the first hierarchical level. For example, instead of columns being contained in the corresponding table, all columns are displayed in a separate Columns folder.
- *Table Dependencies:* Categorizes tables according to their relationships with other tables. There are categories for tables with foreign keys, tables referenced by foreign keys and tables that have no relationships to other tables.

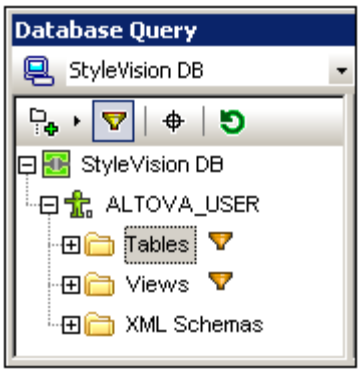
To sort tables into User and System tables, switch to Folders, No Schemas or Flat layout, then right-click the Tables folder and select **Sort into User and System Tables**. The tables are sorted alphabetically in the User Tables and System Tables folders.

Filtering database objects

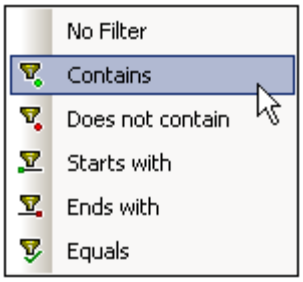
In the Browser pane (in all layouts except No Folders and Table Dependencies), schemas, tables, and views can be filtered by name or part of a name. Objects are filtered as you type in the characters, and filtering is case-insensitive by default.

To filter objects in the Browser, do the following:

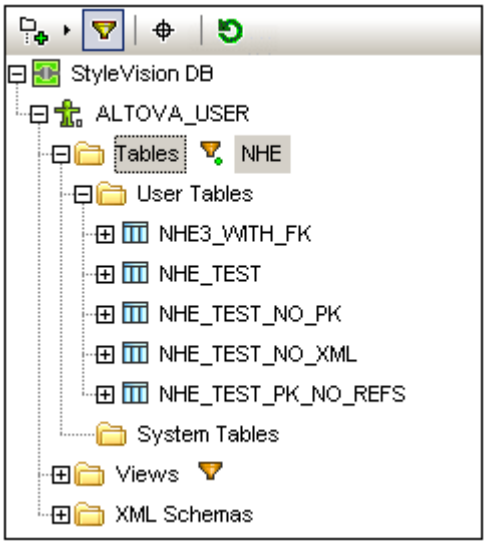
1. Click the Filter Folder Contents icon in the toolbar of the Browser pane. Filter icons appear next to the Tables and Views folders in the currently selected layout (*screenshot below*).



2. Click the filter icon next to the folder you want to filter, and select the filtering option from the popup menu, for example, `Contains`.



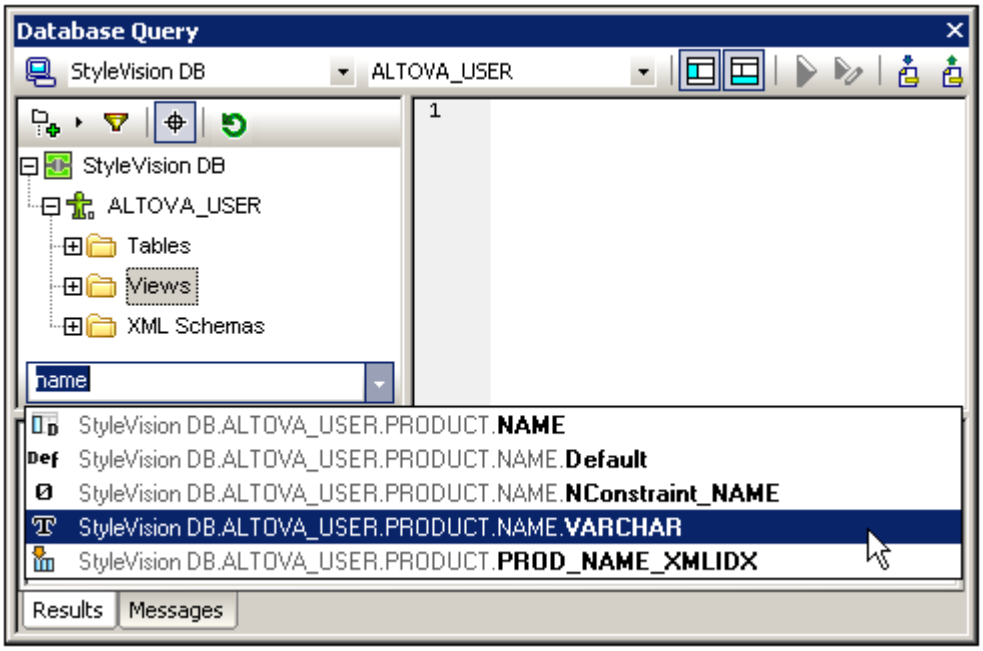
3. In the entry field that appears, enter the filter string (in the screenshot below, the filter string on the `Tables` folder is `NHE`). The filter is applied as you type.



Finding database objects

To find a specific database item by its name, you can use the Browser pane's Object Locator. This works as follows:

1. In the toolbar of the Browser pane, click the Object Locator icon. A drop-down list appears at the bottom of the Browser.
2. Enter the search string in the entry field of this list, for example `name` (*screenshot below*). Clicking the drop-down arrow displays all objects that contain the search string.



3. Click the object in the list to see it in the Browser.

Query Pane: Description and Features

The Query pane is an intelligent SQL editor for entering queries to the selected database. After entering the query, clicking the Execute command of the Database Query window executes the query and displays the result and execution messages in the Results/Messages pane. How to work with queries is described in the next section, Query Pane: Working with Queries. In this section, we describe the main features of the Query pane:

- SQL Editor icons in the Database Query toolbar
- SQL Editor options
- Auto-completion of SQL statements
- Definition of regions in an SQL script
- Insertion of comments in an SQL script
- Use of bookmarks

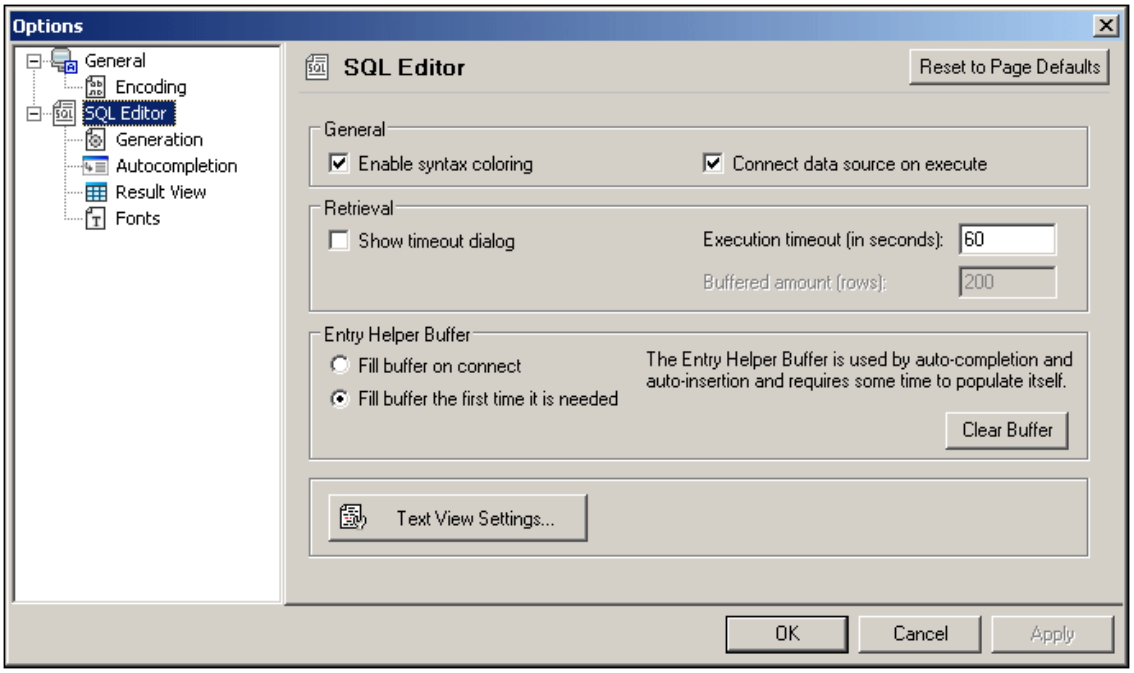
SQL Editor icons in the Database Query toolbar

The following icons in the toolbar of the Database Query window are used when working with the SQL Editor:

	**Execute**	Executes currently selected SQL statement. If script contains multiple statements and none is selected, then all are executed.
	**Execute with Data Editing**	Same as for Execute command, except that results (in Results tab) are editable.
	**Import SQL File**	Opens an SQL file in the SQL Editor.
	**Export SQL File**	Saves SQL queries to an SQL file.
	**Undo**	Undoes an unlimited number of edits in SQL Editor.
	**Redo**	Redoes an unlimited number of edits in SQL Editor.
	**Hide DB Query on XML Open**	Sets whether the DB Query window should be hidden when an XML document is opened for editing.
	**Auto-Commit on XML Save**	When an edited XML document is saved in XMLSpy, changes are committed to the DB if this toggle is on. Otherwise, changes have to be explicitly committed in the Results Pane.
	**Options**	Open the Options dialog of SQL Editor.
	**Open SQL Script in DatabaseSpy**	Opens the SQL script in Altova's DatabaseSpy product.

Options

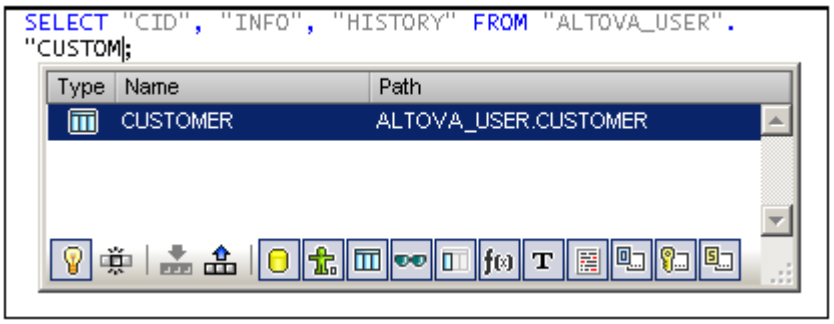
Clicking the **Options** icon in the Database Query toolbar pops up the Options dialog (*screenshot below*). A page of settings can be selected in the left-hand pane, and the options on that page can be selected. Click the **Reset to Page Defaults** button to reset the options on that page to their original settings.



The key settings are as follows:

- ***General | Encoding:*** Options for setting the encoding of new SQL files, of existing SQL files for which the encoding cannot be detected, and for setting the Byte Order Mark (BOM). (If the encoding of existing SQL files can be detected, the files are opened and saved without changing the encoding.)
- ***SQL Editor:*** Options for toggling syntax coloring and data source connections on execution on/off. A timeout can be set for query execution, and a dialog to change the timeout can also be shown if the specified time is exceeded. The buffer for the entry helper information can be filled either on connection to the data source or the first time it is needed. The Text View settings button opens the Text View options window of XMLSpy.
- ***SQL Editor | SQL Generation:*** The application generates SQL statements when you drag objects from the Browser pane into the Query pane. Options for SQL statement generation can be set in the SQL generation tab. Use the *Database* pane to select a database kind and set the statement generation options individually for the different database kinds you are working with. Activating the *Apply to all databases* check box sets the options that are currently selected for all databases. Options include appending semi-colons to statements and surrounding identifiers with escape characters. When the *Append semicolons to statement end* check box is activated, a semicolon is appended when you generate an SQL statement in the SQL Editor. Note that editing of data in Oracle databases and IBM iSeries and DB2 databases via a JDBC connection is possible only if this check box is unchecked.
- ***SQL Editor | Auto-completion:*** The Auto-Completion feature works by suggesting, while you type, relevant entries from various SQL syntax categories. It is available for the following databases: MS SQL Server 2000, 2005, and 2008, MS Access 2003 and 2007, and IBM DB2 v.9. When the Auto-Completion option is switched on, the Auto-Completion window (*screenshot below*) appears, containing suggestions for auto-completion. Select the required entry to insert it. You can define whether the autocompletion popup should be triggered automatically after a delay which you can set in the *Triggering Auto-completion* pane, or if the popup has to be invoked manually. You can also select the keys to be used to insert the selected completion. The SQL Editor can intelligently suggest autocompletion entries based on language statistics. If this feature is activated, items that are frequently used appear on top of the list of suggested

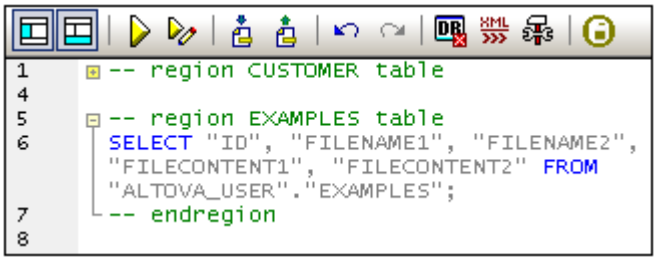
entries. In the Auto-completion window (*screenshot below*) itself, note the buttons at the bottom of the window. The *Context-Sensitive Suggestion* button sets whether only entries that are relevant to the context are displayed or all possible entries with that spelling. The *Single Mode* button enables you to click a category button to select only that category. The *Set All Categories* button selects all categories. You can then deselect a category by clicking its button. The *Clear All Categories* button de-selects all categories. The other buttons are the various category buttons.



- ***SQL Editor | Result View:*** Options to configure the Result tab.
- ***SQL Editor | Fonts:*** Options for setting the font style of the text in the Text Editor and in the Result View.

Definition of regions in an SQL script

Regions are sections in SQL scripts that are marked and declared to be a unit. Regions can be collapsed and expanded to hide or display parts of the script. It is also possible to nest regions within other regions. Regions are delimited by `--region` and `--endregion` comments, respectively, before and after the region. Regions can optionally be given a name, which is entered after the `-- region` delimiter (*see screenshot below*).



To insert a region, select the statement/s to be made into a region, right-click, and select **Insert Region**. The expandable/collapsible region is created. Add a name if you wish. In the screenshot above, also notice the line-numbering. To remove a region, delete the two `--region` and `--endregion` delimiters.

Insertion of comments in an SQL script

Text in an SQL script can be commented out. These portions of the script are skipped when the script is executed.

- To comment out a block, mark the block, right-click, and select **Insert/Remove Block Comment**. To remove the block comment, mark the comment, right-click and select **Insert/Remove Block Comment**.
- To comment out a line or part of a line, place the cursor at the point where the line comment should start, right-click, and select **Insert/Remove Line Comment**. To remove the line comment, mark the comment, right-click and select **Insert/Remove Line Comment**.

Use of bookmarks
Bookmarks can be inserted at specific lines, and you can then navigate through the bookmarks in the document. To insert a bookmark, place the cursor in the line to be bookmarked, right-click, and select **Insert/Remove Bookmark**. To go to the next or previous bookmark, right-click, and select **Go to Next Bookmark** or **Go to Previous Bookmark**, respectively. To remove a bookmark, place the cursor in the line for which the bookmark is to be removed, right-click, and select **Insert/Remove Bookmark**. To remove all bookmarks, right-click, and select **Remove All Bookmarks**.

Query Pane: Working with Queries

After connecting to a database, an SQL script can be entered in the SQL Editor and executed. This section describes:

- How an SQL script is entered in the SQL Editor.
- How the script is executed in the Database Query window.

The following icons are referred to in this section:

	**Execute Query**	Executes currently selected SQL statement. If script contains multiple statements and none is selected, then all are executed.
	**Execute for Data Editing**	Same as for Execute command, except that results (in Results tab) are editable.
	**Import SQL File**	Opens an SQL file in the SQL Editor.

Creating SQL statements and scripts in the SQL Editor
The following GUI methods can be used to create SQL statements or scripts:

- *Drag and drop:* Drag an object from the Browser pane into the SQL Editor. An SQL statement is generated to query the database for that object.
- *Context menu:* Right-click an object in the Browser pane and select **Show in SQL Editor | Select**.
- *Manual entry:* Type SQL statements directly in SQL Editor. The Auto-completion feature can help with editing.
- *Import an SQL script:* Click the **Import SQL File** icon in the toolbar of the Database Query window.

Executing SQL statements
If the SQL script in the SQL Editor has more than one SQL statement, select the statement to execute and click either the **Execute** icon or **Execute with Data Editing** icon in the toolbar of the Database Query window. If no statement in the SQL script is selected, then all the statements in the script are executed. The database data is retrieved and displayed as a grid in the Results tab. If **Execute with Data Editing** was selected, then the retrieved data in the Result Grid can be edited. Messages about the execution are displayed in the Messages tab.

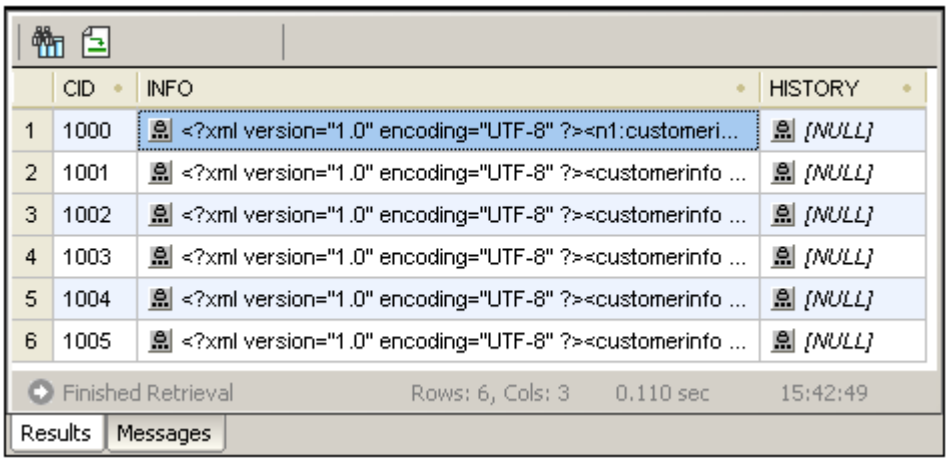
Results and Messages

The Results/Messages pane has two tabs:

- The Results tab shows the data that is retrieved by the query.
- The Messages tab shows messages about the query execution.

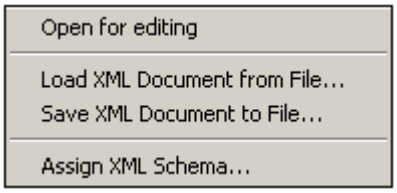
Results tab

The data retrieved by the query is displayed in the form of a grid in the Results tab (*screenshot below*). When the query results have been generated using the **Execute Query** command, the XML documents in the Results tab are indicated with the XML icon (*screenshot below*). If the **Execute for Data Editing** command was used, XML documents are shown with the Editable XML icon.



The following operations can be carried out in the Results tab, via the context menu that pops up when you right-click in the appropriate location in the Results tab:

- *Sorting on a column:* Right-click anywhere in the column on which the records are to be sorted, then select **Sorting | Ascending/Descending/Restore Default**.
- *Copying to the clipboard:* This consists of two steps: (i) selecting the data range; and (ii) copying the selection. Data can be selected in several ways: (i) by clicking a column header or row number to select the column or row, respectively; (ii) selecting individual cells (use the **Shift** and/or **Ctrl** keys to select multiple cells); (iii) right-clicking a cell, and selecting **Selection | Row/Column/All**. After making the selection, right-click, and select **Copy Selected Cells**. This copies the selection to the clipboard, from where it can be pasted into another application.
- *Appending a new row:* If the query was executed for editing, right-click anywhere in the Results pane to access the **Append row** command.
- *Deleting a row:* If the query was executed for editing, right-click anywhere in a row to access the **Delete row** command.
- *Editing records:* If the query was executed for editing, individual fields can be edited. To commit changes, click the **Commit** button in the toolbar of the Results tab.
- *Editing XML records:* If the query was executed for editing and an editable field is an XML field (only IBM DB2 XML databases are currently supported), clicking the Editable XML icon in the Result Grid opens the Edit XML menu (*screenshot below*). An XML field can also be opened for data editing by right-clicking the XML filed in the Folders pane and selecting the command **Edit Data**.



The **Open for Editing** command opens the XML document in an XMLSpy window, and the Editable XML icon changes to , in which the three dots are red. When this document is saved and if the Auto-Commit XML Changes icon in the Query Database toolbar was selected when the document was opened, the changes to the XML document are committed automatically to the database. Otherwise, saved changes will have to be committed using the Commit button of the Results pane. (Note that to toggle between the XML document window and the Database Query window, you must click the **DB | Query Database** command.) The **Load XML Document from File** command loads an external XML document to the selected field in the database. The **Save XML Document to File** saves the XML document in the selected database field to a file location you choose. The Assign XML Schema command pops up the Choose XML Schema dialog, in which you can select an XML Schema to assign to the XML document. This assignment is saved to the database. XML Schema assignment is explained in more detail in the section, IBM DB2 | Assign XML Schema.

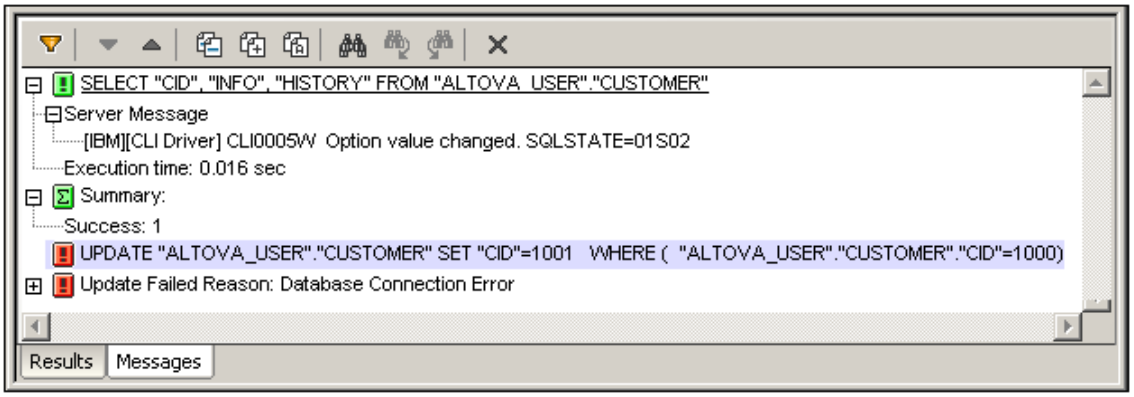
- *Set NULL, Set default, Undo changes for this cell:* If the query was executed for editing, right-clicking in a cell provides access to commands that enable you to set a `NULL` value or, if defined, a column default value for that cell. Changes made to a cell can be undone with the **Undo changes for this cell** command; the current edited value is replaced by the value currently in the DB.

The Results tab has the following toolbar icons:

	Go to Statement	Highlights the statement in the SQL Editor that produced the current result.
	Find	Finds text in the Results pane. XML document content is also searched.
	Add New Line	Adds a new row to the Result Grid.
	Delete Row	Deletes the current row in the Result Grid.
	Undo Changes to Result Grid	Undoes all changes to the Result Grid.
Commit	**Commit**	Commits changes made in the Result Grid to the database.

Messages tab

The Messages tab provides information on the previously executed SQL statement and reports errors or warning messages.



The toolbar of the Messages tab contains icons that enable you to customize the view, navigate it, and copy messages to the clipboard. The **Filter** icon enables the display of particular types of messages to be toggled on or off. The **Next** and **Previous** icons move the selection down and up the list, respectively. Messages can also be copied with or without their child components to the clipboard, enabling them to be pasted in documents. The **Find** function enables you to specify a search term and then search up or down the listing for this term. Finally, the **Clear** icon clears the contents of the Messages pane.

Note: These toolbar icon commands are also available as context menu commands.

18.9.3 IBM DB2

The **IBM DB2** menu item rolls out a submenu containing commands (i) to register and unregister schemas with an IBM DB2 database (**Manage XML Schemas**), and (ii) to assign schemas for XML file validation (**Assign XML Schema**).

Both these mechanisms require that you connect to the required IBM DB2 database. How to connect to the database is described in the section Connecting to a Data Source. In this section the focus is on how to manage schemas in an IBM DB2 database and how to assign XML Schemas to a DB XML file.

Note: The Result Grid of the Database Query window provides important functionality for working with XML files in IBM DB2 databases. This functionality includes the ability to open files for editing, loading XML files into a DB XML files, saving DB XML files externally, and assigning XML Schemas to DB XML files.

Manage XML Schemas

The **Manage XML Schemas** feature enables schemas to be added to and dropped from individual database schemas in an IBM DB2 database. To manage schemas, you have to do the following:

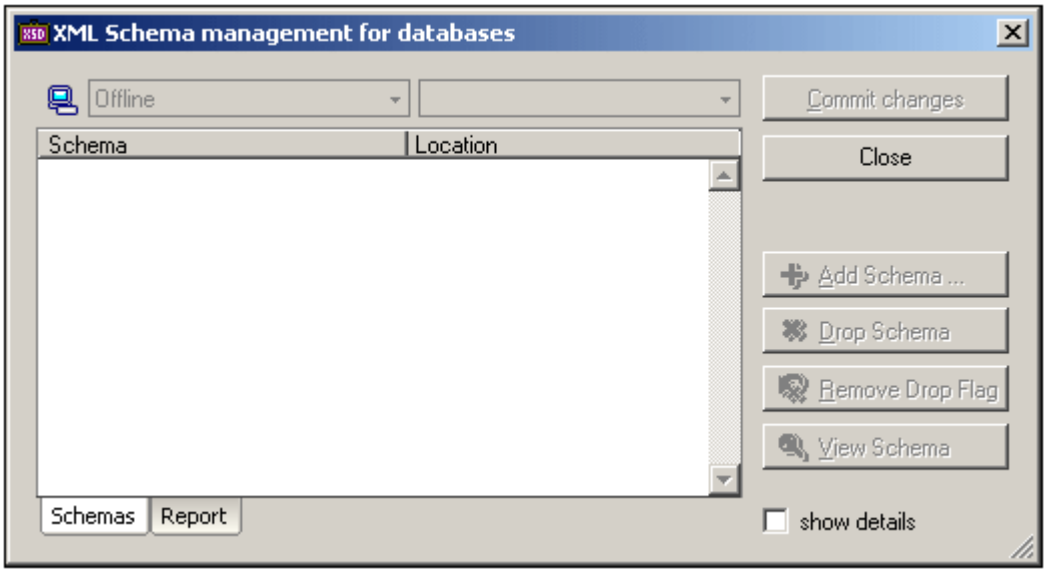
- Connect to the IBM DB2 database
- Select the database schema for which XML Schemas need to be added or dropped
- Carry out the schema management actions.

These steps are described in detail below.

Connecting to the IBM DB2 database

Clicking the **Manage XML Schemas** command pops up the XML Schema Management for

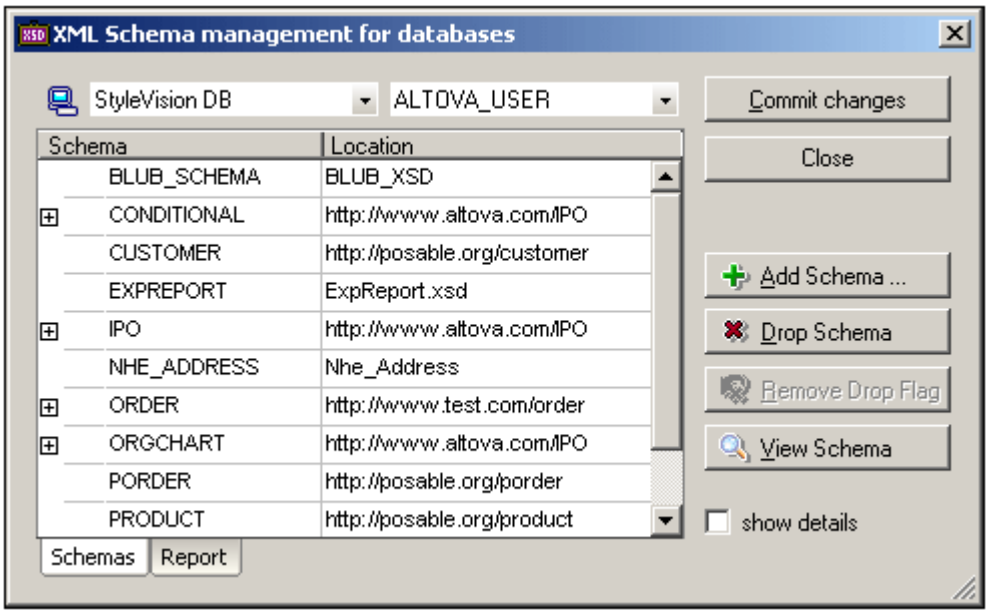
Databases dialog (*screenshot below*).



The first thing to do if there is no connection to the required database is to connect to it. If a connection already exists, it appears in the Database combo box. To start the connection process, click the Quick Connect icon in the dialog. This pops up the Quick Connect dialog, through which you can make the connection to the database. How to use the Quick Connect dialog is explained in the section DB Menu | Connecting to a Data Source.

Displaying the list of XML Schemas

After the connection to the IBM DB2 database has been established, the database is listed in the combo box at left (*see screenshot below*). If more than one connection is currently open, you can select the required database in this combo box. In the screenshot below, the StyleVision DB database is selected.



The combo box at right lists all the database schemas of the currently selected IBM DB2 database. When a database schema is selected in this combo box, all the XML Schemas

registered for the selected database schema are displayed in the main pane. In the screenshot above, all the XML Schemas registered with the `Altova_User` database schema are listed, together with their locations. Checking the Show Details check box causes additional information columns to be displayed in the main pane.

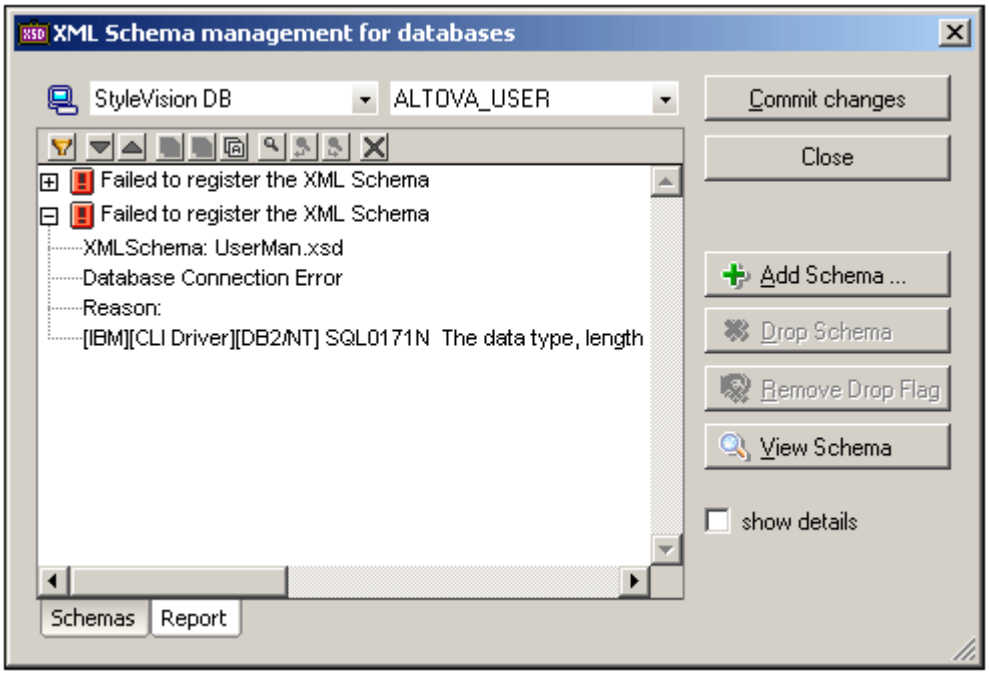
Managing the XML Schemas
The list of schemas in the main pane represents the schemas registered for the selected database schema. After the list of XML Schemas is displayed, you can add schemas to the list or drop (delete) schemas from the list.

To add a schema, click the **Add** button, browse for the required schema file, and select it. The selected schema file is added to the list in the main pane. Clicking the **Commit Changes** button registers the newly added schema with the database schema.

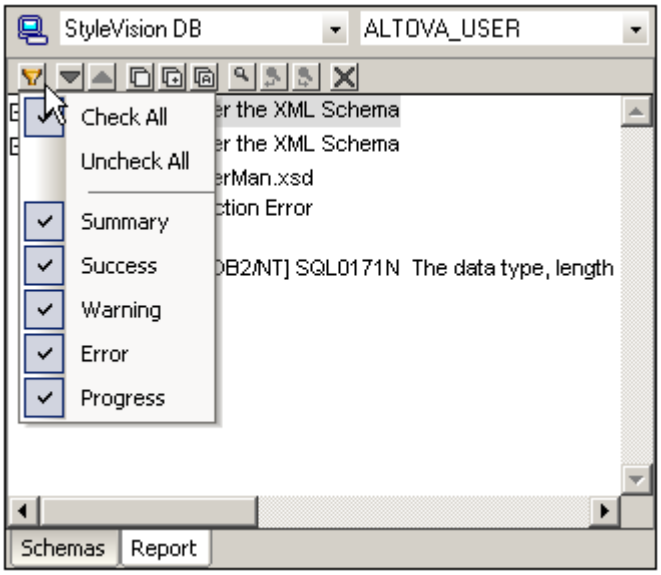
To drop a schema, select the schema in the main pane and click the **Drop Schema** button. A Drop Flag is assigned to the schema, indicating that it is scheduled for dropping when changes are next committed. The Drop Flag can be removed by selecting the flagged schema and clicking the **Remove Drop Flag** button. When the **Commit Changes** button is clicked, all schemas that have been flagged for dropping will be unregistered from the database schema.

Clicking the View Schema button opens the schema in XMLSpy. To close the XML Schema Management dialog, click the **Close** button.

Reports
When the **Commit Changes** button is clicked, the database is modified according to the changes you have made. A report of the Commit action is displayed in the Report pane (*screenshot below*), enabling you to evaluate whether the success of the action and to debug possible errors. Each subsequent report is displayed below the previous report.



The report pane has a toolbar containing icons that enable you to customize the display of the report listing, navigate the listing, copy report messages, search for text, and clear the pane (*see screenshot below*).



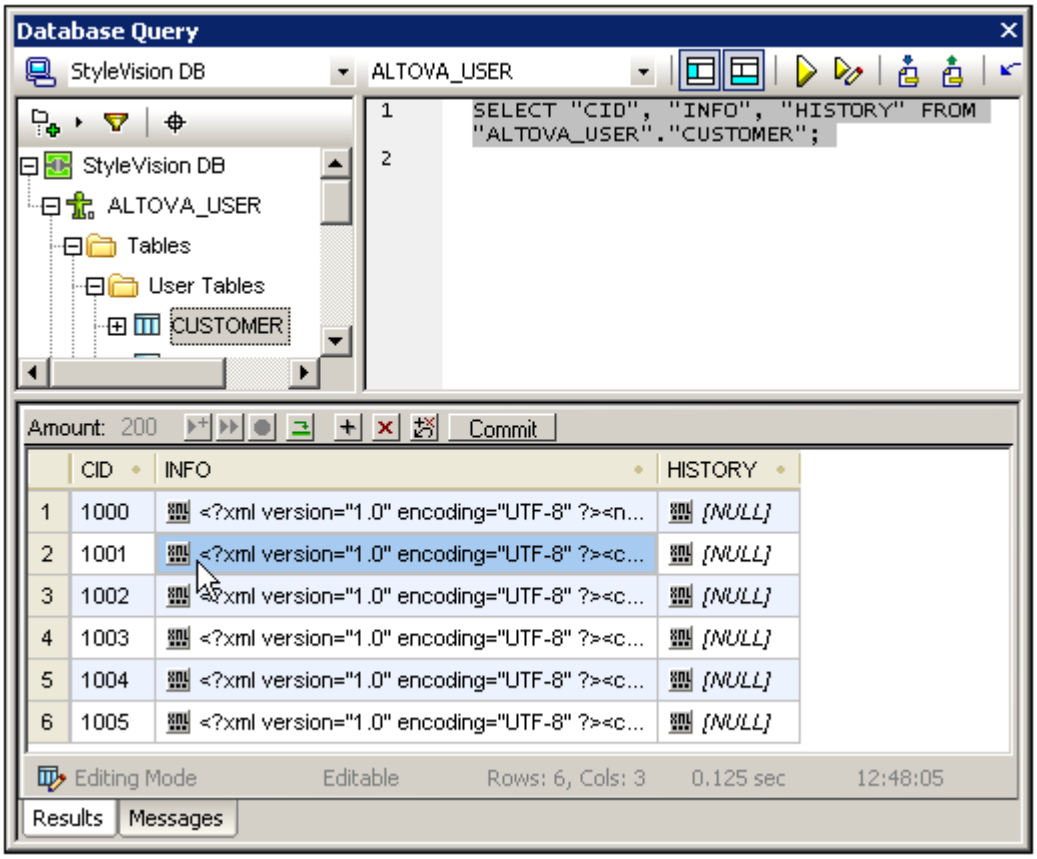
The **Filter** icon enables the display of particular types of messages to be toggled on or off. The **Next** and **Previous** icons move the selection down and up the list, respectively. Messages can also be copied with or without their child components to the clipboard, enabling them to be pasted in documents. The **Find** function enables you to specify a search term and then search up or down the listing for this term. Finally, the **Clear** icon clears the contents of the Report pane.

Assign XML Schema

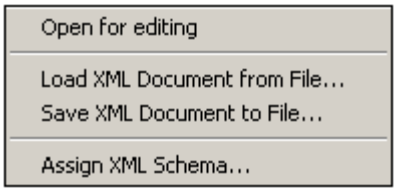
The Assign XML Schema assigns a schema to an XML file opened for editing via the Result Grid of the Database Query window. After the assignment is made, the XML file can be validated against the assigned schema. The assignment is written to the DB when the XML file is saved in XMLSpy.

Opening a DB XML file for editing

In the Database Query window, when a query is addressed to an XML DB and the query is executed for data editing, the Result Grid at the bottom of the Database Query window provides access to the XML files in the database so these can be edited (*see screenshot below*).

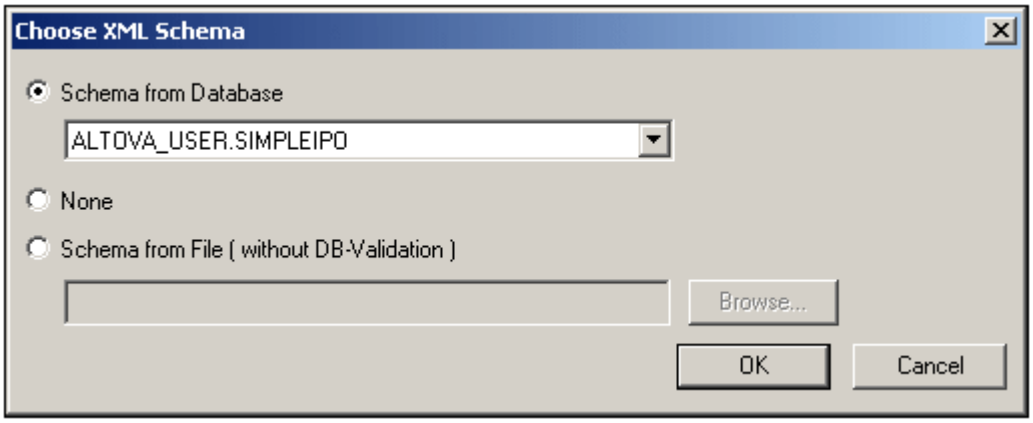


Clicking the XML icon pops up the following menu.



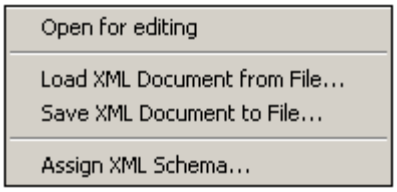
Selecting the **Open for Editing** command opens the XML document in XMLSpy, where it can be edited.

Assigning a schema to the DB XML file
It is when the DB XML file is opened for editing in XMLSpy that the **IBM DB2 | Assign XML Schema** command is enabled. With the XML document active in XMLSpy, clicking the **Assign XML Schema** command pops up the Choose XML Schema dialog (*screenshot below*).



A schema can be selected from among those stored in the database (these are listed in the dropdown list of the Schema from Database combo box), or from among external files that can be browsed. Clicking **OK** assigns the schema to the XML file. Note that the assignment is not written into the XML file. When the XML file is saved in XMLSpy—and if the Auto-Commit XML changes icon in the Query Database toolbar was selected when the document was opened—then the schema assignment is saved to the database. Note that the schema assignment is written to the database—and not to the XML file.

Note: The Edit XML menu in the Result Grid of the Database Query window also has an **Assign XML Schema** command (*see screenshot below*), which also assigns a schema to the DB XML file.



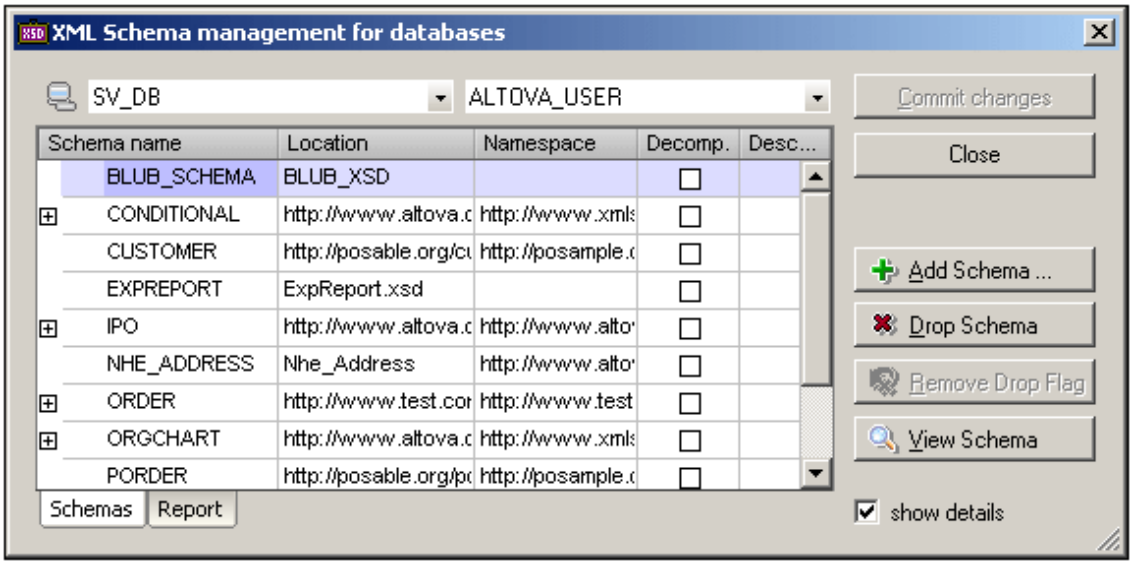
The difference between the two Assign XML Schema commands is that the command in the **DB | IBM DB2** menu enables you to assign an XML Schema while you are editing the XML file thereby allowing you to change schema assignments while editing the XML document and to validate the XML document immediately.

18.9.4 SQL Server

The **SQL Server** menu item rolls out a submenu containing the Manage XML Schemas command.

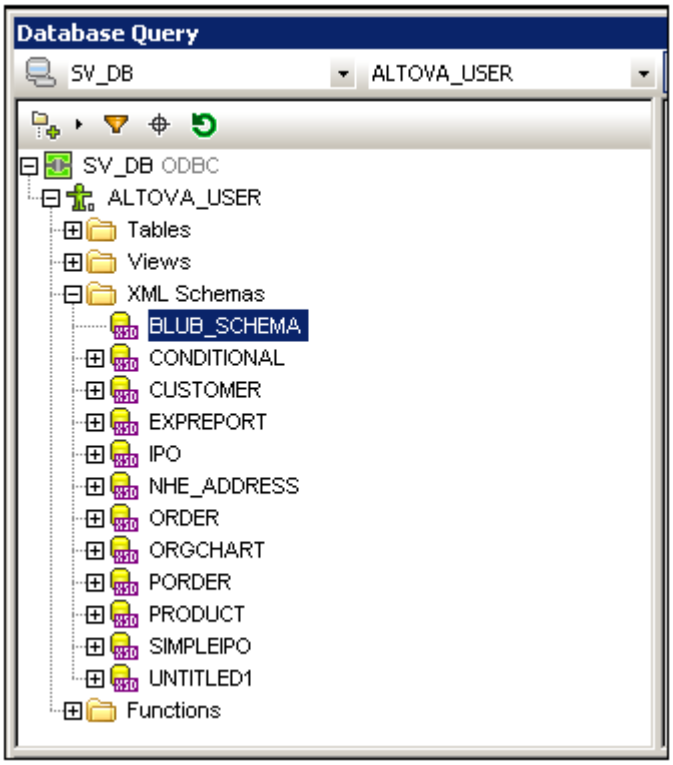
Manage XML Schemas

XML Schema management for databases enables you to add and delete XML Schemas from the schema repository of an XML database. After connecting to the database, XMLSpy provides the XML Schema Management for Databases dialog, in which XML Schemas can be managed.



The dialog box provides a Quick Connect icon which calls the Quick Connect wizard to connect to a data source. If more than one connection currently exists, the required connection can be selected from the combo box on the to left-hand side. The required root object can then be selected from the right-hand side combo box. All the XML Schemas currently in the repository for that root object are displayed in the dialog box. The name, location, and namespace of each schema are listed, as well as the option for decomposition..

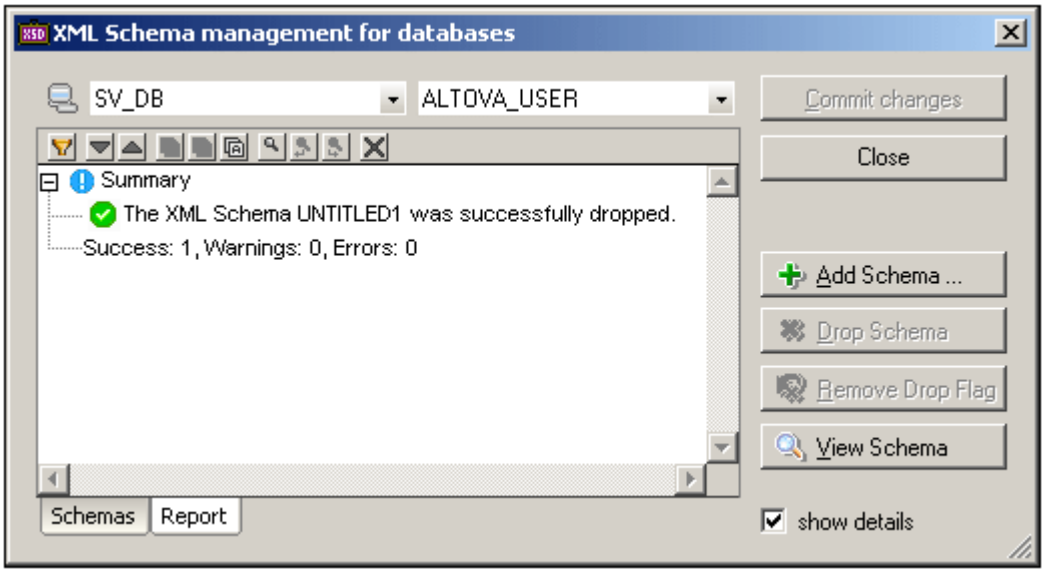
Note that the stored schemas can also be viewed in the Database Query window (*screenshot below*), but they cannot be managed there. To manage schemas, use the XML Schema Management for Databases dialog.



In the XML Schema Management dialog you can do the following:

- Add a schema using the **Add Schema** button. The selected schema will be appended to the list and marked for addition.
- Mark schemas in the list for deletion with the **Drop Schema** button. The Drop flag can be removed with the **Remove Drop Flag** button.
- Open a selected schema in Schema View by clicking the **View Schema** button.
- Commit the addition and drop (deletion) changes with the **Commit Changes** button.

After changes have been committed, a report of the commit action can be viewed in the Report tab (*screenshot below*).

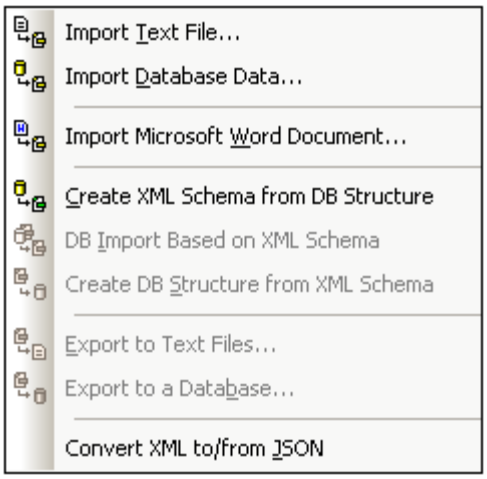


18.10 Convert Menu

XMLSpy provides powerful data exchange functions that allow you to:

- Import and export text, word processor, database, and XML files.
- Import database data based on an existing XML Schema.
- Create an XML Schema based on the structure of an existing database.
- Create a **database structure**, based on an existing XML schema

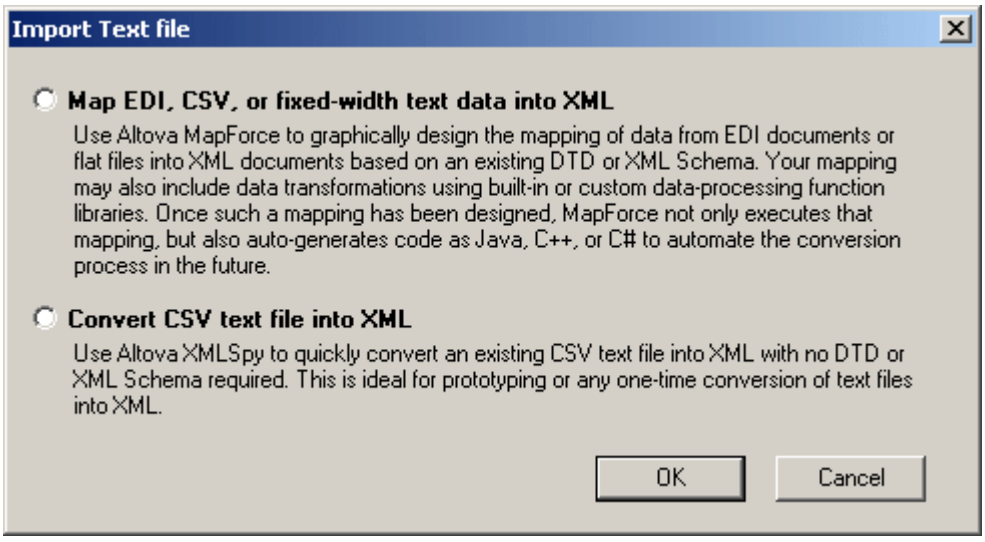
These functions are available in the **Convert** menu (*screenshot bvelow*).



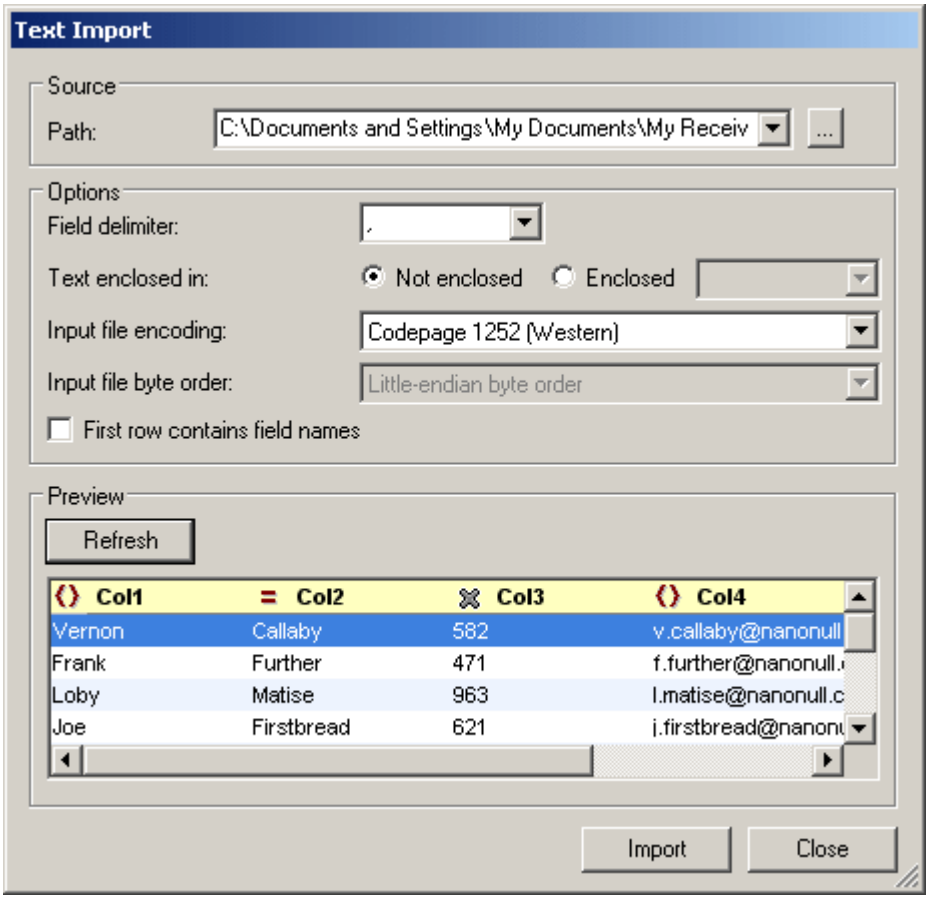
18.10.1 Import Text File

This command lets you **import** any **structured text** file into XMLSpy and convert it to XML format immediately. This is useful when you want to import legacy data from older systems. The steps for importing data in a text file as an XML document are described below.

1. Select the menu item **Convert | Import Text File**. The following dialog appears:



2. Select one of the following:
   - Map EDI, CSV, or fixed-width text data into XML (you must have installed Altova MapForce in order to select this option)
   - Convert CSV text file into XML
3. Click **OK**. The Text import dialog appears (*screenshot below*). How to use this dialog is described below.



Path
Enter the path to the file to import in the Path text box, or select the file using the Browse button to the right of the text box. After the file is selected, a Grid View preview of the XML file is displayed in the Preview pane. Any change in the options selected in this dialog will be reflected in the preview immediately.

Delimiter
To successfully import a text file, you need to specify the field delimiter that is used to separate columns or fields within the file. XMLSpy will auto-detect common row separators (CR, LF, or CR+LF).

String quotes
Text files exported from legacy systems sometimes enclose textual values in quotes to better distinguish them from numeric values. If this is the case, you can specify what kind of quotes are being used in your file, and remove them automatically when the data is imported.

Encoding
The data is converted into Unicode (the basis of all XML documents), so you need to specify which character-set the file is currently encoded in. For US or Western European Windows systems this will most likely be Codepage 1252, also referred to as the ANSI encoding.

Byte order
If you are importing 16-bit or 32-bit Unicode (UCS-2, UTF-16, or UCS-4) files, you can also switch between little-endian and big-endian byte order.

First row contains column names
It is also very common for text files to contain the field names in the first row within the file. If this is the case, check this check box.

Preview
In the Preview pane you can rename column headers by clicking in a name and editing it. The column headers will be the element or attribute names in the XML document. You can also select whether a column should be an element or an attribute in the XML document, or whether it should not be imported into the XML document. Click the column-type icon in each column header to toggle through these options. In the screenshot above, `Col1` is an element, `Col2` is an attribute, and `Col3` will not be imported.

When you are satisfied with the options, click **Import**. The imported data is converted into an XML document that is displayed in Grid View.

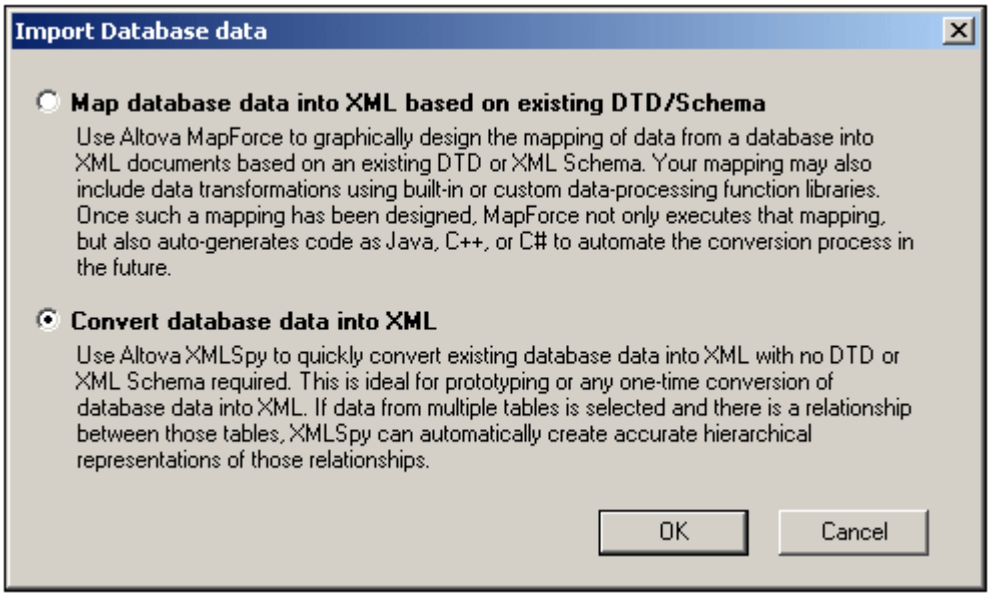
18.10.2 Import Database Data

The **Import Database Data** command enables you to import data from any of a variety of databases into an XML file. The import mechanism involves two steps:

1. A connection to the database is established.
2. The data to be imported is selected.

To import database data, do the following:

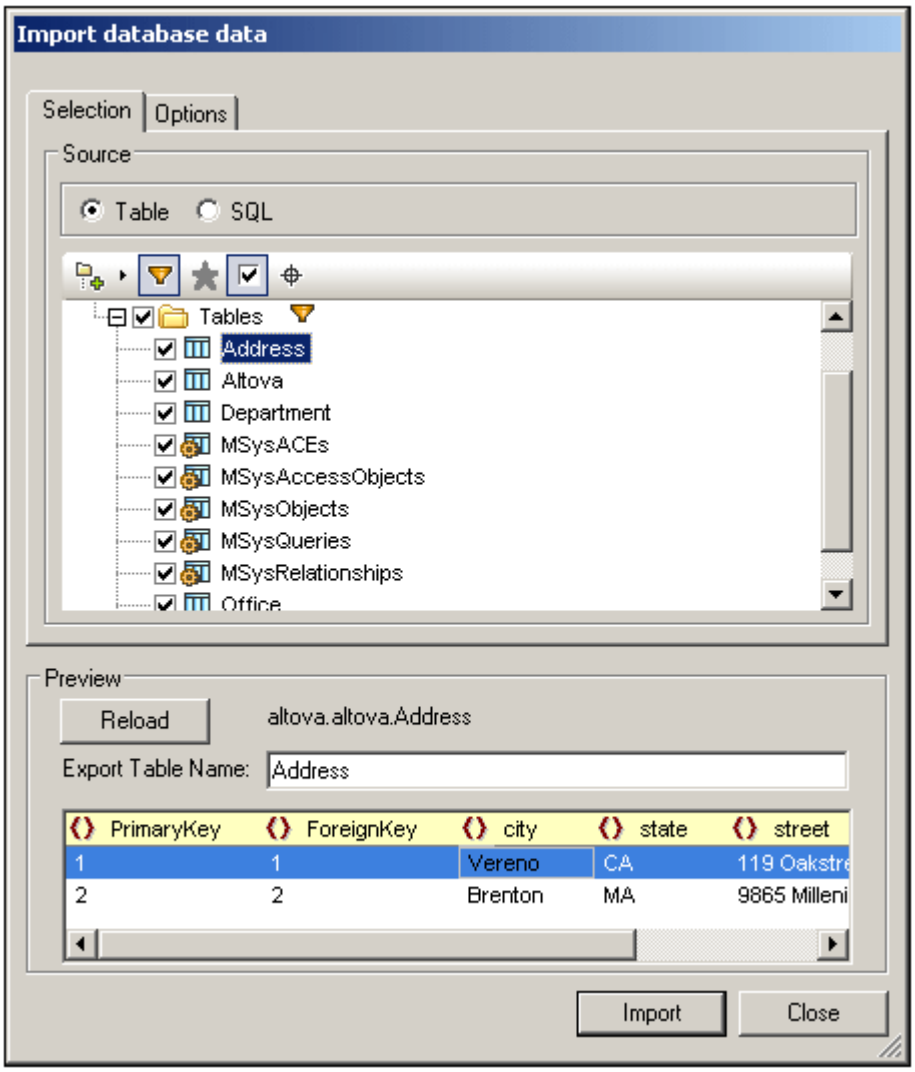
1. When you click the Import Database Data command, the Import Database Data dialog (screenshot below) pops up.



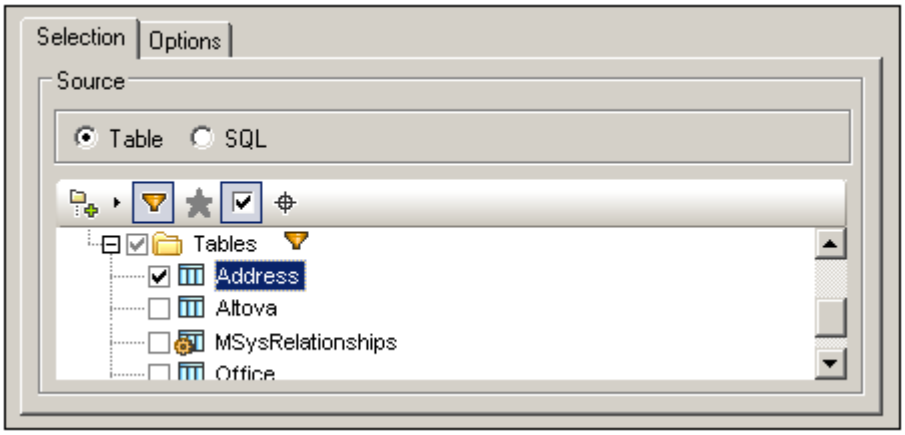
2. Select Convert Database Data into XML and click **OK**. The Connect to a Data Source dialog appears. (The Map Database Data into XML Based on Existing DTD/Schema option requires the use of Altova MapForce to carry out the mapping.)
3. In the Connect to Data Source dialog, you establish a connection to the database. How to do this for different types of databases is explained in the section, Connecting to a Data Source.
4. After the connection to the database is established, the Import Database Data dialog displays tabs and windows that enable you to select the database data to import. These options are described below. After finishing, click the **Import** button to import the database data.

Data selection and import options
The Import Database Data dialog for setting the selection and import options consists of two parts (*shown separately in the screenshots below*):

- an upper part with two tabs: (i) Selection, and (ii) Options.
- a lower part, which is a Preview window showing the data according to the data selection and import options.



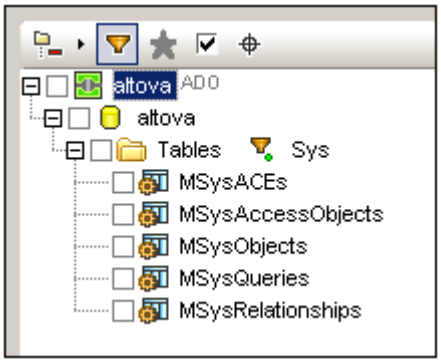
Selection tab
In the Selection tab (*screenshot above*), the Source pane (*screenshot below*) displays either a representation of the tables of the database or an editable SQL statement for selecting the required tables, each view being selected by clicking the respective radio button.



In the Table view, you can select the tables in the database that you want to import by checking the table's check box (*screenshot above*). The contents of the table can then be displayed in the Preview pane. The table selection can be further filtered in the Preview pane (*see below*).

The database structure can be displayed differently and can be filtered. The Layout icon  in the Source pane enables you to organize database objects into: (i) folders based on object type; (ii) folders based on object type, but without schema folders; (iii) in a hierarchy, but without folders; and (iv) categories of tables, based on their relationships with other tables.

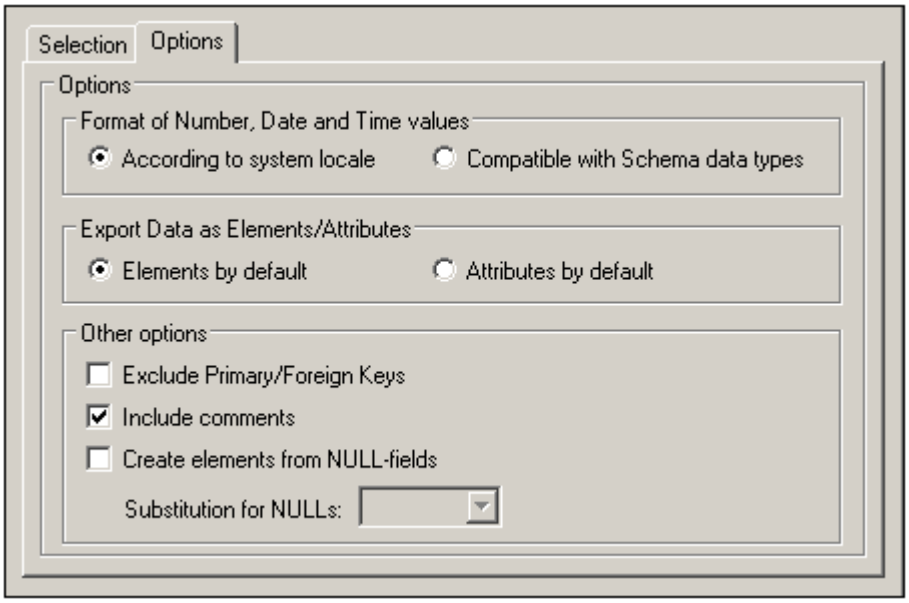
Clicking the Filter Folder Contents  icon applies a filter to the selected folder (*in the screenshot below, to the Tables folder*). Clicking the filter icon on the table pops out a menu with a list of filter possibilities. In the screenshot below, the filter has been set to display objects that contain the text `Sys` in its name. The view is filtered accordingly.



Clicking the Object Locator icon  pops up a text field, which behaves like a Search entry field. You can enter a text string and the dropdown list will display all the objects whose names contain that text string. Selecting one of these objects from the dropdown list will highlight that object in the tree.

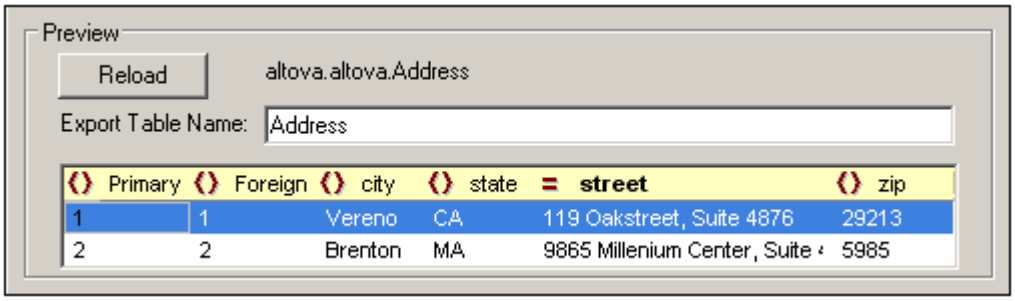
Options tab

In the Options tab (*screenshot below*), you can specify how number, date, and time values are to be imported; whether data is imported as elements or attributes; and whether comments and `NULL` fields are to be included in the import.



When `NULL` fields are enabled for import, you can enter a substitution XML value for them.

Preview pane
The Preview pane (*screenshot below*) displays the structure of the table currently selected in the Selection tab. When a new table is selected in the Selection tab, click the Preview button in the Preview pane to display the table. Click the Refresh button to refresh the preview.



A field can be specified to be imported as an element or attribute, or not to be imported, by clicking the symbol to the left of the column name. You can click through the element, attribute, and ignore options. In the screenshot above, the `city` field, for example, has been set to be imported as an element while the `street` field has been set to be imported as an attribute.

Datatype conversions
Information about the conversion of database datatypes to XML Schema datatypes is listed in the Appendices.

18.10.3 Import Microsoft Word Document

This command enables the direct **import** of any **Word document** and conversion into XML

format if you have been using paragraph styles in Microsoft Word. This option requires Microsoft Word or Microsoft Office (Version 97 or 2000).

When you select this command, the Open dialog box appears. Select the Word document you want to import.

XMLSpy automatically generates an XML document with included CSS stylesheet. Each Word paragraph generates an XML element, whose name is defined as the name of the corresponding paragraph style in Microsoft Word.

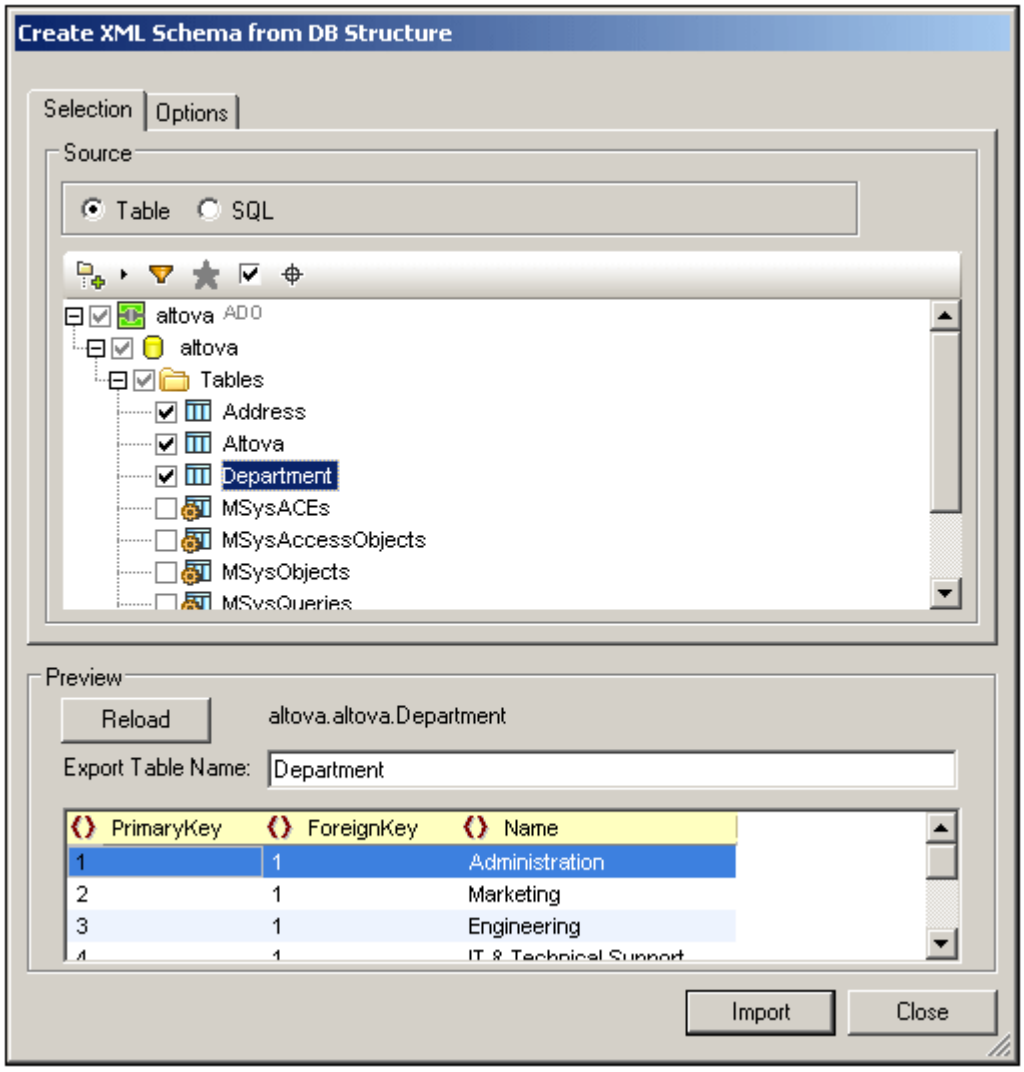
18.10.4 Create XML Schema from DB Structure

The **Create XML Schema from DB Structure** command enables you to create an XML Schema from the structure of any of a variety of databases. The XML Schema-creation mechanism involves two steps:

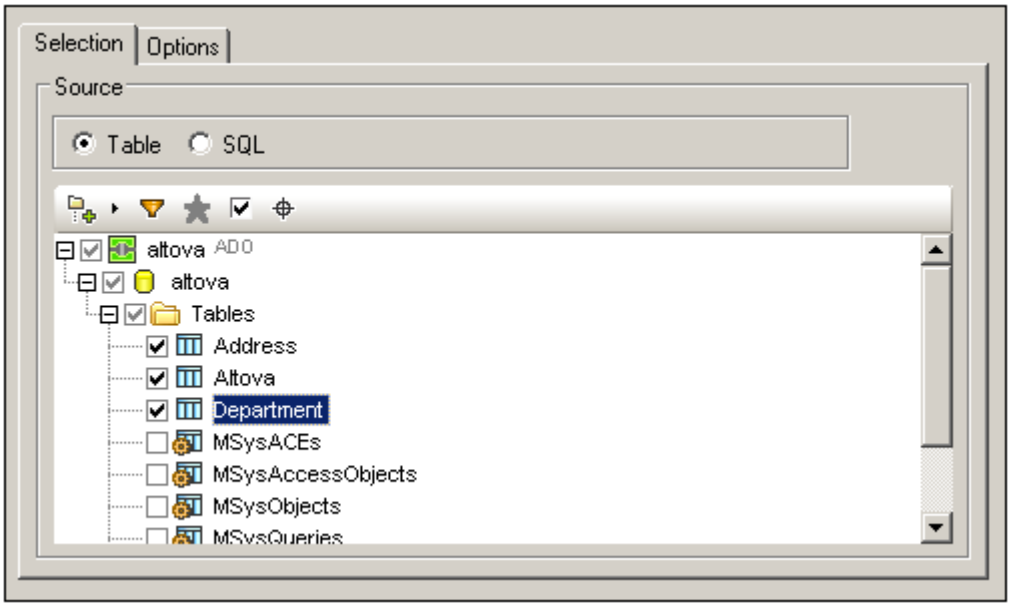
1. A connection to the database is established.
2. Options for the database data selection and the XML Schema are specified.

To create an XML Schema from a DB structure you would do the following:

1. When you click the **Create XML Schema from DB Structure** command, the Connect to Data Source dialog appears.
2. In the Connect to Data Source dialog, you establish a connection to the database. How to do this for different types of databases is explained in the section, Connecting to a Data Source.
3. After the connection to the database is established, the Create XML Schema from DB Structure dialog (*screenshot below*) displays tabs and windows that enable you to select the database structure to import. These options are described below. After finishing, click the **Import** button to import the database data.

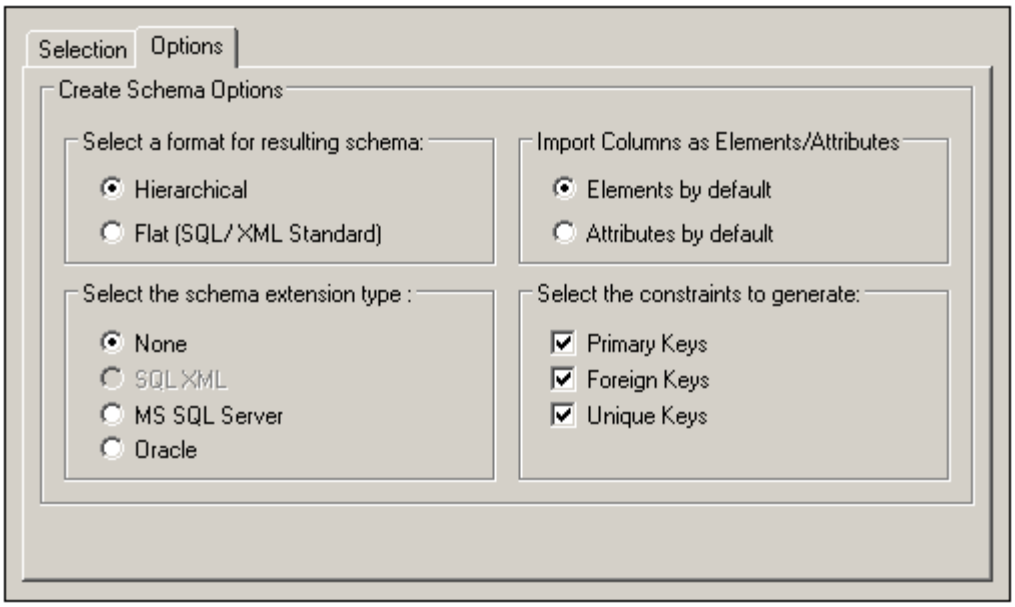


Selection tab
In the Selection tab (*screenshot below*), the data source is listed in the Source Database pane. The Source pane displays either a representation of the tables of the database or an editable SQL statement for selecting the required tables.



In the Table view, you can select the tables in the database that you want to import by checking the table's check box (*screenshot above*). The contents of the table can then be displayed in the Preview pane. The table selection can be further filtered in the Preview pane (*see below*). You can configure the display in the Source pane as described in the section Import Database Data.

Options tab
In the Options tab (*screenshot below*), you can specify the format of the schema, its extension type, whether columns should be imported as elements or attributes, and the database constraints that should be generated in the schema.



Schema format: You can select between a flat (SQL/XML Standard) and a hierarchical schema form

- The **flat** schema model is based on an ISO-ANSI Working draft titled XML-Related

Specification (SQL/XML) (Henceforth referenced as the" SQL/XML Working Draft"). The SQL/XML Working Draft defines how to map databases to XML. Relationships are defined in schema using identity constraints and there are no references to elements. Hence the schema is flat structure which resembles a tree-like view of the database. For more information on the SQL/XML working draft please see: http://www.sqlx.org/SQLXdocs

- The **hierarchical** schema model displays the table dependencies visually, in a type of tree view where dependent tables are shown as indented child elements in the content model. Table dependencies are also displayed in the Identity constraints tab. Tables are listed as global elements in the schema, and columns are the elements or attributes of these global elements (The user decides whether to map the columns as elements or as attributes). Relationships are created in a hierarchical way so that a foreign key field in one table is actually a reference to the global element that represents that table.

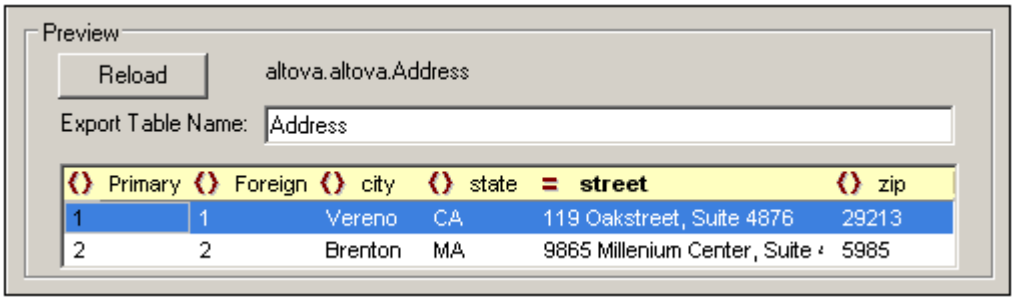
Schema extension type: Schema extension information is additional information read from a database that is then embedded in the schema as either annotation data or attributes. There are four extension type options when generating schemas: (i) no extensions information; (ii) SQL/XML extensions; (iii) MS SQL Server extensions; and (iv) Oracle extensions. These are described below:

- **None**: No additional information is provided by the database.
- **SQL XML:** SQL/XML extensions are only inserted when generating schemas in a Flat Format. The extension information is stored in annotations, and is described in the SQL/XML Working Draft.
- **MS SQL Server:** Selecting Microsoft SQL Server, generates SQL Server extensions. See *Using Annotations in XSL Schemas* in the SQL Server Books Online for detailed information (Download from http://www.microsoft.com/sql/techinfo/productdoc/2000/books.asp). The following subset of annotation data are generated in the schema: `sql:relation`, `sql:field`, `sql:datatype`, `sql:mapped`.
- **Oracle:** Oracle extensions are selected by default when working with an Oracle database. Additional database information is stored as attributes. A full description of these attributes can be found at http://download-west.oracle.com/docs/cd/B10501_01/appdev.920/a96620/xdb05obj.htm#1027227. The following subset of attributes is currently generated: `SQLName`, `SQLType`, `SQLSchema`.

Note: Although SQL Server and Oracle extensions can be generated for their respective databases they are not restricted in this way. This proves useful when working with a third database and wanting to generate a schema that later should be working with either SQL Server or Oracle.

Preview pane

The Preview pane (*screenshot below*) displays the structure of the table currently selected in the Selection tab. When a new table is selected in the Selection tab, click the Refresh button in the Preview pane to refresh the preview.



A field can be specified to be imported as an element or attribute, or not to be imported, by clicking the symbol to the left of the column name. You can click through the element, attribute, and ignore options. In the screenshot above, the `city` field, for example, has been set to be imported as an element while the `street` field has been set to be imported as an attribute.

Datatype conversions
Information about the conversion of database datatypes to XML Schema datatypes is listed in the Appendices.

18.10.5 DB Import Based on XML Schema

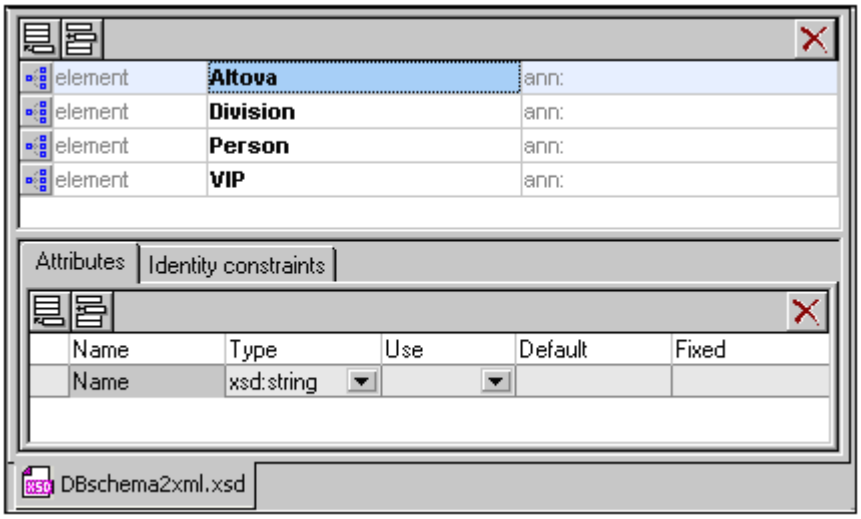
The **DB Import Based on XML Schema** command creates an XML document which is valid according to a given XML Schema and contains data imported from a database. For this feature, the following databases are supported:

- Microsoft Access 2000 and 2003
- Microsoft SQL Server
- Oracle
- MySQL
- Sybase
- IBM DB2

The data to be imported is determined by the table that is selected in the database. With the required XML Schema (that on which you wish to base the import) as the active document in Schema View, connect to the database. Then select the table/s you wish to import, and click Import. The data is imported into an XML document, and the document has the structure of the XML Schema that was active when the data was imported.

In the example below, data from an MS Access database is imported with an XML Schema active in Schema View. These would be the steps to carry out for the import:

1. Open the schema file in Schema View (*screenshot below*).



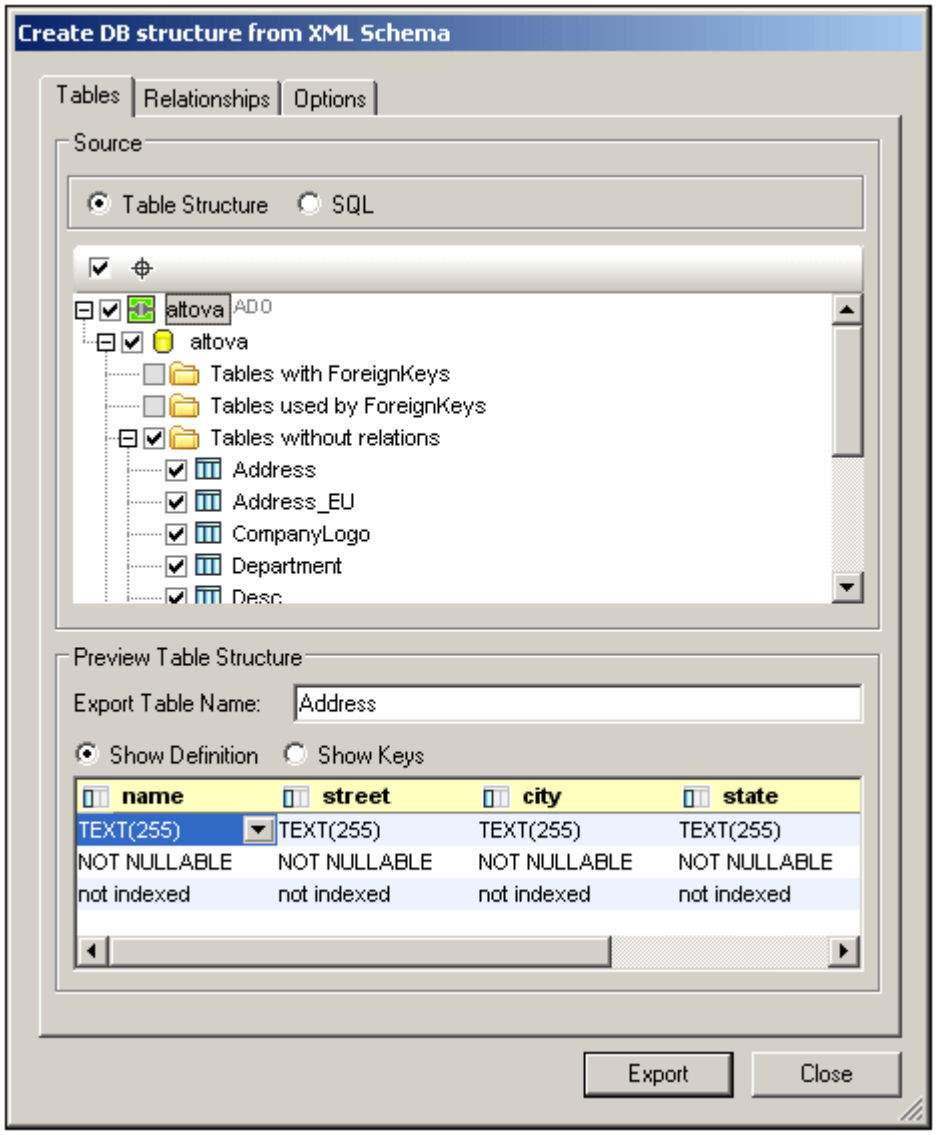
2. Select the menu command **DB Import based on XML Schema**. This opens the Connect to Data Source dialog.
3. Select the Microsoft Access (ADO) option and click **Next**.
4. Click **Browse** and select the database file. Then click **Next**.
5. In the DB Import Based on XML Schema dialog which pops up, go to the Tables tab, select one or more tables you wish to import (for example, `Altova`), then click **Import**. The table is imported into an XML document that is displayed in Grid View.

Datatype conversions
Information about the conversion of database datatypes to XML Schema datatypes is listed in the Appendices.

18.10.6 Create DB Structure from XML Schema

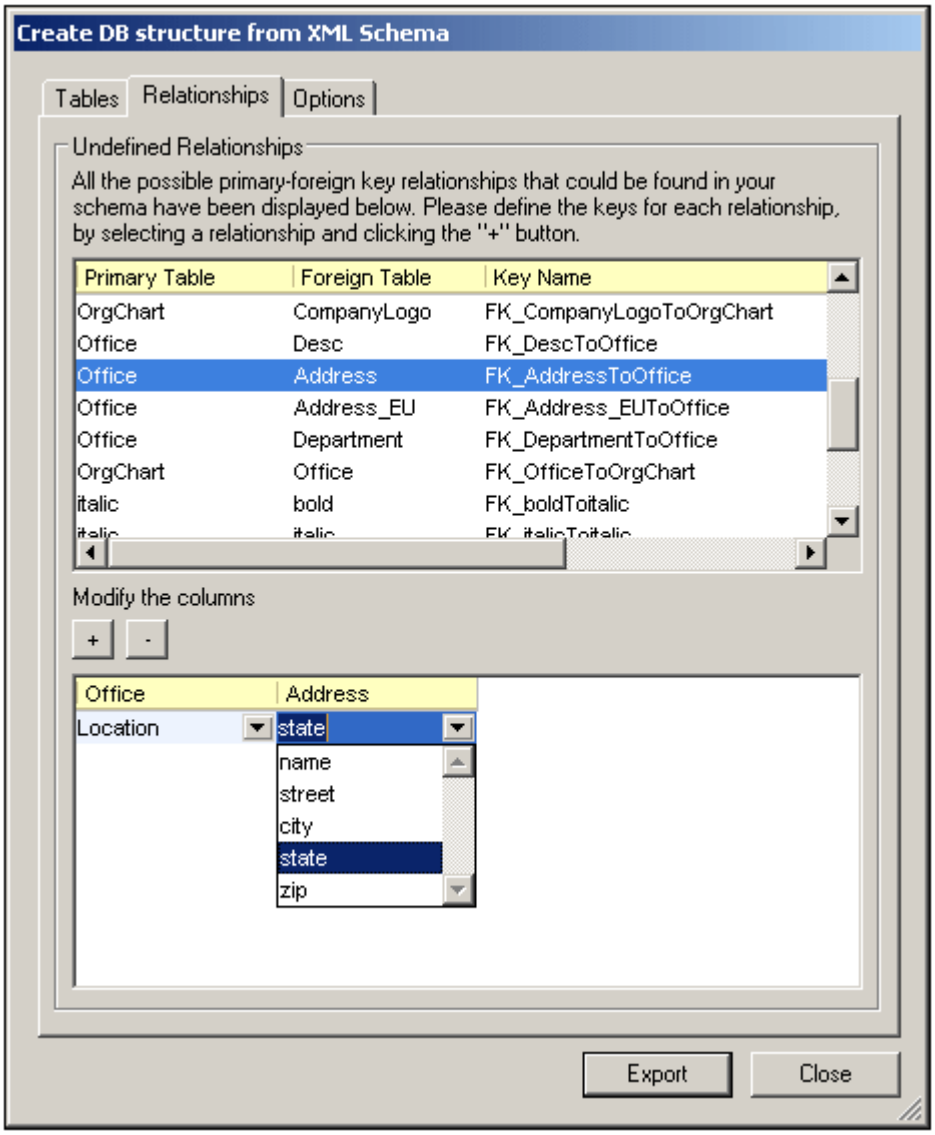
XMLSpy allows you to create an empty database (or skeleton database) based on an existing schema file. The method described below is generally the same for each type of database.

1. Open the schema file in Schema/WSDL View
2. Select the menu command **Convert | Create DB Structure from XML Schema**. This pops up the Connect to a Data Source dialog, which enables you to connect to a database (DB).
3. Use the steps described in the section Connecting to a Data Source to connect to the required database. For example, to connect to a Microsoft Access database, select the Microsoft Access radio button, and continue the process to select a database. You can use an existing database or create a new database in which the schema structure will be contained.
4. In the Create DB Structure from XML Schema dialog, tables are created from the schema and displayed in a tree format at the location where they they will occur in the DB. For example, in the screenshot below, the Address table is created and selected for export. Tables that should not be exported should be deselected (by unchecking the check box or selecting the appropriate item from the context menu for that table).



Creating DB tables with relationships
If the XML Schema from which the DB structure is generated has relationships defined in the form of identity constraints, then these relationships are automatically created in the generated DB structure and displayed in the Table Structure. Tables with relationships are listed under the sections: Tables with ForeignKeys and Tables used by ForeignKeys. Tables without relationships are listed in the Independent Tables section.

In the Relationships tab, you can create and modify table relationships. The tab lists all possible primary-key/foreign-key relationships (*screenshot below*).



To create a relationship, do the following:

1. Select one of the possible primary-key/foreign-key relationships.
2. In the lower pane of the dialog, click the Plus button to create a relationship.
3. Select the required columns in each of the two tables from the respective dropdown lists.

You can also remove a relationship by selecting it and then clicking the Minus button.

Notes on database structure and connecting

The schema structure, defined by the identity constraints, is mirrored in the resulting database. The table below shows the type of database created, the restrictions, and the connecting methods, when using the **Create DB Structure from XML Schema** menu command.

	Directly	using ODBC	using ADO
MS Access (2000 and 2003)	OK *	OK	OK

MS SQL Server	OK *	OK	OK
Oracle	OK *	OK	OK
MySQL	-	OK *	OK ⌖
Sybase	-	OK *	OK
IBM DB2	-	OK *	OK

* *Recommended connection method for each database.*
⌖ *MySQL: When creating the ADO connection based on ODBC, it is recommended to use either the User or System DSN.*
\- *Not supported*

XMLSpy will map both hierarchical and flat formatted schemas. XMLSpy recognizes both formats automatically.
The flat format is mapped to SQL in two different ways.

- SQL Server DB, Oracle DB, or Sybase DB:
  A schema that was generated in flat format, for one of the above databases, will have the schema catalog name extracted and used in the generated SQL script as the DB name. This means that the resulting SQL script will be executed on a target DB whose name must be identical to the schema catalog name.
- Access (2000 or 2003), MySQL, or DB2 DB:
  A schema that was generated in flat format, for one of the above databases, will **ignore** the schema catalog name when the SQL script is generated. This means that the resulting SQL script will be executed on a target database that was logged into.

Datatype conversions
Information about the conversion of XML Schema datatypes to database datatypes is listed in the Appendices.

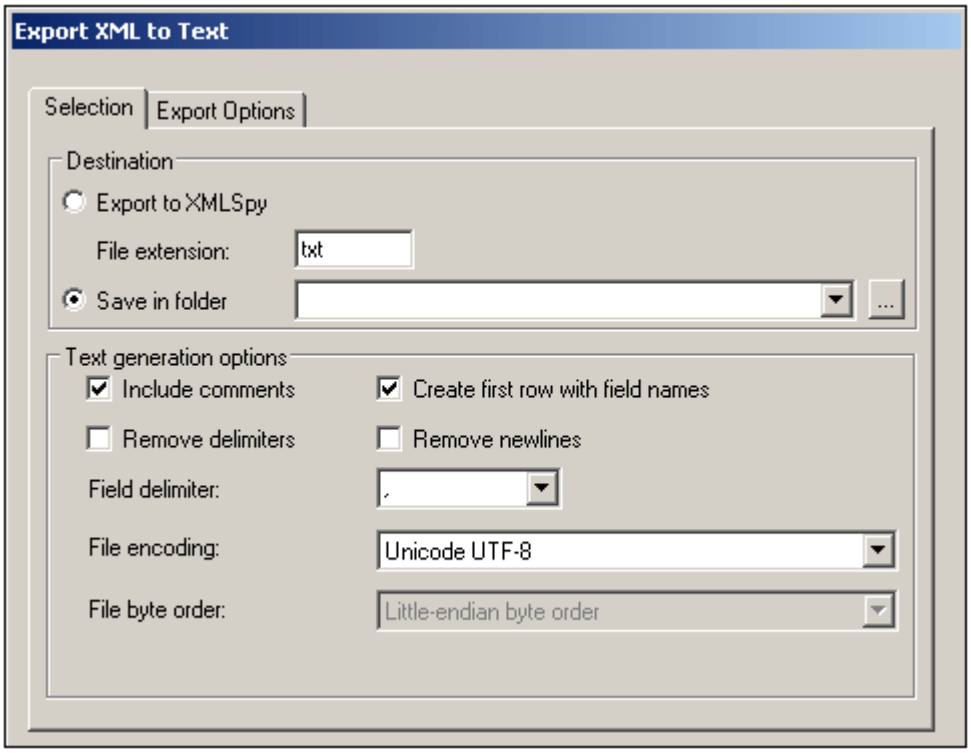
18.10.7 Export to Text Files

The command **Convert | Export to Text Files** exports XML data into text formats for exchange with databases or legacy systems. On clicking this command, the Export XML to Text dialog pops. It consists of two parts (*shown separately in the screenshots below*):

- an upper part with two tabs: (i) Selection, and (ii) Export Options.
- a lower part, which is a Preview window.

After you have selected the desired options in this dialog (*described below*), click the **Export** button to export to text file/s.

Selection
In the Selection tab (*screenshot below*), you can select the destination of the file to be exported and text generation options.



Destination: The exported file can be saved directly to a folder. The file extension can be specified. The filenames will be those of the elements (in the XML file) that will be exported. Alternatively, untitled files can be exported to XMLSpy. These files will be displayed in the GUI, and can be saved later.

Include comments: Activate this option to include a comment in the exported XML file that shows the SQL query used to select the data, as well as a list containing one item for each column header in the database table.

Create first row with field names: When activated, the exported tables include the database column names.

Remove delimiters: Removes delimiters that are contained in text values in the exported data. Set the delimiter you want to remove by using the Delimiter combo box in this tab. For example, if this option is activated and the selected delimiter is the apostrophe, when you export the XML value `Ba' ker`, the string will be `Baker` in the exported text.

Remove newlines: Removes newlines from exported data.

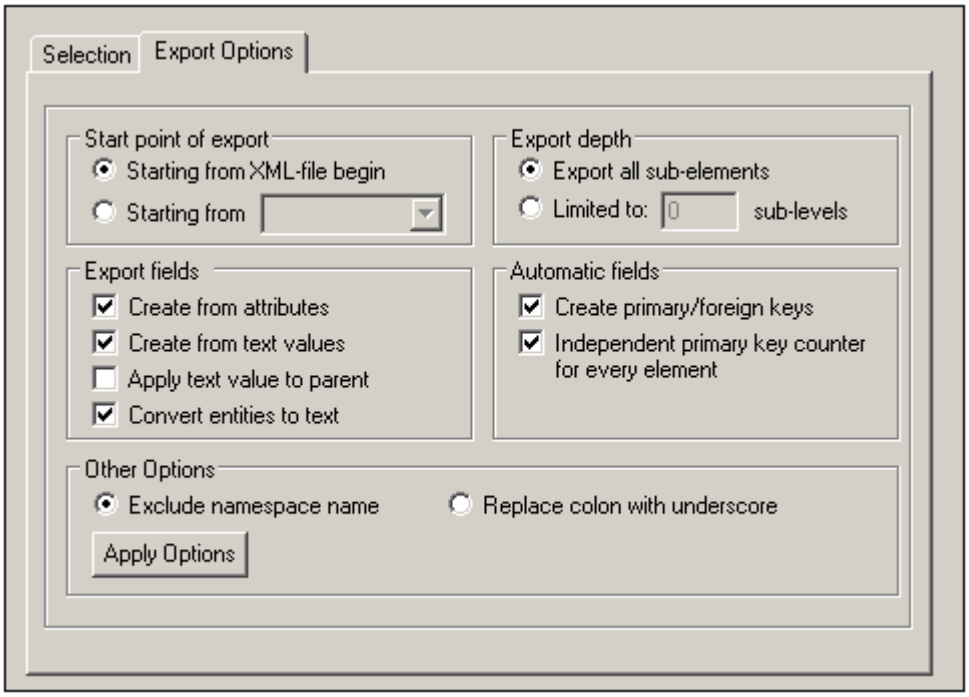
Delimiter: Select from the drop-down list the character that you wish to have removed during export. Alternatively, enter the desired character string.

Encoding: Select from the drop-down list, the desired encoding for files that are generated during export.

Byte order: If you are exporting 16-bit or 32-bit Unicode (UCS-2, UTF-16, or UCS-4) files, you can also switch between little-endian and big-endian byte order.

Export Options

Additional export options, which are described below, can be specified in the Export Options tab (*screenshot below*):



Start point of export: You can choose to export the entire XML document or restrict your export to the data hierarchy starting from the currently selected element. The number of sub-levels below the start point that will be exported is specified in the Export Depth option.

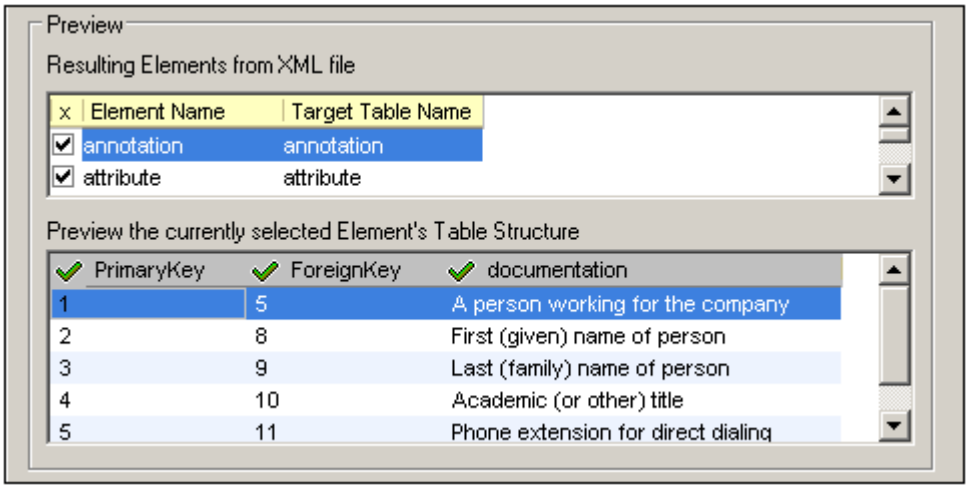
Export depth: Specifies the number of sub-levels below the start point that will be exported.

Export fields: Depending on your XML data, you may want to export only elements, attributes, or the textual content of your elements. Note that you can deselect the export of individual elements in the Preview window.

Automatic fields: XMLSpy will produce one output file or table for each element type selected. You can choose to automatically create primary/foreign key pairs to link your data in the relational model, or define a primary key for each element.

Exclude namespace name: Together with the Replace Colon With Underscore radio button this is an either/or choice. Specifies whether namespace prefixes of elements and attributes should be excluded or whether the colon in the namespace prefix should be replaced with an underscore.

Preview window
The Preview window (*screenshot below*) is displayed below the Selection and Export Options tab.



The Resulting Elements from XML File pane shows the node name that will be exported and the name in the generated file. You can select/deselect nodes that will be exported. When an element is selected, a preview of its structure is shown in a second pane below. In this pane, clicking to the left of a column name toggles the export of that column on and off.

18.10.8 Export to a Database

The command **Convert | Export to a Database** exports XML data to a database. On clicking this command, the Connection Wizard starts up and enables you to set up a connection to the database you wish to update. After a connection has been established, the Export Data to Database dialog pops. It consists of two parts (*shown separately in the screenshots below*):

- an upper part with two tabs: (i) Selection, and (ii) Export Options.
- a lower part, which is a Preview window.

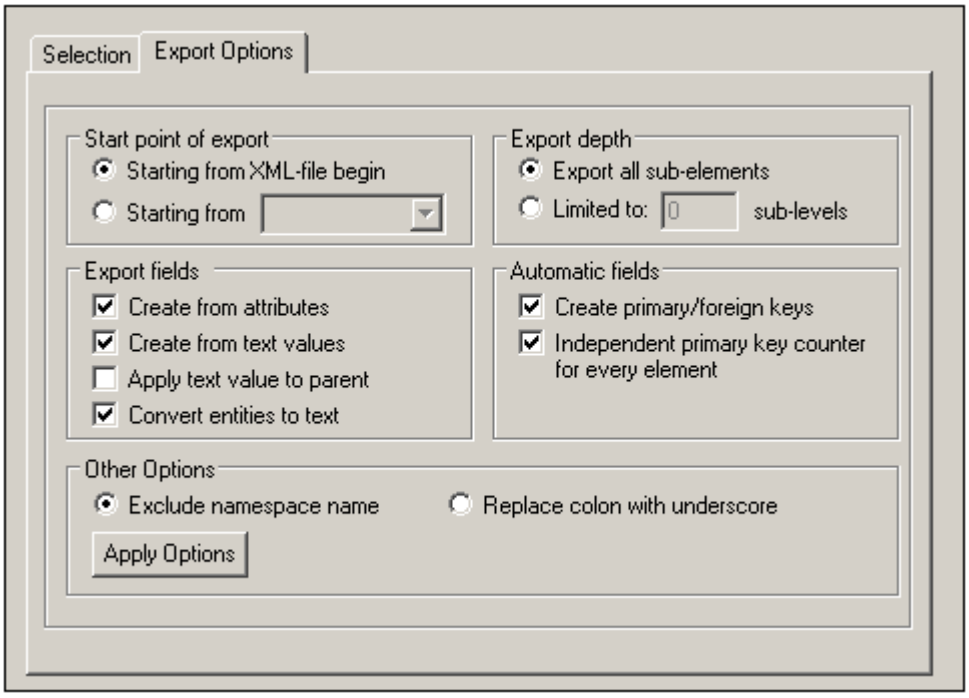
After you have selected the desired options in this dialog (*described below*), click the **Export** button to export to the database.

Selection

In the Selection tab, you can select the destination database and table generation options. The destination field selects the connection to the database. You must select whether the data is created as new tables, updates existing tables, or first tries to update an existing table and then creates a new table if an an update is not possible. You can also set a stop action based on the number of errors, and, optionally, SQL script logging.

Export Options

Export options, which are described below, can be specified in the Export Options tab (*screenshot below*):



Start point of export: You can choose to export the entire XML document or restrict your export to the data hierarchy starting from the currently selected element. The number of sub-levels below the start point that will be exported is specified in the Export Depth option.

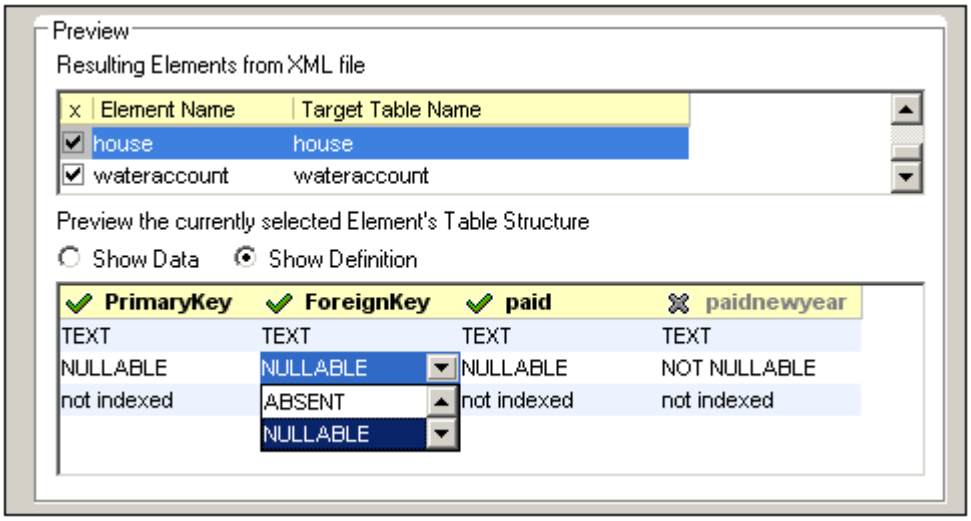
Export depth: Specifies the number of sub-levels below the start point that will be exported.

Export fields: Depending on your XML data, you may want to export only elements, attributes, or the textual content of your elements. Note that you can deselect the export of individual elements in the Preview window.

Automatic fields: XMLSpy will produce one output file or table for each element type selected. You can choose to automatically create primary/foreign key pairs to link your data in the relational model, or define a primary key for each element.

Exclude namespace name: Together with the Replace Colon With Underscore radio button this is an either/or choice. Specifies whether namespace prefixes of elements and attributes should be excluded or whether the colon in the namespace prefix should be replaced with an underscore.

Preview window
The Preview window (*screenshot below*) is displayed below the Selection and Export Options tab.



The Resulting Elements from XML File pane, shows the node name that will be exported and the name in the generated file. You can select/deselect nodes that will be exported. When an element is selected, a preview of its structure is shown in a second pane below. In this pane, clicking to the left of a column name toggles the export of that column on and off. In the screenshot above, the `paidnewyear` column has been toggled off, so it will not be exported.

When the element's table structure shows the data, the key constraint type can be set by clicking to the left of a column name. When the element's table structure shows field definitions, the definitions can be edited by selecting the definition and selecting an option from the definition's combo box (*see screenshot above*).

18.10.9 Convert XML to/from JSON

The **Convert XML to/from JSON** command converts the active document, if XML, to a JSON document. If the active document is a JSON document, clicking the **Convert XML to/from JSON** command will convert the JSON document to an XML document. The generated document can then be saved to any location.

JSON (JavaScript Object Notation) is a data interchange format based on a subset of JavaScript and is commonly used with JavaScript code. Code for parsing JSON is widely available for many programming languages.

XMLSpy provides intelligent editing features for JSON documents. These are described in the JSON Editing Features section of the documentation.

Given below is an example of a source XML document, and, below it, the JSON document generated by the **Convert XML to/from JSON** command.

XML document

```
<?xml version="1.0" encoding="UTF-8"?>
<Person first="Jim" last="James">
  <Address>
    <street>4 New Street</street>
    <city>New York</city>
    <state>NY</state>
    <code>10123</code>
  </Address>
  <Tel type="home">
      123 123-1234
  </Tel>
  <Tel type="office">
```



```
      123 987-9876
  </Tel>
</Person>
```

JSON document

```
{
        "XML": {
                "version": 1.0,
                "encoding": "UTF-8"
        },
        "Person": {
                "first": "Jim",
                "last": "James",
                "Address": {
                        "street": "4 New Street",
                        "city": "New York",
                        "state": "NY",
                        "code": 10123
                },
                "Tel": [ { "type": "home",
                        "Text": "\r       123 123-1234\r  "}, { "type": "office",
                        "Text": "\r       123 987-9876\r  "} ]
        }
}
```

To convert a JSON document to XML, make the JSON document active and click the **Convert XML to/from JSON** command.

18.11 View Menu

The **View** menu controls the display of the active Main window and allows you to change the way XMLSpy displays your XML documents.

This section provides a complete description of commands in the **View** menu.

18.11.1 Text View

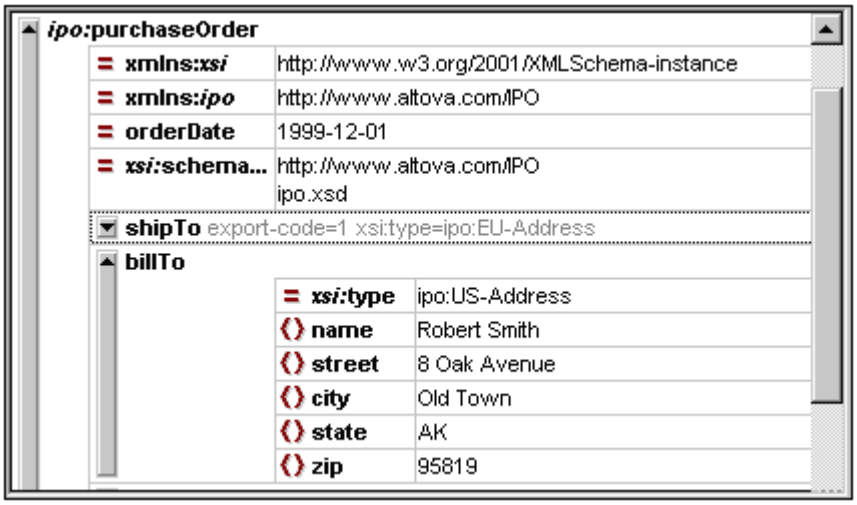
This command **switches** the current view of the document to Text View, which enables you to edit the document in its text form. It supports a number of advanced text editing features, described in detail in Text View section of this document.

Please note: You can configure aspects of the Text View using options available in the various tabs of the Options dialog (**Tools | Options**).

18.11.2 Enhanced Grid View

This command **switches** the current document into Grid View.

If the previous view was the Text View, the document is automatically checked for well-formedness.



Embedded Database/Table view
XMLSpy allows you to display recurring elements in a Database/Table View from within the Grid View. This function is available wherever the Grid View can be activated, and can be used when editing any type of XML file - XML, XSD, XSL etc.

For further information on this view, please see the Grid View section of this documentation.

18.11.3 Schema Design View

This command **switches** the current document to Schema Design View. The switch will be successful only if the document is an XML Schema document. This view is described in detail in the Schema View section of this documentation.

18.11.4 Authentic View

This command **switches** the current document into the Authentic View.

Authentic View enables you to edit XML documents **based on StyleVision Power Stylesheet templates created in StyleVision!** The templates in StyleVision are saved as **StyleVision Power Stylesheet**s (***.sps** files), and supply all the necessary information needed by Authentic View.

To **open** a template select the **File | New** command and then click the **Select a StyleVision stylesheet...** button. Please see the Authentic View documentation for further information.

Please note: If, when you try to switch to Authentic View, you receive a message saying that a temporary (temp) file could not be created, contact your system administrator. The system administrator must change the default Security ID for "non-power users" to allow them to create folders and files.

18.11.5 Browser View

This command **switches** the current document into Browser View.

This view uses an XML-enabled browser to render the XML document using information from potential CSS or XSL style-sheets.

When switching to browser view, the document is first checked for validity, if you have selected Validate upon saving in the File tab of the Options dialog. Use the menu command **Tools | Options** to open this dialog.

For further information on this view, please see the detailed description of the various views in the Main Window section.

18.11.6 Expand

Hotkey: **"+" on the numeric keypad**

This command **expands** the selected element by one level.

The command can be used in the Grid View.

In the Grid View, the element and all its children remain selected after expansion. This allows you to expand a large element by pressing the **+** key repeatedly.

You can expand and collapse any element by clicking on the gray bar to the left of each element.

18.11.7 Collapse

Hotkey: **"-" on the numeric keypad**

This command **collapses** the selected element by one level.

The command can be used in the Grid View.

You can expand and collapse any element by clicking on the gray bar to the left of each element.

18.11.8 Expand Fully

Hotkey: **"*" on the numeric keypad**

This command **expands** all child items of the **selected element**, down to the last level of nesting.

The command can be used in the Grid View.

18.11.9 Collapse Unselected

Hotkey: **CTRL** + **"-" key on the numeric keypad**

This command allows you to focus on one element and its children, and ignore all the other surrounding elements.

The command can be used in the Grid View.

Select the item that you want to work with and choose this command to collapse all other (unselected) elements.

18.11.10 Optimal Widths

This command adjusts the widths of all columns so that each has a width that exactly accommodates in one line the longest text string in any of its cells. A maximum optimal width can be specified in the View tab of the Options dialog (**Tools | Menu**). Note that optimal widths are calculated on the basis of the visible cells of columns. This enables the optimization of the view when individual elements are collapsed or expanded.

18.11.11 Word Wrap

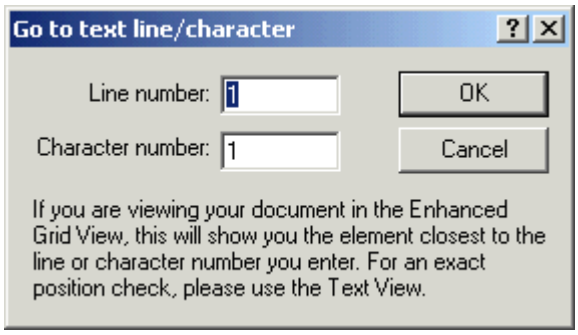
This command enables or disables word wrapping in the **Text view**.

18.11.12 Go to Line/Character

Hotkey: **CTRL**+ **g**

This command goes to a **specific line number** and/or character position in an XML document in the Text view.

If you are working with an external XSLT processor (see the XSL tab on the Tools | Options dialog for details) you may often get error messages by line number and character position. XMLSpy lets you quickly navigate to that spot, using this command:



This command works in both the Text View and Grid View, but will only be able to show an approximate position in the grid view by highlighting the element closest to the character position specified.

18.11.13Go to File

This command **opens** a document that is being **referred** to, from within the file you are currently editing.

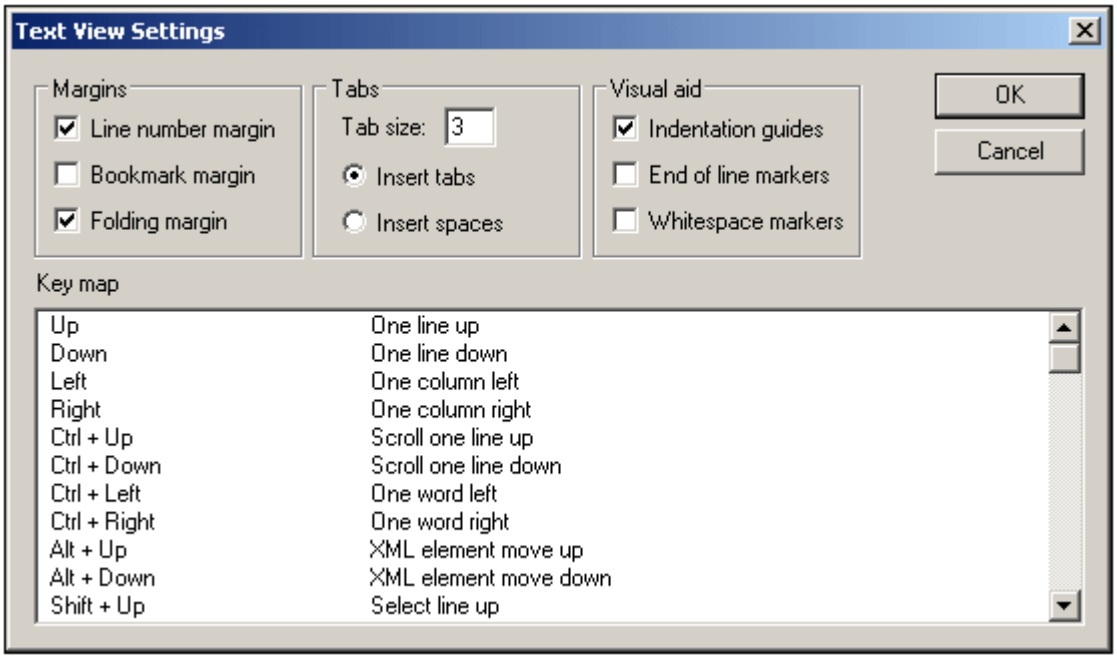
Select the file name, path name, or URL you are interested in, and choose this command from the View menu.

You can select:

- An entire element or attribute in the Grid View
- Some characters from within any item in the Text View or Grid View.
- An enclosed string. If your text cursor is between quotes, XMLSpy will automatically use the entire string that is enclosed in the quotes.

18.11.14Text View Settings

The **Text View Settings** command opens the Text View Settings dialog (*screenshot below*), in which you can configure Text View. The shortcut for the command is available as an icon in the Text toolbar.



Margins
In the Margins pane, the Line Number, Bookmark, and Source Folding margins can be toggled on and off. These are separate margins and display, respectively, line numbers, bookmarks, and source folding (icons to expand and collapse nodes). These settings determine whether the margins are displayed in Text View or not. Bookmark commands are in the **Edit** menu. To expand and collapse nodes, the Folding margin must be toggled on.

Tabs
The Tab pane enables you to set the tab size in terms of spaces. The radio buttons for inserting either tabs or spaces determine whether documents are displayed with tab or space indentation when pretty-printing with indentation is toggled on.

Visual Aid
The Visual Aid pane contains settings to toggle on indentation guides (dotted vertical lines that show the indentation of the text), end-of-line markers, and whitespace markers.

Key map
The key map is a list of XMLSpy shortcuts and their associated commands.

18.12 Browser Menu

The commands in the **Browser** menu are enabled in Browser View only.

18.12.1 Back

Backspace (Alt + Left Arrow)

In Browser View, the **Back** command displays the previously viewed page. The Backspace key also achieves the same effect. The **Back** command is useful if you click a link in your XML document and want to return to your XML document.

In Schema View, the **Back** command takes you to the previously viewed component. The shortcut key is **Alt + Left Arrow**. Using the **Back** command up to 500 previously viewed positions can be re-viewed.

18.12.2 Forward

(Alt + Right Arrow)

The **Forward** command is only available once you have used the **Back** command. It moves you forward through (i) previously viewed pages in Browser View, and (ii) previous views of schema components in Schema View.

18.12.3 Stop

The **Stop** command instructs the browser to stop loading your document. This is useful if large external files or graphics are being downloaded over a slow Internet connection, and you wish to stop the process.

18.12.4 Refresh

F5

The **Refresh (F5)** command updates the Browser View by reloading the document and related documents, such as CSS and XSL stylesheets, and DTDs.

18.12.5 Fonts

The **Fonts** command allows you to select the default font size for rendering the text of your XML document. It is similar to the Font Size command in most browsers.

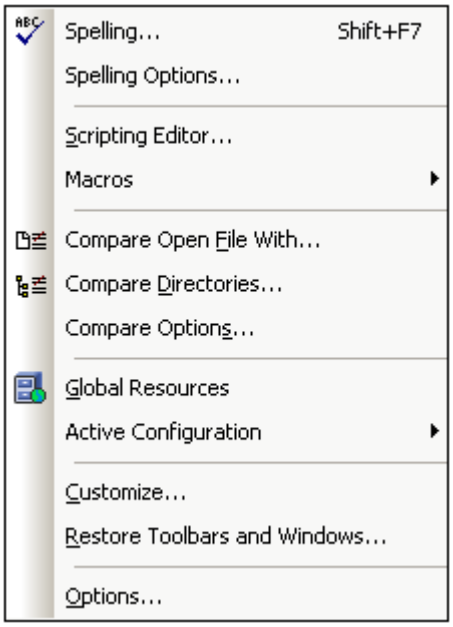
18.12.6 Separate Window

The **Separate Window** command opens the Browser View in a separate window, so that side-by-side viewing is possible. If you have separated the Browser View, press **F5** in editing view to automatically refresh the corresponding Browser View. To dock separate windows back into the interface, click the maximize button (at top right) of the active window.

18.13 Tools Menu

The tools menu allows you to:

- Check the spelling of your XML documents
- Access the scripting environment of XMLSpy. You can create, manage and store your own forms, macros and event handlers
- View the currently assigned macros
- Compare any two files to check for differences
- Compare any two folders to check for differences
- Define global resources
- Change the active configuration for global resources in XMLSpy
- Customize your version of XMLSpy: define your own toolbars, keyboard shortcuts, menus, and macros
- Define global XMLSpy settings



18.13.1 Spelling

XMLSpy's spellchecker with built-in language dictionaries (*see note below*) is enabled in Text View, Grid View, and Authentic View. If you wish to spellcheck a document that you have been editing in another view, you can switch to Text View or Grid View and run a spelling check. For example, if you have been editing an XML Schema document in Schema View, switch to Text View or Grid View for the spelling check.

Note: The selection of built-in dictionaries that ship with Altova software does not constitute any language preferences by Altova, but is largely based on the availability of dictionaries that permit redistribution with commercial software, such as the MPL, LGPL, or BSD licenses. Many other open-source dictionaries exist, but are distributed under more restrictive licenses, such as the GPL license. Many of these dictionaries are available as part of a separate installer located at http://www.altova.com/dictionaries. It is your choice as to whether you can agree to the terms of the license applicable to the dictionary and whether the dictionary is appropriate for your use with the software on your computer.

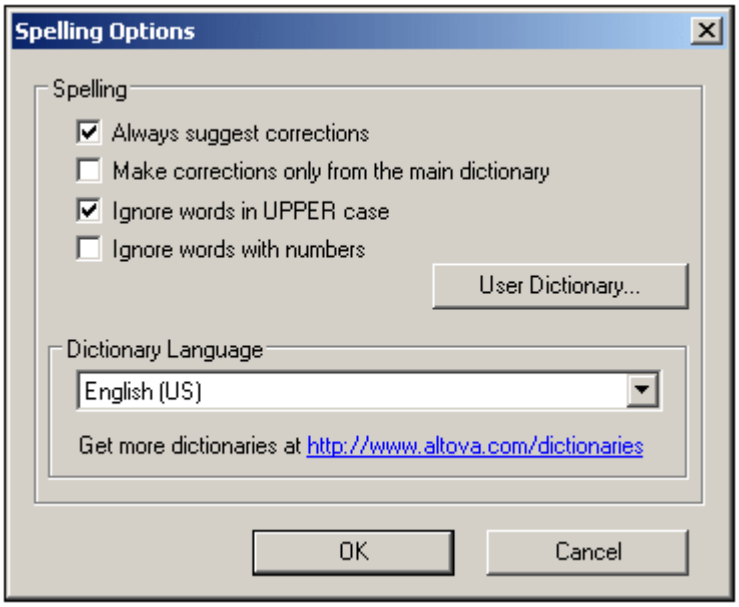
This section describes how to use the spellchecker. It is organized into the following

sub-sections:

- Selecting the spellchecker language
- Defining the scope of the check
- Running the spelling check

Selecting the spellchecker language
The spellchecker language can be set as follows:

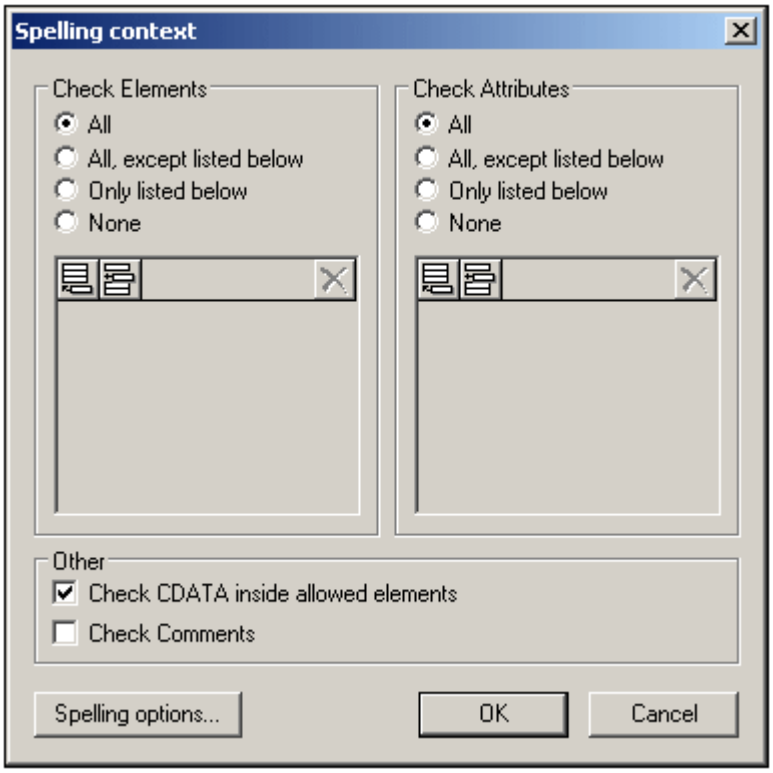
1. Click the **Tools | Spelling Options** menu command.
2. In the Spelling Context dialog that pops up, click the **Spelling Options** button.
3. In the Spelling Options dialog (*screenshot below*), select one of the installed dictionaries from the dropdown list of the Dictionary Language combo box.



4. Click **OK** to finish.

The dictionary language you selected will be used by the spellchecker for spelling checks. If the language you want is not already installed, you can download additional language dictionaries. How to do this is described in the section, Adding dictionaries for the spellchecker.

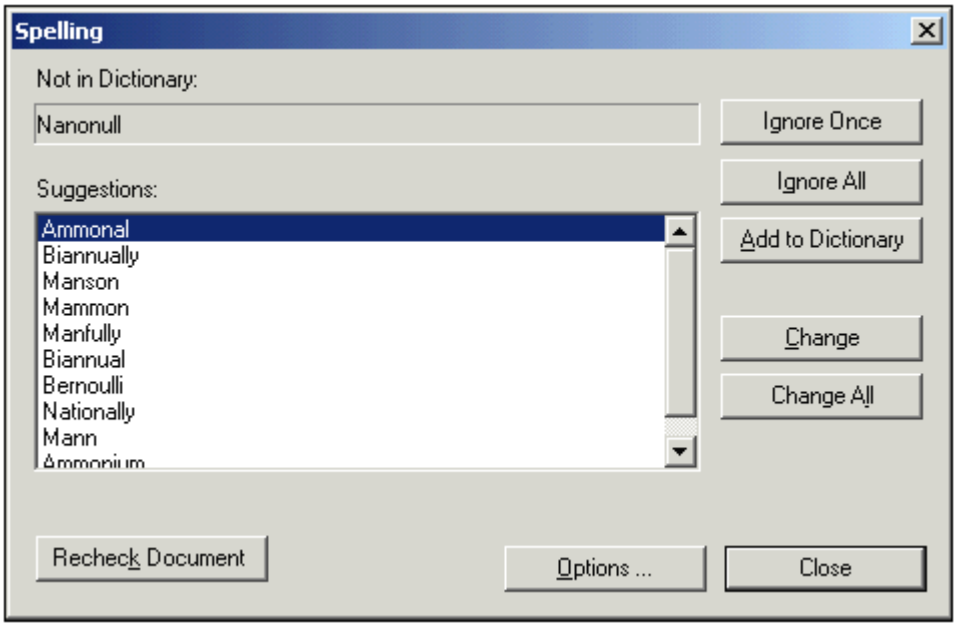
Defining the scope of the check
When the spellchecker is run in Text View or Grid View, the scope of the check can be defined immediately before starting the check. Do this by selecting the command **Tools | Spelling Options** and by defining the required scope in the Spelling Context dialog that pops up (*see screenshot below*).



You can select which elements and attributes are to be checked and whether CDATA sections and comments should be checked. Also see the description of the Spelling Options command for related information.

Running the spellchecker

The **Tools | Spelling (Shift+F7)** command automatically starts checking the currently active XML document according to the defined scope. If an unknown word is encountered, the *Spelling: Not in Dictionary* dialog pops up (*screenshot below*). Otherwise the spelling check runs through to completion.



The various parts of the *Spelling: Not in Dictionary* dialog and the available options are described below:

Not in Dictionary
This text box contains the word that cannot be found in either the selected language dictionary or user dictionary. The following options are available:

- You can edit the word in the text box manually or select a suggestion from the *Suggestions* pane. Then click **Change** to replace the word in the XML document with the edited word. (Double-clicking a suggestion inserts it directly in the XML document.) When a word is shown in the *Not in Dictionary* text box, it is also highlighted in the XML document, so you can edit the word directly in the document if you like. Clicking **Change All** will replace all occurrences of the word in the XML document with the edited word.
- You can choose to not make any change and to ignore the spellchecker warning—either just for the current occurrence of the word or for every occurrence of it.
- You can add the word to the user dictionary and so allow the word to be considered correct for all checks from the current check onwards.

Suggestions
This list box displays words resembling the unknown word (supplied from the language and user dictionaries). Double-clicking a word in this list automatically inserts it in the document and continues the spellchecking process.

Ignore once
This command allows you to continue checking the document while ignoring the first occurrence of the unknown word. The same word will be flagged again if it appears in the document.

Ignore all
This command ignores all instances of the unknown word in the whole document.

Add to dictionary
This command adds the unknown word to the **user dictionary**. You can access the user dictionary (in order to edit it) via the Spelling Options dialog.

Change
This command replaces the currently highlighted word in the XML document with the (edited) word in the *Not in Dictionary* text box.

Change all
This command replaces all occurrences of the currently highlighted word in the XML document with the (edited) word in the *Not in Dictionary* text box.

Recheck Document
The **Recheck Document** button restarts the check from the beginning of the document.

Options
This command opens a dialog box depending on the current view.

- If the current view is Authentic View, the Spelling Options dialog box is opened.
- If the current view is Text View or Grid View, then the Spelling Context dialog box is opened.

For more information about these dialog boxes, see the section Spelling Options.

Close
This command closes the Spelling dialog box.

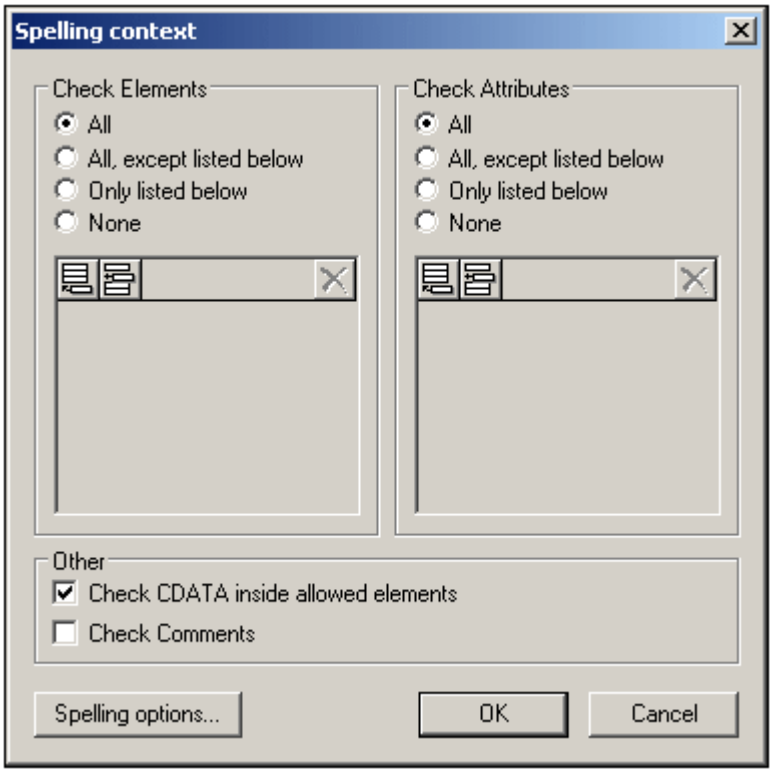
18.13.2 Spelling Options

The **Tools | Spelling Options** command opens the **Spelling Options**.Depending on which view is active, the **Tools | Spelling Options** command opens either the **Spelling Options** dialog directly (Schema View, WSDL View, XBRL View, Authentic View, Browser View), or the **Spelling Context** dialog (Text View, Grid View,). The Spelling Context dialog has a **Spelling Options** button to access the Spelling Options dialog.

The various settings available in these two dialogs are described in the sub-sections of this section:

- Spelling context
- Spelling options
- Adding dictionaries for the spellchecker
- Working with the user dictionary

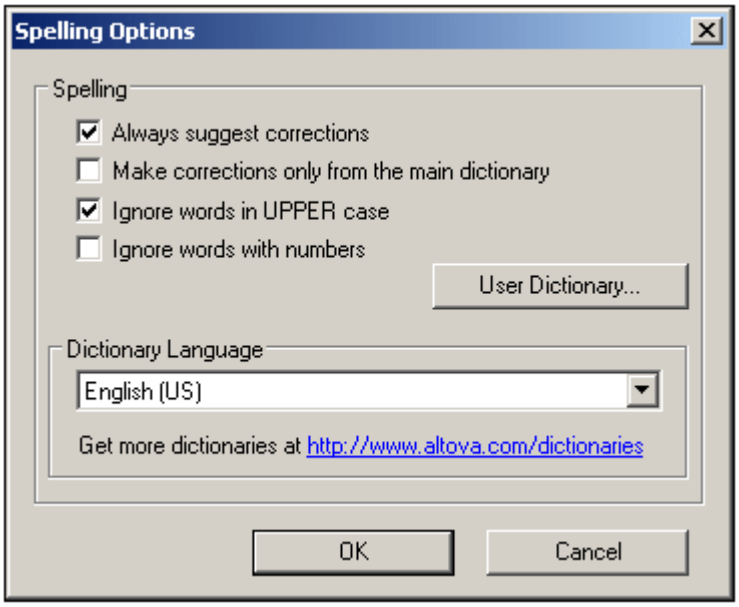
Spelling context
Clicking the **Spelling Options** command in Text View or Grid View opens the Spelling Context dialog (*screenshot below*), in which you can select the scope of the spelling check. You can select which elements and attributes are to be checked and whether CDATA sections and comments should be checked.



You can compile a list of elements and/or attributes that you wish to have spellchecked or have excluded from the spelling check. Alternatively, you can choose to run the spelling check on all elements and/or attributes or on no element or attribute.

Clicking the **Spelling Options** button at the bottom of the dialog opens the Spelling Options dialog.

Spelling options
The Spelling Options dialog is used to define global spellchecker options.



Always suggest corrections:
Activating this option causes suggestions (from both the language dictionary and the user dictionary) to be displayed in the Suggestions list box. Disabling this option causes no suggestions to be shown.

Make corrections only from main dictionary:
Activating this option causes only the language dictionary (main dictionary) to be used. The user dictionary is not scanned for suggestions. It also disables the **User Dictionary** button, preventing any editing of the user dictionary.

Ignore words in UPPER case:
Activating this option causes all upper case words to be ignored.

Ignore words with numbers:
Activating this option causes all words containing numbers to be ignored.

Dictionary Language
Use this combo box to select the dictionary language for the spellchecker. The default selection is US English. Other language dictionaries are available for download free of charge from the Altova website.

Adding dictionaries for the spellchecker
For each dictionary language there are two Hunspell dictionary files that work together: a `.aff` file and `.dic` file. All language dictionaries are installed in a `Lexicons` folder at the following location:

On Windows 7: `C:\ProgramData\Altova\SpellChecker\Lexicons`
On Windows XP: `C:\Documents and Settings\All Users\Application Data\Altova\SharedBetweenVersions\SpellChecker\Lexicons`

Within the `Lexicons` folder, different language dictionaries are each stored in different folder: `<language name>\<dictionary files>`. For example, on a Windows 7 machine, files for the two English-language dictionaries (`English (British)` and `English (US)`) will be stored as below:

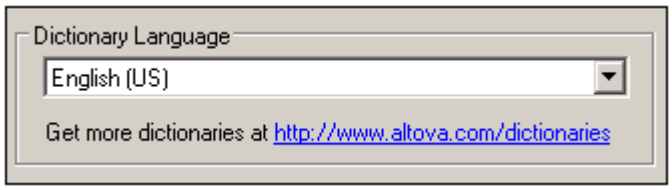
```
C:\ProgramData\Altova\SpellChecker\Lexicons\English (British)\en_GB.aff
C:\ProgramData\Altova\SpellChecker\Lexicons\English (British)\en_GB.dic
C:\ProgramData\Altova\SpellChecker\Lexicons\English (US)\en_US.dic
C:\ProgramData\Altova\SpellChecker\Lexicons\English (US)\en_US.dic
```

In the Spelling Options dialog, the dropdown list of the *Dictionary Language* combo box displays the language dictionaries. These dictionaries are those available in the `Lexicons` folder and have the same names as the language subfolders in the `Lexicons` folder. For example, in the case of the English-language dictionaries shown above, the dictionaries would appear in the Dictionary Language combo box as: *English (British)* and *English (US)*.

All installed dictionaries are shared by the different users of the machine and the different major versions of Altova products (whether 32-bit or 64-bit).

You can add dictionaries for the spellchecker in two ways, neither of which require that the files be registered with the system:

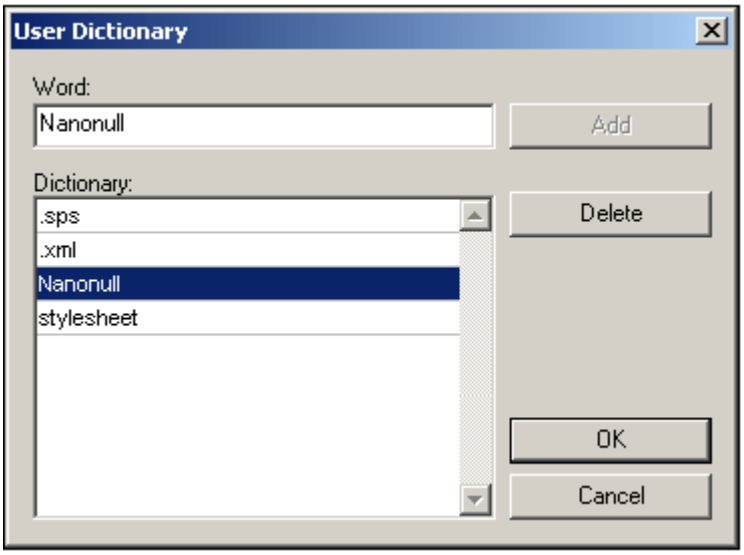
- By adding Hunspell dictionaries into a new subfolder of the `Lexicons` folder. Hunspell dictionaries can be downloaded, for example, from http://wiki.services.openoffice.org/wiki/Dictionaries or http://extensions.services.openoffice.org/en/dictionaries. (Note that OpenOffice uses the zipped `OXT` format. So change the extension to `.zip` and unzip the `.aff` and `.dic` file to the language folders in the `Lexicons` folder. Also note that Hunspell dictionaries are based on Myspell dictionaries. So Myspell dictionaries can also be used.)
- By using the Altova dictionary installer, which installs a package of multiple language dictionaries by default to the correct location on your machine. The installer can be downloaded by clicking the link in the Dictionary language pane of the Spelling Options dialog (*see screenshot below*).



Note: It is your choice as to whether you agree to the terms of the license applicable to the dictionary and whether the dictionary is appropriate for your use with the software on your computer.

Working with the user dictionary

Each user has one user dictionary, in which user-allowed words can be stored. During a spellcheck, spellings are checked against a word list comprising the words in the language dictionary and the user dictionary. You can add words to and delete words from the user dictionary via the User Dictionary dialog (*screenshot below*). This dialog is accessed by clicking the User Dictionary button in the Spelling Options dialog (*see screenshot at top of section*).



To add a word to the user dictionary, enter the word in the Word text box and click **Add**. The word will be added to the alphabetical list in the Dictionary pane. To delete a word from the dictionary, select the word in the Dictionary pane and click **Delete**. The word will be deleted from the Dictionary pane. When you have finished editing the User Dictionary dialog, click **OK** for the changes to be saved to the user dictionary.

Words may also be added to the User Dictionary during a spelling check. If an unknown word is encountered during a spelling check, then the Spelling dialog pops up prompting you for the action you wish to take. If you click the **Add to Dictionary** button, then the unknown word is added to the user dictionary.

The user dictionary is located at:

On Windows 7: `C:\Users\<user>\Documents\Altova\SpellChecker\Lexicons\user.dic`
On Windows XP: `C:\Documents and Settings\<user>\My Documents\Altova\SpellChecker\Lexicons\user.dic`

18.13.3 Scripting Editor

The Scripting Editor command opens the Scripting Editor window. How to work with the Scripting Editor is described in the Scripting section of this documentation.

Note: The .NET Framework version 2.0 or higher will have to be installed on your machine in order for the Scripting Editor to run.

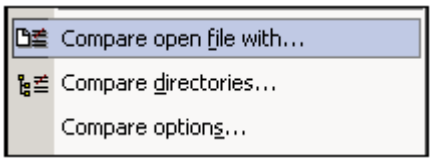
18.13.4 Macros

Mousing over the **Macros** command rolls out a submenu containing the macros defined in the Scripting Project that is currently active in XMLSpy (*screenshot below*).

Clicking a macro in the submenu (*see screenshot above*) runs the macro.

18.13.5 Comparisons

XMLSpy provides a comparison (or differencing) feature, with which you can compare XML and Text files, as well as folders, in order to check for differences.



There are the following menu items in the **Tools** menu that enable you to perform comparison tasks on files and folders:

- Compare open file with
- Compare directories
- Compare options

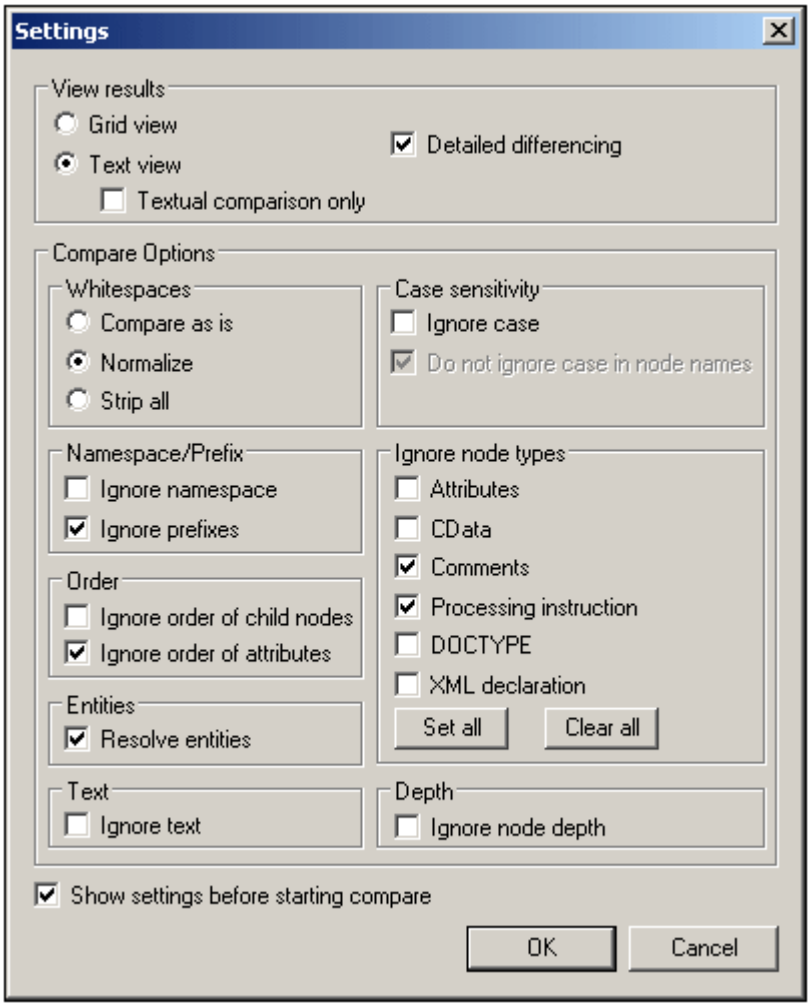
These commands are described in detail in the following sub-sections.

Compare Open File With

This command allows you to compare the open file with another file. The comparison shows both files tiled vertically in the main window with the differences between them highlighted in each file in green. You can compare files as XML documents (where the structure and semantics of tags is significant) or as text documents.

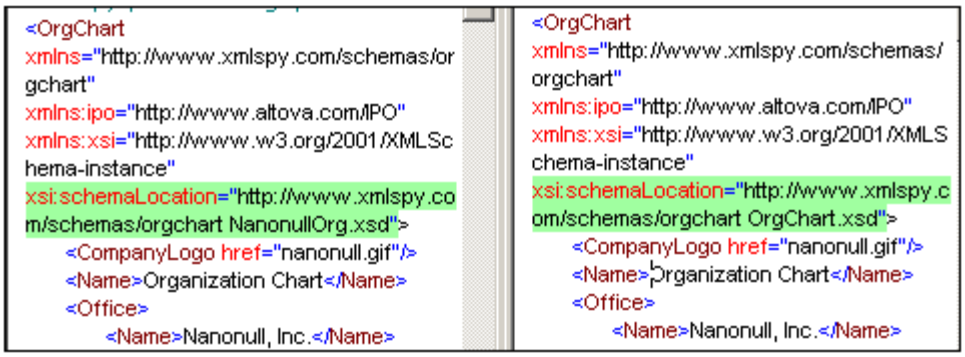
To compare the open file with another file:

1. With the file active in the Main Window (only one open file can be active in the Main Window at a given time), click **Tools | Compare open file with...**.
2. Browse for the file you wish to compare the open file with, and select it. You can also select a file via a global resource or a URL (click the **Browse** button) or a file in one of the open windows in XMLSpy (click the **Window** button).
3. Click **OK**. The second file is opened, and the Settings dialog appears:

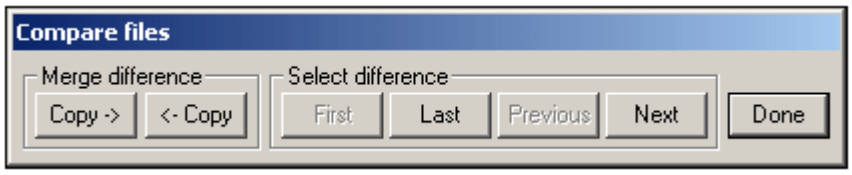


These settings are described under Compare Options. If you do not wish to have this dialog appear each time you start a compare session, uncheck **Show settings before starting compare**, which is at the bottom of the dialog.

4. Select the required settings, then click **OK**. The two files now appear in the Main Window. Lines that are different are highlighted in green. One difference is selected at a time and is indicated in both files in a darker green color. (*Also see the 'Highlight Colors' section below.*)



A Compare Files control window also appears:



To select the next difference, click the **Next** button. The **First**, **Last**, and **Previous** buttons help you to navigate among the differences and to select a difference.
The "Merge difference" pane enables you to copy the selected difference from one file to the other. In order to enable merging, the following Compare options must be set: Detailed differencing must be checked and Ignore node depth must be unchecked. If you wish to undo a merge, stop the Compare session, select the file in which the change is to be undone, and select **Edit | Undo** or press **Ctrl + Z**.

5. When you are done with reviewing and/or merging differences, click **Done**.

Highlight colors
The differences and merged differences in the two files are indicated by the following highlight colors:

Difference

Current difference

Merged difference

Current merged difference

Please note:

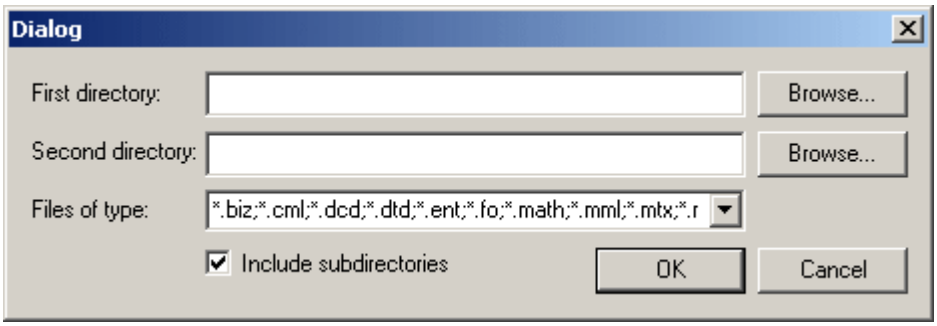
- While the Compare session is active, no editing or change of views is allowed. Any attempt to edit or change the view of either file will pop up a message warning that the Compare session will be ended.
- Compare settings can be changed during a Compare session (by selecting **Tools | Compare options...**), but will only take effect from the next Compare session onward; the new settings will not affect the current session.

Compare Directories

The Compare directories command allows you to compare two directories, with or without their sub-directories. Directories are compared to indicate missing files, and whether files of the same name are different or not.

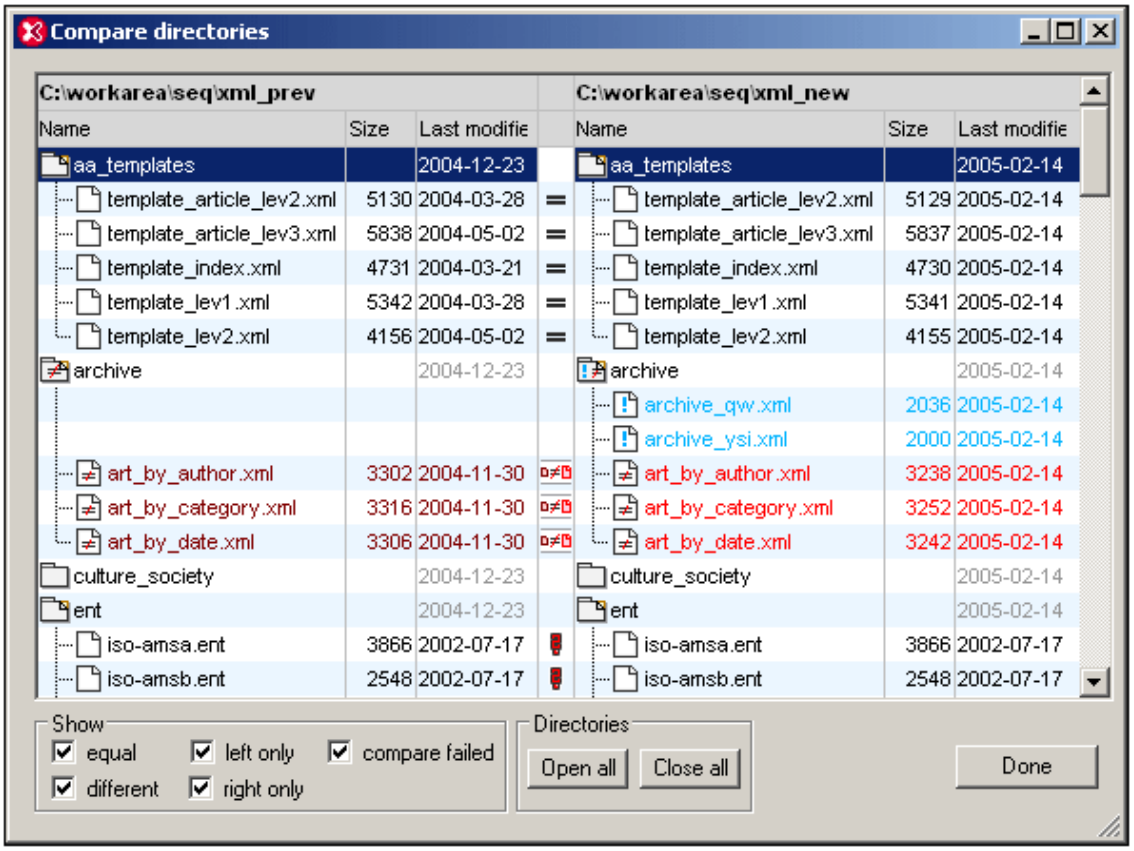
To compare two directories:

1. Click **Tools | Compare directories**. The following dialog appears.



2. Browse for the directories to compare, and check the **Include subdirectories** check box if you wish to include subdirectories in the Compare.
3. Select the file types you want to compare in the **Files of type** field. There are three options in the dropdown menu: (i) XML filetypes; (ii) Filetypes defined in XMLSpy; and (iii) all filetypes.
4. Click **OK**. The Settings dialog (described in Compare Options) appears.
5. Select the required settings for comparing files.
6. Click **OK**. A dialog will appear indicating the progress of the Compare.

The result will appear in a window, and will look like this:



Directory symbols
All directory names are given in black.

Directory is collapsed and its contents are not displayed.

Directory is expanded, indicated by the turned down corner. The contents are displayed.

Directory contains files, all of which either cannot be compared or are not different from the corresponding file in the compared directory.

Directory contains one or more files that do not exist in the compared directory.

Directory contains one or more files that are different from the corresponding file in the compared directory.

Directory contains one or more files that do not exist in the compared directory and one or more files that are different from the corresponding file in the compared directory.

File symbols

The colors in which file names appear depend on their compare status. These colors are noted below.

This file cannot be compared (with the corresponding file in the compared directory). A question mark appears in the middle column. The file name appears in black.

This file is not different from the corresponding file in the compared directory. An equals-to sign appears in the middle column. The file name appears in black.

This file does not exist in the compared directory. The middle column is empty. The file name appears in blue.

This file is different from the corresponding file in the compared directory, and the last modification to this file is more recent than the last modification to the corresponding file. The newer file appears in a brighter red, and the icon shows the brighter red file symbol on the side having the newer file.

Viewing options

- Select what files to show by checking or unchecking the options in the Show pane at the bottom of the Result window.
- Open or close all subdirectories by clicking the appropriate button in the Directories pane.
- Expand or collapse subdirectories by double-clicking the folder icon.
- The Size and Last Modified can be toggled on and off by right-clicking on either file titlebar and clicking Size and Last Modified.

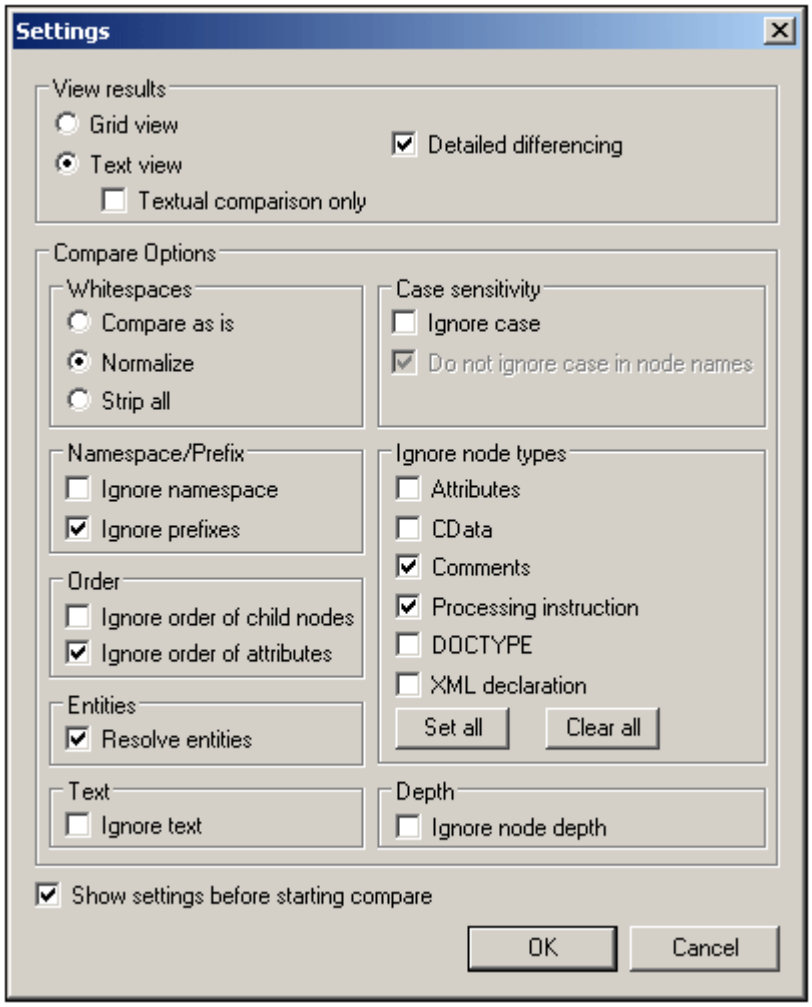
- Change column widths by dragging columns.
- The Result window can be maximized, minimized, and resized.

Comparing and merging files

Double-clicking on a line opens both files on that line in the Main Window, and directly starts a File Compare for the two files. You can then continue as in a regular Compare session (see Compare open file with...).

Compare Options

Click **Tools** | **Compare options** to open the Settings dialog (*see screenshot*). In it you make the settings for your Compare sessions. The settings that are current when a Compare session is started are the settings that are applied to that Compare session.



View results
Selects the view in which results are shown. You can select from the following options:

- Grid View (XML comparison)
- Text View with Textual Comparison Only unchecked (XML comparison)
- Text View with Textual Comparison Only checked (Text comparison)

If a view that provides XML comparison is selected, then the documents are treated as XML documents, and XML Compare Options are enabled. If Text comparison is selected, only Compare Options valid for Text comparison (Whitespaces and Case-sensitivity) are enabled; all other Compare Options are disabled.

Please note: You can merge differences in both Grid View and Text View, and in both XML and Text comparison modes. If you wish to undo a merge, stop the Compare session, select the file in which the change is to be undone, and select **Edit | Undo** or press **Ctrl + Z**.

Detailed differencing
If unselected, differences in immediate sibling elements are represented as a single difference, and the merge option is disabled. If selected, differences in immediate siblings are represented as separate differences, and merging is enabled.

Please note: The **Detailed differencing** check box must be checked to enable merging.

Whitespaces
Whitespace characters are space, tab, carriage return, and line feed. The options here compare files with whitespace unchanged; with whitespace normalized (i.e., all consecutive whitespace characters are reduced to one whitespace character); and with all whitespace stripped. The Whitespaces option is available for both XML and Text comparisons.

Case sensitivity
If the **Ignore case** check box is checked, then you have the option of ignoring or not ignoring case in node names (for XML comparisons only). The Case-sensitivity option is available for both XML and Text comparisons.

Namespace/Prefix
These are options for ignoring namespaces and prefixes when searching for differences.

Order
If **Ignore order of child nodes** is checked, then the position of child nodes relative to each other does not matter. The comparison is made for the entire set of child nodes, and if the only difference between a child node in one document and a child node in the compare document is the relative position in the nodeset, then this difference is ignored.
Please note: Each child element node is identified by its name, its attributes, and its position. If the names of more than one node in the sibling set are the same, then the position of these nodes is used to identify the nodes even if the "Ignore order of child nodes" option is checked. This option applies to each level separately.

If **Ignore order of child nodes** is unchecked, then differences in order are represented as differences.

The option of ignoring the order of attributes is also available, and applies to the order of attributes of a single element.

Entities
If "Resolve entities" is selected, then all entities in the document are resolved. Otherwise the files are compared with the entities as is.

Text
If "Ignore text" is selected, then differences in corresponding text nodes are not reported.

Ignore node types
Check the node types that will not be compared in the Compare session. Node types that may be ignored are Attributes, CDATA, Comments, Processing Instructions, DOCTYPE statements, and the XML declaration.

Depth
If **Ignore node depth** is checked, then the additional depth of any element (i.e. more levels of descendants) relative to the depth of the corresponding element in the compared file is ignored. This option must be unchecked to enable merging.

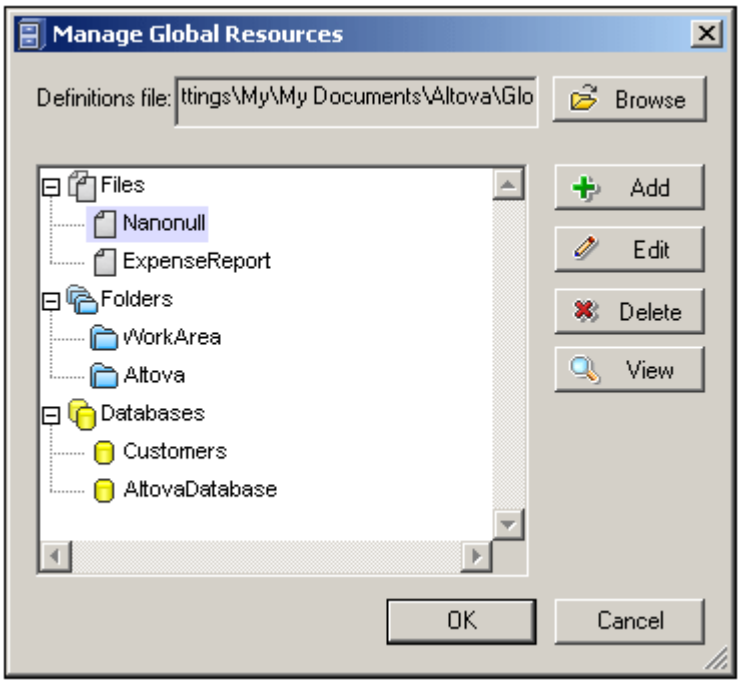
Show settings before starting compare
Checking this option causes this dialog to appear whenever the **Compare open file with** command is clicked. Having the Settings dialog appear before each comparison allows you to check and modify the settings for each comparison.

If this command is unchecked, then the Compare session will start directly when a comparison is invoked.

18.13.6 Global Resources

The **Global Resources** command pops up the Global Resources dialog (*screenshot below*), in which you can:

- Specify the Global Resources XML File to use for global resources.
- Add file, folder, and database global resources (or aliases)
- Specify various configurations for each global resource (alias). Each configuration maps to a specific resource.

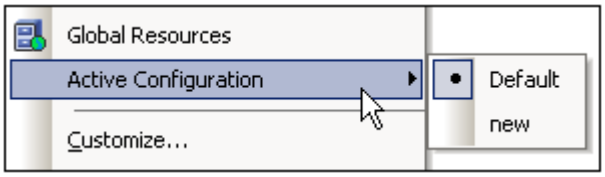


How to define global resources is described in detail in the section, Defining Global Resources.

Note: The Altova Global Resources dialog can also be accessed via the Global Resources toolbar (**Tools | Customize | Toolbars | Global Resources**).

18.13.7 Active Configuration

Mousing over the **Active Configuration** menu item rolls out a submenu containing all the configurations defined in the currently active Global Resources XML File (*screenshot below*).



The currently active configuration is indicated with a bullet. In the screenshot above the currently active configuration is `Default`. To change the active configuration, select the configuration you wish to make active.

Note: The active configuration can also be selected via the Global Resources toolbar (**Tools |**

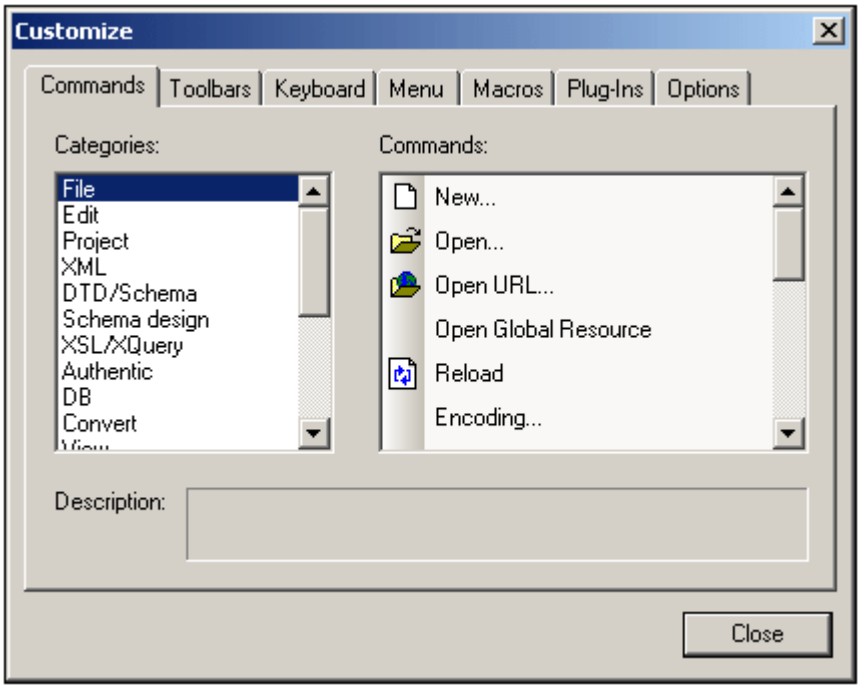
Customize | Toolbars | Global Resources).

18.13.8 Customize

The **Customize** command lets you customize XMLSpy to suit your personal needs.

Commands

The **Commands** tab allows you customize your menus or toolbars.



To add a command to a toolbar or menu:

1. Select the menu item **Tools | Customize**. The Customize dialog appears.
2. Select the **All Commands** category in the Categories list box. The available commands appear in the Commands list box.
3. Click on a command in the Commands list box and drag it to an to an existing menu or toolbar. An **I**-beam appears when you place the cursor over a valid position to drop the command.
4. Release the mouse button at the position you want to insert the command.

- A small button appears at the tip of mouse pointer when you drag a command. The "x" below the pointer means that the command cannot be dropped at the current cursor position.
- The "x" disappears whenever you can drop the command (over a tool bar or menu).
- Placing the cursor over a menu when dragging opens it, allowing you to insert the command anywhere in the menu.
- Commands can be placed in menus or tool bars. If you created you own toolbar you can populate it with your own commands/icons.

Please note:

You can also edit the commands in the **context menus** (right-click anywhere to open the context menu), using the same method. Click the **Menu** tab and then select the

specific context menu available in the Context Menus combo box.

To delete a command or menu:

1. Select the menu item **Tools | Customize**. The Customize dialog appears.
2. Click on the menu entry or icon you want to delete, and drag with the mouse.
3. Release the mouse button whenever the "x" icon appears below the mouse pointer. The command, or menu item, is deleted from the menu or tool bar.

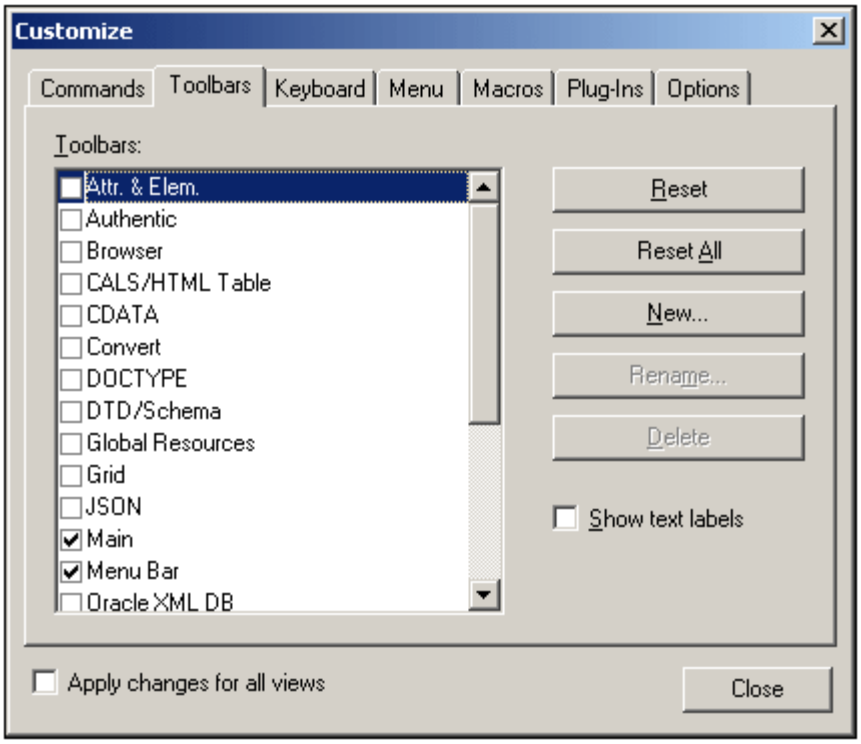
Toolbars

The **Toolbars** tab allows you to activate or deactivate specific toolbars, as well as create your own specialized ones.

XMLSpy toolbars contain symbols for the most frequently used menu commands. For each symbol you get a brief "tool tip" explanation when the mouse cursor is directly over the item and the status bar shows a more detailed description of the command.

You can drag the toolbars from their standard position to any location on the screen, where they appear as a floating window. Alternatively you can also dock them to the left or right edge of the main window.

- Toolbar settings defined in Grid View, Schema View and Text View are valid in those views. The Browser View toolbars are independent of all the other views.



To activate or deactivate a toolbar

- Click the check box to activate (or deactivate) the specific toolbar.

Apply changes for all views

- Check this check box at the bottom of the dialog to apply changes to all views (and not only to the current view). On clicking **Close**, all changes that were made **after** checking the check box will be applied to all views.

To create a new toolbar

1. Click the **New...** button, and give the toolbar a name in the Toolbar name dialog box.
2. Drag commands to the toolbar in the **Commands** tab of the Customize dialog box.

To reset the Menu Bar

1. Click the Menu Bar entry.
2. Click the **Reset** button, to reset the menu commands to the state they were in when XMLSpy was installed.

To reset all toolbar and menu commands

1. Click the **Reset All** button, to reset all the toolbar commands to the state they were when the program was installed. A prompt appears stating that all toolbars and menus will be reset.
2. Click **Yes** to confirm the reset.

To change a toolbar name

- Click the **Rename**... button to edit the name of the toolbar.

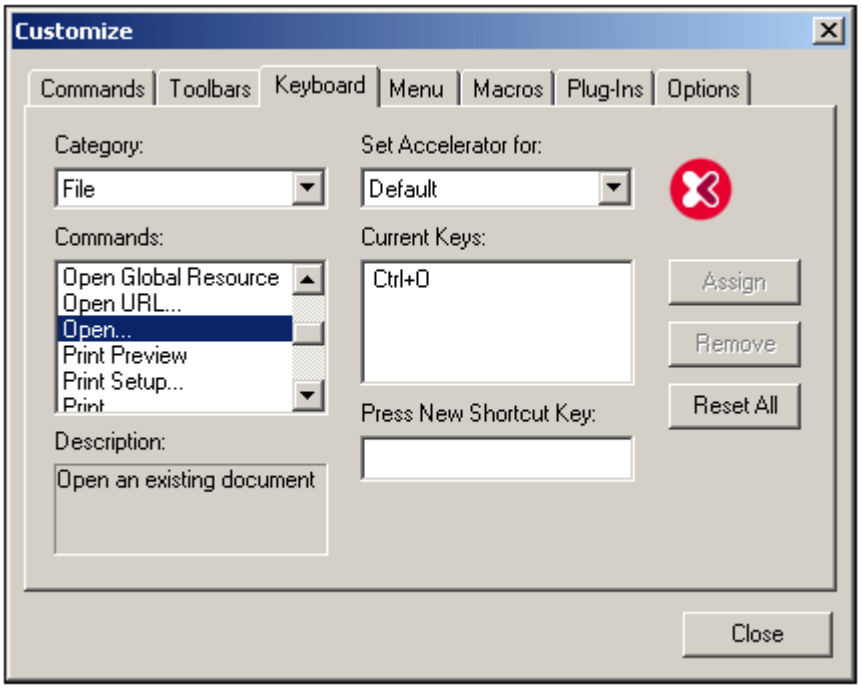
To delete a toolbar

1. Select the toolbar you want to delete in the Toolbars list box.
2. Click the **Delete** button.
3. A prompt appears, asking if you really want to delete the toolbar. Click **Yes** to confirm the deletion.

Show text labels
This option displays explanatory text below toolbar icons when activated.

Keyboard

The **Keyboard** tab allows you to define (or change) keyboard shortcuts for any XMLSpy command.



To assign a new Shortcut to a command:

1. Select the All Commands category using the **Category** combo box. Note that if a macro has been selected as an Associated Command, then macros can also be selected via the category combo box and a shortcut for the macro can be set.
2. Select the **command** you want to assign a new shortcut to, in the Commands list box
3. Click in the **Press New Shortcut Key**: text box, and press the shortcut keys that are to activate the command.
   The shortcuts appear immediately in the text box. If the shortcut was assigned previously, then that function is displayed below the text box.
4. Click the **Assign** button to assign the shortcut.
   The shortcut now appears in the Current Keys list box.
   (To **clear** this text box, press any of the control keys, **CTRL**, **ALT** or **SHIFT**).

To de-assign or delete a shortcut:

1. Click the shortcut you want to delete in the Current Keys list box.
2. Click the **Remove** button.
3. Click the **Close** button to confirm.

Set accelerator for:

Currently no function.

Currently assigned keyboard shortcuts:

Hotkeys by key

F1	Help Menu
F3	Find Next
F5	Refresh
F7	Check well-formedness
F8	Validate
F9	Insert/Remove breakpoint
Shift+F9	Insert/Remove tracepoint
CTRL+F9	Enable/Disable breakpoint
Shift+CTRL+F9	Enable/Disable tracepoint
F10	XSL Transformation
CTRL+F10	XSL:FO Transformation
F11	Step into
CTRL+F11	Step Over
Shift + F11	Step Out
Alt+F11	Start Debugger/Go
Num +	Expand
Num -	Collapse
Num *	Expand fully
CTRL+Num-	Collapse unselected
CTRL + G	Goto line/char
CTRL+TAB	Switches between open documents
CTRL+F6	Cycle through open windows
Arrow keys (up / down)	Move selection bar
Esc.	Abandon edits/close dialog box
Return/Space bar	confirms a selection
Alt + F4	Closes XMLSpy
CTRL + F4	Closes active window
Alt + F, 1	Open last file
CTRL + Double click an element (Schema view)	Display element definition
CTRL + N	File New
CTRL + O	File Open
CTRL + S	File Save
CTRL + P	File Print
CTRL + A	Select All
Shift + Del	Cut (or CTRL + X)
CTRL + C	Copy
CTRL + V	Paste
CTRL + Z	Undo
CTRL + Y	Redo
Del	Delete (Delete item in Schema/Grid View)
CTRL + F	Find
F3	Find Next

CTRL + H	Replace
CTRL + I	Append Attribute
CTRL + E	In Grid View, Append Element. in Text View, Jump to Start/End Tag when cursor is in other member of the pair
CTRL + T	Append Text
CTRL + D	Append CDATA
CTRL + M	Append Comment
CTRL + SHIFT + I	Insert Attribute
CTRL + SHIFT + E	Insert Element
CTRL + SHIFT + T	Insert Text content
CTRL + SHIFT + D	Insert CDATA
CTRL + SHIFT + M	Insert Comment
CTRL + ALT + I	Add Child Attribute
CTRL + ALT + E	Add Child Element
CTRL + ALT + T	Add Child Text
CTRL + ALT + D	Add Child CDATA
CTRL + ALT + M	Add Child Comment

Hotkeys for Text View

CTRL + "+"	Zoom In
CTRL + "-"	Zoom Out
CTRL + 0	Reset Zoom
CTRL + mouse wheel forward	Zoom In
CTRL + mouse wheel back	Zoom Out

Currently assigned keyboard shortcuts:

Hotkeys by function

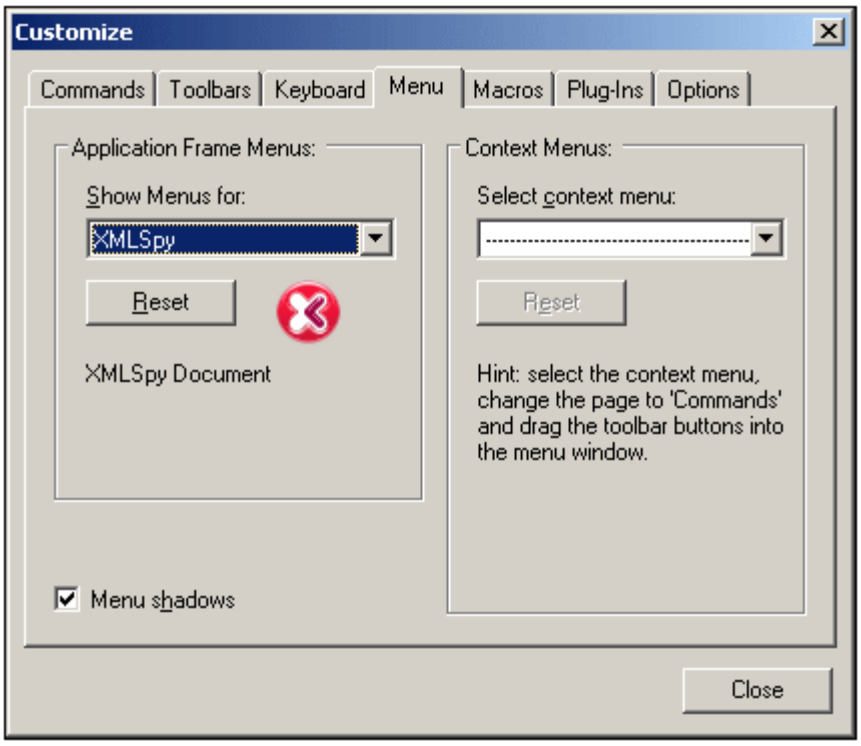
Abandon edits	Esc.
Add Child Attribute	CTRL + ALT + I
Add Child CDATA	CTRL + ALT + D
Add Child Comment	CTRL + ALT + M
Add Child Element	CTRL + ALT + E
Add Child Text	CTRL + ALT + T
Append Attribute	CTRL + I
Append CDATA	CTRL + D
Append Comment	CTRL + M
Append Element	CTRL + E (Grid View)
Append Text	CTRL + T
Check well-formedness	F7
Closes active window	CTRL + F4
Close XMLSpy	Alt + F4
Collapse	Num -
Collapse unselected	CTRL + Num-
Confirms a selection	Return / Space bar
Copy	CTRL + C
Cut	SHIFT + Del (or CTRL + X)
Cycle through windows	CTRL + TAB and CTRL + F6
Delete item	Del
Enable/Disable breakpoint	CTRL + F9
Enable/Disable tracepoint	Shift + CTRL + F9
Expand	Num +
Expand fully	Num *
File New	CTRL + N
File Open	CTRL + O
File Print	CTRL + P
File Save	CTRL + S
Find	CTRL + F
Find Next	F3
Goto line/char	CTRL + G
Help Menu	F1
Highlight other tag in pair when cursor is inside a start or end element tag	CTRL + E (Text View)
Insert Attribute	CTRL + SHIFT + I
Insert CDATA	CTRL + SHIFT + D
Insert Comment	CTRL + SHIFT + M
Insert Element	CTRL + SHIFT + E
Insert/Remove breakpoint	F9
Insert/Remove tracepoint	SHIFT+F9
Insert Text content	CTRL + SHIFT + T
Move selection bar	Arrow keys (up / down)
Open last file	Alt + F, 1
Paste	CTRL + V
Redo	CTRL + Y
Refresh	F5
Replace	CTRL + H
Select All	CTRL + A
Start Debugger/Go	Alt + F11

Step Into	F11
Step Out	Shift + F11
Step Over	CTRL + F11
To view an element definition	CTRL + Double click on an element.
Undo	CTRL + Z
Validate	F8
XSL Transformation	F10
XSL:FO Transformation	CTRL + F10

In the application, you can see a list of commands, together with their shortcuts and descriptions, in the Keyboard Map dialog (**Help | Keyboard Map**).

Menu

The **Menu** tab allows you to customize the main menu bars as well as the (popup - right click) context menus.



You can customize both the Default and XMLSpy menu bars.

The **Default** menu (*screenshot below*) is the one visible when no XML documents of any type are open in XMLSpy.

The XMLSpy menu is the menu bar visible when at least one XML document has been opened.

To customize a menu:

1. Select the menu bar you want to customize from the **Show Menus for:** combo box
2. Click the **Commands** tab, and drag the commands to the menu bar of your choice.

To delete commands from a menu:

1. Click right on the command, or icon representing the command.
2. Select the **Delete** option from the popup menu,

or,

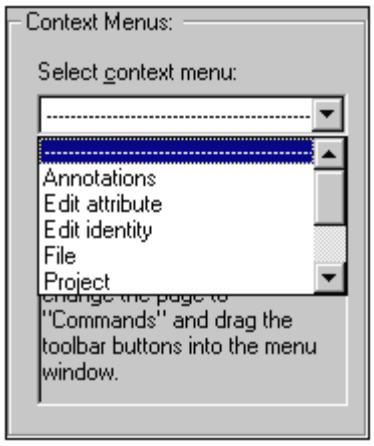
1. Select **Tools | Customize** to open the Customize dialog box.
2. Drag the command away from the menu, and drop it as soon as the check mark icon appears below the mouse pointer.

To reset either of the menu bars:

1. Select either the Default or XMLSpy entry in the **Show Menus for** combo box.
2. Click the **Reset** button just below the menu name.
   A prompt appears asking if you are sure you want to reset the menu bar.

To customize any of the Context menus (right-click menus):

1. Select the context menu from the **Select context menu** combo box. The context menu you selected appears.
2. Click the **Commands** tab, and drag the commands to the context menu.



To delete commands from a context menu:

1. Click right on the command, or icon representing the command.
2. Select the **Delete** option from the popup menu

or,

1. Select **Tools | Customize** to open the Customize dialog box.
2. Drag the command away from the context menu, and drop it as soon as the check mark icon appears below the mouse pointer.

To reset any of the context menus:

1. Select the context menu from the combo box, and
2. Click the **Reset** button just below the context menu name.
   A prompt appears asking if you are sure you want to reset the context menu.

To close a context menu window:

- Click on the **Close icon** at the top right of the title bar

or

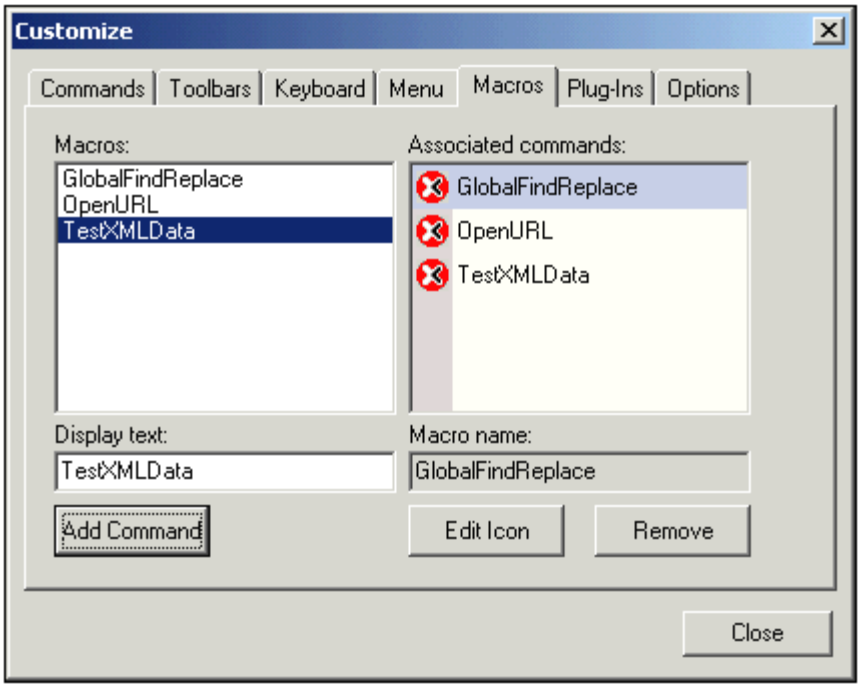
- Click the Close button of the Customize dialog box.

Menu shadows

- Click the **Menu shadows** check box, if you want all your menus to have shadows.

Macros

The **Macros** tab allows you to place macros (created using the XML scripting environment) in a toolbar or menu.



To place a macro (icon) into a toolbar or menu:

1. Start the scripting environment using **Tools | Switch to Scripting environment**.
2. Double-click the XMLSpyMacros entry in the Modules folder of the **XMLSpyGlobalScripts** project.
   Previously defined macros will then be visible in the right hand window.
3. Switch back to XMLSpy, and select **Tools | Customize** and click on the **Macros** tab. The macros defined in the scripting environment are now visible in the Macros list box at left.
4. Click the macro name and then the **Add Command** button. This places the macro name in the Associated Commands list box.
5. Click the macro name in the Associated Commands list box, and drag it to any tool bar or menu.

To edit a macro icon:

- Click the **Edit Icon** button.

To delete a macro from the Associated commands list box:

- Click the **Remove** button.

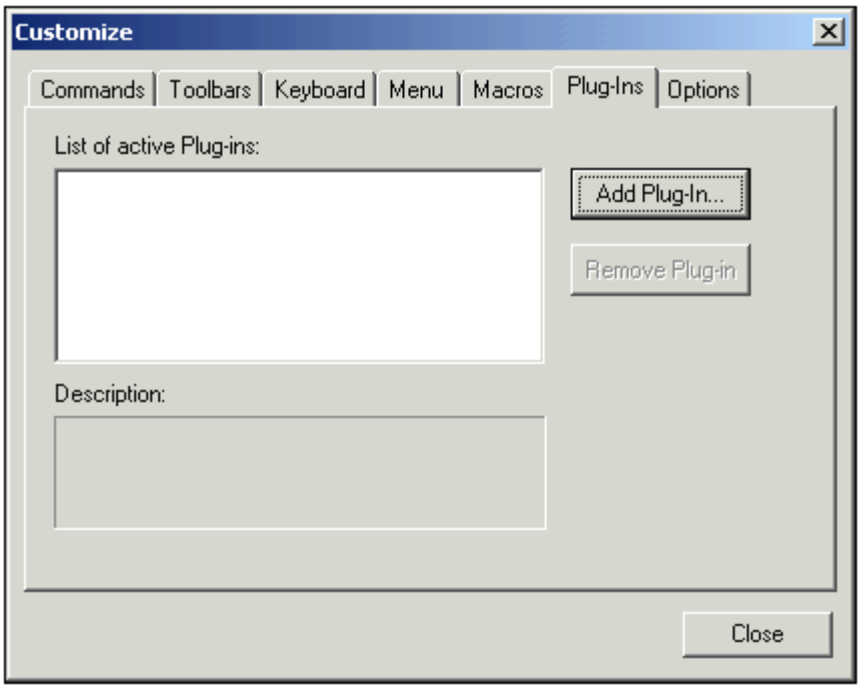
Note: If a macro has been set as an Associated Command, you can set a keyboard shortcut for it. In the Keyboard tab of the Customize dialog, select Macros in the Category combo box, then select the required macro, and set the shortcut. You should set a macro as an associated command in order for Macros to be available for keyboard shortcuts.

Plug-Ins

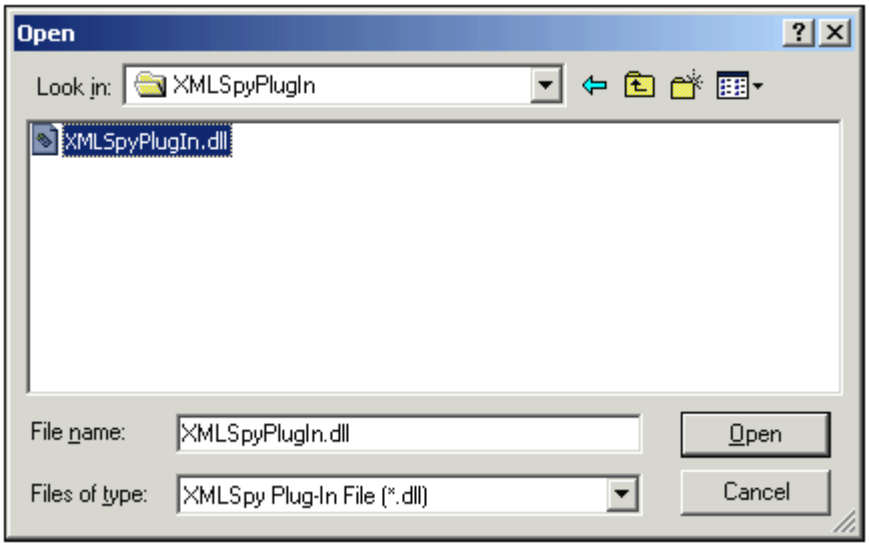
The Plug-Ins tab allows you to place plug-ins in a toolbar or menu.

To place a plug-in icon into a toolbar or menu:

1. Click the **Add Plug-In...** button.



2. Select the folder and then click the plug-in file to mark it (`XMLSpyPlugIn.dll` in this case).



3. Click the **Open** button to install the plug-in.
   The plug-in name appears in the "list of active plug-ins" list, and the plug-in icon(s) appears in a new toolbar.

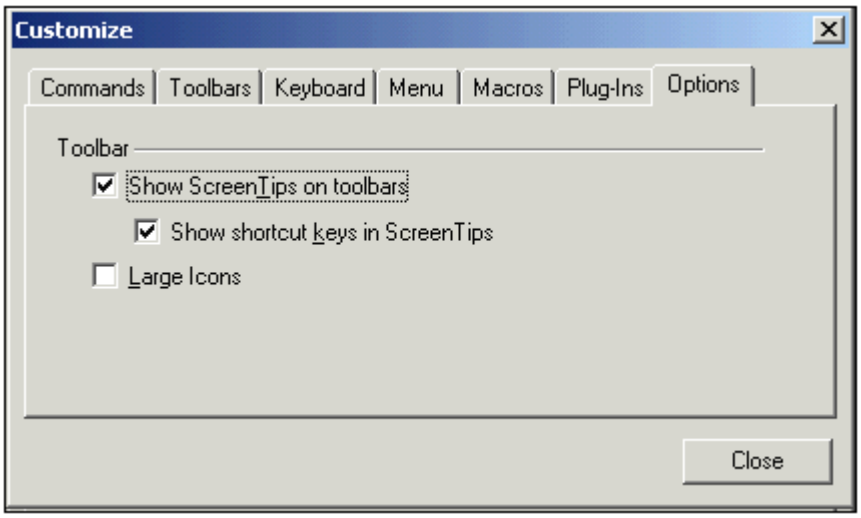
To remove a plug-in:

- Click the plug-in name in the "List of active plug-ins" list and click the "Remove Plug-in" button

.

Options

The Options tab allows you to set general environment settings.



Toolbar
When active, the **Show ScreenTips on toolbars** check box displays a popup when the mouse pointer is placed over an icon in any of the icon bars. The popup contains a short description of the icon function, as well as the associated keyboard shortcut, if one has been assigned.

The **Show shortcut keys in ScreenTips** check box, allows you to decide if you want to have the shortcut displayed in the tooltip.

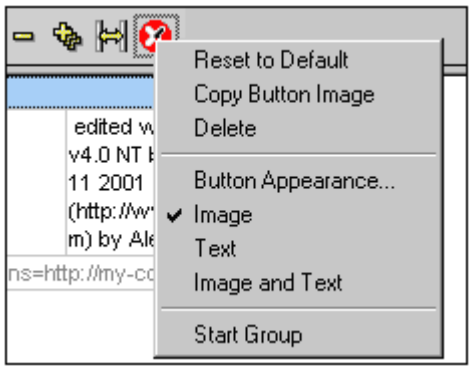
When active, the **Large icons** check box switches between the standard size icons, and larger versions of the icons.

Customize Context Menu

The Customize context menu allows you to further customize icons and menu items.

To open the customize context menu:

1. First open the Customize dialog by selecting **Tools | Customize**.
2. Then place the mouse pointer over an icon (or menu) and **click right** to open the context menu.



Reset to default
Currently no function.

Copy Button image
This option copies the icon you right-click to the clipboard.

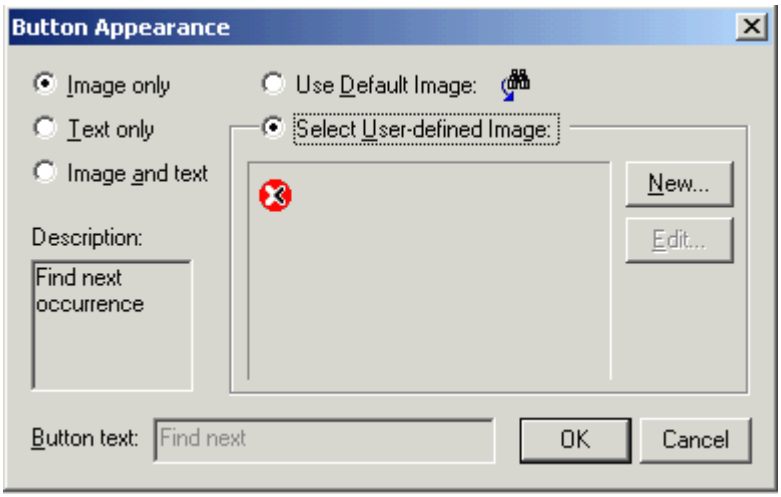
Delete
This option deletes the icon or menu you right click. Deleting a menu deletes all menu options contained in it!

To restore a deleted menu:

1. Select the **Menu** tab in the Customize dialog.
2. Select the menu you want to restore (XMLSpy or Default).
3. Click the **Reset** button below the menu selection combo box.

Button Appearance...
This option allows you to edit the button image as well as the button text. Currently only the macro icons can be edited (default XMLSpy icon).

The Image only, Text only and Image and text radio buttons, let you define what you want to edit. Click the Select User-defined Image radio button and click one of the icons.



Click the **Edit...** button, to open the Edit button image dialog box. The Button text can be edited if you select either **Text only** or **Image and text** options.

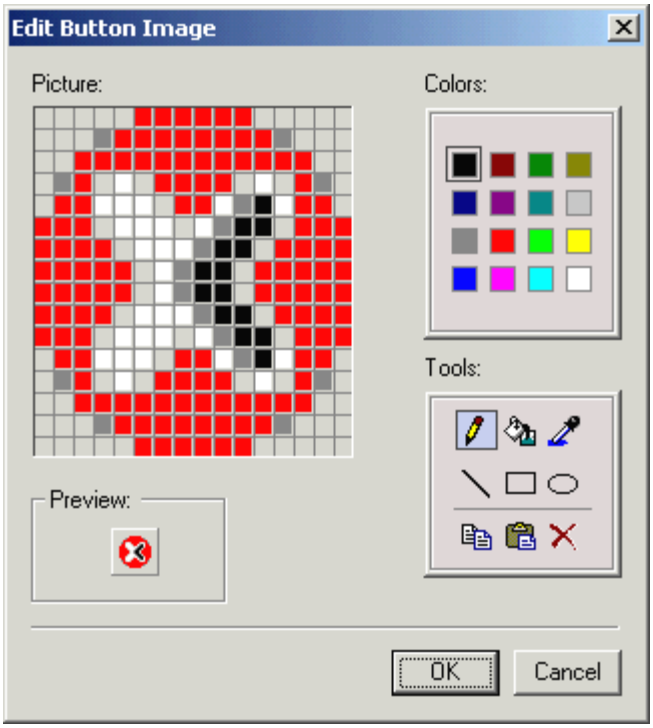


Image
This option changes the textual description of a function to the graphical image (icon) representing that function.

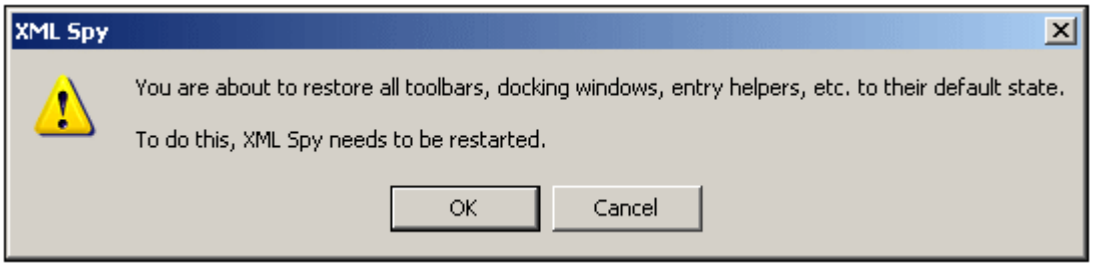
Text
This option changes the graphical display of an icon to the text representing it.

Image and Text
This option enables the simultaneous display of an icon and its text.

Start group
This option inserts a vertical divider to the left of the icon you right clicked.

18.13.9 Restore Toolbars and Windows

The **Restore Toolbars and Windows** command closes down XMLSpy and re-starts it with the default settings. Before it closes down a dialog pops up asking for confirmation about whether XMLSpy should be closed (*screenshot below*).



This command is useful if you have been resizing, moving, or hiding toolbars or windows, and would now like to have all the toolbars and windows as they originally were.

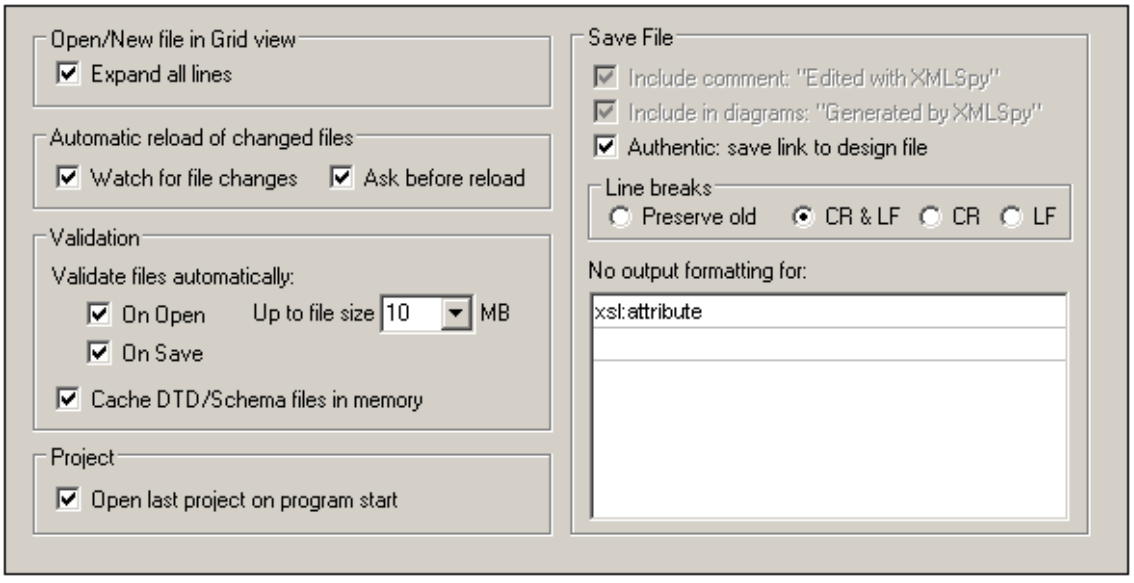
18.13.10Options

The **Tools** | **Options** command enables you to define global application settings. These settings are specified in a tabbed dialog box and saved in the registry. They apply to all current and future document windows. The **Apply** button in the Options dialog displays the changes in the currently open documents and fixes the current settings. The changes are seen immediately in the background windows.

Each tab of the Options dialog is described in detail in this section.

File

The **File** tab defines the way XMLSpy opens and saves documents. Related settings are in the Encoding tab.



Open/New file in Grid view
You can choose to open an existing file or create a new file either in Grid View or in Text View. If you select Grid View, you can also choose to automatically expand all lines.

Automatic reload of changed files
If you are working in a multi-user environment, or if you are working on files that are dynamically generated on a server, you can watch for changes to files that are currently open in the interface. Each time XMLSpy detects a change in an open document, it will prompt you about whether you want to reload the changed file.

Validation
If you are using DTDs or schemas to define the structure of your XML documents, you can automatically check the document for validity whenever it is opened or saved. During Open and Save operations, you have the option of validating files only if the file-size is less than a size you specify in MB. If the document is not valid, an error message will be displayed. If it is valid, no message will be displayed and the operation will proceed without any notification. XMLSpy can also cache these files in memory to save any unnecessary reloading (e.g. when the schema being referred to is accessed through a URL). If your schema location declaration uses an URL, disable the "cache DTD/Schema files in memory" option to have changes made to the schema appear immediately, and not use the cached version of the schema.

Project
When you start XMLSpy, you can open the last-used project automatically.

Save File
When saving an XML document, XMLSpy includes a short comment `<!-- Edited with XMLSpy http://www.altova.com -->` near the top of the file. This option can only be deactivated by licensed users, and takes effect when editing or saving files in the Enhanced Grid or Schema Design View.

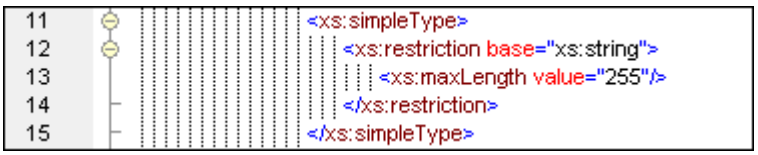
When saving a content model diagram (using the menu option **Schema design | Generate Documentation**), XMLSpy includes the XMLSpy logo. This option can only be deactivated by licensed users.

If a StyleVision Power Stylesheet is associated with an XML file, the 'Authentic: save link to design file' option will cause the link to the StyleVision Power Stylesheet to be saved with the XML file.

Line breaks
When you open a file, the character coding for line breaks in it are preserved if **Preserve old** is selected. Alternatively, you can choose to code line breaks in any of three codings: **CR&LF** (for PC), **CR** (for MacOS), or **LF** (for Unix).

No output formatting for
In Text View, the indentation of an element can be made to reflect its position in the element hierarchy (*see* **Save File**). You can, however, override this indentation for individual elements. To do this, enter the element name in the **No output formatting for** field. All elements entered in this field will be formatted such that their descendant elements have no whitespace between them (*see screenshots*).

Hierarchical indentation for all elements:



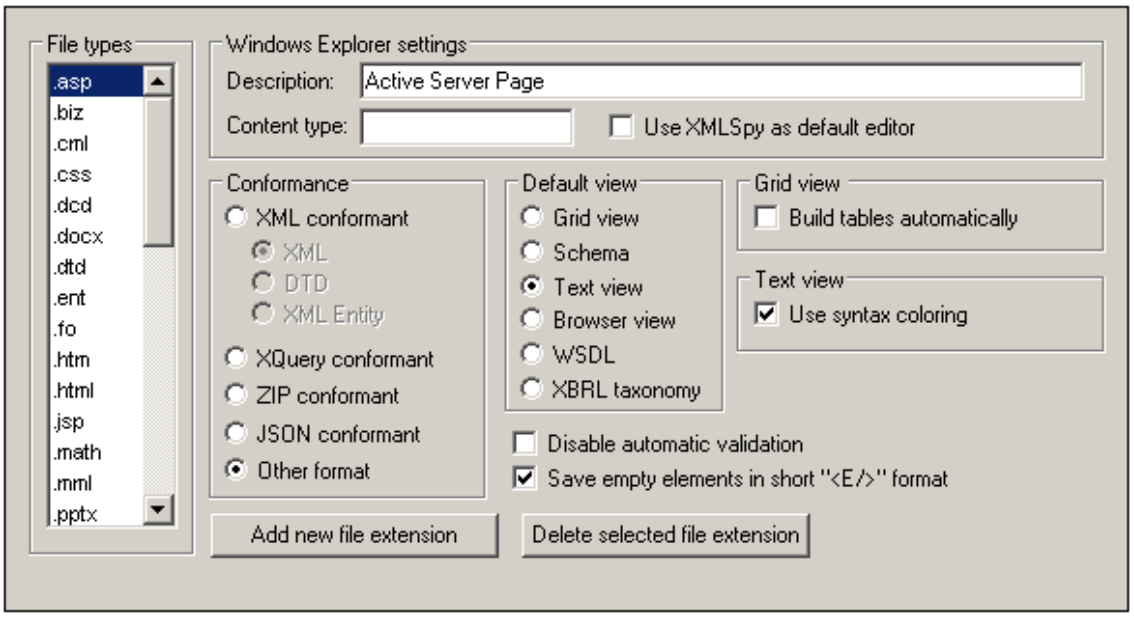
No output formatting has been specified for element `xs:restriction`:

```
11  <xs:simpleType>
12      <xs:restriction base="xs:string"><xs:maxLength value="255"/></xs:restriction>
13  </xs:simpleType>
```

After making the settings, click **OK** to finish and close the Options dialog.

File Types

The **File types** tab allows you to customize the behavior of XMLSpy on a per-file-type basis.



Choose a file type from the File Types list box to customize the functions for that particular file type:

Windows Explorer settings
You can define the file type description and MIME-compliant content type used by Windows Explorer and whether XMLSpy is to be the default editor for documents of this file type.

Conformance
XMLSpy provides specific editing and other features for various file types. The features for a file type are set by specifying the conformance in this option. XMLSpy lets you set file type to conform with XML, XQuery, ZIP, JSON, and other (text) grammars. Furthermore, XML conformance is differentiated between XML, DTD, and XML Entity file types. A large number of file types are defined with a default conformance that is appropriate for the file type. We recommend that you do not modify these settings unless you are adding a new file type or deliberately wish to set a file type to another kind of conformance.

Default view
This group lets you define the default view to be used for each file type. The screenshot above shows the Filetypes tab of the Enterprise edition. If your edition is not the Enterprise edition, it will have fewer views than shown in the screenshot.

Grid View

This check box lets you define whether the Grid View should automatically build tables.

Text View
This check box lets you set syntax-coloring for particular file types.

Disable automatic validation
This option enables you to disable automatic validation per file type. Automatic validation typically takes place when a file is opened or saved, or when a view is changed.

Save empty elements in short <E/> format
Some applications that use XML documents or output generated from XML documents may have problems understanding the short `<Element/>` form for empty elements defined in the XML 1.0 Specification. You can instruct XMLSpy to save elements in the longer (but also valid) `<Element></Element>` form.

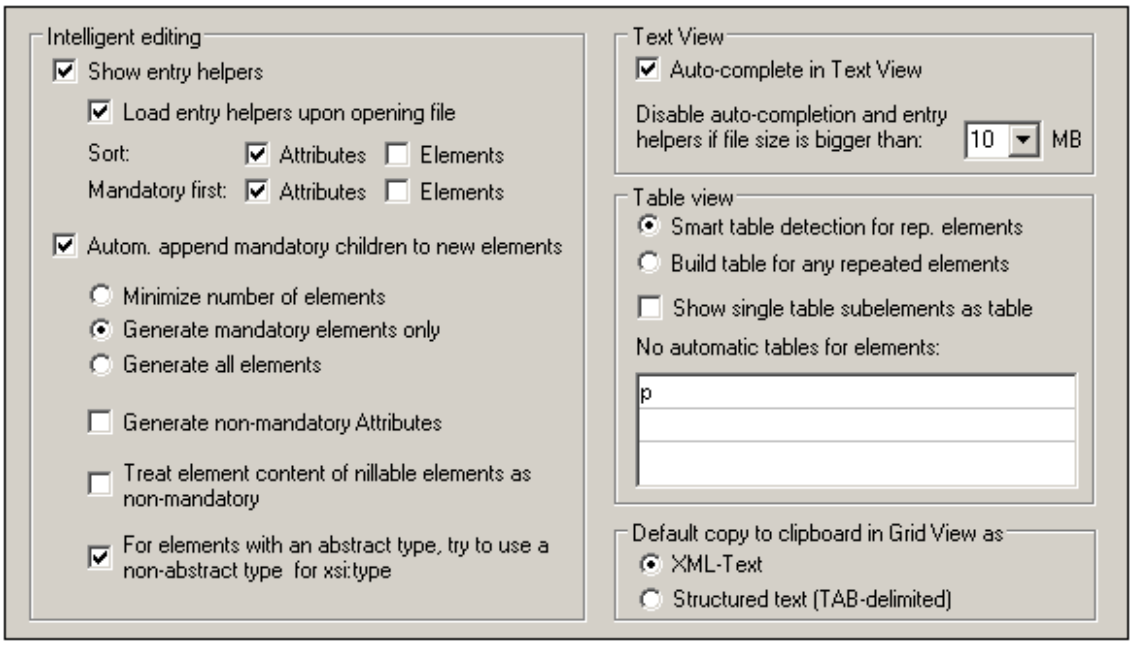
Add new file extension
Adds a new file type to the File types list. You must then define the settings for this new file type using the other options in this tab.

Delete selected file extension
Deletes the currently selected file type and all its associated settings.

After making the settings, click **OK** to finish and close the Options dialog.

Editing

The **Editing** tab enables you to specify editing behaviour in XMLSpy.



Intelligent editing
While editing documents, XMLSpy provides intelligent editing based on these settings. You can also customize various aspects of the behavior of these Entry Helpers here. Such customization varies according to the file type. For example, the option to load entry helpers on opening the file and sorting attributes will not be applicable to DTD or XQuery documents.

Text View
The *Auto-complete* option automatically adds unambiguous structural components. For example, when the closing angular bracket of the start tag of an element is entered, then the end tag of that element is automatically added if this option is enabled.

In Text View, Auto-completion and entry helpers can be disabled if a file is bigger than the size specified in the *Disable Auto-completion...* combo box. This is useful if you wish to speed up the editing of large files and can do without the auto-completion feature and entry helpers. If the file size is bigger than that specified for this option, then the Text View context menu contains a toggle command for switching on and off Auto-completion and entry helper use. So you can always switch these editing aids on and off at any time during editing (in the event of files having a size greater than the size specified for this option). If the value specified for this option is smaller than the size of the opened file, locations indicated in error messages will not correctly correspond to the location in Text View.

Default copy to clipboard in grid view as
You can choose the format in which data will be exported to foreign applications using the clipboard. If you select XML-Text, the contents of the clipboard will be formatted and tagged just like the resulting XML file itself.

The structured text mode attempts to format the clipboard contents as a table, for use in a spreadsheet or database application. This option does not affect the internal clipboard format that XMLSpy uses for copying and pasting.

Table view
You can also control, how XMLSpy decides when to display repeating elements in the Table View.

After making the settings, click **OK** to finish and close the Options dialog.

View

The **View** tab enables you to customize the XML documents presentation in XMLSpy.

Grid View
XML elements in Grid View can be collapsed into a single line displaying the element name. When collapsed, the element's attributes can also be displayed in that line. If the *Show Attribute Previews* option is checked, attributes are displayed in gray with collapsed elements. Otherwise, attributes are not displayed with the collapsed element. Columns in the grid can be set to adjust automatically to optimal widths. Additionally, the maximum optimal width and cell height can be limited. If the content of a cell is more than can fit in a cell, this is indicated by an ellipsis.

Pretty-print
When you select **Edit | Pretty-Print XML Text** in Text View or switch from another view to Text View, the XML document will be "pretty-printed". The pretty-printing will be with or without indentation according to whether the *Use Indentation* option in this dialog is checked or not. The amount of indentation can be specified in the Tabs pane of the Text View Settings dialog.

Program logo
You can turn off the splash screen on program startup to speed up the application. Also, if you have a purchased license (as opposed to, say, a trial license), you will have the option of turning off the program logo, copyright notice, and registration details when printing a document from

XMLSpy.

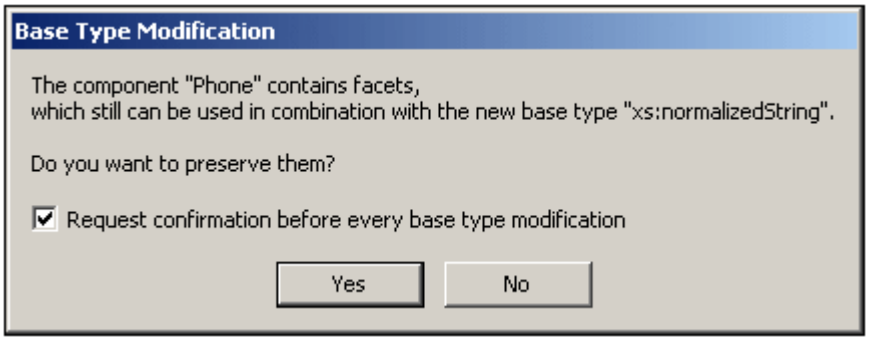
Window title
The window title for each document window can contain either the file name only or the full path name.

Authentic View
XML files based on a **StyleVision Power Stylesheet** are automatically opened in the Authentic View when this option is active.

Browser View
You can choose to see the browser view in a separate window, enabling side-by-side placement of the edit and browser views.

Schema view
An XML Schema datatype can be derived from another datatype. For example, a datatype for E-mail elements can be derived from a base datatype of `xs:string` (for example, by restricting the `xs:string` datatype to a specific set of characters). If the base datatype is subsequently changed, you can set the following options:

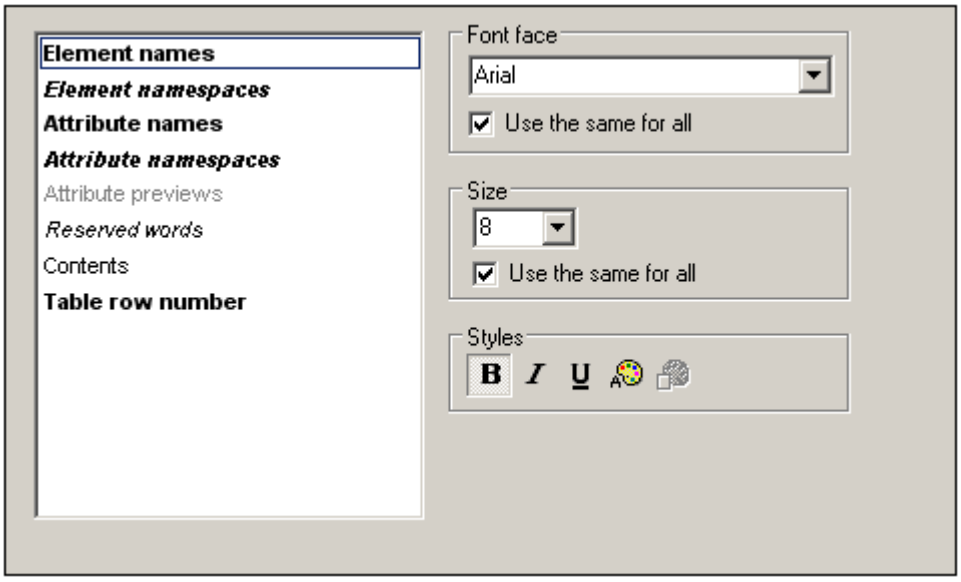
- *Preserve content:* If the definitions used to define the derived type can be used with the new base type, checking this option will automatically preserve the definitions.
- *Confirm on every modification*: After changing the base type, a dialog (*see screenshot below*) will pop up asking whether the old definitions should be preserved and used with the new base type.



After modifying the options settings, click **OK** to finish and close the Options dialog.

Grid Fonts

The **Grid fonts** tab allows you to customize the appearance of text in Grid View.



Font face
You can select the font face and size to be used for displaying the various items in Grid View. The same fonts are also used for printing, so only TrueType fonts should be selected.

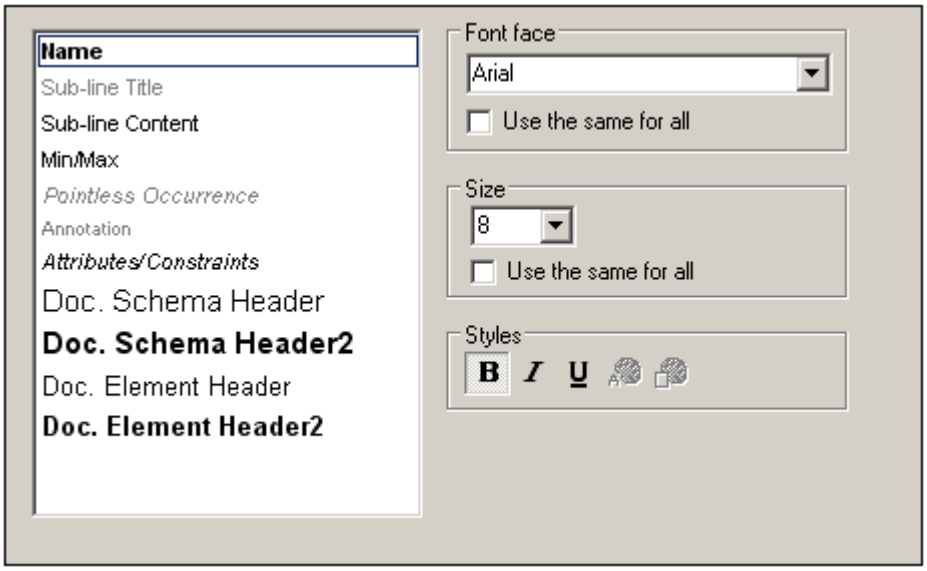
Size
Select the required size. If you want to use the same font size for all items, check the **Use the same for all** check box.

Styles
The style and color can be set using the options in this pane. The current settings are immediately reflected in the list in the left-hand pane, so you can preview the way your document will look.

After making the settings, click **OK** to finish and close the Options dialog.

Schema Fonts

The **Schema fonts** tab enables you to customize the appearance of text in Schema View.



Font face
You can select the font face and size to be used for displaying the various items in the Schema Design view. The same fonts are used when printing and creating schema documentation, so only TrueType fonts should be selected. Components prefixed with "Doc." are used in the schema documentation.

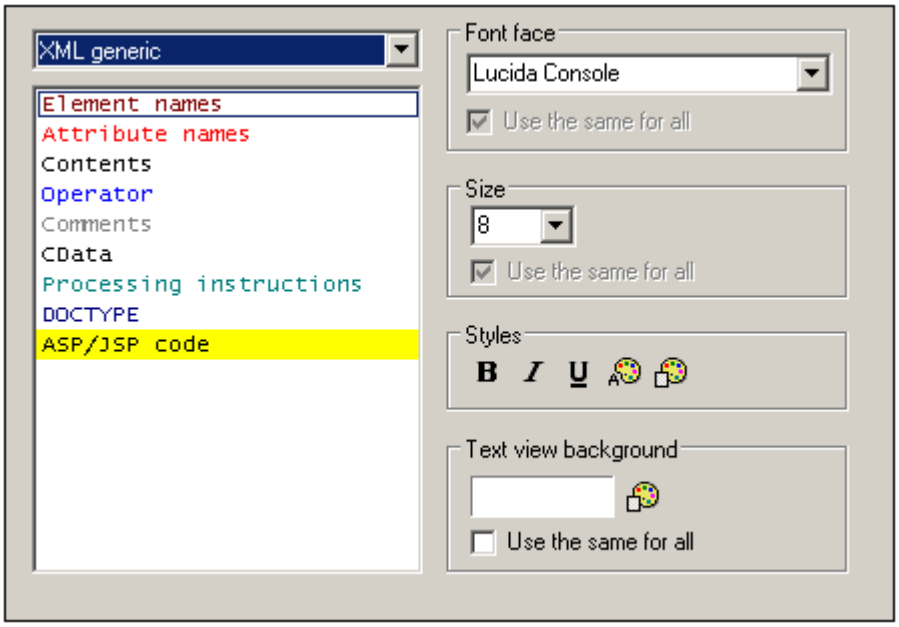
Size
Select the required size. If you want to use the same font size for all items, click on the Use The Same For All" check box.

Styles
The style and color can be set using the options in this pane. The current settings are immediately reflected in the list in the left pane, so you can preview the way your document will look.

After making the settings, click **OK** to finish and close the Options dialog.

Text Fonts

The **Text fonts** tab enables you to customize the appearance of text in Text View. You can customize the appearance of of text items according to the type of text item. For example, you can color element names and attribute names differently.



The text item types are categorized into three groups:

- XML generic
- XQuery
- CSS
- JSON

To customize text fonts, do the following:

1. In the combo box at top left, select the type of document for which you wish to customize text fonts. On doing this, the text item types for that document type appear in the box below the combo box. (*In the screenshot above,* `XML generic` *has been selected as the document type.*)
2. Select the text item type you wish to customize by clicking it. (*In the screenshot above,* `Element names` *has been selected.*)
3. Set the font properties using the options in the panes on the right-hand side. You can select the font-family, font-size, font-style, font-color, and background-color for the text. Additionally, you can also select a background color for the entire Text View.

Note: The same font, style, and size is used for all text item types. Only the text color and background color can be changed for individual text types. This enables the syntax coloring feature.

After making the settings, click **OK** to finish and close the Options dialog.

Colors

The **Colors** tab enables you to customize the background colors used in the Table View of Grid View. In the screenshot below, the colors have been changed from the default colors by clicking the palette icon next to each item and then selecting the preferred color.

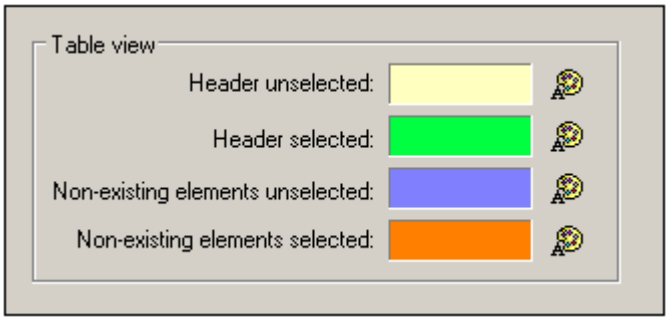
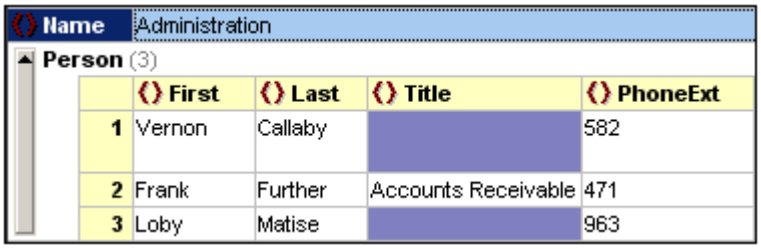
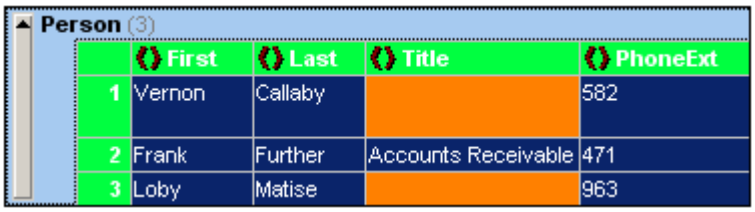


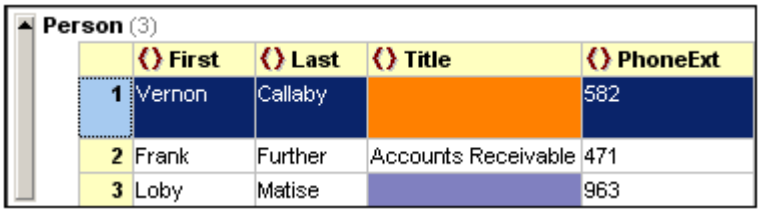
Table View
The Header unselected and Header selected options refer to the column and row headers. The screenshot below shows headers unselected; its color is as set in the dialog above.



The Header Selected color is activated when all headers are selected (*screenshot below*)—not when individual headers are selected. The screenshot below shows this using the colors defined in the dialog shown above. All headers can be selected by clicking the cell that intersects both headers or by selecting the element created as the table—or any of its ancestors.



Non-existent Elements
When an element or attribute does not exist in the XML document, then it can be given different background colors when selected and unselected. This is shown in the screenshot below, in which the first row is selected.

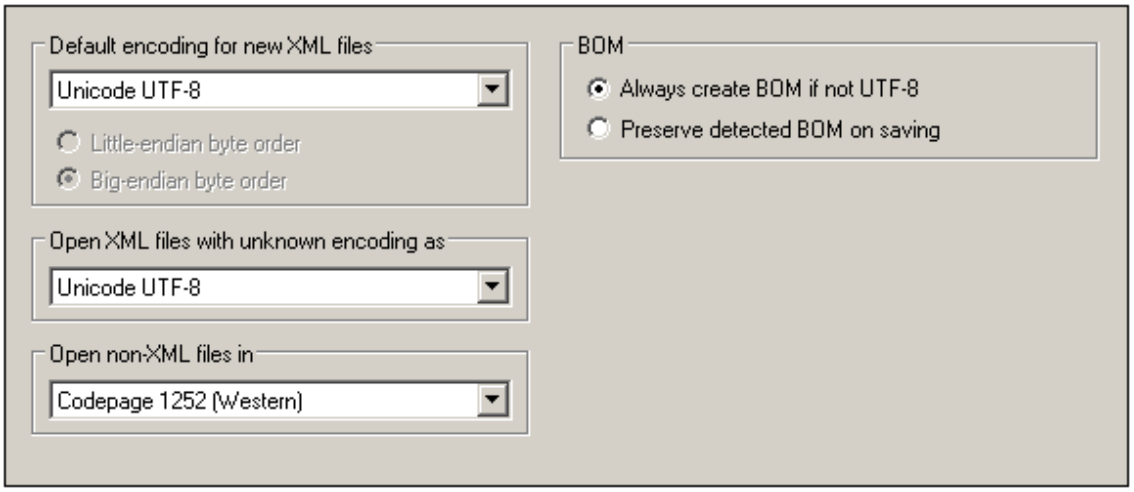


Please note: In addition to the colors you define here, XMLSpy uses the regular selection and menu color preferences set in the Display Settings in the Control Panel of your Windows installation.

After making the settings, click **OK** to finish and close the Options dialog.

Encoding

The **Encoding** tab specifies options for file encodings.



Default encoding for new XML files
The default encoding for new XML files can be set by selecting an option from the dropdown list. A new document is created with an XML declaration containing the encoding value you specify here. If a two- or four-byte encoding is selected as the default encoding (i.e. UTF-16, UCS-2, or UCS-4) you can also choose between little-endian and big-endian byte-ordering.

The encoding of existing XML files will be retained and can only be changed with the **File | Encoding** command.

Open XML files with unknown encoding as
If the encoding of an XML file cannot be determined or if the XML document has no encoding specification, the file will be opened with the encoding you select in this combo box.

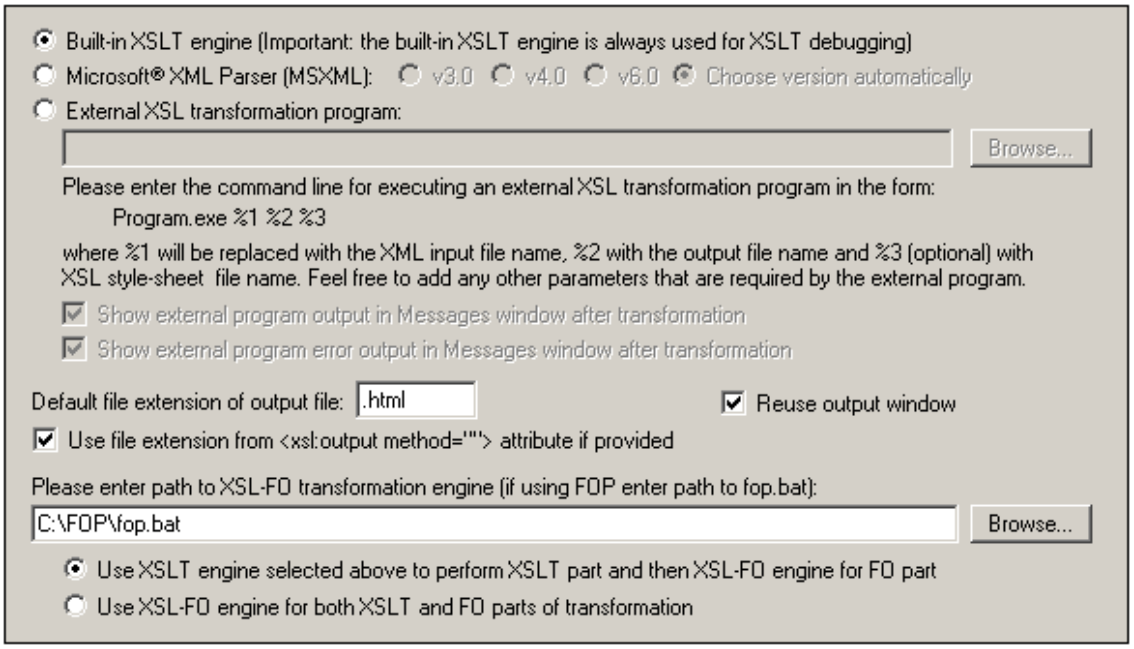
Open non-XML files in
Existing and new non-XML files are opened with the encoding you select in this combo box. You can change the encoding of the document by using the **File | Encoding** command.

BOM (Byte Order Mark)
When a document with two-byte or four-byte character encoding is saved, the document can be saved either with (i) little-endian byte-ordering and a little-endian BOM (*Always create BOM if not UTF-8*); or (ii) the detected byte-ordering and the detected BOM (*Preserve detected BOM on saving*).

After making the settings, click **OK** to finish and close the Options dialog.

XSL

The **XSL** tab (*screenshot below*) enables you to define options for XSLT transformations and XSL-FO transformations carried out from within the application.



XSLT transformations
XMLSpy contains the Altova XSLT 1.0 Engine and Altova XSLT 2.0 Engine, which you can use for XSLT transformations. The appropriate XSLT engine (1.0 or 2.0) is used (according to the value of the `version` attribute of the `xsl:stylesheet` or `xsl:transform` element). This applies both for XSLT transformations as well as for XSLT debugging using XMLSpy's XSLT/XQuery Debugger.

For transforming XML documents using XSLT, you could use one of the following:

- The built-in Altova XSLT Engine (comprising the Altova XSLT 1.0 Engine and the Altova XSLT 2.0 Engine).
- The MSXML 3.0, 4.0, or 6.0 parser (which is pre-installed). If you know which version of the MSXML parser is running on your machine, you could select it; otherwise, you should let the application select the version automatically. (The *Choose version automatically* option is active by default.) In this case, the application tries to select the most recent available version.
- An external XSLT processor of your choice. You must specify the command line string for the external XSLT processor. The following variables are available for building the command line string:

  `%1` = XML document to process
  `%2` = Output file to generate
  `%3` = XSLT stylesheet to use (if the XML document does not contain a reference to a stylesheet)

  For example, the command to run a simple transformation with the Saxon (XSLT 1.0) processor is:

  ```
  saxon.exe -o output.xml input.xml stylesheet.xslt
  parameter-name=parameter-value
  ```

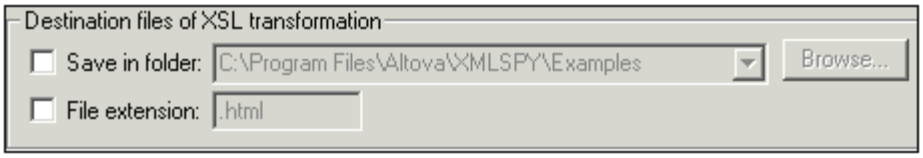
  To run this command from the application, select the External XSL Transformation Program radio button, and enter the following line in the text box:

  ```
  c:\saxon\saxon.exe -o %2 %1 %3 parameter-name=parameter-value
  ```

Check the respective check boxes to show the output and error messags of the external program in the Messages Window in XMLSpy.

Note: The parameters set in XMLSpy's XSLT Input Parameters dialog are passed to the internal Altova XSLT Engines only. They are not passed to any other XSLT Engine that is set up as the default XSLT processor.

The *Reuse output window* option causes subsequent transformations to display the result document in the same output window. If the XML file belongs to a project and *Reuse output window* option is disabled, the setting only takes effect if the *Save in folder* output file path (*screenshot below*) in the relevant project properties is **also** disabled.

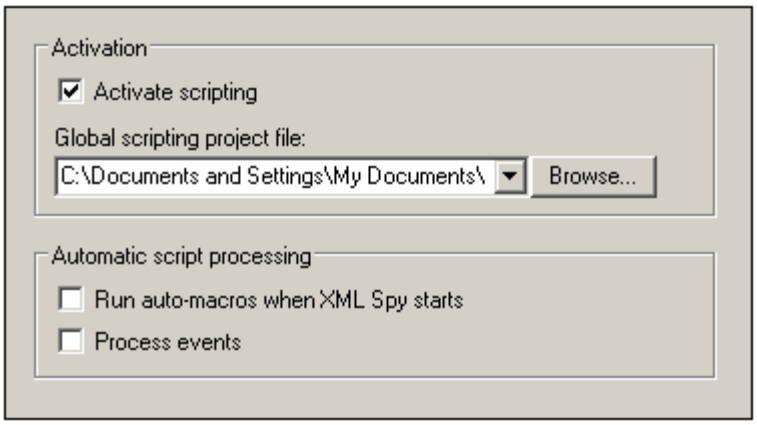


XSL-FO transformations
FO documents are processed using an FO processor, and the path to the executable of the FO processor must be specified in the text box for the XSL-FO transformation engine. The transformation is carried out using the **XSL/XQuery | XSL-FO Transformation** menu command. If the source file (the active document when the command is executed in the IDE) is an XSL-FO document, the FO processor is invoked for the transformation. If the source document is an XML document, an XSLT transformation is required to first convert the XML document to an XSL-FO document. This XSLT transformation can be carried out either by the XSLT engine you have specified as the default engine for the application (*see above*), or by the XSLT engine that might be built into the FO processor you have specified as the default FO processor for the application. To select between these two options, click the appropriate radio button.

After making the settings, click **OK** to finish and close the Options dialog.

Scripting

The **Scripting** tab (*screenshot below*) allows you to enable the Scripting Environment on application startup. Check the *Activate Scripting* check box to do this. You can then specify the Global Scripting Project file (*see screenshot below*).



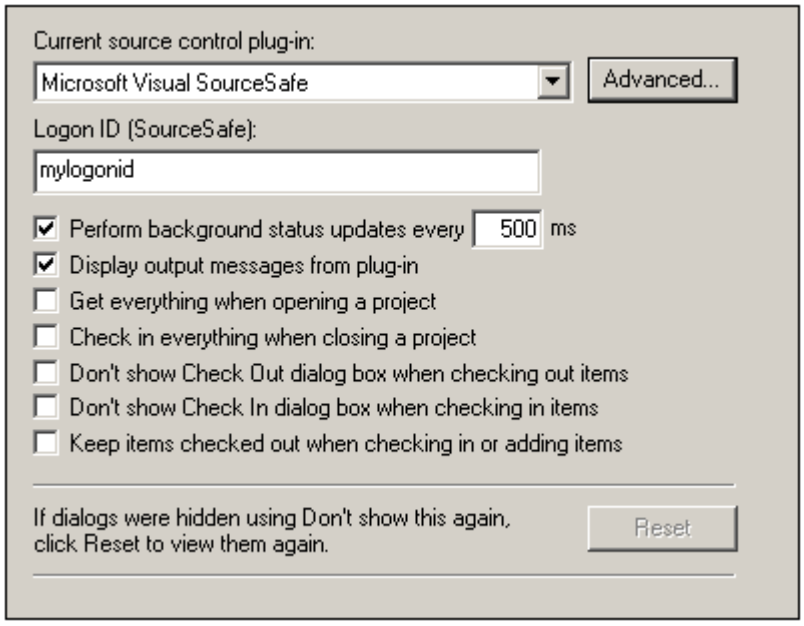
To set a global scripting project for XMLSpy, check the *Activate Scripting* check box and then browse for the Altova Scripting Project (`.asprj`) file you want. You can also specify: (i) whether

Auto-Macros in the scripting project should be automatically executed when XMLSpy starts, and (ii) whether application event handler scripts in the project should be automatically executed or not; check or uncheck the respective check boxes accordingly.

Click **OK** when done. Macros in the Global Scripting Project will then be displayed in the submenu of the **Macros** command.

Source Control

The **Source Control** tab (*screenshot below*) enables you to specify the source control provider, and the settings and default logon ID for each source control provider.



Source Control Plugin

The current source control plugin can be selected from among the currently installed source control systems. These systems are listed in the dropdown list of the combo box. After selecting the required source control, specify the login ID for it in the next text box. The **Advanced** button pops up a dialog specific to the selected source control plugin, in which you can define settings for that source control plugin. These settings are different for different source control plugins.

User preferences

A range of user preferences is available, including the following:

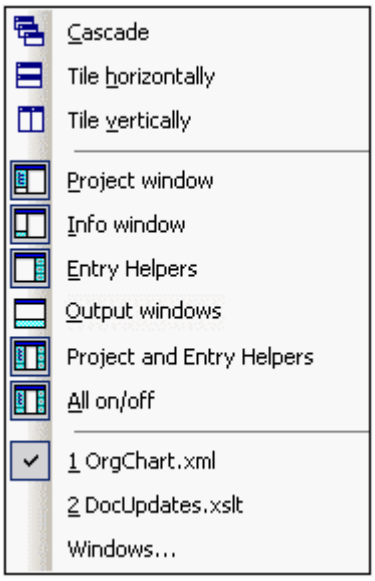
- Status updates can be performed in the background after a user-defined interval of time, or they can be switched off entirely. Very large source control databases could consume considerable CPU and network resources. The system can be speeded up, however, by disabling background status updates or increasing the interval between them..
- When opening and closing projects, files can be automatically checked out and checked in, respectively.
- The display of the Check Out and Check In dialogs can be suppressed.
- The **Reset** button is enabled if you have checked/activated the *Don't show this again* option in one of the dialog boxes. On clicking the **Reset** button, the *Don't show this*

again prompt is re-enabled.

After making the settings, click **OK** to finish and close the Options dialog.

18.14 Window Menu

To organize the individual document windows in an XMLSpy session, the **Window** menu contains standard commands common to most Windows applications.



You can cascade the open document windows, tile them, or arrange document icons once you have minimized them. You can also switch the various Entry Helper windows on or off, or switch to an open document window directly from the menu.

18.14.1 Cascade

This command rearranges all open document windows so that they are all cascaded (i.e. staggered) on top of each other.

18.14.2 Tile Horizontally

This command rearranges all open document windows as **horizontal tiles**, making them all visible at the same time.

18.14.3 Tile Vertically

This command rearranges all open document windows as **vertical tiles**, making them all visible at the same time.

18.14.4 Project Window

This command lets you switch the Project Window on or off.

This is a dockable window. Dragging on its title bar detaches it from its current position and makes it a floating window. Click right on the title bar, to allow docking or hide the window.

18.14.5 Info Window

This command lets you switch the Info Window on or off.

This is a dockable window. Dragging on its title bar detaches it from its current position and

makes it a floating window. Click right on the title bar, to allow docking or hide the window.

18.14.6 Entry Helpers

This command lets you switch all three Entry-Helper Windows on or off.

All three Entry helpers are dockable windows. Dragging on a title bar detaches it from its current position and makes it a floating window. Click right on the title bar to allow docking or hide the window.

18.14.7 Output Windows

The Output Windows are a set of tabbed output windows, such as the Messages window (which displays messages like validation results), the Find in Files window, and the XPath window (which shows XPath evaluation results). The initial setting is for them to open at below the Main Window. The Output Windows command lets you switch the Output Windows on or off.

The Output Windows window is dockable. Dragging on its title bar detaches it from its current position and makes it a floating window. Click right on the title bar to allow docking or to hide the window.

For a complete description of Output Windows see Output Windows in the section, Text View.

18.14.8 Project and Entry Helpers

This command toggles on and off the display of the Project Window and the Entry Helpers together.

18.14.9 All On/Off

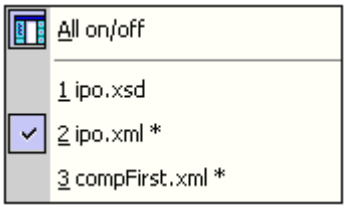
This command lets you switch all dockable windows on, or off:

- the Project Window
- the Info Window
- the three Entry-Helper Windows
- the Output Windows

This is useful if you want to hide all non-document windows quickly, to get the maximum viewing area for the document you are working on.

18.14.10 Currently Open Window List

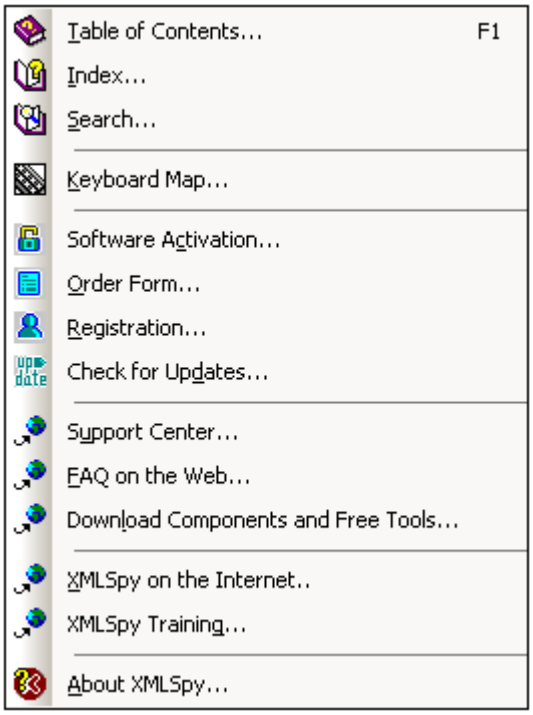
This list shows all currently open windows, and lets you quickly switch between them.



You can also use the Ctrl-TAB or CTRL F6 keyboard shortcuts to cycle through the open windows.

18.15 Help Menu

The **Help** menu contains all commands required to get help or more information on XMLSpy, as well as links to information and support pages on our web server.



The **Help** menu also contains the Registration dialog, which lets you enter your license key-code once you have purchased the product.

18.15.1 Table of Contents

The **Help | Table of contents** command displays a **hierarchical representation** of all chapters and topics contained in the online help system. Use this command to jump to the table of contents directly from within XMLSpy.

Once the help window is open, use the three tabs to toggle between the table of contents, index , and search panes. The Favorites tab lets you bookmark certain pages within the help system.

18.15.2 Index

The **Help | Index** command accesses the **keyword index** of the Online Help. You can also use the Index tab in the left pane of the online help system.

The index lists all relevant keywords and lets you navigate to a topic by double-clicking the respective keyword. If more than one topic matches the selected keyword, you are presented a list of available topics to choose from.

18.15.3 Search

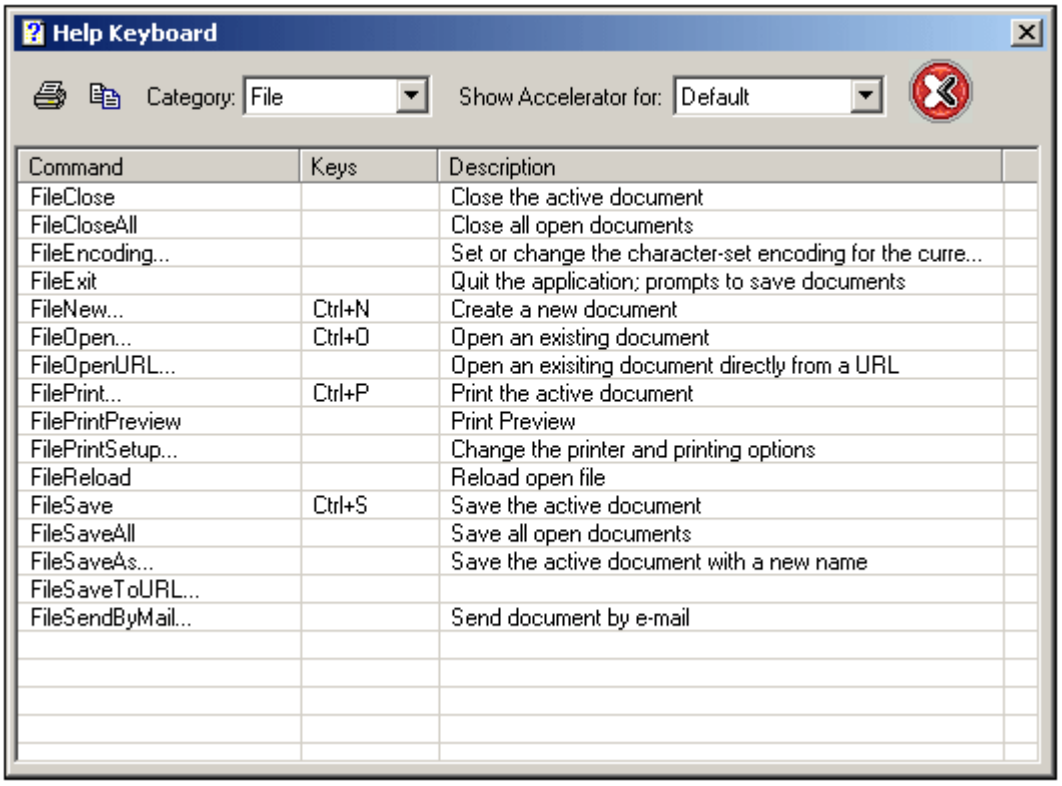
The **Help | Search** command performs a **full-text search** on the entire online help system.

1. Enter your search term in the query field and press **Enter**.
   The online help system displays a list of available topics that contain the search term

you've entered.
2. Double-click on any item in the list to display the corresponding topic.

18.15.4 Keyboard Map

The **Help | Keyboard Map...** command causes an information box to be displayed that contains a menu-by-menu listing of all commands in XMLSpy. Menu commands are listed with a description and shortcut keystrokes for the command.



To view commands in a particular menu, select the menu name in the Category combo box. You can print the command by clicking the printer icon.

You should note the following points about shortcuts:

- Certain commands (and their shortcuts) are applicable only within a certain view. For example, most of the commands in the XML menu are applicable only in Grid View. Other commands (such as **File | Save** or **XML | Check Well-Formedness**) are available in multiple views.
- Other cool shortcuts: For example, **Shift+F10** brings up the context menu in Text View and Schema View; **Ctrl+E** when the cursor is inside an element start or end tag in Text View moves the cursor to the end or start tag, respectively.
- In the Keyboard tab of the Customize dialog, you can also set your own shortcuts for various menu commands.

18.15.5 Activation, Order Form, Registration, Updates

Software Activation
After you download your Altova product software, you can activate it using either a free evaluation key or a purchased permanent license key.

- ***Free evaluation key.*** When you first start the software after downloading and installing it, the Software Activation dialog will pop up. In it is a button to request a free evaluation key-code. Enter your name, company, and e-mail address in the dialog that appears, and click Request Now! The evaluation key is sent to the e-mail address you entered and should reach you in a few minutes. Now enter the key in the key-code field of the Software Activation dialog box and click **OK** to start working with your Altova product. The software will be unlocked for a period of 30 days.
- ***Permanent license key.*** The Software Activation dialog contains a button to purchase a permanent license key. Clicking this button takes you to Altova's online shop, where you can purchase a permanent license key for your product. There are two types of permanent license: single-user and multi-user. Both will be sent to you by e-mail. A *single-user license* contains your license-data and includes your name, company, e-mail, and key-code.A *multi-user license* contains your license-data and includes your company name and key-code. Note that your license agreement does not allow you to install more than the licensed number of copies of your Altova software on the computers in your organization (per-seat license). Please make sure that you enter the data required in the registration dialog exactly as given in your license e-mail.

Note: When you enter your license information in the Software Activation dialog, ensure that you enter the data exactly as given in your license e-mail. For multi-user licenses, each user should enter his or her own name in the Name field.

The Software Activation dialog can be accessed at any time by clicking the **Help | Software Activation** command.

Order Form
When you are ready to order a licensed version of the software product, you can use either the **Order license key** button in the Software Activation dialog (*see previous section*) or the **Help | Order Form** command to proceed to the secure Altova Online Shop.

Registration
The first time you start your Altova software after having activated it, a dialog appears asking whether you would like to register your product. There are three buttons in this dialog:

- **OK:** Takes you to the Registration Form
- **Remind Me Later:** Pops up a dialog in which you can select when you wish to be next reminded.
- **Cancel:** Closes the dialog and suppresses it in future. If you wish to register at a later time, you can use the **Help | Registration** command.

Check for Updates
Checks with the Altova server whether a newer version than yours is currently available and displays a message accordingly.

18.15.6 Support Center, FAQ, Downloads

Support Center
If you have any questions regarding our product, please feel free to use this command to send a query to the Altova Support Center at any time. This is the place where you'll find links to the FAQ, support form, and e-mail addresses for contacting our support staff directly.

FAQ

To help you in getting the best support possible, we are providing a list of Frequently Asked Questions (FAQ) on the Internet, that is constantly updated as our support staff encounters new issues that are raised by our customers.

Please make sure to check the FAQ before contacting our technical support team. This will allow you to get help more quickly.

We regret that we are not able to offer technical support by phone at this time, but our support staff will typically answer your e-mail requests within one business day.

If you would like to make a feature suggestion for a future version of XMLSpy or if you wish to send us any other general feedback, please use the questionnaire form.

Download components and free tools
This command is a link to the Components Download page at the Altova website, from where you can download components, free tools, and third-party add-ins that you can use in your XML development environment. Included among these are the Altova Validator, and XSLT and XQuery engines.

18.15.7 On the Internet

On the Internet
This command takes you directly to the Altova web-server http://www.altova.com where you can find out about news, product updates and additional offers from the Altova team.

Training
The **Training** command takes you to the Online Training page on the Altova website. Here you can enroll for online courses to help you develop expertise in using Altova products.

18.15.8 About

This command shows the XMLSpy splash screen and copyright information dialog box, which includes the XMLSpy logo. If you are using the 64-bit version of XMLSpy, this is indicated with the suffix (x64) after the application name. There is no suffix for the 32-bit version.

Please note:
This dialog box shows the version number - to find the number of the actual build you are using, please look at the status bar, which always includes the full version and build number.

18.16 Command Line

Certain XMLSpy actions can be carried out from the command line. These commands are listed below:

Open a file
Command: `xmlspy.exe file.xml`
Action: Opens the file, `file.xml`, in XMLSpy

Note: If an XML file has an SPS file already assigned to it, then the XML file is opened in Authentic View. Otherwise, the XML file is opened in Text View. If an SPS file is not assigned, one can be assigned with the `/sps` flag (*see below*).

Open multiple files
Command: `xmlspy.exe file1.xml file2.xml`
Action: Opens the files, `file1.xml` and `file2.xml`, in XMLSpy

Assign an SPS file to an XML file for Authentic View editing
Command: `xmlspy.exe myxml.xml /sps mysps.sps`
Action: Opens the file, `myxml.xml` in Authentic View with `mysps.sps` as its SPS file. The `/sps` flag specifies that the SPS file that follows is to be used with the XML file that precedes the `/sps` flag (for Authentic View editing).

Open a new XML template file via an SPS file
Command: `xmlspy.exe mysps.sps`
Action: Opens a new XML file in Authentic View. The display will be based on the SPS and the new XML file will have a skeletal structure based on the SPS schema. The name of the newly created XML file must be assigned when saving the XML file.

Open an SPS file as an XML document in Text View
Command: `xmlspy.exe /raw mysps.sps`
Action: Opens the file `mysps.sps` as an XML document in Text View. The `/raw` flag specifies that the SPS file that follows is to be edited as an XML file.

Altova XMLSpy 2012

Programmers' Reference

Programmers' Reference

XMLSpy is an Automation Server: It exposes programmable objects to other applications called Automation Clients. An Automation Client can directly access the objects and functionality that the Automation Server makes available. So, an Automation Client of XMLSpy can use, for example, the XML validation functionality of XMLSpy. As a consequence, developers can enhance their applications with the ready-made functionality of XMLSpy.

The programmable objects of XMLSpy are made available to Automation Clients via the Application API of XMLSpy, which is a COM API. The Application API of XMLSpy will also be called Application API for short from now onwards. The object model of the Application API and a complete description of all the available objects are provided in this documentation (see the section Application API).

Execution environments
The Application API can be accessed from within the following environments:

- Scripting Editor
- IDE Plug-ins
- External programs
- ActiveX Integration

Each of these environments is described briefly below.

Scripting Editor: Customizing and modifying XMLSpy functionality
You can customize your installation of XMLSpy by modifying and adding functionality to it. You can also create Forms for user input and modify the user interface so that it contains new menu commands and toolbar shortcuts. All these features are achieved by writing scripts that interact with objects of the Application API. To aid you in carrying out these tasks efficiently, XMLSpy offers you an in-built Scripting Editor. A complete description of the functionality available in the Scripting Editor and how it is to be used is given in the Scripting Editor section of this documentation. The supported programming languages are **JScript** and **VBScript**.

IDE Plug-ins: Creating plug-ins for XMLSpy
XMLSpy enables you to create your own plug-ins and integrate them into XMLSpy. You can do this using XMLSpy's special interface for plug-ins. A description of how to create plug-ins is given in the section XMLSpy IDE Plug-ins.

An application object gets passed to most methods that must be implemented by an IDE plug-in and gets called by the application. Typical languages used to implement an IDE plug-in are **C#** and **C++**. For more information, see the section XMLSpy IDE Plugins.

External programs
Additionally, you can manipulate XMLSpy with external scripts. For example, you could write a script to open XMLSpy at a given time, then open an XML file in XMLSpy, validate the file, and print it out. External scripts would again make use of the Application API to carry out these

tasks. For a description of the Application API, see the section Application API.

Using the Application API from outside XMLSpy requires an instance of XMLSpy to be started first. How this is done depends on the programming language used. See the section, Programming Languages, for information about individual languages.

Essentially, XMLSpy will be started via its COM registration. Then the `Application` object associated with the XMLSpy instance is returned. Depending on the COM settings, an object associated with an already running XMLSpy can be returned. Any programming language that supports creation and invocation of COM objects can be used. The most common of these are listed below.

- JScript and VBScript script files have a simple syntax and are designed to access COM objects. They can be run directly from a DOS command line or with a double click on Windows Explorer. They are best used for simple automation tasks.
- C# is a a full-fledged programming language that has a wide range of existing functionality. Access to COM objects can be automatically wrapped using C#..
- C++ provides direct control over COM access but requires relatively larger amounts of code than the other languages.
- Java: Altova products come with native Java classes that wrap the Application API and provide a full Java look-and-feel.
- Other programming languages that make useful alternatives are: Visual Basic for Applications, Perl, and Python.

ActiveX Integration

A special case of accessing the Application API is via the XMLSpy ActiveX control. This feature is only available if the XMLSpy integration package is installed. Every ActiveX Control has a property that returns a corresponding COM object for its underlying functionality. The manager control provides an `Application` object, the document control a `Document` object, and the placeholder object, in cases where it contains the project tree, returns the `Project` object. The methods supported by these objects are exactly as described in the Interfaces section of the Application API. Care must be taken not to use methods that do not make sense in the context of ActiveX control integration. For details see ActiveX Integration.

About Programmers' Reference

The documentation contained in the Programmers' Reference for XMLSpy consists of the following sections:

- Scripting Editor: a user reference for the Scripting Environment available in XMLSpy
- IDE Plug-ins: a description of how to create plug-ins for XMLSpy
- Application API: a reference for the Application API
- ActiveX Integration: a guide and reference for how to integrate the XMLSpy GUI and XMLSpy functionality using an ActiveX control

1 Scripting Editor

The Scripting Editor of XMLSpy uses the Form Editor components of the Microsoft .NET Framework, and thus provides access to the Microsoft .NET Framework. This means that JScripts and VBScripts not only work with the XMLSpy API—which is a COM API and the API of XMLSpy—but can also access and use classes of the Microsoft .NET framework.

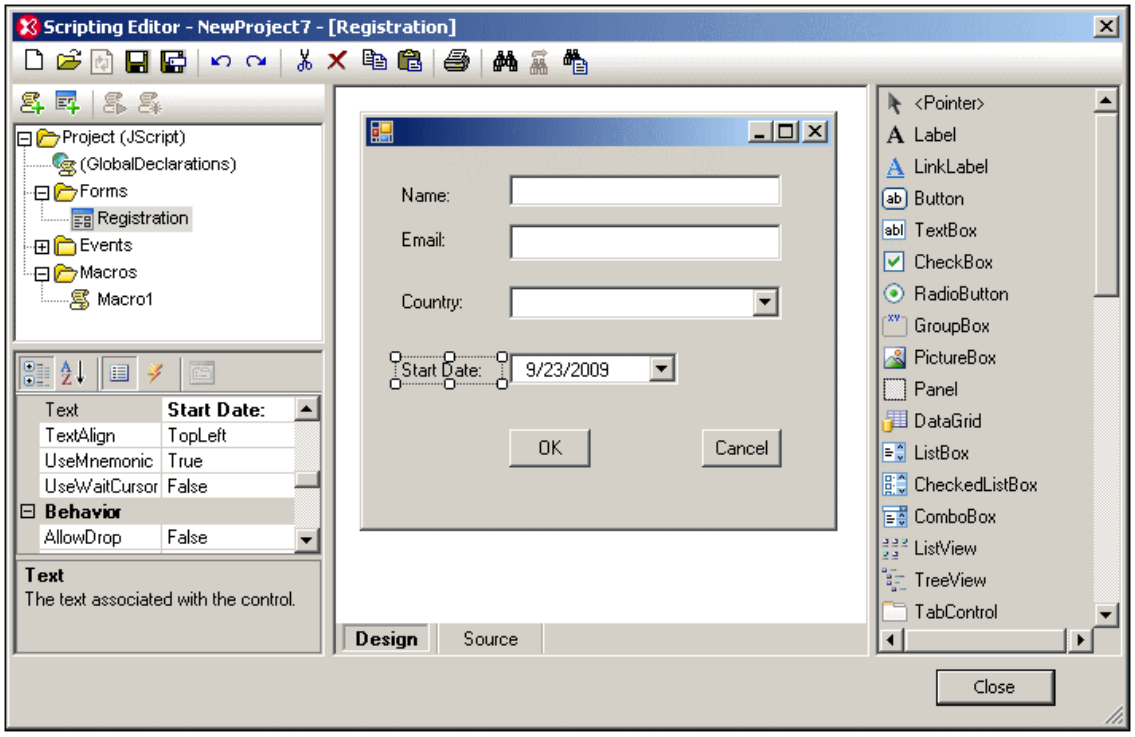
You can therefore create and use your own macros and forms within XMLSpy, and thus add to and modify the functionality of your installation of XMLSpy.

Note: Visual Basic is **not supported** as a language in the scripting environment. Only VBScript and JavaScript are. Ensure that you use VBScript syntax and not Visual Basic syntax in the scripting environment.

Note: Microsoft's **.NET Framework 2.0 or higher** is a system prerequisite for Scripting Editor, and it must be installed before XMLSpy is installed.

The Scripting Editor

The Scripting Editor (*screenshot below*) opens in a separate window and is accessed via the **Tools | Scripting Editor** menu command in the XMLSpy GUI. The programming languages that can be used in the Scripting Environment are **JScript** and **VBScript**. The scripting language can be changed by right-clicking the Project item in the Project window, selecting **Scripting Language**, and selecting the language you want.



What you can do with the Scripting Editor

In the Scripting Editor, you can create Forms, Event Handlers, and Macros to build up a

Scripting Project. A Scripting Project can then be set as the Global Scripting Project for XMLSpy , thus enabling scripts in the Scripting Project to be used in the application. Additionally, different Scripting Projects can be assigned to different XMLSpy projects, thus allowing different scripts to be used for different XMLSpy projects.

Every script project can define the .NET runtime version it wants to use. An application can handle multiple scripting projects with different .NET runtime versions simultaneously, but the appropriate .NET version must be installed. For example, script projects with .NET 4.0 will only run on computers having .NET 4.0 installed.

Documentation about the Scripting Editor

The documentation describing the Scripting Environment (this section) is organized into the following parts:

- An overview, which provides a high level description of the Scripting Editor and Scripting Projects.
- A list of steps required to create a Scripting Project.
- An explanation of Global Declarations, together with an example.
- A description of how to create Forms.
- A discussion of XMLSpy-specific event handlers.
- An explanation of how to use macros in the Scripting Editor and in XMLSpy.

1.1 Overview

The Scripting Editor provides an interface in which you can: (i) graphically design Forms while assigning scripts for components in the Form; (ii) create Event Handlers, and (iii) create Macros.

These Forms, Event Handlers, and Macros are organized into scripting projects, which are then assigned to XMLSpy application projects and can be used in the application.

Variables and functions can be defined in a Global Declarations script, which is always executed before Macro or Event Handler scripts.

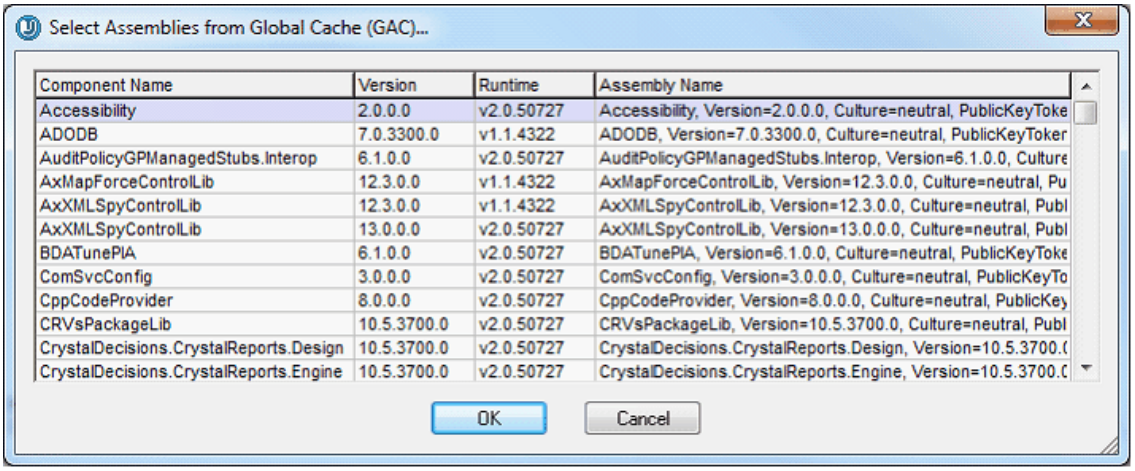
This section gives an overview of the Scripting Editor and Scripting Projects. It is organized into the following sections:

- Scripting Projects in XMLSpy, which describes how the scripting projects you create with the Scripting Editor will be used in XMLSpy.
- The Scripting Editor GUI, which provides a detailed look at the different parts of the Scripting Editor GUI and how they are to be used.
- Components of a Scripting Project, which explains the different components that go to make up a scripting project.

The details about the creation of the various components (Global Declarations, Forms, Event Handlers, and Macros) are described in their respective sections.

.NET assemblies
Every scripting project can have references to .NET assemblies—in addition to the default references. .NET assemblies can be added for the whole scripting project or for individual macros (by using the new `CLR.LoadAssembly` command in the source code; see Built-in Commands). Assemblies can be added, for example, from the Global Assembly Cache.

To add an assembly, right-click the project or macro, and, from the context menu that pops up, select **Add .NET Assembly | Assembly from Global Cache (GAC)**.



This works in the same way as with Visual Studio and allows access not only to the complete Microsoft .NET Framework but also to any user-defined assembly.

1.1.1 Scripting Projects in XMLSpy

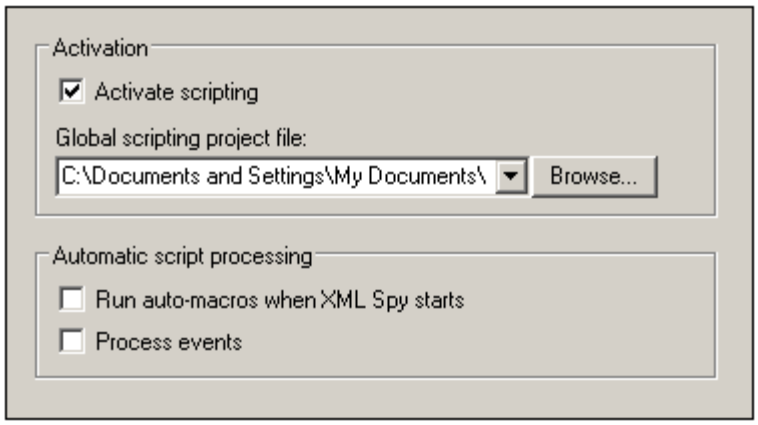
All scripts and scripting information created in the Scripting Editor are stored in **Altova Scripting Projects** (**. asprj files**).

You can create any number of Altova Scripting Projects. After a scripting project has been created, it can be used in the following ways:

- It can be set as the global scripting project for XMLSpy. Scripts in the global scripting project can then be called from within the application, and macros of the Global Scripting Project can be used for all XMLSpy projects.
- It can be assigned to an XMLSpy project (as an application project). When an XMLSpy project is open in XMLSpy, scripts in the associated scripting project can be called.

Your XMLSpy package contains a sample scripting project called `SampleScripts.asprj`. This file is located in the folder: `C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012\Examples\` and contains global declarations for a few standard tasks.

Setting the global scripting project of an application
The global scripting project of an application is set in the Scripting tab of the Options dialog of XMLSpy (*screenshot below*, **Tools | Options**).



To set a global scripting project for XMLSpy, check the *Activate Scripting* check box and then browse for the Altova Scripting Project (`.asprj`) file you want. You can also specify: (i) whether Auto-Macros in the scripting project should be automatically executed when XMLSpy starts, and (ii) whether application event handler scripts in the project should be automatically executed or not; check or uncheck the respective check boxes accordingly.

Note: Nested script execution is possible, i.e. Macros can call other macros, and events are received during macro, or event, execution.

Assigning a scripting project to an XMLSpy project
A scripting project is assigned to an XMLSpy project as follows:

1. In the XMLSpy GUI, open the required application project.
2. Select the menu command **Project | Script Settings**.
3. Check the *Activate Project Scripts* check box and select the required scripting project (`.asprj` file). If you wish to run Auto-Macros when the XMLSpy project is loaded, check

the *Run Auto-Macros* check box.

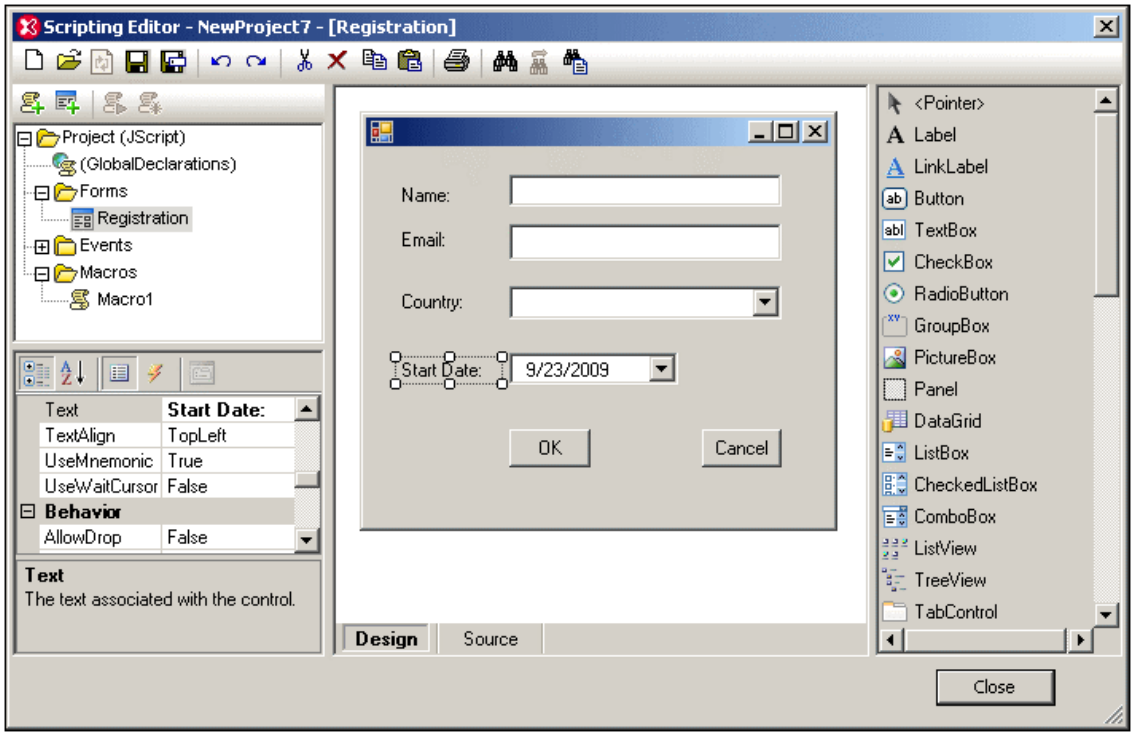
4. Click **OK** to finish.

Note: To deactivate (that is, unassign) the scripting project of an XMLSpy project, uncheck the *Activate Project Scripts* check box.

1.1.2 The Scripting Editor GUI

The Scripting Editor GUI is shown below. It has the following parts:

- A toolbar
- A Scripting Project Tree pane (top left-hand side)
- A Properties and Events pane (bottom left)
- A Main Window with Design and Source tabs
- A Form Object Palette (right-hand side)



Scripting Editor toolbar

The Scripting Editor toolbar contains icons for:

- Standard file commands such as **New**, **Open**, **Save**, and **Print**. These commands are used to create new scripting projects, open existing scripting projects, and save and print scripting projects.
- Standard editing commands such as **Copy**, **Paste**, **Undo**, **Redo**, **Find**, and **Replace**. Note that the **Find** and **Replace** commands are applied to code in the Source tab of the Scripting Editor.

Scripting Project Tree

The Scripting Project Tree (*screenshot below*) shows the various components of the scripting project, structured along four main branches: (i) Global Declarations, (ii) Forms, (iii) Events, and (iv) Macros.

The Scripting Project Tree provides access to each component of the scripting project. For example, in order to display and edit a particular Form, expand the Forms folder in the tree (*see screenshot above*), right-click the Form you wish to display or edit, and click **Open** from the context menu that pops up.

A quicker way to open a Form, Event, macro, or the Global Declarations script, is to double-click the respective icon, or text. To delete a Form or Macro from the scripting project, right-click the component and select the **Delete** command from the context menu.

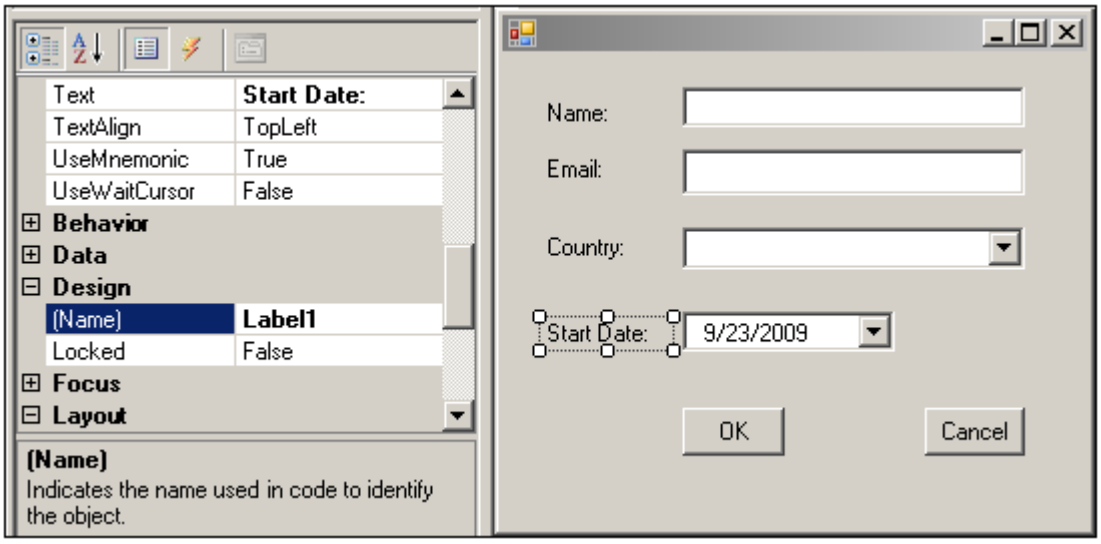
The Scripting Project Tree pane contains a toolbar with icons (*screenshot below*).

The icons, from left to right, are for: (i) creating a new macro, (ii) creating a new form, (iii) running a macro, and (iv) debugging a macro. These commands are also available in the context menu that appears when you right-click any component in the Scripting Project Tree.

Properties and Events

The Properties and Events pane (*screenshot below*) displays the following:

- Form properties, when the Form is selected
- Object properties, when an object in a Form is selected. (The screenshot below shows, at left, the properties of the object selected in the Form at right.)
- Form events, when a Form is selected
- Object events, when an object in a Form is selected



To switch between the properties and events of the selected component, click, respectively, the **Properties** icon (third from left in the Properties and Events toolbar, *see screenshot above*) and the **Events** icon (fourth from left).

The first and second icons from left in the toolbar are, respectively, the **Categorized** and **Alphabetical** icons. These display the properties or events either organized by category or organized in ascending alphabetical order.

When a property or event is selected, a short description of it is displayed at the bottom of the Properties and Events pane.

Main Window

The Main Window displays one component at a time and has one or two tabs depending on what is being displayed. If a Global Declarations script, an Event, or a Macro is being displayed, then a single tab, the Source tab, displays the source code of the selected component.

The Source tab supports:

- syntax coloring
- source code folding
- setting/deleting bookmarks using **CTRL+F2**
- autocompletion entry helper with parameter info
- Goto Brace, Goto Brace Extend
- Zoom In / Zoom Out
- full method/property signature shown next to the autocompletion entry helper
- brace highlighting during code entry

```
if ( x == y.GetName( a, b, c() ) )
```

- mouse over popups; placing the mouse over a known method or property, displays its signature (and documentation if available)

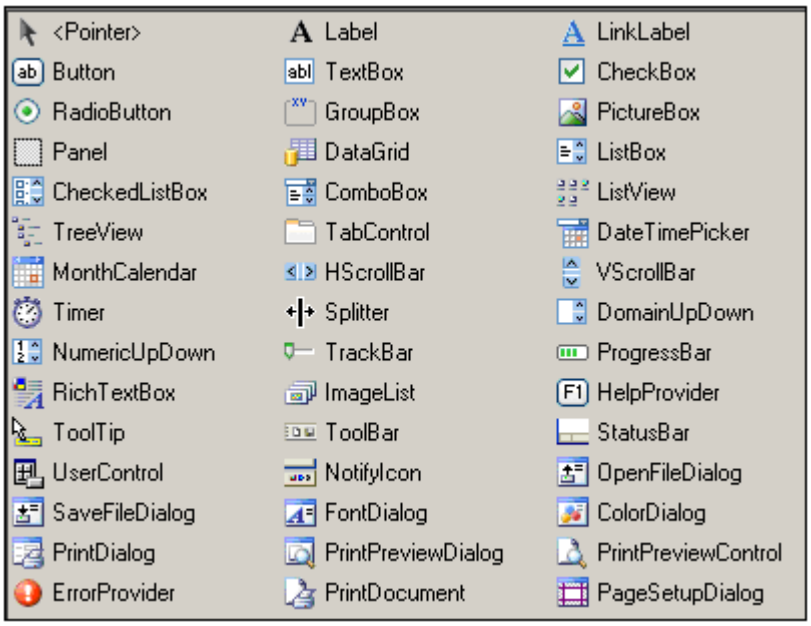
If a **Form** is being displayed, then the Main Window has two tabs: a Design tab showing and enabling the layout of the Form, and a Source tab containing the source code for the Form. Content in both the Design tab and Source tab can be edited.

Note: Since JScript and VB Script are untyped languages, entry helpers and auto-completion is supported only in cases of "fully qualified constructs" and "predefined" names.

If names start with `objDocument`, `objProject`, `objXMLData`, or `objAuthenticRange`, members of the corresponding interface will be shown. Auto-completion entry helper and parameter info are shown during editing, but can also be obtained on demand by pressing **Ctrl+Space**.

Form Object Palette

The Form Object Palette contains all the objects that are available for designing Forms and looks something like the screenshot below. Registered ActiveX controls can be added to the Form Object Palette by right-clicking the pane and selecting the **Add ActiveX Control** command



To insert an object from the Form Object Palette click the object you want in the palette, then click at the location in the Form where you wish to insert the object. The object will be placed at this location. In many cases you will need to supply some properties of the object via the Properties and Events pane. You can drag the object to other locations as well as resize it. Further, a number of editing commands, such as centering and stacking objects, can be accessed via the context menu of the selected Form object.

Some Form objects, such as `Timer`, are not added to the Form but are created as Tray Components in a tray at the bottom of the Main Window. You can select the object in the tray and set properties and event handlers for the object via the Properties and Events pane. For an example of how Tray Components are handled, see Form usage and commands.

1.1.3 Components of a Scripting Project

An Altova Scripting Project consists of the following four major components:

- *Global Declarations*, a component which contains definitions of variables and functions that are available to, and can be used by, all Forms, Macros, and Event Handler scripts

in the scripting project.

- *Forms*, a component which contains all the Forms defined in the scripting project.
- *Events*, a component which contains Event Handler scripts for all application-based—as opposed to Form-based—events.
- *Macros*, a component which contains all the Macros defined in the scripting project.

These components are displayed in and accessed via the Scripting Project Tree of the Scripting Editor (*screenshot below*).

Given below is a brief description of each of these components.

Global Declarations
The Global Declarations component is a script that contains variables and functions that can be used by Forms, Event Handlers, and Macros. The functions make use of the XMLSpy API to access XMLSpy functionality. Creating a variable or function in the Global Declarations module enables it to be accessed from all the Forms, Event Handlers and Macros in the scripting project.

To add a variable or function, open the Global Declarations component (by right-clicking it in the Scripting Project Tree and selecting **Open**) and edit the Global Declarations script in the Main Window. In this script, add the required variable or function.

Forms
In the Scripting Editor, you can build a Form graphically using a palette of Form objects such as text input fields and buttons. For example, you can create a Form to accept the input of an element name and to then remove all occurrences of that element from the active XML document.

For such a Form, a function script can be associated with a text box so as to take an input variable, and an Event Handler can be associated with a button to start execution of the delete functionality, which is available in the XMLSpy API. A Form is invoked by a call to it either within a function (in the Global Declarations script) or directly in a Macro. For details of how to create and edit Forms, see the Forms section.

Event handling
Event Handler scripts can be associated with a variety of available events. You can control events that occur both within Forms (Form events) and within the general application interface (application events). The script associated with an event is executed immediately upon the triggering of that event.

Most events have parameters which provide detailed information about the event. The return value from the script typically instructs the application about how to continue its processing (for example, the application may not allow editing).

An Event Handler runs when the relevant event occurs in the Form or in XMLSpy. For details about how to create event handlers, see Event Handlers.

Macros
Macros are used to implement complex or repetitive tasks. Macros do not use either parameters or return values.

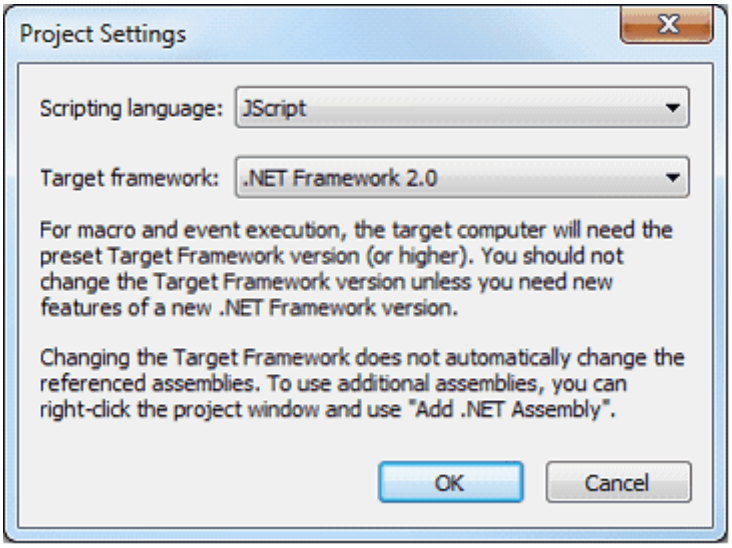
In a Macro, it is possible to access all variables and functions declared in the Global Declarations and to display Forms for user input.

For a simple example of creating a Macro, see Writing a Macro. Also see Running Macros for a description of the ways in which a Macro can be called. A Macro is run from within the XMLSpy interface by clicking **Tools | Macros | *[MacroName]***

1.2 Creating a Scripting Project

The broad steps for creating a Scripting Project are as follows:

1. Open the Scripting Editor by clicking the command **Tools | Scripting Editor**.
2. In the Scripting Editor, open a new scripting project by clicking the **New** icon in the Scripting Editor toolbar. The Project Settings dialog (*screenshot below*) pops up.



   Select either JScript or VBScript in the first combo box and the .NET Framework in teh second combo box, and click **OK**. The new Scripting Project is created.
3. Click the **Save** icon in the Scripting Editor toolbar to save the Scripting Project as a `.asprj` file.
4. A Scripting Project can be considered to be made up of several components that work together. These components will typically be a combination of: Global Declarations, Forms, Events, and Macros. They can be created in any order, but you should clearly understand how they work together. The way each type of component is called and executed is described below. How to create each type of component is described in the respective sections about the component type.
5. After you have finished creating all the required components, save the Scripting Project (by clicking the **Save** icon in the Scripting Editor toolbar).
6. Close the Scripting Editor.

Please note:

Right clicking the Project folder and selecting "Scripting Language..." lets you change the scripting language at any time.

How Forms, Event Handlers, and Macros are called and executed

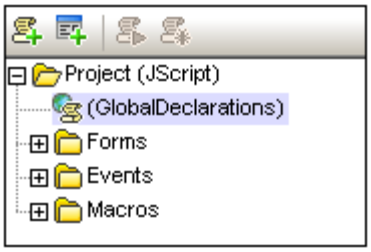
Forms, Event Handlers, and Macros are all created in the Scripting Editor. However, the way they are called and executed is different for each and has a bearing on how you create your scripting projects.

- A Form is invoked by a call to it either within a function in the Global Declarations script or directly in a Macro.
- An Event Handler runs when the relevant event occurs in XMLSpy. If an Event Handler for a single event is defined in both the Global Scripting Project and the XMLSpy -project-specific Scripting Project, then the event handler for the project-specific Scripting Project is executed first and that for the Global Scripting Project immediately afterwards.

- A Macro is executed from within the XMLSpy interface by clicking **Tools | Macros | *[MacroName]***. In a Macro, it is possible to access all variables and functions declared in the Global Declarations and to display Forms for user input.

1.3 Global Declarations

The Global Declarations component is present by default in every Scripting Project (*see screenshot below*), and therefore does not have to be created. In order to add variables and functions to the Global Declarations script of a Scripting Project, you need to open the Global Declarations script and add the code fragment to the Global Declarations script. See Components of a Scripting Project and Creating a Scripting Project for more information.



To open the Global Declarations script of a Scripting Project, right-click the *Global Declarations* item in the Scripting Project Tree (*screenshot above*), and select **Open**. The Global Declarations script opens in the Main Window.

Note: Every time a macro is executed or an event handler is called, global declarations are re-initialized.

Given below is an example function. Remember that creating a variable or function in the Global Declarations script makes this variable or function accessible to all Forms, Event Handlers, and Macros.

Example function

A function called `RemoveAllNamespaces` would have code like this:

```
function RemoveAllNamespaces(objXMLData)
{
       if(objXMLData == null)
    return;

  if(objXMLData.HasChildren)      {
    var objChild;

    // spyXMLDataElement := 4
    objChild = objXMLData.GetFirstChild(4);

    while(objChild) {
    RemoveAllNamespaces(objChild);

          try{
              var nPos,txtName;
              txtName = objChild.Name;

              if((nPos = txtName.indexOf(":")) >= 0)  {
                  objChild.Name = txtName.substring(nPos+1);
              }

    objChild = objXMLData.GetNextChild();
          }
          catch(Err)              {
              objChild = null;
          }
      }
```



```
    }
  }
```

Note:

- It is possible to define local variables and helper functions within macros and event handlers. Example:

```
//return value: true allows editing
//return value: false disallows editing
var txtLocal;
function Helper()
{
  txtMessage = txtLocal;
  Application.ShowForm("MsgBox");
}
function On_BeforeStartEditing(objXMLData)
{
  txtLocal = "On_BeforeStartEditing()";
  Helper();
}
```

- Recursive functions are supported.

1.4 Forms

Creating and editing Forms in the Scripting Editor consists of the following steps:

1. Creating a New Form. The new Form is created and named, and has properties defined for it.
2. Designing the Form. A Form is designed by adding Form Objects to it and assigning values for the different Form Objects.
3. Scripting Form Events. Scripts are assigned to Form-related events.

1.4.1 Creating a New Form

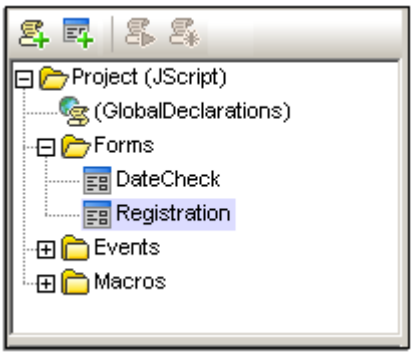
Creating a new Form in the Scripting Editor involves the following steps:

1. Creating a new Form and naming it
2. Specifying the properties of the Form

Creating a new Form and naming it

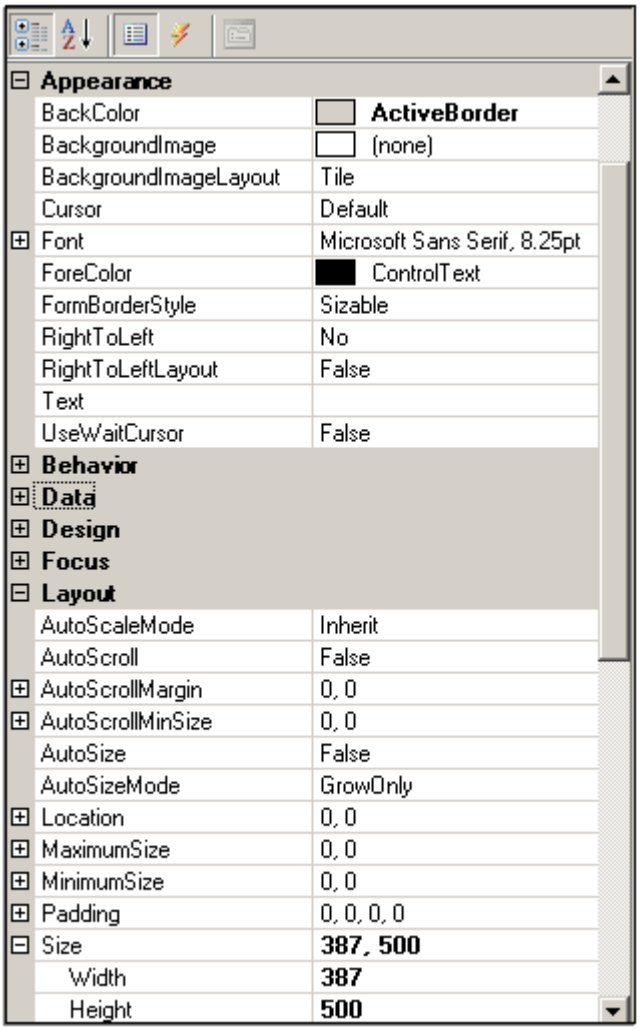
To add a new Form to a scripting project, click the **Add Form** icon (*highlighted in screenshot below*) in the toolbar of the Project Overview pane. Enter the name of the new Form.

A new Form is added to the project. It appears in the Main Window and an entry for it is created in the Scripting Project Tree pane, under the Forms heading. Press the F2 function key to rename the form, or right click the form name and select Rename from the context menu. In the screenshot below, we have named the new Form *Registration*.



Form properties

The properties of the Form, such as its size, background color, and font properties, can be set in the Properties pane. The screenshot below shows the size and background-color property values in bold, in the *Layout* and *Appearance* categories, respectively.



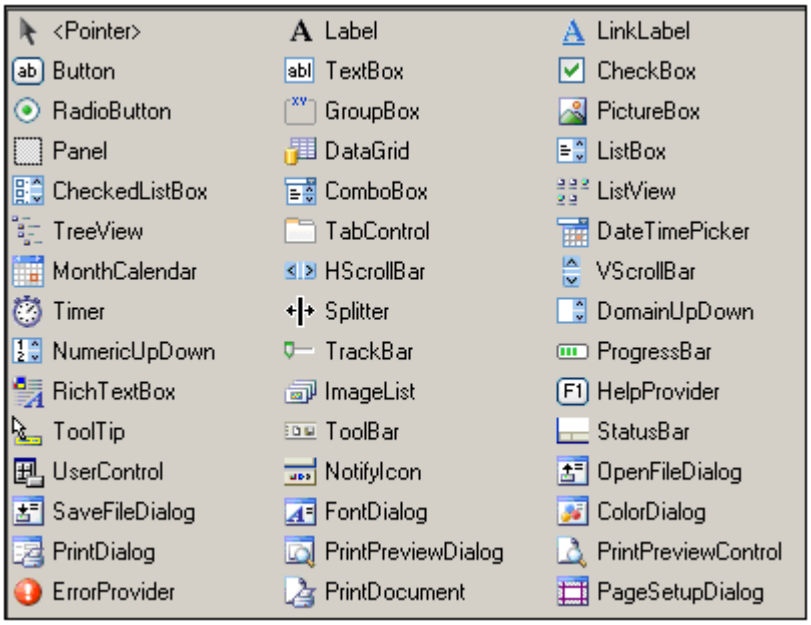
Testing a Form
You can test a form in the Scripting Editor by right-clicking it in the Project Overview pane and selecting the **Test Form** Command.

1.4.2 Form Design and Form Objects

Designing a Form consists of the following steps:

- Placing an object from the Form Object Palette in the Form design.
- Assigning values for the properties of individual Form Objects.
- Assigning scripts for Form-based events.

The Form Object Palette
The Form Object Palette contains all the objects that are available for designing Forms and looks something like the screenshot below. Registered ActiveX controls can be added to the Form Object Palette by right-clicking the pane and selecting the **Add ActiveX Control** command



To insert an object from the Form Object Palette click the object you want in the palette, then click at the location in the Form where you wish to insert the object. The object will be placed at this location. In many cases you will need to supply some properties of the object via the Properties and Events pane. You can drag the object to other locations as well as resize it. Further, a number of editing commands, such as centering and stacking objects, can be accessed via the context menu of the selected Form object.

Some Form objects, such as `Timer`, are not added to the Form but are created as Tray Components in a tray at the bottom of the Main Window. You can select the object in the tray and set properties and event handlers for the object via the Properties and Events pane. For an example of how Tray Components are handled, see Form usage and commands.

Some of the most commonly used objects are described below:

Label: Adds text fields such as captions or field descriptions.

Button: Adds a button. It is possible to assign bitmaps as background images for these buttons.

Check Box: Adds a check box, which enables `Yes/No` type selections.

Combo Box: Adds a combo box, which allows the user to select an option from a drop-down menu.

List Box: Adds a list box, which displays a list of items for selection.

TextBox: Enables the user to enter a single line of text.

Rich TextBox: Enables the user to enter multiple lines of text.

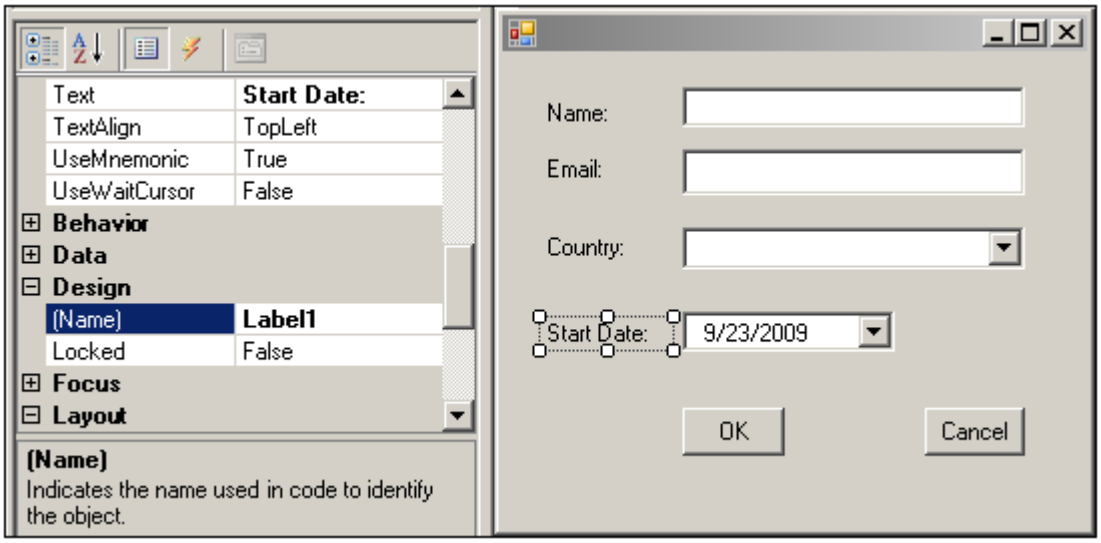
Creating objects and setting their properties

To create an object in the Form, first select the required object in the Form Object Palette and then click the location in the Form where you want to insert it. After the object has been inserted, you can resize it as well as drag it to another location in the Form.

When an object is selected in the design, you can specify its properties in the Properties and Events pane. In the toolbar of the Properties and Events pane, click the Properties icon to display a list of the object's properties.

For example, in the screenshot below, the Label object with the text *Start Date* has been selected in the design. In the Properties and Events pane, the name of the object (which is the name that is to be used to identify the object in code, `Label1` in the screenshot below) is given in the *Design* category of properties; in this case, the name of the object is `Label1`.

The text of the label (which is what appears in the Form) must be entered as the value of the *Text* property in the *Appearance* category of properties.

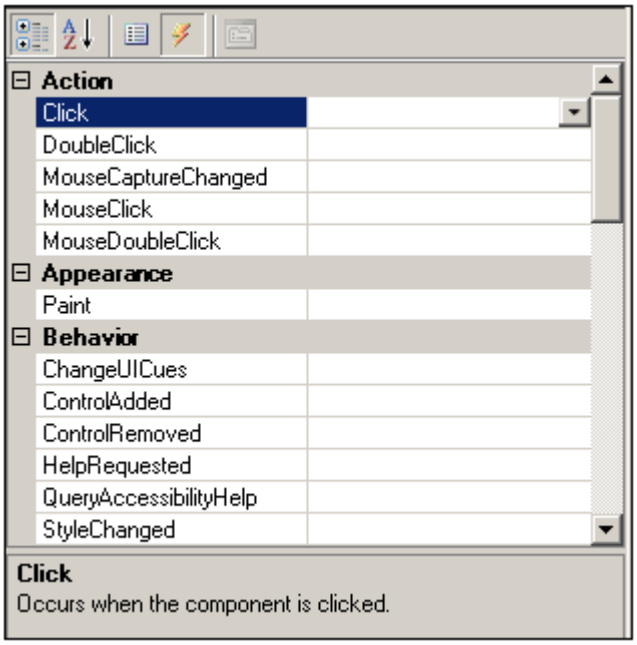


To assign other object properties, enter values for them in the Properties and Events pane.

Testing a Form
You can test a form in the Scripting Editor by right-clicking it in the Project Overview pane and selecting the **Test Form** Command.

1.4.3 Form Events

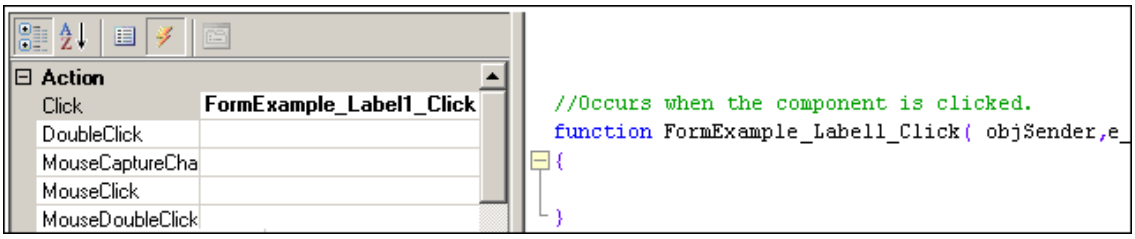
When an object is selected in the design, clicking on the Events icon in the toolbar of the Properties and Events pane (*fourth icon from left*), displays all the events available for that object (*see screenshot below*). These can be displayed either by category (*screenshot below*) or alphabetically.



For each event, you can enter the name of an existing event handler or function. Alternatively:

- you can double click on an event to create: (i) an empty function script in the *Source* tab of the Main Window, and (ii) an association of the newly created function with the selected event.
- double click a button in the design tab, to directly generate the handler stub in the code window.

The screenshot below was taken after the *Click* event was double-clicked. Notice that an empty event handler function called `FormExample_Label1_Click` has been created in the Main Window and that, in the Properties and Events pane, this function has been associated with the *Click* event.



Enter the required scripting code and save the project.

Writing the required scripts

After the visual design of the form is complete, form objects will typically be associated with suitable scripts. The example below is a script that adds colors when a button is clicked. The script is inserted as an event handler for the `Click` event of the button `Button1` (the event is available in the Properties and Events pane when the button is selected in the design):

```
function FormExample_Button1_Click( objSender, e_EventArgs )
{
	// Sets the ForeColor (red) of the button.
	objSender.ForeColor = CLR.Static( "System.Drawing.Color" ).Red;
	// Sets the BackColor (blue) of the button.
```



```
        objSender.BackColor = CLR.Static( "System.Drawing.Color" ).Blue;
        // Sets the form BackColor (green).
        objSender.FindForm().BackColor = CLR.Static( "System.Drawing.Color"
).Green;
}
```

1.5 Events

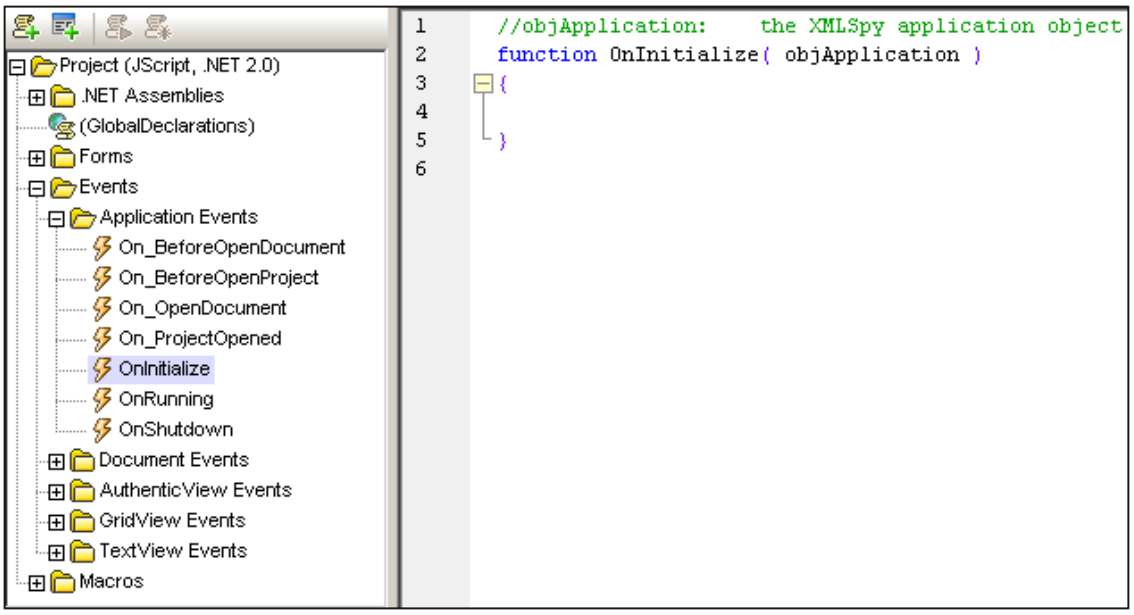
The Events folder of the scripting project (*see screenshot below*) contains folders for the following type of events:

- Application Events
- Document Events
- Authentic View Events
- Grid View Events
- Text View Events

Note that these events are XMLSpy-specific, as opposed to Form-based events. Each of the folders listed above contains a set of events for which Event Handler scripts can be written.

Application Events, for example, are shown in the screenshot below.

To access the event handler script of any of these events, right-click the event and select **Open** from the context menu. The script will be displayed in the Main Window (*see screenshot below*) and can be edited there. After you have finished editing the script, save changes by clicking the **Save** command in the toolbar of the Scripting Editor.



Note the following points:

- Event Handlers need function headers with the correct spelling of the event name. Otherwise the Event Handler will not be called.
- It is possible to define local variables and helper functions within Macros and Event Handlers. Example:

```
//return value: true allows editing
//return value: false disallows editing
var txtLocal;
function Helper()
{
  txtMessage = txtLocal;
  Application.ShowForm("MsgBox");
}
function On_BeforeStartEditing(objXMLData)
{
```



```
    txtLocal = "On_BeforeStartEditing()";
    Helper();
  }
```

- In order for events to be processed, the Process Events options must be toggled on in the Scriptings options of XMLSpy. See Scripting Projects in XMLSpy for details.
- Also see Programming Points.

Application Events

OnInitialize
The `OnInitialize` event is raised after the main window becomes visible but before any project is loaded. This event is not raised if the application can't be loaded at all.

OnRunning
If the application is completely loaded and after the `OnInitialize` event occurs, the `OnRunning` event is raised.

OnShutdown
The event is raised after any open project and all documents have been closed on shutdown of the application. The main window is no longer visible.

Example

The following script is an Event Handler for the `On_BeforeOpenProject` event. It allows you to add a script that will be executed each time before XMLSpy opens a project. The example script below sequentially opens all XML files located in the XML folder of the project and validates them. If the validation fails, the script shows the validation error and stops. If a file passes the validity test, it will be closed and the next file will be opened.

Enter the following script for the `On_BeforeOpenProject()` event, and then save the scripting project.

```
function On_BeforeOpenProject()
{
 var bOK;
 var nIndex, nCount;
 var objItems, objXMLFolder = null;

 objItems = Application.CurrentProject.RootItems;
 nCount = objItems.Count;

 // search for XML folder
 for( nIndex = 1; nIndex <= nCount; nIndex++) {
  var txtExtensions;
  txtExtensions = objItems.Item( nIndex).FileExtensions;

 if( txtExtensions.indexOf("xml") >= 0)     {
  objXMLFolder = objItems.Item( nIndex);
 break;
 }
}

// does XML folder exist?
if( objXMLFolder) {
 var objChild, objDoc;

 nCount = objXMLFolder.ChildItems.Count;

 // step through associated xml files
 for( nIndex = 1; nIndex <= nCount; nIndex++) {
```

```
    objChild = objXMLFolder.ChildItems.Item(nIndex);

    try{
     objDoc = objChild.Open();

     // use JScript method to access out-parameters
     var strError = new Array(1);
     var nErrorPos = new Array(1);
     var objBadData = new Array(1);

     bOK = objDoc.IsValid(strError,nErrorPos,objBadData);

     if(!bOK) {
      // if the validation fails, we should display the
      // message from XMLSpy
      // of course we have to create the form "MsgBox" and
      // define the global txtMessage variable
      //
      // txtMessage = Position:" + nErrorPos[0] + "\n" + // strError[0];
      // txtMessage += "\n\nXML:\n" + objBadData[0].Name + ", " +
      //    objBadData[0].TextValue;
      //
      // Application.ShowForm("MsgBox");

       break;
     }

     objDoc.Close(true);
     objDoc = null;
    }
    catch(Err) {
     // displaying the error description here is a good idea

     // txtMessage = Err.Description;
     // Application.ShowForm("MsgBox");

     break;
     }
    }
   }
  }
```

Testing the Event Handler

Switch to XMLSpy, and open a project to see how the `BeforeOpenProject` event is handled.

1.6 Macros

Macros automate repetitive or complex tasks. In the Scripting Environment, you can create a script that calls application functions as well as custom functions that you have defined. This flexibility provides you with a powerful method of automating tasks within XMLSpy. This section about macros is organized as follows:

- Creating and Editing a Macro describes how to create a new macro and edit an existing one.
- Running a Macro explains how a macro can be run from the Scripting Editor and from the broader XMLSpy environment as well.
- Debugging describes how macros can be debugged.

Key points about macros
Given below is a summary of important points about macros.

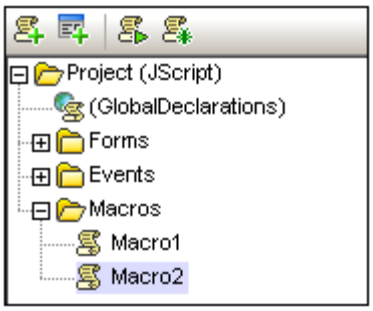
- Any number of macros can be added to the active scripting project. These macros are saved in the Altova Scripting Project file (. `asprj` file).
- Functions that are used in a macro can be saved as a Global Declaration. All Global Declarations are also saved in the Altova scripting project file (. `asprj` file).
- The macro can be tested by running it from within the Scripting Editor, and it can be debugged from within the Scripting Editor.
- XMLSpy can have one global Scripting Project, and a second scripting project, assigned to the currently loaded project, active at any one time; the macros are available to both of them. See Running a Macro for details.

1.6.1 Creating and Editing a Macro

The following operations enable you to create a new macro and edit an existing macro.

Creating a new macro
Right-click the Macro folder in the Scripting Projects tree and select **Add Macro** from the context menu. (The **Add Macro** command can also be selected from the context menu of any item in the Scripting Projects tree.) Alternatively, click the **New Macro** icon in the toolbar of the Scripting Projects tree.

The newly created (and empty) macro document is displayed in the Main Window, and the name of the macro is displayed in the title bar of the Scripting Editor (*screenshot below*).



Naming or renaming a macro
To name or rename a macro, click the macro name in the Scripting Project tree and press the **F2** function key, or right click the name and select **Rename** from the context menu.

Opening a macro

To open a macro, right-click the macro in the Macros folder of the Scripting Project tree (*see screenshot above*), and select the **Open** command. The macro is displayed in the Main Window and its name is displayed in the title bar of the Scripting Editor (*screenshot below*). Alternatively, double-clicking a macro in the Scripting Project tree opens it in the Main Window.

Editing the macro

To edit a macro, enter or edit its code in the Main Window. For example, the following code creates the Form named `Form1` in memory and then shows it. `Form1` must already have been created (using the Scripting Editor's Form creation) before this macros is run.

```
objForm = CreateForm( 'Form1' );
objForm.ShowDialog();
```

The following macro uses the `RemoveAllNamespaces` function to remove all namespaces in the active XML document.

```
if( Application.ActiveDocument != null)  {

RemoveAllNamespaces( Application.ActiveDocument.RootElement);
              Application.ActiveDocument.UpdateViews();
}
```

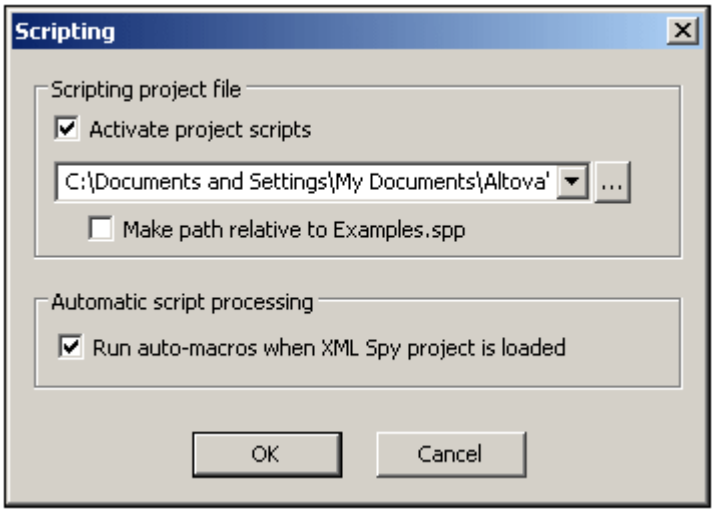
The `RemoveAllNamespaces` function itself will have to be defined in the Global Declarations script. After the `RemoveAllNamespaces` function has been defined, the macro is complete and can be run.

Note: Macros do not support parameters or return values.

Setting a macro as an Auto-Macro

When a macro is set as an Auto-Macro it can be run automatically when: (i) XMLSpy is started, or (ii) an Altova XMLSpy project is loaded in XMLSpy. To specify whether Auto-Macros should be run in each of these two events, check the *Run Auto-Macros* option in the Automatic Script Processing pane of the relevant dialogs:

- *When XMLSpy is started:* the Scripting tab of the XMLSpy Options dialog (**Tools | Options** menu command).
- *When an XMLSpy project is loaded into XMLSpy:* the Scripting dialog (*screenshot below*, **Project | Scripting Settings** menu command).



To set a macro as an Auto-Macro, right-click the macro in the Scripting Project tree and select the command **Set as Auto-Macro**. This is a toggle command; so to remove the Auto-Macro setting of a macro, select the command again.

1.6.2 Running a Macro

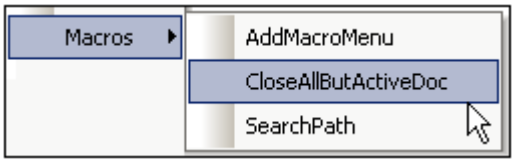
To run a macro in the Scripting Editor, right-click the macro in the Scripting Project tree and select the command **Run Macro**.

There are different ways to run a macro from XMLSpy:

- Via the Tools | Macros menu of XMLSpy.
- By creating and using a toolbar button for a macro.
- By creating and using a menu item for a macro.

Note that only one macro can be run at a time. After a macro (or event) is executed, the script is closed and global variables lose their values.

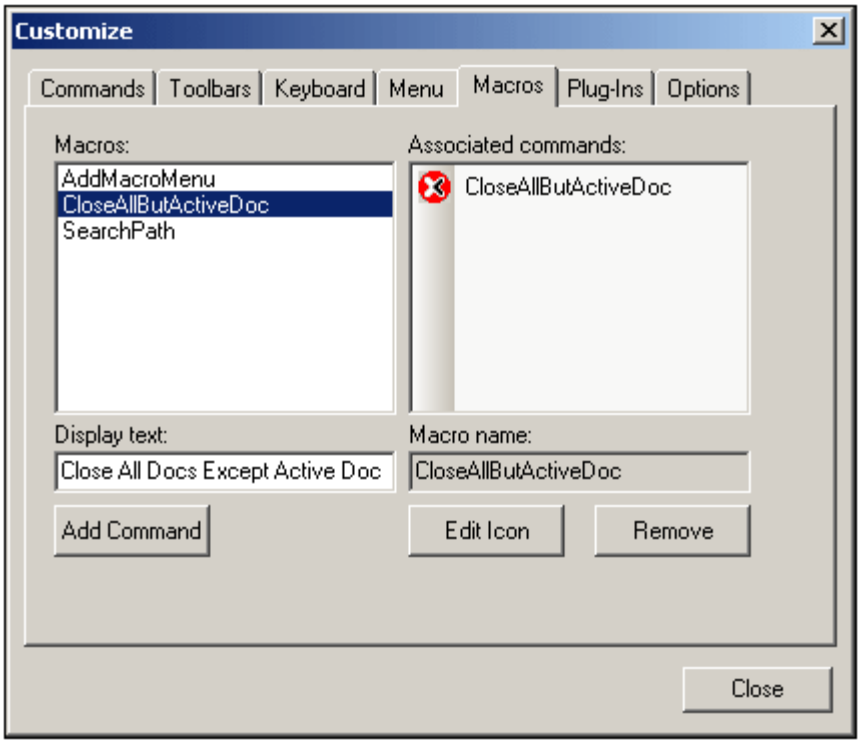
The XMLSpy command to run Macros
The **Tools | Macros** menu command (*screenshot below*) opens a submenu containing the macros defined in the Scripting Project that is currently active in XMLSpy. The active Scripting Projects are specified in the Scripting tab of the Options dialog, or in the Scripting tab of the project settings.



From the submenu of available macros, select the macro to run. The macro will be executed.

Toolbar icon
You can create an icon in the toolbar or a menu item that runs a selected macro. To do this,

click **Tools | Customize | Macros**. This causes the Customize dialog to be displayed (*screenshot below*).



Now do the following:

1. In the Macros tab of the Customize dialog, select the required macro from the Macros pane. The macros in the Macros pane are those in the active Scripting Project (which is specified in the Scripting tab of the Options dialog).
2. In the *Display Text* input field enter the name of the icon. This name will appear when the cursor is placed over the icon when it is in the toolbar.
3. Click **Add Command** to add it to the list of commands.
4. Select the command and click **Edit Icon** to create a new icon.
5. Drag the finished icon from the *Associated Commands* pane and drop it on to the toolbar or menu when the cursor changes from an arrow to an I-beam or line.
6. Macros can even be assigned their own shortcuts in the Keyboard tab of the Customize dialog (*see screenshot above*).

To remove the toolbar icon, open the Macros tab of the Customize dialog and drag the icon out of the toolbar and into the *Associated Commands* pane. Select the command in the *Associated Commands* pane and click **Remove** to remove the command from the pane.

Item in the Tools menu

The XMLSpy API includes a function, `AddMacroMenuItem()`, to add macros as menu items to the **Tools** menu. This function can be used to add one or more macros to the **Tools | Macros** list of macros. Typically, you should do this as follows:

1. Add the macro menu item by calling the XMLSpy API function, `AddMacroMenuItem()`.

```
Application.AddMacroMenuItem("DeleteElements","Delete Elements
Dialog");
```

   - The function's first parameter (`DeleteElements` in the example listing above) is the

name of the macro. If you run the macro and there is an open project having scripts associated with it, XMLSpy searches for the macro in the project scripts first. If there are no project scripts, or if XMLSpy cannot find the macro, then it looks for the macro in the global scripts.

- The second parameter (`Delete Elements Dialog`) is the display text for the menu item.

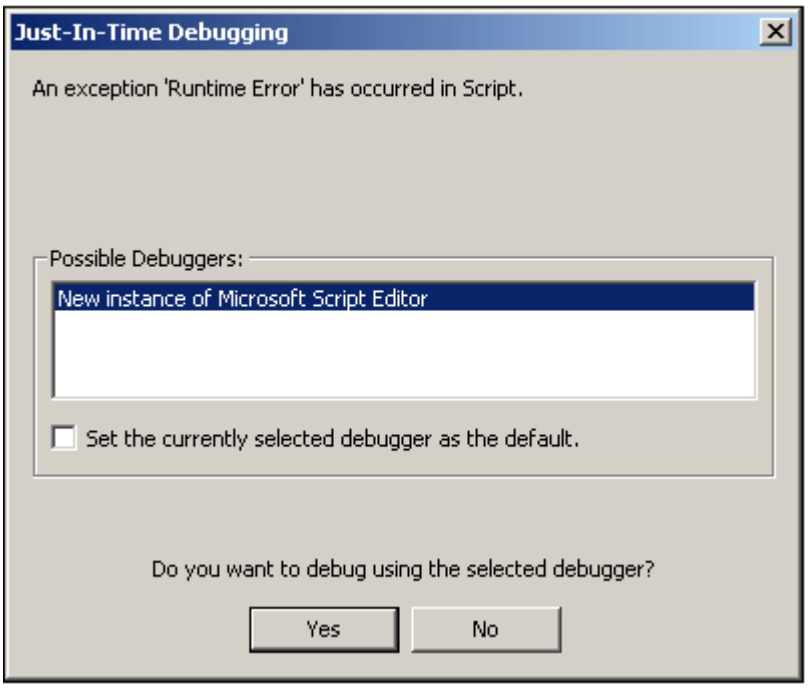
2. Reset the **Tools** menu by calling `ClearMacroMenu()`. This removes all previously added menu items

The best way to call these two functions is with the `Autorun` macro of the global scripting project or the `On_OpenProject` event.

1.6.3 Debugging a Macro

You can debug a macro using an installed debugger. To do this, right-click the macro in the Scripting Project tree and select the command **Debug Macro**.

This pops up the Just-In-Time Debugging dialog (*screenshot below*), which lists the debuggers available on the machine. Select the debugger you wish to use and click **Yes**.



The selected debugger starts.

1.7 Programming Points

The following programming points should be noted:

- All namespaces and types of the following .NET assemblies can be accessed in the Microsoft .NET Framework per default:

```
System
System.Data
System.Design
System.Drawing
System.Windows.Forms
System.XML
```

  Additional assemblies can be added to the scripting project via the project's context menu, or dynamically (at runtime) in the source code by using `CLR.LoadAssembly`.

- Out-parameters from methods of the XMLSpy API require special variables in JScript. Given below are some examples.

```
// use JScript method to access out-parameters
var strError = new Array(1);
var nErrorPos = new Array(1);
var objBadData = new Array(1);
bOK = objDoc.IsValid(strError,nErrorPos,objBadData);END
```

- Out-parameters from methods of the.NET Framework require special variables in JScript.
  For example:

```
    var dictionary = CLR.Create( "System.Collections.Generic.Dictionary<
System.String,
    System.String >" );
    dictionary.Add("1", "A");
    dictionary.Add("2", "B");

    // use JScript method to access out-parameters
    var strOut = new Array(1);
    if ( dictionary.TryGetValue("1", strOut) ) // TryGetValue will set
the out parameter
        alert( strOut[0] ); // use out parameter
```

- .NET Methods that require integer arguments should not be called directly with JScript Number Objects which are Floating Point Values.

  For example, instead of:

```
var objCustomColor = CLR.Static( "System.Drawing.Color" ). FromArgb(
128, 128, 128 );
```

use:

```
var objCustomColor = CLR.Static( "System.Drawing.Color" ). FromArgb(
Math.floor( 128 ), Math.floor( 128 ), Math.floor( 128 ) );
```

- To iterate .NET collections the JScript Enumerator as well as the .NET iterator technologies can be used:

  For example:


```
// iterate using the JScript iterator
var itr = new Enumerator( coll );
for ( ; !itr.atEnd(); itr.moveNext() )
    alert( itr.item() );

// iterate using the .NET iterator
var itrNET = coll.GetEnumerator();
while( itrNET.MoveNext() )
    alert( itrNET.Current );
```

- .NET templates can be instantiated as shown below:

```
var coll = CLR.Create( "System.Collections.Generic.List<System.String>"
 );
```

or

```
    CLR.Import( "System" );
    CLR.Import( "System.Collections.Generic" );
    var dictionary = CLR.Create( "Dictionary< String, Dictionary<
String, String > >" );
```

- .NET Enum values are accessed as shown below:

```
    var enumValStretch = CLR.Static( "System.Windows.Forms.ImageLayout"
).Stretch;
```

- Enumeration literals, as defined in the Altova type libraries, can now be used instead of numerical values.

```
    objExportXMIFileDlg.XMIType = eXMI21ForUML23;
```

1.7.1 Built-in Commands

This section lists:

- Built-in commands
  alert
  conform
  doevents
  CreateForm
  lastform
  prompt
  ShowForm
  watchdog

- .NET interoperability commands
  CLR.Create
  CLR.Import
  CLR.LoadAssembly
  CLR.ShowImports
  CLR.ShowLoadedAssemblies
  CLR.Static

Built-in commands
The following built-in commands are available.

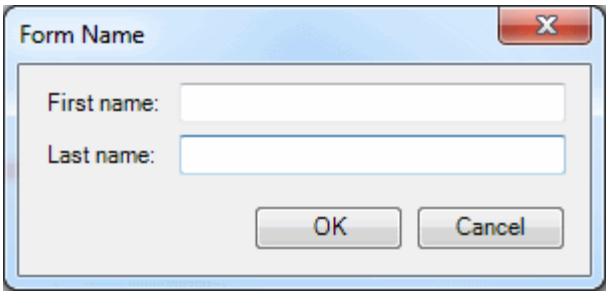
ShowForm(strFormName : String)

Instantiates a New Form object from the given form name and immediately shows it as Dialog.
Return Value: A Number that represents the generated DialogResult (`System.Windows.Forms.DialogResult`).

Example:

```
var dialogResult = ShowForm( "FormName" );
```

Shows Form "FormName" as Dialog:



The DialogResult can be evaluated e.g. by:

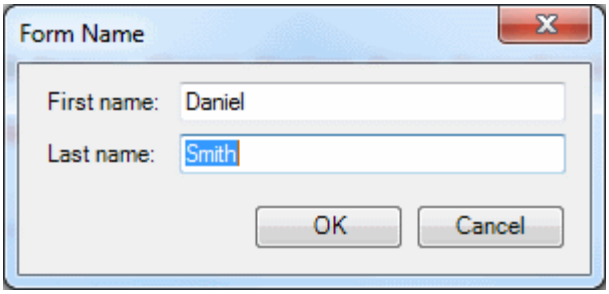
```
if ( dialogResult == CLR.Static( "System.Windows.Forms.DialogResult" ).
OK )
	alert( "ok" );
else
	alert( "cancel" );
```

`CreateForm( strFormName : String)`
Instantiates a New Form object from the given Form name.
Return Value: The Form object (`System.Windows.Forms.Form`) of the given name, or `null` if no Form with such name exists.

Example:

```
var myForm = CreateForm( "FormName" );
if ( myForm != null )
{
	myForm.textboxFirstName.Text = "Daniel";
	myForm.textboxLastName.Text = "Smith";
	var dialogResult = myForm.ShowDialog();
}
```

Shows Form "FormName" as Dialog - TextBoxes are initialized:



The DialogResult can be evaluated e.g. by:

```
if ( dialogResult == CLR.Static( "System.Windows.Forms.DialogResult" ).
OK )
	alert( "ok" );
else
```



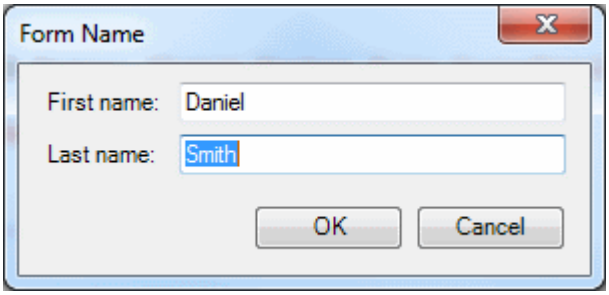
```
alert( "cancel" );
```

lastform
This global field can be used to conveniently access the last form object that was created.
Return Value: Returns a reference to the last form object (`System.Windows.Forms.Form`) that was successfully instantiated via `CreateForm()` or `ShowForm()`.

Example:

```
CreateForm( "FormName" );
if ( lastform != null )
{
	lastform.textboxFirstName.Text = "Daniel";
	lastform.textboxLastName.Text = "Smith";
	var dialogResult = lastform.ShowDialog();
}
```

Shows Form "FormName" as Dialog - TextBoxes are initialized (similar to the CreateForm example above):



doevents()
Processes all Windows messages currently in the message queue.
Return Value: None

Example:

```
for ( i=0; i < nLongLastingProcess; ++i )
{
	// do long lasting process

	doevents(); // process windows messages; give UI a chance to
update
}
```

watchdog(bEnable : boolean)
Long running CPU-intensive scripts cause the watchdog to ask the user if the script should be terminated. The `watchdog()` method is used to disable or enable this behavior.
Per default the watchdog is enabled.
Return Value: None

Example:

```
watchdog( false );  // disable watchdog - we know the next statement is
CPU intensive but it will terminate for sure
doCPUIntensiveScript();
watchdog( true );   // re-enable watchdog
```

Usage tip:
Calling watchdog(true) can also be used to reset the watchdog. This can be useful before executing long running (CPU intensive) tasks to ensure they have the maximum allowed script processing quota.

alert(strMessage : String) or MsgBox(strMessage : String)
An alert box is used to show a given message. The user will have to click "OK" to proceed.
Return Value: None

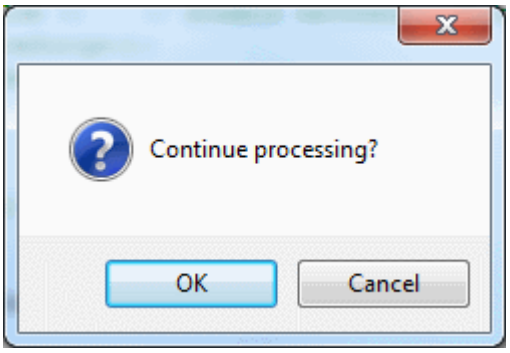
Example:

```
alert( "Hello World" );
```

confirm(strMessage : String)
Opens a dialog that shows the given confirm message.
A confirm box is often used to verify or accept something. The user will have to click either "OK" or "Cancel" to proceed.
Return Value: A Boolean that represents the users answer. If the user clicks "OK", the dialog returns true, if the user clicks "Cancel", the dialog returns false.

Example:

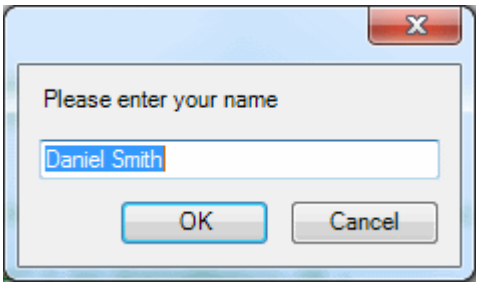
```
if ( confirm( "Continue processing?" ) == false )
    return;
```



prompt(strMessage : String, strDefault : String)
Opens a dialog that shows the given prompt message and a TextBox control with a default answer.
A prompt box is often used to input a simple string value.
Return Value: A String that contains the TextBox value or null if the user selected "Cancel".

Example:

```
var name = prompt( "Please enter your name", "Daniel Smith" );
if ( name != null )
    alert( "Hello " + name + "!" );
```

.NET interoperability commands

To allow further interoperability with the .NET Framework additional functions are provided under CLR.

CLR.Import(strNamespaceCLR : String)

This is the scripting equivalent to the C# *using* / VB.Net *imports* keyword. This allows to leave out the given namespaces in successive calls like `CLR.Create()` and `CLR.Static()`.
Return Value: None

Example:

Instead of always having to use full qualified names:

```
if ( ShowForm( "FormName" ) == CLR.Static(
"System.Windows.Forms.DialogResult" ).OK )
{
	var sName = lastform.textboxFirstName.Text + " " + lastform.
textboxLastName.Text;
	CLR.Static( "System.Windows.Forms.MessageBox" ).Show( "Hello " +
sName );
}
```

one can import namespaces and use the short form:

```
CLR.Import( "System.Windows.Forms" );
if ( ShowForm( "FormName" ) == CLR.Static( "DialogResult" ).OK )
{
	var sName = lastform.textboxFirstName.Text + " " + lastform.
textboxLastName.Text;
	CLR.Static( "MessageBox" ).Show( "Hello " + sName );
}
```

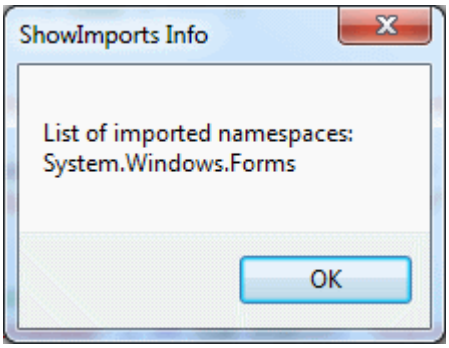
Please note:
Importing a namespace does not add or load the corresponding assembly to the scripting project!
Assemblies can be added to the scripting project by..... or dynamically (at runtime) in the source code by using `CLR.LoadAssembly`.

CLR.ShowImports()

Opens a MessageBox dialog that shows the currently imported namespaces. The user will have to click "OK" to proceed.
Return Value: None

Example:

```
CLR.ShowImports();
```



CLR.LoadAssembly(strAssemblyNameCLR : String)
Loads the .NET assembly with the given long assembly name or file path.
Return Value: A Boolean value. True if the assembly could be loaded, false otherwise.

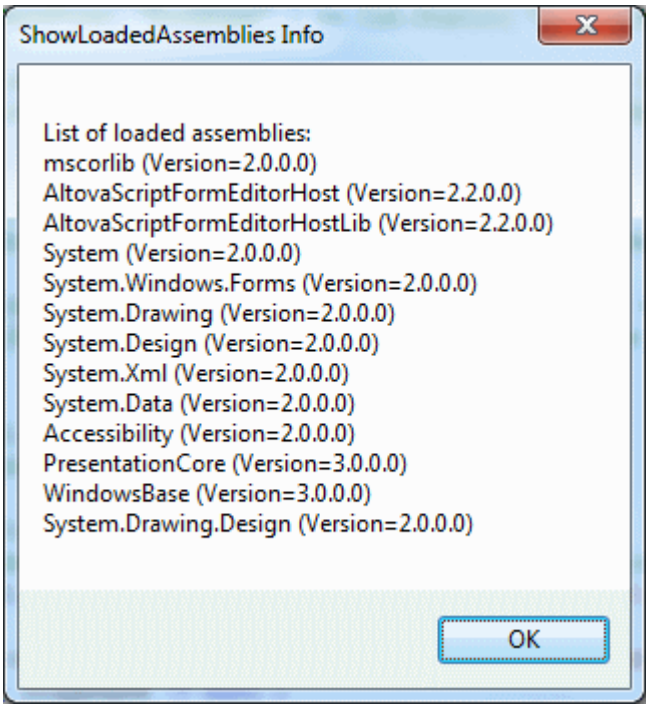
Example:

```
// set clipboard text (if possible)
// System.Windows.Clipboard is part of the PresentationCore assembly,
so load this assembly first:
if ( CLR.LoadAssembly( "PresentationCore, Version=3.0.0.0,
Culture=neutral, PublicKeyToken=31bf3856ad364e35", true ) )
{
	var clipboard = CLR.Static( "System.Windows.Clipboard" );
	if ( clipboard != null )
		clipboard.SetText( "HelloClipboard" );
}
```

CLR.ShowLoadedAssemblies()
Opens a MessageBox dialog that shows the currently loaded assemblies. The user will have to click "OK" to proceed.
Return Value: None

Example:

```
CLR.ShowLoadedAssemblies();
```

CLR.Create(strTypeNameCLR : String, constructor arguments ...)
Creates a new .NET object instance for the given typename. If more than one argument is passed the successive arguments are interpreted as the arguments for the constructor of the .NET object.
Return Value: A reference to the created .NET object

```
Examples:
	var objArray = CLR.Create("System.Collections.ArrayList");

	var newItem = CLR.Create( "System.Windows.Forms.ListViewItem",
	"NewItemText" );

	var coll = CLR.Create( "System.Collections.Generic.List<System.String>"
	 );

	CLR.Import( "System" );
	CLR.Import( "System.Collections.Generic" );
	var dictionary = CLR.Create( "Dictionary< String, Dictionary< String,
	String > >" );
```

CLR.Static(strTypeNameCLR : String)
Gives access to .NET types that have no instances and contain only static members.
Return Value: A reference to the static .NET object

```
Examples:
	var enumValStretch = CLR.Static( "System.Windows.Forms.ImageLayout"
	).Stretch

	var clipboard = CLR.Static( "System.Windows.Clipboard" );
	clipboard.SetText( "HelloClipboard" );

	if ( ShowForm( "FormName" ) == CLR.Static(
	"System.Windows.Forms.DialogResult" ).OK )
		alert( "ok" );
```

```
else
        alert( "cancel" );
```

Form usage and commands

Form usage is as follows:

With Form objects, the Form Component Tree can be accessed naturally via field access:

For example, suppose there is a Form designed as follows:

```
MyForm
    ButtonPanel
        OkButton
        CancelButton
    TextEditor
    AxMediaPlayer1

TrayComponents:
    MyTimer
```

The Form can then be instantiated from script as:

```
var objForm = CreateForm("MyForm");
```

To access one its components the field access can be used:

```
objForm.ButtonPanel.OkButton.Enabled = false;
```

or

```
objForm.TextEditor.Text = "Hello World";
```

To access Tray Components use the following method on the Form object:

```
var objTrayComponent = <A form object>.GetTrayComponent(strComponentName
: String);
```

In our example to get a reference to the Timer Component to enable it use the following:

```
var objTimer = objForm.GetTrayComponent("MyTimer");
objTimer.Enabled = true;
```

For ActiveX Controls the underlying COM object can be accessed via the OCX property:

```
var ocx = lastform.AxMediaPlayer1.OCX; // get underlying COM object
ocx.enableContextMenu = true;
ocx.URL = "mms://apasf.apa.at/fm4_live_worldwide";
```

1.8 Migrating to Scripting Editor 2010 and Later

The Scripting Editor in XMLSpy from version 2010 onwards uses a different underlying technology than earlier versions used. Consequently, scripting projects that were created with versions of XMLSpy prior to version 2010 might need to be modified. The following points need to be noted.

- If a previous Scripting Projects (`.prj` file) is opened with the new Scripting Editor (version 2010 and later), the visual layout of Forms will be migrated as faithfully as possible and scripts will be copied as they are in the `.prj` file. You will then need to modify the scripts to be in accordance with the new technology used by the Scripting Editor, and which is described in this documentation.
- `TheView` object: The old Scripting Environment provided an artificial property named `TheView` that was only accessible from inside event handlers. It was used to access the Form that trigged the event (either directly or from one of its child controls). The new Scripting IDE does **not** provide this artificial property but instead provides the same functionality, and much more, with orthogonal built-in scripting helper functions combined with the power of the .NET framework.
- Since all event handlers in the new Scripting Environment get a sender object as a first parameter, the source that triggered the event is always available. By calling the .NET function `FindForm()` on the sender object one can access the Form object easily. Alternatively (if only one Form is involved) the built-in property `lastform` can be used. Note that the use of `lastform` is not constrained to event handlers (as was the case with `TheView`). It can be used everywhere in script code.

Given below is a list of methods and properties of the `TheView` object, each accompanied by an alternative mechanism offered by the new Scripting Environment.

Methods

The following methods were provided by the `TheView` object and must be migrated as explained:

`Cancel()`

In the new scripting environment the same can be achieved with: `lastform.Close(); // Use .NET Form.Close()`

`IsFormOpen(Name as String) as Boolean`

Since for .NET Forms there is a distinction between showing a Form and instantiating a Form, the previous concept does not directly translate. Instead the user can ask if a certain Form is currently shown. For example:

```
var objFormPencilSelector = CreateForm("PencilSelector");
var objFormColorSelector = CreateForm("ColorSelector");
   ...
// Anywhere in code ...

if(objFormColorSelector.Visible)
{
   ...
}
```

`FormFind(Name as String) as Object`

The new Scripting Environment allows you to instantiate more Forms of the same kind. In the old Scripting Environment each Form could only exist once (as a Singleton). Thus there is no equivalent of `FormFind()`. In the new Scripting Environment.

OpenDoc(File as String)
The same can be achieved with: `Application.OpenDocument( File as String )`

PumpData()
This corresponds to the built-in function `doevents()` which processes all Windows messages currently in the message queue.

RunClick(), RunInitialize(), RunTerminate()
There is no direct replacement for these methods. Call the corresponding handlers directly instead.

Properties

The following properties were provided by the `TheView` object and must be migrated as explained:

ToolTipText as String
To use tooltips in the new scripting environment, the .NET infrastructure can be used. This allows fine-grained control of tooltip behaviour (adjusting delays, when to show, etc). For example, to provide tooltips for a Form with two controls, the following code could to be added to the Form's `Load` event handler:

```
//Occurs whenever the user loads the form.
function MyForm_Load( objSender, e_EventArgs )
{
    // Create the ToolTip and associate with the Form container.
    var toolTip = CLR.Create("System.Windows.Forms.ToolTip");

    // Set up the delays for the ToolTip.
    toolTip.AutoPopDelay = 3000;
    toolTip.InitialDelay = 1000;
    toolTip.ReshowDelay = 500;

    // Force the ToolTip text to be displayed whether or not
    // the form is active.
    toolTip.ShowAlways = true;

    // Set up the ToolTip text for several Controls.
    toolTip.SetToolTip(objSender.ProgressBar1,
           "Shows the progress of the operation");
    toolTip.SetToolTip(objSender.Button1,
           "Click Button to start the processing");
}
```

Color as Long
Since all Form/controls in the new Scripting Environment are .NET controls from the `System.Windows.Forms` namespace, the possibilities to modify colors, background image, fonts, and all other visual aspects are numerous. For example, every Visual Component has the properties `BackColor` and `ForeColor` to modify the visual appearance. The following handler could be used to change the color of a button at runtime:

```
function TestForm_Button1_Click( objSender, e_EventArgs )
{
    objSender.BackColor = CLR.Static( "System.Drawing.Color" ).SlateBlue;
}
```

Please refer to the .NET documentation to find out more about this topic:

http://msdn.microsoft.com/en-us/library/system.windows.forms.aspx

2 IDE Plugins

XMLSpy allows you to create your own IDE plug-ins and integrate them into XMLSpy.

Use plug-ins to:

- Configure your version of XMLSpy, add commands through menus, icons, buttons etc.
- React to events from XMLSpy.
- Run your specific code within XMLSpy with access to the complete XMLSpy API

XMLSpy expects your plug-in to implement the IXMLSpyPlugIn interface. See ATL sample files for an example using C++. The relevant files are in the following folder of your XMLSpy installation:

```
C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012
\Examples\CppIDEPlugin
```

For a sample using VisualBasic, look in the following folder of your XMLSpy installation:

```
C:\Documents and Settings\<username>\My Documents\Altova\XMLSpy2012
\Examples\XMLSpyPlugInActiveX
```

2.1 Registration of IDE PlugIns

XMLSpy maintains a specific key in the Registry where it stores all registered IDE plug-ins:

HKEY_CURRENT_USER\Software\Altova\XML Spy\PlugIns

All values of this key are treated as references to registered plug-ins and must conform to the following format:

Value name:	ProgID of the plug-in
Value type:	must be REG_SZ
Value data:	CLSID of the component

Each time the application starts the values of the "PlugIns" key is scanned, and the registered plug-ins are loaded.

Register plug-in manually
To register a plug-in manually, use the "Customize" dialog box of the XMLSpy "Tools" menu. Use the "Add Plug-In..." button to specify the DLL that implements your plug-in. XMLSpy registers the DLL as a COM server and adds the corresponding entry in its "PlugIns" key.

If you experience problems with manual registration you can check if the CLSID of your plug-in is correctly registered in the "PlugIns" key. If this is not the case, the name of your plug-in DLL was probably not sufficiently unique. Use a different name or perform direct registration.

Register plug-in directly
A plug-in can be directly registered as an IDE plug-in by first registering the DLL and then adding the appropriate value to the "PlugIns" key of XMLSpy during plug-in setup for example. The new plug-in will be activated the next time XMLSpy is launched.

2.2 ActiveX Controls

ActiveX controls are supported. Any IDE PlugIn which is also an ActiveX control will be displayed in a Dialog Control Bar. A sample PlugIn that is also an ActiveX control is included in the `XMLSpyPlugInActiveX` folder in the `Examples` folder of your application folder.

2.3 Configuration XML

The IDE plug-in allows you to change the user interface (UI) of XMLSpy. This is done by describing each separate modification using an XML data stream. The XML configuration is passed to XMLSpy using the GetUIModifications method of the IXMLSpyPlugIn interface.

The XML file containing the UI modifications for the IDE PlugIn, must have the following structure:

```
<ConfigurationData>
 <ImageFile>path To image file</ImageFile>
 <Modifications>
  <Modification>
   ...
  </Modification>
  ...
 </Modifications>
</ConfigurationData>
```

You can define icons or toolbar buttons for the new menu items which are added to the UI of XMLSpy by the plug-in. The path to the file containing the images is set using the ImageFile element. Each image must be 16 x 16 pixels using max. 256 colors. The image references must be arranged from left to right in a single (<ImageFile>...) line. The rightmost image index value, is zero.

The Modifications element can have any number of Modification child elements. Each Modification element defines a specific change to the standard UI of XMLSpy. Starting with version 4.3, it is also possible to remove UI elements from XMLSpy.

Structure of Modification elements
All Modification elements consist of the following two child elements:

```
<Modification>
 <Action>Type of action</Action>
 <UIElement Type="type of UI element">
 </UIElement>
</Modification>
```

Valid values for the Action element are:

Add - to add the following UI element to XMLSpy
Hide - to hide the following UI element in XMLSpy
Remove - to remove the UI element from the "Commands" list box, in the customize dialog

You can combine values of the Action element e.g. "Hide Remove"

The UIElement element describes any new, or existing UI element for XMLSpy. Possible elements are currently: new toolbars, buttons, menus or menu items. The **type** attribute, defines which UI element is described by the XML element.

Common UIElement children
The ID and Name elements are valid for all different types of XML UIElement fragments. It is however possible, to ignore one of the values for a specific type of UIElement e.g. Name is ignored for a separator.

```
<ID></ID>
<Name></Name>
```

If UIElement describes an existing element of the UI, the value of the ID element is predefined

by XMLSpy. Normally these ID values are not known to the public. If the XML fragment describes a new part of the UI, then the ID is arbitrary and the value should be less than 1000. The Name element sets the textual value. Existing UI elements can be identified just by name, for e.g. menus and menu items with associated sub menus. For new UI elements, the Name element sets the caption e.g. the title of a toolbar, or text for a menu item.

Toolbars and Menus
To define a toolbar its necessary to specify the ID and/or the name of the toolbar. An existing toolbar can be specified using only the name, or by the ID if it is known. To create a **new** toolbar both values must be set. The **type** attribute must be equal to "ToolBar".

```
<UIElement Type="ToolBar">
 <ID>1</ID>
 <Name>TestPlugIn</Name>
</UIElement>
```

To specify an XMLSpy menu you need two parameters:

- The ID of the menu bar which contains the menu. If no XML documents are open in the main window, the menu bar ID is 128. If one or more XML documents are open, the menu bar ID is 129.
- The menu name. Menus do not have an associated ID value. The following example defines the "Edit" menu of the menu bar which is active, when at least one XML document is open:

```
<UIElement Type="Menu">
 <ID>129</ID>
 <Name>Edit</Name>
</UIElement>
```

An additional element is used if you want to create a new menu. The Place element defines the position of the new menu in the menu bar:

```
<UIElement Type="Menu">
 <ID>129</ID>
 <Name>PlugIn Menu</Name>
 <Place>12</Place>
</UIElement>
```

A value of -1 for the Place element sets the new button or menu item at the end of the menu or toolbar.

Commands
If you add a new command, through a toolbar button or a menu item, the UIElement fragment can contain any of these sub elements:

```
<MacroName></MacroName>
<Info></Info>
<ImageID></ImageID>
```

If MacroName is specified, XMLSpy searches for a macro with the same name in the scripting environment and executes it each time this command is processed. The Info element contains a short description string which is displayed in the status bar, when the mouse pointer is over the associated command (button or menu item). ImageID defines the index of the icon the external image file. Please note that all icons are stored in one image file.

To define a toolbar button create an UIElement with this structure:

```
<UIElement Type="ToolBarItem">
 <!--don't reuse local IDs even the commands do the same-->
 <ID>5</ID>
```



```
  <Name>Open file from repository...</Name>
  <!--Set Place To -1 If this is the first button To be inserted-->
  <Place>-1</Place>
  <ImageID>0</ImageID>
  <ToolBarID>1</ToolBarID>
  <!--instead of the toolbar ID the toolbar name could be used-->
  <ToolBarName>TestPlugIn</ToolBarName>
 </UIElement>
```

Additional elements to declare a toolbar button are Place, ToolBarID and ToolBarName. ToolBarID and ToolBarName are used to identify the toolbar which contains the new or existing button. The textual value of ToolBarName is case sensitive. The (UIElement) **type** attribute must equal "ToolBarItem".

To define a menu item, the elements MenuID, Place and Parent are available in addition to the standard elements used to declare a command. MenuID can be either 128 or 129. Please see "Toolbars and Menus" for more information on these values.

The Parent element is used to identify the **menu** where the new menu entry should be inserted. As sub menu items have no unique Windows ID, we need some other way to identify the parent of the menu item.

The value of the Parent element is a path to the menu item.
The text value of the Parent element, must equal the **parent menu name** of the submenu, where the submenu name is separated by a colon. If the menu has no parent, because its not a submenu, add a colon to the beginning of the name. The **type** attribute must be set to "MenuItem". Example for an UIElement defining a menu item:

```
<UIElement Type="MenuItem">
  <!--the following element is a Local command ID-->
  <ID>3</ID>
  <Name>Open file from repository...</Name>
  <Place>-1</Place>
  <MenuID>129</MenuID>
  <Parent>:PlugIn Menu</Parent>
  <ImageID>0</ImageID>
</UIElement>
```

XMLSpy makes it possible to add toolbar separators and menus if the value of the ID element is set to 0.

2.4 ATL sample files

The following pages show how to create a simple XMLSpy IDE plug-in DLL using ATL. To build the DLL it is necessary to know about ATL, the wizards that generate new ATL objects, as well as MS VisualStudio.

To access the API the implementation imports the Type Library of XMLSpy. The code reads various properties and calls methods using the smart pointers provided by the #import statement.

In addition, the sample code uses the MFC class CString and the ATL conversion macros such as W2T.

At a glance the steps to create an ATL DLL are as follows:

1. Open VisualStudio and select "New..." from the "File" menu.
2. Select the "Projects" tab.
3. Select "ATL COM AppWizard" and type in a project name.
4. Select "Support for MFC" if you want to use MFC classes, or if you want to create a project for the sample code.

   Having created the project files you can add an ATL object to implement the IXMLSpyPlugIn interface:

1. Select "New ATL Object..." from the "Insert" menu.
2. Select "Simple Object" from the wizard and click "Next".
3. Type in a name for the object.
4. On the "Attributes" tab, select "Custom" for the type of interface, and disable Aggregation.

These steps produce the skeleton code for the implementation of the IDE plug-in interface. Please see the following pages on how to modify the code and achieve some basic functionality.

2.4.1 Interface description (IDL)

The IDL of the newly created ATL object contains a declaration for one COM interface.

- This interface declaration must be replaced by the declaration of IXMLSpyPlugIn as shown below.
- The IDL must also contain the definition of the SPYUpdateAction enumeration.
- Replace the generated default interface name, (created by the wizard) with "IXMLSpyPlugIn" in the coclass declaration. The IDL should then look something like the example code below:

Having created the ATL object, you then need to implement the IDE plug-in interface of XMLSpy.

```
import "oaidl.idl";
import "ocidl.idl";

// ----- please insert the following block into your IDL file -----
 typedef enum {
  spyEnable = 1,
  spyDisable = 2,
  spyCheck = 4,
  spyUncheck = 8
 } SPYUpdateAction;
```



```
// ----- end insert block ----


// ----- E.g. Interface entry automatically generated by the ATL wizard -----
// [
//    object,
//    uuid(AB7CD86A-8145-429A-A1F3-270692EO8AFC),

//    helpstring("IXMLSpyPlugIn Interface")
//    pointer_default(unique)
// ]
// interface IXMLSpyPlugIn : IUnknown
// {
// };

// ----- end automatically generated Interface Entry


// ----- replace the Interface Entry (shown above) generated for you by the
ATL wizard, with the following block -----

 [
  odl,
  uuid(88F2A622-4B7E-42CD-8D04-3C0E5389DD85),
  helpstring("IXMLSpyPlugIn Interface")
 ]
 interface IXMLSpyPlugIn : IUnknown
  {
   HRESULT _stdcall OnCommand([in] long nID, [in] IDispatch* pXMLSpy);

   HRESULT _stdcall OnUpdateCommand([in] long nID, [in] IDispatch* pXMLSpy,
[out, retval] SPYUpdateAction* pAction);

   HRESULT _stdcall OnEvent([in] long nEventID, [in] SAFEARRAY(VARIANT)*
arrayParameters, [in] IDispatch* pXMLSpy, [out, retval] VARIANT*
pReturnValue);

   HRESULT _stdcall GetUIModifications([out, retval] BSTR* pModificationsXML);

   HRESULT _stdcall GetDescription([out, retval] BSTR* pDescription);
  };

// ----- end replace block -----


// ----- The code below is automatically generated by the ATL wizard and will
look slightly different in your case -----

 [
 uuid(24FE0D1B-3FC0-494E-B36E-1D4CE412B014),
 version(1.0),
 helpstring("XMLSpyIDEPlugInDLL 1.0 Type Library")
 ]
 library XMLSPYIDEPLUGINDLLLib
 {
 importlib("stdole32.tlb");
 importlib("stdole2.tlb");

 [
  uuid(3800E791-7F6B-4ACD-9E32-2AC184444501),
  helpstring("XMLSpyIDEPlugIn Class")
 ]
 coclass XMLSpyIDEPlugIn
 {
  [default] interface IXMLSpyPlugIn;    // ----- define IXMLSpyPlugIn as the
default interface -----
```

```
 };
};
```

2.4.2 Class definition

In the class definition of the ATL object, several changes must be made. The class has to derive from IXMLSpyPlugIn, the "Interface Map" needs an entry for IXMLSpyPlugIn, and the methods of the IDE plug-in interface must be declared:

```
#ifndef __XMLSPYIDEPLUGIN_H_
#define __XMLSPYIDEPLUGIN_H_

#include "resource.h"       // main symbols

/////////////////////////////////////////////////////////////////////////////
// CXMLSpyIDEPlugIn
class ATL_NO_VTABLE CXMLSpyIDEPlugIn :
 public CComObjectRootEx<CComSingleThreadModel>,
 public CComCoClass<CXMLSpyIDEPlugIn, &CLSID_XMLSpyIDEPlugIn>,
 public IXMLSpyPlugIn
{
public:
 CXMLSpyIDEPlugIn()
 {
 }

DECLARE_REGISTRY_RESOURCEID(IDR_XMLSPYIDEPLUGIN)
DECLARE_NOT_AGGREGATABLE(CXMLSpyIDEPlugIn)

DECLARE_PROTECT_FINAL_CONSTRUCT()

BEGIN_COM_MAP(CXMLSpyIDEPlugIn)
 COM_INTERFACE_ENTRY(IXMLSpyPlugIn)
END_COM_MAP()

// IXMLSpyIDEPlugIn
public:
 virtual HRESULT _stdcall OnCommand(long nID, IDispatch* pXMLSpy);

 virtual HRESULT _stdcall OnUpdateCommand(long nID, IDispatch* pXMLSpy,
SPYUpdateAction* pAction);

 virtual HRESULT _stdcall OnEvent(long nEventID, SAFEARRAY **arrayParameters,
IDispatch* pXMLSpy, VARIANT* pReturnValue);

 virtual HRESULT _stdcall GetUIModifications(BSTR* pModificationsXML);

 virtual HRESULT _stdcall GetDescription(BSTR* pDescription);
};

#endif //__XMLSPYIDEPLUGIN_H_
```

2.4.3 Implementation

The code below shows a simple implementation of an XMLSpy IDE plug-in. It adds a menu item and a separator (available with XMLSpy) to the Tools menu. Inside the OnUpdateCommand() method, the new command is only enabled when the active document is displayed using the Grid View. The command searches for the XML element which has the current focus, and opens any URL starting with "http://", from the textual value of the element.

```
/////////////////////////////////////////////////////////////////////////////
// CXMLSpyIDEPlugIn
```

```
#import "XMLSpy.tlb"
using namespace XMLSpyLib;

HRESULT CXMLSpyIDEPlugIn::OnCommand(long nID, IDispatch* pXMLSpy)
{
 USES_CONVERSION;

 if(nID == 1) {
  IApplicationPtr ipSpyApp;

  if(pXMLSpy) {
   if(SUCCEEDED(pXMLSpy->QueryInterface(__uuidof(IApplication),(void
**)&ipSpyApp))) {
    IDocumentPtr ipDocPtr = ipSpyApp->ActiveDocument;

    // we assume that grid view is active
    if(ipDocPtr) {
     IGridViewPtr ipGridPtr = ipDocPtr->GridView;

     if(ipGridPtr) {
      IXMLDataPtr  ipXMLData = ipGridPtr->CurrentFocus;

      CString strValue = W2T(ipXMLData->TextValue);

      if(!strValue.IsEmpty() && (strValue.Left(7) == _T("http://")))
       ::ShellExecute(NULL,_T("open")
,W2T(ipXMLData->TextValue),NULL,NULL,SW_SHOWNORMAL);
     }
    }
   }
  }
 }

 return S_OK;
}


HRESULT CXMLSpyIDEPlugIn::OnUpdateCommand(long nID, IDispatch* pXMLSpy,
SPYUpdateAction* pAction)
{
 *pAction = spyDisable;

 if(nID == 1) {
  IApplicationPtr ipSpyApp;

  if(pXMLSpy) {
   if(SUCCEEDED(pXMLSpy->QueryInterface(__uuidof(IApplication),(void
**)&ipSpyApp))) {
    IDocumentPtr ipDocPtr = ipSpyApp->ActiveDocument;

    // only enable if grid view is active
    if((ipDocPtr != NULL) && (ipDocPtr->CurrentViewMode == spyViewGrid))
     *pAction = spyEnable;
   }
  }
 }

 return S_OK;
}


HRESULT CXMLSpyIDEPlugIn::OnEvent(long nEventID, SAFEARRAY **arrayParameters,
IDispatch* pXMLSpy, VARIANT* pReturnValue)
{
 return S_OK;
```

```
}

HRESULT CXMLSpyIDEPlugIn::GetUIModifications(BSTR* pModificationsXML)
{
 CComBSTR bstrMods = _T(" \
    <ConfigurationData> \
     <Modifications> ");
 // add "Open URL..." to Tools menu
 bstrMods.Append ( _T(" \
      <Modification> \
       <Action>Add</Action> \
       <UIElement type=\"MenuItem\"> \
        <ID>1</ID> \
        <Name>Open URL...</Name> \
        <Place>0</Place> \
        <MenuID>129</MenuID> \
        <Parent>:Tools</Parent> \
       </UIElement> \
      </Modification> "));
 // add Seperator to Tools menu
 bstrMods.Append ( _T(" \
      <Modification> \
       <Action>Add</Action> \
       <UIElement type=\"MenuItem\"> \
        <ID>0</ID> \
        <Place>1</Place> \
        <MenuID>129</MenuID> \
        <Parent>:Tools</Parent> \
       </UIElement> \
      </Modification> "));
 // finish modification description
 bstrMods.Append ( _T(" \
     </Modifications> \
    </ConfigurationData>"));

 return bstrMods.CopyTo(pModificationsXML);
}


HRESULT CXMLSpyIDEPlugIn::GetDescription(BSTR* pDescription)
{
 CComBSTR bstrDescr = _T("ATL C++ XMLSpy IDE PlugIn;This PlugIn demonstrates
the implementation of a simple ATL DLL as a IDE PlugIn for XMLSpy.");
 return bstrDescr.CopyTo(pDescription);
}
```


2.5 IXMLSpyPlugIn

See also

Methods
OnCommand
OnUpdateCommand
OnEvent
GetUIModifications
GetDescription

Description
If a DLL is added to XMLSpy as an IDE plug-in, it is necessary that it registers a COM component that answers to an IXMLSpyPlugIn interface with the reserved uuid(88F2A622-4B7E-42CD-8D04-3C0E5389DD85), for it to be recognized as a plug-in.

2.5.1 OnCommand

See also

Declaration: `OnCommand( nID as long, pXMLSpy as IDispatch)`

Description
The `OnCommand()` method of the interface implementation, is called each time a command added by the the IDE plug-in (menu item or toolbar button) is processed. nID stores the command ID defined by the `ID` element of the respective `UIElement`.

`pXMLSpy` holds a reference to the dispatch interface of the `Application` object of XMLSpy.

Example

```
Public Sub IXMLSpyPlugIn_OnCommand(ByVal nID As Long, ByVal pXMLSpy As Object)
    If (Not (pXMLSpy Is Nothing)) Then
        Dim objDlg
        Dim objDoc As XMLSpyLib.Document
        Dim objSpy As XMLSpyLib.Application
        Set objSpy = pXMLSpy

        If nID = 3 Or nID = 5 Then
            Set objDlg = CreateObject("MSComDlg.CommonDialog")
            objDlg.Filter = "XML Files (*.xml)|*.xml|All Files (*.*)|*.*||"
            objDlg.FilterIndex = 1
            objDlg.ShowOpen

            If Len(objDlg.FileName) > 0 Then
                Set objDoc = objSpy.Documents.OpenFile(objDlg.FileName, False)
                Set objDoc = Nothing
            End If
        End If

        If nID = 4 Or nID = 6 Then
            Set objDlg = CreateObject("MSComDlg.CommonDialog")
            objDlg.Filter = "All Files (*.*)|*.*||"
            objDlg.Flags = cdlOFNPathMustExist
            objDlg.ShowSave

            If Len(objDlg.FileName) > 0 Then
                Set objDoc = objSpy.ActiveDocument

                If Not (objDoc Is Nothing) Then
                    objDoc.SetPathName objDlg.FileName
```

```
                    objDoc.Save
                    Set objDoc = Nothing
                End If
            End If
        End If

        Set objSpy = Nothing
    End If
End Sub
```

2.5.2 OnUpdateCommand

See also

Declaration: `OnUpdateCommand( nID as long, pXMLSpy as IDispatch) as SPYUpdateAction`

Description

The `OnUpdateCommand()` method is called each time the visible state of a button or menu item needs to be set. `nID` stores the command ID defined by the `ID` element of the respective `UIElement`.

`pXMLSpy` holds a reference to the dispatch interface of the `Application` object.

Possible return values to set the update state are:

```
spyEnable         = 1
spyDisable        = 2
spyCheck          = 4
spyUncheck        = 8
```

Example

```
Public Function IXMLSpyPlugIn_OnUpdateCommand( ByVal nID As Long, ByVal
pXMLSpy As Object) As SPYUpdateAction
    IXMLSpyPlugIn_OnUpdateCommand = spyDisable

    If ( Not ( pXMLSpy Is Nothing)) Then
        Dim objSpy As XMLSpyLib.Application
        Set objSpy = pXMLSpy

        If nID = 3 Or nID = 5 Then
            IXMLSpyPlugIn_OnUpdateCommand = spyEnable
        End If
        If nID = 4 Or nID = 6 Then
            If objSpy.Documents.Count > 0 Then
                IXMLSpyPlugIn_OnUpdateCommand = spyEnable
            Else
                IXMLSpyPlugIn_OnUpdateCommand = spyDisable
            End If
        End If
    End If
End Function
```

2.5.3 OnEvent

See also

Declaration: `OnEvent( nEventID as long, arrayParameters as SAFEARRAY( VARIANT), pXMLSpy as IDispatch) as VARIANT`

Description

`OnEvent()` is called each time an event is raised from XMLSpy.

Possible values for `nEventID` are:

On_BeforeStartEditing	= 1
On_EditingFinished	= 2
On_FocusChanged	= 3
On_Beforedrag	= 4
On_BeforeDrop	= 5
On_OpenProject	= 6
On_OpenDocument	= 7
On_CloseDocument	= 8
On_SaveDocument	= 9

Events available since XMLSpy 4r4:

On_DocEditDragOver	= 10
On_DocEditDrop	= 11
On_DocEditKeyDown	= 12
On_DocEditKeyUp	= 13
On_DocEditKeyPressed	= 14
On_DocEditMouseMove	= 15
On_DocEditButtonUp	= 16
On_DocEditButtonDown	= 17
On_DocEditContextMenu	= 18
On_DocEditPaste	= 19
On_DocEditCut	= 20
On_DocEditCopy	= 21
On_DocEditClear	= 22
On_DocEditSelectionChanged	= 23

Events available since XMLSpy 2004:

On_DocEditDragOver	= 10

Events available since XMLSpy 2004r4 (type library version 1.4):

On_BeforeOpenProject	= 25
On_BeforeOpenDocument	= 26
On_BeforeSaveDocument	= 27
On_BeforeCloseDocument	= 28
On_ViewActivation	= 29
On_DocEditKeyboardEvent	= 30
On_DocEditMouseEvent	= 31

Events available since XMLSpy 2006 SP1 (type library version 1.5):

On_BeforeValidate	= 32

Events available since XMLSpy 2007 (type library version 1.6):

On_BeforeShowSuggestions	= 33
On_ProjectOpened	= 34
On_Char	= 35

Events available since XMLSpy 2009 (type library version 2.2):

On_Initialize	= 36
On_Running	= 37
On_Shutdown	= 38

Events available since XMLSpy 2012 (type library version 2.8):

On_AuthenticBeforeSave	= 39
On_AuthenticContextMenuActivated	= 40
On_AuthenticLoad	= 41
On_AuthenticToolbarButtonClicked	= 42
On_AuthenticToolbarButtonExecuted	= 43
On_AuthenticUserAddedXMLNode	= 44

The names of the events are the same as they appear in the Scripting Environment of XMLSpy. For IDE plug-ins the names used are immaterial. The events are identified using the `ID` value.

`arrayParameters` is an array which is filled with the parameters of the currently raised event. Order, type and meaning of the single parameters are available through the scripting environment of XMLSpy. The events module of a scripting project, contains predefined functions for all events prior to version 4.4. The parameters passed to the predefined functions are identical to the array elements of the `arrayParameters` parameter.

Events raised from the Authentic View of XMLSpy do not pass any parameters directly. An "event" object is used instead. The event object can be accessed through the Document object of the active document.

`pXMLSpy` holds a reference to the dispatch interface of the `Application` object of XMLSpy.

If the return value of `OnEvent()` is set, then neither the IDE plug-in, nor an event handler inside of the scripting environment will get this event afterwards. Please note that all IDE plug-ins get/process the event before the Scripting Environment does.

2.5.4 GetUIModifications

See also

Declaration: `GetUIModifications()` as String

Description

The `GetUIModifications()` method is called during initialization of the plug-in, to get the configuration XML data that defines the changes to the UI of XMLSpy. The method is called when the plug-in is loaded for the first time, and at every start of XMLSpy.

See also Configuration XML for a detailed description how to change the UI.

Example

```
Public Function IXMLSpyPlugIn_GetUIModifications() As String
    ' GetUIModifications() gets the XML file with the specified modifications
of
    ' the UI from the config.xml file in the plug-in folder
    Dim strPath As String
    strPath = App.Path

    If Len(strPath) > 0 Then
        Dim fso As New FileSystemObject
        Dim file As file

        Set file = fso.GetFile(strPath & "\config.xml")

        If (Not (file Is Nothing)) Then
            Dim stream As TextStream
            Set stream = file.OpenAsTextStream(ForReading)

            ' this replaces the token '**path**' from the XML file with
            ' the actual installation path of the plug-in to get the image
file
            Dim strMods As String
            strMods = stream.ReadAll
            strMods = Replace(strMods, "**path**", strPath)

            IXMLSpyPlugIn_GetUIModifications = strMods
        Else
            IXMLSpyPlugIn_GetUIModifications = ""
        End If
    End If
End Function
```

2.5.5 GetDescription

See also

Declaration: `GetDescription()` as String

Description

`GetDescription()` is used to define the description string for the plug-in entries visible in the Customize dialog box.

Example

```
Public Function IXMLSpyPlugIn_GetDescription() As String
    IXMLSpyPlugIn_GetDescription = "Sample Plug-in for XMLSpy;This Plug-in
demonstrates the implementation of a simple VisualBasic DLL as a Plug-in for
XMLSpy."
```

```
End Function
```

3 Application API

The COM-based API of XMLSpy (also called the Application API from now on) enables other applications to use the functionality of XMLSpy. As a result, it is possible to automate a wide range of tasks, from validating an XML file to modifying complex XML content (with the XMLData interface).

XMLSpy and its Application API follow the common specifications for automation servers set out by Microsoft. It is possible to access the methods and properties of the Application API from common development environments, such as those using C, C++, VisualBasic, and Delphi, and with scripting languages like JScript and VBScript.

Execution environments for the Application API
The Application API can be accessed from the following execution environments:

- External programs (described below and in the Overview part of this section)
- From within the built-in Scripting Editor of XMLSpy. For a description of the scripting environment, see the section, Scripting Editor.
- XMLSpy allows you to create and integrate your own plug-ins into the application using a special interface for plug-ins. A description of how to create plug-ins is given in the section IDE Plug-ins.
- Via an ActiveX Control, which is available if the integration package is installed. For more information, see the section ActiveX Integration.

External programs
In the Overview part of this section, we describe how the functionality of XMLSpy can be accessed and automated from external programs.

Using the Application API from outside XMLSpy requires an instance of XMLSpy to be started first. How this is done depends on the programming language used. See the section, Programming Languages, for information about individual languages.

Essentially, XMLSpy will be started via its COM registration. Then the `Application` object associated with the XMLSpy instance is returned. Depending on the COM settings, an object associated with an already running XMLSpy can be returned. Any programming language that supports creation and invocation of COM objects can be used. The most common of these are listed below.

- JScript and VBScript script files have a simple syntax and are designed to access COM objects. They can be run directly from a DOS command line or with a double click on Windows Explorer. They are best used for simple automation tasks.
- C# is a a full-fledged programming language that has a wide range of existing functionality. Access to COM objects can be automatically wrapped using C#..
- C++ provides direct control over COM access but requires relatively larger amounts of code than the other languages.
- Java: Altova products come with native Java classes that wrap the Application API and provide a full Java look-and-feel.
- Other programming languages that make useful alternatives are: Visual Basic for Applications, Perl, and Python.

Programming points
The following limitations must be considered in your client code:

- Be aware that if your client code crashes, instances of XMLSpy may still remain in the system.
- Don't hold references to objects in memory longer than you need them, especially those from the `XMLData` interface. If the user interacts between two calls of your client, then there is no guarantee that these references are still valid.
- Don't forget to disable dialogs if the user interface is not visible.
- See Error handling in JScript (and in C# and Java) for details of how to avoid annoying error messages.
- Free references explicitly if you are using C or C++.

This documentation
This documentation section about the Application API is broadly divided into two parts.

- The first part consists of an Overview, which describes the object model for the API and explains how the API is accessed via various programming languages.
- The second part is a reference section (Interfaces and Enumerations) that contains descriptions of the interface objects of the Application API.

3.1 Overview

This overview of the Application API is organized as follows:

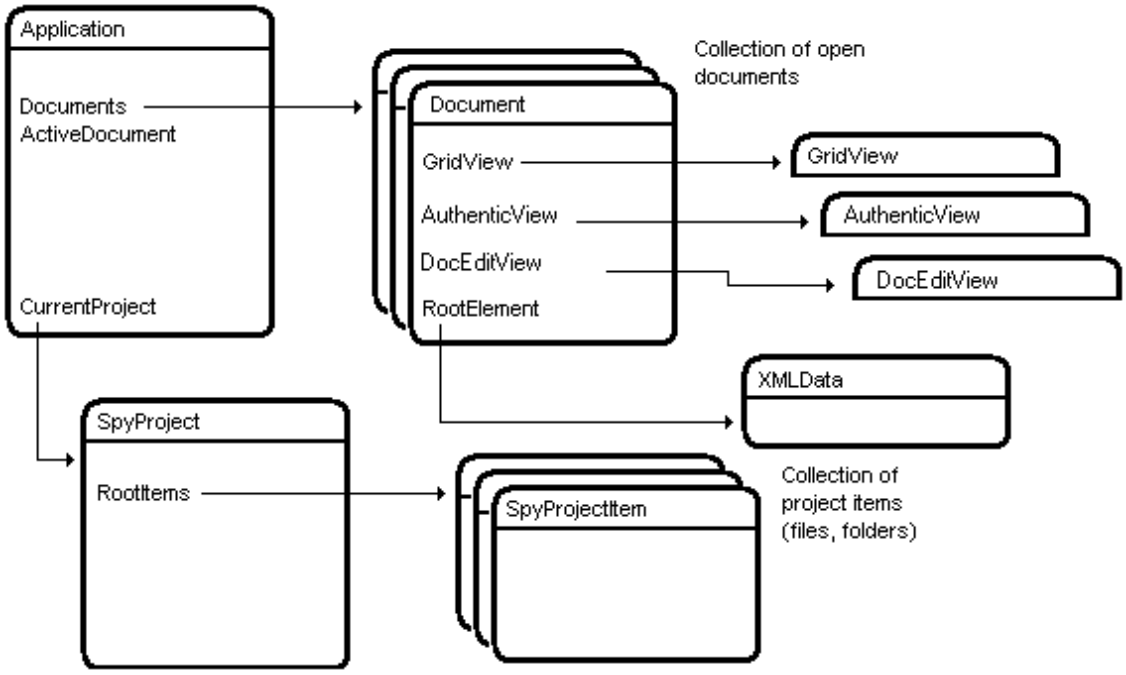
- The Object Model describes the relationships between the objects of the Application API.
- Programming Languages explains how the most commonly used programming languages (JScript, VBScript, C#, and Java) can be used to access the functionality of the Application API. Code listings from the example files supplied with your application package are used to describe basic mechanisms.
- The DOM and XMLData explains the relationship between the Application API's `XMLData` interface and the DOM.
- Obsolete: Authentic View Row Operations supplies information about obsolete objects for Authentic View table row operations.
- Obsolete: Authentic View Editing Operations supplies information about obsolete objects for Authentic View editing operations.

3.1.1 Object Model

The starting point for every application which uses the Application API is the `Application` object. This object contains general methods like import/export support and references to the open documents and any open project.

To create an instance of the `Application` object, call `CreateObject("XMLSpy.Application")` from VisualBasic or a similar function from your preferred development environment to create a COM object. There is no need to create any other objects in order to use the complete Application API; it is in fact not even possible. All other interfaces are accessed through other objects with the `Application` object as the starting point.

The picture below shows the links between the main objects of the Application API:



The application object consists of the following parts:

1. Document collection and reference to the active document.
2. Reference to current project and methods for creating and opening projects.
3. Methods to support the export to and import from databases, text files, and Word documents.
4. URL management.
5. Methods for macro menu items.

Once you have created an `Application` object you can start using the functionality of XMLSpy. In most cases, you either open a project and access the documents from there or you directly open a document via the `Documents` interface.

3.1.2 Programming Languages

Programming languages differ in the way they support COM access. A few examples for the most frequently used languages (*links below*) will help you get started. The code listings in this section show how basic functionality can be accessed. This basic functionality is included in the files in the API Examples folder and can be tested straight away. The path to the API Examples folder is given below:

Windows XP	`C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/`

JScript
The JScript listings demonstrate the following basic functionality:

- Start application or attach to a running instance
- Simple document access
- Iteration
- Error handling
- Events
- Import and export of data

VBScript
VBScript is different than JScript only syntactically; otherwise it works in the same way. The listings below describe is an example of how VBScript can be used. For more information, refer to the JScript examples.

- Events: Shows how events are handled using VBScript.

C#
C# can be used to access the Application API functionality. The code listings show how to access the API for certain basic functionality.

- Start XMLSpy: Starts XMLSpy, which is registered as an automation server, or activates the program if XMLSpy is already running.
- Open OrgChart.pxf: Locates one of the example documents installed with XMLSpy and opens it. If this document is already open it becomes the active document.

- OnDocumentOpened Event On/Off: Shows how to listen to XMLSpy events. When turned on, a message box will pop up after a document has been opened.
- Open ExpReport.xml: Opens another example document.
- Toggle View Mode: Changes the view of all open documents between Text View and Authentic View. The code shows how to iterate through open documents.
- Validate: Validates the active document and shows the result in a message box. The code shows how to handle errors and COM output parameters.
- Shutdown XMLSpy: Stops XMLSpy.

Java

The XMLSpy API can be accessed from Java code. This section explains how some basic XMLSpy functionality can be accessed from Java code. It is organized into the following sub-sections:

- Mapping Rules for the Java Wrapper
- Example Java Project
- Application Startup and Shutdown
- Simple Document Access
- Iterations
- Use of Out-Parameters
- Event Handlers

JScript

This section contains listings of JScript code that demonstrate the following basic functionality:

- Start application or attach to a running instance
- Simple document access
- Iteration
- Error handling
- Events
- Import and export of data
- Example: Bubble Sort Dynamic Tables

Example files

The code listings in this section are available in example files that you can test as is or modify to suit your needs. The JScript example files are located in the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

The example files can be run in one of two ways:

- *From the command line:* Open a command prompt window and type the name of one of the example scripts (for example, `Start.js`). The Windows Scripting Host that is packaged with newer versions of Windows (XP, Vista, 7) will execute the script.
- *From Windows Explorer:* In Windows Explorer, browse for the JScript file and double-click it. The Windows Scripting Host that is packaged with newer versions of Windows (XP, Vista, 7) will execute the script. After the script is executed, the command console

gets closed automatically.

Start Application

The JScript below starts the application and shuts it down. If an instance of the application is already running, the running instance will be returned.

Script listing

The JScript listing below is explained with comments in the code.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;

WScript.Echo("Hello");

objSpy.Visible = false;        // will shutdown application if it has no more COM
connections
//objSpy.Visible = true;       // will keep application running with UI visible
```

Running the script

The JScript code listed above is available in the file `Start.js` located in the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Simple Document Access

The JScript listing below shows how to open documents, set a document as the active document, iterate through the open documents, and close documents.

Running the script

The JScript code listed below is available in the file `DocumentAccess.js` located in the `JScript` folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The JScript listing below is explained with comments in the code.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
	objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
	Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;

// ************************** code snippet for "Simple Document Access"
*************************************

// Locate examples via USERPROFILE shell variable. The path needs to be adapted to major
release versions.
objWshShell = WScript.CreateObject("WScript.Shell");
strExampleFolder = objWshShell.ExpandEnvironmentStrings("%USERPROFILE%") + "\\My
Documents\\Altova\\XMLSpy2012\\Examples\\";

// Tell XMLSpy to open two documents. No dialogs
objDoc1 = objSpy.Documents.OpenFile(strExampleFolder + "OrgChart.pxf", false);
objSpy.Documents.OpenFile(strExampleFolder + "ExpReport.xml", false);

// The document currently active can be easily located.
objDoc2 = objSpy.ActiveDocument;

// Let us make sure that the document is shown in grid view.
objDoc2.SwitchViewMode(0);     // SPYViewModes.spyViewGrid = 0

// Now switch back to the document opened first
objDoc1.SetActiveDocument();

// ************************** code snippet for "Simple Document Access"
*************************************

// ************************** code snippet for "Iteration"
*************************************

// go through all open documents using a JScript Enumerator
bRequiresSaving = false;
for (var iterDocs = new Enumerator(objSpy.Documents); !iterDocs.atEnd(); iterDocs.
moveNext())
	if (iterDocs.item().IsModified)
		bRequiresSaving = true;

// go through all open documents using index-based access to the document collection
for (i = objSpy.Documents.Count; i > 0; i--)
```

```
        objSpy.Documents.Item(i).Close(false);


// ************************** code snippet for "Iteration"
***************************************

//objSpy.Visible = false;             // will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

Iteration

The JScript listing below shows how to iterate through the open documents.

Running the script

You can test this script by copying the listing below to a file, naming the file with a `.js` extension, and running the file from either the command line or Windows Explorer. You could copy the file to the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The JScript listing below is explained with comments in the code.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;



// ***************** Accessing documents, setting the active document
***********************

// Locate examples via USERPROFILE shell variable. The path needs to be adapted to major
release versions.
objWshShell = WScript.CreateObject("WScript.Shell");
strExampleFolder = objWshShell.ExpandEnvironmentStrings("%USERPROFILE%") + "\\My
Documents\\Altova\\XMLSpy2012\\Examples\\";

// Tell XMLSpy to open two documents. No dialogs
objDoc1 = objSpy.Documents.OpenFile(strExampleFolder + "OrgChart.pxf", false);
```

```
objSpy.Documents.OpenFile(strExampleFolder + "ExpReport.xml", false);

// The document currently active can be easily located.
objDoc2 = objSpy.ActiveDocument;

// Let us make sure that the document is shown in grid view.
objDoc2.SwitchViewMode(0);     // SPYViewModes.spyViewGrid = 0

// Now switch back to the document opened first
objDoc1.SetActiveDocument();



// ************************ Two ways of iterating; close documents
*************************

// Go through all open documents using a JScript Enumerator
bRequiresSaving = false;
for (var iterDocs = new Enumerator(objSpy.Documents); !iterDocs.atEnd(); iterDocs.
moveNext())
        if (iterDocs.item().IsModified)
                bRequiresSaving = true;

// Go through all open documents using index-based access to the document collection
// and close each document.  Comment out to leave documents open.

for (i = objSpy.Documents.Count; i > 0; i--)
        objSpy.Documents.Item(i).Close(false);   // Closes the iterated documents



// ************************* Shut down the application or not
*******************************

//objSpy.Visible = false;             // will shutdown application if it has no more COM
connections
objSpy.Visible = true;        // will keep application running with UI visible
```

Error Handling

The Application API returns errors in two different ways:

- The `HRESULT` returned by every API method
- The `IErrorInfo` interface of the Application API

Every API method returns an `HRESULT`. This return value gives the caller information about errors during execution of the method. If the call was successful, the return value is `S_OK`. The `HRESULT` option is commonly used in C/C++ programs.

However, programming languages such as VisualBasic and scripting languages (and other high-level development environments) don't give the programmer access to the `HRESULT` return of a COM call. Such languages use the `IErrorInfo` interface, which is also supported by the Application API. If an error occurs, the Application API creates a new object that implements the `IErrorInfo` interface. The information provided by the `IErrorInfo` interface is imported by the development environment into its own error-handling mechanism.

JScript error handling

JScript provides a try-catch mechanism to deal with errors raised from COM calls. An error object containing the necessary information is declared. The listing below shows how.

```
// go through all open documents using a JScript Enumerator
bRequiresSaving = false;
for (var iterDocs = new Enumerator(objSpy.Documents); !iterDocs.atEnd(); iterDocs.
```

```
moveNext())
{
        if (iterDocs.item().IsModified)
                bRequiresSaving = true;

        var strErrorText = new Array(1);
        var nErrorNumber = new Array(1);
        var errorData = new Array(1);

        if (!iterDocs.item().IsValid(strErrorText, nErrorNumber, errorData))
        {
       var text = strErrorText;
           // access that XMLData object only if filled in
       if (errorData[0] != null)
                        text += "(" + errorData[0].Name + "/" + errorData[0].TextValue +
")";

                WScript.Echo("Document \"" + iterDocs.item().Name +"\" validation error["
 + nErrorNumber + "]: " + text);
        }
        else
        {
                // The COM call succeeded and the document is valid.
                WScript.Echo("Document \"" + iterDocs.item().Name + "\" is valid.");
        }
}
```

Events

COM specifies that a client must register itself at a server for callbacks using the connection point mechanism. The automation interface for XMLSpy defines the necessary event interfaces. The way to connect to those events depends on the programming language you use in your client. The following code listing shows how this is done using JScript.

The method `WScript.ConnectObject` is used to receive events.

```
// The event-handler function
function DocEvent_OnBeforeCloseDocument(objDocument)
{
        WScript.Echo("Received event - before closing document");
}

// Create or connect to XMLSpy (or Authentic Desktop)
try
{
        // Create the environment and XMLSpy (or Authentic Desktop)
        objWshShell = WScript.CreateObject("WScript.Shell");
        objFSO = WScript.CreateObject("Scripting.FileSystemObject");
        objSpy = WScript.GetObject("", "XMLSpy.Application");

// If only Authentic Desktop is installed (and XMLSpy is not installed) use:
// objSpy = WScript.GetObject("", "AuthenticDesktop.Application")

}
catch(err)
        { WScript.Echo ("Can't create WScript.Shell object or XMLSpy"); }

// Create document object and connect to its events
objSpy.Visible = true;
objDoc = objSpy.Documents.OpenFile ("C:\\Program
Files\\Altova\\XMLSpy2012\\Examples\\OrgChart.xml", false);
WScript.ConnectObject(objDoc, "DocEvent_");

// Keep running while waiting for the event
// In the meanwhile close this document in XMLSpy (or Authentic Desktop) manually
WScript.Echo ("Sleeping for 10 seconds ...");
WScript.Sleep (10000);
```



```
objDoc = null;
WScript.Echo ("Stopped listening for event");
objSpy.Quit();
```

Import and Export of Data

Before you implement your import and export tasks with the Application API, it is good practice to test the connections, parameters, SQL queries and so on in XMLSpy. In this way you are able to verify the results and make quick adjustments to import or export parameters.

Most of the methods for importing and exporting data are placed in the `Application` object, the remaining functions are accessible via the `Document` interface.

There is some preparatory work necessary, before the actual import or export can be started. Every import/export job consists of two parts. You need to define a connection to your data and the specific behaviour for the import/export process.

In case of an import, the connection is either a database, a text-file or a Word document. The behaviour is basically which data (columns) should be imported in XMLSpy.

In case of an export, the connection is either a database or a text file. Specify which data (elements of the XML file) and additional parameters (for example, automatic key generation or number of sub-levels) to use from the XML-structure.

The properties in the `DatabaseConnection`, `TextImportExportSettings` and `ExportSettings` interfaces have default values. See the corresponding descriptions in the `Interfaces` chapter for further information.

Descriptions

The sub-sections of this section describe each of these operations in detail.

- Import from Database
- Export to Database
- Import from Text
- Export to Text

Running the script

The JScript code listed below contains snippets for importing and exporting to database and text. It is available in the file `ImportExport.js` located in the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The listing below contains code snippets for import and export to database and text.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
	objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
	Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;



// ******************** Import from database: Start ******************************

// Locate examples via USERPROFILE shell variable. The path needs to be adapted to major
release versions.
objWshShell = WScript.CreateObject("WScript.Shell");
strExampleFolder = objWshShell.ExpandEnvironmentStrings("%USERPROFILE%") + "\\My
Documents\\Altova\\XMLSpy2012\\Examples\\";

try
{
	// specify the source of data import
	objImpSettings = objSpy.GetDatabaseSettings();
	objImpSettings.File = strExampleFolder + "Tutorial\\Company.mdb";
	objImpSettings.SQLSelect = "SELECT * FROM Address";

	// column filter
	objElementList = objSpy.GetDatabaseImportElementList(objImpSettings);

	// import into a new XML file
	objImpDocFromDB = objSpy.ImportFromDatabase(objImpSettings,objElementList);
}
catch(err)
{
	WScript.Echo("Error importing from database.\n\n" +
			"Error: " + (err.number & 0xffff) + "\n" +
			"Description: " + err.description);
}

// ******************** Import from database: End ******************************



// ******************** Export to database: Start ******************************

//try
//{
	// set the behaviour of the export with ExportSettings
	objExpSettings = objSpy.GetExportSettings()

	//set the destination with DatabaseConnection
	objDB = objSpy.GetDatabaseSettings();
	objDB.CreateMissingTables = true;
	objDB.CreateNew = true;
	objDB.File = "C:\\Temp\\Export.mdb";

try
{
	objImpDocFromDB.ExportToDatabase(objImpDocFromDB.RootElement, objExpSettings,
objDB);
}
```



```
catch(err)
{
	WScript.Echo("Error exporting to database.\n\n" +
			"Error: " + (err.number & 0xffff) + "\n" +
			"Description: " + err.description);
}


// ********************** Export to database: End ********************************


// ********************** Import from text: Start ********************************

try
{
	// specify the source of data import
	objImpSettings = objSpy.GetTextImportExportSettings();
	objImpSettings.ImportFile = strExampleFolder + "Tutorial\\Shapes.txt";
	objImpSettings.HeaderRow = false;

	// column filter
	objElementList = objSpy.GetTextImportElementList(objImpSettings);

	// import into a new XML file
	objImpDocFromText = objSpy.ImportFromText(objImpSettings,objElementList);
}
catch(err)
{
	WScript.Echo("Error importing from text file.\n\n" +
			"Error: " + (err.number & 0xffff) + "\n" +
			"Description: " + err.description);
}


// ************************** Import from text: End ********************************


// ************************** Export to text: Start ********************************

//try
//{
	objExpSettings = objSpy.GetExportSettings();
	objExpSettings.ElementList = objImpDocFromText.GetExportElementList(
objImpDocFromText.RootElement, objExpSettings);

	objTextExp = objSpy.GetTextImportExportSettings();
	objTextExp.HeaderRow = true;
	objTextExp.DestinationFolder = "C:\\Temp";
try
{

	objImpDocFromText.ExportToText(objImpDocFromText.RootElement, objExpSettings,
objTextExp);
}
catch(err)
{
	WScript.Echo("Error exporting to text.\n\n" +
			"Error: " + (err.number & 0xffff) + "\n" +
			"Description: " + err.description);
}

// ***************************** Export to text: End ********************************

//objSpy.Visible = false;		// will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

Given below are the steps to establish a connection to an existing database for import:

1. Use a DatabaseConnection object and set the properties:
   The method Application.GetDatabaseSettings returns a new object for a database connection:

   ```
   objImpSettings = objSpy.GetDatabaseSettings();
   ```

   You have to set either an **ADO connection string**,

   - `objImpSettings.ADOConnection = strADOConnection`

   or the **path** to an existing database file:

   - `objImpSettings.File = strExampleFolder + "Tutorial\\Company.mdb";`

   To complete the settings you create a **SQL select statement** to define the data to be queried:

   - `objImpSettings.SQLSelect = "SELECT * FROM Address";`

2. Call Application.GetDatabaseImportElementList to get a collection of the resulting columns of the SQL query:

   ```
   objElementList = objSpy.GetDatabaseImportElementList(objImpSettings);
   ```

   This collection gives you the opportunity to control which columns should be imported and specify the datatype of the new elements. Each item of the collection represents one column to import. If you remove an item, the corresponding column will not be imported. You can additionally modify the ElementListItem.ElementKind property to set the datatype of the XML elements for each column.

   Please consider that `GetDatabaseImportElementList()` executes the SQL query and could initiate a time-consuming call. To avoid this, it is possible to pass a null-pointer as the second parameter to `ImportFromDatabase()`; this imports all columns as plain XML elements.

3. Start the import with Application.ImportFromDatabase:

```
objImpDocFromDB =
objSpy.ImportFromDatabase(objImpSettings,objElementList);
```

Running the script

You can test the script below by copying the listing below to a file, naming the file with a `.js` extension, and running the file from either the command line or Windows Explorer. You could copy the file to the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The following listing shows how data can be imported from a database.


```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;


// ************************* Import from database ******************************

// Locate examples via USERPROFILE shell variable. The path needs to be adapted to major
release versions.
objWshShell = WScript.CreateObject("WScript.Shell");
strExampleFolder = objWshShell.ExpandEnvironmentStrings("%USERPROFILE%") + "\\My
Documents\\Altova\\XMLSpy2012\\Examples\\";

try
{
        // specify the source of data import
        objImpSettings = objSpy.GetDatabaseSettings();
        objImpSettings.File = strExampleFolder + "Tutorial\\Company.mdb";
        objImpSettings.SQLSelect = "SELECT * FROM Address";

        // column filter
        objElementList = objSpy.GetDatabaseImportElementList(objImpSettings);

        // import into a new XML file
        objImpDocFromDB = objSpy.ImportFromDatabase(objImpSettings,objElementList);
}
catch(err)
{
        WScript.Echo("Error importing from database.\n\n" +
                     "Error: " + (err.number & 0xffff) + "\n" +
                     "Description: " + err.description);
}

// ************************** End ************************************


//objSpy.Visible = false;             // will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

To export data to a database, carry out the steps below:

1. Use a `DatabaseConnection` object and set the necessary properties.
   All properties except `SQLSelect` are important for the export. `ADOConnection` or `File` defines the target for the output. You need to set only one of them.

2. Fill an `ExportSettings` object with the required values.
   These properties are the same options as those available in the export dialog of XMLSpy. Select the menu option **Convert | Export to Text files/Database** to see the options and try a combination of export settings. After that it is easy to transfer these settings to the properties of the interface.

Call Application.GetExportSettings to get an ExportSettings object:

```
objExpSettings = objSpy.GetExportSettings()
```

3. Build an element list with Document.GetExportElementList.
   The element list enables you to eliminate XML elements from the export process. It also gives you information about the record and field count in the RecordCount and FieldCount properties. Set the ExportSettings.ElementList property to this collection. It is possible to set the element list to null/Nothing (default) to export all elements.

4. Call Document.ExportToDatabase to execute the export.
   The description of the ExportToDatabase method contains also a code example for a database export.

Running the script

You can test the script below by copying the listing below to a file, naming the file with a .js extension, and running the file from either the command line or Windows Explorer. You could copy the file to the JScript folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The following listing shows how data can be exported to a database.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;


// *************************** Export to database
************************************

//try
//{
        // set the behaviour of the export with ExportSettings
        objExpSettings = objSpy.GetExportSettings()

        //set the destination with DatabaseConnection
```



```
        objDB = objSpy.GetDatabaseSettings();
        objDB.CreateMissingTables = true;
        objDB.CreateNew = true;
        objDB.File = "C:\\Temp\\Export.mdb";

try
{
        objImpDocFromDB.ExportToDatabase(objImpDocFromDB.RootElement, objExpSettings,
objDB);
}
catch(err)
{
        WScript.Echo("Error exporting to database.\n\n" +
                     "Error: " + (err.number & 0xffff) + "\n" +
                     "Description: " + err.description);
}

// *************************** End ************************************


//objSpy.Visible = false;            // will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

Importing data from a text file is similar to the import from a database. You must use other interfaces (described in steps 1 to 3 below) with different methods and properties:

1. Use a `TextImportExportSettings` object and set the properties:
   The method `Application.GetTextImportExportSettings` returns a new object to specify a text file for import.

   ```
   objImpSettings = objSpy.GetTextImportExportSettings();
   ```

   You have to set at least the `ImportFile` property to the path of the file for the import. Another important property is `HeaderRow`. Set it to `False` if the text file does not contain a leading line as a header row.

   ```
   objImpSettings.ImportFile = strExampleFolder + "Tutorial\\Shapes.txt";
   ```

2. Call `Application.GetTextImportElementList` to get a collection of all columns inside the text file:

   ```
   objElementList = objSpy.GetTextImportElementList(objImpSettings);
   ```

3. Start the import with `Application.ImportFromText`.

   ```
   objImpDocFromText = objSpy.ImportFromText(objImpSettings,objElementList
);
   ```

Running the script
You can test the script below by copying the listing below to a file, naming the file with a `.js` extension, and running the file from either the command line or Windows Explorer. You could copy the file to the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The following listing shows how data can be imported from text.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;

// *************************** Import from text ***********************************

try
{
        // specify the source of data import
        objImpSettings = objSpy.GetTextImportExportSettings();
        objImpSettings.ImportFile = strExampleFolder + "Tutorial\\Shapes.txt";
        objImpSettings.HeaderRow = false;

        // column filter
        objElementList = objSpy.GetTextImportElementList(objImpSettings);

        // import into a new XML file
        objImpDocFromText = objSpy.ImportFromText(objImpSettings,objElementList);
}
catch(err)
{
        WScript.Echo("Error importing from text file.\n\n" +
                     "Error: " + (err.number & 0xffff) + "\n" +
                     "Description: " + err.description);
}

// *************************** End ************************************


//objSpy.Visible = false;             // will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

To export data to text, carry out the steps below:

1. Use a `TextImportExportSettings` object and set the necessary properties.
2. Fill an `ExportSettings` object with the required values. See Item 2 in Export to database.
3. Build an element list with `Document.GetExportElementList`. See Item 3 in Export to database.
4. Call `Document.ExportToText` to execute the export.

Running the script

You can test the script below by copying the listing below to a file, naming the file with a `.js`

extension, and running the file from either the command line or Windows Explorer. You could copy the file to the `JScript` folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

To run the script, start it from a command prompt window or from Windows Explorer.

Script listing

The following listing shows how data can be exported to text.

```
// Initialize application's COM object. This will start a new instance of the
application and
// return its main COM object. Depending on COM settings, a the main COM object of an
already
// running application might be returned.
try
{
        objSpy = WScript.GetObject("", "XMLSpy.Application");
}
catch(err)
{
        Exit("Can't access or create XMLSpy.Application");
}

// if newly started, the application will start without its UI visible. Set it to
visible.
objSpy.Visible = true;


// ***************************** Export to text **********************************

//try
//{
       objExpSettings = objSpy.GetExportSettings();
       objExpSettings.ElementList = objImpDocFromText.GetExportElementList(
objImpDocFromText.RootElement, objExpSettings);

       objTextExp = objSpy.GetTextImportExportSettings();
       objTextExp.HeaderRow = true;
       objTextExp.DestinationFolder = "C:\\Temp";
try
{

       objImpDocFromText.ExportToText(objImpDocFromText.RootElement, objExpSettings,
objTextExp);
}
catch(err)
{
        WScript.Echo("Error exporting to text.\n\n" +
                     "Error: " + (err.number & 0xffff) + "\n" +
                     "Description: " + err.description);
}

// ***************************** End *************************************


//objSpy.Visible = false;             // will shutdown application if it has no more COM
connections
objSpy.Visible = true; // will keep application running with UI visible
```

Example: Bubble Sort Dynamic Tables

The following JScript snippet will sort any dynamic table by the table column identified by the current cursor position. The sort process is performed on screen. The undo buffer is available for all performed operations.

If you can run JScript on you computer - as you most likely will - copy the following code into a file with extension 'js'. Execute the script by double-clicking it in Windows Explorer, or run it from the command line.

```
// some useful XMLSpy enum constants
var spyAuthenticTag = 6;
var spyAuthenticTable = 9;
var spyAuthenticTableRow = 10;
var spyAuthenticTableColumn = 11;

var spyAuthenticRangeBegin = 2;

// example call for the sort table function
try
{
  var objSpy = WScript.GetObject("", "XMLSpy.Application");
  // If only Authentic is installed (and XMLSpy is not installed) use:
  // var objSpy = WScript.GetObject("", "AuthenticDesktop.Application")

  // use current selection to indicate which column to sort
  SortCurrentTable (objSpy.ActiveDocument.AuthenticView.Selection);
}
catch (err)
  { WScript.Echo ("Please open a document in authentic view, and select a
  table column\n" +
                  "Error : (" + (err.number & 0xffff) + ")" +
err.description); }

// we assume that XMLSpy is running, a document with a dynamic table
// is open, and the cursor is in a table column that will
// be used for sorting.
function SortCurrentTable (objCursor)
{
  if (objCursor.IsInDynamicTable())
  {
    // calculate current column index
    var nColIndex = 0;
    while (true)
    {
      // go left column-by-column
      try { objCursor.GotoPrevious(spyAuthenticTableColumn); }
      catch (err) { break; }
      nColIndex++;
    }

    // count number of table rows, so the bubble loops become simpler.
    // goto begin of table
    var objTableStart =
    objCursor.ExpandTo(spyAuthenticTable).CollapsToBegin().Clone();
    var nRows = 1;
    while (true)
    {
      // go down row-by-row
      try { objTableStart.GotoNext(spyAuthenticTableRow); }
      catch (err) { break; }
      nRows++;
    }
```



```
    // bubble sort through table
    for ( var i = 0; i < nRows - 1; i++)
    {
      // select correct column in first table row
      var objBubble =
      objCursor.ExpandTo( spyAuthenticTable).CollapsToBegin().Clone();
      objBubble.Goto ( spyAuthenticTableColumn, nColIndex,
      spyAuthenticRangeBegin).ExpandTo( spyAuthenticTag);

      // bubble this row down as far as necessary
      for ( var j = 0; j < nRows - i - 1; j++)
      {
        var strField1 = objBubble.Text;
        // now look for the comparison table cell: start of next row and right
        of the correct column
        var strField2 = objBubble.GotoNext( spyAuthenticTableRow).
                                  Goto ( spyAuthenticTableColumn, nColIndex,
        spyAuthenticRangeBegin).
                                  ExpandTo( spyAuthenticTag).Text;
        if ( strField1 > strField2)
        {
          objBubble.MoveRowUp();  // swap the rows
          // and re-calculate objBubble to select the cell to bubble
          objBubble.GotoNext( spyAuthenticTableRow).
                    Goto ( spyAuthenticTableColumn, nColIndex,
          spyAuthenticRangeBegin).
                    ExpandTo( spyAuthenticTag);
        }
      }
    }
  }
  else
    WScript.Echo ("please, select a table cell first");
}
```

VBScript

VBScript is syntactically different than JScript but works in the same way. This section contains a listing showing how events are used with VBScript and an example.

For information about other functionality, refer to the JScript examples listed below:

- Start application or attach to a running instance
- Simple document access
- Iteration
- Error handling
- Import and export of data

Events

COM specifies that a client must register itself at a server for callbacks using the connection point mechanism. The automation interface for XMLSpy defines the necessary event interfaces. The way to connect to those events depends on the programming language you use in your client. The following code listing shows how this is done using VBScript.

The method `WScript.ConnectObject` is used to receive events.

```
' the event handler function
Function DocEvent_OnBeforeCloseDocument( objDocument)
   Call WScript.Echo( "received event - before closing document")
```

```
End Function

' create or connect to XMLSPY
Set objWshShell = WScript.CreateObject("WScript.Shell")
Set objFSO = WScript.CreateObject("Scripting.FileSystemObject")
Set objSpy = WScript.GetObject("", "XMLSpy.Application")
' If only Authentic is installed (and XMLSpy is not installed) use:
' Set objSpy = WScript.GetObject("", "AuthenticDesktop.Application")

' create document object and connect to its events
objSpy.Visible = True
Set objDoc = objSpy.Documents.OpenFile ("C:\\Program
Files\\Altova\\XMLSPY2004\\Examples\\OrgChart.xml", False)
Call WScript.ConnectObject(objDoc, "DocEvent_")

' keep running while waiting on the event
' in the meantime close the document in XMLSPY manually
Call WScript.Echo ("sleeping for 10 seconds ...")
Call WScript.Sleep (10000)

Set objDoc = Nothing
Call WScript.Echo ("stopped listening for event")
Call objSpy.Quit
```

Example: Using Events

Authentic View supports event connection on a per-object basis. Implementation of this feature is based on COM connection points and is available in environments that support this mechanism.

The following example is a VBScript code example that shows how to use events from within a VBScript project.

```
Rem ------------------------------------------------------------------------
Rem VBScript example that demonstrates how to use events.
Rem ------------------------------------------------------------------------

' Event handler for OnSelectionChanged event of AuthenticView
Function AuthenticViewEvent_OnSelectionChanged(objAuthenticRange)
    If objAuthenticRange.FirstTextPosition <> objAuthenticRange.LastTextPosition Then
        Call WScript.Echo("Selection: " & objAuthenticRange.Text & vbNewLine & vbNewLine
& "Close this dialog.")
    Else
        Call WScript.Echo("Cursor position: " & objAuthenticRange.FirstTextPosition &
vbNewLine & vbNewLine & "Close this dialog.")
    End If
End Function

' Here starts the main code.
' Find out user's personal folder and locate one of the installed XMLSpy 2011 examples.
Set WshShell = WScript.CreateObject("WScript.Shell")
personalFolder = WshShell.ExpandEnvironmentStrings("%UserProfile%")
xmlspyExamplesFolder = personalFolder & "\My Documents\Altova\XMLSpy2011\Examples\"
docPath = xmlspyExamplesFolder & "OrgChart.xml"

' Start/access XMLSpy and connect to its automation interface.
Set objSpy = GetObject("", "XMLSpy.Application")
' Make the UI of XMLSpy visible.
objSpy.Visible = True

' Create object to access windows file system and test if the our document exists.
Set fso = CreateObject("Scripting.FileSystemObject")
If fso.FileExists(docPath) Then
    ' open the document
    Call objSpy.Documents.OpenFile(docPath, False)
    set objDoc = objSpy.ActiveDocument

    ' switch active document to authentic view
    objDoc.SwitchViewMode 4 ' spyViewAuthentic
```



```
    ' Register for connection point events on the authentic view of the active document.
    ' Any function with a valid event name prefixed with "AuthenticViewEvent_" will
    ' be called when the corresponding event gets triggered on the specified object.
    set objView = objDoc.AuthenticView
    Call WScript.ConnectObject(objView, "AuthenticViewEvent_")
    Call WScript.Echo("Events are connected." & vbNewLine & vbNewLine & "Now set or move
the cursor in XMLSpy." & vbNewLine & vbNewLine & "Close this dialog to shut down
XMLSpy.")

    ' To disconnect from the events delete the reference to the object.
    set objView = Nothing
Else
    Call WScript.Echo("The file " & docPath & " does not exist.")
End If

' shut down XMLSpy when this script ends
objSpy.Visible = False
```

C#

The C# programming language can be used to access the Application API functionality. You could use Visual Studio 2008 or Visual Studio 2010 to create the C# code, saving it in a Visual Studio project. Create the project as follows:

1. In Microsoft Visual Studio, add a new project using **File | New | Project**.
2. Add a reference to the XMLSpy Type Library by clicking **Project | Add Reference**. The Add Reference dialog pops up, displaying a list of installed COM components. Select the XMLSpy Type Library component from the list to add it.
3. Enter the code you want.
4. Compile the code and run it.

Example C# project

Your XMLSpy package contains an example C# project, which is located in the C# folder of the API Examples folder:

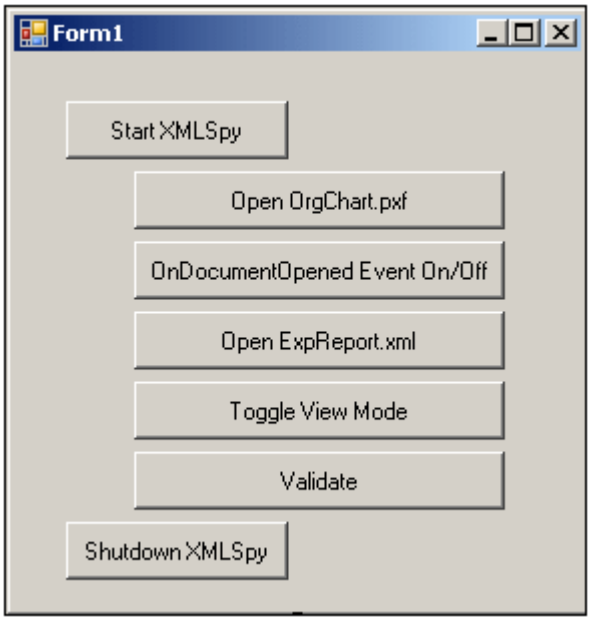
Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

The code listing below shows how basic application functionality can be used. This code is similar to the example C# project in the API Examples folder of your application package, but might differ slightly.

What the code listing below does

The example code listing below creates a simple user interface (*screenshot below*) with buttons that invoke basic XMLSpy operations:



- Start XMLSpy: Starts XMLSpy, which is registered as an automation server, or activates the application if it is already running.
- Open OrgChart.pxf: Locates one of the example documents installed with XMLSpy and opens it. If this document is already open it becomes the active document.
- OnDocumentOpened Event On/Off: Shows how to listen to XMLSpy events. When turned on, a message box will pop up after a document has been opened.
- Open ExpReport.xml: Opens another example document.
- Toggle View Mode: Changes the view of all open documents between Text View and Authentic View. The code shows how to iterate through open documents.
- Validate: Validates the active document and shows the result in a message box. The code shows how to handle errors and COM output parameters.
- Shut down XMLSpy: Stops XMLSpy.

You can modify the code (of the code listing below or of the example C# project in the API Examples folder) in any way you like and run it.

Compiling and running the example
In the API Examples folder, double-click the file `AutomateXMLSpy_VS2008.sln` (to open it in Visual Studio 2008) or the file `AutomateXMLSpy_VS2010.sln` (to open it in Visual Studio 2010). Alternatively the file can be opened from within Visual Studio (with **File | Open | Project/Solution**). To compile and run the example, select **Debug | Start Debugging** or **Debug | Start Without Debugging**.

Code listing of the example
Given below is the C# code listing of the basic functionality of the form (`Form1.cs`) created in the `AutomateXMLSpy` example. Note that the code listed below might differ slightly from the code in the API Examples form.The listing below is commented for ease of understanding. Parts of the code are also presented separately in the sub-sections of this section, according to the Application API functionality they access.

The code essentially consists of a series of handlers for the buttons in the user interface shown

in the screenshot above.

```
namespace WindowsFormsApplication2
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        // An instance of XMLSpy accessed via its automation interface
        XMLSpyLib.Application XMLSpy;

        // Location of examples installed with XMLSpy
        String strExamplesFolder;

        private void Form1_Load(object sender, EventArgs e)
        {
            // Locate examples installed with XMLSpy
            // REMARK: You might need to adapt this if you have a different major
version of the product
            strExamplesFolder = Environment.GetEnvironmentVariable("USERPROFILE") +
"\\My Documents\\Altova\\XMLSpy2012\\Examples\\";
        }

        // Handler for the "Start XMLSpy" button
        private void StartXMLSpy_Click(object sender, EventArgs e)
        {
            if (XMLSpy == null)
            {
                Cursor.Current = Cursors.WaitCursor;

                // If no XMLSpy instance is open, create one and make it visible
                XMLSpy = new XMLSpyLib.Application();
                XMLSpy.Visible = true;

                Cursor.Current = Cursors.Default;
            }
            else
            {
                // If an instance of XMLSpy is already running, make sure it's visible
                if (!XMLSpy.Visible)
                    XMLSpy.Visible = true;
            }
        }

        // Handler for the "Open OrgChart.pxf" button
        private void openOrgChart_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);

            // Open one of the example files installed with the product
            XMLSpy.Documents.OpenFile(strExamplesFolder + "OrgChart.pxf", false);
        }

        // Handler for the "Open ExpReport.xml" button
        private void openExpReport_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);

            // Open one of the sample files installed with the product.
            XMLSpy.Documents.OpenFile(strExamplesFolder + "ExpReport.xml", false);
        }

        // Handler for the "Toggle View Mode" button
        private void toggleView_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);
```

```
            // Iterate through all open documents and toggle view between Text View and
Authentic View
            foreach (XMLSpyLib.Document doc in XMLSpy.Documents)
                if (doc.CurrentViewMode == XMLSpyLib.SPYViewModes.spyViewText)
                    doc.SwitchViewMode(XMLSpyLib.SPYViewModes.spyViewAuthentic);
                else
                    doc.SwitchViewMode(XMLSpyLib.SPYViewModes.spyViewText);
        }

        // Handler for the "Shutdown XMLSpy" button
        // Shut down the application instance by explicitly releasing the COM object
        private void shutdownXMLSpy_Click(object sender, EventArgs e)
        {
            if (XMLSpy != null)
            {
                // Allow shutdown of XMLSpy by releasing the UI
                XMLSpy.Visible = false;

                // Explicitly release the COM object
                try
                {
                    while (System.Runtime.InteropServices.Marshal
.ReleaseComObject(XMLSpy) > 0) ;
                }
                finally
                {
                    // Disallow subsequent access to this object
                    XMLSpy = null;
                }
            }
        }

        // Handler for button "Validate"
        private void validate_Click(object sender, EventArgs e)
        {
            // COM errors are returned to C# as exceptions.  We use a try/catch block to
handle them.
            try
            {
                // Method 'IsValid' is one of the few functions that uses output
parameters
                // Use 'object' type for these parameters
                object strErrorText = "";
                object nErrorNumber = 0;
                object errorData = null;

                if (!XMLSpy.ActiveDocument.IsValid(ref strErrorText, ref nErrorNumber,
ref errorData))
                {
                    // The COM call succeeded but the document is not valid
                    // A detailed description of the problem is returned in
strErrorText, nErrorNumber and errorData
                    listBoxMessages.Items.Add("Document " + XMLSpy.ActiveDocument.Name
+ " is not valid.");
                    listBoxMessages.Items.Add("\tErrorText  : " + strErrorText);
                    listBoxMessages.Items.Add("\tErrorNumber: " + nErrorNumber);
                    listBoxMessages.Items.Add("\tElement    : " + (errorData != null ?
((XMLSpyLib.XMLData)errorData).TextValue : "null"));
                }
                else
                {
                    // The COM call succeeded and the document is valid
                    listBoxMessages.Items.Add("Document " + XMLSpy.ActiveDocument.Name
+ " is valid.");
                }
            }
            catch (Exception ex)
            {
                // The COM call was not successful
                // Probably no application instance has been started or no document is
open.
                listBoxMessages.Items.Add("Error validating active document: " +
ex.Message);
            }
        }
```



```
        // Event handler for OnDocumentOpened event
        private void handleOnDocumentOpened( XMLSpyLib. Document i_ipDocument)
        {
            MessageBox. Show( "Document " + i_ipDocument. Name + " was opened! ");
        }

        // Remember if the event handler is currently registered.
        private bool bEventHandlerIsRegistered = false;

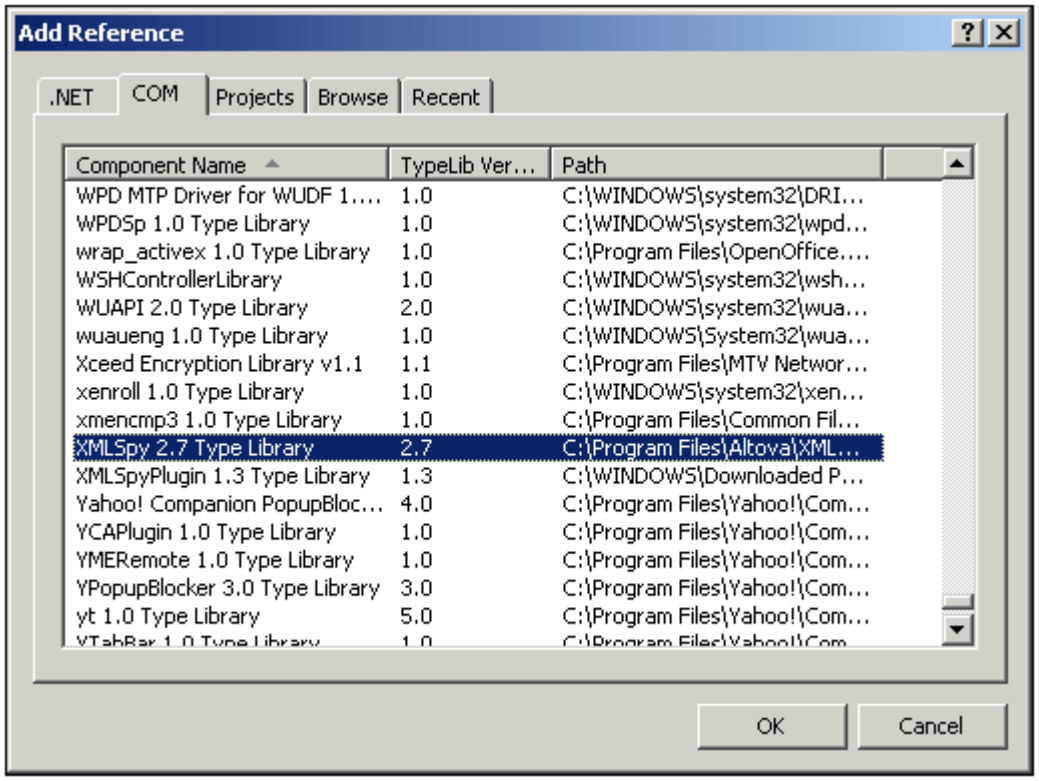
        // Handler for button ' OnDocuemntOpened Event On/Off
        private void toggleOnDocumentOpenedEvent_Click( object sender, EventArgs e)
        {
            if ( XMLSpy ! = null)
            {
                if ( bEventHandlerIsRegistered)
                    XMLSpy. OnDocumentOpened -= new XMLSpyLib.
_IApplicationEvents_OnDocumentOpenedEventHandler( handleOnDocumentOpened);
                else
                    XMLSpy. OnDocumentOpened += new XMLSpyLib.
_IApplicationEvents_OnDocumentOpenedEventHandler( handleOnDocumentOpened);

                bEventHandlerIsRegistered = ! bEventHandlerIsRegistered;
            }
        }
    }
}
```

Add Reference to XMLSpy Application API

To add the application's type library as a reference in a .NET project, do the following:

1. With the .NET project open, click **Project | Add Reference**. The Add Reference dialog (*screenshot below*) pops up, displaying a list of installed COM components.



2. Select `XMLSpy X.Y Type Library` from the component list and finish.

Declare a variable to access the XMLSpy API

```
// An instance of XMLSpy is accessed via its automation interface.
XMLSpyLib.Application XMLSpy;
```

Application Startup and Shutdown

In the code snippets below, the methods `StartXMLSpy_Click` and `ShutdownXMLSpy_Click` are those assigned to buttons in the AutomateXMLSpy example that, respectively, start up and shut down the application. This example is located in the C# folder of the API Examples folder (*see the file Form1.cs*):

Windows XP	`C:/Documents and Settings/<username>/My Documents/Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/Altova/XMLSpy20XX/Examples/API/`

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

Starting XMLSpy

The following code snippet from the AutomateXMLSpy example shows how to start up the application.

```
// Handler for the "Start XMLSpy" button
private void StartXMLSpy_Click(object sender, EventArgs e)
{
    if (XMLSpy == null)
    {
        Cursor.Current = Cursors.WaitCursor;

        // If no XMLSpy instance is running, we create one and make it visible
        XMLSpy = new XMLSpyLib.Application();
        XMLSpy.Visible = true;

        Cursor.Current = Cursors.Default;
    }
    else
    {
        // If an instance of XMLSpy is already running, make sure it's visible
        if (!XMLSpy.Visible)
            XMLSpy.Visible = true;
    }
}
```

Shutting down XMLSpy

The following code snippet from the AutomateXMLSpy example shows how to shut down the application.

```
// Handler for the "Shutdown XMLSpy" button
// Shut down the application instance by explicitly releasing the COM object
private void shutdownXMLSpy_Click(object sender, EventArgs e)
{
    if (XMLSpy != null)
    {
```



```
                // Allow shutdown of XMLSpy by releasing the UI
                XMLSpy.Visible = false;

                // Explicitly release COM object
                try
                {
                    while (System.Runtime.InteropServices.Marshal
.ReleaseComObject(XMLSpy) > 0) ;
                }
                finally
                {
                    // Disallow subsequent access to this object
                    XMLSpy = null;
                }
            }
        }
```

Opening Documents

The code snippets below (from the AutomateXMLSpy example) show how two files are opened via two separate methods assigned to two buttons in the user interface. Both methods use the same Application API access mechanism: `XMLSpy.Documents.OpenFile(string, boolean)`.

The AutomateXMLSpy example (*see the file Form1.cs*) is located in the C# folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

Code snippet

```
        // Handler for the "Open OrgChart.pxf" button
        private void openOrgChart_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);

            // Open a file from the Examples folder installed with the product
            XMLSpy.Documents.OpenFile(strExamplesFolder + "OrgChart.pxf", false);
        }

        // Handler for the "Open ExpReport.xml" button
        private void openExpReport_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);

            // Open a file from the Examples folder installed with the product
            XMLSpy.Documents.OpenFile(strExamplesFolder + "ExpReport.xml", false);
        }
```

The file opened last will be the active file.

Iterating through Open Documents

The code snippet below (from the AutomateXMLSpy example; *see the file Form1.cs*) shows how to iterate through open documents. A condition is then tested within the iteration loop, and the document view is switched between Text View and Authentic View.

```
        // Handler for the "Toggle view mode" button
        private void toggleView_Click(object sender, EventArgs e)
        {
            // Make sure there's a running XMLSpy instance, and that it's visible
            StartXMLSpy_Click(null, null);

            // Iterate through open documents and toggle current view between text and
authentic view.
            foreach (XMLSpyLib.Document doc in XMLSpy.Documents)
                if (doc.CurrentViewMode == XMLSpyLib.SPYViewModes.spyViewText)
                    doc.SwitchViewMode(XMLSpyLib.SPYViewModes.spyViewAuthentic);
                else
                    doc.SwitchViewMode(XMLSpyLib.SPYViewModes.spyViewText);
        }
```

The AutomateXMLSpy example example is located in the C# folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

Errors and COM Output Parameters

The code snippet below (from the AutomateXMLSpy example) shows how to handle errors and COM output parameters. The method XMLSpy.ActiveDocument.IsValid(ref strErrorText, ref nErrorNumber, ref errorData) uses output parameters that are used, in the code snippet below, to generate an error-message text.

The AutomateXMLSpy example (*see the file Form1.cs*) is located in the C# folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

Code snippet

```
        // Handler for button "Validate"
        private void validate_Click(object sender, EventArgs e)
        {
            // COM errors are returned to C# as exceptions. We use a try/catch block to
```



```
handle them.
            try
            {
                // Method 'IsValid' is one of the few functions that uses output
parameters
                // Use 'object' type for these parameters
                object strErrorText = "";
                object nErrorNumber = 0;
                object errorData = null;

                if (!XMLSpy.ActiveDocument.IsValid(ref strErrorText, ref nErrorNumber,
ref errorData))
                {
                    // The COM call succeeded but the document is not valid
                    // A detailed description of the problem is returned in
strErrorText, nErrorNumber and errorData
                    listBoxMessages.Items.Add("Document " + XMLSpy.ActiveDocument.Name
+ " is not valid.");
                    listBoxMessages.Items.Add("\tErrorText  : " + strErrorText);
                    listBoxMessages.Items.Add("\tErrorNumber: " + nErrorNumber);
                    listBoxMessages.Items.Add("\tElement    : " + (errorData != null ?
((XMLSpyLib.XMLData)errorData).TextValue : "null"));
                }
                else
                {
                    // The COM call succeeded and the document is valid
                    listBoxMessages.Items.Add("Document " + XMLSpy.ActiveDocument.Name
+ " is valid.");
                }
            }
            catch (Exception ex)
            {
                // The COM call was not successful
                // Probably no application instance has been started or no document is
open.
                listBoxMessages.Items.Add("Error validating active document: " +
ex.Message);
            }
        }
```

Events

The code snippet below (from the AutomateXMLSpy example) lists the code for two event handlers. The AutomateXMLSpy example (*see the file Form1.cs*) is located in the C# folder of the API Examples folder:

Windows XP	C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/
Windows Vista, Windows 7	C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/

You can compile and run the project from within Visual Studio 2008 or Visual Studio 2010.

```
        // Event handler for OnDocumentOpened event
        private void handleOnDocumentOpened(XMLSpyLib.Document i_ipDocument)
        {
            MessageBox.Show("Document " + i_ipDocument.Name + " was opened!");
        }

        // Remember if the event handler is currently registered.
        private bool bEventHandlerIsRegistered = false;

        // Handler for button 'OnDocuemntOpened Event On/Off
        private void toggleOnDocumentOpenedEvent_Click(object sender, EventArgs e)
        {
            if (XMLSpy != null)
```

```
            {
                if (bEventHandlerIsRegistered)
                    XMLSpy.OnDocumentOpened -= new XMLSpyLib.
_IApplicationEvents_OnDocumentOpenedEventHandler(handleOnDocumentOpened);
                else
                    XMLSpy.OnDocumentOpened += new XMLSpyLib.
_IApplicationEvents_OnDocumentOpenedEventHandler(handleOnDocumentOpened);

                bEventHandlerIsRegistered = !bEventHandlerIsRegistered;
            }
        }
```

Java

The Application API can be accessed from Java code. To allow accessing the XMLSpy automation server directly from Java code, the libraries listed below must reside in the `classpath`. They are installed in the folder: `JavaAPI` in the XMLSpy application folder.

- `AltovaAutomation.dll`: a JNI wrapper for Altova automation servers
- `AltovaAutomation.jar`: Java classes to access Altova automation servers
- `XMLSpyAPI.jar`: Java classes that wrap the XMLSpy automation interface
- `XMLSpyAPI_JavaDoc.zip`: a `Javadoc` file containing help documentation for the Java API

Note: In order to use the Java API, the DLL and Jar files must be on the Java Classpath.

Example Java project

An example Java project is supplied with your product installation. You can test the Java project and modify and use it as you like. For more details of the example Java project, see the section, Example Java Project.

Rules for mapping the Application API names to Java

The rules for mapping between the Application API and the Java wrapper are as follows:

- ***Classes and class names***
  For every interface of the XMLSpy automation interface a Java class exists with the name of the interface.

- ***Method names***
  Method names on the Java interface are the same as used on the COM interfaces but start with a small letter to conform to Java naming conventions. To access COM properties, Java methods that prefix the property name with `get` and `set` can be used. If a property does not support write-access, no setter method is available. Example: For the `Name` property of the `Document` interface, the Java methods `getName` and `setName` are available.

- ***Enumerations***
  For every enumeration defined in the automation interface, a Java enumeration is defined with the same name and values.

- ***Events and event handlers***
  For every interface in the automation interface that supports events, a Java interface with the same name plus '`Event`' is available. To simplify the overloading of single events, a Java class with default implementations for all events is provided. The name

of this Java class is the name of the event interface plus '`DefaultHandler`'. For example:
`Application`: Java class to access the application
`ApplicationEvents`: Events interface for the Application
`ApplicationEventsDefaultHandler`: Default handler for `ApplicationEvents`

Exceptions to mapping rules
There are some exceptions to the rules listed above. These are listed below:

Interface	Java name
`Document`, method `SetEncoding`	`setFileEncoding`
`AuthenticView`, method `Goto`	`gotoElement`
`AuthenticRange`, method `Goto`	`gotoElement`
`AuthenticRange`, method `Clone`	`cloneRange`

This section
This section explains how some basic XMLSpy functionality can be accessed from Java code. It is organized into the following sub-sections:

- Example Java Project
- Application Startup and Shutdown
- Simple Document Access
- Iterations
- Use of Out-Parameters
- Event Handlers

Example Java Project

The XMLSpy installation package contains an example Java project, located in the Java folder of the API Examples folder:

Windows XP	`C:/Documents and Settings/<username>/My Documents/ Altova/XMLSpy20XX/Examples/API/`
Windows Vista, Windows 7	`C:/Users/<username>/Documents/ Altova/XMLSpy20XX/Examples/API/`

This folder contains Java examples for the XMLSpy API. You can test it directly from the command line using the batch file `BuildAndRun.bat`, or you can compile and run the example project from within Eclipse. See below for instructions on how to use these procedures.

File list
The Java examples folder contains all the files required to run the example project. These files are listed below:

`AltovaAutomation.dll`	Java-COM bridge: DLL part
`AltovaAutomation.jar`	Java-COM bridge: Java library part

XMLSpyAPI.jar	Java classes of the XMLSpy API
RunXMLSpy.java	Java example source code
BuildAndRun.bat	Batch file to compile and run example code from the command line prompt. Expects folder where Java Virtual Machine resides as parameter.
.classpath	Eclipse project helper file
.project	Eclipse project file
XMLSpyAPI_JavaDoc.zip	Javadoc file containing help documentation for the Java API

What the example does
The example starts up XMLSpy and performs a few operations, including opening and closing documents. When done, XMLSpy stays open. You must close it manually.

- Start XML Spy: Starts XMLSpy, which is registered as an automation server, or activates XMLSpy if it is already running.
- Open OrgChart.pxf: Locates one of the example documents installed with XMLSpy and opens it.
- Iteration and Changing the View Mode: Changes the view of all open documents to Text View. The code also shows how to iterate through open documents.
- Iteration, validation, output parameters: Validates the active document and shows the result in a message box. The code shows how to use output parameters.
- Event Handling: Shows how to handle XMLSpy events.
- Shut down XMLSpy: Shuts down XMLSpy.

You can modify the example in any way you like and run it.

Running the example from the command line
To run the example from the command line, open a command prompt window, go to the Java folder of the API Examples folder (*see above for location*), and then type:

```
buildAndRun.bat "<Path-to-the-Java-bin-folder>"
```

The Java binary folder must be that of a JDK 1.5 or later installation on your computer.

Press the **Return** key. The Java source in RunXMLSpy.java will be compiled and then executed.

Loading the example in Eclipse
Open Eclipse and use the **Import | Existing Projects into Workspace** command to add the Eclipse project file (.project) located in the Java folder of the API Examples folder (*see above for location*). The project RunXMLSpy will then appear in your Package Explorer or Navigator.

Select the project and then the command **Run as | Java Application** to execute the example.

Note: You can select a class name or method of the Java API and press F1 to get help for that class or method.

Java source code listing

The Java source code in the example file `RunXMLSpy.java` is listed below with comments.

```
001 // Access general JAVA-COM bridge classes
002 import com.altova.automation.libs.*;
003
004 // Access XMLSpy Java-COM bridge
005 import com.altova.automation.XMLSpy.*;
006 import com.altova.automation.XMLSpy.Enums.SPYViewModes;
007
008 /**
009  * An example that starts XMLSpy COM server and performs view operations on it
010  * Feel free to extend
011  */
012 public class RunXMLSpy
013 {
014   public static void main(String[] args)
015   {
016     // An instance of the application.
017     Application xmlSpy = null;
018
019     // Instead of COM error handling, use Java exception mechanism
020     try
021       {
022       // Start XMLSpy as COM server
023       xmlSpy = new Application();
024
025       // COM servers start up invisible, so make it visible
026       xmlSpy.setVisible(true);
027
028       // Locate samples installed with the product
029       String strExamplesFolder =
030       System.getenv("USERPROFILE") + "\\My
Documents\\Altova\\XMLSpy2012\\Examples\\";
031
032       // Open two example files
033       xmlSpy.getDocuments().openFile(strExamplesFolder + "OrgChart.pxf", false);
034       xmlSpy.getDocuments().openFile(strExamplesFolder + "ExpReport.xml", false);
035
036       // Iterate through open documents and set view mode to 'Text'.
037       for (Document doc: xmlSpy.getDocuments())
038       if ( doc.getCurrentViewMode() != SPYViewModes.spyViewText)
039           doc.switchViewMode(SPYViewModes.spyViewText);
040
041       // An alternative iteration mode is index-based
042       // COM indices are typically zero-based
043       Documents documents = xmlSpy.getDocuments();
044       for (int i = 1; i <= documents.getCount();
045           i++)
046           {
047             Document doc = documents.getItem(i);
048
049       // Validation is one of the few methods to have output parameters.
050       // The class JVariant is the correct type for parameters in these cases.
051       // To get values back mark them with the by-reference flag.
052       JVariant validationErrorText = new
053
054       JVariant.JStringVariant("");
055
056       validationErrorText.setByRefFlag();
057       JVariant validationErrorCount = new
058
059       JVariant.JIntVariant(0);
060
061       validationErrorCount.setByRefFlag();
062       JVariant validationErrorXMLData = new
063
064       JVariant.JIDispatchVariant(0);
065
```

```
066       validationErrorXMLData.setByRefFlag();
067       if (!doc.isValid(validationErrorText, validationErrorCount,
validationErrorXMLData))
068           System.out.println("Document" + doc.getName() + " is not wellformed - " +
validationErrorText.getStringValue());
069         else
070           System.out.println("Document" + doc.getName() + " is wellformed.");
071       }
072
073       // The following lines attach to the document events using a default
implementation
074       // for the events and override one of its methods.
075       // If you want to override all document events it is better to derive your
listener class
076       // from DocumentEvents and implement all methods of this interface.
077       Document doc = xmlSpy.getActiveDocument();
078       doc.addListener(new
079
080 DocumentEventsDefaultHandler()
081       {
082         @Override
083         public boolean
084
085 onBeforeCloseDocument(Document i_ipDoc) throws AutomationException
086         {
087           System.out.println("Document
088
089 " + i_ipDoc.getName() + " requested closing.");
090
091           // Allow closing of document
092           return true;
093         }
094       });
095       doc.close(true);
096       doc = null;
097
098       System.out.println("Watch XMLSpy!");
099     }
100     catch (AutomationException e)
101     {
102       // e.printStackTrace();
103     }
104     finally
105     {
106       // Make sure that XMLSpy can shut down properly.
107       if (xmlSpy != null)
108           xmlSpy.dispose();
109
110       // Since the COM server was made visible and still is visible,
111       // it will keep running, and needs to be closed manually.
112       System.out.println("Now close XMLSpy!");
113     }
114   }
115 }
```

Application Startup and Shutdown

The code listings below show how the application can be started up and shut down.

Application startup

Before starting up the application, the appropriate classes must be imported (*see below*).

```
01 // Access general JAVA-COM bridge classes
02 import com.altova.automation.libs.*;
03
04 // Access XMLSpy Java-COM bridge
05 import com.altova.automation.XMLSpy.*;
06 import com.altova.automation.XMLSpy.Enums.SPYViewModes;
```



```
07
08 /**
09  * An example that starts XMLSpy COM server and performs view operations on it
10  * Feel free to extend
11  */
12 public class RunXMLSpy
13 {
14   public static void main(String[] args)
15   {
16     // An instance of the application.
17     Application xmlSpy = null;
18
19     // Instead of COM error handling, use Java exception mechanism
20     try
21     {
22         // Start XMLSpy as COM server
23           xmlSpy = new Application();
24         // COM servers start up invisible, so make it visible
25           xmlSpy.setVisible(true);
26
27 ...
28     }
29   }
30 }
```

Application shutdown

The application can be shut down as shown below.

```
01 {
02       // Allow shutdown of XMLSpy by releasing the UI.
03       xmlSpy.setVisible(true);
04
05       // Make sure that XMLSpy can shut down properly.
06       if (xmlSpy != null)
07         xmlSpy.dispose();
08
09       // Since the COM server was made visible and still is visible,
10       // it will keep running, and needs to be closed manually.
11       System.out.println("Now close XMLSpy!");
12 }
```

Simple Document Access

The code listing below shows how to open a document.

```
1  // Locate samples installed with the product
2  String strExamplesFolder =
3  System.getenv("USERPROFILE") + "\\My Documents\\Altova\\XMLSpy2012\\Examples\\";
4
5
6  // Open file
7  xmlSpy.getDocuments().openFile(strExamplesFolder + "OrgChart.pxf", false);
```

Iterations

The listing below shows how to iterate through open documents.

```
// Iterate through open documents and set view mode to 'Text'.
for (Document doc: xmlSpy.getDocuments())
  if ( doc.getCurrentViewMode() != SPYViewModes.spyViewText)
            doc.switchViewMode(SPYViewModes.spyViewText);

// An alternative iteration mode is index-based
// COM indices are typically zero-based
Documents documents = xmlSpy.getDocuments();
   for (int i = 1; i <= documents.getCount();
       i++)
     {
       Document doc = documents.getItem(i);
             ...
     }
```

Use of Out-Parameters

The code listing below iterates through open documents and validates each of them. For each validation, a message is generated using the output parameters of the Validation method.

```
// An alternative iteration mode is index-based
// COM indices are typically zero-based
Documents documents = xmlSpy.getDocuments();
for (int i = 1; i <= documents.getCount();
      i++)
    {
        Document doc = documents.getItem(i);

// Validation is one of the few methods to have output parameters.
// The class JVariant is the correct type for parameters in these cases.
// To get values back mark them with the by-reference flag.
JVariant validationErrorText = new

JVariant.JStringVariant("");

validationErrorText.setByRefFlag();
      JVariant validationErrorCount = new

JVariant.JIntVariant(0);

validationErrorCount.setByRefFlag();
      JVariant validationErrorXMLData = new

JVariant.JIDispatchVariant(0);

validationErrorXMLData.setByRefFlag();
      if (!doc.isValid(validationErrorText,

        validationErrorCount, validationErrorXMLData))
        System.out.println("Document

        " + doc.getName() + " is not wellformed - " +

        validationErrorText.getStringValue());
      else
        System.out.println("Document

        " + doc.getName() + " is wellformed.");
    }
```


Event Handlers

The listing below shows how to listen for and use events.

```
01 // The following lines attach to the document events using a default implementation
02 // for the events and override one of its methods.
03 // If you want to override all document events it is better to derive your listener
class
04 // from DocumentEvents and implement all methods of this interface.
05
06 Document doc = xmlSpy.getActiveDocument();
07 doc.addListener(new DocumentEventsDefaultHandler()
08     {
09       @Override
10       public boolean
11       onBeforeCloseDocument(Document i_ipDoc) throws AutomationException
12       {
13         System.out.println("Document " + i_ipDoc.getName() + " requested closing.");
14
15         // Allow closing of document
16         return true;
17       }
18     });
19 doc.close(true);
20 doc = null;
```

3.1.3 The DOM and XMLData

The `XMLData` interface gives you full access to the XML structure behind the current document with less methods than DOM and is much simpler. The `XMLData` interface is a minimalist approach to reading and modifying existing, or newly created XML data. You might however, want to use a DOM tree because you can access one from an external source or you just prefer the MSXML DOM implementation.

The `ProcessDOMNode()` and `ProcessXMLDataNode()` functions provided below convert any segments of an XML structure between `XMLData` and DOM.

To use the `ProcessDOMNode()` function:

- pass the root element of the DOM segment you want to convert in `objNode` and
- pass the plugin object with the CreateChild() method in `objCreator`

To use the `ProcessXMLDataNode()` function:

- pass the root element of the `XMLData` segment in `objXMLData` and
- pass the `DOMDocument` object created with MSXML in `xmlDoc`

```
////////////////////////////////////////////////////////////////
// DOM To XMLData conversion
Function ProcessDOMNode(objNode,objCreator)
{
 var objRoot;
 objRoot = CreateXMLDataFromDOMNode(objNode,objCreator);

 If(objRoot) {
  If((objNode.nodeValue != Null) && (objNode.nodeValue.length > 0))
   objRoot.TextValue = objNode.nodeValue;
   // add attributes
  If(objNode.attributes) {
   var Attribute;
   var oNodeList = objNode.attributes;
```

```
    For( var i = 0;i < oNodeList.length; i++) {
     Attribute = oNodeList.item(i);

     var newNode;
     newNode = ProcessDOMNode( Attribute,objCreator);

     objRoot.AppendChild( newNode);
    }
   }
   If( objNode.hasChildNodes){
    try {
     // add children
     var Item;
     oNodeList = objNode.childNodes;

     For( var i = 0;i < oNodeList.length; i++) {
        Item = oNodeList.item(i);

      var newNode;
      newNode = ProcessDOMNode( Item,objCreator);

      objRoot.AppendChild( newNode);
     }
    }
    catch( err) {
    }
   }
  }
  Return objRoot;
}

Function CreateXMLDataFromDOMNode( objNode,objCreator)
{
 var bSetName = True;
 var bSetValue = True;

 var nKind = 4;

 switch( objNode.nodeType){
  Case 2: nKind = 5;break;
  Case 3: nKind = 6;bSetName = False;break;
  Case 4: nKind = 7;bSetName = False;break;
  Case 8: nKind = 8;bSetName = False;break;
  Case 7: nKind = 9;break;
 }
 var objNew = Null;
 objNew = objCreator.CreateChild( nKind);

 If( bSetName)
  objNew.Name = objNode.nodeName;

 If( bSetValue && ( objNode.nodeValue != Null))
  objNew.TextValue = objNode.nodeValue;

 Return objNew;
}
////////////////////////////////////////////////////////////////
// XMLData To DOM conversion

Function ProcessXMLDataNode( objXMLData,xmlDoc)
{
 var objRoot;
 objRoot = CreateDOMNodeFromXMLData( objXMLData,xmlDoc);

 If( objRoot) {
  If( IsTextNodeEnabled( objRoot) && ( objXMLData.TextValue.length > 0))
```



```
    objRoot.appendChild(xmlDoc.createTextNode(objXMLData.TextValue));

   If(objXMLData.HasChildren){
    try {
     var objChild;
     objChild = objXMLData.GetFirstChild(-1);

     While(True){
      If(objChild) {
       var newNode;
       newNode = ProcessXMLDataNode(objChild,xmlDoc);

       If(newNode.nodeType == 2){
        // child node is an attribute
        objRoot.attributes.setNamedItem(newNode);
       }
       Else
        objRoot.appendChild(newNode);
      }
      objChild = objXMLData.GetNextChild();
     }
    }
    catch(err) {
    }
   }
  }
  Return objRoot;
}

Function CreateDOMNodeFromXMLData(objXMLData,xmlDoc)
{
 switch(objXMLData.Kind){
  Case 4:Return xmlDoc.createElement(objXMLData.Name);
  Case 5:Return xmlDoc.createAttribute(objXMLData.Name);
  Case 6:Return xmlDoc.createTextNode(objXMLData.TextValue);
  Case 7:Return xmlDoc.createCDATASection(objXMLData.TextValue);
  Case 8:Return xmlDoc.createComment(objXMLData.TextValue);
  Case 9:Return
xmlDoc.createProcessingInstruction(objXMLData.Name,objXMLData.TextValue);
 }

 Return xmlDoc.createElement(objXMLData.Name);
}
Function IsTextNodeEnabled(objNode)
{
 switch(objNode.nodeType) {
  Case 1:
  Case 2:
  Case 5:
  Case 6:
  Case 11:Return True;
 }
 Return False;
}
```

3.1.4 Obsolete: Authentic View Row operations

If the schema on which an XML document is based specifies that an element is repeatable, such a structure can be represented in Authentic View as a table. When represented as a table, rows and their contents can be manipulated individually, thereby allowing you to manipulate each of the repeatable elements individually. Such row operations would be performed by an external script.

If an external script is to perform row operations then two steps must occur:

- The first step checks whether the cursor is currently in a row using a property. Such a check could be, for example, `IsRowInsertEnabled`, which returns a value of either `TRUE` or `FALSE`.
- If the return value is `TRUE` then a row method, such as `RowAppend`, can be called. (`RowAppend` has no parameters and returns no value.)

The following is a list of properties and methods available for table operations. Each property returns a `BOOL`, and the methods have no parameter.

Property	Method	Table operations
`IsRowInsertEnabled`	**RowInsert**, superseded by `AuthenticRange.InsertRow`	Insert row operation
`IsRowAppendEnabled`	**RowAppend**, superseded by `AuthenticRange.AppendRow`	Append row operation
`IsRowDeleteEnabled`	**RowDelete**, superseded by `AuthenticRange.DeleteRow`	Delete row operation
`IsRowMoveUpEnabled`	**RowMoveUp**, superseded by `AuthenticRange.MoveRowUp`	Move XML data up one row
`IsRowMoveDownEnabled`	**RowMoveDown**, superseded by `AuthenticRange.MoveRowDown`	Move XML data down one row
`IsRowDuplicateEnabled`	**RowDuplicate**, superseded by `AuthenticRange.DuplicateRow`	Duplicate currently selected row

3.2 Interfaces

Object Hierarchy

Application
- SpyProject
  - SpyProjectItems
    - SpyProjectItem
- Documents
  - Document
    - GridView
    - AuthenticView
      - AuthenticRange
      - AuthenticDataTransfer (previously DocEditDataTransfer)
    - OldAuthenticView (previously DocEditView, **now obsolete**, superseded by AuthenticView and AuthenticRange)
      - AuthenticSelection (previously DocEditSelection, **now obsolete**, superseded by AuthenticRange)
      - AuthenticEvent (previously DocEditEvent, **now obsolete**)
      - AuthenticDataTransfer (previously DocEditDataTransfer)
    - TextView
    - XMLData
- Dialogs
  - CodeGeneratorDlg
  - FileSelectionDlg
  - SchemaDocumentationDlg
  - GenerateSampleXMLDlg
  - DTDSchemaGeneratorDlg
  - FindInFilesDlg
  - WSDLDocumentationDlg
  - WSDL20DocumentationDlg
  - XBRLDocumentationDlg
- DatabaseConnection
- ExportSettings
- TextImportExportSettings
- ElementList
  - ElementListItem

Enumerations

Description

This chapter contains the reference of the XMLSpy 1.5 Type Library.

Most of the given examples are written in VisualBasic. These code snippets assume that there is a variable defined and set, called **objSpy of type Application**. There are also some code samples written in JavaScript.

3.2.1 Application

See also

Methods

GetDatabaseImportElementList
GetDatabaseSettings
GetDatabaseTables
ImportFromDatabase
CreateXMLSchemaFromDBStructure

GetTextImportElementList
GetTextImportExportSettings
ImportFromText

ImportFromWord

ImportFromSchema

GetExportSettings

NewProject
OpenProject

AddMacroMenuItem
ClearMacroMenu

ShowForm

ShowApplication

URLDelete
URLMakeDirectory

FindFiles

Quit

Properties
Application
Parent

ActiveDocument
Documents

CurrentProject

Dialogs

WarningNumber
WarningText

Status
MajorVersion
MinorVersion
Edition
IsAPISupported
ServicePackVersion

Description
Application is the root for all other objects. It is the only object you can create by CreateObject (VisualBasic) or other similar COM related functions.

Example

```
Dim objSpy As Application
Set objSpy = CreateObject("XMLSpy.Application")
```


Events

OnBeforeOpenDocument

See also

Event: `OnBeforeOpenDocument(objDialog as FileSelectionDlg)`

Description
This event gets fired whenever a document gets opened via the OpenFile or OpenURL menu command. It is sent after a document file has been selected but before the document gets opened. The file selection dialog object is initialized with the name of the selected document file. You can modify this selection. To continue the opening of the document leave the FileSelectionDlg.DialogAction property of *io_objDialog* at its default value spyDialogOK. To abort the opening of the document set this property to spyDialogCancel.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:
```
Function On_BeforeOpenDocument(objDialog)
End Function
```

XMLSpy scripting environment - JScript:
```
function On_BeforeOpenDocument(objDialog)
{
}
```

XMLSpy IDE Plugin:
```
IXMLSpyPlugIn.OnEvent (26, ...)  //nEventID=26
```

OnBeforeOpenProject

See also

Event: `OnBeforeOpenProject(objDialog as FileSelectionDlg)`

Description
This event gets fired after a project file has been selected but before the project gets opened. The file selection dialog object is initialized with the name of the selected project file. You can modify this selection. To continue the opening of the project leave the FileSelectionDlg.DialogAction property of *io_objDialog* at its default value spyDialogOK. To abort the opening of the project set this property to spyDialogCancel.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:
```
Function On_BeforeOpenProject(objDialog)
End Function
```

XMLSpy scripting environment - JScript:
```
function On_BeforeOpenProject(objDialog)
```

```
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (25, ...)   //nEventId=25
```

OnDocumentOpened

See also

Event: `OnDocumentOpened(objDocument as Document)`

Description
This event gets fired whenever a document opens in XMLSpy. This can happen due to opening a file with the OpenFile or OpenURL dialog, creating a new file or dropping a file onto XMLSpy. The new document gets passed as parameter. The operation cannot be canceled.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:

```
Function On_OpenDocument(objDocument)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_OpenDocument(objDocument)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (7, ...)   //nEventId=7
```

OnProjectOpened

See also

Event: `OnProjectOpened(objProject as SpyProject)`

Description
This event gets fired whenever a project gets opened in XMLSpy. The new project gets passed as parameter.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:

```
Function On_OpenProject(objProject)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_OpenProject(objProject)
{
```



```
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (6, ...)    //nEventID=6
```

ActiveDocument

See also

Property: `ActiveDocument` as `Document`

Description
Reference to the active document. If no document is open, `ActiveDocument` is null (nothing).

Errors

1111	The application object is no longer valid.
1100	Invalid address for the return parameter was specified.

AddMacroMenuItem

See also

Method: `AddMacroMenuItem(strMacro` as String,`strDisplayText` as String)

Description
Adds a menu item to the **Tools** menu. This new menu item invokes the macro defined by `strMacro`. See also "Calling macros from XMLSpy".

Errors

1111	The application object is no longer valid.
1100	Invalid parameter or invalid address for the return parameter was specified.
1108	Number of macro items is limited to 16 items.

Application

See also

Property: `Application` as `Application` (read-only)

Description
Accesses the XMLSpy application object.

Errors

1111	The application object is no longer valid.
1100	Invalid address for the return parameter was specified.

ClearMacroMenu

See also

Method: `ClearMacroMenu()`

Return Value

None

Description
Removes all menu items from the **Tools** menu. See also Calling macros from XMLSpy".

Errors
1111 The application object is no longer valid.

CreateXMLSchemaFromDBStructure

See also

Method: `CreateXMLSchemaFromDBStructure(pImportSettings as DatabaseConnection, pTables as ElementList)`

Description
`CreateXMLSchemaFromDBStructure` creates from a database specified in `pImportSettings` for the defined tables in `pTables` new XML Schema document(s) describing the database tables structure.

The parameter `pTables` specifies which table structures the XML Schema document should contain. This parameter can be NULL, specifying that all table structures will be exported.

See also GetDataBaseTables.

Errors
1112 Invalid database specified.
1120 Database import failed.

CurrentProject

See also

Property: `CurrentProject` as `SpyProject`

Description
Reference to the active document. If no project is open, `CurrentProject` is null (nothing).

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Dialogs

See also

Property: `Dialogs` as `Dialogs` (read-only)

Description
Access the built-in dialogs of XMLSpy.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Documents

See also

Property: Documents as Documents

Description
Collection of all open documents. See also Simple document access.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Edition

See also

Property: Edition as String

Description
Returns the edition of the application. Eg: Enterprise, Professional, Basic

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

FindInFiles

See also

Method: FindInFiles(*pSettings* as FindInFilesDlg) as FindInFilesResults

Description
Returns a FindInFilesResults object containing information about the files that matched the specified settings.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

GetDatabaseImportElementList

See also

Method: GetDatabaseImportElementList(*pImportSettings* as DatabaseConnection) as ElementList

Description
The function returns a collection of ElementListItems where the properties ElementListItem.Name contain the names of the fields that can be selected for import and the properties ElementListItem.ElementKind are initialized either to *spyXMLDataAttr* or *spyXMLDataElement*, depending on the value passed in DatabaseConnection.AsAttributes. This list serves as a filter to what finally gets imported by a future call to ImportFromDatabase. Use ElementList.RemoveElement to exclude fields from import.

Properties mandatory to be filled out for the database connection are one of DatabaseConnection. File, DatabaseConnection. ADOConnection and DatabaseConnection. ODBCConnection, as well as DatabaseConnection. SQLSelect. Use the property DatabaseConnection. AsAttributes to initialize ElementListItem. ElementKind of the resulting element list to either *spyXMLDataAttr* or *spyXMLDataElement*, respectively.

Example
See example at ImportFromDatabase.

Errors
1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1107 Import from database failed.
1112 Invalid database specified.
1114 Select statement is missing.
1119 database element list import failed.

GetDatabaseSettings

See also

Method: GetDatabaseSettings() as DatabaseConnection

Description
GetDatabaseSettings creates a new object of database settings. The object is used to specify database connection parameters for the methods GetDatabaseTables, GetDatabaseImportElementList, ImportFromDatabase, ImportFromSchema and ExportToDatabase.

Example
See example of ImportFromDatabase.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

GetDatabaseTables

See also

Method: GetDatabaseTables(*pImportSettings* as DatabaseConnection) as ElementList

Description
GetDatabaseTables reads the table names from the database specified in *pImportSettings*. Properties mandatory to be filled out for the database connection are one of DatabaseConnection. File, DatabaseConnection. ADOConnection and DatabaseConnection. ODBCConnection. All other properties are ignored.
The function returns a collection of ElementListItems where the properties ElementListItem. Name contain the names of tables stored in the specified database. The remaining properties of ElementListItem are unused.

Errors

1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1112 Invalid database specified.
1113 Error while reading database table information.
1118 Database table query failed.

Example

```
Dim objImpSettings As DatabaseConnection
Set objImpSettings = objSpy.GetDatabaseSettings
objImpSettings.ADOConnection = TxtADO.Text

'store table names in list box
ListTables.Clear

Dim objList As ElementList
Dim objItem As ElementListItem
On Error GoTo ErrorHandler
Set objList = objSpy.GetDatabaseTables(objImpSettings)

For Each objItem In objList
 ListTables.AddItem objItem.Name
Next
```

GetExportSettings

See also

Method: GetExportSettings() as ExportSettings (read-only)

Description

GetExportSettings creates a new object of common export settings. This object is used to pass the parameters to the export functions and defines the behaviour of the export calls. See also the export functions from Document and the examples at Import and Export.

Errors

1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

GetTextImportElementList

See also

Method: GetTextImportElementList(pImportSettings as TextImportExportSettings) as ElementList

Description

GetTextImportElementList retrieves importing information about the text-file as specified in pImportSettings. The function returns a collection of ElementListItems where the properties ElementListItem.Name contain the names of the fields found in the file. The values of remaining properties are undefined.

If the text-file does not contain a column header, set pImportSettings.HeaderRow to false. The resulting element list will contain general column names like 'Field1' and so on.

See also Import and export of data.

Errors

1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1107 Import from database failed.
1115 Error during text element list import. Cannot create parser for import file.
1116 Error during text element list import.

Example

```
' ----------------------------------------------------------
' VBA client code fragment - import selected fields from text file
' ----------------------------------------------------------
Dim objImpSettings As TextImportExportSettings
Set objImpSettings = objSpy.GetTextImportExportSettings

objImpSettings.ImportFile = "C:\ImportMe.txt"
objImpSettings.HeaderRow = False

Dim objList As ElementList
Set objList = objSpy.GetTextImportElementList(objImpSettings)

'exclude first column
objList.RemoveItem 1

Dim objImpDoc As Document
On Error Resume Next
Set objImpDoc = objSpy.ImportFromText(objImpSettings, objList)
CheckForError
```

GetTextImportExportSettings

See also

Method: GetTextImportExportSettings() as TextImportExportSettings (read-only)

Description

GetTextImportExportSettings creates a new object of common import and export settings for text files. See also the example for Application.GetTextImportElementList and Import and Export.

See also Import and export of data.

Errors

1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

ImportFromDatabase

See also

Method: ImportFromDatabase(pImportSettings as DatabaseConnection ,pElementList as ElementList) as Document

Return Value

Creates a new document containing the data imported from the database.

Description

ImportFromDatabase imports data from a database as specified in pImportSettings and creates a new document containing the data imported from the database. Properties mandatory to be

filled out are one of DatabaseConnection.File, DatabaseConnection.ADOConnection or DatabaseConnection.ODBCConnection and DatabaseConnection.SQLSelect. Additionally, you can use DatabaseConnection.AsAttributes, DatabaseConnection.ExcludeKeys, DatabaseConnection.IncludeEmptyElements and NumberDateTimeFormat to further parameterize import.

The parameter pElementList specifies which fields of the selected data gets written into the newly created document, and which are created as elements and which as attributes. This parameter can be NULL, specifying that all selected fields will be imported as XML elements.

See GetDatabaseSettings and GetDatabaseImportElementList for necessary steps preceding any import of data from a database.

Errors

1111	The application object is no longer valid.
1100	Invalid parameter or invalid address for the return parameter was specified.
1107	Import from database failed.
1112	Invalid database specified.
1114	Select statement is missing.
1117	Transformation to XML failed.
1120	Database import failed.

Example

```
Dim objImpSettings As DatabaseConnection
Set objImpSettings = objSpy.GetDatabaseSettings

objImpSettings.ADOConnection = strADOConnection
objImpSettings.SQLSelect = "SELECT * FROM MyTable"

Dim objDoc As Document
On Error Resume Next
Set objDoc = objSpy.ImportFromDatabase(objImpSettings,
objSpy.GetDatabaseImportElementList(objImpSettings))
' CheckForError here
```

ImportFromSchema

See also

Method: ImportFromSchema(*pImportSettings* as DatabaseConnection,*strTable* as String,*pSchemaDoc* as Document) as Document

Return Value

Creates a new document filled with data from the specified database as specified by the schema definition in *pSchemaDoc*.

Description

ImportFromSchema imports data from a database specified in pImportSettings. Properties mandatory to be filled out are one of DatabaseConnection.File, DatabaseConnection.ADOConnection or DatabaseConnection.ODBCConnection. Additionally, you can use DatabaseConnection.AsAttributes, DatabaseConnection.ExcludeKeys and NumberDateTimeFormat to further parameterize import. All other properties get ignored.

ImportFromSchema does not use and explicit SQL statement to select the data. Instead, it

expects a structure definition of the document to create in form of an XML schema document in *pSchemaDoc*. From this definition the database select statement is automatically deduced. Specify in *strTable* the table name of the import root that will become the root node in the new document.

See GetDatabaseSettings and GetDatabaseTables for necessary steps preceding an import from a database based on a schema definition. To create the schema definition file use command 'create database schema' from the 'convert' menu of XMLSpy.

Errors

1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1107 Import from database failed.
1112 Invalid database specified.
1120 Database import failed.
1121 Could not create validator for the specified schema.
1122 Failed parsing schema for database import.

ImportFromText

See also

Method: ImportFromText(*pImportSettings* as TextImportExportSettings, *pElementList* as ElementList) as Document

Description

ImportFromText imports the text file as specified in pImportSettings. The parameter pElementList can be used as import filter. Either pass the list returned by a previous call to GetTextImportElementList or nil to import all columns. To avoid import of unnecessary columns use ElementList.RemoveElement to remove the corresponding field names from pElementList before calling ImportFromText.
The method returns the newly created document containing the imported data. This document is the same as the active document of XMLSpy.

See also Import and export of data.

Errors

1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1107 Import from text file failed.
1117 Transformation to XML failed.

Example

```
' ----------------------------------------------------------
' VBA client code fragment - import from text file
' ----------------------------------------------------------
Dim objImpSettings As TextImportExportSettings
Set objImpSettings = objSpy.GetTextImportExportSettings

objImpSettings.ImportFile = strFileName
objImpSettings.HeaderRow = False

Dim objImpDoc As Document
On Error Resume Next
Set objImpDoc = objSpy.ImportFromText(objImpSettings,
  objSpy.GetTextImportElementList(objImpSettings))
```



```
CheckForError
```

ImportFromWord

See also

Method: `ImportFromWord(strFile as String) as Document`

Description
`ImportFromWord` imports the MS-Word Document `strFile` into a new XML document.

Errors
1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
Import from document failed.

IsAPISupported

See also

Property: `IsAPISupported` as Boolean

Description
Returns whether the API is supported in this version or not.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

MajorVersion

See also

Property: `MajorVersion` as Integer

Description
Returns the application version's major number.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

MinorVersion

See also

Property: `MinorVersion` as Integer

Description
Returns the application version's minor number.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

NewProject

See also

Method: NewProject(*strPath* as String,*bDiscardCurrent* as Boolean)

Description

NewProject creates a new project.

If there is already a project open that has been modified and bDiscardCurrent is false, then NewProject() fails.

Errors

1111 The application object is no longer valid.
1102 A project is already open but *bDiscardCurrent* is *true*.
1103 Creation of new project failed.

OpenProject

See also

Method: OpenProject(*strPath* as String,*bDiscardCurrent* as Boolean,*bDialog* as Boolean)

Parameters

strPath
Path and file name of the project to open. Can be empty if bDialog is true.

bDiscardCurrent
Discard currently open project and possible lose changes.

bDialog
Show dialogs for user input.

Return Value

None

Description

OpenProject opens an existing project. If there is already a project open that has been modified and bDiscardCurrent is false, then OpenProject() fails.

Errors

1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.
1101 Cannot open specified project.
1102 A project is already open but *bDiscardCurrent* is *true*.

Parent

See also

Property: Parent as Application (read-only)

Description
Accesses the XMLSpy application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Quit

See also

Method: Quit()

Return Value
None

Description
This method terminates XMLSpy. All modified documents will be closed without saving the changes. This is also true for an open project.

If XMLSpy was automatically started as an automation server by a client program, the application will not shut down automatically when your client program shuts down if a project or any document is still open. Use the Quit method to ensure automatic shut-down.

Errors
1111 The application object is no longer valid.

ReloadSettings

See also

Method: `ReloadSettings`

Return Value

Description
The application settings are reloaded from the registry.

Available with TypeLibrary version 1.5

Errors
1111 The application object is no longer valid.

RunMacro

See also

Method: `RunMacro(strMacro` as String)

Return Value

Description
Calls the specified macro either from the project scripts (if present) or from the global scripts.

Available with TypeLibrary version 1.5

Errors
1111 The application object is no longer valid.

ScriptingEnvironment

See also

Property: `ScriptingEnvironment` as IUnknown (read-only)

Description
Reference to any active scripting environment. This property makes it possible to access the TypeLibrary of the XMLSpyFormEditor.exe application which is used as the current scripting environment.

Available with TypeLibrary version 1.5

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

ServicePackVersion

See also

Property: `ServicePackVersion` as Long

Description
Returns the Service Pack version number of the application. Eg: 1 for 2010 R2 SP1

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

ShowApplication

See also

Method: `ShowApplication( bShow` as Boolean)

Return Value
None

Description
The method shows (`bShow = True`) or hides (`bShow = False`) XMLSpy.

Errors
1110 The application object is no longer valid.

ShowFindInFiles

See also

Method: ShowFindInFiles(pSettings as FindInFilesDlg) as Boolean

Return Value
Returns false if the user pressed the Cancel button, true otherwise.

Description
Displays the FindInFiles dialog preset with the given settings. The user modifications of the settings are stored in the passed dialog object.

Errors
1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.

ShowForm

See also

Method: `ShowForm(strFormName as String) as Long`

Return Value
Returns zero if the user pressed a Cancel button or the form calls `TheView.Cancel()` .

Description
Displays the form `strFormName` .

Forms, event handlers and macros can be created with the Scripting Environment. Select "Switch to scripting environment" from the **Tools** menu to invoke the Scripting Environment.

Errors
1111 The application object is no longer valid.
1100 Invalid parameter or invalid address for the return parameter was specified.

Status

See also

Property: `Status` as ENUMApplicationStatus

Description
Returns the current status of the running application.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

URLDelete

See also

Method: `URLDelete( strURL as String,strUser as String,strPassword as String)`

Return Value
None

Description
The method deletes the file at the URL `strURL` .

Errors

1111 The application object is no longer valid.
1109 Error deleting file at specified URL.

URLMakeDirectory

See also

Method: URLMakeDirectory(*strURL* as String,*strUser* as String,*strPassword* as String)

Return Value
None

Description
The method creates a new directory at the URL strURL .

Errors
1111 The application object is no longer valid.
1100 Invalid parameter specified.

Visible

See also

Property: Visible as VARIANT_BOOL

Description
Sets or gets the visibility attribute of XMLSpy. This standard automation property makes usage of ShowApplication obsolete.

Errors
1110 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

WarningNumber

See also

Property: WarningNumber as integer

Description
Some methods fill the property WarningNumber with additional information if an error occurs.

Currently just Documents.OpenFile fills this property.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

WarningText

See also

Property: WarningText as String

Description
Some methods fill the property `WarningText` with additional information if an error occurs.

Currently just `Documents.OpenFile` fills this property.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

3.2.2 AuthenticContextMenu

The context menu interface provides the mean for the user to customize the context menus shown in Authentic. The interface has the methods listed in this section.

CountItems

Method: `CountItems()` nItems as long

Return Value
Returns the number of menu items.

Errors
2501 Invalid object.

DeleteItem

Method: `DeleteItem(IndexPosition as long)`

Return Value
Deletes the menu item that has the index position submitted in the first parameter.

Errors
2501 Invalid object
2502 Invalid index

GetItemText

Method: `GetItemText(IndexPosition as long)` MenuItemName as string

Return Value
Gets the name of the menu item located at the index position submitted in the first parameter.

Errors
2501 Invalid object
2502 Invalid index

InsertItem

Method: `InsertItem(IndexPosition as long, MenuItemName as string, MacroName as string)`

Return Value
Inserts a user-defined menu item at the position in the menu specified in the first parameter and having the name submitted in the second parameter. The menu item will start a macro, so a valid macro name

must be submitted.

Errors

2501 Invalid object
2502 Invalid index
2503 No such macro
2504 Internal error

SetItemText

Method: `SetItemText( IndexPosition as long, MenuItemName as string)`

Return Value

Sets the name of the menu item located at the index position submitted in the first parameter.

Errors

2501 Invalid object
2502 Invalid index

3.2.3 AuthenticDataTransfer

Renamed from DocEditDataTransfer to AuthenticDataTransfer

The `DocEditView` object is renamed to `OldAuthenticView`.
`DocEditSelection` is renamed to `AuthenticSelection`.
`DocEditEvent` is renamed to `AuthenticEvent`.
`DocEditDataTransfer` is renamed to `AuthenticDataTransfer`.

Their usage—except for `AuthenticDataTransfer`—is no longer recommended. We will continue to support existing functionality for a yet undefined period of time but no new features will be added to these interface. All functionality available up to now in `DocEditView`, `DocEditSelection`, `DocEditEvent` and `DocEditDataTransfer` is now available via `AuthenticView`, `AuthenticRange` and `AuthenticDataTransfer`. Many new features have been added.

For examples on migrating from DocEdit to Authentic see the description of the different methods and properties of the different DocEdit objects.

See also

Methods

`getData`

Properties

`dropEffect`
`ownDrag`
`type`

Description

The events `OnDragOver` and `OnBeforeDrop` provide information about the object being dragged

with an instance of type AuthenticDataTransfer. It contains a description of the dragged object and its content. The latter is available either as string or a pointer to a COM object supporting the IUnkown interface.

dropEffect

See also

Property: dropEffect as long

Description
The property stores the drop effect from the default event handler. You can set the drop effect if you change this value and return TRUE for the event handler (or set AuthenticEvent.cancelBubble to TRUE if you are still using the now obsolete AuthenticEvent interface).

Errors
2101 Invalid address for the return parameter was specified.

getData

See also

Method: getData() as Variant

Description
Retrieve the data associated with the dragged object. Depending on AuthenticDataTransfer.type, that data is either a string or a COM interface pointer of type IUnknown.

Errors
2101 Invalid address for the return parameter was specified.

ownDrag

See also

Property: ownDrag as Boolean (read-only)

Description
The property is TRUE if the current dragging source comes from inside Authentic View.

Errors
2101 Invalid address for the return parameter was specified.

type

See also

Property: type as String (read-only)

Description
Holds the type of data you get with the DocEditDataTransfer.getData method.

Currently supported data types are:

OWN	data from Authentic View itself
TEXT	plain text
UNICODETEXT	plain text as UNICODE

Errors
2101 Invalid address for the return parameter was specified.

3.2.4 AuthenticEventContext

The `EventContext` interface gives access to many properties of the context in which a macro is executed.

EvaluateXPath

Method: `EvaluateXPath` (`strExpression as string`) as strValue as string

Return Value
The method evaluates the XPath expression in the context of the node within which the event was triggered and returns a string.

Description
`EvaluateXPath()` executes an XPath expressions with the given event context. The result is returned as string, in the case of a sequence it is a space-separated string.

Errors
2201 Invalid object.
2202 No context.
2209 Invalid parameter.
2210 Internal error.
2211 XPath error.

GetEventContextType

Method: `GetEventContextType()` Type as `AuthenticEventContextType` enumeration

Return Value
Returns the context node type.

Description
`GetEventContextType` allows the user to determine whether the macro is in an XML node or in an XPath atomic item context. The enumeration `AuthenticEventContextType` is defined as follows:

```
authenticEventContextXML,
authenticEventContextAtomicItem,
authenticEventContextOther
```

If the context is a normal XML node, the `GetXMLNode()` function gives access to it (returns `NULL` if not).

Errors
2201 Invalid object.
2202 No context.
2209 Invalid parameter.

GetNormalizedTextValue

Method: `GetNormalizedTextValue()` strValue as string

Return Value
Returns the value of the current node as string

Errors
2201 Invalid object.
2202 No context.
2203 Invalid context
2209 Invalid parameter.

GetVariableValue

Method: `GetVariableValue(strName as string) strValue as string`

Return Value
Gets the value of the variable submitted as the parameter.

Description
`GetVariableValue` gets the variable's value in the scope of the context.

```
nZoom = parseInt( AuthenticView.EventContext.GetVariableValue( 'Zoom' ) );
if ( nZoom > 1 )
{
        AuthenticView.EventContext.SetVariableValue( 'Zoom', nZoom - 1 );
}
```

Errors
2201 Invalid object.
2202 No context.
2204 No such variable in scope
2205 Variable cannot be evaluated
2206 Variable returns sequence
2209 Invalid parameter

GetXMLNode

Method: `GetXMLNode()` Node as XMLData object

Return Value
Returns the context XML node or `NULL`

Errors
2201 Invalid object.
2202 No context.
2203 Invalid context
2209 Invalid parameter.

IsAvailable

Method: `IsAvailable()` as Boolean

Return Value
Returns true if `EventContext` is set, false otherwise.

Errors
2201 Invalid object.

SetVariableValue

Method: `SetVariableValue( strName as string, strValue as string)`

Return Value
Sets the value (second parameter) of the variable submitted in the first parameter.

Description
`SetVariableValue` sets the variable's value in the scope of the context.

```
nZoom = parseInt( AuthenticView.EventContext.GetVariableValue( 'Zoom' ) );
if ( nZoom > 1 )
{
        AuthenticView.EventContext.SetVariableValue( 'Zoom', nZoom - 1 );
}
```

Errors
2201 Invalid object.
2202 No context.
2204 No such variable in scope
2205 Variable cannot be evaluated
2206 Variable returns sequence
2207 Variable read-only
2208 No modification allowed

3.2.5 AuthenticRange

See also

The first table lists the properties and methods of `AuthenticRange` that can be used to navigate through the document and select specific portions.

Properties		Methods
Application	Clone	MoveBegin
FistTextPosition	CollapsToBegin	MoveEnd
FistXMLData	CollapsToEnd	NextCursorPosition
FistXMLDataOffset	ExpandTo	PreviousCursorPosition
LastTextPosition	Goto	Select
LastXMLData	GotoNext	SelectNext
LastXMLDataOffset	GotoPrevious	SelectPrevious
Parent	IsEmpty	SetFromRange
	IsEqual	

The following table lists the content modification methods, most of which can be found on the right/button mouse menu.

Properties	Edit operations	Dynamic table operations
Text	Copy	AppendRow
	Cut	DeleteRow

Delete
IsCopyEnabled
IsCutEnabled
IsDeleteEnabled
IsPasteEnabled
Paste
DuplicateRow
InsertRow
IsFirstRow
IsInDynamicTable
IsLastRow
MoveRowDown
MoveRowUp

The following methods provide the functionality of the Authentic entry helper windows for range objects.

Operations of the entry helper windows

Elements	Attributes	Entities
CanPerformActionWith	GetElementAttributeValue	GetEntityNames
CanPerformAction	GetElementAttributeNames	InsertEntity
PerformAction	GetElementHierarchy	
	HasElementAttribute	
	IsTextStateApplied	
	SetElementAttributeValue	

Description

AuthenticRange objects are the 'cursor' selections of the automation interface. You can use them to point to any cursor position in the Authentic view, or select a portion of the document. The operations available for AuthenticRange objects then work on this selection in the same way, as the corresponding operations of the user interface do with the current user interface selection. The main difference is that you can use an arbitrary number of AuthenticRange objects at the same time, whereas there is exactly one cursor selection in the user interface.

To get to an initial range object use AuthenticView.Selection, to obtain a range corresponding with the current cursor selection in the user interface. Alternatively, some trivial ranges are accessible via the read/only properties AuthenticView.DocumentBegin, AuthenticView.DocumentEnd, and AuthenticView.WholeDocument. The most flexible method is AuthenticView.Goto, which allows navigation to a specific portion of the document within one call. For more complex selections, combine the above, with the various navigation methods on range objects listed in the first table on this page.

Another method to select a portion of the document is to use the position properties of the range object. Two positioning systems are available and can be combined arbitrarily:

- **Absolute** text cursor positions, starting with position 0 at the document beginning, can be set and retrieved for the beginning and end of a range. For more information see FirstTextPosition and LastTextPosition. This method requires complex internal calculations and should be used with care.
- The **XMLData** element and a text position inside this element, can be set and retrieved for the beginning and end of a range. For more information see FirstXMLData, FirstXMLDataOffset, LastXMLData, and LastXMLDataOffset. This method is very efficient but requires knowledge on the underlying document structure. It can be used to locate XMLData objects and perform operations on them otherwise not accessible through the user interface.

Modifications to the document content can be achieved by various methods:

- The Text property allows you to retrieve the document text selected by the range object. If set, the selected document text gets replaced with the new text.
- The standard document edit functions Cut, Copy, Paste and Delete.

- Table operations for tables that can grow dynamically.
- Methods that map the functionality of the Authentic entry helper windows.
- Access to the XMLData objects of the underlying document to modify them directly.

AppendRow

See also

Method: AppendRow( ) as Boolean

Description
If the beginning of the range is inside a dynamic table, this method inserts a new row at the end of the selected table. The selection of the range is modified to point to the beginning of the new row. The function returns *true* if the append operation was successful, otherwise *false*.

Errors
2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------------------
' XMLSpy scripting environment - VBScript
' Append row at end of current dynamically growable table
' ------------------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' check if we can insert something
If objRange.IsInDynamicTable Then
     objRange.AppendRow
     ' objRange points to beginning of new row
     objRange.Select
End If
```

Application

See also

Property: Application as Application (read-only)

Description
Accesses the XMLSpy application object.

Errors
2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

CanPerformAction

See also

Method: CanPerformAction (*eAction* as SPYAuthenticActions, *strElementName* as String) as Boolean

Description
CanPerformAction and its related methods enable access to the entry-helper functions of

Authentic. This function allows easy and consistent modification of the document content, without having to know exactly where the modification will take place. The beginning of the range object is used to locate the next valid location where the specified action can be performed. If the location can be found, the method returns *True*, otherwise it returns *False*.

HINT: To find out all valid element names for a given action, use CanPerformActionWith.

Errors

2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.
2007 Invalid action was specified.

Examples

See PerformAction.

CanPerformActionWith

See also

Method: CanPerformActionWith (*eAction* as SPYAuthenticActions, *out_arrElementNames* as Variant)

Description

PerformActionWith and its related methods, enable access to the entry-helper functions of Authentic. These function allows easy and consistent modification of the document content without having to know exactly where the modification will take place.

This method returns an array of those element names that the specified action can be performed with.

HINT: To apply the action use CanPerformActionWith.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.
2007 Invalid action was specified.

Examples

See PerformAction.

Clone

See also

Method: Clone() as AuthenticRange

Description

Returns a copy of the range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

CollapsToBegin

See also

Method: `CollapsToBegin()` as `AuthenticRange`

Description
Sets the end of the range object to its begin. The method returns the modified range object.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

CollapsToEnd

See also

Method: `CollapsToEnd()` as `AuthenticRange`

Description
Sets the beginning of the range object to its end. The method returns the modified range object.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Copy

See also

Method: `Copy()` as Boolean

Description
Returns *False* if the range contains no portions of the document that may be copied.
Returns *True* if text, and in case of fully selected XML elements the elements as well, has been copied to the copy/paste buffer.

Errors
2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Cut

See also

Method: `Cut()` as Boolean

Description
Returns *False* if the range contains portions of the document that may not be deleted.
Returns *True* after text, and in case of fully selected XML elements the elements as well, has been deleted from the document and saved in the copy/paste buffer.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Delete

See also

Method: `Delete()` as Boolean

Description
Returns *False* if the range contains portions of the document that may not be deleted. Returns *True* after text, and in case of fully selected XML elements the elements as well, has been deleted from the document.

Errors
2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

DeleteRow

See also

Method: `DeleteRow()` as Boolean

Description
If the beginning of the range is inside a dynamic table, this method deletes the selected row. The selection of the range gets modified to point to the next element after the deleted row. The function returns *true,* if the delete operation was successful, otherwise *false*.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Examples

```
' ----------------------------------------------------------
' XMLSpy scripting environment - VBScript
' Delete selected row from dynamically growing table
' ----------------------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' check if we are in a table
If objRange.IsInDynamicTable Then
     objRange.DeleteRow
End If
```

DuplicateRow

See also

Method: `DuplicateRow()` as Boolean

Description
If the beginning of the range is inside a dynamic table, this method inserts a duplicate of the current row after the selected one. The selection of the range gets modified to point to the

beginning of the new row. The function returns *true* if the duplicate operation was successful, otherwise *false*.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Examples

```
' ----------------------------------------------------------
' XMLSpy scripting environment - VBScript
' duplicate row in current dynamically growable table
' ----------------------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' check if we can insert something
If objRange.IsInDynamicTable Then
     objRange.DuplicateRow
     ' objRange points to beginning of new row
     objRange.Select
End If
```

EvaluateXPath

Method: `EvaluateXPath` (strExpression as string) strValue as string

Return Value

The method returns a string

Description

`EvaluateXPath()` executes an XPath expressions with the context node being the beginning of the range selection. The result is returned as string, in the case of a sequence it is a space-separated string. If XML context node is irrelevant, the user may provide any node, like `AuthenticView.XMLDataRoot`.

Errors

2001 Invalid object
2005 Invalid parameter
2008 Internal error
2202 Missing context node
2211 XPath error

ExpandTo

See also

Method: `ExpandTo` (*eKind* as `SPYAuthenticElementKind`), as `AuthenticRange`

Description

Selects the whole element of type `eKind`, that starts at, or contains, the first cursor position of the range. The method returns the modified range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2003 Range expansion would be beyond end of document.
2005 Invalid address for the return parameter was specified.

FirstTextPosition

See also

Property: `FirstTextPosition` as Long

Description

Set or get the left-most text position index of the range object. This index is always less or equal to `LastTextPosition`. Indexing starts with 0 at document beginning, and increments with every different position that the text cursor can occupy. Incrementing the test position by 1, has the same effect as the cursor-right key. Decrementing the test position by 1 has the same effect as the cursor-left key.

If you set FirstTextPosition to a value greater than the current `LastTextPosition`, `LastTextPosition` gets set to the new FirstTextPosition.

HINT: Use text cursor positions with care, since this is a costly operation compared to `XMLData` based cursor positioning.

Errors

2001 The authentic range object, or its related view object is not valid.
2005 Invalid address for the return parameter was specified.
2006 A text position outside the document was specified.

Examples

```
' ----------------------------------------
' XMLSpy scripting environment - VBScript
' ----------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

nDocStartPosition = objAuthenticView.DocumentBegin.FirstTextPosition
nDocEndPosition = objAuthenticView.DocumentEnd.FirstTextPosition

' let's create a range that selects the whole document
' in an inefficient way
Dim objRange
' we need to get a (any) range object first
Set objRange = objAuthenticView.DocumentBegin
objRange.FirstTextPosition = nDocStartPosition
objRange.LastTextPosition = nDocEndPosition

' let's check if we got it right
If objRange.isEqual(objAuthenticView.WholeDocument) Then
     MsgBox "Test using direct text cursor positioning was ok"
Else
     MsgBox "Ooops!"
End If
```

FirstXMLData

See also

Property: `FirstXMLData` as `XMLData`

Description

Set or get the first `XMLData` element in the underlying document that is partially, or completely selected by the range. The exact beginning of the selection is defined by the

FirstXMLDataOffset attribute.

Whenever you set FirstXMLData to a new data object, FirstXMLDataOffset gets set to the first cursor position inside this element. Only XMLData objects that have a cursor position may be used. If you set FirstXMLData / FirstXMLDataOffset selects a position greater then the current LastXMLData / LastXMLDataOffset, the latter gets moved to the new start position.

HINT: You can use the FirstXMLData and LastXMLData properties, to directly access and manipulate the underlying XML document in those cases where the methods available with the AuthenticRange object are not sufficient.

Errors

2001 The authentic range object, or its related view object is not valid.
2005 Invalid address for the return parameter was specified.
2008 Internal error
2009 The XMLData object cannot be accessed.

Examples

```
' ------------------------------------------------
' XMLSpy scripting environment - VBScript
' show name of currently selected XMLData element
' ------------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

Dim objXmlData
Set objXMLData = objAuthenticView.Selection.FirstXMLData
' authentic view adds a 'text' child element to elements
' of the document which have content. So we have to go one
' element up.
Set objXMLData = objXMLData.Parent
MsgBox "Current selection selects element " & objXMLData.Name
```

FirstXMLDataOffset

See also

Property: FirstXMLDataOffset as Long

Description

Set or get the cursor position offset inside FirstXMLData element for the beginning of the range. Offset positions are based on the characters returned by the Text property, and start with 0. When setting a new offset, use -1 to set the offset to the last possible position in the element. The following cases require specific attention:

- The textual form of entries in Combo Boxes, Check Boxes and similar controls can be different from what you see on screen. Although the data offset is based on this text, there only two valid offset positions, one at the beginning and one at the end of the entry. An attempt to set the offset to somewhere in the middle of the entry, will result in the offset being set to the end.
- The textual form of XML Entities might differ in length from their representation on the screen. The offset is based on this textual form.

If FirstXMLData / FirstXMLDataOffset selects a position after the current LastXMLData / LastXMLDataOffset, the latter gets moved to the new start position.

Errors

2001 The authentic range object, or its related view object is not valid.
2005 Invalid offset was specified.
Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Select the complete text of an XMLData element
' using XMLData based selection and ExpandTo
' ------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

' first we use the XMLData based range properties
' to select all text of the first XMLData element
' in the current selection
Dim objRange
Set objRange = objAuthenticView.Selection
objRange.FirstXMLDataOffset = 0  ' start at beginning of element text
objRange.LastXMLData = objRange.FirstXMLData  ' select only one element
objRange.LastXMLDataOffset = -1  ' select till its end

' the same can be achieved with the ExpandTo method
Dim objRange2
Set objRange2 = objAuthenticView.Selection.ExpandTo(spyAuthenticTag)

' were we successful?
If objRange.IsEqual(objRange2) Then
     objRange.Select()
Else
     MsgBox "Oops"
End If
```

GetElementAttributeNames

See also

Method: GetElementAttributeNames (*strElementName* as String, *out_arrAttributeNames* as Variant)

Description

Retrieve the names of all attributes for the enclosing element with the specified name. Use the element/attribute pairs, to set or get the attribute value with the methods GetElementAttributeValue and SetElementAttributeValue.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid element name was specified.
Invalid address for the return parameter was specified.

Examples

See SetElementAttributeValue.

GetElementAttributeValue

See also

Method: GetElementAttributeValue (*strElementName* as String, *strAttributeName* as String) as String

Description
Retrieve the value of the attribute specified in `strAttributeName`, for the element identified with `strElementName`. If the attribute is supported but has no value assigned, the empty string is returned. To find out the names of attributes supported by an element, use `GetElementAttributeNames`, or `HasElementAttribute`.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid element name was specified.
Invalid attribute name was specified.
Invalid address for the return parameter was specified.

Examples
See `SetElementAttributeValue`.

GetElementHierarchy

See also

Method: `GetElementHierarchy` (*`out_arrElementNames`* as Variant)

Description
Retrieve the names of all XML elements that are parents of the current selection. Inner elements get listed before enclosing elements. An empty list is returned whenever the current selection is not inside a single `XMLData` element.

The names of the element hierarchy, together with the range object uniquely identify `XMLData` elements in the document. The attributes of these elements can be directly accessed by `GetElementAttributeNames`, and related methods.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

C# Examples

```
' ------------------------------------------
' C#
' ------------------------------------------

namespace ConsoleApplication1
{
    class Program
    {
        static void Main(string[] args)
        {
            XMLSpyLib.Application app = new XMLSpyLib.Application();

            app.ShowApplication(true);

            XMLSpyLib.AuthenticView view = app.ActiveDocument.AuthenticView;
            XMLSpyLib.AuthenticRange range = view.DocumentBegin;

            object o = null;
            range.GetElementHierarchy(ref o);

            object[] elements = (object[])o;
```



```
            foreach (string e in elements)
            {
                Console.WriteLine(e);
            }
        }
    }
}
```

Also see: SetElementAttributeValue.

GetEntityNames

See also

Method: GetEntityNames (*out_arrEntityNames* as Variant)

Description
Retrieve the names of all defined entities. The list of retrieved entities is independent of the current selection, or location. Use one of these names with the InsertEntity function.

Errors

2001	The authentic range object, or its related view object is no longer valid.
2005	Invalid address for the return parameter was specified.

Examples
See: GetElementHierarchy and InsertEntity.

GetVariableValue

Method: GetVariableValue(strName as string) strVal as string

Return Value
Gets the value of the variable named as the method's parameter.

Errors

2001	Invalid object.
2202	No context.
2204	No such variable in scope
2205	Variable cannot be evaluated
2206	Variable returns sequence
2209	Invalid parameter

Goto

See also

Method: Goto (*eKind* as SPYAuthenticElementKind, *nCount* as Long, *eFrom* as SPYAuthenticDocumentPosition) as AuthenticRange

Description
Sets the range to point to the beginning of the nCount element of type eKind . The start position is defined by the parameter eFrom .

Use positive values for `nCount` to navigate to the document end. Use negative values to navigate to the beginning of the document. The method returns the modified range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2003 Target lies after end of document.
2004 Target lies before begin of document.
2005 Invalid element kind specified.
Invalid start position specified.
Invalid address for the return parameter was specified.

GotoNext

See also

Method: `GotoNext` (*`eKind`* as `SPYAuthenticElementKind`) as `AuthenticRange`

Description

Sets the range to the beginning of the next element of type `eKind` . The method returns the modified range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2003 Target lies after end of document.
2005 Invalid element kind specified.
Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Scan through the whole document word-by-word
' ------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

Dim objRange
Set objRange = objAuthenticView.DocumentBegin
Dim bEndOfDocument
bEndOfDocument = False

On Error Resume Next
While Not bEndOfDocument
     objRange.GotoNext(spyAuthenticWord).Select
     If ((Err.number - vbObjecterror) = 2003) Then
            bEndOfDocument = True
            Err.Clear
     ElseIf (Err.number <> 0) Then
            Err.Raise  ' forward error
     End If
Wend
```

GotoNextCursorPosition

See also

Method: `GotoNextCursorPosition()` as `AuthenticRange`

Description

Sets the range to the next cursor position after its current end position. Returns the modified object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2003 Target lies after end of document.
2005 Invalid address for the return parameter was specified.

GotoPrevious

See also

Method: GotoPrevious (*eKind* as SPYAuthenticElementKind) as AuthenticRange

Description

Sets the range to the beginning of the element of type eKind which is before the beginning of the current range. The method returns the modified range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2004 Target lies before beginning of document.
2005 Invalid element kind specified.
Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Scan through the whole document tag-by-tag
' ------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

Dim objRange
Set objRange = objAuthenticView.DocumentEnd
Dim bEndOfDocument
bBeginOfDocument = False

On Error Resume Next
While Not bBeginOfDocument
     objRange.GotoPrevious(spyAuthenticTag).Select
     If ((Err.number - vbObjecterror) = 2004) Then
            bBeginOfDocument = True
            Err.Clear
     ElseIf (Err.number <> 0) Then
            Err.Raise  ' forward error
     End If
Wend
```

GotoPreviousCursorPosition

See also

Method: GotoPreviousCursorPosition() as AuthenticRange

Description

Set the range to the cursor position immediately before the current position. Returns the modified object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2004 Target lies before begin of document.
2005 Invalid address for the return parameter was specified.

HasElementAttribute

See also

Method: `HasElementAttribute` (*`strElementName`* as String, *`strAttributeName`* as String) as Boolean

Description

Tests if the enclosing element with name `strElementName`, supports the attribute specified in `strAttributeName`.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid element name was specified.
Invalid address for the return parameter was specified.

InsertEntity

See also

Method: `InsertEntity` (*`strEntityName`* as String)

Description

Replace the ranges selection with the specified entity. The specified entity must be one of the entity names returned by `GetEntityNames`.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2005 Unknown entry name was specified.

Examples

```
' ------------------------------------------------------
' XMLSpy scripting environment - VBScript
' Insert the first entity in the list of available entities
' ------------------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' first we get the names of all available entities as they
' are shown in the entry helper of XMLSpy
Dim arrEntities
objRange.GetEntityNames arrEntities

' we insert the first one of the list
If UBound(arrEntities) >= 0 Then
     objRange.InsertEntity arrEntities(0)
Else
     MsgBox "Sorry, no entities are available for this document"
End If
```


InsertRow

See also

Method: `InsertRow()` as Boolean

Description
If the beginning of the range is inside a dynamic table, this method inserts a new row before the current one. The selection of the range, gets modified to point to the beginning of the newly inserted row. The function returns *true* if the insert operation was successful, otherwise *false*.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------------------------
' XMLSpy scripting environment - VBScript
' Insert row at beginning of current dynamically growing table
' ------------------------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' check if we can insert something
If objRange.IsInDynamicTable Then
     objRange.InsertRow
     ' objRange points to beginning of new row
     objRange.Select
End If
```

IsCopyEnabled

See also

Property: `IsCopyEnabled` as Boolean (read-only)

Description
Checks if the copy operation is supported for this range.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsCutEnabled

See also

Property: `IsCutEnabled` as Boolean (read-only)

Description
Checks if the cut operation is supported for this range.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsDeleteEnabled

See also

Property: `IsDeleteEnabled` as Boolean (read-only)

Description
Checks if the delete operation is supported for this range.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsEmpty

See also

Method: `IsEmpty()` as Boolean

Description
Tests if the first and last position of the range are equal.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsEqual

See also

Method: `IsEqual` (*`objCmpRange`* as `AuthenticRange`) as Boolean

Description
Tests if the start and end of both ranges are the same.

Errors
2001 One of the two range objects being compared, is invalid.
2005 Invalid address for a return parameter was specified.

IsFirstRow

See also

Property: `IsFirstRow` as Boolean (read-only)

Description
Test if the range is in the first row of a table. Which table is taken into consideration depends on the extend of the range. If the selection exceeds a single row of a table, the check is if this table is the first element in an embedding table. See the entry helpers of the user manual for more information.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsInDynamicTable

See also

Method: `IsInDynamicTable()` as Boolean

Description
Test if the whole range is inside a table that supports the different row operations like 'insert', 'append', duplicate, etc.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsLastRow

See also

Property: `IsLastRow` as Boolean (read-only)

Description
Test if the range is in the last row of a table. Which table is taken into consideration depends on the extend of the range. If the selection exceeds a single row of a table, the check is if this table is the last element in an embedding table. See the entry helpers of the user manual for more information.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsPasteEnabled

See also

Property: `IsPasteEnabled` as Boolean (read-only)

Description
Checks if the paste operation is supported for this range.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsSelected

Property: `IsSelected` as Boolean

Description
Returns true() if selection is present. The selection range still can be empty: that happens when e.g. only the cursor is set.

IsTextStateApplied

See also

Method: IsTextStateApplied (*i_strElementName* as String) as Boolean

Description
Checks if all the selected text is embedded into an XML Element with name i_strElementName . Common examples for the parameter i_strElementName are "strong", "bold" or "italic".

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

LastTextPosition

See also

Property: LastTextPosition as Long

Description
Set or get the rightmost text position index of the range object. This index is always greater or equal to FirstTextPosition. Indexing starts with 0 at the document beginning, and increments with every different position that the text cursor can occupy. Incrementing the test position by 1, has the same effect as the cursor-right key. Decreasing the test position by 1 has the same effect as the cursor-left key.

If you set LastTextPosition to a value less then the current FirstTextPosition, FirstTextPosition gets set to the new LastTextPosition .

HINT: Use text cursor positions with care, since this is a costly operation compared to XMLData based cursor positioning.

Errors
2001 The authentic range object, or its related view object is not valid.
2005 Invalid address for the return parameter was specified.
2006 A text position outside the document was specified.

Examples

```
' ----------------------------------------
' XMLSpy scripting environment - VBScript
' ----------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

nDocStartPosition = objAuthenticView.DocumentBegin.FirstTextPosition
nDocEndPosition = objAuthenticView.DocumentEnd.FirstTextPosition

' let's create a range that selects the whole document
' in an inefficient way
Dim objRange
' we need to get a (any) range object first
Set objRange = objAuthenticView.DocumentBegin
objRange.FirstTextPosition = nDocStartPosition
objRange.LastTextPosition = nDocEndPosition

' let's check if we got it right
```



```
If objRange.isEqual(objAuthenticView.WholeDocument) Then
     MsgBox "Test using direct text cursor positioning was ok"
Else
     MsgBox "Oops!"
End If
```

LastXMLData

See also

Property: LastXMLData as XMLData

Description
Set or get the last XMLData element in the underlying document that is partially or completely selected by the range. The exact end of the selection is defined by the LastXMLDataOffset attribute.

Whenever you set LastXMLData to a new data object, LastXMLDataOffset gets set to the last cursor position inside this element. Only XMLData objects that have a cursor position may be used. If you set LastXMLData / LastXMLDataOffset, select a position less then the current FirstXMLData / FirstXMLDataOffset, the latter gets moved to the new end position.

HINT: You can use the FirstXMLData and LastXMLData properties to directly access and manipulate the underlying XML document in those cases, where the methods available with the AuthenticRange object are not sufficient.

Errors

2001	The authentic range object, or its related view object is not valid.
2005	Invalid address for the return parameter was specified.
2008	Internal error
2009	The XMLData object cannot be accessed.

LastXMLDataOffset

See also

Property: LastXMLDataOffset as Long

Description
Set or get the cursor position inside LastXMLData element for the end of the range.

Offset positions are based on the characters returned by the Text property and start with 0. When setting a new offset, use -1 to set the offset to the last possible position in the element. The following cases require specific attention:

- The textual form of entries in Combo Boxes, Check Boxes and similar controls can be different from what you see on the screen. Although, the data offset is based on this text, there only two valid offset positions, one at the beginning and one at the end of the entry. An attempt to set the offset to somewhere in the middle of the entry, will result in the offset being set to the end.
- The textual form of XML Entities might differ in length from their representation on the screen. The offset is based on this textual form.

If LastXMLData / LastXMLDataOffset selects a position before FirstXMLData / FirstXMLDataOffset, the latter gets moved to the new end position.

Errors

2001 The authentic range object, or its related view object is not valid.
2005 Invalid offset was specified.
Invalid address for the return parameter was specified.

Examples

```
' ---------------------------------------------
' XMLSpy scripting environment - VBScript
' Select the complete text of an XMLData element
' using XMLData based selection and ExpandTo
' ---------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

' first we use the XMLData based range properties
' to select all text of the first XMLData element
' in the current selection
Dim objRange
Set objRange = objAuthenticView.Selection
objRange.FirstXMLDataOffset = 0  ' start at beginning of element text
objRange.LastXMLData = objRange.FirstXMLData  ' select only one element
objRange.LastXMLDataOffset = -1  ' select till its end

' the same can be achieved with the ExpandTo method
Dim objRange2
Set objRange2 = objAuthenticView.Selection.ExpandTo(spyAuthenticTag)

' were we successful?
If objRange.IsEqual(objRange2) Then
     objRange.Select()
Else
     MsgBox "Ooops"
End If
```

MoveBegin

See also

Method: `MoveBegin` (*eKind* as `SPYAuthenticElementKind`, *nCount* as Long) as `AuthenticRange`

Description

Move the beginning of the range to the beginning of the `nCount` element of type `eKind` . Counting starts at the current beginning of the range object.

Use positive numbers for `nCount` to move towards the document end, use negative numbers to move towards document beginning. The end of the range stays unmoved, unless the new beginning would be larger than it. In this case, the end is moved to the new beginning. The method returns the modified range object.

Errors

2001 The authentic range object, or its related view object is no longer valid.
2003 Target lies after end of document.
2004 Target lies before beginning of document.
2005 Invalid element kind specified.
Invalid address for the return parameter was specified.

MoveEnd

See also

Method: MoveEnd (*eKind* as SPYAuthenticElementKind, *nCount* as Long) as AuthenticRange

Description
Move the end of the range to the begin of the nCount element of type eKind . Counting starts at the current end of the range object.

Use positive numbers for nCount to move towards the document end, use negative numbers to move towards document beginning. The beginning of the range stays unmoved, unless the new end would be less than it. In this case, the beginning gets moved to the new end. The method returns the modified range object.

Errors

2001	The authentic range object, or its related view object is no longer valid.
2003	Target lies after end of document.
2004	Target lies before begin of document.
2005	Invalid element kind specified. Invalid address for the return parameter was specified.

MoveRowDown

See also

Method: MoveRowDown() as Boolean

Description
If the beginning of the range is inside a dynamic table and selects a row which is not the last row in this table, this method swaps this row with the row immediately below. The selection of the range moves with the row, but does not otherwise change. The function returns *true* if the move operation was successful, otherwise *false*.

Errors

2001	The authentic range object or its related view object is no longer valid.
2005	Invalid address for the return parameter was specified.

MoveRowUp

See also

Method: MoveRowUp() as Boolean

Description
If the beginning of the range is inside a dynamic table and selects a row which is not the first row in this table, this method swaps this row with the row above. The selection of the range moves with the row, but does not change otherwise. The function returns *true* if the move operation was successful, otherwise *false*.

Errors

2001	The authentic range object, or its related view object is no longer valid.
2005	Invalid address for the return parameter was specified.

Examples
See JScript - Bubble Sort Dynamic Tables.

Parent

See also

Property: Parent as AuthenticView (read-only)

Description
Access the view that owns this range object.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Paste

See also

Method: Paste() as Boolean

Description
Returns *False* if the copy/paste buffer is empty, or its content cannot replace the current selection.

Otherwise, deletes the current selection, inserts the content of the copy/paste buffer, and returns *True*.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.

PerformAction

See also

Method: PerformAction (*eAction* as SPYAuthenticActions, *strElementName* as String) as Boolean

Description
PerformAction and its related methods, give access to the entry-helper functions of Authentic. This function allows easy and consistent modification of the document content without a need to know exactly where the modification will take place. The beginning of the range object is used to locate the next valid location where the specified action can be performed. If no such location can be found, the method returns *False*. Otherwise, the document gets modified and the range points to the beginning of the modification.

HINT: To find out element names that can be passed as the second parameter use CanPerformActionWith.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2005 Invalid address for the return parameter was specified.
2007 Invalid action was specified.

Examples

```
' ----------------------------------------
' XMLSpy scripting environment - VBScript
' Insert the innermost element
' ----------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' we determine the elements that can be inserted at the current position
Dim arrElements()
objRange.CanPerformActionWith spyAuthenticInsertBefore, arrElements

' we insert the first (innermost) element
If UBound(arrElements) >= 0 Then
     objRange.PerformAction spyAuthenticInsertBefore, arrElements(0)
     ' objRange now points to the beginning of the inserted element
     ' we set a default value and position at its end
     objRange.Text = "Hello"
     objRange.ExpandTo(spyAuthenticTag).CollapsToEnd().Select
Else
     MsgBox "Can't insert any elements at current position"
End If
```

Select

See also

Method: `Select()`

Description
Makes this range the current user interface selection. You can achieve the same result using: '*objRange.Parent.Selection = objRange*'

Errors
2001 The authentic range object or its related view object is no longer valid.

Examples

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' ---------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

' set current selection to end of document
objAuthenticView.DocumentEnd.Select()
```

SelectNext

See also

Method: `SelectNext` (*`eKind`* as `SPYAuthenticElementKind`) as `AuthenticRange`

Description
Selects the element of type `eKind` after the current end of the range. The method returns the modified range object.

Errors
2001 The authentic range object, or its related view object is no longer valid.

2003 Target lies after end of document.
2005 Invalid element kind specified.
Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Scan through the whole document word-by-word
' ------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

Dim objRange
Set objRange = objAuthenticView.DocumentBegin
Dim bEndOfDocument
bEndOfDocument = False

On Error Resume Next
While Not bEndOfDocument
     objRange.SelectNext(spyAuthenticWord).Select
     If ((Err.number - vbObjecterror) = 2003) Then
            bEndOfDocument = True
            Err.Clear
     ElseIf (Err.number <> 0) Then
            Err.Raise  ' forward error
     End If
Wend
```

SelectPrevious

See also

Method: GotoPrevious (*eKind* as SPYAuthenticElementKind) as AuthenticRange

Description
Selects the element of type eKind before the current beginning of the range. The method returns the modified range object.

Errors
2001 The authentic range object, or its related view object is no longer valid.
2004 Target lies before begin of document.
2005 Invalid element kind specified.
Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Scan through the whole document tag-by-tag
' ------------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

Dim objRange
Set objRange = objAuthenticView.DocumentEnd
Dim bEndOfDocument
bBeginOfDocument = False

On Error Resume Next
```



```
While Not bBeginOfDocument
     objRange.SelectPrevious(spyAuthenticTag).Select
     If ((Err.number - vbObjecterror) = 2004) Then
            bBeginOfDocument = True
            Err.Clear
     ElseIf (Err.number <> 0) Then
            Err.Raise  ' forward error
     End If
Wend
```

SetElementAttributeValue

See also

Method: SetElementAttributeValue (*strElementName* as String, *strAttributeName* as String, *strAttributeValue* as String)

Description

Retrieve the value of the attribute specified in strAttributeName for the element identified with strElementName. If the attribute is supported but has no value assigned, the empty string is returned. To find out the names of attributes supported by an element, use GetElementAttributeNames, or HasElementAttribute.

Errors

2001 The authentic range object or its related view object is no longer valid.
2005 Invalid element name was specified.
Invalid attribute name was specified.
Invalid attribute value was specified.

Examples

```
' ------------------------------------------
' XMLSpy scripting environment - VBScript
' Get and set element attributes
' ------------------------------------------
Dim objRange
' we assume that the active document is open in authentic view mode
Set objRange = Application.ActiveDocument.AuthenticView.Selection

' first we find out all the elements below the beginning of the range
Dim arrElements
objRange.GetElementHierarchy arrElements

If IsArray(arrElements) Then
     If UBound(arrElements) >= 0 Then
            ' we use the top level element and find out its valid attributes
            Dim arrAttrs()
            objRange.GetElementAttributeNames arrElements(0), arrAttrs

            If UBound(arrAttrs) >= 0 Then
                  ' we retrieve the current value of the first valid
attribute
                  Dim strAttrVal
                  strAttrVal = objRange.GetElementAttributeValue
(arrElements(0), arrAttrs(0))
                  msgbox "current value of " & arrElements(0) & "//" &
arrAttrs(0) & " is: " & strAttrVal

                  ' we change this value and read it again
                  strAttrVal = "Hello"
                  objRange.SetElementAttributeValue arrElements(0),
arrAttrs(0), strAttrVal
```

```
                    strAttrVal = objRange.GetElementAttributeValue
  (arrElements(0), arrAttrs(0))
                    msgbox "new value of " & arrElements(0) & "//" &
  arrAttrs(0) & " is: " & strAttrVal
               End If
      End If
End If
```

SetFromRange

See also

Method: SetFromRange (*objSrcRange* as AuthenticRange)

Description
Sets the range object to the same beginning and end positions as objSrcRange .

Errors
2001 One of the two range objects, is invalid.
2005 Null object was specified as source object.

SetVariableValue

Method: SetVariableValue(strName as string, strValue as string)

Return Value
Sets the value (second parameter) of the variable named in the first parameter.

Errors
2201 Invalid object.
2202 No context.
2204 No such variable in scope
2205 Variable cannot be evaluated
2206 Variable returns sequence
2207 Variable read-only
2208 No modification allowed

Text

See also

Property: Text as String

Description
Set or get the textual content selected by the range object.

The number of characters retrieved are not necessarily identical, as there are text cursor positions between the beginning and end of the selected range. Most document elements support an end cursor position different to the beginning cursor position of the following element. Drop-down lists maintain only one cursor position, but can select strings of any length. In the case of radio buttons and check boxes, the text property value holds the string of the corresponding XML element.

If the range selects more then one element, the text is the concatenation of the single texts. XML entities are expanded so that '&' is expected as '&'.

Setting the text to the empty string, does not delete any XML elements. Use Cut, Delete or PerformAction instead.

Errors

2001 The authentic range object or its related view object is no longer valid.
2005 Invalid address for a return parameter was specified.

3.2.6 AuthenticView

See also

Properties	Methods	Events
Application	Goto	OnBeforeCopy
AsXMLString	IsRedoEnabled	OnBeforeCut
DocumentBegin	IsUndoEnabled	OnBeforeDelete
DocumentEnd	Print	OnBeforeDrop
Event	Redo	OnBeforePaste
MarkupVisible	Undo	OnDragOver
Parent	UpdateXMLInstanceEntities	OnKeyBoardEvent
Selection		OnMouseEvent
XMLDataRoot		OnSelectionChanged
WholeDocument		

Description

AuthenticView and its child objects AuthenticRange and AuthenticDataTransfer provide you with an interface for Authentic View, which allow easy and consistent modification of document contents. These interfaces replace the following interfaces which are marked now as **obsolete**:

OldAuthenticView (old name was DocEditView)
AuthenticSelection (old name was DocEditSelection, superseded by AuthenticRange)
AuthenticEvent (old name was DocEditEvent)Interfaces

AuthenticView gives you easy access to specific features such as printing, the multi-level undo buffer, and the current cursor selection, or position.

AuthenticView uses objects of type AuthenticRange to make navigation inside the document straight-forward, and to allow for the flexible selection of logical text elements. Use the properties DocumentBegin, DocumentEnd, or WholeDocument for simple selections, while using the Goto method for more complex selections. To navigate relative to a given document range, see the methods and properties of the AuthenticRange object.

Examples

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' secure access to authentic view object
' ---------------------------------------
Dim objDocument
Set objDocument = Application.ActiveDocument
If (Not objDocument Is Nothing) Then
     ' we have an active document, now check for view mode
     If (objDocument.CurrentViewMode <> spyViewAuthentic) Then
            If (Not objDocument.SwitchViewMode (spyViewAuthentic)) Then
```

```
                    MsgBox "Active document does not support authentic view
mode"
               Else
                    ' now it is safe to access the authentic view object
                    Dim objAuthenticView
                    Set objAuthenticView = objDocument.AuthenticView
                    ' now use the authentic view object

               End If
          End If
Else
          MsgBox "No document is open"
End If
```

Events

OnBeforeCopy

See also

Event: `OnBeforeCopy()` as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticBeforeCopy()
     'On_AuthenticBeforeCopy=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function  On_AuthenticBeforeCopy()
{
     //return false; /*to disable operation*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (21, ...)  //nEventID=21
```

Description

This event gets triggered before a copy operation gets performed on the document. Return *True* (or nothing) to allow copy operation. Return *False* to disable copying.

OnBeforeCut

See also

Event: `OnBeforeCut()` as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticBeforeCut()
     'On_AuthenticBeforeCut=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function  On_AuthenticBeforeCut()
{
     //return false; /*to disable operation*/
}
```


XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (20, ...)   //nEventID=20
```

Description

This event gets triggered before a cut operation gets performed on the document. Return *True* (or nothing) to allow cut operation. Return *False* to disable operation.

OnBeforeDelete

See also

Event: `OnBeforeDelete()` as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticBeforeDelete()
    'On_AuthenticBeforeDelete=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function On_AuthenticBeforeDelete()
{
    //return false;/*to disable operation*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (22, ...)   //nEventID=22
```

Description

This event gets triggered before a delete operation gets performed on the document. Return *True* (or nothing) to allow delete operation. Return *False* to disable operation.

OnBeforeDrop

See also

Event: `OnBeforeDrop (i_nXPos` as Long, `i_nYPos` as Long, `i_ipRange` as `AuthenticRange`, `i_ipData` as `cancel` Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticBeforeDrop(nXPos, nYPos, objRange, objData)
    'On_AuthenticBeforeDrop=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function On_AuthenticBeforeDrop(nXPos, nYPos, objRange, objData)
{
    //return false;/*to disable operation*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (11, ...)   //nEventID=11
```

Description

This event gets triggered whenever a previously dragged object gets dropped inside the

application window. All event related information gets passed as parameters.

The first two parameters specify the mouse position at the time when the event occurred. The parameter *objRange* passes a range object that selects the XML element below the mouse position. The value of this parameter might be *NULL*. Be sure to check before you access the range object. The parameter *objData* allows to access information about the object being dragged.

Return *False* to cancle the drop operation. Return *True* (or nothing) to continue normal operation.

Examples

```
'
--------------------------------------------------------------------------------
' VB code snippet - connecting to object level events
'
--------------------------------------------------------------------------------
' access XMLSpy (without checking for any errors)
Dim objSpy As XMLSpyLib.Application
Set objSpy = GetObject("", "XMLSpy.Application")

' this is the event callback routine connected to the OnBeforeDrop
' event of object objView
Private Function objView_OnBeforeDrop(ByVal i_nXPos As Long, ByVal i_nYPos
As Long,
                                      ByVal i_ipRange As IAuthenticRange,
                                      ByVal i_ipData As
IAuthenticDataTransfer) As Boolean

    If (Not i_ipRange Is Nothing) Then
        MsgBox ("Dropping on content is prohibited");
        Return False;
    Else
        Return True;
    End If
End Function

' use VBA keyword WithEvents to connect to object-level event
Dim WithEvents objView As XMLSpyLib.AuthenticView
Set objView = objSpy.ActiveDocument.AuthenticView

' continue here with something useful ...
' and serve the windows message loop
```

OnBeforePaste

See also

Event: OnBeforePaste (*objData* as Variant, *strType* as String) as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticBeforePaste(objData, strType)
    'On_AuthenticBeforePaste=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function On_AuthenticBeforePaste(objData, strType)
{
    //return false; /*to disable operation*/
}
```


XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (19, ...)      //nEventID=19
```

Description

This event gets triggered before a paste operation gets performed on the document. The parameter *strType* is one of "TEXT", "UNICODETEXT" or "IUNKNOWN". In the first two cases *objData* contains a string representation of the object that will be pasted. In the later case, *objData* contains a pointer to an IUnknown COM interface.

Return *True* (or nothing) to allow paste operation. Return *False* to disable operation.

OnBeforeSave

Event: `OnBeforeSave` (SaveAs flag) as Boolean

Description: `OnBeforeSave` gives the opportunity to e.g. warn the user about overwriting the existing XML document, or to make the document read-only when specific circumstances are not met. The event will be fired before the file dialog is shown. (Please note, that the event fires when saving the XML document, and not when saving the SPS design in StyleVision.)

OnDragOver

See also

Event: `OnDragOver` (*nXPos* as Long, *nYPos* as Long, *eMouseEvent* as SPYMouseEvent, *objRange* as AuthenticRange, *objData* as AuthenticDataTransfer) as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticDragOver(nXPos, nYPos, eMouseEvent, objRange,
objData)
      'On_AuthenticDragOver=False 'to disable operation
End Function
```

XMLSpy scripting environment - JScript:

```
function   On_AuthenticDragOver(nXPos, nYPos, eMouseEvent, objRange, objData)
{
      //return false; /*to disable operation*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (10, ...)   //nEventID=10
```

Description

This event gets triggered whenever an object from within our outside of Authentic View gets dragged with the mouse over the application window. All event related information gets passed as parameters.

The first three parameters specify the mouse position, the mouse button status and the status of the virtual keys at the time when the event occurred. The parameter *objRange* passes a range object that selects the XML element below the mouse position. The value of this parameter might be *NULL*. Be sure to check before you access the range object. The parameter *objData* allows to access information about the object being dragged.

Return *False* to cancel the drag operation. Return *True* (or nothing) to continue normal

operation.

Examples

```
'
-------------------------------------------------------------------------
' VB code snippet - connecting to object level events
'
-------------------------------------------------------------------------
' access XMLSpy (without checking for any errors)
Dim objSpy As XMLSpyLib.Application
Set objSpy = GetObject("", "XMLSpy.Application")

' this is the event callback routine connected to the OnDragOver
' event of object objView
Private Function objView_OnDragOver(ByVal i_nXPos As Long, ByVal i_nYPos As
Long,
                                    ByVal i_eMouseEvent As SPYMouseEvent,
                                    ByVal i_ipRange As IAuthenticRange,
                                    ByVal i_ipData As
IAuthenticDataTransfer) As Boolean

    If (((i_eMouseEvent And spyShiftKeyDownMask) <> 0) And
              (Not i_ipRange Is Nothing)) Then
        MsgBox ("Floating over element " &
i_ipRange.FirstXMLData.Parent.Name);
    End If

    Return True;
End Function

' use VBA keyword WithEvents to connect to object-level event
Dim WithEvents objView As XMLSpyLib.AuthenticView
Set objView = objSpy.ActiveDocument.AuthenticView

' continue here with something useful ...
' and serve the windows message loop
```

OnKeyboardEvent

See also

Event: `OnKeyboardEvent` (*eKeyEvent* as SPYKeyEvent, *nKeyCode* as Long, *nVirtualKeyStatus* as Long) as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticKeyboardEvent(eKeyEvent, nKeyCode,
nVirtualKeyStatus)
    'On_AuthenticKeyboardEvent=True 'to cancel bubbling of event
End Function
```

XMLSpy scripting environment - JScript:

```
function On_AuthenticKeyboardEvent(eKeyEvent, nKeyCode, nVirtualKeyStatus)
{
    //return true; /*to cancel bubbling of event*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (30, ...)   //nEventID=30
```

Description

This event gets triggered for *WM_KEYDOWN*, *WM_KEYUP* and *WM_CHAR* Windows

messages.

The actual message type is available in the *eKeyEvent* parameter. The status of virtual keys is combined in the parameter *nVirtualKeyStatus*. Use the bit-masks defined in the enumeration datatype SPYVirtualKeyMask, to test for the different keys or their combinations.

OnLoad

Event: OnLoad ()

Description: OnLoad can be used e.g. to restrict some AuthenticView functionality, as shown in the example below:

```
function On_AuthenticLoad(  )
{
	// We are disabling all entry helpers in order to prevent user from
manipulating XML tree
	AuthenticView.DisableElementEntryHelper();
	AuthenticView.DisableAttributeEntryHelper();

	// We are also disabling the markup buttons for the same purpose
	AuthenticView.SetToolbarButtonState( 'AuthenticMarkupSmall',
authenticToolbarButtonDisabled );
	AuthenticView.SetToolbarButtonState( 'AuthenticMarkupLarge',
authenticToolbarButtonDisabled );
	AuthenticView.SetToolbarButtonState( 'AuthenticMarkupMixed',
authenticToolbarButtonDisabled );
}
```

In the example the status of the Markup Small, Markup Large, Markup Mixed toolbar buttons are manipulated with the help of button identifiers. See complete list.

OnMouseEvent

See also

Event: OnMouseEvent (*nXPos* as Long, *nYPos* as Long, *eMouseEvent* as SPYMouseEvent , *objRange* as AuthenticRange) as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticMouseEvent(nXPos,nYPos,eMouseEvent,objRange)
	'On_AuthenticMouseEvent=True 'to cancel bubbling of event
End Function
```

XMLSpy scripting environment - JScript:

```
function  On_AuthenticMouseEvent(nXPos,nYPos,eMouseEvent,objRange)
{
	//return true;/*to cancel bubbling of event*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (31, ...)  //nEventID=31
```

Description
This event gets triggered for every mouse movement and mouse button Windows message.

The actual message type and the mouse buttons status, is available in the *eMouseEvent* parameter. Use the bit-masks defined in the enumeration datatype SPYMouseEvent to test for

the different messages, button status, and their combinations.

The parameter *objRange* identifies the part of the document found at the current mouse cursor position. The range objects always selects a complete tag of the document. (This might change in future versions, when a more precise positioning mechanism becomes available). If no selectable part of the document is found at the current position, the range object is *null*.

OnSelectionChanged

See also

Event: `OnSelectionChanged` (*`objNewSelection`* as `AuthenticRange`)

XMLSpy scripting environment - VBScript:

```
Function On_AuthenticSelectionChanged(objNewSelection)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_AuthenticSelectionChanged(objNewSelection)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (23, ...)  //nEventID=23
```

Description
This event gets triggered whenever the selection in the user interface changes.

Examples

```
'
'--------------------------------------------------------------------------
' VB code snippet - connecting to object level events
'
'--------------------------------------------------------------------------
' access XMLSpy (without checking for any errors)
Dim objSpy As XMLSpyLib.Application
Set objSpy = GetObject("", "XMLSpy.Application")

' this is the event callback routine connected to the OnSelectionChanged
' event of object objView
Private Sub objView_OnSelectionChanged (ByVal i_ipNewRange As
XMLSpyLib.IAuthenticRange)
    MsgBox ("new selection: " & i_ipNewRange.Text)
End Sub

' use VBA keyword WithEvents to connect to object-level event
Dim WithEvents objView As XMLSpyLib.AuthenticView
Set objView = objSpy.ActiveDocument.AuthenticView

' continue here with something useful ...
' and serve the windows message loop
```

OnToolbarButtonClicked

Event: `OnToolbarButtonClicked` (Button identifier)

Description: `OnToolbarButtonClicked` is fired when a toolbar button was clicked by user. The parameter button identifier helps to determine which button was clicked. The list of predefined button identifiers is below:

- AuthenticPrint
- AuthenticPrintPreview
- AuthenticUndo
- AuthenticRedo
- AuthenticCut
- AuthenticCopy
- AuthenticPaste
- AuthenticClear
- AuthenticMarkupHide
- AuthenticMarkupLarge
- AuthenticMarkupMixed
- AuthenticMarkupSmall
- AuthenticValidate
- AuthenticChangeWorkingDBXMLCell
- AuthenticSave
- AuthenticSaveAs
- AuthenticReload
- AuthenticTableInsertRow
- AuthenticTableAppendRow
- AuthenticTableDeleteRow
- AuthenticTableInsertCol
- AuthenticTableAppendCol
- AuthenticTableDeleteCol
- AuthenticTableJoinCellRight
- AuthenticTableJoinCellLeft
- AuthenticTableJoinCellAbove
- AuthenticTableJoinCellBelow
- AuthenticTableSplitCellHorizontally
- AuthenticTableSplitCellVertically
- AuthenticTableAlignCellContentTop
- AuthenticTableCenterCellVertically
- AuthenticTableAlignCellContentBottom
- AuthenticTableAlignCellContentLeft
- AuthenticTableCenterCellContent
- AuthenticTableAlignCellContentRight
- AuthenticTableJustifyCellContent
- AuthenticTableInsertTable
- AuthenticTableDeleteTable
- AuthenticTableProperties
- AuthenticAppendRow
- AuthenticInsertRow
- AuthenticDuplicateRow
- AuthenticMoveRowUp
- AuthenticMoveRowDown
- AuthenticDeleteRow
- AuthenticDefineEntities
- AuthenticXMLSignature

For custom buttons the user might add his own identifiers. Please, note that the user must take

care, as the identifiers are not checked for uniqueness. The same identifiers can be used to identify buttons in the `Set/GetToolbarState()` COM API calls. By adding code for different buttons, the user is in the position to completely redefine the AuthenticView toolbar behavior, adding own methods for table manipulation, etc.

OnToolbarButtonExecuted

Event: `OnToolbarButtonExecuted` (Button identifier)

Description: `OnToolbarButtonClicked` is fired when a toolbar button was clicked by user. The parameter button identifier helps to determine which button was clicked. See the list of predefined button identifiers.

`OnToolbarButtonExecuted` is fired after the toolbar action was executed. It is useful e.g. to add update code, as shown in the example below:

```
//event fired when a toolbar button action was executed
function On_AuthenticToolbarButtonExecuted( varBtnIdentifier )
{
	// After whatever command user has executed - make sure to update
toolbar button states
	UpdateOwnToolbarButtonStates();
}
```

In this case `UpdateOwnToolbarButtonStates` is a user function defined in the Global Declarations.

OnUserAddedXMLNode

Event: `OnUserAddedXMLNode` (XML node)

Description: `OnUserAddedXMLNode` will be fired when the user adds an XML node as a primary action. This happens in the situations, where the user clicks on

- auto-add hyperlinks (see example OnUserAddedXMLNode.sps)
- the Insert…, Insert After…, Insert Before… context menu items
- Append row, Insert row toolbar buttons
- Insert After…, Insert Before… actions in element entry helper (outside StyleVision)

The event doesn't get fired on Duplicate row, or when the node was added externally (e.g. via COM API), or on Apply (e.g. Text State Icons), or when in XML table operations or in DB operations.

The event parameter is the XML node object, which was added giving the user an opportunity to manipulate the XML node added. An elaborate example for an event handler can be found in the `OnUserAddedXMLNode.sps` file.

Application

See also

Property: `Application` as `Application` (read-only)

Description
Accesses the XMLSpy application object.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

AsXMLString

See also

Property: `AsXMLString` as String

Description
Returns or sets the document content as an XML string. Setting the content to a new value does not change the schema file or sps file in use. If the new `XMLString` does not match the actual schema file error 2011 gets returned.

Errors
2000 The authentic view object is no longer valid.
2011 `AsXMLString` was set to a value which is no valid XML for the current schema file.

ContextMenu

Property: `ContextMenu()` as `ContextMenu`

Description
The property `ContextMenu` gives access to customize the context menu. The best place to do it is in the event handler `OnContextMenuActivated`.

Errors
2000 Invalid object.
2005 Invalid parameter.

CreateXMLNode

Method: `CreateXMLNode` (*`nKind`* as `SPYXMLDataKind`) as `XMLData`

Return Value
The method returns the new `XMLData` object.

Description
To create a new `XMLData` object use the `CreateXMLNode()` method. See also Using XMLData.

Errors
2000 Invalid object.
2012 Cannot create XML node.

DisableAttributeEntryHelper

Method: `DisableAttributeEntryHelper()`

Description
`DisableAttributeEntryHelper()` disables the attribute entry helper in XMLSpy, Authentic Desktop and Authentic Browser plug-in.

Errors
2000 Invalid object.

DisableElementEntryHelper

Method: `DisableElementEntryHelper()`

Description
`DisableElementEntryHelper()` disables the element entry helper in XMLSpy, Authentic Desktop and Authentic Browser plug-in.

Errors
2000 Invalid object.

DisableEntityEntryHelper

Method: `DisableEntityEntryHelper()`

Description
`DisableEntityEntryHelper()` disables the entity entry helper in XMLSpy, Authentic Desktop and Authentic Browser plug-in.

Errors
2000 Invalid object.

DocumentBegin

See also

Property: `DocumentBegin` as `AuthenticRange` (read-only)

Description
Retrieve a range object that points to the beginning of the document.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

DocumentEnd

See also

Property: `DocumentEnd` as `AuthenticRange` (read-only)

Description
Retrieve a range object that points to the end of the document.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

DoNotPerformStandardAction

Method: `DoNotPerformStandardAction ()`

Description

DoNotPerformStandardAction() serves as cancel bubble for macros, and stops further execution after macro has finished.

Errors
2000 Invalid object.

EvaluateXPath

Method: EvaluateXPath (XMLData as XMLData, strExpression as string) strValue as string

Return Value
The method returns a string

Description
EvaluateXPath() executes an XPath expressions with the given XML context node. The result is returned as string, in the case of a sequence it is a space-separated string.

Errors
2000 Invalid object.
2005 Invalid parameter.
2008 Internal error.
2013 XPath error.

Event

See also

Property: Event as AuthenticEvent (read-only)

Description
This property gives access to parameters of the last event in the same way as OldAuthenticView.event does. Since all events for the scripting environment and external clients are now available with parameters this Event property should only be used from within IDE-Plugins.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

EventContext

Property: EventContext() as EventContext

Description
EventContext property gives access to the running macros context. See the EventContext interface description for more details.

Errors
2000 Invalid object.

GetToolbarButtonState

Method: GetToolbarButtonState (ButtonIdentifier as string) as AuthenticToolbarButtonState

Return Value
The method returns `AuthenticToolbarButtonState`

Description
`Get/SetToolbarButtonState` queries the status of a toolbar button, and lets the user disable or enable the button, identified via its button identifier (see list above). One usage is to disable toolbar buttons permanently. Another usage is to put `SetToolbarButtonState` in the `OnSelectionChanged` event handler, as toolbar buttons are updated regularly when the selection changes in the document.

Toolbar button states are given by the listed enumerations.

The default state means that the enable/disable of the button is governed by AuthenticView. When the user sets the button state to enable or disable, the button remains in that state as long as the user does not change it.

Errors
2000 Invalid object.
2005 Invalid parameter.
2008 Internal error.
2014 Invalid button identifier.

Goto

See also

Method: `Goto` (*`eKind`* as SPYAuthenticElementKind, *`nCount`* as Long, *`eFrom`* as *`SPYAuthenticDocumentPosition`*) as *`AuthenticRange`*

Description
Retrieve a range object that points to the beginning of the *`nCount`* element of type *`eKind`*. The start position is defined by the parameter *`eFrom`*. Use positive values for *`nCount`* to navigate to the document end. Use negative values to navigate towards the beginning of the document.

Errors
2000 The authentic view object is no longer valid.
2003 Target lies after end of document.
2004 Target lies before beginning of document.
2005 Invalid element kind specified.
The document position to start from is not one of *spyAuthenticDocumentBegin* or *spyAuthenticDocumentEnd*.
Invalid address for the return parameter was specified.

Examples

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' ---------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

On Error Resume Next
Dim objRange
' goto beginning of first table in document
Set objRange = objAuthenticView.Goto (spyAuthenticTable, 1,
spyAuthenticDocumentBegin)
If (Err.number = 0) Then
```



```
    objRange.Select()
Else
    MsgBox "No table found in document"
End If
```

IsRedoEnabled

See also

Property: `IsRedoEnabled` as Boolean (read-only)

Description
True if redo steps are available and `Redo` is possible.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

IsUndoEnabled

See also

Property: `IsUndoEnabled` as Boolean (read-only)

Description
True if undo steps are available and `Undo` is possible.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

MarkupVisibility

See also

Property: `MarkupVisibility` as `SPYAuthenticMarkupVisibility`

Description
Set or get current visibility of markup.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid enumeration value was specified.
Invalid address for the return parameter was specified.

Parent

See also

Property: `Parent` as `Document` (read-only)

Description
Access the document shown in this view.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Print

See also

Method: `Print` (*`bWithPreview`* as Boolean, *`bPromptUser`* as Boolean)

Description
Print the document shown in this view. If *bWithPreview* is set to *True*, the print preview dialog pops up. If *bPromptUser* is set to *True*, the print dialog pops up. If both parameters are set to *False*, the document gets printed without further user interaction.

Errors
2000 The authentic view object is no longer valid.

Redo

See also

Method: `Redo()` as Boolean

Description
Redo the modification undone by the last undo command.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

Selection

See also

Property: `Selection` as `AuthenticRange`

Description
Set or get current text selection in user interface.

Errors
2000 The authentic view object is no longer valid.
2002 No cursor selection is active.
2005 Invalid address for the return parameter was specified.

Examples

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' ---------------------------------------
Dim objAuthenticView
' we assume that the active document is open in authentic view mode
Set objAuthenticView = Application.ActiveDocument.AuthenticView

' if we are the end of the document, re-start at the beginning
```



```
If (objAuthenticView.Selection.IsEqual(objAuthenticView.DocumentEnd)) Then
     objAuthenticView.Selection = objAuthenticView.DocumentBegin
Else
     ' objAuthenticView.Selection =
objAuthenticView.Selection.GotoNextCursorPosition()
     ' or shorter:
      objAuthenticView.Selection.GotoNextCursorPosition().Select
End If
```

SetToolbarButtonState

Method: `SetToolbarButtonState` (`ButtonIdentifier` as string, `AuthenticToolbarButtonState` state)

Description

`Get/SetToolbarButtonState` queries the status of a toolbar button, and lets the user disable or enable the button, identified via its button identifier (see list above). One usage is to disable toolbar buttons permanently. Another usage is to put `SetToolbarButtonState` in the `OnSelectionChanged` event handler, as toolbar buttons are updated regularly when the selection changes in the document.

Toolbar button states are given by the listed enumerations.

The default state means that the enable/disable of the button is governed by AuthenticView. When the user sets the button state to enable or disable, the button remains in that state as long as the user does not change it.

Errors

2000 Invalid object.
2008 Internal error.
2014 Invalid button identifier.

Undo

See also

Method: Undo() as Boolean

Description

Undo the last modification of the document from within this view.

Errors

2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

UpdateXMLInstanceEntities

See also

Method: `UpdateXMLInstanceEntities()`

Description

Updates the internal representation of the declared entities, and refills the entry helper. In addition, the validator is reloaded, allowing the XML file to validate correctly. Please note that this may also cause schema files to be reloaded.

Errors
The method never returns an error.

Example

```
// ----------------------------------------
// XMLSpy scripting environment - JavaScript
// ----------------------------------------
if( Application. ActiveDocument &&
( Application. ActiveDocument. CurrentViewMode == 4))
{
     var objDocType;
     objDocType =
Application. ActiveDocument. DocEditView. XMLRoot. GetFirstChild( 10);

     if( objDocType)
     {
          var objEntity = Application. ActiveDocument. CreateChild( 14);
          objEntity. Name = "child";
          objEntity. TextValue = "SYSTEM \"child. xml\"";
          objDocType. AppendChild( objEntity);


Application. ActiveDocument. AuthenticView. UpdateXMLInstanceEntities( );
     }
}
```

WholeDocument

See also

Property: `WholeDocument` as `AuthenticRange` (read-only)

Description
Retrieve a range object that selects the whole document.

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

XMLDataRoot

See also

Property: `XMLDataRoot` as `XMLData` (read-only)

Description
Returns or sets the top-level XMLData element of the current document. This element typically describes the document structure and would be of kind spyXMLDataXMLDocStruct, spyXMLDataXMLEntityDocStruct or spyXMLDataDTDDocStruct..

Errors
2000 The authentic view object is no longer valid.
2005 Invalid address for the return parameter was specified.

3.2.7 CodeGeneratorDlg

See also
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Properties and Methods

Standard automation properties
Application
Parent

Programming language selection properties
ProgrammingLanguage
TemplateFileName
CompatibilityMode

Settings for C++ code
CPPSettings_DOMType
CPPSettings_LibraryType
CPPSettings_UseMFC
CPPSettings_GenerateVC6ProjectFile
CPPSettings_GenerateVSProjectFile

Settings for C# code
CSharpSettings_ProjectType

Dialog handling for above code generation properties
PropertySheetDialogAction

Output path selection properties
OutputPath
OutputPathDialogAction

Presentation of result
OutputResultDialogAction

Description
Use this object to configure the generation of program code for schema files. The method GenerateProgramCode expects a CodeGeneratorDlg as parameter to configure code generation as well as the associated user interactions.

Application

See also
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

CompatibilityMode

Property: `CompatibilityMode` as Boolean
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Set to true to generate code compatible to XMLSpy 2005R3. Set to false to use newly added code-generation features.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_DOMType

Property: `CPPSettings_DOMType` as `SPYDOMType`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines one of the settings that configure generation of C++ code.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_GenerateVC6ProjectFile

Property: `CPPSettings_GenerateVC6ProjectFile` as Boolean
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines one of the settings that configure generation of C++ code.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_GenerateGCCMakefile

Property: `CPPSettings_GenerateGCCMakefile` as Boolean
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Creates makefiles to compile the generated code under Linux with GCC.

Errors

2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_GenerateVSProjectFile

Property: `CSharpSettings_GenerateVSProjectFile` as `SPYProjectType`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description

Defines one of the settings that configure generation of C++ code. Only `spyVisualStudio2005Project (=4)` and `spyVisualStudio2008Project (=5)` and `spyVisualStudio2010Project (=6)` are valid project types.

Errors

2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_LibraryType

Property: `CPPSettings_LibraryType` as `SPYLibType`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description

Defines one of the settings that configure generation of C++ code.

Errors

2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CPPSettings_UseMFC

Property: `CPPSettings_UseMFC` as Boolean
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description

Defines one of the settings that configure generation of C++ code.

Errors

2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

CSharpSettings_ProjectType

Property: `CSharpSettings_ProjectType` as `SPYProjectType`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines the only setting to configure generation of C# code.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

OutputPath

Property: `OutputPath` as String
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Selects the base directory for all generated code.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

OutputPathDialogAction

Property: `OutputPathDialogAction` as `SPYDialogAction`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines how the sub-dialog for selecting the code generation output path gets handled. Set this value to *spyDialogUserInput(2)* to show the dialog with the current value of the OutputPath property as default. Use *spyDialogOK(0)* to hide the dialog from the user.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

OutputResultDialogAction

Property: `OutputResultDialogAction` as `SPYDialogAction`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines how the sub-dialog that asks to show the result of the code generation process gets handled. Set this value to *spyDialogUserInput(2)* to show the dialog. Use *spyDialogOK(0)* to hide the dialog from the user.

Errors

2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

Parent

See also
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Property: `Parent` as `Dialogs` (read-only)

Description
Access the parent of the object.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

ProgrammingLanguage

Property: `ProgrammingLanguage` as `ProgrammingLanguage`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Selects the output language for the code to be generated.

CAUTION: Setting this property to one of C++, C# or Java, changes the property TemplateFileName to the appropriate template file delivered with XMLSpy as well. If you want to generate C++, C# or Java code based on your own templates, set first the programming language and then select your template file.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

PropertySheetDialogAction

Property: `PropertySheetDialogAction` as `SPYDialogAction`
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Defines how the sub-dialog that configures the code generation process gets handled. Set this value to *spyDialogUserInput(2)* to show the dialog with the current values as defaults. Use *spyDialogOK(0)* to hide the dialog from the user.

Errors
2200 The object is no longer valid.
2201 Invalid action passed as parameter or an invalid address was specified for the return parameter.

TemplateFileName

Property: `TemplateFileName` as String
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Selects the code generation template file. XMLSpy comes with template files for C++, C# or Java in the SPL folder of your installation directory.

Setting this property to one of the code generation template files of your XMLSpy installation automatically sets the ProgrammingLanguage property to its appropriate value.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

3.2.8 DatabaseConnection

See also

Properties for import and export
`File` or
`ADOConnection` or
`ODBCConnection`

Properties for import only
`DatabaseKind`
`SQLSelect`
`AsAttributes`
`ExcludeKeys`
`IncludeEmptyElements`
`NumberDateTimeFormat`
`NullReplacement`
`CommentIncluded`

Properties for export only
`CreateMissingTables`
`CreateNew`
`TextFieldLen`
`DatabaseSchema`

Properties for XML Schema from DB Structure generation
`PrimaryKeys`
`ForeignKeys`
`UniqueKeys`
`SchemaExtensionType`
`SchemaFormat`
`ImportColumnsType`

Description
`DatabaseConnection` specifies the parameters for the database connection.

Please note that the properties of the `DatabaseConnection` interface are referring to the settings of the import and export dialogs of XMLSpy.

ADOConnection

See also

Property: ADOConnection as String

Description
The property ADOConnection contains a connection string. Either use this property or ODBCConnection or File to refer to a database.

Errors
No error codes are returned.

Example

```
Dim objSpyConn As DatabaseConnection
Set objSpyConn = objSpy.GetDatabaseSettings

Dim objADO As DataLinks
Set objADO = CreateObject("DataLinks")

If Not (objADO Is Nothing) Then
 Dim objConn As Connection
 Set objConn = objADO.PromptNew
 objSpyConn.ADOConnection = objConn.ConnectionString
End If
```

AsAttributes

See also

Property: AsAttributes as Boolean

Description
Set AsAttributes to true if you want to initialize all import fields to be imported as attributes. Default is false and will initialize all fields to be imported as elements. This property is used only in calls to Application.GetDatabaseImportElementList.

Errors
No error codes are returned.

CommentIncluded

See also

Property: CommentIncluded as Boolean

Description
This property tells whether additional comments are added to the generated XML. Default is true. This property is used only when importing from databases.

Errors
No error codes are returned.

CreateMissingTables

See also

Property: `CreateMissingTables` as Boolean

Description
If `CreateMissingTables` is true, tables which are not already defined in the export database will be created during export. Default is true. This property is used only when exporting to databases.

Errors
No error codes are returned.

CreateNew

See also

Property: `CreateNew` as Boolean

Description
Set `CreateNew` true if you want to create a new database on export. Any existing database will be overwritten. See also `DatabaseConnection.File`. Default is false. This property is used only when exporting to databases.

Errors
No error codes are returned.

DatabaseKind

See also

Property: `DatabaseKind` as `SPYDatabaseKind`

Description
Select the kind of database that gets access. The default value is `spyDB_Unspecified(7)` and is sufficient in most cases. This property is used only when importing from databases.

Errors
No error codes are returned.

DatabaseSchema

See also

Property: DatabaseSchema as String

Description
This property specifies the Schema used for export in Schema aware databases. Default is "". This property is used only when exporting to databases.

Errors
No error codes are returned.

ExcludeKeys

See also

Property: `ExcludeKeys` as Boolean

Description
Set `ExcludeKeys` to true if you want to exclude all key columns from the import data. Default is false. This property is used only when importing from databases.

Errors
No error codes are returned.

File

See also

Property: `File` as String

Description
The property `File` sets the path for the database during export or import. This property can only be used in conjunction with a Microsoft Access database. Either use this property or `ODBCConnection` or `ADOConnection` to refer to the database.

See also Import and Export.

Errors
No error codes are returned.

ForeignKeys

See also

Property: `ForeignKeys` as Boolean

Description
Specifies whether the Foreign Keys constraint is created or not. Default is true. This property is used only when creating a XML Schema from a DB structure.

Errors
No error codes are returned.

ImportColumnsType

See also

Property: `ImportColumnsType` as SPYImportColumnsType

Description
Defines if column information from the DB is saved as element or attribute in the XML Schema. Default is as element. This property is used only when creating a XML Schema from a DB structure.

Errors
No error codes are returned.

IncludeEmptyElements

See also

Property: `IncludeEmptyElements` as Boolean

Description
Set `IncludeEmptyElements` to false if you want to exclude all empty elements. Default is true. This property is used only when importing from databases.

Errors
No error codes are returned.

NullReplacement

See also

Property: NullReplacement as String

Description
This property contains the text value that is used during import for empty elements (null values). Default is "". This property is used only when importing from databases.

Errors
No error codes are returned.

NumberDateTimeFormat

See also

Property: `NumberDateTimeFormat` as `SPYNumberDateTimeFormat`

Description
The property `NumberDateTimeFormat` sets the format of numbers and date- and time-values. Default is `spySystemLocale`. This property is used only when importing from databases.

Errors
No error codes are returned.

ODBCConnection

See also

Property: `ODBCConnection` as String

Description
The property `ODBCConnection` contains a ODBC connection string. Either use this property or `ADOConnection` or `File` to refer to a database.

Errors
No error codes are returned.

PrimaryKeys

See also

Property: `PrimaryKeys` as Boolean

Description
Specifies whether the Primary Keys constraint is created or not. Default is true. This property is used only when creating a XML Schema from a DB structure.

Errors
No error codes are returned.

SchemaExtensionType

See also

Property: `SchemaExtensionType` as SPYSchemaExtensionType

Description
Defines the Schema extension type used during the Schema generation. This property is used only when creating a XML Schema from a DB structure.

See also Create XML Schema from DB Structure.

Errors
No error codes are returned.

SchemaFormat

See also

Property: `SchemaFormat` as SPYSchemaFormat

Description
Defines the Schema format used during the Schema generation. This property is used only when creating a XML Schema from a DB structure.

See also Create XML Schema from DB Structure.

Errors
No error codes are returned.

SQLSelect

See also

Property: `SQLSelect` as String

Description
The SQL query for the import is stored in the property `SQLSelect`. This property is used only when importing from databases. See also Import and Export.

Errors
No error codes are returned.

TextFieldLen

See also

Property: `TextFieldLen` as `long`

Description
The property `TextFieldLen` sets the length for created text fields during the export. Default is 255. This property is used only when exporting to databases.

Errors
No error codes are returned.

UniqueKeys

See also

Property: `UniqueKeys` as `Boolean`

Description
Specifies whether the Unique Keys constraint is created or not. Default is true. This property is used only when creating a XML Schema from a DB structure.

Errors
No error codes are returned.

3.2.9 Dialogs

See also

Properties and Methods

Standard automation properties
Application
Parent

Various dialog objects
CodeGeneratorDlg
FileSelectionDlg
SchemaDocumentationDlg
GenerateSampleXMLDlg
DTDSchemaGeneratorDlg
FindInFilesDlg
WSDLDocumentationDlg
WSDL20DocumentationDlg
XBRLDocumentationDlg

Description
The Dialogs object provides access to different built-in dialogs of XMLSpy. These dialog objects allow to initialize the fields of user dialogs before they get presented to the user or allow to simulate complete user input by your program.

Application

See also

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
2300 The object is no longer valid.
2301 Invalid address for the return parameter was specified.

CodeGeneratorDlg

See also
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Property: `CodeGeneratorDlg` as `CodeGeneratorDlg` (read-only)

Description
Get a new instance of a code generation dialog object. You will need this object to pass the necessary parameters to the code generation methods. Initial values are taken from last usage of the code generation dialog.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

FileSelectionDlg

See also

Property: `FileSelectionDlg` as `FileSelectionDlg` (read-only)

Description
Get a new instance of a file selection dialog object.

File selection dialog objects are passed to you with the some events that signal opening or saving of documents and projects.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

Parent

See also

Property: `Parent` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
2300 The object is no longer valid.
2301 Invalid address for the return parameter was specified.

SchemaDocumentationDlg

See also

Property: `SchemaDocumentationDlg` as `SchemaDocumentationDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of schema documentation. See Document.GenerateSchemaDocumentation for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

GenerateSampleXMLDlg

See also

Property: `GenerateSampleXMLDlg` as `GenerateSampleXMLDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of a sample XML based on a W3C schema or DTD. See GenerateSampleXML for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

DTDSchemaGeneratorDlg

See also

Property: `DTDSchemaGeneratorDlg` as `DTDSchemaGeneratorDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of a schema or DTD. See Document.GenerateDTDOrSchemaEx for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

FindInFilesDlg

See also

Property: FindInFilesDlg as FindInFilesDlg (read-only)

Description
Get a new instance of a dialog object that parameterizes the search (or replacement) of strings in files. See Application.FindInFiles for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

WSDLDocumentationDlg

See also

Property: `WSDLDocumentationDlg` as `WSDLDocumentationDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of WSDL documentation. See Document.GenerateWSDLDocumentation for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

WSDL20DocumentationDlg

See also

Property: `WSDL20DocumentationDlg` as `WSDL20DocumentationDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of WSDL 2.0 documentation. See Document.GenerateWSD20LDocumentation for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

XBRLDocumentationDlg

See also

Property: `XBRL20DocumentationDlg` as `XBRL20DocumentationDlg` (read-only)

Description
Get a new instance of a dialog object that parameterizes generation of WSDL 2.0 documentation. See Document.GenerateXBRLDocumentation for its usage.

Errors
2300 The Dialogs object or one of its parents is no longer valid.
2301 Invalid address for the return parameter was specified.

3.2.10 Document

See also

Properties and Methods

Standard automation properties
`Application`

Parent

Various document properties and methods
SetActiveDocument
Encoding
SetEncoding (obsolete)
Suggestions

XML validation
IsWellFormed
IsValid
SetExternalIsValid

Document conversion and transformation
AssignDTD
AssignSchema
AssignXSL
AssignXSLFO
ConvertDTDOrSchema
ConvertDTDOrSchemaEx
GenerateDTDOrSchema
GenerateDTDOrSchemaEx
CreateSchemaDiagram
ExecuteXQuery
TransformXSL
TransformXSLEx
TransformXSLFO
GenerateProgramCode (Enterprise Edition only)
GenerateSchemaDocumentation
GenerateSampleXML
GenerateWSDL20Documentation
GenerateWSDLDocumentation
GenerateXBRLDocumentation
ConvertToWSDL20

Document export
GetExportElementList
ExportToText
ExportToDatabase
CreateDBStructureFromXMLSchema
GetDBStructureList

File saving and naming
FullName
Name
Path
GetPathName (obsolete)
SetPathName (obsolete)
Title
IsModified
Saved
SaveAs
Save
SaveInString
SaveToURL
Close

View access
CurrentViewMode

SwitchViewMode
AuthenticView
GridView
DocEditView (obsolete)

Access to XMLData
RootElement
DataRoot
CreateChild
UpdateViews
StartChanges
EndChanges
UpdateXMLData

Description
Document objects represent XML documents opened in XMLSpy.

Use one of the following properties to access documents that are already open XMLSpy:
Application.ActiveDocument
Application.Documents

Use one of the following methods to open a new document in XMLSpy:
Documents.OpenFile
Documents.OpenURL
Documents.OpenURLDialog
Documents.NewFile
Documents.NewFileFromText
SpyProjectItem.Open
Application.ImportFromDatabase
Application.ImportFromSchema
Application.ImportFromText
Application.ImportFromWord
Document.ConvertDTDOrSchema
Document.GenerateDTDOrSchema

Events

OnBeforeSaveDocument

See also

Event: OnBeforeSaveDocument(*objDocument* as Document, *objDialog* as FileSelectionDlg)

XMLSpy scripting environment - VBScript:
```
Function On_BeforeSaveDocument(objDocument,objDialog)
End Function

' old handler - now obsolete
' return string to save to new file name
' return empty string to cancel save operation
' return nothing to save to original name
Function On_SaveDocument(objDocument,strFilePath)
End Function
```

XMLSpy scripting environment - JScript:
```
function On_BeforeSaveDocument(objDocument,objDialog)
```

```
{
}

// old handler - now obsolete
// return string to save to new file name
// return empty string to cancel save operation
// return nothing to save to original name
function On_SaveDocument(objDocument,strFilePath)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (27, ...)  //nEventID=27
```

Description

This event gets fired on any attempt to save a document. The file selection dialog object is initialized with the name chosen for the document file. You can modify this selection. To continue saving the document leave the FileSelectionDlgDialogAction property of *io_objDialog* at its default value spyDialogOK. To abort saving of the document set this property to spyDialogCancel.

OnBeforeCloseDocument

See also

Event: OnBeforeCloseDocument(*objDocument* as Document)as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_BeforeCloseDocument(objDocument)
    'On_BeforeCloseDocument=False 'to prohibit closing of document
End Function
```

XMLSpy scripting environment - JScript:

```
function On_BeforeCloseDocument(objDocument)
{
    //return false; /*to prohibit closing of document*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (28, ...)  //nEventID=28
```

Description

This event gets fired on any attempt to close a document. To prevent the document from being closed return false.

OnBeforeValidate

See also

Event: OnBeforeValidate(*objDocument* as Document,*bOnLoading* as Boolean, *bOnCommand* as Boolean) as Boolean

XMLSpy scripting environment - VBScript:

```
Function On_BeforeValidate(objDocument,bOnLoading, bOnCommand)
    On_BeforeValidate=bCancelDefaultValidation          'set by the script if
```

```
necessary
End Function
```

XMLSpy scripting environment - JScript:

```
function On_BeforeValidate(objDocument, eViewMode, bActivated)
{
    return bCancelDefaultValidation          //set by the script if necessary
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (32, ...)  //nEventID=32
```

Description
This event gets fired before the document is validated. It is possible to suppress the default validation by returning false from the event handler. In this case the script should also set the validation result using the SetExternalIsValid method.

`bOnLoading` is true if the the event is raised on the initial validation on loading the document.

`bOnCommand` is true whenever the user selected the Validate command from the Toolbar or menu.

Available with TypeLibrary version 1.5

OnCloseDocument

See also

Event: `OnCloseDocument(objDocument as Document)`

XMLSpy scripting environment - VBScript:

```
Function On_Close Document(objDocument)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_Close Document(objDocument)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (8, ...)  //nEventID=8
```

Description
This event gets fired as a result of closing a document. Do not modify the document from within this event.

OnViewActivation

See also

Event: `OnViewActivation(objDocument as Document, eViewMode as SPYViewModes, bActivated as Boolean)`

XMLSpy scripting environment - VBScript:

```
Function On_ViewActivation(objDocument, eViewMode, bActivated)
```

```
End Function
```

XMLSpy scripting environment - JScript:

```
function On_ViewActivation(objDocument, eViewMode, bActivated)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (29, ...)   //nEventID=29
```

Description
This event gets fired whenever a view of a document becomes visible (i.e. becomes the active view) or invisible (i.e. another view becomes the active view or the document gets closed). However, the first view activation event after a document gets opened cannot be received, since there is no document object to get the event from. Use the Application.OnDocumentOpened event instead.

Application

See also

Property: `Application` as `Application` (read-only)

Description
Accesses the XMLSpy application object.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.

AssignDTD

See also

Method: `AssignDTD(strDTDFile` as String, `bDialog` as Boolean)

Description
The method places a reference to the DTD file "strDTDFile" into the document. Note that no error occurs if the file does not exist, or is not accessible. If `bDialog` is true XMLSpy presents a dialog to set the file.

See also Simple document access.

Errors
1400 The object is no longer valid.
1409 You are not allowed to assign a DTD to the document.

AssignSchema

See also

Method: `AssignSchema` (`strSchemaFile` as String, `bDialog` as Boolean)

Description
The method places a reference to the schema file "strSchemaFile" into the document. Note that

no error occurs if the file does not exist or is not accessible. If `bDialog` is true XMLSpy presents a dialog to set the file.

See also Simple document access.

Errors
1400 The object is no longer valid.
1409 You are not allowed to assign a schema file to the document.

AssignXSL

See also

Method: `AssignXSL` (*`strXSLFile`* as String, *`bDialog`* as Boolean)

Description
The method places a reference to the XSL file "strXSLFile" into the document. Note that no error occurs if the file does not exist or is not accessible. If `bDialog` is true XMLSpy presents a dialog to set the file.

Errors
1400 The object is no longer valid.
1409 You are not allowed to assign an XSL file to the document.

AssignXSLFO

See also

Method: `AssignXSLFO` (*`strXSLFOFile`* as String, *`bDialog`* as Boolean)

Description
The method places a reference to the XSLFO file "strXSLFile" into the document. Note that no error occurs if the file does not exist or is not accessible. If `bDialog` is true XMLSpy presents a dialog to set the file.

Errors
1400 The object is no longer valid.
1409 You are not allowed to assign an XSL file to the document.

AsXMLString

See also

Property: AsXMLString as String

Description
This property can be used to get or set the document content.

Errors
1400 The document object is no longer valid.
1404 Cannot create XMLData object.
1407 View mode cannot be switched.

AuthenticView

See also

Method: AuthenticView as AuthenticView (read-only)

Description

Returns an object that gives access to properties and methods specific to Authentic view. The object returned is only valid if the current document is opened in Authentic view mode. The lifetime of an object ends with the next view switch. Any attempt to access objects or any of its children afterwards will result in an error indicating that the object is invalid.

AuthenticView and DocEditView both provide automation access to the Authentic view mode of XMLSpy. Functional overlap is intentional. A future version of Authentic View will include all functionality of DocEditView and its sub-objects, thereby making usage of DocEditView obsolete.

Errors

1400 The object is no longer valid.
1417 Document needs to be open in authentic view mode.

Examples

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' secure access to authentic view object
' ---------------------------------------
Dim objDocument
Set objDocument = Application.ActiveDocument
If (Not objDocument Is Nothing) Then
	' we have an active document, now check for view mode
	If (objDocument.CurrentViewMode <> spyViewAuthentic) Then
		If (Not objDocument.SwitchViewMode (spyViewAuthentic)) Then
			MsgBox "Active document does not support authentic view
mode"
		Else
			' now it is safe to access the authentic view object
			Dim objAuthenticView
			Set objAuthenticView = objDocument.AuthenticView
			' now use the authentic view object

		End If
	End If
Else
	MsgBox "No document is open"
End If
```

Close

See also

Method: Close (*bDiscardChanges* as Boolean)

Description

To close the document call this method. If bDiscardChanges is true and the document is modified, the document will be closed but not saved.

Errors

1400 The object is no longer valid.
1401 Document needs to be saved first.

ConvertDTDOrSchema

See also

Method: ConvertDTDOrSchema (*nFormat* as SPYDTDSchemaFormat, *nFrequentElements* as SPYFrequentElements)

Parameters

nFormat
Sets the schema output format to DTD, or W3C.

nFrequentElements
Create complex elements as elements or complex types.

Description

ConvertDTDOrSchema takes an existing schema format and converts it into a different format. For a finer tuning of DTD / schema conversion, use ConvertDTDOrSchemaEx.

Errors

1400 The object is no longer valid.
1412 Error during conversion.

ConvertDTDOrSchemaEx

See also

Method: ConvertDTDOrSchemaEx (*nFormat* as SPYDTDSchemaFormat, *nFrequentElements* as SPYFrequentElements, sOutputPath as String, nOutputPathDialogAction as SPYDialogAction)

Parameters

nFormat
Sets the schema output format to DTD, or W3C.

nFrequentElements
Create complex elements as elements or complex types.

sOutputPath
The file path for the newly generated file.

nOutputPathDialogAction
Defines the dialog interaction for this call.

Description

ConvertDTDOrSchemaEx takes an existing schema format and converts it into a different format.

Errors

1400 The object is no longer valid.
1412 Error during conversion.

ConvertToWSDL20

Method: ConvertToWSDL20 (*sFilePath* as String, *bShowDialogs* as Boolean)

Parameters

`sFilePath`
This specifies the file name of the converted WSDL. In case the source WSDL includes files which also must be converted, then only the directory part of the given path is used and the file names are generated automatically.

`bShowDialogs`
Defines whether file/folder selection dialogs are shown.

Description
Converts the WSDL 1.1 document to a WSDL 2.0 file. It will also convert any referenced WSDL files that are referenced from within this document. Note that this functionality is limited to WSDL View only. See `Document.CurrentViewMode`. and `SPYViewModes`.

Errors
1400 The document object is no longer valid.
1407 Invalid parameters have been passed or an empty file name has been specified as output target.
1417 The document is not opened in WSDL view, maybe it is not an '.wsdl' file.
1421 Feature is not available in this edition.
1433 WSDL 1.1 to WSDL 2.0 conversion failed.

CreateChild

See also

Method: `CreateChild` (*`nKind`* as `SPYXMLDataKind`) as `XMLData`

Return Value
The method returns the new `XMLData` object.

Description
To create a new `XMLData` object use the `CreateChild()` method. See also Using XMLData.

Errors
1400 The object is no longer valid.
1404 Cannot create XMLData object.
1407 Invalid address for the return parameter was specified.

CreateDBStructureFromXMLSchema

See also

Method: `CreateDBStructureFromXMLSchema` (*`pDatabase`* as `DatabaseConnection`, *`pTables`* `as` `ElementList`, *`bDropTableWithExistingName`* `as Boolean`) as String

Description
`CreateDBStructureFromXMLSchema` exports the given tables to the specified database. The function returns the SQL statements that were necessary to perform the changes.

See also GetDBStructureList.

Errors
1429 Database selection missing.
1430 Document export failed.

CreateSchemaDiagram

See also

Method: `CreateSchemaDiagram` (*`nKind`* as `SPYSchemaDefKind`, *`strName`* as String, *`strFile`* as String)

Return Value
None.

Description
The method creates a diagram of the schema type `strName` of kind `nKind` and saves the output file into `strFile`. Note that this functionality is limited to Schema View only. See `Document.CurrentViewMode`. and `SPYViewModes`.

Errors
1400 The object is no longer valid.
1414 Failed to save diagram.
1415 Invalid schema definition type specified.

CurrentViewMode

See also

Method: `CurrentViewMode` as `SPYViewModes`

Description
The property holds the current view mode of the document. See also `Document.SwitchViewMode`.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.

DataRoot

See also

Property: `DataRoot` as `XMLData` (read-only)

Description
This property provides access to the document's first XMLData object of type *spyXMLDataElement*. This is typically the root element for all document content data. See XMLSpyDocument.RootElement to get the root element of the whole document including XML prolog data. If the CurrentViewMode is not *spyViewGrid* or *spyViewAuthentic* an UpdateXMLData may be necessary to get access to the latest XMLData.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

DocEditView

See also

Method: DocEditView as DocEditView

Description
Holds a reference to the current Authentic View object.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.
1417 Document needs to be open in authentic view mode.

Encoding

See also

Property: Encoding as String

Description
This property provides access to the document's encoding value. However, this property can only be accessed when the document is opened in *spyViewGrid*, *spyViewText* or *spyViewAuthentic*. See CurrentViewMode on how to detect that a document's actual view mode.

This property makes the method SetEncoding obsolete.

Possible values are, for example:

8859-1,
8859-2,
ASCII, ISO-646,
850,
1252,
1255,
SHIFT-JIS, MS-KANJI,
BIG5, FIVE,
UTF-7,
UTF-8,
UTF-16

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.
1416 Operation not supported in current view mode.

EndChanges

See also

Method: EndChanges()

Description

Use the method EndChanges to display all changes since the call to Document.StartChanges.

Errors

1400 The object is no longer valid.

ExecuteXQuery

See also

Method: ExecuteXQuery (*strXMLFileName* as String)

Description

Execute the XQuery statements contained in the document. Use the XML file specified as XML source for the transformation. If your XQuery script does not use an XML source set the parameter strXMLFileName to an empty string.

Errors

1400 The document object is no longer valid.
1423 XQuery transformation error.
1424 Not all files required for operation could be loaded. Most likely, the file specified in strXMLFileName does not exist or is not valid.

ExportToDatabase

See also

Method: ExportToDatabase (*pFromChild* as XMLData, *pExportSettings* as ExportSettings, *pDatabase* as DatabaseConnection)

Description

ExportToDatabase exports the XML document starting with the element pFromChild. The parameter pExportSettings defines the behaviour of the export (see Application.GetExportSettings). The parameter pDatabase specifies the destination of the export (see Application.GetDatabaseSettings). UpdateXMLData() might be indirectly needed as you have to pass the XMLData as parameter to this function.

Errors

1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.
1416 Error during export.
1429 Database selection missing.
1430 Document export failed.

Example

```
Dim objDoc As Document
Set objDoc = objSpy.ActiveDocument

'set the behaviour of the export with ExportSettings
Dim objExpSettings As ExportSettings
Set objExpSettings = objSpy.GetExportSettings

'set the destination with DatabaseConnection
Dim objDB As DatabaseConnection
Set objDB = objSpy.GetDatabaseSettings
```

```
objDB.CreateMissingTables = True
objDB.CreateNew = True
objDB.File = "C:\Export.mdb"

objDoc.ExportToDatabase objDoc.RootElement, objExpSettings, objDB
If Err.Number <> 0 Then
 a = MsgBox("Error: " & (Err.Number - vbObjectError) & Chr(13) &
   "Description: " & Err.Description)
End If
```

ExportToText

See also

Method: ExportToText (*pFromChild* as XMLData, *pExportSettings* as ExportSettings, *pTextSettings* as TextImportExportSettings)

Description

ExportToText exports tabular information from the document starting at pFromChild into one or many text files. Columns of the resulting tables are generated in alphabetical order of the column header names. Use GetExportElementList to learn about the data that will be exported. The parameter pExportSettings defines the specifics for the export. Set the property ExportSettings.ElementList to the - possibly modified - list returned by GetExportElementList to avoid exporting all contained tables. The parameter pTextSettings defines the options specific to text export and import. You need to set the property TextImportExportSettings.DestinationFolder before you call ExportToText. UpdateXMLData() might be indirectly needed as you have to pass the XMLData as parameter to this function.

See also Import and export of data.

Errors

1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.
1416 Error during export.
1430 Document export failed.

Example

```
' ----------------------------------------------------------
' VBA client code fragment - export document to text files
' ----------------------------------------------------------
Dim objDoc As Document
Set objDoc = objSpy.ActiveDocument

Dim objExpSettings As ExportSettings
Set objExpSettings = objSpy.GetExportSettings
objExpSettings.ElementList = objDoc.GetExportElementList(
        objDoc.RootElement,
        objExpSettings)

Dim objTextExp As TextImportExportSettings
Set objTextExp = objSpy.GetTextExportSettings
objTextExp.HeaderRow = True
objTextExp.DestinationFolder = "C:\Exports"

On Error Resume Next
objDoc.ExportToText objDoc.RootElement, objExpSettings, objTextExp

If Err.Number <> 0 Then
```



```
  a = MsgBox("Error: " & (Err.Number - vbObjectError) & Chr(13) &
"Description: "     & Err.Description)
 End If
```

FullName

See also

Property: `FullName` as String

Description
This property can be used to get or set the full file name - including the path - to where the document gets saved. The validity of the name is not verified before the next save operation.

This property makes the methods GetPathName and SetPathName obsolete.

Errors
1400 The document object is no longer valid.
1402 Empty string has been specified as full file name.

GenerateDTDOrSchema

See also

Method: `GenerateDTDOrSchema` (*`nFormat`* as `SPYDTDSchemaFormat`, *`nValuesList`* as integer, *`nDetection`* as `SPYTypeDetection`, *`nFrequentElements`* as `SPYFrequentElements`)

Parameters
`nFormat`
Sets the schema output format to DTD, or W3C.

`nValuesList`
Generate not more than this amount of enumeration-facets per type. Set to -1 for unlimited.

`nDetection`
Specifies granularity of simple type detection.

`nFrequentElements`
Shall the types for all elements be defined as global? Use that value *spyGlobalComplexType* to define them on global scope. Otherwise, use the value *spyGlobalElements*.

Description
Use this method to automatically generate a DTD or schema for the current XML document. For a finer tuning of DTD / schema generation, use GenerateDTDOrSchemaEx.
Note that this functionality is not available in ZIP View only. See `Document.CurrentViewMode`. and `SPYViewModes`.

Errors
1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.

GenerateDTDOrSchemaEx

See also

Method: GenerateDTDOrSchemaEx (*objDlg* as DTDSchemaGeneratorDlg) as Document

Description
Use this method to automatically generate a DTD or schema for the current XML document. A DTDSchemaGeneratorDlg object is used to pass information to the schema/DTD generator. The generation process can be configured to allow user interaction or run without further user input.
Note that this functionality is not available in ZIP View only. See Document. CurrentViewMode. and SPYViewModes.

Errors
1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.

GenerateProgramCode

Method: GenerateProgramCode (*objDlg* as CodeGeneratorDlg)
Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Description
Generate Java, C++ or C# class files from the XML Schema definitions in your document. A CodeGeneratorDlg object is used to pass information to the code generator. The generation process can be configured to allow user interaction or run without further user input.

Errors
1400 The document object is no longer valid.
1407 An empty file name has been specified.
1421 Feature not available in this edition

GenerateSampleXML

Method: GenerateSampleXML (*objDlg* as GenerateSampleXMLDlg) as Document

Description
Generates a sample XML if the document is a schema or DTD. Use Dialogs.GenerateSampleXMLDlg to get an initialized set of options.

Available with TypeLibrary version 1.5

Errors
1400 The document object is no longer valid.

GenerateSchemaDocumentation

Method: GenerateSchemaDocumentation (*objDlg* as SchemaDocumentationDlg)

Description
Generate documentation for a schema definition file in HTML, MS-Word, or RTF format. The

parameter objDlg is used to parameterize the generation process. Use Dialogs.SchemaDocumentationDlg to get an initialized set of options. As a minimum, you will need to set the property SchemaDocumentationDlg.OutputFile before starting the generation process. Note that this functionality is limited to Schema View only. See Document.CurrentViewMode and SPYViewModes.

Errors

1400 The document object is no longer valid.
1407 Invalid parameters have been passed or an empty file name has been specified as output target.
1417 The document is not opened in schema view, maybe it is not an '.xsd' file.
1421 Feature is not available in this edition.
1422 Error during generation

GenerateWSDL20Documentation

Method: GenerateWSDL20Documentation (*objDlg* as WSDL20DocumentationDlg)

Description

Generate documentation for a WSDL definition file in HTML, MS-Word, or RTF format. The parameter objDlg is used to parameterize the generation process. Use Dialogs.WSDL20DocumentationDlg to get an initialized set of options. As a minimum, you will need to set the property WSDL20DocumentationDlg.OutputFile before starting the generation process. Note that this functionality is limited to WSDL View only. See Document.CurrentViewMode and SPYViewModes.

Errors

1400 The document object is no longer valid.
1407 Invalid parameters have been passed or an empty file name has been specified as output target.
1417 The document is not opened in schema view, maybe it is not an '.xsd' file.
1421 Feature is not available in this edition.
1422 Error during generation

GenerateWSDLDocumentation

Method: GenerateWSDLDocumentation (*objDlg* as WSDLDocumentationDlg)

Description

Generate documentation for a WSDL definition file in HTML, MS-Word, or RTF format. The parameter objDlg is used to parameterize the generation process. Use Dialogs.WSDLDocumentationDlg to get an initialized set of options. As a minimum, you will need to set the property WSDLDocumentationDlg.OutputFile before starting the generation process. Note that this functionality is limited to WSDL View only. See Document.CurrentViewMode and SPYViewModes.

Errors

1400 The document object is no longer valid.
1407 Invalid parameters have been passed or an empty file name has been specified as output target.
1417 The document is not opened in schema view, maybe it is not an '.xsd' file.
1421 Feature is not available in this edition.

1422 Error during generation

GenerateXBRLDocumentation

Method: GenerateXBRLDocumentation (*objDlg* as XBRLDocumentationDlg)

Description
Generate documentation for a WSDL definition file in HTML, MS-Word, or RTF format. The parameter objDlg is used to parameterize the generation process. Use Dialogs.XBRLDocumentationDlg to get an initialized set of options. As a minimum, you will need to set the property XBRLDocumentationDlg.OutputFile before starting the generation process. Note that this functionality is limited to XBRL View only. See Document.CurrentViewMode and SPYViewModes.

Errors
1400 The document object is no longer valid.
1407 Invalid parameters have been passed or an empty file name has been specified as output target.
1417 The document is not opened in schema view, maybe it is not an '.xsd' file.
1421 Feature is not available in this edition.
1422 Error during generation

GetDBStructureList

See also

Method: GetDBStructureList (*pDatabase* as DatabaseConnection) as ElementList

Description
GetDBStructureList creates a collection of elements from the Schema document for which tables in the specified database are created. The function returns a collection of ElementListItems where the properties ElementListItem.Name contain the names of the tables.

See also CreateDBStructureFromXMLSchema.

Errors
1400 The object is no longer valid.
1427 Failed creating parser for the specified XML.
1428 Export of element list failed.
1429 Database selection missing.

GetExportElementList

See also

Method: GetExportElementList (*pFromChild* as XMLData, *pExportSettings* as ExportSettings) as ElementList

Description
GetExportElementList creates a collection of elements to export from the document,

depending on the settings in pExportSettings and starting from the element pFromChild. The function returns a collection of ElementListItems where the properties ElementListItem.Name contain the names of the tables that can be exported from the document. The property ElementListItem.FieldCount contains the number of columns in the table. The property ElementListItem.RecordCount contains the number of records in the table. The property ElementListItem.ElementKind is unused. UpdateXMLData() might be indirectly needed as you have to pass the XMLData as parameter to this function.

See also Import and export of data.

Errors

1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.
1427 Failed creating parser for the specified XML.
1428 Export of element list failed.

GetPathName (obsolete)

Superseded by Document.FullName

```
// ----- javascript sample -----
// instead of:
// strPathName = Application.ActiveDocument.GetPathName();
// use now:
strPathName = Application.ActiveDocument.FullName;
```

See also

Method: GetPathName() as String

Description
The method GetPathName gets the path of the active document.

See also Document.SetPathName (obsolete).

GridView

See also

Property: GridView as GridView

Description
This property provides access to the grid view functionality of the document.

Errors

1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.
1417 Document needs to be open in enhanced grid view mode.

IsModified

See also

Property: `IsModified` as Boolean

Description
True if the document is modified.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.

IsValid

See also

Method: `IsValid` (*`strError`* as Variant, *`nErrorPos`* as Variant, *`pBadData`* as Variant) as Boolean

Return Value
True if the document is valid, false if not.

Description
IsValid() validates the document against its associated schema or DTD. strError gives you the same error message as XMLSpy, if you validate the file within the editor.

nErrorPos is obsolete and only present for compatibility reasons. pBadData is a reference to the XMLData object raising the error. It is only available if the document is currently displayed in TextView, GridView or AuthenticView.

Errors
1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.
1408 Unable to validate file.

Examples

For an example written in VBA see Overview - Simple document access

```
' ---------------------------------------
' XMLSpy scripting environment - VBScript
' ---------------------------------------
Dim errorText
Dim errorPos
Dim badData

' validate the active document
Set doc = Application.ActiveDocument
valid = doc.IsValid(errorText, errorPos, badData)

If (Not valid) Then
       ' create the validation error message text
       Text = errorText

       If ( Not IsEmpty(badData) ) Then
```



```
            Text = Text & "(" & badData.Name & "/" & badData.TextValue & ")"
      End If

      Call MsgBox("validation error[" & errorPos & "]: " & Text)
End If

// ---------------------------------------
// XMLSpy scripting environment - JScript
// ---------------------------------------
// define as arrays to support their usage as return parameters
var errorText = new Array(1);
var errorPos = new Array(1);
var badData = new Array(1);

// validate the active document
var doc = Application.ActiveDocument;
var valid = doc.IsValid(errorText, errorPos, badData);

if (! valid)
{
      // compose the error description
      var text = errorText;

      // access that XMLData object only if filled in
      if (badData[0] != null)
            text += "(" + badData[0].Name + "/" + badData[0].TextValue + ")"
;

      MsgBox("validation error[" + errorPos + "]: " + text);
}
```

IsWellFormed

See also

Method: `IsWellFormed` (*`pData`* as `XMLData`, *`bWithChildren`* as `Boolean`, *`strError`* as Variant, *`nErrorPos`* as Variant, *`pBadXMLData`* as Variant) as Boolean

Return Value

True if the document is well formed.

Description

`IsWellFormed` checks the document for well-formedness starting at the element `pData`.

If the document is not well formed, `strError` contains an error message, `nErrorPos` the position in the file and `pBadXMLData` holds a reference to the element which breaks the well-formedness. These out-parameters are defined as VARIANTs to support scripting languages like VBScript.

Errors

1400	The object is no longer valid.
1407	Invalid parameter or invalid address for the return parameter was specified.

Example

See IsValid.

Name

See also

Property: `Name` as String (read-only)

Description
Use this property to retrieve the name - not including the path - of the document file. To change the file name for a document use the property FullName.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

Parent

See also

Property: `Parent` as `Documents` (read-only)

Description
Access the parent of the document object.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

Property: `Parent` as `Application` (read-only)

Path

See also

Property: `Path` as String (read-only)

Description
Use this property to retrieve the path - not including the file name - of the document file. To change the file name and path for a document use the property FullName.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

RootElement

See also

Property: `RootElement` as `XMLData` (read-only)

Description
The property `RootElement` provides access to the root element of the XML structure of the document including the XML prolog data. To access the first element of a document's content navigate to the first child of kind *spyXMLDataElement* or use the Document.DataRoot property. If the CurrentViewMode is not *spyViewGrid* or *spyViewAuthentic* an UpdateXMLData may be

necessary to get access to the latest XMLData.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

Save

See also

Method: `Save()`

Description
The method writes any modifications of the document to the associated file. See also `Document.FullName`.

Errors
1400 The document object is no longer valid.
1407 An empty file name has been specified.
1403 Error when saving file, probably the file name is invalid.

SaveAs

See also

Method: `SaveAs` (*`strFileName`* as String)

Description
Save the document to the file specified. If saving was successful, the FullName property gets set to the specified file name.

Errors
1400 The document object is no longer valid.
1407 An empty file name has been specified.
1403 Error when saving file, probably the file name is invalid.

Saved

See also

Property: `Saved` as Boolean (read-only)

Description
This property can be used to check if the document has been saved after the last modifications. It returns the negation of IsModified.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

SaveInString

See also

Method: SaveInString (*pData* as XMLData, *bMarked* as Boolean) as String

Parameters
pData
XMLData element to start. Set pData to Document. RootElement if you want to copy the complete file.

bMarked
If bMarked is true, only the elements selected in the grid view are copied.

Return Value
Returns a string with the XML data.

Description
SaveInString starts at the element pData and converts the XMLData objects to a string representation. UpdateXMLData() might be indirectly needed as you have to pass the XMLData as parameter to this function.

Errors
1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.

SaveToURL

See also

Method: SaveToURL (*strURL* as String, *strUser* as String, *strPassword* as String)

Return Value

Description
SaveToURL() writes the document to the URL strURL. This method does not set the permanent file path of the document.

Errors
1400 The object is no longer valid.
1402 Invalid URL specified.
1403 Error while saving to URL.

SetActiveDocument

See also

Method: SetActiveDocument()

Description
The method sets the document as the active and brings it to the front.

Errors
1400 The object is no longer valid.

SetEncoding (obsolete)

Superseded by Document.Encoding

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.SetEncoding("UTF-16");
// use now:
Application.ActiveDocument.Encoding = "UTF-16";
```

See also

Method: `SetEncoding` (*`strEncoding`* as String)

Description

`SetEncoding` sets the encoding of the document like the menu item "File/Encoding..." in XMLSpy. Possible values for `strEncoding` are, for example:

8859-1,
8859-2,
ASCII, ISO-646,
850,
1252,
1255,
SHIFT-JIS, MS-KANJI,
BIG5, FIVE,
UTF-7,
UTF-8,
UTF-16

SetExternalIsValid

See also

Method: `SetExternalIsValid` (*bValid* as Boolean)

Parameters

`bValid`
Sets the result of an external validation process.

Description
The internal information set by this method is only queried on cancelling the default validation in any OnBeforeValidate handler.

Available with TypeLibrary version 1.5

Errors
1400 The object is no longer valid.

SetPathName (obsolete)

Superseded by Document.FullName

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.SetPathName("C:\\myXMLFiles\\test.xml");
// use now:
Application.ActiveDocument.FullName = "C:\\myXMLFiles\\test.xml";
```

See also

Method: `SetPathName` (*strPath* as String)

Description
The method `SetPathName` sets the path of the active document. `SetPathName` only copies the string and does not check if the path is valid. All succeeding save operations are done into this file.

StartChanges

See also

Method: `StartChanges()`

Description
`After StartChanges` is executed XMLSpy will not update its editor windows until `Document.EndChanges` is called. This increases performance of complex tasks to the XML structure.

Errors
1400 The object is no longer valid.

Suggestions

Property: Suggestions as Array

Description
This property contains the last valid user suggestions for this document. The XMLSpy generated suggestions can be modified before they are shown to the user in the OnBeforeShowSuggestions event.

Errors
1400 The object is no longer valid.
1407 Invalid parameter or invalid address for the return parameter was specified.

SwitchViewMode

See also

Method: `SwitchViewMode` (*nMode* as `SPYViewModes`) as Boolean

Return value
Returns true if view mode is switched.

Description
The method sets the current view mode of the document in XMLSpy. See also `Document.CurrentViewMode`.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.
1417 Invalid view mode specified.

TextView

See also

Property: TextView as TextView

Description
This property provides access to the text view functionality of the document.

Errors
1400 The object is no longer valid.
1407 Invalid address for the return parameter was specified.

Title

See also

Property: `Title` as String (read-only)

Description
`Title` contains the file name of the document. To get the path and filename of the file use `FullName`.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

TransformXSL

See also

Method: `TransformXSL()`

Description
`TransformXSL` processes the XML document via the associated XSL file. See `Document.AssignXSL` on how to place a reference to a XSL file into the document.

Errors
1400 The document object is no longer valid.
1411 Error during transformation process.

TransformXSLEx

See also

Method: `TransformXSLEx( nAction as SPYDialogAction)`

Description
`TransformXSLEx` processes the XML document via the associated XSL file. The parameter specifies whether a dialog asking for the result document name should pop up or not. See `Document.AssignXSL` on how to place a reference to a XSL file into the document.

Errors
1400 The document object is no longer valid.
1411 Error during transformation process.

TransformXSLFO

See also

Method: `TransformXSLFO()`

Description
`TransformXSLFO` processes the XML document via the associated XSLFO file. See `AssignXSLFO` on how to place a reference to a XSLFO file into the document. You need to assign a FOP processor to XMLSpy before you can use this method.

Errors
1400 The document object is no longer valid.
1411 Error during transformation process.

TreatXBRLInconsistencies AsErrors

Property: `TreatXBRLInconsistenciesAsErrors` as Boolean

Description
If this is set to `true` the `Document.IsValid()` method will return `false` for XBRL instances containing inconsistencies as defined by the XBRL Specification. The default value of this

property is `false`.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

UpdateViews

See also

Method: `UpdateViews()`

Description
To redraw the Enhanced Grid View and the Tree View call `UpdateViews`. This can be important after you changed the `XMLData` structure of a document. This method does not redraw the text view of XMLSpy.

Errors
1400 The document object is no longer valid.

UpdateXMLData

See also

Method: `UpdateXMLData()` as Boolean

Description
The XMLData tree is updated from the current view. Please note that this can fail in case of the TextView if the current XML text is not well-formed. This is not necessary if CurrentViewMode is *spyViewGrid* or *spyViewAuthentic* because these views keep the XMLData updated.

Available with TypeLibrary version 1.5

Errors
1400 The document object is no longer valid.

3.2.11 Documents

See also

Properties
Count
Item

Methods
NewAuthenticFile
NewFile
NewFileFromText
OpenAuthenticFile
OpenFile
OpenURL
OpenURLDialog

Description
This object represents the set of documents currently open in XMLSpy. Use this object to open further documents or iterate through already opened documents.

Examples

```
' ----------------------------------------
' XMLSpy scripting environment - VBScript
' iterate through open documents
' ----------------------------------------
Dim objDocuments
Set objDocuments = Application.Documents

For Each objDoc In objDocuments
     'do something useful with your document
     objDoc.SetActiveDocument()
Next
```

```
// ----------------------------------------
// XMLSpy scripting environment - JScript
// close all open documents
// ----------------------------------------
for (var iter = new Enumerator (Application.Documents);
     ! iter.atEnd();
     iter.moveNext())
{
     // MsgBox ("Closing file " + iter.item().Name);
     iter.item().Close (true);
}
```

Count

See also

Property: `Count` as long

Description
Count of open documents.

Errors
1600 Invalid `Documents` object
1601 Invalid input parameter

Item

See also

Method: `Item` (*n* as long) as `Document`

Description
Gets the document with the index n in this collection. Index is 1-based.

Errors
1600 Invalid `Documents` object
1601 Invalid input parameter

NewAuthenticFile

See also

Method: NewAuthenticFile (*strSPSPath* as String, *strXMLPath* as String) as Document

Parameters
strSPSPath
The path to the SPS document.

strXMLPath
The new XML document name.

Return Value
The method returns the new document.

Description
NewAuthenticFile creates a new XML file and opens it in Authentic View using SPS design strSPSPath.

NewFile

See also

Method: NewFile (*strFile* as String, *strType* as String) as Document

Parameters
strFile
Full path of new file.

strType
Type of new file as string (i.e. "xml", "xsd", ...)

Return Value
Returns the new file.

Description
NewFile creates a new file of type strType (i.e. "xml"). The newly created file is also the ActiveDocument.

NewFileFromText

See also

Method: NewFileFromText (*strText* as String, *strType* as String) as Document

Parameters
strText
The content of the new document in plain text.

strType
Type of the document to create (i.e. "xml").

Return Value
The method returns the new document.

Description
NewFileFromText creates a new document with strText as its content.

OpenAuthenticFile

See also

Method: OpenAuthenticFile (*strSPSPath* as String, *strXMLPath* as String) as Document

Parameters
strSPSPath
The path to the SPS document.

strXMLPath
The path to the XML document (can be empty).

Return Value
The method returns the new document.

Description
OpenAuthenticFile opens an XML file or database in Authentic View using SPS design strSPSPath.

OpenFile

See also

Method: OpenFile (*strPath* as String, *bDialog* as Boolean) as Document

Parameters
strPath
Path and file name of file to open.

bDialog
Show dialogs for user input.

Return Value
Returns the opened file on success.

Description
OpenFile opens the file strPath. If bDialog is TRUE, a file-dialog will be displayed.

Example

```
Dim objDoc As Document
Set objDoc = objSpy.Documents.OpenFile(strFile, False)
```

OpenURL

See also

Method: OpenURL (*strURL* as String, *nURLType* as SPYURLTypes, *nLoading* as SPYLoading, *strUser* as String, *strPassword* as String) as Document

Parameters
strURL
URL to open as document.

nURLType
Type of document to open. Set to -1 for auto detection.

nLoading
Set nLoading to 0 (zero) if you want to load it from cache or proxy. Otherwise set nLoading to 1.

strUser
Name of the user if required. Can be empty.

strPassword
Password for authentification. Can be empty.

Return Value
The method returns the opened document.

Description
OpenURLopens the URL strURL.

OpenURLDialog

See also

Method: OpenURLDialog (*strURL* as String, *nURLType* as SPYURLTypes, *nLoading* as SPYLoading, *strUser* as String, *strPassword* as String) as Document

Parameters
strURL
URL to open as document.

nURLType
Type of document to open. Set to -1 for auto detection.

nLoading
Set nLoading to 0 (zero) if you want to load it from cache or proxy. Otherwise set nLoading to 1.

strUser
Name of the user if required. Can be empty.

strPassword
Password for authentification. Can be empty.

Return Value
The method returns the opened document.

Description
OpenURLDialog displays the "open URL" dialog to the user and presets the input fields with the given parameters.

3.2.12 DTDSchemaGeneratorDlg

See also

Properties and Methods

Standard automation properties
Application
Parent

DTDSchemaFormat
ValueList
TypeDetection
FrequentElements
MergeAllEqualNamed
ResolveEntities
AttributeTypeDefinition
GlobalAttributes
OnlyStringEnums
MaxEnumLength
OutputPath
OutputPathDialogAction

Description
Use this object to configure the generation of a schema or DTD. The method GenerateDTDOrSchemaEx expects a DTDSchemaGeneratorDlg as parameter to configure the generation as well as the associated user interactions.

Application

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

AttributeTypeDefinition

Property: AttributeTypeDefinition as `SPYAttributeTypeDefinition`

Description
Specifies how attribute definitions get merged.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

DTDSchemaFormat

Property: DTDSchemaFormat as `SPYDTDSchemaFormat`

Description
Sets the schema output format to DTD, or W3C.

Errors

3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

FrequentElements

Property: FrequentElements as `SPYFrequentElements`

Description
Shall the types for all elements be defined as global? Use that value *spyGlobalComplexType* to define them on global scope. Otherwise, use the value *spyGlobalElements*.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

GlobalAttributes

Property: GlobalAttributes as Boolean

Description
Shall attributes with same name and type be resolved globally?

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

MaxEnumLength

Property: MaxEnumLength as Integer

Description
Specifies the maximum number of characters allowed for enumeration names. If one value is longer than this, no enumeration will be generated.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

MergeAllEqualNamed

Property: MergeAllEqualNamed as Boolean

Description
Shall types of all elements with the same name be merged into one type?

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

OnlyStringEnums

Property: OnlyStringEnums as Boolean

Description
Specifies if enumerations will be created only for plain strings or all types of values.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

OutputPath

Property: OutputPath as String

Description
Selects the file name for the generated schema/DTD.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

OutputPathDialogAction

Property: OutputPathDialogAction as `SPYDialogAction`

Description
Defines how the sub-dialog for selecting the schema/DTD output path gets handled. Set this value to *spyDialogUserInput(2)* to show the dialog with the current value of the OutputPath property as default. Use *spyDialogOK(0)* to hide the dialog from the user.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as `Dialogs` (read-only)

Description
Access the parent of the object.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

ResolveEntities

Property: ResolveEntities as Boolean

Description
Shall all entities be resolved before generation starts? If yes, an info-set will be built.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

TypeDetection

Property: TypeDetection as SPYTypeDetection

Description
Specifies granularity of simple type detection.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

ValueList

Property: ValueList as Integer

Description
Generate not more than this amount of enumeration-facets per type. Set to -1 for unlimited.

Errors
3000 The object is no longer valid.
3001 Invalid address for the return parameter was specified.

3.2.13 ElementList

See also

Properties
Count
Item

Methods
RemoveElement

Description
Element lists are used for different purposes during export and import of data. Depending on this purpose, different properties of ElementListItem are used.

It can hold
- a list of table names returned by a call to Application. GetDatabaseTables,
- a list of field names retuned by a call to Application. GetDatabaseImportElementList or Application. GetTextImportElementList,
- a field name filter list used in Application. ImportFromDatabase and Application. ImportFromText,
- a list of table names and counts for their rows and columns as returned by calls to GetExportElementList or
- a field name filter list used in Document. ExportToDatabase and Document. ExportToText.

Count

See also

Property: Count as long (read-only)

Description
Count of elements in this collection.

Item

See also

Method: Item(n as long) as ElementListItem

Description
Gets the element with the index n from this collection. The first item has index 1.

RemoveElement

See also

Method: RemoveElement(Index as long)

Description
RemoveElement removes the element Index from the collection. The first Item has index 1.

3.2.14 ElementListItem

See also

Properties
Name

ElementKind

FieldCount
RecordCount

Description
An element in an ElementList. Usage of its properties depends on the purpose of the element list. For details see ElementList.

ElementKind

See also

Property: ElementKind as SPYXMLDataKind

Description
Specifies if a field should be imported as XML element (data value of spyXMLDataElement) or attribute (data value of spyXMLDataAttr).

FieldCount

See also

Property: `FieldCount` as long (read-only)

Description
Count of fields (i.e. columns) in the table described by this element. This property is only valid after a call to DocumentGetExportElementList.

Name

See also

Property: `Name` as String (read-only)

Description
Name of the element. This is either the name of a table or a field, depending on the purpose of th element list.

RecordCount

See also

Property: `RecordCount` as long (read-only)

Description
Count of records (i.e. rows) in the table described by this element. This property is only valid after a call to DocumentGetExportElementList.

3.2.15 ExportSettings

See also

Properties

ElementList

EntitiesToText

ExportAllElements
SubLevelLimit

FromAttributes
FromSingleSubElements
FromTextValues

CreateKeys
IndependentPrimaryKey

Namespace

ExportCompleteXML
StartFromElement

Description
ExportSettings contains options used during export of XML data to a database or text file. See Import and export of data for a general overview.

CreateKeys

See also

Property: `CreateKeys` as Boolean

Description
This property turns creation of keys (i.e. primary key and foreign key) on or off. Default is True.

ElementList

See also

Property: `ElementList` as `ElementList`

Description
Default is empty list. This list of elements defines which fields will be exported. To get the list of available fields use `Document.GetExportElementList`. It is possible to prevent exporting columns by removing elements from this list with `ElementList.RemoveElement` before passing it to `Document.ExportToDatabase` or `Document.ExportToText`.

EntitiesToText

See also

Property: `EntitiesToText` as Boolean

Description
Defines if XML entities should be converted to text or left as they are during export. Default is True.

ExportAllElements

See also

Property: `ExportAllElements` as Boolean

Description
If set to true, all elements in the document will be exported. If set to false, then `ExportSettings.SubLevelLimit` is used to restrict the number of sub levels to export. Default is true.

ExportCompleteXML

See also

Property: ExportCompleteXML as Boolean

Description
Defines whether the complete XML is exported or only the element specified by

StartFromElement and its children. Default is True.

FromAttributes

See also

Property: `FromAttributes` as Boolean

Description
`SetFromAttributes` to false if no export data should be created from attributes. Default is True.

FromSingleSubElements

See also

Property: `FromSingleSubElements` as Boolean

Description
`SetFromSingleSubElements` to false if no export data should be created from elements. Default is True.

FromTextValues

See also

Property: `FromTextValues` as Boolean

Description
`SetFromTextValues` to false if no export data should be created from text values. Default is True.

IndependentPrimaryKey

See also

Property: `IndependentPrimaryKey` as Boolean

Description
Turns creation of independent primary key counter for every element on or off. If `ExportSettings.CreateKeys` is False, this property will be ignored. Default is True.

Namespace

See also

Property: `Namespace` as `SPYExportNamespace`

Description
The default setting removes all namespace prefixes from the element names. In some database formats the colon is not a legal character. Default is `spyNoNamespace`.

StartFromElement

See also

Property: StartFromElement as String

Description
Specifies the start element for the export. This property is only considered when ExportCompleteXML is false.

SubLevelLimit

See also

Property: `SubLevelLimit` as Integer

Description
Defines the number of sub levels to include for the export. Default is 0. This property is ignored if `ExportSettings.ExportAllElements` is true.

3.2.16 FileSelectionDlg

See also

Properties and Methods

Standard automation properties
Application
Parent

Dialog properties
FullName

Acceptance or cancellation of action that caused event
DialogAction

Description
The dialog object allows you to receive information about an event and pass back information to the event handler in the same way as with a user dialog. Use the FileSelectionDlg.FullName to select or modify the file path and set the FileSelectionDlg.DialogAction property to cancel or agree with the action that caused the event.

Application

See also

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
2400 The object is no longer valid.
2401 Invalid address for the return parameter was specified.

DialogAction

Property: `DialogAction` as `SPYDialogAction`

Description
If you want your script to perform the file selection operation without any user interaction necessary, simulate user interaction by either setting the property to *spyDialogOK(0)* or *spyDialogCancel(1)*.
To allow your script to fill in the default values but let the user see and react on the dialog, use the value *spyDialogUserInput(2)*. If you receive a FileSelectionDlg object in an event handler, *spyDialogUserInput(2)* is not supported and will be interpreted as *spyDialogOK(0)*.

Errors
2400 The object is no longer valid.
2401 Invalid value for dialog action or invalid address for the return parameter was specified.

FullName

Property: `FullName` as String

Description
Access the full path of the file the gets selected by the dialog. Most events that pass a FileSelectionDlg object to you allow you modify this value and thus influence the action that caused the event (e.g. load or save to a different location).

Errors
2400 The object is no longer valid.
2401 Invalid address for the return parameter was specified.

Parent

See also

Property: `Parent` as `Dialogs` (read-only)

Description
Access the parent of the object.

Errors
2400 The object is no longer valid.
2401 Invalid address for the return parameter was specified.

3.2.17 FindInFilesDlg

See also

Properties and Methods

Standard automation properties
Application
Parent

Find
RegularExpression

Description
Use this object to configure the search (or replacement) for strings in files. The method FindInFiles expects a FindInFilesDlg as parameter.

AdvancedXMLSearch

Property: AdvancedXMLSearch as Boolean

Description
Specifies if the XML search properties (XMLElementNames, XMLElementContents, XMLAttributeNames, XMLAttributeContents, XMLComments, XMLCData, XMLPI and XMLRest) are considered. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

Application

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

DoReplace

Property: DoReplace as Boolean

Description
Specifies if the matched string is replaced by the string defined in Replace. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

FileExtension

Property: FileExtension as String

Description
Specifies the file filter of the files that should be considered during the search. Multiple file filters must be delimited with a semicolon (eg: *.xml;*.dtd;a*.xsd). Use the wildcards * and ? to define the file filter.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

Find

Property: Find as String

Description
Specifies the string to search for.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

IncludeSubfolders

Property: IncludeSubfolders as Boolean

Description
Specifies if subfolders are searched too. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

MatchCase

Property: MatchCase as Boolean

Description
Specifies if the search is case sensitive. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

MatchWholeWord

Property: MatchWholeWord as Boolean

Description
Specifies whether the whole word or just a part of it must match. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as `Dialogs` (read-only)

Description
Access the parent of the object.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

RegularExpression

Property: RegularExpression as Boolean

Description
Specifies if Find contains a regular expression. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

Replace

Property: Replace as String

Description
Specifies the replacement string. The matched string is only replaced if DoReplace is set true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

ReplaceOnDisk

Property: ReplaceOnDisk as Boolean

Description
Specifies if the replacement is done directly on disk. The modified file is not opened. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

SearchInProjectFilesDoExternal

Property: SearchInProjectFilesDoExternal as Boolean

Description
Specifies if the external folders in the open project are searched, when a project search is

performed. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

SearchLocation

Property: SearchLocation as SPYFindInFilesSearchLocation

Description
Specifies the location of the search. The default is spyFindInFiles_Documents.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

ShowResult

Property: ShowResult as Boolean

Description
Specifies if the result is displayed in the Find in Files output window. The default is false.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

StartFolder

Property: StartFolder as String

Description
Specifies the folder where the disk search starts.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLAttributeContents

Property: XMLAttributeContents as Boolean

Description
Specifies if attribute contents are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLAttributeNames

Property: XMLAttributeNames as Boolean

Description

Specifies if attribute names are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLCData

Property: XMLCData as Boolean

Description
Specifies if CData tags are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLComments

Property: XMLComments as Boolean

Description
Specifies if comments are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLElementContents

Property: XMLElementContents as Boolean

Description
Specifies if element contents are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLElementNames

Property: XMLElementNames as Boolean

Description
Specifies if element names are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLPI

Property: XMLPI as Boolean

Description
Specifies if XML processing instructions are searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

XMLRest

Property: XMLRest as Boolean

Description
Specifies if the rest of the XML (which is not covered by the other XML search properties) is searched when AdvancedXMLSearch is true. The default is true.

Errors
3500 The object is no longer valid.
3501 Invalid address for the return parameter was specified.

3.2.18 FindInFilesResult

See also

Properties and Methods

Standard automation properties
Application
Parent

Count
Item

Path
Document

Description
This object represents a file that matched the search criteria. It contains a list of FindInFilesResultMatch objects that describe the matching position.

Application

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
3700 The object is no longer valid.
3701 Invalid address for the return parameter was specified.

Count

Property: `Count` as long (read-only)

Description
Count of elements in this collection.

Document

Property: Path as Document (read-only)

Description
This property returns the Document object if the matched file is already open in XMLSpy.

Errors
3700 The object is no longer valid.
3701 Invalid address for the return parameter was specified.

Item

Method: `Item`(`n` as long) as FindInFilesResultMatch

Description
Gets the element with the index `n` from this collection. The first item has index 1.

Parent

Property: `Parent` as FindInFilesResults (read-only)

Description
Access the parent of the object.

Errors
3700 The object is no longer valid.
3701 Invalid address for the return parameter was specified.

Path

Property: Path as String (read-only)

Description
Returns the path of the file that matched the search criteria.

Errors
3700 The object is no longer valid.
3701 Invalid address for the return parameter was specified.

3.2.19 FindInFilesResultMatch

See also

Properties and Methods

Standard automation properties
Application
Parent

Line
Position
Length
LineText
Replaced

Description
Contains the exact position in the file of the matched string.

Application

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

Length

Property: Length as Long (read-only)

Description
Returns the length of the matched string.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

Line

Property: Line as Long (read-only)

Description
Returns the line number of the match. The line numbering starts with 0.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

LineText

Property: LineText as String (read-only)

Description
Returns the text of the line.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as FindInFilesResult (read-only)

Description
Access the parent of the object.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

Position

Property: Position as Long (read-only)

Description
Returns the start position of the match in the line. The position numbering starts with 0.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

Replaced

Property: Replaced as Boolean (read-only)

Description
True if the matched string was replaced.

Errors
3800 The object is no longer valid.
3801 Invalid address for the return parameter was specified.

3.2.20 FindInFilesResults

See also

Properties and Methods

Standard automation properties
Application
Parent

Count
Item

Description

This is the result of the FindInFiles method. It is a list of FindInFilesResult objects.

Application

Property: `Application` as `Application` (read-only)

Description
Access the XMLSpy application object.

Errors
3600 The object is no longer valid.
3601 Invalid address for the return parameter was specified.

Count

Property: `Count` as long (read-only)

Description
Count of elements in this collection.

Item

Method: `Item(n` as long) as FindInFilesResult

Description
Gets the element with the index `n` from this collection. The first item has index 1.

Parent

Property: `Parent` as Application (read-only)

Description
Access the parent of the object.

Errors
3600 The object is no longer valid.
3601 Invalid address for the return parameter was specified.

3.2.21 GenerateSampleXMLDlg

See also

Properties and Methods

Standard automation properties
Application
Parent

NonMandatoryAttributes
RepeatCount
FillAttributesWithSampleData
FillElementsWithSampleData
ContentOfNillableElementsIsNonMandatory
TryToUseNonAbstractTypes

Optimization
SchemaOrDTDAssignment
LocalNameOfRootElement
NamespaceURIOfRootElement
OptionsDialogAction

Properties that are no longer supported
NonMandatoryElements - obsolete
TakeFirstChoice - obsolete
FillWithSampleData - obsolete

Description
Used to set the parameters for the generation of sample XML instances based on a W3C schema or DTD.

Application

Property: Application as Application (read-only)

Description
Access the XMLSpy application object.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

Parent

Property: Parent as Dialogs (read-only)

Description
Access the parent of the object.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

NonMandatoryAttributes

Property: NonMandatoryAttributes as Boolean

Description
If true attributes which are not mandatory are created in the sample XML instance file.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

NonMandatoryElements - obsolete

Property: NonMandatoryElements as Boolean

Description
Do no longer use this property. Use Optimization, instead.

Errors
0001 The property is no longer accessible.

TakeFirstChoice - obsolete

Property: `TakeFirstChoice` as Boolean

Description
Do no longer use this property.

Errors
0001 The property is no longer accessible.

RepeatCount

Property: `RepeatCount` as long

Description
Number of elements to create for repeated types.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

FillWithSampleData - obsolete

Property: `FillWithSampleData` as Boolean

Description
Do no longer access this property. Use `FillAttributesWithSampleData` and `FillElementsWithSampleData`, instead.

Errors
0001 The property is no longer accessible.

FillElementsWithSampleData

Property: `FillElementsWithSampleData` as Boolean

Description
If true, elements will have sample content.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

FillAttributesWithSampleData

Property: `FillAttributesWithSampleData` as Boolean

Description
If true, attributes will have sample content.

Errors
2200 The object is no longer valid.

2201 Invalid address for the return parameter was specified.

ContentOfNillableElementsIsNonMandatory

Property: `ContentOfNillableElementsIsNonMandatory` as Boolean

Description
If true, the contents of elements that are nillable will not be treated as mandatory.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

TryToUseNonAbstractTypes

Property: `TryToUseNonAbstractTypes` as Boolean

Description
If true, tries to use a non-abstract type for xsi:type, if element has an abstract type.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

Optimization

Property: `Optimization` as `SPYSampleXMLGenerationOptimization`

Description
Specifies which elements will be generated.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

SchemaOrDTDAssignment

Property: `SchemaOrDTDAssignment` as `SPYSampleXMLGenerationSchemaOrDTDAssignment`

Description
Specifies in which way a reference to the related schema or DTD - which is this document - will be generated into the sample XML.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

LocalNameOfRootElement

Property: `LocalNameOfRootElement` as String

Description
Specifies the local name of the root element for the generated sample XML.

Errors

2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

NamespaceURIOfRootElement

Property: `NamespaceURIOfRootElement` as String

Description
Specifies the namespace URI of the root element for the generated sample XML.

Errors
2200 The object is no longer valid.
2201 Invalid address for the return parameter was specified.

OptionsDialogAction

Property: `OptionsDialogAction` as `SPYDialogAction`

Description
To allow your script to fill in the default values and let the user see and react on the dialog, set this property to the value *spyDialogUserInput(2)*. If you want your script to define all the options in the schema documentation dialog without any user interaction necessary, use *spyDialogOK(0)*. Default is *spyDialogOK.*

Errors
2200 The object is no longer valid.
2201 Invalid value has been used to set the property.
Invalid address for the return parameter was specified.

3.2.22 GridView

See also

Methods
`Deselect`
`Select`

`SetFocus`

Properties
`CurrentFocus`

`IsVisible`

Description
`GridView` Class

Events

OnBeforeDrag

See also

Event: `OnBeforeDrag()` as `Boolean`

XMLSpy scripting environment - VBScript:

```
Function On_BeforeDrag()
	'On_BeforeStartEditing=False 'to prohibit dragging
End Function
```

XMLSpy scripting environment - JScript:

```
function On_BeforeDrag()
{
	//return false;/*to prohibit dragging*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (4, ...)	//nEventID=4
```

Description

This event gets fired on an attempt to drag an XMLData element on the grid view. Return *false* to prevent dragging the data element to a different position.

OnBeforeDrop

See also

Event: `OnBeforeDrop(objXMLData as XMLData) as Boolean`

XMLSpy scripting environment - VBScript:

```
Function On_BeforeDrop(objXMLData)
	'On_BeforeStartEditing=False 'to prohibit dropping
End Function
```

XMLSpy scripting environment - JScript:

```
function On_BeforeDrop(objXMLData)
{
	//return false;/*to prohibit dropping*/
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (5, ...)	//nEventID=5
```

Description

This event gets fired on an attempt to drop a previously dragged XMLData element on the grid view. Return *false* to prevent the data element to be moved from its original position to the drop destination position.

OnBeforeStartEditing

See also

Event: `OnBeforeStartEditing(objXMLData as XMLData, bEditingName as Boolean) as Boolean`

XMLSpy scripting environment - VBScript:

```
Function On_BeforeStartEditing(objXMLData, bEditingName)
	'On_BeforeStartEditing=False 'to prohibit editing the field
```



```
End Function
```

XMLSpy scripting environment - JScript:

```
function On_BeforeStartEditing(objXMLData, bEditingName)
{
	//return false; /* to prohibit editing the field */
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (1, ...)	//nEventID=1
```

Description

This event gets fired before the editing mode for a grid cell gets entered. If the parameter *bEditingName* is true, the name part of the element will be edited, it its value is false, the value part will be edited.

OnEditingFinished

See also

Event: `OnEditingFinished(objXMLData as XMLData, bEditingName as Boolean)`

XMLSpy scripting environment - VBScript:

```
Function On_EditingFinished(objXMLData, bEditingName)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_EditingFinished(objXMLData, bEditingName)
{
}
```

XMLSpy IDE Plugin:

```
IXMLSpyPlugIn.OnEvent (2, ...)	//nEventID=2
```

Description

This event gets fired when the editing mode of a grid cell gets left. The parameter *bEditingName* specifies if the name part of the element has been edited.

OnFocusChanged

See also

Event: `OnFocusChanged(objXMLData as XMLData, bSetFocus as Boolean, bEditingName as Boolean)`

XMLSpy scripting environment - VBScript:

```
Function On_FocusChanged(objXMLData, bSetFocus, bEditingName)
End Function
```

XMLSpy scripting environment - JScript:

```
function On_FocusChanged(objXMLData, bSetFocus, bEditingName)
{
}
```

XMLSpy IDE Plugin:
```
IXMLSpyPlugIn.OnEvent (3, ...)    //nEventId=3
```

Description
This event gets fired whenever a grid cell receives or looses the cursor focus. If the parameter *bEditingName* is *true*, focus of the name part of the grid element has changed. Otherwise, focus of the value part has changed.

CurrentFocus

See also

Property: `CurrentFocus` as `XMLData`

Description
Holds the XML element with the current focus. This property is read-only.

Deselect

See also

Method: `Deselect(pData as XMLData)`

Description
Deselects the element `pData` in the grid view.

IsVisible

See also

Property: `IsVisible` as Boolean

Description
True if the grid view is the active view of the document. This property is read-only.

Select

See also

Method: `Select (pData as XMLData)`

Description
Selects the XML element `pData` in the grid view.

SetFocus

See also

Method: `SetFocus (pFocusData as XMLData)`

Description
Sets the focus to the element `pFocusData` in the grid view.

3.2.23 SchemaDocumentationDlg

See also

Properties and Methods

Standard automation properties
Application
Parent

Interaction and visibility properties
OutputFile
OutputFileDialogAction
OptionsDialogAction
ShowProgressBar
ShowResult

Document generation options and methods
OutputFormat
UseFixedDesign
SPSFile
EmbedDiagrams
DiagramFormat
MultipleOutputFiles
EmbedCSSInHTML
CreateDiagramsFolder
GenerateRelativeLinks

IncludeAll
IncludeIndex
IncludeGlobalAttributes
IncludeGlobalElements
IncludeLocalAttributes
IncludeLocalElements
IncludeGroups
IncludeComplexTypes
IncludeSimpleTypes
IncludeAttributeGroups
IncludeRedefines
IncludeReferencedSchemas

AllDetails
ShowDiagram
ShowNamespace
ShowType
ShowChildren
ShowUsedBy
ShowProperties
ShowSingleFacets
ShowPatterns
ShowEnumerations
ShowAttributes
ShowIdentityConstraints
ShowAnnotations
ShowSourceCode

Description
This object combines all options for schema document generation as they are available through

user interface dialog boxes in XMLSpy. The document generation options are initialized with the values used during the last generation of schema documentation. However, before using the object you have to set the SetOutputFile property to a valid file path. Use OptionsDialogAction, OutputFileDialogAction and ShowProgressBar to specify the level of user interaction desired. You can use FolderAll and AllDetails to set whole option groups at once or the individual properties to operate on a finer granularity.

AllDetails

See also

Method: AllDetails (i_bDetailsOn as Boolean)

Description
Use this method to turn all details options on or off.

Errors
2900 The object is no longer valid.

Application

See also

Property: Application as Application (read-only)

Description
Access the XMLSpy application object.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

CreateDiagramsFolder

See also

Property: CreateDiagramsFolder as Boolean

Description
Set this property to true , to create a directory for the created images. Otherwise the diagrams will be created next to the documentation. This property is only available when the diagrams are not embedded. The property is initialized with the value used during the last call to DocumentGenerateWSDLDocumentation. The default for the first run is false.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

DiagramFormat

See also

Property: DiagramFormat as SPYImageKind

Description
This property specifies the generated diagram image type. This property is not available for HTML documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is PNG.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

EmbedCSSInHTML

See also

Property: EmbedCSSInHTML as Boolean

Description
Set this property to true, to embed the CSS data in the generated HTML document. Otherwise a separate file will be created and linked. This property is only available for HTML documentation. The property is initialized with the value used during the last call to DocumentGenerateWSDLDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

EmbedDiagrams

See also

Property: EmbedDiagrams as Boolean

Description
Set this property to true, to embed the diagrams in the generated document. This property is not available for HTML documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

GenerateRelativeLinks

See also

Property: GenerateRelativeLinks as Boolean

Description
Set this property to true, to create relative paths to local files. This property is not available for HTML documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is false.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeAll

See also

Method: `IncludeAll (i_bInclude as Boolean)`

Description
Use this method to mark or unmark all include options.

Errors
2900 The object is no longer valid.

IncludeAttributeGroups

See also

Property: `IncludeAttributeGroups as Boolean`

Description
Set this property to true, to include attribute groups in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeComplexTypes

See also

Property: `IncludeComplexTypes as Boolean`

Description
Set this property to true, to include complex types in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeGlobalAttributes

See also

Property: IncludeGlobalAttributes as Boolean

Description
Set this property to true, to include global attributes in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeGlobalElements

See also

Property: IncludeGlobalElements as Boolean

Description
Set this property to true, to include global elements in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeGroups

See also

Property: IncludeGroups as Boolean

Description
Set this property to true, to include groups in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeIndex

See also

Property: IncludeIndex as Boolean

Description
Set this property to true, to include an index in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation.

The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeLocalAttributes

See also

Property: `IncludeLocalAttributes` as Boolean

Description
Set this property to true, to include local attributes in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeLocalElements

See also

Property: `IncludeLocalElements` as Boolean

Description
Set this property to true, to include local elements in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeRedefines

See also

Property: `IncludeRedefines` as Boolean

Description
Set this property to true, to include redefines in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeReferencedSchemas

See also

Property: `IncludeReferencedSchemas` as Boolean

Description
Set this property to true, to include referenced schemas in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

IncludeSimpleTypes

See also

Property: `IncludeSimpleTypes` as Boolean

Description
Set this property to true, to include simple types in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

MultipleOutputFiles

See also

Property: `MultipleOutputFiles` as Boolean

Description
Set this property to true, to split the documentation files. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is false.

Errors
2900 The object is no longer valid.
2901 Invalid value has been used to set the property.
Invalid address for the return parameter was specified.

OptionsDialogAction

See also

Property: `OptionsDialogAction` as SPYDialogAction

Description
To allow your script to fill in the default values and let the user see and react on the dialog, set this property to the value *spyDialogUserInput(2)*. If you want your script to define all the options in the schema documentation dialog without any user interaction necessary, use *spyDialogOK(0)*. Default is *spyDialogOK.*

Errors

2900 The object is no longer valid.
2901 Invalid value has been used to set the property.
Invalid address for the return parameter was specified.

OutputFile

See also

Property: `OutputFile` as String

Description
Full path and name of the file that will contain the generated documentation. In case of HTML output, additional '.png' files will be generated based on this filename. The default value for this property is an empty string and needs to be replaced before using this object in a call to DocumentGenerateSchemaDocumentation.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

OutputFileDialogAction

See also

Property: `OutputFileDialogAction` as SPYDialogAction

Description
To allow the user to select the output file with a file selection dialog, set this property to *spyDialogUserInput(2)*. If the value stored in OutputFile should be taken and no user interaction should occur, use *spyDialogOK(0)*. Default is *spyDialogOK.*

Errors
2900 The object is no longer valid.
2901 Invalid value has been used to set the property.
Invalid address for the return parameter was specified.

OutputFormat

See also

Property: `OutputFormat` as SPYSchemaDocumentationFormat

Description
Defines the kind of documentation that will be generated: HTML (value=0), MS-Word (value=1), or RTF (value=2). The property gets initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is HTML.

Errors
2900 The object is no longer valid.
2901 Invalid value has been used to set the property.
Invalid address for the return parameter was specified.

Parent

See also

Property: Parent as Dialogs (read-only)

Description
Access the parent of the object.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowAnnotations

See also

Property: ShowAnnotations as Boolean

Description
Set this property to true, to show the annotations to a type definition in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowAttributes

See also

Property: ShowAttributes as Boolean

Description
Set this property to true, to show the type definitions attributes in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowChildren

See also

Property: ShowChildren as Boolean

Description
Set this property to true, to show the children of a type definition as links in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowDiagram

See also

Property: `ShowDiagram` as Boolean

Description
Set this property to true , to show type definitions as diagrams in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowEnumerations

See also

Property: `ShowEnumerations` as Boolean

Description
Set this property to true , to show the enumerations contained in a type definition in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowIdentityConstraints

See also

Property: `ShowIdentityConstraints` as Boolean

Description
Set this property to true , to show a type definitions identity constraints in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowNamespace

See also

Property: ShowNamespace as Boolean

Description
Set this property to true , to show the namespace of type definitions in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowPatterns

See also

Property: ShowPatterns as Boolean

Description
Set this property to true , to show the patterns of a type definition in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowProgressBar

See also

Property: ShowProgressBar as Boolean

Description
Set this property to true , to make the window showing the document generation progress visible. Use false , to hide it. Default is false .

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowProperties

See also

Property: ShowProperties as Boolean

Description
Set this property to true , to show the type definition properties in the schema documentation. The property is initialized with the value used during the last call to

DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowResult

See also

Property: ShowResult as Boolean

Description
Set this property to true, to automatically open the resulting document when generation was successful. HTML documentation will be opened in XMLSpy. To show Word documentation, MS-Word will be started. The property gets initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowSingleFacets

See also

Property: ShowSingleFacets as Boolean

Description
Set this property to true, to show the facets of a type definition in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowSourceCode

See also

Property: ShowSourceCode as Boolean

Description
Set this property to true, to show the XML source code for type definitions in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowType

See also

Property: ShowType as Boolean

Description
Set this property to true, to show the type of type definitions in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

ShowUsedBy

See also

Property: ShowUsedBy as Boolean

Description
Set this property to true, to show the used-by relation for type definitions in the schema documentation. The property is initialized with the value used during the last call to DocumentGenerateSchemaDocumentation. The default for the first run is true.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

SPSFile

See also

Property: SPSFile as String

Description
Full path and name of the SPS file that will be used to generate the documentation.

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

UseFixedDesign

See also

Property: UseFixedDesign as Boolean

Description
Specifies whether the documentation should be created with a fixed design or with a design specified by a SPS file (which requires StyleVision).

Errors
2900 The object is no longer valid.
2901 Invalid address for the return parameter was specified.

3.2.24 SpyProject

See also

Methods
CloseProject
SaveProject
SaveProjectAs

Properties
RootItems
ProjectFile

Description
SpyProject Class

CloseProject

See also

Declaration: `CloseProject(`*`bDiscardChanges`* as Boolean, *`bCloseFiles`* as Boolean, *`bDialog`* as Boolean)

Parameters
`bDiscardChanges`
Set `bDiscardChanges` to FALSE if you want to save the changes of the open project files and the project.

`bCloseFiles`
Set `bCloseFiles` to TRUE to close all open project files.

`bDialog`
Show dialogs for user input.

Description
`CloseProject` closes the current project.

ProjectFile

See also

Declaration: `ProjectFile` as String

Description
Path and filename of the project.

RootItems

See also

Declaration: `RootItems` as `SpyProjectItems`

Description
Root level of collection of project items.

SaveProject

See also

Declaration: `SaveProject`

Description
`SaveProject` saves the current project.

SaveProjectAs

See also

Declaration: `SaveProjectAs` (`strPath` as String, `bDialog` as Boolean)

Parameters
`strPath`
Full path with file name of new project file.

`bDialog`
If `bDialog` is TRUE, a file-dialog will be displayed.

Description
`SaveProjectAs` stores the project data into a new location.

3.2.25 SpyProjectItem

See also

Methods
`Open`

Properties
`ChildItems`
`ParentItem`
`FileExtensions`
`ItemType`
`Name`
`Path`
`ValidateWith`
`XMLForXSLTransformation`
`XSLForXMLTransformation`
`XSLTransformationFileExtension`
`XSLTransformationFolder`

Description

SpyProjectItem Class

ChildItems

See also

Declaration: `ChildItems` as `SpyProjectItems`

Description
If the item is a folder, `ChildItems` is the collection of the folder content.

FileExtensions

See also

Declaration: `FileExtensions` as String

Description
Used to set the file extensions if the project item is a folder.

ItemType

See also

Declaration: `ItemType` as `SPYProjectItemTypes`

Description
This property is read-only.

Name

See also

Declaration: `Name` as String

Description
Name of the project item. This property is read-only.

Open

See also

Declaration: `Open` as `Document`

Return Value
The project item opened as document.

Description
Opens the project item.

ParentItem

See also

Declaration: `ParentItem` as `SpyProjectItem`

Description
Parent item of the current project item. Can be NULL (Nothing) if the project item is a top-level item.

Path

See also

Declaration: `Path` as String

Description
Path of project item. This property is read-only.

ValidateWith

See also

Declaration: `ValidateWith` as String

Description
Used to set the schema/DTD for validation.

XMLForXSLTransformation

See also

Declaration: `XMLForXSLTransformation` as String

Description
Used to set the XML for XSL transformation.

XSLForXMLTransformation

See also

Declaration: `XSLForXMLTransformation` as String

Description
Used to set the XSL for XML transformation.

XSLTransformationFileExtension

See also

Declaration: `XSLTransformationFileExtension` as String

Description
Used to set the file extension for XSL transformation output files.

XSLTransformationFolder

See also

Declaration: `XSLTransformationFolder` as String

Description
Used to set the destination folder for XSL transformation output files.

3.2.26 SpyProjectItems

See also

Methods
AddFile
AddFolder
AddURL
RemoveItem

Properties
Count
Item

Description
SpyProjectItems Class

AddFile

See also

Declaration: `AddFile` (*`strPath`* as String)

Parameters

strPath
Full path with file name of new project item

Description
The method adds a new file to the collection of project items.

AddFolder

See also

Declaration: `AddFolder` (*`strName`* as String)

Parameters

strName
Name of the new folder.

Description
The method `AddFolder` adds a folder with the name `strName` to the collection of project items.

AddURL

See also

Declaration: AddURL (*strURL* as String, *nURLType* as SPYURLTypes, *strUser* as String, *strPassword* as String, *bSave* as Boolean)

Description

strURL
URL to open as document.

nURLType
Type of document to open. Set to -1 for auto detection.

strUser
Name of the user if required. Can be empty.

strPassword
Password for authentification. Can be empty.

bSave
Save user and password information.

Description
The method adds an URL item to the project collection.

Count

See also

Declaration: Count as long

Description
This property gets the count of project items in the collection. The property is read-only.

Item

See also

Declaration: Item (*n* as long) as SpyProjectItem

Description
Retrieves the n-th element of the collection of project items. The first item has index 1.

RemoveItem

See also

Declaration: RemoveItem (*pItem* as SpyProjectItem)

Description
RemoveItem deletes the item pItem from the collection of project items.

3.2.27 TextImportExportSettings

See also

Properties for import only
ImportFile

Properties for export only
DestinationFolder
FileExtension
CommentIncluded
RemoveDelimiter
RemoveNewline

Properties for import and export
HeaderRow
FieldDelimiter
EnclosingCharacter
Encoding
EncodingByteOrder

Description
TextImportExportSettings contains options common to text import and export functions.

CommentIncluded

See also

Property: CommentIncluded as Boolean

Description
This property tells whether additional comments are added to the generated text file. Default is true. This property is used only when exporting to text files.

DestinationFolder

See also

Property: `DestinationFolder` as String

Description
The property `DestinationFolder` sets the folder where the created files are saved during text export.

EnclosingCharacter

See also

Property: `EnclosingCharacter` as SPYTextEnclosing

Description
This property defines the character that encloses all field values for import and export. Default is `spyNoEnclosing`.

Encoding

See also

Property: `Encoding` as String

Description
The property `Encoding` sets the character encoding for the text files for importing and exporting.

EncodingByteOrder

See also

Property: `EncodingByteOrder` as `SPYEncodingByteOrder`

Description
The property `EncodingByteOrder` sets the byte order for Unicode characters. Default is `spyNONE`.

FieldDelimiter

See also

Property: `FieldDelimiter` as `SPYTextDelimiters`

Description
The property `FieldDelimiter` defines the delimiter between the fields during import and export. Default is `spyTabulator`.

FileExtension

See also

Property: `FileExtension` as String

Description
This property sets the file extension for files created on text export.

HeaderRow

See also

Property: `HeaderRow` as Boolean

Description
The property `HeaderRow` is used during import and export. Set `HeaderRow` true on import, if the first line of the text file contains the names of the columns. Set `HeaderRow` true on export, if the first line in the created text files should contain the name of the columns. Default value is true.

ImportFile

See also

Property: `ImportFile` as String

Description
This property is used to set the text file for import. The string has to be a full qualified path. See also Import and Export.

RemoveDelimiter

See also

Property: RemoveDelimiter as Boolean

Description
The property RemoveDelimiter defines whether characters in the text that are equal to the delimiter character are removed. Default is false. This property is used only when exporting to text files.

RemoveNewline

See also

Property: RemoveNewline as Boolean

Description
The property RemoveNewline defines whether newline characters in the text are removed. Default is false. This property is used only when exporting to text files.

3.2.28 TextView

See also

Properties and Methods

Application
Parent

LineFromPosition
PositionFromLine
LineLength
SelText
GetRangeText
ReplaceText
MoveCaret
GoToLineChar
SelectText
SelectionStart
SelectionEnd
Text
LineCount
Length

Description

Events

OnBeforeShowSuggestions

See also

Event: OnBeforeShowSuggestions() as Boolean

Description
This event gets fired before a suggestion window is shown. The Document property Suggestions contains a string array that is recommended to the user. It is possible to modify the displayed recommendations during this event. Before doing so you have to assign an empty array to the Suggestions property. The best location for this is the OnDocumentOpened event. To prevent the suggestion window to show up return false and true to continue its display.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:
```
Function On_BeforeShowSuggestions()
End Function
```

XMLSpy scripting environment - JScript:
```
function On_BeforeShowSuggestions()
{
}
```

XMLSpy IDE Plugin:
```
IXMLSpyPlugIn.OnEvent (33, ...)  //nEventID=33
```

OnChar

See also

Event: OnChar(nChar as Long, bExistSuggestion as Boolean) as Boolean

Description
This event gets fired on each key stroke. The parameter nChar is the key that was pressed and bExistSuggestions tells whether a XMLSpy generated suggestions window is displayed after this key. The Document property Suggestions contains a string array that is recommended to the user. It is possible to modify the displayed recommendations during this event. Before doing so you have to assign an empty array to the Suggestions property. The best location for this is the OnDocumentOpened event. To prevent the suggestion window to show up return false and true to continue its display.
It is also possible to create a new suggestions window when none is provided by XMLSpy. Set the Document property Suggestions to a string array with your recommendations and return true.
This event is fired before the OnBeforeShowSuggestions event. If you prevent to show the suggestion window by returning false then OnBeforeShowSuggestions is not fired.

Examples
Given below are examples of how this event can be scripted.

XMLSpy scripting environment - VBScript:
```
Function On_Char(nChar, bExistSuggestions )
End Function
```

XMLSpy scripting environment - JScript:
```
function On_Char(nChar, bExistSuggestions )
{
}
```

XMLSpy IDE Plugin:
```
IXMLSpyPlugIn.OnEvent (35, ...)  //nEventID=35
```

Application

Property: Application as Application (read-only)

Description
Access the XMLSpy application object.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

GetRangeText

Method: GetRangeText(nStart as Long, nEnd as Long) as String

Description
Returns the text in the specified range.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

GoToLineChar

Method: GoToLineChar(nLine as Long, nChar as Long)

Description
Moves the caret to the specified line and character position.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

Length

Property: Length as Long

Description

Returns the character count of the document.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

LineCount

Property: LineCount as Long

Description
Returns the number of lines in the document.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

LineFromPosition

Method: LineFromPosition(nCharPos as Long) as Long

Description
Returns the line number of the character position.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

LineLength

Method: LineLength(nLine as Long) as Long

Description
Returns the length of the line.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

MoveCaret

Method: MoveCaret(nDiff as Long)

Description
Moves the caret nDiff characters.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as Document (read-only)

Description
Access the parent of the object.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

PositionFromLine

Method: PositionFromLine(nLine as Long) as Long

Description
Returns the start position of the line.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

ReplaceText

Method: ReplaceText(nPosFrom as Long, nPosTill as Long, sText as String)

Description
Replaces the text in the specified range.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

SelectionEnd

Property: SelectionEnd as Long

Description
Returns/sets the text selection end position.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

SelectionStart

Property: SelectionStart as Long

Description
Returns/sets the text selection start position.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

SelectText

Method: SelectText(nPosFrom as Long, nPosTill as Long)

Description
Selects the text in the specified range.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

SelText

Property: SelText as String

Description
Returns/sets the selected text.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

Text

Property: Text as String

Description
Returns/sets the document text.

Errors
3900 The object is no longer valid.
3901 Invalid address for the return parameter was specified.

3.2.29 XMLData

See also

Properties
Kind
Name
TextValue

HasChildren
MayHaveChildren
Parent

Methods
GetFirstChild
GetNextChild
GetCurrentChild

InsertChild
InsertChildAfter
InsertChildBefore
AppendChild

EraseAllChildren
EraseChild
EraseCurrentChild

IsSameNode

CountChildren
CountChildrenKind

GetChild
GetChildAttribute
GetChildElement
GetChildKind
GetNamespacePrefixForURI

HasChildrenKind
SetTextValueXMLEncoded

Description
The XMLData interface provides direct XML-level access to a document. You can read and directly modify the XML representation of the document. However, please, note the following restrictions:

- The XMLData representation is only valid when the document is shown in grid view or authentic view.
- When in authentic view, additional XMLData elements are automatically inserted as parents of each visible document element. Typically this is an XMLData of kind spyXMLDataElement with the Name property set to 'Text'.
- When you use the XMLData interface while in a different view mode you will not receive errors, but changes are not reflected to the view and might get lost during the next view switch.

Note also:

- Setting a new text value for an XML element is possible if the element does not have non-text children. A text value can be set even if the element has attributes.
- When setting a new text value for an XML element which has more than one text child, the latter will be deleted and replaced by one new text child.
- When reading the text value of an XML element which has more than one text child, only the value of the first text child will be returned.

Objects of this class represent the different atomic parts of an XML document. See the enumeration type SPYXMLDataKind for the available part types. Each part knows its children, thus forming a XMLData tree with DocumentRootElement at its top. To get the top element of the document content - ignoring the XML header - use DocumentDataRoot. For examples on how to traverse the XMLData tree see Using XMLData to modify document structure and GetNextChild.

AppendChild

See also

Declaration: AppendChild (*pNewData* as XMLData)

Description
AppendChild appends pNewData as last child to the XMLData object. See also Using XMLData.

Errors
1500 The XMLData object is no longer valid.
1505 Invalid XMLData kind was specified.
1506 Invalid address for the return parameter was specified.
1507 Element cannot have Children
1512 Cyclic insertion - new data element is already part of document

1514 Invalid XMLData kind was specified for this position.
1900 Document must not be modified

Example

```
Dim objCurrentParent As XMLData
Dim objNewChild As XMLData

Set objNewChild = objSpy.ActiveDocument.CreateChild(spyXMLDataElement)
Set objCurrentParent = objSpy.ActiveDocument.RootElement

objCurrentParent.AppendChild objNewChild

Set objNewChild = Nothing
```

CountChildren

See also

Declaration: `CountChildren` as long

Description

`CountChildren` gets the number of children.

Available with TypeLibrary version 1.5

Errors

1500 The XMLData object is no longer valid.

CountChildrenKind

See also

Declaration: `CountChildrenKind` (*nKind* as `SPYXMLDataKind`) as long

Description

`CountChildrenKind` gets the number of children of the specific kind.

Available with TypeLibrary version 1.5

Errors

1500 The XMLData object is no longer valid.

EraseAllChildren

See also

Declaration: `EraseAllChildren`

Description

`EraseAllChildren` deletes all associated children of the `XMLData` object.

Errors

1500 The XMLData object is no longer valid.

1900 Document must not be modified

Example
The sample erases all elements of the active document.

```
Dim objCurrentParent As XMLData

Set objCurrentParent = objSpy.ActiveDocument.RootElement
objCurrentParent.EraseAllChildren
```

EraseChild

Method: `EraseChild` (Child as XMLData)

Description
Deletes the given child node.

Errors
1500 Invalid object.
1506 Invalid input xml
1510 Invalid parameter.

EraseCurrentChild

See also

Declaration: `EraseCurrentChild`

Description
`EraseCurrentChild` deletes the current `XMLData` child object. Before you call `EraseCurrentChild` you must initialize an internal iterator with `XMLData.GetFirstChild`. After deleting the current child, `EraseCurrentChild` increments the internal iterator of the XMLData element. No error is returned when the last child gets erased and the iterator is moved past the end of the child list. The next call to `EraseCurrentChild` however, will return error 1503.

Errors
1500 The XMLData object is no longer valid.
1503 No iterator is initialized for this XMLData object, or the iterator points past the last child.
1900 Document must not be modified

Examples

```
// ----------------------------------------
// XMLSpy scripting environment - JScript
// erase all children of XMLData
// ----------------------------------------
// let's get an XMLData element, we assume that the
// cursor selects the parent of a list in grid view
var objList = Application.ActiveDocument.GridView.CurrentFocus;

// the following line would be shorter, of course
//objList.EraseAllChildren ();

// but we want to demonstrate the usage of EraseCurrentChild
if ((objList != null) && (objList.HasChildren))
{
 try
 {
```



```
  objEle = objList.GetFirstChild(-1);
  while (objEle != null)
   objList.EraseCurrentChild();
   // no need to call GetNextChild
 }
 catch (err)
  // 1503 - we reached end of child list
  { if ((err.number & 0xffff) != 1503) throw (err); }
}
```

GetChild

See also

Declaration: `GetChild` (*position* as long) as `XMLData`

Return Value
Returns an XML element as `XMLData` object.

Description
`GetChild()` returns a reference to the child at the given index (zero-based).

Available with TypeLibrary version 1.5

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

GetChildAttribute

Method: `GetChildAttribute` (strName as string) child as XMLData object (`NULL` on error)

Description
Retrieves the attribute having the given name.

Errors
1500 Invalid object.
1510 Invalid parameter.

GetChildElement

Method: `GetChildElement` (strName as string, nIndex as long) child as XMLData object (`NULL` on error)

Description
Retrieves the Nth child element with the given name.

Errors
1500 Invalid object.
1510 Invalid parameter.

GetChildKind

See also

Declaration: GetChildKind (*position* as long, *nKind* as SPYXMLDataKind) as XMLData

Return Value
Returns an XML element as XMLData object.

Description
GetChildKind() returns a reference to a child of this kind at the given index (zero-based). The position parameter is relative to the number of children of the specified kind and not to all children of the object.

Available with TypeLibrary version 1.5

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

GetCurrentChild

See also

Declaration: GetCurrentChild as XMLData

Return Value
Returns an XML element as XMLData object.

Description
GetCurrentChild gets the current child. Before you call GetCurrentChild you must initialize an internal iterator with XMLData.GetFirstChild.

Errors
1500 The XMLData object is no longer valid.
1503 No iterator is initialized for this XMLData object.
1510 Invalid address for the return parameter was specified.

GetFirstChild

See also

Declaration: GetFirstChild (*nKind* as SPYXMLDataKind) as XMLData

Return Value
Returns an XML element as XMLData object.

Description
GetFirstChild initializes a new iterator and returns the first child. Set nKind = -1 to get an iterator for all kinds of children.
REMARK: The iterator is stored inside the XMLData object and gets destroyed when the XMLData object gets destroyed. Be sure to keep a reference to this object as long as you want to use GetCurrentChild, GetNextChild or EraseCurrentChild.

Errors
1500 The XMLData object is no longer valid.
1501 Invalid XMLData kind was specified.
1504 Element has no children of specified kind.
1510 Invalid address for the return parameter was specified.

Example
See the example at XMLData.GetNextChild.

GetNamespacePrefixForURI

Method: GetNamespacePrefixForURI (strURI as string) strNS as string

Description
Returns the namespace prefix of the supplied URI.

Errors
1500 Invalid object.
1510 Invalid parameter.

GetNextChild

See also

Declaration: GetNextChild as XMLData

Return Value
Returns an XML element as XMLData object.

Description
GetNextChild steps to the next child of this element. Before you call GetNextChild you must initialize an internal iterator with XMLData.GetFirstChild.

Check for the last child of the element as shown in the sample below.

Errors
1500 The XMLData object is no longer valid.
1503 No iterator is initialized for this XMLData object.
1510 Invalid address for the return parameter was specified.

Examples

```
' ------------------------------------------
' VBA code snippet - iterate XMLData children
' ------------------------------------------
On Error Resume Next
Set objParent = objSpy.ActiveDocument.RootElement

'get elements of all kinds
Set objCurrentChild = objParent.GetFirstChild(-1)

Do
 'do something useful with the child

 'step to next child
```

```
  Set objCurrentChild = objParent.GetNextChild
Loop Until (Err.Number - vbObjectError = 1503)
```

```
// ---------------------------------------
// XMLSpy scripting environment - JScript
// iterate through children of XMLData
// ---------------------------------------
try
{
   var objXMLData = ... // initialize somehow
   var objChild = objXMLData.GetFirstChild(-1);

   while (true)
   {
      // do something usefull with objChild

      objChild = objXMLData.GetNextChild();
   }
}
catch (err)
{
   if ((err.number & 0xffff) == 1504)
    ; // element has no children
   else if ((err.number & 0xffff) == 1503)
    ;// last child reached
   else
    throw (err);
}
```

GetTextValueXMLDecoded

Method: `GetTextValueXMLDecoded()` as string

Description
Gets the decoded text value of the XML.

Errors
1500 Invalid object.
1510 Invalid parameter.

HasChildren

See also

Declaration: `HasChildren` as Boolean

Description
The property is true if the object is the parent of other `XMLData` objects. This property is read-only.

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

HasChildrenKind

See also

Declaration: `HasChildrenKind` (*nKind* as `SPYXMLDataKind`) as Boolean

Description
The method returns true if the object is the parent of other `XMLData` objects of the specific kind.

Available with TypeLibrary version 1.5

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

InsertChild

See also

Declaration: `InsertChild` (*pNewData* as `XMLData`)

Description
`InsertChild` inserts the new child before the current child (see also `XMLData.GetFirstChild`, `XMLData.GetNextChild` to set the current child).

Errors
1500 The XMLData object is no longer valid.
1503 No iterator is initialized for this XMLData object.
1505 Invalid XMLData kind was specified.
1506 Invalid address for the return parameter was specified.
1507 Element cannot have Children
1512 Cyclic insertion - new data element is already part of document
1514 Invalid XMLData kind was specified for this position.
1900 Document must not be modified

Examples
See `Using XMLData to modify document structure` .

InsertChildAfter

Method: `InsertChildBefore` (Node as XMLData, NewData as XMLData)

Description
Inserts a new XML node (supplied with the second parameter) after the specified node (first parameter).

Errors
1500 Invalid object.
1506 Invalid input xml
1507 No children allowed
1510 Invalid parameter.
1512 Child is already added
1514 Invalid kind at position

InsertChildBefore

Method: `InsertChildBefore` (Node as XMLData, NewData as XMLData)

Description
Inserts a new XML node (supplied with the second parameter) before the specified node (first parameter).

Errors
1500 Invalid object.
1506 Invalid input xml
1507 No children allowed
1510 Invalid parameter.
1512 Child is already added
1514 Invalid kind at position

IsSameNode

See also

Declaration: `IsSameNode` (*`pNodeToCompare`* as `XMLData`) as Boolean

Description

Returns true if `pNodeToCompare` references the same node as the object itself.

Errors
1500 The XMLData object is no longer valid.
1506 Invalid address for the return parameter was specified.

Kind

See also

Declaration: `Kind` as `SPYXMLDataKind`

Description
Kind of this `XMLData` object. This property is read-only.

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

MayHaveChildren

See also

Declaration: `MayHaveChildren` as Boolean

Description
Indicates whether it is allowed to add children to this `XMLData` object.

This property is read-only.

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

Name

See also

Declaration: `Name` as String

Description
Used to modify and to get the name of the `XMLData` object.

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

Parent

See also

Declaration: `Parent` as `XMLData`

Return value
Parent as `XMLData` object. Nothing (or NULL) if there is no parent element.

Description
Parent of this element. This property is read-only.

Errors
1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

SetTextValueXMLEncoded

Method: `SetTextValueXMLEncoded` (*`strVal`* as `String`)

Description
Sets the encoded text value of the XML.

Errors
1500 Invalid object.
1513 Modification not allowed.

TextValue

See also

Declaration: `TextValue` as String

Description
Used to modify and to get the text value of this `XMLData` object.

Errors

1500 The XMLData object is no longer valid.
1510 Invalid address for the return parameter was specified.

Examples

See Using XMLData to modify document structure .

3.3 Interfaces (obsolete)

Interfaces contained in this book are obsolete. It is recommended to migrate your applications to the new interfaces. See the different properties and methods in this book for migration hints.

3.3.1 AuthenticEvent (obsolete)

Superseded by AuthenticView and AuthenticRange

The DocEditView object is renamed to OldAuthenticView.
DocEditSelection is renamed to AuthenticSelection.
DocEditEvent is renamed to AuthenticEvent.
DocEditDataTransfer is renamed to AuthenticDataTransfer.

Their usage - except for AuthenticDataTransfer - is no longer recommended. We will continue to support existing functionality for a yet undefined period of time but no new features will be added to these interface. All functionality available up to now in DocEditView, DocEditSelection, DocEditEvent and DocEditDataTransfer is now available via AuthenticView, AuthenticRange and AuthenticDataTransfer. Many new features have been added.

For examples on migrating from DocEdit to Authentic see the description of the different methods and properties of the different DocEdit objects.

See also

Properties

altKey
altLeft
ctrlKey
ctrlLeft
shiftKey
shiftLeft

keyCode
repeat

button

clientX
clientY

dataTransfer

srcElement
fromElement

propertyName

cancelBubble
returnValue

type

Description

DocEditEvent interface.

altKey (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditKeyPressed ()
// {
//     if (Application.ActiveDocument.DocEditView.event.altKey ||
//         Application.ActiveDocument.DocEditView.event.altLeft)
//       MsgBox ("alt key is down");
// }
// use now:
function On_AuthenticView_KeyPressed (SPYKeyEvent i_eKeyEvent, long
i_nKeyCode, SPYVirtualKeyMask i_nVirtualKeyStatus)
{
    if (i_nVirtualKeyStatus & spyAltKeyMask)
        MsgBox ("alt key is down");
}
```

See also

Declaration: `altKey` as Boolean

Description
True if the right ALT key is pressed.

altLeft (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditKeyDown ()
// {
//     if (Application.ActiveDocument.DocEditView.event.altKey ||
//         Application.ActiveDocument.DocEditView.event.altLeft)
//       MsgBox ("alt key is down");
// }
// use now:
function On_AuthenticView_KeyDown (SPYKeyEvent i_eKeyEvent, long i_nKeyCode,
SPYVirtualKeyMask i_nVirtualKeyStatus)
{
    if (i_nVirtualKeyStatus & spyAltKeyMask)
        MsgBox ("alt key is down");
}
```

See also

Declaration: `altLeft` as Boolean

Description
True if the left ALT key is pressed.

button (obsolete)

Superseded by parameters to
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditButtonDown ()
// {
//     if ( Application. ActiveDocument. DocEditView. event. button == 1)
//         MsgBox ("left mouse button down detected");
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if (i_eMouseEvent & spyLeftButtonDownMask)
        MsgBox ("left mouse button down detected");
}
```

See also

Declaration: `button` as long

Description
Specifies which mouse button is pressed:

0	No button is pressed.
1	Left button is pressed.
2	Right button is pressed.
3	Left and right buttons are both pressed.
4	Middle button is pressed.
5	Left and middle buttons both are pressed.
6	Right and middle buttons are both pressed.
7	All three buttons are pressed.

cancelBubble (obsolete)

Superseded by the boolean return value of following event handler functions
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

Returning *true* from an event handler function signals that the event has beend handled and normal event handling should be aborted.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditKeyPressed ()
// {
//     if (Application.ActiveDocument.DocEditView.event.keyCode == 0x20)
//     {
//        // cancel key processing, swallow spaces :-)
//        Application.ActiveDocument.DocEditView.event.cancelBubble = true;
//     }
// }
// use now:
function On_AuthenticView_KeyPressed (SPYKeyEvent i_eKeyEvent, long
i_nKeyCode, SPYVirtualKeyMask i_nVirtualKeyStatus)
{
    if (i_nKeyCode == 0x20)
        return true;  // cancel key processing, swallow spaces :-)
}
```

See also

Declaration: `cancelBubble` as Boolean

Description
Set `cancelBubble` to TRUE if the default event handler should not be called.

clientX (obsolete)

Superseded by parameters to
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnBeforeDrop (On_AuthenticView_BeforeDrop)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditMouseMove ()
// {
//     MsgBox ("moving over " +
Application.ActiveDocument.DocEditView.event.clientX +
//             "/" + Application.ActiveDocument.DocEditView.event.clientY);
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if (i_eMouseEvent & spyMouseMoveMask)
        MsgBox ("moving over " + i_nXPos + "/" + i_nYPos);
}
```

See also

Declaration: `clientX` as long

Description
X value of the current mouse position in client coordinates.

clientY (obsolete)

Superseded by parameters to
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnBeforeDrop (On_AuthenticView_BeforeDrop)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditMouseMove ()
// {
//     MsgBox ("moving over " +
Application.ActiveDocument.DocEditView.event.clientX +
//             "/" + Application.ActiveDocument.DocEditView.event.clientY);
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if (i_eMouseEvent & spyMouseMoveMask)
        MsgBox ("moving over " + i_nXPos + "/" + i_nYPos);
}
```

See also

Declaration: `clientY` as long

Description
Y value of the current mouse position in client coordinates.

ctrlKey (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditMouseMove ()
// {
//     if (Application.ActiveDocument.DocEditView.event.ctrlKey ||
//         Application.ActiveDocument.DocEditView.event.altLeft)
//       MsgBox ("control key is down");
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if (i_eMouseEvent & spyCtrlKeyMask)
        MsgBox ("control key is down");
}
```

See also

Declaration: `ctrlKey` as Boolean

Description
True if the right CTRL key is pressed.

ctrlLeft (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditMouseMove ()
// {
//     if (Application.ActiveDocument.DocEditView.event.ctrlKey ||
//         Application.ActiveDocument.DocEditView.event.altLeft)
//       MsgBox ("control key is down");
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if (i_eMouseEvent & spyCtrlKeyMask)
        MsgBox ("control key is down");
}
```

See also

Declaration: `ctrlLeft` as Boolean

Description
True if the left CTRL key is pressed.

dataTransfer (obsolete)

Superseded by parameters to
AuthenticView.OnBeforeDrop (On_AuthenticView_BeforeDrop)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditDrop ()
// {
//     if ( Application. ActiveDocument. DocEditView. event. dataTransfer != 
null)
//         if (! 
Application. ActiveDocument. DocEditView. event. dataTransfer. ownDrag)
//         {
//            // cancel key processing, don't drop foreign objects :-)
//            Application. ActiveDocument. DocEditView. event. cancelBubble = 
true;
//         }
// }
// use now:
function On_AuthenticView_BeforeDrop (long i_nXPos, long i_nYPos,
                                      IAuthenticRange *i_ipRange,
                                      IAuthenticDataTransfer *i_ipData)
{
    if (i_ipRange != null)
        if (! i_ipRange. ownDrag)
            return true;  // cancel key processing, don't drop foreign 
objects :-)

    return false;
}
```

See also

Declaration: `dataTransfer` as Variant

Description
Property dataTransfer

fromElement (obsolete)

Not supported

See also

Declaration: `fromElement` as Variant (not supported)

Description
Currently no event sets this property.

keyCode (obsolete)

Superseded by a parameter to AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditKeyPressed ()
// {
//     if ( Application. ActiveDocument. DocEditView. event. keyCode == 0x20)
//     {
//        // cancel key processing, swallow spaces :-)
//        Application. ActiveDocument. DocEditView. event. cancelBubble = true;
//     }
// }
// use now:
function On_AuthenticView_KeyPressed ( SPYKeyEvent i_eKeyEvent, long
i_nKeyCode, SPYVirtualKeyMask i_nVirtualKeyStatus)
{
    if ( i_nKeyCode == 0x20)
        return true;  // cancel key processing, swallow spaces :-)
}
```

See also

Declaration: `keyCode` as long

Description
Keycode of the currently pressed key. This property is read-write.

propertyName (obsolete)

Not supported

See also

Declaration: `propertyName` as String (not supported)

Description
Currently no event sets this property.

repeat (obsolete)

Not supported

See also

Declaration: `repeat` as Boolean (not supported)

Description
True if the `onkeydown` event is repeated.

returnValue (obsolete)

No longer supported

See also

Declaration: `returnValue` as Variant

Description
Use `returnValue` to set a return value for your event handler.

shiftKey (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditDragOver ()
// {
//     if (Application.ActiveDocument.DocEditView.event.shiftKey ||
//         Application.ActiveDocument.DocEditView.event.shiftLeft)
//       MsgBox ("shift key is down");
// }
// use now:
function On_AuthenticView_DragOver (long i_nXPos, long i_nYPos,
                                    SPYMouseEvent i_eMouseEvent,
                                    IAuthenticRange *i_ipRange,
                                    IAuthenticDataTransfer *i_ipData)
{
    if (i_eMouseEvent & spyShiftKeyMask)
        MsgBox ("shift key is down");
}
```

See also

Declaration: `shiftKey` as Boolean

Description
True if the right SHIFT key is pressed.

shiftLeft (obsolete)

Superseded by parameters to
AuthenticView.OnKeyboardEvent (On_AuthenticView_KeyPressed)
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditDragOver ()
// {
//     if (Application.ActiveDocument.DocEditView.event.shiftKey ||
//         Application.ActiveDocument.DocEditView.event.shiftLeft)
//       MsgBox ("shift key is down");
// }
// use now:
function On_AuthenticView_DragOver (long i_nXPos, long i_nYPos,
                                    SPYMouseEvent i_eMouseEvent,
                                    IAuthenticRange *i_ipRange,
                                    IAuthenticDataTransfer *i_ipData)
{
    if (i_eMouseEvent & spyShiftKeyMask)
        MsgBox ("shift key is down");
}
```

See also

Declaration: `shiftLeft` as Boolean

Description
True if the left SHIFT key is pressed.

srcElement (obsolete)

Superseded by parameters to
AuthenticView.OnMouseEvent (On_AuthenticView_MouseEvent)
AuthenticView.OnBeforeDrop (On_AuthenticView_BeforeDrop)
AuthenticView.OnDragOver (On_AuthenticView_DragOver)

The event object that holds the information of the last event is now replaced by parameters to the different event handler functions to simplify data access. The event object will be supported for a not yet defined period of time for compatibility reasons. No improvements are planned. It is highly recommended to migrate to the new event handler functions.

With the new event handler function, a range object selecting this element is provided instead of the XMLData element currently below the mouse cursor.

```
// ----- XMLSpy scripting environment - javascript sample -----
// instead of:
// function On_DocEditMouseMove ()
// {
//     var objEvent = Application.ActiveDocument.DocEditView.event;
//     if (objEvent.srcElement != null)
//         MsgBox ("moving over " + objEvent.srcElement.Parent.Name);
// }
// use now:
function On_AuthenticView_MouseEvent (long i_nXPos, long i_nYPos,
SPYMouseEvent i_eMouseEvent, IAuthenticRange *i_ipRange)
{
    if ((i_eMouseEvent & spyMouseMoveMask) &&
        (i_ipRange != null))
        MsgBox ("moving over " + i_ipRange.FirstXMLData.Parent.Name);
}
```

See also

Declaration: `srcElement` as Variant

Description
Element which fires the current event. This is usually an `XMLData` object.

type (obsolete)

Not supported

See also

Declaration: `type` as String (not supported)

Description
Currently no event sets this property.

3.3.2 AuthenticSelection (obsolete)

Superseded by AuthenticRange

The DocEditView object is renamed to OldAuthenticView.
DocEditSelection is renamed to AuthenticSelection.
DocEditEvent is renamed to AuthenticEvent.
DocEditDataTransfer is renamed to AuthenticDataTransfer.

Their usage - except for AuthenticDataTransfer - is no longer recommended. We will continue to support existing functionality for a yet undefined period of time but no new features will be added to these interface. All functionality available up to now in DocEditView, DocEditSelection, DocEditEvent and DocEditDataTransfer is now available via AuthenticView, AuthenticRange and AuthenticDataTransfer. Many new features have been added.

For examples on migrating from DocEdit to Authentic see the description of the different methods and properties of the different DocEdit objects.

See also

Properties
Start
StartTextPosition
End
EndTextPosition

End (obsolete)

Superseded by AuthenticRange.LastXMLData

```
// ----- javascript sample -----
// instead of:
// var objXMLData =
Application.ActiveDocument.DocEditView.CurrentSelection.End;
// use now:
var objXMLData =
Application.ActiveDocument.AuthenticView.Selection.LastXMLData;
```

See also

Declaration: `End` as `XMLData`

Description
XML element where the current selection ends.

EndTextPosition (obsolete)

Superseded by AuthenticRange.LastXMLDataOffset

```
// ----- javascript sample -----
// instead of:
// var nOffset =
Application.ActiveDocument.DocEditView.CurrentSelection.EndTextPosition;
// use now:
var nOffset =
Application.ActiveDocument.AuthenticView.Selection.LastXMLDataOffset;
```

See also

Declaration: `EndTextPosition` as long

Description
Position in `DocEditSelection.End.TextValue` where the selection ends.

Start (obsolete)

Superseded by AuthenticRange.FirstXMLData

```
// ----- javascript sample -----
// instead of:
// var objXMLData =
Application.ActiveDocument.DocEditView.CurrentSelection.Start;
// use now:
var objXMLData =
Application.ActiveDocument.AuthenticView.Selection.FirstXMLData;
```

See also

Declaration: `Start` as `XMLData`

Description
XML element where the current selection starts.

StartTextPosition (obsolete)

Superseded by AuthenticRange.FirstXMLDataOffset

```
// ----- javascript sample -----
// instead of:
// var nOffset =
Application.ActiveDocument.DocEditView.CurrentSelection.StartTextPosition;
// use now:
var nOffset =
Application.ActiveDocument.AuthenticView.Selection.FirstXMLDataOffset;
```

See also

Declaration: `StartTextPosition` as long

Description
Position in `DocEditSelection.Start.TextValue` where the selection starts.

3.3.3 OldAuthenticView (obsolete)

Superseded by AuthenticView and AuthenticRange

The DocEditView object is renamed to OldAuthenticView.
DocEditSelection is renamed to AuthenticSelection.
DocEditEvent is renamed to AuthenticEvent.
DocEditDataTransfer is renamed to AuthenticDataTransfer.

Their usage - except for AuthenticDataTransfer - is no longer recommended. We will continue to support existing functionality for a yet undefined period of time but no new features will be added to these interfaces. All functionality available up to now in DocEditView, DocEditSelection, DocEditEvent and DocEditDataTransfer is now available via AuthenticView, AuthenticRange and AuthenticDataTransfer. Many new features have been added.

For examples on migrating from DocEdit to Authentic see the description of the different methods and properties of the different DocEdit objects.

See also

Methods

LoadXML
SaveXML

EditClear
EditCopy
EditCut
EditPaste
EditRedo
EditSelectAll
EditUndo

RowAppend
RowDelete
RowDuplicate
RowInsert
RowMoveDown
RowMoveUp

ApplyTextState
IsTextStateApplied
IsTextStateEnabled

MarkUpView

SelectionSet
SelectionMoveTabOrder

GetNextVisible
GetPreviousVisible

GetAllowedElements

Properties

CurrentSelection

event

XMLRoot

IsEditClearEnabled
IsEditCopyEnabled
IsEditCutEnabled
IsEditPasteEnabled
IsEditRedoEnabled
IsEditUndoEnabled

IsRowAppendEnabled
IsRowDeleteEnabled
IsRowDuplicateEnabled
IsRowInsertEnabled
IsRowMoveDownEnabled
IsRowMoveUpEnabled

Description

Interface for Authentic View.

ApplyTextState (obsolete)

Superseded by AuthenticRange.PerformAction

Use spyAuthenticApply for the eAction parameter. The PerformAction method allows to apply text state attributes to any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.ApplyTextState ("bold");
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.PerformAction
(spyAuthenticApply, "bold"))
    MsgBox ("Error: can't set current selection to bold");
```

See also

Declaration: `ApplyTextState` (*elementName* as String)

Description

Applies or removes the text state defined by the parameter `elementName`. Common examples for the parameter elementName would be strong and italic.

In an XML document there are segments of data, which may contain sub-elements. For example consider the following HTML:

```
<b>fragment</b>
```

The HTML tag `<b>` will cause the word fragment to be bold. However, this only happens because the HTML parser knows that the tag `<b>` is bold. With XML there is much more flexibility. It is possible to define any XML tag to do anything you desire. The point is that it is possible to apply a Text state using XML. But the Text state that is applied must be part of the schema. For example in the `OrgChart.xml, OrgChart.sps, OrgChart.xsd` example the tag `<strong>` is the same as bold. And to apply bold the method `ApplyTextState()` is called. But like the row and edit operations it is necessary to test if it is possible to apply the text state.

See also `IsTextStateEnabled` and `IsTextStateApplied`.

CurrentSelection (obsolete)

Superseded by AuthenticView.Selection

The returned AuthenticRange object supports navigation via XMLData elements as well as navigation by document elements (e.g. characters, words, tags) or text cursor positions.

```
// ----- javascript sample -----
// instead of:
// var objDocEditSel =
Application.ActiveDocument.DocEditView.CurrentSelection;
// use now:
    var objRange = Application.ActiveDocument.AuthenticView.Selection;
```

See also

Declaration: `CurrentSelection` as `DocEditSelection`

Description
The property provides access to the current selection in the Authentic View.

EditClear (obsolete)

Superseded by AuthenticRange.Delete

The Delete method of AuthenticRange allows to delete any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditClear();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.Delete())
    MsgBox ("Error: can't delete current selection");
```

See also

Declaration: `EditClear`

Description
Deletes the current selection.

EditCopy (obsolete)

Superseded by AuthenticRange.Copy

The Copy method of AuthenticRange allows to delete any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditCopy();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.Copy())
    MsgBox ("Error: can't copy current selection");
```

See also

Declaration: `EditCopy`

Description
Copies the current selection to the clipboard.

EditCut (obsolete)

Superseded by AuthenticRange.Cut

The Cut method of AuthenticRange allows to delete any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditCut();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.Cut())
    MsgBox ("Error: can't cut out current selection");
```

See also

Declaration: `EditCut`

Description
Cuts the current selection from the document and copies it to the clipboard.

EditPaste (obsolete)

Superseded by AuthenticRange.Paste

The Paste method of AuthenticRange allows to delete any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditPaste();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.Paste())
    MsgBox ("Error: can't paste to current selection");
```

See also

Declaration: `EditPaste`

Description
Pastes the content from the clipboard into the document.

EditRedo (obsolete)

Superseded by AuthenticView.Redo

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditRedo();
// use now:
if (! Application.ActiveDocument.AuthenticView.Redo())
    MsgBox ("Error: no redo step available");
```

See also

Declaration: `EditRedo`

Description
Redo the last undo step.

EditSelectAll (obsolete)

Superseded by AuthenticView.WholeDocument and AuthenticRange.Select

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditSelectAll();
// use now:
Application.ActiveDocument.AuthenticView.WholeDocument.Select();
```

See also

Declaration: `EditSelectAll`

Description
The method selects the complete document.

EditUndo (obsolete)

Superseded by AuthenticView.Undo

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.EditUndo();
// use now:
if (! Application.ActiveDocument.AuthenticView.Undo())
    MsgBox ("Error: no undo step available");
```

See also

Declaration: `EditUndo`

Description
Undo the last action.

event (obsolete)

Superseded by parameters to AuthenticView events.

See also

Declaration: `event` as `DocEditEvent`

Description

The event property holds a `DocEditEvent` object which contains information about the current event.

GetAllowedElements (obsolete)

Superseded by AuthenticRange.CanPerformActionWith

AuthenticRange now supports all functionality of the 'elements' entry helper. Besides querying the elements that can be inserted, appended, etc., you can invoke the action as well. See AuthenticRange.PerformAction for more information.

```
// ----- javascript sample -----
// instead of:
// var arrElements = New Array();
// var objDocEditView = Application.ActiveDocument.DocEditView;
// var objStartElement = objDocEditView.CurrentSelection.Start;
// var objEndElement = objDocEditView.CurrentSelection.End;
// objDocEditView.GetAllowedElements(k_ActionInsertBefore, objStartElement,
objEndElement, arrElements);
// use now:
var arrElements = New Array();
Application.ActiveDocument.AuthenticView.Selection.CanPerformActionWith
(spyAuthenticInsertBefore, arrElements);
```

See also

Declaration: `GetAllowedElements` (*`nAction`* as `SpyAuthenticElementActions`, *`pStartElement`* as `XMLData`, *`pEndElement`* as `XMLData`, *`pElements`* as Variant)

Description

`GetAllowedElements()` returns the allowed elements for the various actions specified by `nAction`.

JavaScript example:

```
Function GetAllowed()
{
 var objView = Application.ActiveDocument.DocEditView;

 var arrElements = New Array(1);
```

```
 var objStart = objView.CurrentSelection.Start;
 var objEnd = objView.CurrentSelection.End;

 var strText;
 strText = "valid elements at current selection:\n\n";

 For(var i = 1;i <= 4;i++){
  objPlugIn.GetAllowedElements(i,objStart,objEnd,arrElements);
  strText = strText + ListArray(arrElements) + "------------------\n";
 }

 Return strText;
}

Function ListArray(arrIn)
{
 var strText = "";

 If(TypeOf(arrIn) == "object"){
  For(var i = 0;i <= (arrIn.length - 1);i++)
   strText = strText + arrIn[i] + "\n";
 }

 Return strText;
}
```

VBScript example:

```
Sub DisplayAllowed
 Dim objView
 Set objView = Application.ActiveDocument.DocEditView

 Dim arrElements()

 Dim objStart
 Dim objEnd
 Set objStart = objView.CurrentSelection.Start
 Set objEnd = objView.CurrentSelection.End

 Dim strText
 strText = "valid elements at current selection:" & chr(13) & chr(13)

 Dim i

 For i = 1 To 4
  objView.GetAllowedElements i,objStart,objEnd,arrElements
  strText = strText & ListArray(arrElements) & "---------------" & chr(13)
 Next

 msgbox strText
End Sub

Function ListArray(arrIn)
 Dim strText

 If IsArray(arrIn) Then
  Dim i

  For i = 0 To UBound(arrIn)
   strText = strText & arrIn(i) & chr(13)
  Next
 End If

 ListArray = strText
End Function
```


GetNextVisible (obsolete)

Superseded by AuthenticRange.SelectNext

AuthenticRange now supports a wide range of element navigation methods based on document elements like characters, words, tags and many more. Selecting the text passage that represents the content of the next XML element is just one of them.

```
// ----- javascript sample -----
// instead of:
// var objCurrXMLData = ...
// var objXMLData =
Application.ActiveDocument.DocEditView.GetNextVisible(objCurrXMLData);
// Application.ActiveDocument.DocEditView.SelectionSet (objXMLData, 0,
objXMLData, -1);
// use now:
var objRange = ...
try
    { objRange.SelectNext (spyAuthenticTag).Select(); }
catch (err)
{
    if ((err.number & 0xffff) == 2003)
        MsgBox ("end of document reached");
    else
        throw (err);
}
```

See also

Declaration: `GetNextVisible` (*pElement* as XMLData) as XMLData

Description

The method gets the next visible XML element in the document.

GetPreviousVisible (obsolete)

Superseded by AuthenticRange.SelectPrevious

AuthenticRange now supports a wide range of element navigation methods based on document elements like characters, words, tags and many more. Selecting the text passage that represents the content of the previous XML element is just one of them.

```
// ----- javascript sample -----
// instead of:
// var objCurrXMLData = ...
// var objXMLData =
Application.ActiveDocument.DocEditView.GetPreviousVisible(objCurrXMLData);
// Application.ActiveDocument.DocEditView.SelectionSet (objXMLData, 0,
objXMLData, -1);
// use now:
var objRange = ...
try
    { objRange.SelectPrevious (spyAuthenticTag).Select(); }
catch (err)
{
    if ((err.number & 0xffff) == 2004)
        MsgBox ("begin of document reached");
    else
        throw (err);
}
```

See also

Declaration: `GetPreviousVisible` (*pElement* as XMLData) as XMLData

Description
The method gets the previous visible XML element in the document.

IsEditClearEnabled (obsolete)

Superseded by AuthenticRange.IsDeleteEnabled

The IsDeleteEnabled property is now supported for any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsEditClearEnabled)
//    Application.ActiveDocument.DocEditView.EditClear();
// use now:
var objCurrSelection = Application.ActiveDocument.AuthenticView.Selection;
if (objCurrSelection.IsDeleteEnabled)
    objCurrSelection.Delete();
```

See also

Declaration: `IsEditClearEnabled` as Boolean

Description
True if `EditClear` is possible. See also `Editing operations`.

IsEditCopyEnabled (obsolete)

Superseded by AuthenticRange.IsCopyEnabled

The IsCopyEnabled property is now supported for any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsEditCopyEnabled)
//    Application.ActiveDocument.DocEditView.EditCopy();
// use now:
var objCurrSelection = Application.ActiveDocument.AuthenticView.Selection;
if (objCurrSelection.IsCopyEnabled)
    objCurrSelection.Copy();
```

See also

Declaration: `IsEditCopyEnabled` as Boolean

Description
True if copy to clipboard is possible. See also `EditCopy` and `Editing operations`.

IsEditCutEnabled (obsolete)

Superseded by AuthenticRange.IsCutEnabled

The IsCutEnabled property is now supported for any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsEditCutEnabled)
//    Application.ActiveDocument.DocEditView.EditCut();
// use now:
var objCurrSelection = Application.ActiveDocument.AuthenticView.Selection;
if (objCurrSelection.IsCutEnabled)
    objCurrSelection.Cut();
```

See also

Declaration: `IsEditCutEnabled` as Boolean

Description
True if `EditCut` is currently possible. See also `Editing operations`.

IsEditPasteEnabled (obsolete)

Superseded by AuthenticRange.IsPasteEnabled

The IsPasteEnabled property is now supported for any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsEditPasteEnabled)
//    Application.ActiveDocument.DocEditView.EditPaste();
// use now:
var objCurrSelection = Application.ActiveDocument.AuthenticView.Selection;
if (objCurrSelection.IsPasteEnabled)
    objCurrSelection.Paste();
```

See also

Declaration: `IsEditPasteEnabled` as Boolean

Description
True if `EditPaste` is possible. See also `Editing operations`.

IsEditRedoEnabled (obsolete)

Superseded by AuthenticView.IsRedoEnabled

```
// ----- javascript sample -----
// instead of:
// if ( Application. ActiveDocument. DocEditView. IsEditRedoEnabled)
//    Application. ActiveDocument. DocEditView. EditRedo( );
// use now:
if ( Application. ActiveDocument. AuthenticView. IsRedoEnabled)
    Application. ActiveDocument. AuthenticView. Redo( );
```

See also

Declaration: `IsEditRedoEnabled` as Boolean

Description
True if `EditRedo` is currently possible. See also `Editing operations`.

IsEditUndoEnabled (obsolete)

Superseded by AuthenticView.IsUndoEnabled

```
// ----- javascript sample -----
// instead of:
// if ( Application. ActiveDocument. DocEditView. IsEditUndoEnabled)
//    Application. ActiveDocument. DocEditView. EditUndo( );
// use now:
if ( Application. ActiveDocument. AuthenticView. IsUndoEnabled)
    Application. ActiveDocument. AuthenticView. Undo( );
```

See also

Declaration: `IsEditUndoEnabled` as Boolean

Description
True if `EditUndo` is possible. See also `Editing operations`.

IsRowAppendEnabled (obsolete)

Superseded by AuthenticRange.IsInDynamicTable

The operations 'insert', 'append', 'delete' and 'duplicate' row are available whenever the selection is inside a dynamic table.

```
// ----- javascript sample -----
// instead of:
// if ( Application. ActiveDocument. DocEditView. IsRowAppendEnabled)
//    Application. ActiveDocument. DocEditView. RowAppend( );
// use now:
if ( Application. ActiveDocument. AuthenticView. Selection. IsInDynamicTable( ))
    Application. ActiveDocument. AuthenticView. Selection. AppendRow( );
```

See also

Declaration: `IsRowAppendEnabled` as Boolean

Description
True if `RowAppend` is possible. See also `Row operations`.

IsRowDeleteEnabled (obsolete)

Superseded by AuthenticRange.IsInDynamicTable

The operations 'insert', 'append', 'delete' and 'duplicate' row are available whenever the selection is inside a dynamic table.

```
// ----- javascript sample -----
// instead of:
// if ( Application. ActiveDocument. DocEditView. IsRowDeleteEnabled)
//    Application. ActiveDocument. DocEditView. Rowdelete( );
// use now:
if ( Application. ActiveDocument. AuthenticView. Selection. IsInDynamicTable( ))
    Application. ActiveDocument. AuthenticView. Selection. DeleteRow( );
```

See also

Declaration: `IsRowDeleteEnabled` as Boolean

Description
True if `RowDelete` is possible. See also `Row operations`.

IsRowDuplicateEnabled (obsolete)

Superseded by AuthenticRange.IsInDynamicTable

The operations 'insert', 'append', 'delete' and 'duplicate' row are available whenever the selection is inside a dynamic table.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsRowDuplicateEnabled)
//    Application.ActiveDocument.DocEditView.RowDuplicate();
// use now:
if (Application.ActiveDocument.AuthenticView.Selection.IsInDynamicTable())
    Application.ActiveDocument.AuthenticView.Selection.DuplicateRow();
```

See also

Declaration: `IsRowDuplicateEnabled` as Boolean

Description
True if `RowDuplicate` is currently possible. See also `Row operations`.

IsRowInsertEnabled (obsolete)

Superseded by AuthenticRange.IsInDynamicTable

The operations 'insert', 'append', 'delete' and 'duplicate' row are available whenever the selection is inside a dynamic table.

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsRowInsertEnabled)
//    Application.ActiveDocument.DocEditView.RowInsert();
// use now:
if (Application.ActiveDocument.AuthenticView.Selection.IsInDynamicTable())
    Application.ActiveDocument.AuthenticView.Selection.InsertRow();
```

See also

Declaration: `IsRowInsertEnabled` as Boolean

Description
True if `RowInsert` is possible. See also `Row operations`.

IsRowMoveDownEnabled (obsolete)

Superseded by AuthenticRange.IsLastRow

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.OldAuthenticView.IsRowMoveDownEnabled)
//    Application.ActiveDocument.DocEditView.RowMoveDown();
// use now:
if (!Application.ActiveDocument.AuthenticView.Selection.IsLastRow)
    Application.ActiveDocument.AuthenticView.Selection.MoveRowDown();
```

See also

Declaration: `IsRowMoveDownEnabled` as Boolean

Description
True if `RowMoveDown` is currently possible. See also `Row operations`.

IsRowMoveUpEnabled (obsolete)

Superseded by AuthenticRange.IsFirstRow

```
// ----- javascript sample -----
// instead of:
// if (Application.ActiveDocument.DocEditView.IsRowMoveUpEnabled)
//    Application.ActiveDocument.DocEditView.RowMoveUp();
// use now:
if (!Application.ActiveDocument.AuthenticView.Selection.IsFirstRow)
    Application.ActiveDocument.AuthenticView.Selection.MoveRowUp();
```

See also

Declaration: `IsRowMoveUpEnabled` as Boolean

Description
True if `RowMoveUp` is possible. See also `Row operations`.

IsTextStateApplied (obsolete)

Superseded by AuthenticRange.IsTextStateApplied

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.IsTextStateApplied ("bold");
// use now:
if (Application.ActiveDocument.AuthenticView.Selection.IsTextStateApplied (
"bold"))
    MsgBox ("bold on");
else
    MsgBox ("bold off");
```

See also

Declaration: `IsTextStateApplied` (*elementName* as String) as Boolean

Description
Checks to see if the it the text state has already been applied. Common examples for the parameter `elementName` would be strong and italic.

IsTextStateEnabled (obsolete)

Superseded by AuthenticRange.CanPerformAction

Use spyAuthenticApply for the eAction parameter. The CanPerformAction method allows to operate on any range of the document, not only the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.IsTextStateEnabled ("bold");
// use now:
if (Application.ActiveDocument.AuthenticView.Selection.CanPerformAction
(spyAuthenticApply, "bold"))
    ... // e.g. enable 'bold' button
```

See also

Declaration: `IsTextStateEnabled` (*i_strElementName* as String) as Boolean

Description
Checks to see if it is possible to apply a text state. Common examples for the parameter `elementName` would be strong and italic.

LoadXML (obsolete)

Superseded by AuthenticView.AsXMLString

AuthenticView now supports the property AsXMLString that can be used to directly access and replace the document content as an XMLString.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.LoadXML (strDocAsXMLString);
// use now:
try
    { Application.ActiveDocument.AuthenticView.AsXMLString =
strDocAsXMLString; }
catch (err)
    { MsgBox ("Error: invalid XML string"); }
```

See also

Declaration: `LoadXML` (*xmlString* as String)

Description
Loads the current XML document with the XML string applied. The new content is displayed immediately.
The *xmlString* parameter must begin with the XML declaration, e.g.,
objPlugIn.LoadXML("<?xml version='1.0' encoding='UTF-8'?><root></root>");

MarkUpView (obsolete)

Superseded by AuthenticView.MarkupVisibility

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.MarkuUpView = 2;
// use now:
Application.ActiveDocument.AuthenticView.MarkupVisibility =
spyAuthenticMarkupLarge;
```

See also

Declaration: `MarkUpView` (*kind* as long)

Description
By default the document displayed is using HTML techniques. But sometimes it is desirable to show the editing tags. Using this method it is possible to display three different types of markup tags:

0	hide the markup tags
2	show the large markup tags
3	show the mixed markup tags.

RowAppend (obsolete)

Superseded by AuthenticRange.AppendRow

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowAppend();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.AppendRow())
    MsgBox ("Error: can't append row");
```

See also

Declaration: `RowAppend`

Description
Appends a row at the current position.

See also Row operations.

RowDelete (obsolete)

Superseded by AuthenticRange.DeleteRow

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowDelete();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.DeleteRow())
    MsgBox ("Error: can't delete row");
```

See also

Declaration: `RowDelete`

Description
Deletes the currently selected row(s).

See also Row operations.

RowDuplicate (obsolete)

Superseded by AuthenticRange.DuplicateRow

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowDuplicate();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.DuplicateRow())
    MsgBox ("Error: can't duplicate row");
```

See also

Declaration: `RowDuplicate`

Description
The method duplicates the currently selected rows.

See also Row operations.

RowInsert (obsolete)

Superseded by AuthenticRange.InsertRow

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowInsert();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.InsertRow())
    MsgBox ("Error: can't insert row");
```

See also

Declaration: `RowInsert`

Description
Inserts a new row immediately above the current selection.

See also Row operations.

RowMoveDown (obsolete)

Superseded by AuthenticRange.MoveRowDown

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowMoveDown();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.MoveRowDown())
    MsgBox ("Error: can't move row down");
```

See also

Declaration: `RowMoveDown`

Description
Moves the current row one position down.

See also Row operations.

RowMoveUp (obsolete)

Superseded by AuthenticRange.MoveRowUp

The table operations of AuthenticRange now allow to manipulate any table in the current document independent of the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.RowAppend();
// use now:
if (! Application.ActiveDocument.AuthenticView.Selection.MoveRowUp())
    MsgBox ("Error: can't move row up");
```

See also

Declaration: `RowMoveUp`

Description
Moves the current row one position up.

See also Row operations.

SaveXML (obsolete)

Superseded by AuthenticView.AsXMLString

AuthenticView now supports the property XMLString that can be used to directly access and replace the document content as an XMLString.

```
// ----- javascript sample -----
// instead of:
// var strDocAsXMLString = Application.ActiveDocument.DocEditView.SaveXML();
// use now:
try
{
    var strDocAsXMLString =
Application.ActiveDocument.AuthenticView.AsXMLString;
    ... // do something here
}
catch (err)
    { MsgBox ("Error: invalid XML string"); }
```

See also

Declaration: `SaveXML` as String

Return Value
XML structure as string

Description
Saves the current XML data to a string that is returned to the caller.

SelectionMoveTabOrder (obsolete)

Superseded by AuthenticRange.SelectNext

AuthenticRange now supports a wide range of element navigation methods based on document elements like characters, words, tags and many more. Selecting the next paragraph is just one of them, and navigation is not necessarily bound to the current UI selection.

```
// ----- javascript sample -----
// instead of:
// Application.ActiveDocument.DocEditView.SelectionMoveTabOrder(true, true);
// use now:
Application.ActiveDocument.AuthenticView.Selection.SelectNext
(spyAuthenticParagraph).Select();
// to append a row to a table use AuthenticRange.AppendRow
```

See also

Declaration: `SelectionMoveTabOrder` (*bForward* as Boolean, *bTag* as Boolean)

Description

`SelectionMoveTabOrder()` moves the current selection forwards or backwards.

If `bTag` is false and the current selection is at the last cell of a table a new line will be added.

SelectionSet (obsolete)

Superseded by AuthenticRange.FirstXMLData and related properties

AuthenticRange supports navigation via XMLData elements as well as navigation by document elements (e.g. characters, words, tags) or text cursor positions.

```
// ----- javascript sample -----
// instead of:
// if (! Application.ActiveDocument.DocEditView.SelectionSet(varXMLData1, 0,
varXMLData2, -1))
//    MsgBox ("Error: invalid data position");
// use now:
try
{
    var objSelection = Application.ActiveDocument.AuthenticView.Selection;
    objSelection.FirstXMLData = varXMLData1;
    objSelection.FirstXMLdataOffset = 0;
    objSelection.LastXMLData = varXMLData2;
    objSelection.LastXMLDataOffset = -1;
    objSelection.Select();
}
catch (err)
    { MsgBox ("Error: invalid data position"); }
// to select all text between varXMLData1 and varXMLdata2, inclusive
```

See also

Declaration: `SelectionSet` (*`pStartElement`* as `XMLData`, *`nStartPos`* as long, *`pEndElement`* as `XMLData`, *`nEndPos`* as long) as Boolean

Description

Use `SelectionSet()` to set a new selection in the Authentic View. Its possible to set `pEndElement` to null (nothing) if the selection should be just over one (`pStartElement`) XML element.

XMLRoot (obsolete)

Superseded by AuthenticView.XMLDataRoot

```
// ----- javascript sample -----
// instead of:
// var objXMLData = Application.ActiveDocument.DocEditView.XMLRoot;
// use now:
var objXMLData = Application.ActiveDocument.AuthenticView.XMLDataRoot;
```

See also

Declaration: `XMLRoot` as `XMLData`

Description

`XMLRoot` is the parent element of the currently displayed XML structure. Using the `XMLData` interface you have full access to the complete content of the file.

See also Using XMLData for more information.

3.4 Enumerations

This is a list of all enumerations used by the XMLSpy API. If your scripting environment does not support enumerations use the number-values instead.

3.4.1 ENUMApplicationStatus

Description
Enumeration to specify the current Application status.

Possible values:

eApplicationRunning	= 0
eApplicationAfterLicenseCheck	= 1
eApplicationBeforeLicenseCheck	= 2
eApplicationConcurrentLicenseCheckFailed	= 3
eApplicationProcessingCommandLine	= 4

3.4.2 SPYAttributeTypeDefinition

Description
Attribute type definition that can be selected for generation of Sample XML.
This type is used with the method GenerateDTDOrSchema and GenerateDTDOrSchemaEx.

Possible values:

spyMergedGlobal	= 0
spyDistinctGlobal	= 1
spyLocal	= 2

3.4.3 SPYAuthenticActions

Description
Actions that can be performed on AuthenticRange objects.

Possible values:

spyAuthenticInsertAt	= 0
spyAuthenticApply	= 1
spyAuthenticClearSurr	= 2
spyAuthenticAppend	= 3
spyAuthenticInsertBefore	= 4
spyAuthenticRemove	= 5

3.4.4 SPYAuthenticDocumentPosition

Description
Relative and absolute positions used for navigating with AuthenticRange objects.

Possible values:

spyAuthenticDocumentBegin	= 0
spyAuthenticDocumentEnd	= 1
spyAuthenticRangeBegin	= 2
spyAuthenticRangeEnd	= 3

3.4.5 SPYAuthenticElementActions

Description
Actions that can be used with GetAllowedElements (superseded by `AuthenticRange.CanPerformActionWith`).

Possible values:

k_ActionInsertAt	= 0
k_ActionApply	= 1
k_ActionClearSurr	= 2
k_ActionAppend	= 3
k_ActionInsertBefore	= 4
k_ActionRemove	= 5

3.4.6 SPYAuthenticElementKind

Description
Enumeration of the different kinds of elements used for navigation and selection within the AuthenticRange and AuthenticView objects.

Possible values:

spyAuthenticChar	= 0
spyAuthenticWord	= 1
spyAuthenticLine	= 3
spyAuthenticParagraph	= 4
spyAuthenticTag	= 6
spyAuthenticDocument	= 8
spyAuthenticTable	= 9
spyAuthenticTableRow	= 10
spyAuthenticTableColumn	= 11

3.4.7 SPYAuthenticMarkupVisibility

Description
Enumeration values to customize the visibility of markup with MarkupVisibility.

Possible values:

spyAuthenticMarkupHidden	= 0
spyAuthenticMarkupSmall	= 1
spyAuthenticMarkupLarge	= 2
spyAuthenticMarkupMixed	= 3

3.4.8 SPYAuthenticToolbarButtonState

Description
Authentic toolbar button states are given by the following enumeration:

Possible values:

`authenticToolbarButtonDefault`	= 0
`authenticToolbarButtonEnabled`	= 1
`authenticToolbarButtonDisabled`	= 2

3.4.9 SPYDatabaseKind

Description
Values to select different kinds of databases for import. See DatabaseConnection.DatabaseKind for its use.

Possible values:

spyDB_Access	= 0
spyDB_SQLServer	= 1
spyDB_Oracle	= 2
spyDB_Sybase	= 3
spyDB_MySQL	= 4
spyDB_DB2	= 5
spyDB_Other	= 6
spyDB_Unspecified	= 7
spyDB_PostgreSQL	= 8
spyDB_iSeries	= 9

3.4.10 SPYDialogAction

Description
Values to simulate different interactions on dialogs. See Dialogs for all dialogs available.

Possible values:

spyDialogOK	= 0	//simulate click on OK button
spyDialogCancel	= 1	//simulate click on Cancel button
spyDialogUserInput	= 2	// show dialog and allow user interaction

3.4.11 SPYDOMType

Description
Enumeration values to parameterize generation of C++ code from schema definitions.

Possible values:

spyDOMType_msxml4	= 0	Obsolete
spyDOMType_xerces	= 1	
spyDOMType_xerces3	= 2	
spyDOMType_msxml6	= 3	

`spyDOMType_xerces` indicates Xerces 2.x usage; `spyDOMType_xerces3` indicates Xerces 3.x usage.

3.4.12 SPYDTDSchemaFormat

Description
Enumeration to identify the different schema formats.

Possible values:

spyDTD	= 0
spyW3C	= 1

3.4.13 SPYEncodingByteOrder

Description
Enumeration values to specify encoding byte ordering for text import and export.

Possible values:

spyNONE	= 0
spyLITTLE_ENDIAN	= 1
spyBIG_ENDIAN	= 2

3.4.14 SPYExportNamespace

Description
Enumeration type to configure handling of namespace identifiers during export.

Possible values:

spyNoNamespace	= 0
spyReplaceColonWithUnderscore	= 1

3.4.15 SPYFindInFilesSearchLocation

Description
The different locations where a search can be performed. This type is used with the FindInFilesDlg dialog.

Possible values:

spyFindInFiles_Documents	= 0
spyFindInFiles_Project	= 1
spyFindInFiles_Folder	= 2

3.4.16 SPYFrequentElements

Description
Enumeration value to parameterize schema generation.

Possible values:

spyGlobalElements	= 0
spyGlobalComplexType	= 1

3.4.17 SPYImageKind

Description
Enumeration values to parameterize image type of the generated documentation. These values are used in SchemaDocumentationDialog.DiagramFormat and WSDLDocumentationDlg.DiagramFormat.

Possible values:

spyImageType_PNG	= 0
spyImageType_EMF	= 1

3.4.18 SPYImportColumnsType

Description
Enumeration to specify different Import columns types.

Possible values:

spyImportColumns_Element = 0
spyImportColumns_Attribute = 1

3.4.19 SPYKeyEvent

Description
Enumeration type to identify the different key events. These events correspond with the equally named windows messages.

Possible values:

spyKeyDown = 0
spyKeyUp = 1
spyKeyPressed = 2

3.4.20 SPYKeyStatus

Description
Enumeration type to identify the key status.

Possible values:

spyLeftShiftKeyMask = 1
spyRightShiftKeyMask = 2
spyLeftCtrlKeyMask = 4
spyRightCtrlKeyMask = 8
spyLeftAltKeyMask = 16
spyRightAltKeyMask = 32

3.4.21 SPYLibType

Description
Enumeration values to parameterize generation of C++ code from schema definitions.

Possible values:

spyLibType_static = 0
spyLibType_dll = 1

3.4.22 SPYLoading

Description
Enumeration values to define loading behaviour of URL files.

Possible values:

spyUseCacheProxy = 0
spyReload = 1

3.4.23 SPYMouseEvent

Description
Enumeration type that defines the mouse status during a mouse event. Use the enumeration values as bitmasks rather then directly comparing with them.

Examples

```
' to check for ctrl-leftbutton-down in VB
If (i_eMouseEvent = (XMLSpyLib.spyLeftButtonDownMask Or
XMLSpyLib.spyCtrlKeyDownMask)) Then
      ' react on ctrl-leftbutton-down
End If

' to check for double-click with any button in VBScript
If (((i_eMouseEvent And spyDoubleClickMask) <> 0) Then
      ' react on double-click
End If
```

Possible values:

spyNoButtonMask	= 0	
spyMouseMoveMask	= 1	
spyLeftButtonMask	= 2	
spyMiddleButtonMask	= 4	
spyRightButtonMask	= 8	
spyButtonUpMask	= 16	
spyButtonDownMask	= 32	
spyDoubleClickMask	= 64	
spyShiftKeyDownMask	= 128	
spyCtrlKeyDownMask	= 256	
spyLeftButtonDownMask	= 34	// spyLeftButtonMask | spyButtonDownMask
spyMiddleButtonDownMask	= 36	// spyMiddleButtonMask | spyButtonDownMask
spyRightButtonDownMask	= 40	// spyRightButtonMask | spyButtonDownMask
spyLeftButtonUpMask	= 18	// spyLeftButtonMask | spyButtonUpMask
spyMiddleButtonUpMask	= 20	// spyMiddleButtonMask | spyButtonUpMask
spyRightButtonUpMask	= 24	// spyRightButtonMask | spyButtonUpMask
spyLeftDoubleClickMask	= 66	// spyRightButtonMask | spyButtonUpMask
spyMiddleDoubleClickMask	= 68	// spyMiddleButtonMask | spyDoubleClickMask
spyRightDoubleClickMask	= 72	// spyRightButtonMask | spyDoubleClickMask

3.4.24 SPYNumberDateTimeFormat

Description
Enumeration value to configure database connections.

Possible values:

spySystemLocale	= 0
spySchemaCompatible	= 1

3.4.25 SPYProgrammingLanguage

Description
Enumeration values to select the programming language for code generation from schema definitions.

Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

Possible values:

spyUndefinedLanguage	= -1
spyJava	= 0
spyCpp	= 1
spyCSharp	= 2

3.4.26 SPYProjectItemTypes

Description
Enumeration values to identify the different elements in project item lists. See SpyProjectItem.ItemType.

Possible values:

spyUnknownItem	= 0
spyFileItem	= 1
spyFolderItem	= 2
spyURLItem	= 3

3.4.27 SPYProjectType

Description
Enumeration values to parameterize generation of C# from schema definitions.

Possible values:

spyVisualStudioProject	= 0	Obsolete
spyVisualStudio2003Project	= 1	Obsolete
spyBorlandProject	= 2	Obsolete
spyMonoMakefile	= 3	
spyVisualStudio2005Project	= 4	For C++ code also
spyVisualStudio2008Project	= 5	For C++ code also
spyVisualStudio2010Project	= 6	For C++ code also

3.4.28 SPYSampleXMLGenerationOptimization

Description
Specify the elements that will be generated in the Sample XML.
This enumeration is used in GenerateSampleXMLDlg.

Possible values:

spySampleXMLGen_Optimized	= 0
spySampleXMLGen_NonMandatoryElements	= 1
spySampleXMLGen_Everything	= 2

3.4.29 SPYSampleXMLGenerationSchemaOrDTDAssignment

Description
Specifies what kind of reference to the schema/DTD should be added to the generated Sample XML.
This enumeration is used in GenerateSampleXMLDlg.

Possible values:

spySampleXMLGen_AssignRelatively	= 0
spySampleXMLGen_AssignAbsolutely	= 1
spySampleXMLGen_DoNotAssign	= 2

3.4.30 SPYSchemaDefKind

Description
Enumeration type to select schema diagram types.

Possible values:

spyKindElement	= 0
spyKindComplexType	= 1
spyKindSimpleType	= 2
spyKindGroup	= 3
spyKindModel	= 4
spyKindAny	= 5
spyKindAttr	= 6
spyKindAttrGroup	= 7
spyKindAttrAny	= 8
spyKindIdentityUnique	= 9
spyKindIdentityKey	= 10
spyKindIdentityKeyRef	= 11
spyKindIdentitySelector	= 12
spyKindIdentityField	= 13
spyKindNotation	= 14
spyKindInclude	= 15
spyKindImport	= 16
spyKindRedefine	= 17
spyKindFacet	= 18
spyKindSchema	= 19
spyKindCount	= 20

3.4.31 SPYSchemaDocumentationFormat

Description
Enumeration values to parameterize generation of schema documentation. These values are used in SchemaDocumentationDialog.OutputFormat and WSDLDocumentationDlg.OutputFormat.

Possible values:

spySchemaDoc_HTML	= 0
spySchemaDoc_MSWord	= 1
spySchemaDoc_RTF	= 2
spySchemaDoc_PDF	= 3

3.4.32 SPYSchemaExtensionType

Description
Enumeration to specify different Schema Extension types.

Possible values:

spySchemaExtension_None	= 0
spySchemaExtension_SQL_XML	= 1
spySchemaExtension_MS_SQL_Server	= 2
spySchemaExtension_Oracle	= 3

3.4.33 SPYSchemaFormat

Description
Enumeration to specify different Schema Format types.

Possible values:

spySchemaFormat_Hierarchical	= 0

spySchemaFormat_Flat = 1

3.4.34 SPYTextDelimiters

Description
Enumeration values to specify text delimiters for text export.

Possible values:

spyTabulator	= 0
spySemicolon	= 1
spyComma	= 2
spySpace	= 3

3.4.35 SPYTextEnclosing

Description
Enumeration value to specify text enclosing characters for text import and export.

Possible values:

spyNoEnclosing	= 0
spySingleQuote	= 1
spyDoubleQuote	= 2

3.4.36 SPYTypeDetection

Description
Enumeration to select how type detection works during GenerateDTDOrSchema and GenerateDTDOrSchemaEx.

Possible values:

spyBestPossible	= 0
spyNumbersOnly	= 1
spyNoDetection	= 2

3.4.37 SPYURLTypes

Description
Enumeration to specify different URL types.

Possible values:

spyURLTypeAuto	= -1
spyURLTypeXML	= 0
spyURLTypeDTD	= 1

3.4.38 SPYViewModes

Description
Enumeration values that define the different view modes for XML documents. The mode *spyViewAuthentic(4)* identifies the mode that was intermediately called DocEdit mode and is now called Authentic mode. The mode *spyViewWSDL* identifies a mode which is mapped to the schema view on the GUI but distinguished internally.

Possible values:

spyViewGrid	= 0
spyViewText	= 1
spyViewBrowser	= 2
spyViewSchema	= 3

spyViewContent	= 4	// obsolete
spyViewAuthentic	= 4	
spyViewWSDL	= 5	
spyViewZIP	= 6	
spyViewEditionInfo	= 7	
spyViewXBRL	= 8	

3.4.39 SPYVirtualKeyMask

Description
Enumeration type for the most frequently used key masks that identify the status of the virtual keys. Use these values as bitmasks rather then directly comparing with them. When necessary, you can create further masks by using the 'logical or' operator.

Examples

```
'  VBScript sample: check if ctrl-key is pressed
If ((i_nVirtualKeyStatus And spyCtrlKeyMask) <> 0)) Then
      ' ctrl-key is pressed
End If

'  VBScript sample: check if ONLY ctrl-key is pressed
If (i_nVirtualKeyStatus == spyCtrlKeyMask) Then
      ' exactly ctrl-key is pressed
End If
```

```
// JScript sample: check if any of the right virtual keys is pressed
if ((i_nVirtualKeyStatus & (spyRightShiftKeyMask | spyRightCtrlKeyMask |
spyRightAltKeyMask)) != 0)
{
      ; ' right virtual key is pressed
}
```

Possible values:

spyNoVirtualKeyMask	= 0	
spyLeftShiftKeyMask	= 1	
spyRightShiftKeyMask	= 2	
spyLeftCtrlKeyMask	= 4	
spyRightCtrlKeyMask	= 8	
spyLeftAltKeyMask	= 16	
spyRightAltKeyMask	= 32	
spyShiftKeyMask	= 3	// spyLeftShiftKeyMask | spyRightShiftKeyMask
spyCtrlKeyMask	= 12	// spyLeftCtrlKeyMask | spyRightCtrlKeyMask
spyAltKeyMask	= 48	// spyLeftAltKeyMask | spyRightAltKeyMask

3.4.40 SPYXMLDataKind

Description
The different types of XMLData elements available for XML documents.

Possible values:

spyXMLDataXMLDocStruct	= 0
spyXMLDataXMLEntityDocStruct	= 1
spyXMLDataDTDDocStruct	= 2
spyXMLDataXML	= 3
spyXMLDataElement	= 4
spyXMLDataAttr	= 5
spyXMLDataText	= 6

spyXMLDataCData	= 7
spyXMLDataComment	= 8
spyXMLDataPI	= 9
spyXMLDataDefDoctype	= 10
spyXMLDataDefExternalID	= 11
spyXMLDataDefElement	= 12
spyXMLDataDefAttlist	= 13
spyXMLDataDefEntity	= 14
spyXMLDataDefNotation	= 15
spyXMLDataKindsCount	= 16

3.5 Application API for Java

The objects described in this section (Application API for Java) are obsolete from v2012 onwards.

For information about how to access the Application API from Java code, see the section: Programming Languages | Java.

The Application API in Java has an interface built up of Java classes, each of which corresponds to an object in the Application API. Developers can use these Java classes to interact with the COM API. These classes are listed below and described in subsequent sections. For a description of the Application API objects themselves, see the Application API documentation. Bear in mind that some API features are only available in scripting environments; these have therefore not been ported to Java.

Java classes

SpyApplication
- SpyProject
  - SpyProjectItems
    - SpyProjectItem
  - SpyDocuments
    - SpyDoc
      - SpyAuthenticView
        - SpyAuthenticRange
      - SpyDocEditView
        - SpyDocEditSelection
      - SpyGridView
      - SpyTextView
      - SpyXMLData
  - SpyDialogs
    - SpyCodeGeneratorDlg
    - SpyDTDSchemaGeneratorDlg
    - SpyFileSelectionDlg
    - SpyFindInFilesDlg
    - SpyGenerateSampleXMLDlg
    - SpySchemaDocumentationDlg
    - SpyWSDL20DocumentationDlg
    - SpyWSDLDocumentationDlg
    - SpyXBRLDocumentationDlg
  - SpyDatabaseConnection
  - SpyElementList
  - SpyElementListItem
  - SpyExportSettings
  - SpyFindInFilesResults
    - SpyFindInFilesResult
      - SpyFindInFilesMatch
  - SpyTextImportExportSettings

Implementation of COM properties in Java

Properties in Java have been defined to include both a **`set`** and **`get`** method (`set` if it is allowed by the COM implementation). For example, the COM class `Document` contains the **`GridView`**

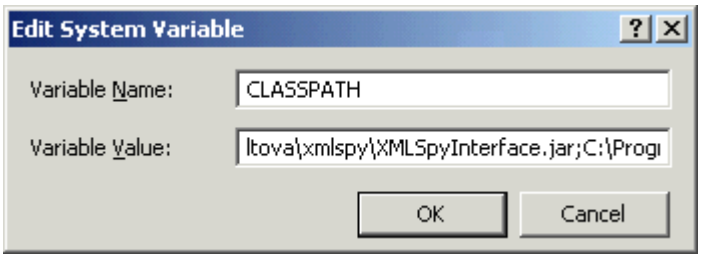
property. In Java the method is called `SpyDoc` and the property is defined as a **`GetGridView`** method.

If you encounter compiling problems, please check the following points:

- The `xmlspylib.dll` must be available in `..\windows\system32`.
- The `XMLSpyInterface.jar` file must be inserted in the ClassPath environment variable.

Setting the `ClassPath` variable in Windows XP

1. Click **Start | Settings | Control panel | System | Advanced | Environment Variables**. This opens the Environment Variables dialog box.
2. If a `ClassPath` entry already exists in the **System variables** group, select the `ClassPath` entry, and click the **Edit** button. Edit the path to: `"C:\Program Files\Altova\xmlspy\XMLSpyInterface.jar"`.



If a `ClassPath` entry does not exist in the System variables group, click the **New** button. The New System Variable dialog pops up. Enter `CLASSPATH` as the variable name, and `"C:\Program Files\Altova\xmlspy\XMLSpyInterface.jar"` as the `ClassPath` variable (alter the path to match your installation, if necessary).

3.5.1 Sample source code

The "`SpyDoc doc = app.GetDocuments().OpenFile(...)`" command parameter must be altered to suit your environment.

What the sample does:

- Starts a new XMLSpy instance
- Opens the Datasheet.xml file (alter the path here...)
- Switches to the Enhanced Grid view
- Appends a new child element called "NewChild" with the text value "NewValuE" element to the root element
- Checks if the document is valid and outputs a message to the Java console
- Quits and releases the XMLSpy application

```
import XMLSpyInterface.*;

public class TestSpyInterface
{
    public TestSpyInterface() {}

    public static void main(String[] args)
    {
        SpyApplication app = null;
        SpyDoc oDoc = null;
```

```
        SpyXMLData oData = null;
        SpyXMLData oNewChild = null;

        try
        {
            app = new SpyApplication();
            app.ShowApplication( true );

            oDoc = app.GetDocuments().OpenFile("C:\\FilePath\\OrgChart.xml",
            true );

            // OrgChart.xml is in the folder C:\Documents and
            Settings\<username>\My Documents\Altova\XMLSpy2012\. The filepath
            should be in
            // the form: C:\\Documents and
            Settings\\Username\\Folder\\Filename.xml

            if ( oDoc != null )
            {
                oDoc.SwitchViewMode(SPYViewModes.spyViewGrid);
                oData = oDoc.GetRootElement();
                oNewChild = oDoc.CreateChild(SPYXMLDataKind.spyXMLDataElement);

                oNewChild.SetName( "NewChild" );
                oNewChild.SetTextValue("newVaLuE");
                oData.AppendChild(oNewChild);

                if ( oDoc.IsValid() == false )
                {
                    // is to be expected after above insertion
                    System.out.println( "!!!!!!validation error: " +
                    oDoc.GetErrorString() );
                    System.out.println( "!!!!!!validation error: " +
                    oDoc.GetErrorPos() );
                    System.out.println( "!!!!!!validation error: " +
                    oDoc.GetBadData() );
                }
            }

            app.Quit();
        }
        finally
        {
            // Free any allocated resources by calling ReleaseInstance().
            if ( oNewChild != null )
                oNewChild.ReleaseInstance();

            if ( oData != null )
                oData.ReleaseInstance();

            if ( oDoc != null )
                oDoc.ReleaseInstance();

            if ( app != null )
                app.ReleaseInstance();
        }
    }
}
```

If you have difficulties compiling this sample, please try the following commands on the (**Start | Run | cmd**) command line. Please make sure you are currently in the folder that contains the sample java file.

compilation

javac -classpath c:*yourpathhere*\XMLSpyInterface.jar *testspyinterface.java*

Execution
java -classpath c:*yourpathhere*\XMLSpyInterface.jar *testspyinterface*

3.5.2 SpyApplication

```
public class SpyApplication
{
  public void ReleaseInstance();
  public void ShowApplication( boolean bShow );
  public void Quit();
  public void AddMacroMenuItem( String sMacro, String sDisplayText );
  public void ClearMacroMenu();
  public SpyDoc GetActiveDocument();
  public SpyProject GetCurrentProject();
  public SpyDocuments GetDocuments();
  public SpyElementList GetDatabaseImportElementList( SpyDatabaseConnection
  oImportSettings );
  public SpyDatabaseConnection GetDatabaseSettings();
  public SpyElementList GetDatabaseTables( SpyDatabaseConnection
  oImportSettings );
  public SpyExportSettings GetExportSettings();
  public SpyElementList GetTextImportElementList( SpyTextImportExportSettings
  oImportSettings );
  public SpyTextImportExportSettings GetTextImportExportSettings();
  public SpyDoc ImportFromDatabase( SpyDatabaseConnection oImportSettings,
  SpyElementList oElementList );
  public SpyDoc ImportFromSchema( SpyDatabaseConnection oImportSettings,
  String strTable, SpyDoc oSchemaDoc );
  public SpyDoc ImportFromText( SpyTextImportExportSettings oImportSettings,
  SpyElementList oElementList );
  public SpyDoc ImportFromWord( String sFile );
  public void NewProject( String sPath, boolean bDiscardCurrent );
  public void OpenProject( String sPath , boolean bDiscardCurrent, boolean
  bDialog );
  public long ShowForm( String sName );
  public void URLDelete( String sURL, String sUser, String sPassword );
  public void URLMakeDirectory( String sURL, String sUser, String sPassword );

  public int GetWarningNumber();
  public String GetWarningText();

  // since Version 2004R4
  public SpyApplication GetApplication();
  public SpyApplication GetParent();
  public SpyDialogs GetDialogs();
  public boolean GetVisible();
  public void SetVisible( boolean i_bVisibility );
  public long GetWindowHandle();

  public void ReloadSettings();
  public SpyFindInFilesResults FindInFiles( SpyFindInFilesDlg dlgSettings );
  public boolean ShowFindInFiles( SpyFindInFilesDlg dlgSettings );
  public void Selection( String sVal );

  public long Status();
  public int MajorVersion();
  public int MinorVersion();
  public String Edition();
  public boolean IsAPISupported();
```

```
  public long ServicePackVersion();
  public void CreateXMLSchemaFromDBStructure( SpyDatabaseConnection
oConnection, SpyElementList oTables );
}
```

3.5.3 SpyCodeGeneratorDlg

Only available/enabled in the Enterprise edition. An error is returned, if accessed by any other version.

```
// since version 2004R4
public class SpyCodeGeneratorDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public SpyDialogs GetParent();
  public long GetProgrammingLanguage();
  public void SetProgrammingLanguage( long i_eVal );
  public String GetTemplateFileName();
  public void SetTemplateFileName( String i_strVal );
  public String GetOutputPath();
  public void SetOutputPath( String i_strVal );
  public long GetOutputPathDialogAction();
  public void SetOutputPathDialogAction( long i_eVal );
  public long GetPropertySheetDialogAction();
  public void SetPropertySheetDialogAction( long i_eVal );
  public long GetOutputResultDialogAction();
  public void SetOutputResultDialogAction( long i_eVal );
  public long GetCPPSettings_DOMType();
  public void SetCPPSettings_DOMType( long i_eVal );
  public long GetCPPSettings_LibraryType();
  public void SetCPPSettings_LibraryType( long i_eVal );
  public boolean GetCPPSettings_UseMFC();
  public void SetCPPSettings_UseMFC( boolean i_bVal );
  public long GetCSharpSettings_ProjectType();
  public void SetCSharpSettings_ProjectType( long i_eVal );
}
```

3.5.4 SpyDatabaseConnection

```
public class SpyDatabaseConnection
{
  public void ReleaseInstance();
  public String GetADOConnection();
  public void SetADOConnection( String sValue );
  public boolean GetAsAttributes();
  public void SetAsAttributes( boolean bValue );
  public boolean GetCreateMissingTables();
  public void SetCreateMissingTables( boolean bValue );
  public boolean GetCreateNew();
  public void SetCreateNew( boolean bValue );
  public boolean GetExcludeKeys();
  public void SetExcludeKeys( boolean bValue );
  public String GetFile();
  public void SetFile( String sValue );
  public boolean GetIncludeEmptyElements();
  public void SetIncludeEmptyElements( boolean bValue );
  public long GetNumberDateTimeFormat();
  public void SetNumberDateTimeFormat( long nValue );
```



```
  public String GetODBCConnection();
  public void SetODBCConnection( String sValue );
  public String GetSQLSelect();
  public void SetSQLSelect( String sValue );
  public long GetTextFieldLen();
  public void SetTextFieldLen( long nValue );

  // since version 2004R4
  public long GetDatabaseKind();
  public void SetDatabaseKind( long nValue );

  // since version 2008R2
  public boolean GetCommentIncluded();
  public void SetCommentIncluded( boolean bValue );
  public String GetNullReplacement();
  public void SetNullReplacement( String sValue );
  public String GetDatabaseSchema();
  public void SetDatabaseSchema( String sValue );

  // since version 2010r3
  public boolean GetPrimaryKeys()
  public void SetPrimaryKeys( boolean bValue )
  public boolean GetForeignKeys()
  public void SetForeignKeys( boolean bValue )
  public boolean GetUniqueKeys()
  public void SetUniqueKeys( boolean bValue )
  public long GetSchemaExtensionType()
  public void SetSchemaExtensionType( long nValue )
  public long GetSchemaFormat()
  public void SetSchemaFormat( long nValue )
  public long GetImportColumnsType()
  public void SetImportColumnsType( long nValue )
}
```

3.5.5 SpyDialogs

```
// Since version 2004R4
public class SpyDialogs
{
  public SpyApplication GetApplication();
  public SpyApplication GetParent();
  public SpyCodeGeneratorDlg GetCodeGeneratorDlg();
  public SpyFileSelectionDlg GetFileSelectionDlg();
  public SpySchemaDocumentationDlg GetSchemaDocumentationDlg();
  public SpyGenerateSampleXMLDlg GetGenerateSampleXMLDlg();
  public SpyDTDSchemaGeneratorDlg GetDTDSchemaGeneratorDlg();
  public SpyFindInFilesDlg GetFindInFilesDlg();
  public SpyWSDLDocumentationDlg GetWSDLDocumentationDlg();

  // Since version 2010
  public SpyWSDL20DocumentationDlg GetWSDL20DocumentationDlg();
  public SpyXBRLDocumentationDlg GetXBRLDocumentationDlg();
}
```

3.5.6 SpyDoc

```
public class SpyDoc
{
  public void ReleaseInstance();
```

```
public void SetEncoding( String strEncoding );
public void SetPathName( String strPath );
public String GetPathName();
public String GetTitle();
public boolean IsModified();
public void Save();
public void Close( boolean bDiscardChanges );
public void UpdateViews();
public long GetCurrentViewMode();
public boolean SwitchViewMode( long nMode );
public SpyGridView GetGridView();
public void SetActiveDocument();
public void StartChanges();
public void EndChanges();
public void TransformXSL();
public void AssignDTD( String sDTDFile, boolean bDialog );
public void AssignSchema( String sSchemaFile, boolean bDialog );
public void AssignXSL( String sXSLFile, boolean bDialog );
public void ConvertDTDOrSchema( long nFormat, long nFrequentElements );
public SpyXMLData CreateChild( long nKind );
public void CreateSchemaDiagram( long nKind, String sName, String sFile );
public SpyDocEditView GetDocEditView();
public void ExportToDatabase( SpyXMLData oFromChild, SpyExportSettings
oExportSettings, SpyDatabaseConnection oDatabaseConnection );
public void ExportToText( SpyXMLData oFromChild, SpyExportSettings
oExportSettings, SpyTextImportExportSettings oTextSettings );
public void GenerateDTDOrSchema( long nFormat, int nValuesList, long
nDetection, long nFrequentElements );
public SpyElementList GetExportElementList( SpyXMLData oFromChild,
SpyExportSettings oExportSettings );
public SpyXMLData GetRootElement();
public String SaveInString( SpyXMLData oData, boolean bMarked );
public void SaveToURL( String sUrl, String sUser, String sPassword );
public String GetErrorString(); // See IsValid() or IsWellFormed()
public int GetErrorPos(); // See IsValid() or IsWellFormed()
public SpyXMLData GetBadData(); // See IsValid() or IsWellFormed()
public boolean IsValid();
public boolean IsWellFormed( SpyXMLData oData, boolean bWithChildren );

// Since version 2004R3
public SpyAuthenticView GetAuthenticView()

// Since version 2004R4
public SpyApplication GetApplication();
public SpyDocuments GetParent();
public String GetFullName();
public void SetFullName( String i_strName );
public String GetName();
public String GetPath();
public boolean GetSaved();
public void SaveAs( String i_strFileNameOrPath );
public String GetEncoding();
public SpyXMLData GetDataRoot();
public void GenerateProgramCode( SpyCodeGeneratorDlg i_dlg );
public void AssignXSLFO( String i_strFile, boolean i_bUseDialog );
public void TransformXSLFO();
public void GenerateSchemaDocumentation( SpySchemaDocumentationDlg i_dlg );

public void ExecuteXQuery( String i_strXMLSourceFile );
public void SetExternalIsValid( boolean bIsValid );
public SpyDoc GenerateSampleXML( SpyGenerateSampleXMLDlg ipGenerateXMLDlg );
public boolean UpdateXMLData();
public String GetAsXMLString();
```

```
  public void SetAsXMLString( String newVal );
  public SpyDoc GenerateDTDOrSchemaEx( SpyDTDSchemaGeneratorDlg
  ipDTDSchemaGeneratorDlg );
  public SpyDoc ConvertDTDOrSchemaEx( long nFormat, long nFrequentElements,
  String sOutputPath, long nOutputPathDialogAction );
  public SpyTextView GetTextView();
  public String[] GetSuggestions();
  public void SetSuggestions( String[] aList );
  public void SetSelection( String sVal );

  // Since version 2009
  public void GenerateWSDLDocumentation( SpyWSDLDocumentationDlg
  ipWSDLDocumenationDlg );
  public void TransformXSLEx( long nDialogAction );

  // Since version 2010
  public void GenerateWSDL20Documentation( SpyWSDL20DocumentationDlg
  ipWSD20DocumenationDlg );
  public void GenerateXBRLDocumentation( SpyXBRLDocumentationDlg
  ipXBRLDocumentationDlg );
  public SpyDoc ConvertToWSDL20( String sFilePath, boolean bShowDialogs );

  // Since version 2010r3
  public String CreateDBStructureFromXMLSchema( SpyDatabaseConnection
  oConnection, SpyElementList oTables, boolean bDropTableWithExistingName );
  public SpyElementList GetDBStructureList( SpyDatabaseConnection oConnection
  );
}
```

3.5.7 SpyDocuments

```
public class SpyDocuments
{
  public void ReleaseInstance();
  public long Count();
  public SpyDoc GetItem( long nNo );
  public SpyDoc NewFile( String strFile, String strType );
  public SpyDoc NewFileFromText( String nSource, String strType );
  public SpyDoc OpenFile( String sPath, boolean bDialog );
  public SpyDoc OpenURL( String sUrl, long nURLType, long nLoading, String
  sUser, String sPassword );
  public SpyDoc OpenURLDialog(String sURL, long nURLType, long nLoading,
  String sUser, String sPassword );
  // Since version 2011r2
  public SpyDoc NewAuthenticFile( String strSPSPath, String strXMLPath );
  public SpyDoc OpenAuthenticFile( String strSPSPath, String strXMLPath );
}
```

3.5.8 SpyDTDSchemaGeneratorDlg

```
public class SpyDTDSchemaGeneratorDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public long GetDTDSchemaFormat();
  public void SetDTDSchemaFormat( long newVal );
  public short GetValueList();
  public void SetValueList( short newVal );
  public long GetTypeDetection();
  public void SetTypeDetection( long newVal );
  public long GetFrequentElements();
```

```
  public void SetFrequentElements( long newVal );
  public boolean GetMergeAllEqualNamed();
  public void SetMergeAllEqualNamed( boolean newVal );
  public boolean GetResolveEntities();
  public void SetResolveEntities( boolean newVal );
  public long GetAttributeTypeDefinition();
  public void SetAttributeTypeDefinition( long newVal );
  public boolean GetGlobalAttributes();
  public void SetGlobalAttributes( boolean newVal );
  public boolean GetOnlyStringEnums();
  public void SetOnlyStringEnums( boolean newVal );
  public long GetMaxEnumLength();
  public void SetMaxEnumLength( long newVal );
  public String GetOutputPath();
  public void SetOutputPath( String newVal );
  public long GetOutputPathDialogAction();
  public void SetOutputPathDialogAction( long newVal );
}
```

3.5.9 SpyElementList

```
public class SpyElementList
{
  public void ReleaseInstance();
  public long GetCount();
  public SpyElementListItem GetItem( long nIndex );
  public void RemoveElement( long nIndex );
}
```

3.5.10 SpyElementListItem

```
public class SpyElementListItem
{
  public void ReleaseInstance();
  public long GetElementKind();
  public void SetElementKind( long nKind );
  public long GetFieldCount();
  public String GetName();
  public long GetRecordCount();
}
```

3.5.11 SpyExportSettings

```
public class SpyExportSettings
{
  public void ReleaseInstance();
  public boolean GetCreateKeys();
  public void SetCreateKeys( boolean bValue );
  public SpyElementList GetElementList();
  public void SetElementList( SpyElementList obj );
  public boolean GetEntitiesToText ();
  public void SetEntitiesToText( boolean bValue );
  public boolean GetExportAllElements();
  public void SetExportAllElements( boolean bValue );
  public boolean GetFromAttributes();
  public void SetFromAttributes( boolean bValue );
  public boolean GetFromSingleSubElements();
  public void SetFromSingleSubElements( boolean bValue );
  public boolean GetFromTextValues();
```



```
  public void SetFromTextValues( boolean bValue );
  public boolean GetIndependentPrimaryKey();
  public void SetIndependentPrimaryKey( boolean bValue );
  public long GetNamespace();
  public void SetNamespace( long nValue );
  public int GetSubLevelLimit();
  public void SetSubLevelLimit( int nValue );
}
```

3.5.12 SpyFileSelectionDlg

```
// Since version 2004R4
public class SpyFileSelectionDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public SpyDialogs GetParent();
  public String GetFullName();
  public void SetFullName( String i_strName );
  public long GetDialogAction();
  public void SetDialogAction( long i_eAction );
}
```

3.5.13 SpyFindInFilesDlg

```
public class SpyFindInFilesDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public String GetFind();
  public void SetFind( String sNewVal );
  public boolean GetRegularExpression();
  public void SetRegularExpression( boolean bNewVal );
  public String GetReplace();
  public void SetReplace( String sNewVal );
  public boolean GetReplaceOnDisk();
  public void SetReplaceOnDisk( boolean bNewVal );
  public boolean GetDoReplace();
  public void SetDoReplace( boolean bNewVal );
  public boolean GetMatchWholeWord();
  public void SetMatchWholeWord( boolean bNewVal );
  public boolean GetMatchCase();
  public void SetMatchCase( boolean bNewVal );
  public long GetSearchLocation();
  public void SetSearchLocation( long nPosition );
  public String GetStartFolder();
  public void SetStartFolder( String sNewVal );
  public boolean GetIncludeSubfolders();
  public void SetIncludeSubfolders( boolean bNewVal );
  public boolean GetSearchInProjectFilesDoExternal();
  public void SetSearchInProjectFilesDoExternal( boolean bNewVal );
  public String GetFileExtension();
  public void SetFileExtension( String sNewVal );
  public boolean GetAdvancedXMLSearch();
  public void SetAdvancedXMLSearch( boolean bNewVal );
  public boolean GetXMLElementNames();
  public void SetXMLElementNames( boolean bNewVal );
  public boolean GetXMLElementContents();
  public void SetXMLElementContents( boolean bNewVal );
  public boolean GetXMLAttributeNames();
```

```
  public void SetXMLAttributeNames( boolean bNewVal );
  public boolean GetXMLAttributeContents();
  public void SetXMLAttributeContents( boolean bNewVal );
  public boolean GetXMLComments();
  public void SetXMLComments( boolean bNewVal );
  public boolean GetXMLCData();
  public void SetXMLCData( boolean bNewVal );
  public boolean GetXMLPI();
  public void SetXMLPI( boolean bNewVal );
  public boolean GetXMLRest();
  public void SetXMLRest( boolean bNewVal );
  public boolean GetShowResult();
  public void SetShowResult( boolean bNewVal );
}
```

3.5.14 SpyFindInFilesMatch

```
public class SpyFindInFilesMatch
{
  public void ReleaseInstance();
  public long Line();
  public long Position();
  public long Length();
  public String LineText();
  public boolean Replaced();
}
```

3.5.15 SpyFindInFilesResult

```
public class SpyFindInFilesResult
{
  public void ReleaseInstance();
  public long Count();
  public SpyFindInFilesMatch GetItem( long nNo );
  public String GetPath();
  public SpyDoc GetDocument();
}
```

3.5.16 SpyFindInFilesResults

```
public class SpyFindInFilesResults
{
  public void ReleaseInstance();
  public long Count();
  public SpyFindInFilesResult GetItem( long nNo );
}
```

3.5.17 SpyGenerateSampleXMLDlg

```
public class SpyGenerateSampleXMLDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public boolean GetNonMandatoryAttributes();
  public void SetNonMandatoryAttributes( boolean newVal );
  public boolean GetNonMandatoryElements();
  public void SetNonMandatoryElements( boolean newVal );
  public boolean GetTakeFirstChoice();
```



```
  public void SetTakeFirstChoice( boolean newVal );
  public long GetRepeatCount();
  public void SetRepeatCount( long newVal );
  public boolean GetFillWithSampleData();
  public void SetFillWithSampleData( boolean newVal );
  public boolean GetFillElementsWithSampleData();
  public void SetFillElementsWithSampleData( boolean newVal );
  public boolean GetFillAttributesWithSampleData();
  public void SetFillAttributesWithSampleData( boolean newVal );
  public boolean GetContentOfNillableElementsIsNonMandatory();
  public void SetContentOfNillableElementsIsNonMandatory( boolean newVal );
  public boolean GetTryToUseNonAbstractTypes();
  public void SetTryToUseNonAbstractTypes( boolean newVal );
  public long GetOptimization();
  public void SetOptimization( long newVal );
  public long GetSchemaOrDTDAssignment();
  public void SetSchemaOrDTDAssignment( long newVal );
  public String GetLocalNameOfRootElement();
  public void SetLocalNameOfRootElement( String newVal );
  public String GetNamespaceURIOfRootElement();
  public void SetNamespaceURIOfRootElement( String newVal );
  public long GetOptionsDialogAction();
  public void SetOptionsDialogAction( long newVal );
}
```

3.5.18 SpyGridView

```
public class SpyGridView
{
  public void ReleaseInstance();
  public SpyXMLData GetCurrentFocus();
  public void Deselect( SpyXMLData oData );
  public boolean GetIsVisible();
  public void Select( SpyXMLData oData );
  public void SetFocus( SpyXMLData oData );
}
```

3.5.19 SpyProject

```
public class SpyProject
{
  public void ReleaseInstance();
  public void CloseProject( boolean bDiscardChanges, boolean bCloseFiles,
  boolean bDialog );
  public String GetProjectFile();
  public void SetProjectFile( String sFile );
  public SpyProjectItems GetRootItems();
  public void SaveProject();
  public void SaveProjectAs( String sPath, boolean bDialog );
}
```

3.5.20 SpyProjectItem

```
public class SpyProjectItem
{
  public void ReleaseInstance();
  public SpyProjectItems GetChildItems();
  public String GetFileExtensions();
  public void SetFileExtensions( String sExtensions );
```

```
  public long GetItemType();
  public String GetName();
  public SpyDoc Open();
  public SpyProjectItem GetParentItem();
  public String GetPath();
  public String GetValidateWith();
  public void SetValidateWith( String sVal );
  public String GetXMLForXSLTransformation();
  public void SetXMLForXSLTransformation( String sVal );
  public String GetXSLForXMLTransformation();
  public void SetXSLForXMLTransformation( String sVal );
  public String GetXSLTransformationFileExtension();
  public void SetXSLTransformationFileExtension( String sVal );
  public String GetXSLTransformationFolder();
  public void SetXSLTransformationFolder( String sVal );
}
```

3.5.21 SpyProjectItems

```
public class SpyProjectItems
{
  public void ReleaseInstance();
  public void AddFile( String sPath );
  public void AddFolder( String sName );
  public void AddURL( String sURL, long nURLType, String sUser, String
  sPassword, boolean bSave );
  public long Count();
  public SpyProjectItem GetItem( long nNumber );
  public void RemoveItem( SpyProjectItem oItemToRemove );
}
```

3.5.22 SpySchemaDocumentationDlg

```
// Since version 2004R4
public class SpySchemaDocumentationDlg
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public SpyDialogs GetParent();

  public String GetOutputFile();
  public void SetOutputFile( String i_strVal );
  public long GetOutputFormat();
  public void SetOutputFormat( long i_eVal );

  public boolean GetShowResult();
  public void SetShowResult( boolean i_bVal );
  public long GetOptionsDialogAction();
  public void SetOptionsDialogAction( long i_eVal );
  public long GetOutputFileDialogAction();
  public void SetOutputFileDialogAction( long i_eVal );
  public boolean GetShowProgressBar();
  public void SetShowProgressBar( boolean i_bVal );

  public void IncludeAll( boolean i_bInclude );
  public boolean GetIncludeIndex();
  public void SetIncludeIndex( boolean i_bVal );
  public boolean GetIncludeGlobalElements();
  public void SetIncludeGlobalElements( boolean i_bVal );
  public boolean GetIncludeLocalElements();
```



```
public void SetIncludeLocalElements( boolean i_bVal );
public boolean GetIncludeGroups();
public void SetIncludeGroups( boolean i_bVal );
public boolean GetIncludeComplexTypes();
public void SetIncludeComplexTypes( boolean i_bVal );
public boolean GetIncludeSimpleTypes();
public void SetIncludeSimpleTypes( boolean i_bVal );
public boolean GetIncludeAttributeGroups();
public void SetIncludeAttributeGroups( boolean i_bVal );
public boolean GetIncludeRedefines();
public void SetIncludeRedefines( boolean i_bVal );

public void AllDetails( boolean i_bDetailsOn );
public boolean GetShowDiagram();
public void SetShowDiagram( boolean i_bVal );
public boolean GetShowNamespace();
public void SetShowNamespace( boolean i_bVal );
public boolean GetShowType();
public void SetShowType( boolean i_bVal );
public boolean GetShowChildren();
public void SetShowChildren( boolean i_bVal );
public boolean GetShowUsedBy();
public void SetShowUsedBy( boolean i_bVal );
public boolean GetShowProperties();
public void SetShowProperties( boolean i_bVal );
public boolean GetShowSingleFacets();
public void SetShowSingleFacets( boolean i_bVal );
public boolean GetShowPatterns();
public void SetShowPatterns( boolean i_bVal );
public boolean GetShowEnumerations();
public void SetShowEnumerations( boolean i_bVal );
public boolean GetShowAttributes();
public void SetShowAttributes( boolean i_bVal );
public boolean GetShowIdentityConstraints();
public void SetShowIdentityConstraints( boolean i_bVal );
public boolean GetShowAnnotations();
public void SetShowAnnotations( boolean i_bVal );
public boolean GetShowSourceCode();
public void SetShowSourceCode( boolean i_bVal );

// Since version 2009
public boolean GetEmbedDiagrams();
public void SetEmbedDiagrams( boolean i_bVal );
public long GetDiagramFormat();
public void SetDiagramFormat( long i_nVal );
public boolean GetIncludeGlobalAttributes();
public void SetIncludeGlobalAttributes( boolean i_bVal );
public boolean GetIncludeLocalAttributes();
public void SetIncludeLocalAttributes( boolean i_bVal );
public boolean GetIncludeReferencedSchemas();
public void SetIncludeReferencedSchemas( boolean i_bVal );
public boolean GetMultipleOutputFiles();
public void SetMultipleOutputFiles( boolean i_bVal );

// Since version 2010
public boolean GetEmbedCSSInHTML();
public void SetEmbedCSSInHTML( boolean i_bVal );
public boolean GetCreateDiagramsFolder();
public void SetCreateDiagramsFolder( boolean i_bVal );

// Since version 2010r3
public boolean GetGenerateRelativeLinks();
public void SetGenerateRelativeLinks( boolean i_bVal );
```

```
  // Since version 2011r2
  public boolean GetUseFixedDesign();
  public void SetUseFixedDesign( boolean i_bVal );
  public String GetSPSFile();
  public void SetSPSFile( String i_strVal );
  }
```

3.5.23 SpyTextImportExportSettings

```
public class SpyTextImportExportSettings
{
  public void ReleaseInstance();
  public String GetDestinationFolder();
  public void SetDestinationFolder( String sVal );
  public long GetEnclosingCharacter();
  public void SetEnclosingCharacter( long nEnclosing );
  public String GetEncoding();
  public void SetEncoding( String sVal );
  public long GetEncodingByteOrder();
  public void SetEncodingByteOrder( long nByteOrder );
  public long GetFieldDelimiter();
  public void SetFieldDelimiter( long nDelimiter );
  public String GetFileExtension ();
  public void SetFileExtension( String sVal );
  public boolean GetHeaderRow();
  public void SetHeaderRow( boolean bVal );
  public String GetImportFile();
  public void SetImportFile( String sVal );
}
```

3.5.24 SpyTextView

```
public class SpyTextView
{
  public void ReleaseInstance();
  public SpyApplication GetApplication();
  public SpyDoc GetParent();
  public long LineFromPosition( long nCharPos );
  public long PositionFromLine( long nLine );
  public long LineLength( long nLine );
  public String GetSelText();
  public void SetSelText( String sText );
  public String GetRangeText( long nPosFrom, long nPosTill );
  public void ReplaceText( long nPosFrom, long nPosTill, String sText );
  public void MoveCaret( long nDiff );
  public void GoToLineChar( long nLine, long nChar );
  public void SelectText( long nPosFrom, long nPosTill );
  public long GetSelectionStart();
  public void SetSelectionStart( long nNewVal );
  public long GetSelectionEnd();
  public void SetSelectionEnd( long nNewVal );
  public String GetText();
  public void SetText( String sText );
  public long LineCount();
  public long Length();
}
```


3.5.25 SpyWSDL20DocumentationDlg

```
// Since version 2010
public class SpyWSDL20DocumentationDlg
{
	public void ReleaseInstance();
	public SpyApplication GetApplication();

	public long GetOptionsDialogAction();
	public void SetOptionsDialogAction( long nNewVal );

	public long GetOutputFileDialogAction();
	public void SetOutputFileDialogAction( long nNewVal );

	public boolean GetShowProgressBar();
	public void SetShowProgressBar( boolean bNewVal );

	public String GetOutputFile();
	public void SetOutputFile( String sNewVal );

	public long GetOutputFormat();
	public void SetOutputFormat( long nNewVal );

	public boolean GetMultipleOutputFiles();
	public void SetMultipleOutputFiles( boolean bNewVal );

	public boolean GetEmbedCSSInHTML();
	public void SetEmbedCSSInHTML( boolean bNewVal );

	public long GetDiagramFormat();
	public void SetDiagramFormat( long nNewVal );

	public boolean GetEmbedDiagrams();
	public void SetEmbedDiagrams( boolean bNewVal );

	public boolean GetCreateDiagramsFolder();
	public void SetCreateDiagramsFolder( boolean bNewVal );

	public boolean GetShowResult();
	public void SetShowResult( boolean bNewVal );

	public void IncludeAll( boolean bNewVal );
	public void AllDetails( boolean bNewVal );

	public boolean GetIncludeOverview();
	public void SetIncludeOverview( boolean bNewVal );

	public boolean GetIncludeService();
	public void SetIncludeService( boolean bNewVal );

	public boolean GetIncludeBinding();
	public void SetIncludeBinding( boolean bNewVal );

	public boolean GetIncludeInterface();
	public void SetIncludeInterface( boolean bNewVal );
```

```
        public boolean GetIncludeTypes();
        public void SetIncludeTypes( boolean bNewVal );

        public boolean GetIncludeImportedWSDLFiles();
        public void SetIncludeImportedWSDLFiles( boolean bNewVal );

        public boolean GetShowServiceDiagram();
        public void SetShowServiceDiagram( boolean bNewVal );

        public boolean GetShowBindingDiagram();
        public void SetShowBindingDiagram( boolean bNewVal );

        public boolean GetShowInterfaceDiagram();
        public void SetShowInterfaceDiagram( boolean bNewVal );

        public boolean GetShowTypesDiagram();
        public void SetShowTypesDiagram( boolean bNewVal );

        public boolean GetShowEndpoint();
        public void SetShowEndpoint( boolean bNewVal );

        public boolean GetShowSourceCode();
        public void SetShowSourceCode( boolean bNewVal );

        public boolean GetShowExtensibility();
        public void SetShowExtensibility( boolean bNewVal );

        public boolean GetShowUsedBy();
        public void SetShowUsedBy( boolean bNewVal );

        public boolean GetShowOperation();
        public void SetShowOperation( boolean bNewVal );

        public boolean GetShowFault();
        public void SetShowFault( boolean bNewVal );

        // Since version 2011r2
        public boolean GetUseFixedDesign();
        public void SetUseFixedDesign( boolean i_bVal );

        public String GetSPSFile();
        public void SetSPSFile( String i_strVal );

}
```

3.5.26 SpyWSDLDocumentationDlg

```
// Since version 2008r2sp1
public class SpyWSDLDocumentationDlg
{
        public void ReleaseInstance();
        public SpyApplication GetApplication();

        public String GetOutputFile();
        public void SetOutputFile( String sNewVal );

        public long GetOutputFileDialogAction();
        public void SetOutputFileDialogAction( long nNewVal );

        public long GetOptionsDialogAction();
```



```
public void SetOptionsDialogAction( long nNewVal );

public boolean GetShowProgressBar();
public void SetShowProgressBar( boolean bNewVal );

public boolean GetShowResult();
public void SetShowResult( boolean bNewVal );

public long GetOutputFormat();
public void SetOutputFormat( long nNewVal );

public boolean GetEmbedDiagrams();
public void SetEmbedDiagrams( boolean bNewVal );

public long GetDiagramFormat();
public void SetDiagramFormat( long nNewVal );

public boolean GetMultipleOutputFiles();
public void SetMultipleOutputFiles( boolean bNewVal );

public void IncludeAll( boolean bNewVal );

public boolean GetIncludeBinding();
public void SetIncludeBinding( boolean bNewVal );

public boolean GetIncludeImportedWSDLFiles();
public void SetIncludeImportedWSDLFiles( boolean bNewVal );

public boolean GetIncludeMessages();
public void SetIncludeMessages( boolean bNewVal );

public boolean GetIncludeOverview();
public void SetIncludeOverview( boolean bNewVal );

public boolean GetIncludePortType();
public void SetIncludePortType( boolean bNewVal );

public boolean GetIncludeService();
public void SetIncludeService( boolean bNewVal );

public boolean GetIncludeTypes();
public void SetIncludeTypes( boolean bNewVal );

public void AllDetails( boolean bNewVal );

public boolean GetShowBindingDiagram();
public void SetShowBindingDiagram( boolean bNewVal );

public boolean GetShowExtensibility();
public void SetShowExtensibility( boolean bNewVal );

public boolean GetShowMessageParts();
public void SetShowMessageParts( boolean bNewVal );

public boolean GetShowPort();
public void SetShowPort( boolean bNewVal );

public boolean GetShowPortTypeDiagram();
public void SetShowPortTypeDiagram( boolean bNewVal );

public boolean GetShowPortTypeOperations();
public void SetShowPortTypeOperations( boolean bNewVal );

public boolean GetShowServiceDiagram();
```

```
        public void SetShowServiceDiagram( boolean bNewVal );

        public boolean GetShowSourceCode();
        public void SetShowSourceCode( boolean bNewVal );

        public boolean GetShowTypesDiagram();
        public void SetShowTypesDiagram( boolean bNewVal );

        public boolean GetShowUsedBy();
        public void SetShowUsedBy( boolean bNewVal );

        // Since version 2010
        public boolean GetEmbedCSSInHTML();
        public void SetEmbedCSSInHTML( boolean i_bVal );

        public boolean GetCreateDiagramsFolder();
        public void SetCreateDiagramsFolder( boolean i_bVal );

        // Since version 2011r2
        public boolean GetUseFixedDesign();
        public void SetUseFixedDesign( boolean i_bVal );

        public String GetSPSFile();
        public void SetSPSFile( String i_strVal );

    }
```

3.5.27 SpyXBRLDocumentationDlg

```
// Since version 2010
public class SpyXBRLDocumentationDlg
{
        public void ReleaseInstance();
        public SpyApplication GetApplication();

        public long GetOptionsDialogAction();
        public void SetOptionsDialogAction( long nNewVal );

        public long GetOutputDialogAction();
        public void SetOutputDialogAction( long nNewVal );

        public boolean GetShowProgressBar();
        public void SetShowProgressBar( boolean bNewVal );

        public String GetOutputFile();
        public void SetOutputFile( String sNewVal );

        public long GetOutputFormat();
        public void SetOutputFormat( long nNewVal );

        public boolean GetEmbedCSSInHTML();
        public void SetEmbedCSSInHTML( boolean bNewVal );

        public long GetDiagramFormat();
        public void SetDiagramFormat( long nNewVal );

        public boolean GetEmbedDiagrams();
        public void SetEmbedDiagrams( boolean bNewVal );
```

```
public boolean GetCreateDiagramsFolder();
public void SetCreateDiagramsFolder( boolean bNewVal );

public boolean GetShowResult();
public void SetShowResult( boolean bNewVal );

public void IncludeAll( boolean bNewVal );
public void AllDetails( boolean bNewVal );

public boolean GetIncludeOverview();
public void SetIncludeOverview( boolean bNewVal );

public boolean GetIncludeNamespacePrefixes();
public void SetIncludeNamespacePrefixes( boolean bNewVal );

public boolean GetIncludeGlobalElements();
public void SetIncludeGlobalElements( boolean bNewVal );

public boolean GetIncludeDefinitionLinkroles();
public void SetIncludeDefinitionLinkroles( boolean bNewVal );

public boolean GetIncludePresentationLinkroles();
public void SetIncludePresentationLinkroles( boolean bNewVal );

public boolean GetIncludeCalculationLinkroles();
public void SetIncludeCalculationLinkroles( boolean bNewVal );

public boolean GetShowDiagram();
public void SetShowDiagram( boolean bNewVal );

public boolean GetShowSubstitutiongroup();
public void SetShowSubstitutiongroup( boolean bNewVal );

public boolean GetShowItemtype();
public void SetShowItemtype( boolean bNewVal );

public boolean GetShowBalance();
public void SetShowBalance( boolean bNewVal );

public boolean GetShowPeriod();
public void SetShowPeriod( boolean bNewVal );

public boolean GetShowAbstract();
public void SetShowAbstract( boolean bNewVal );

public boolean GetShowNillable();
public void SetShowNillable( boolean bNewVal );

public boolean GetShowLabels();
public void SetShowLabels( boolean bNewVal );

public boolean GetShowReferences();
public void SetShowReferences( boolean bNewVal );

public boolean GetShowLinkbaseReferences();
public void SetShowLinkbaseReferences( boolean bNewVal );

public boolean GetShortQualifiedName();
public void SetShortQualifiedName( boolean bNewVal );

public boolean GetShowImportedElements();
```

```
        public void SetShowImportedElements( boolean bNewVal );

        // Since version 2011r2
        public boolean GetUseFixedDesign();
        public void SetUseFixedDesign( boolean i_bVal );

        public String GetSPSFile();
        public void SetSPSFile( String i_strVal );
};
```

3.5.28 SpyXMLData

```
public class SpyXMLData
{
  public void ReleaseInstance();
  public void AppendChild( SpyXMLData oNewData );
  public void EraseAllChildren();
  public void EraseCurrentChild();
  public SpyXMLData GetCurrentChild();
  public SpyXMLData GetFirstChild( long nKind );
  public SpyXMLData GetNextChild();
  public boolean GetHasChildren();
  public void InsertChild( SpyXMLData oNewData );
  public boolean IsSameNode( SpyXMLData oToComp);
  public long GetKind();
  public boolean GetMayHaveChildren();
  public String GetName();
  public void SetName( String sValue );
  public SpyXMLData GetParent();
  public String GetTextValue();
  public void SetTextValue( String sValue );
}
```

3.5.29 Authentic

SpyAuthenticRange

```
// Since version 2004R3
public class SpyAuthenticRange
{
    public void ReleaseInstance();
    public SpyApplication GetApplication();
    public SpyAuthenticView GetParent();
    public SpyAuthenticRange GotoNext( long eKind );
    public SpyAuthenticRange GotoPrevious( long eKind );
    public void Select();
    public long GetFirstTextPosition();
    public void SetFirstTextPosition( long nTextPosition );
    public long GetLastTextPosition();
    public void SetLastTextPosition( long nTextPosition );
    public String GetText();
    public void SetText( String strText );
    public boolean PerformAction( long eAction, String strElementName );
    public boolean CanPerformAction( long eAction, String strElementName );
    public String[] CanPerformActionWith( long eAction );
    public SpyAuthenticRange GoTo( long eKind, long nCount, long nFrom );
    public SpyAuthenticRange SelectNext( long eKind );
    public SpyAuthenticRange SelectPrevious( long eKind );
    public SpyAuthenticRange MoveBegin( long eKind, long nCount );
    public SpyAuthenticRange MoveEnd( long eKind, long nCount );
```



```
    public SpyAuthenticRange ExpandTo( long eKind );
    public SpyAuthenticRange CollapsToBegin();
    public SpyAuthenticRange CollapsToEnd();
    public SpyAuthenticRange GotoNextCursorPosition();
    public SpyAuthenticRange GotoPreviousCursorPosition();
    public boolean IsEmpty();
    public boolean IsEqual( SpyAuthenticRange ipCmp );
    public SpyAuthenticRange Clone();
    public SpyAuthenticRange SetFromRange( SpyAuthenticRange ipSrc );
    public boolean Delete();
    public boolean Cut();
    public boolean Copy();
    public boolean Paste();
    public SpyXMLData GetFirstXMLData();
    public void SetFirstXMLData( SpyXMLData objXMLDataPtr );
    public long GetFirstXMLDataOffset();
    public void SetFirstXMLDataOffset( long nOffset );
    public SpyXMLData GetLastXMLData();
    public void SetLastXMLData( SpyXMLData objXMLDataPtr );
    public long GetLastXMLDataOffset();
    public void SetLastXMLDataOffset( long nOffset );
    public String[] GetElementHierarchy();
    public String[] GetElementAttributeNames( String strElementName );
    public boolean HasElementAttribute( String strElementName, String
strAttributeName );
    public String GetElementAttributeValue( String strElementName, String
strAttributeName );
    public void SetElementAttributeValue( String strElementName, String
strAttributeName, String strNewValue );
    public String[] GetEntityNames();
    public void InsertEntity( String strEntityName );
    public boolean IsInDynamicTable();
    public boolean AppendRow();
    public boolean InsertRow();
    public boolean DuplicateRow();
    public boolean DeleteRow();
    public boolean MoveRowUp();
    public boolean MoveRowDown();

    // Since version 2004R4
    public boolean IsCopyEnabled();
    public boolean IsCutEnabled();
    public boolean IsPasteEnabled();
    public boolean IsDeleteEnabled();
    public boolean IsTextStateApplied( String i_strElementName );
    public boolean IsFirstRow();
    public boolean IsLastRow();
}
```

SpyAuthenticView

```
// Since version 2004R3
public class SpyAuthenticView
{
    public void ReleaseInstance();
    public SpyApplication GetApplication();
    public SpyDoc GetParent();
    public SpyAuthenticRange GetSelection();
    public void SetSelection( SpyAuthenticRange obj );
    public SpyAuthenticRange GetDocumentBegin();
    public SpyAuthenticRange GetDocumentEnd();
    public SpyAuthenticRange GetWholeDocument();
```

```
    public long GetMarkupVisibility();
    public void SetMarkupVisibility( long eSpyAuthenticMarkupVisibility );
    public SpyAuthenticRange GoTo( long eKind, long nCount, long nFrom );
    public void Print( boolean bWithPreview, boolean bPromptUser );
    public boolean Undo();
    public boolean Redo();
    public void UpdateXMLInstanceEntities();

    // Since version 2004R4
    public String GetAsXMLString();
    public void SetAsXMLString( String i_strXML );
    public SpyXMLData GetXMLDataRoot();
    public boolean IsUndoEnabled();
    public boolean IsRedoEnabled();
}
```

SpyDocEditSelection

```
public class SpyDocEditSelection
{
  public void ReleaseInstance();
  public SpyXMLData GetEnd();
  public long GetEndTextPosition();
  public SpyXMLData GetStart();
  public long GetStartTextPosition();
}
```

SpyDocEditView

```
public class SpyDocEditView
{
  public void ReleaseInstance();
  public void ApplyTextState( String sElementName );
  public SpyDocEditSelection GetCurrentSelection();
  public void EditClear();
  public void EditCopy();
  public void EditCut();
  public void EditPaste();
  public void EditRedo();
  public void EditSelectAll();
  public void EditUndo();
  public SpyXMLData GetNextVisible( SpyXMLData oElement );
  public SpyXMLData GetPreviousVisible( SpyXMLData oElement );
  public boolean GetIsEditClearEnabled();
  public boolean GetIsEditCopyEnabled();
  public boolean GetIsEditCutEnabled();
  public boolean GetIsEditPasteEnabled();
  public boolean GetIsEditRedoEnabled();
  public boolean GetIsEditUndoEnabled();
  public boolean GetIsRowAppendEnabled();
  public boolean GetIsRowDeleteEnabled();
  public boolean GetIsRowDuplicateEnabled();
  public boolean GetIsRowInsertEnabled();
  public boolean GetIsRowMoveDownEnabled();
  public boolean GetIsRowMoveUpEnabled();
  public boolean IsTextStateApplied( String sElementName );
  public boolean IsTextStateEnabled( String sElementName );
  public void LoadXML( String sXML );
  public void MarkUpView( long nKind );
  public void RowAppend();
```

```
  public void RowDelete();
  public void RowDuplicate();
  public void RowInsert();
  public void RowMoveDown();
  public void RowMoveUp();
  public String SaveXML();
  public void SelectionMoveTabOrder( boolean bForward, boolean bTag );
  public boolean SelectionSet( SpyXMLData oStart, long nStartPos, SpyXMLData
  oEndElement, long nEndPos );
  public SpyXMLData GetXMLRoot();
  public String[] GetAllowedElements( long nAction, SpyXMLData oStartPtr,
  SpyXMLData oEndPtr );
}
```

3.5.30 Predefined constants

This section lists all classes that define the predefined constants used by the Java interface.

SPYApplicationStatus

```
public class SPYApplicationStatus
{
    public final static long spyApplicationStatus_Running         = 0;
    public final static long                                      = 1;
    spyApplicationStatus_AfterLicenseCheck
    public final static long                                      = 2;
    spyApplicationStatus_BeforeLicenseCheck
    public final static long                                      = 3;
    spyApplicationStatus_ConcurrentLicenseCheckFailed
    public final static long                                      = 4;
    spyApplicationStatus_ProcessingCommandLine
}
```

SPYAttributeTypeDefinition

```
public class SPYAttributeTypeDefinition
{
   public final static long          = 0;
   spyMergedGlobal
   public final static long          = 1;
   spyDistinctGlobal
   public final static long spyLocal = 2;
}
```

SPYAuthenticActions

```
public class SPYAuthenticActions
{
    public final static long                  = 0;
    spyAuthenticInsertAt
    public final static long spyAuthenticApply= 1;
    public final static long                  = 2;
    spyAuthenticClearSurr
    public final static long                  = 3;
    spyAuthenticAppend
```

```
    public final static long                = 4;
    spyAuthenticInsertBefore
    public final static long                = 5;
    spyAuthenticRemove
}
```

SPYAuthenticDocumentPosition

```
public class SPYAuthenticDocumentPosition
{
    public final static long                = 0;
    spyAuthenticDocumentBegin
    public final static long                = 1;
    spyAuthenticDocumentEnd
    public final static long                = 2;
    spyAuthenticRangeBegin
    public final static long                = 3;
    spyAuthenticRangeEnd
}
```

SPYAuthenticElementKind

```
public class SPYAuthenticElementKind
{
   public final static long          = 0;
   spyAuthenticChar
   public final static long          = 1;
   spyAuthenticWord
   public final static long          = 3;
   spyAuthenticLine
   public final static long          = 4;
   spyAuthenticParagraph
   public final static long          = 6;
   spyAuthenticTag
   public final static long          = 8;
   spyAuthenticDocument
   public final static long          = 9;
   spyAuthenticTable
   public final static long          = 10;
   spyAuthenticTableRow
   public final static long          = 11;
   spyAuthenticTableColumn
}
```

SPYAuthenticMarkupVisibility

```
public class SPYAuthenticMarkupVisibility
{
    public final static long                = 0;
    spyAuthenticMarkupHidden
    public final static long                = 1;
    spyAuthenticMarkupSmall
```



```
    public final static long                    = 2;
    spyAuthenticMarkupLarge
    public final static long                    = 3;
    spyAuthenticMarkupMixed
}
```

SPYDatabaseKind

```
public class SPYLoading
{
    public final static long           = 0;
    spyDB_Access
    public final static long           = 1;
    spyDB SQLServer
    public final static long           = 2;
    spyDB_Oracle
    public final static long           = 3;
    spyDB Sybase
    public final static long           = 4;
    spyDB_MySQL
    public final static long spyDB_DB2 = 5;
    public final static long           = 6;
    spyDB_Other
    public final static long           = 7;
    spyDB_Unspecified
}
```

SPYDialogAction

```
public class SPYDialogAction
{
    public final static long           = 0;
    spyDialogOK
    public final static long           = 1;
    spyDialogCancel
    public final static long           = 2;
    spyDialogUserInput
}
```

SPYDOMType

```
public class SPYDOMType
{
    public final static long          = 0;
    spyDOMType msxml4
    public final static long          = 1;
    spyDOMType_xerces
}
```

SPYDTDSchemaFormat

```
public class SPYDTDSchemaFormat
{
    public final static long spyDTD     = 0;
```

```
    public final static long spyDCD     = 1;
    public final static long spyXMLData = 2;
    public final static long spyBizTalk = 3;
    public final static long spyW3C     = 4;
}
```

SPYEncodingByteOrder

```
public class SPYEncodingByteOrder
{
    public final static long spyNONE      = 0;
    public final static long              = 1;
    spyLITTLE ENDIAN
    public final static long              = 2;
    spyBIG ENDIAN
}
```

SPYExportNamespace

```
public class SPYExportNamespace
{
    public final static long spyNoNamespace                = 0;
    public final static long spyReplaceColonWithUnderscore = 1;
}
```

SPYFindInFilesSearchLocation

```
public class SPYFindInFilesSearchLocation
{
   public final static long              = 0;
   spyFindInFiles Documents
   public final static long              = 1;
   spyFindInFiles Project
   public final static long              = 2;
   spyFindInFiles_Folder
}
```

SPYFrequentElements

```
public class SPYFrequentElements
{
   public final static long         = 0;
   spyGlobalElements
   public final static long         = 1;
   spyGlobalComplexType
}
```

SPYImageKind

```
public class SPYImageKind
{
   public final static long          = 0;
   spyImageType_PNG
   public final static long          = 1;
   spyImageType EMF
```



```
}
```

SPYImportColumnsType

Enter topic text here.

SPYLibType

```
public class SPYLibType
{
   public final static long          = 0;
   spyLibType static
   public final static long          = 1;
   spyLibType_dll
}
```

SPYLoading

```
public class SPYLoading
{
   public final static long          = 0;
   spyUseCacheProxy
   public final static long          = 1;
   spyReload
}
```

SPYNumberDateTimeFormat

```
public class  SPYNumberDateTimeFormat
{
   public final static long           = 0;
   spySystemLocale
   public final static long           = 1;
   spySchemaCompatible
}
```

SPYProgrammingLanguage

```
public class SPYLoading
{
    public final static long spyUndefinedLanguage = -1;
    public final static long spyJava              = 0;
    public final static long spyCpp               = 1;
    public final static long spyCSharp            = 2;
}
```

SPYProjectItemTypes

```
public class SPYProjectItemTypes
{
   public final static long       = 0;
   spyUnknownItem
```

```
    public final static long        = 1;
    spyFileItem
    public final static long        = 2;
    spyFolderItem
    public final static long        = 3;
    spyURLItem
 }
```

SPYProjectType

```
 public class SPYProjectType
 {
    public final static long             = 0;
    spyVisualStudioProject
    public final static long             = 1;
    spyVisualStudio2003Project
    public final static long             = 2;
    spyBorlandProject
    public final static long             = 3;
    spyMonoMakefile
 }
```

SPYSampleXMLGenerationOptimization

```
public class SPYSampleXMLGenerationOptimization
{
   public final static long                      = 0;
   spySampleXMLGen_Optimized
   public final static long                      = 1;
   spySampleXMLGen NonMandatoryElements
   public final static long                      = 2;
   spySampleXMLGen_Everything
}
```

SPYSampleXMLGenerationSchemaOrDTDAssignment

```
public class SPYSampleXMLGenerationOptimization
{
   public final static long                      = 0;
   spySampleXMLGen AssignRelatively
   public final static long                      = 1;
   spySampleXMLGen_AssignAbsolutely
   public final static long                      = 2;
   spySampleXMLGen_DoNotAssign
}
```

SPYSchemaDefKind

```
 public class SPYSchemaDefKind
 {
    public final static long spyKindElement  = 0;
    public final static long                 = 1;
    spyKindComplexType
    public final static long                 = 2;
    spyKindSimpleType
```



```
    public final static long spyKindGroup    = 3;
    public final static long spyKindModel    = 4;
    public final static long spyKindAny      = 5;
    public final static long spyKindAttr     = 6;
    public final static long                 = 7;
    spyKindAttrGroup
    public final static long spyKindAttrAny  = 8;
    public final static long                 = 9;
    spyKindIdentityUnique
    public final static long                 = 10;
    spyKindIdentityKey
    public final static long                 = 11;
    spyKindIdentityKeyRef
    public final static long                 = 12;
    spyKindIdentitySelector
    public final static long                 = 13;
    spyKindIdentityField
    public final static long spyKindNotation = 14;
    public final static long spyKindInclude  = 15;
    public final static long spyKindImport   = 16;
    public final static long spyKindRedefine = 17;
    public final static long spyKindFacet    = 18;
    public final static long spyKindSchema   = 19;
    public final static long spyKindCount    = 20;
}
```

SPYSchemaDocumentationFormat

```
public class SPYSchemaDocumentationFormat
{
    public final static long           = 0;
    spySchemaDoc_HTML
    public final static long           = 1;
    spySchemaDoc MSWord
    public final static long           = 2;
           spySchemaDoc_RTF
    public final static long           = 3;
           spySchemaDoc_PDF
}
```

SPYSchemaExtensionType

```
public class SPYSchemaExtensionType
{
    public final static long                    = 0;
    spySchemaExtension_None
    public final static long                    = 1;
    spySchemaExtension SQL XML
    public final static long                    = 2;
    spySchemaExtension_MS_SQL_Server
    public final static long                    = 3;
    spySchemaExtension Oracle
}
```

SPYSchemaFormat

```
public class SPYSchemaFormat
{
   public final static long                  = 0;
   spySchemaFormat Hierarchical
   public final static long                  = 1;
   spySchemaFormat_Flat
}
```

SPYTextDelimiters

```
public class SPYTextDelimiters
{
    public final static long           = 0;
    spyTabulator
    public final static long           = 1;
    spySemicolon
    public final static long spyComma  = 2;
    public final static long spySpace  = 3;
}
```

SPYTextEnclosing

```
public class SPYTextEnclosing
{
   public final static long       = 0;
   spyNoEnclosing
   public final static long       = 1;
   spySingleQuote
   public final static long       = 2;
   spyDoubleQuote
}
```

SPYTypeDetection

```
public class SPYTypeDetection
{
    public final static long          = 0;
    spyBestPossible
    public final static long          = 1;
    spyNumbersOnly
    public final static long          = 2;
    spyNoDetection
}
```

SPYURLTypes

```
public class SPYURLTypes
{
    public final static long        = (-1);
    spyURLTypeAuto
    public final static long        = 0;
    spyURLTypeXML
```



```
    public final static long         = 1;
    spyURLTypeDTD
}
```

SpyViewModes

```
public class SPYViewModes
{
    public final static long            = 0;
    spyViewGrid
    public final static long            = 1;
    spyViewText
    public final static long            = 2;
    spyViewBrowser
    public final static long            = 3;
    spyViewSchema
    public final static long            = 4;
    spyViewContent
    public final static long            = 4;
    spyViewAuthentic
    public final static long            = 5;
    spyViewWSDL
    public final static long spyViewZIP = 6;
    public final static long            = 7;
    spyViewEditionInfo
}
```

SPYWhitespaceComparison

```
public class SPYWhitespaceComparison
{
    public final static long           = 0;
    spyCompareAsIs
    public final static long           = 1;
    spyCompareNormalized
    public final static long           = 2;
    spyStripAll
}
```

SPYXMLDataKind

```
public class SPYXMLDataKind
{
    public final static long            = 0;
    spyXMLDataXMLDocStruct
    public final static long            = 1;
    spyXMLDataXMLEntityDocStruct
    public final static long            = 2;
    spyXMLDataDTDDocStruct
    public final static long            = 3;
    spyXMLDataXML
    public final static long            = 4;
    spyXMLDataElement
    public final static long            = 5;
    spyXMLDataAttr
```

```
    public final static long            = 6;
    spyXMLDataText
    public final static long            = 7;
    spyXMLDataCData
    public final static long            = 8;
    spyXMLDataComment
    public final static long            = 9;
    spyXMLDataPI
    public final static long            = 10;
    spyXMLDataDefDoctype
    public final static long            = 11;
    spyXMLDataDefExternalID
    public final static long            = 12;
    spyXMLDataDefElement
    public final static long            = 13;
    spyXMLDataDefAttlist
    public final static long            = 14;
    spyXMLDataDefEntity
    public final static long            = 15;
    spyXMLDataDefNotation
    public final static long            = 16;
    spyXMLDataKindsCount
}
```

4 ActiveX Integration

XMLSpyControl is a control that provides a means of integration of the XMLSpy user interface and the functionality described in this section into most kinds of applications. ActiveX technology was chosen so as to allow integration using any of a wide variety of languages; this enables C++, C#, VisualBasic, or HTML to be used for integration. ActiveX components officially only work with Microsoft Internet Explorer. All components are full OLE Controls, which makes integration as simple as possible. Two different levels of integration are provided, thus enabling the integration to be adapted to a wide range of needs.

To integrate XMLSpy you must install the XMLSpy Integration Package. Ensure that you install XMLSpy first, and then the XMLSpy Integration Package.

For a successful integration you have to consider the following main design factors:

- What technology or programming language can the hosting application use to integrate the XMLSpyControl?
- Should the integrated UI look exactly like XMLSpy with all its menus, toolbars, and windows, or will a subset of these elements—like allowing only one document and a restricted set of commands—be more effective?
- How deep will the integration be? Should the XMLSpy user interface be used as is? Are user interface extensions and/or restrictions required? Can some frequently used tasks be automated?

The sections, Integration at the Application Level and Integration at Document Level, both of which have examples in various programming languages, will help you to make the right decisions quickly. The section, Object Reference, describes all COM objects that can be used for integration, together with their properties and methods.

For automation tasks, the XMLSpy Automation Interface is accessible from the XMLSpyControl as well.

For information about how to integrate XMLSpy into Microsoft Visual Studio see the section, XMLSpy in Visual Studio.

4.1 Integration at Application Level

Integration at application level is simple and straightforward. It allows you to embed the complete interface of XMLSpy into a window of your application. Since you get the whole user interface of XMLSpy, you get all menus, toolbars, the status bar, document windows, and helper windows. Customization of the application's user interface is restricted to what XMLSpy provides. This includes rearrangement and resizing of helper windows and customization of menus and toolbars.

The only ActiveX control you need to integrate is `XMLSpyControl`. Its property `IntegrationLevel` defaults to application-level. You may use `Appearance` and `BorderStyle` to configure the appearance of the control's wrapper window. Do not instantiate or access `XMLSpyControlDocument` or `XMLSpyControlPlaceHolder` ActiveX controls when integrating at application-level.

If you have any initialization to do or if you want to automate some behaviour of XMLSpy, use the properties, methods, and events described for `XMLSpyControl`. Consider using `XMLSpyControl.Application` for more complex access to XMLSpy functionality.

In this section is an example (Example: HTML) showing how the XMLSpy application can be embedded in an HTML page. For usage with other programming languages, or more sophisticated access, see the Examples of integration at document-level.

4.1.1 Example: HTML

This example shows a simple integration of the XMLSpy control at application-level into a HTML page. The integration is described in the following sections:

- Instantiate a XMLSpyControl in HTML code.
- Implement buttons to load documents and automate code-generation tasks.
- Define actions for some application events.

The code for this example is available at the following location in your XMLSpy installation: `Examples\ActiveX\HTML\XMLSpyActiveX_ApplicationLevel.htm`

Note: This example works only in Internet Explorer.

Instantiate the Control

The HTML `Object` tag is used to create an instance of the XMLSpyControl. The `Classid` is that of XMLSpyControl. Width and height specify the window size. No additional parameters are necessary, since application-level is the default.

```
<OBJECT id="objXMLSpyControl"
        Classid="clsid:a258bba2-3835-4c16-8590-72b44f52c471"
        width="1000"
        height="700"
        VIEWASTEXT>
</OBJECT>
```

Add Button to Open Default Document

As a simple example of how to automate some tasks, we add a button to the page:

```
<input type="button" value="Open Marketing Expenses"
```



```
onclick="BtnOpenMEFile()">
```

When clicked, a predefined document will be opened in the XMLSpyControl. We use a method to locate the file relative to the XMLSpyControl so the example can run on different installations.

```
<SCRIPT ID=Javahandlers LANGUAGE=javascript>
// --------------------------------
// open a pre-defined document
function BtnOpenMEFile()
{

       objXMLSpyControl.Open("C:\Documents and Settings\username\My
Documents\Altova\XMLSpy2012\Examples/OrgChart.xml");

}
</SCRIPT>
```

Add Buttons for Code Generation

For direct access, we want to have a button that will validate the current document. The method is similar to that used in the previous section.

First comes the button:

```
<input type="button" value="Validate" onclick="BtnValidate()">
```

Then we provide the script that will validate the current document.

```
<SCRIPT ID=Javahandlers LANGUAGE=javascript>
// ---------------------------------------------------------------------
// check validity of current document.
// if validation fails, show validation result in alert box .
function BtnValidate()
{
       // get top-level object of automation interface
       var objApp = objXMLSpyControl.Application;

       // get the active document
       var objDocument = objApp.ActiveDocument;

       if ( objDocument == null )
              alert( "no active document found" );
       else
       {
              // define as arrays to support their usage as return parameters
              var errorText = new Array(1);
              var errorPos = new Array(1);
              var badData = new Array(1);

              var valid = objDocument.IsValid(errorText, errorPos, badData);

              if (! valid)
              {
                       // compose the error description
                       var text = errorText;

                       // access that XMLData object only if filled in
                       if (badData[0] != null)
                              text += "(" + badData[0].Name + "/" +
badData[0].TextValue + ")";


                       alert("Validation error[" + errorPos + "]: " + text);
```

```
                }
                else
                       alert("Docuent is valid"); }
}
</SCRIPT>
```

Connect to Custom Events

The example implements two event callbacks for XMLSpyControl custom events to show the principle:

```
<!-- ------------------------------------------------------------ -->
<!--  custom event 'OnDocumentOpened" of XMLSpyControl object  -->
<SCRIPT LANGUAGE="javascript">
       function objXMLSpyControl::OnDocumentOpened( objDocument )
       {
       // alert("Document '" + objDocument.Name + "' opened!");
       }
</SCRIPT>

<!-- ------------------------------------------------------------ -->
<!--  custom event 'OnDocumentClosed" of XMLSpyControl object  -->
<SCRIPT LANGUAGE="javascript">
       function objXMLSpyControl::OnDocumentClosed( objDocument )
       {
       // alert("Document '" + objDocument.Name + "' closed!");
       }
</SCRIPT>
```


4.2 Integration at Document Level

Integration at document level gives you freedom over instantiation and placement of the following parts of the XMLSpy user interface:

- Editing windows for XMLSpy
- XMLSpy entry helper windows
- XMLSpy validator output window
- XMLSpy project window
- XMLSpy XPath profiler window
- XMLSpy XPath dialog window
- XMLSpy XSLT/XQuery debugger windows
- XMLSpy SOAP debugger window

If necessary, a replacement for the menus and toolbars of XMLSpy must be provided by your application.

You will need to instantiate and access multiple ActiveX controls, depending on which user interface parts you want to re-use. All these controls are contained in the XMLSpyControl OCX.

- Use XMLSpyControl to set the integration level and access application wide functionality.
- Use XMLSpyControlDocument to create any number of editor windows. It may be sufficient to create only one window and re-use it, depending on your needs.
- Optionally Use XMLSpyControlPlaceholder to embed XMLSpy entry helper windows, validator output or other windows mentioned above.
- Access run-time information about commands, menus, and toolbars available in XMLSpyControl to seamlessly integrate these commands into your application's menus and toolbars. See Query XMLSpy Commands for more information.

If you want to automate some behaviour of XMLSpy use the properties, methods, and events described for the XMLSpyControl, XMLSpyControlDocument and XMLSpyControlPlaceHolder. Consider using XMLSpyControl.Application, XMLSpyControlDocument.Document and XMLSpyControlPlaceHolder.Project for more complex access to XMLSpy functionality. However, to open a document always use XMLSpyControlDocument.Open or XMLSpyControlDocument.New on the appropriate document control. To open a project always use XMLSpyControlPlaceHolder.OpenProject on a placeholder control embedding a XMLSpy project window.

See Examples on how to instantiate and access the necessary controls in different programming environments.

4.2.1 Use XMLSpyControl

To integrate at document level, instantiate a `XMLSpyControl` first. Set the property `IntegrationLevel` to `IActiveXIntegrationOnDocumentLevel(=1)`. Set the window size of the embedding window to `0x0` to hide any user interface behind the control. You may use `Appearance` and `BorderStyle` to configure the appearance of the control's wrapper window.

Avoid using the method `Open` since this might lead to unexpected results. Use the corresponding open methods of `XMLSpyControlDocument` and `XMLSpyControlPlaceHolder`, instead.

See Query XMLSpy Commands for a description of how to integrate XMLSpy commands into your application. Send commands to XMLSpy via the method `Exec`. Query if a command is currently enabled or disabled using the method `QueryStatus`.

4.2.2 Use XMLSpyControlDocument

An instance of the `XMLSpyControlDocument` ActiveX control allows you to embed one XMLSpy document editing window into your application. You can use any number of instances you need.

Use the method `Open` to load any other existing file.

The control does not support a read-only mode. The value of the property `ReadOnly` is ignored.

Use `Path` and `Save` or methods and properties accessible via the property `Document` to access document functionality.

4.2.3 Use XMLSpyControlPlaceHolder

Instances of XMLSpyControlPlaceHolder ActiveX controls allow you to selectively embed the additional helper windows of XMLSpy into your application. The property `PlaceholderWindowID` selects the XMLSpy helper window to be embedded. Use only one XMLSpyControlPlaceHolder for each window identifier. See `Enumerations.XMLSpyControlPlaceholderWindow` for valid window identifiers.

For placeholder controls that select the XMLSpy project window, additional methods are available. Use `OpenProject` to load a XMLSpy project. Use the property `Project` and the methods and properties from the XMLSpy automation interface to perform any other project related operations.

4.2.4 Query XMLSpy Commands

When integrating at document-level, no menu or toolbar from XMLSpy is available to your application. Instead, you can query all the commands and the structure of the application menu at runtime. Professional applications will need to integrate this menu in a sophisticated manner into their own menu structure. Your installation of XMLSpy even provides you with command label images used within XMLSpy. See the folder `Examples\ActiveX\Images` of your XMLSpy installation for icons in GIF format. The file names correspond to the `labels` of commands.

4.2.5 Examples

This section contains examples of XMLSpy document-level integration using different container environments and programming languages. Source code for all examples is available in the folder `Examples\ActiveX` of your XMLSpy installation.

C#

The C# example shows how to integrate the XMLSpyControl in a common desktop application created with C# using Visual Studio 2008. The following topics are covered:

- Integration of a XMLSpyControl Document control to embed a XMLSpy document editing window.
- Usage of a XMLSpyControlPlaceholder controls to embed the XMLSpy XPath dialog window.
- Opening and closing of XMLSpy documents via the main menu.

Please note that the example application is already complete. There is no need to change anything if you want to run and see it working. The following steps describe what general actions and considerations must be taken in order to create a project such as this.

Introduction

Adding the XMLSpy components to the Toolbox
Before you take a look at the sample project please add the assemblies to the .NET IDE Toolbox. The XMLSpy Installer will have already installed the assemblies in the .NET Global Assembly Cache (GAC). If you open the Toolbox dialog under **Tools | Add/Remove Toolbox Items** the controls will appear as `AxXMLSpyControl`, `AxXMLSpyControlDocument` and `AxXMLSpyControlPlaceholder` on the .NET Framework Components tab. Check all to make them available to the IDE.

Now you can open the `XPathDialog.sln` file in the `ActiveX\C#\XPathDialog` folder to load the project.

Placing the XMLSpyControl

It is necessary to have one XMLSpyControl instance to set the integration level and to manage the Document and Placeholder controls of the XMLSpy library. The control is accessible via the General section of the Toolbox helper window in the IDE. To add it you need to select the component in the Toolbox window and drag a rectangle wherever you want to have it in the destination window. If you have an application which does not open a window on startup you can use a simple invisible Form with the control on it which is created manually in the code.

The example project adds this instance to the main MdiContainer MDIMain. If you open MDIMain in the Design View from the Solution Explorer you will see a light blue rectangle at the top-left side in the client area of the Frame window. Selecting this rectangle will show you the properties of the XMLSpyControl. It is important to set the `IntegrationLevel` property to **`ICActiveXIntegrationOnDocumentLevel`** in order to turn on the Document and Placeholder support of the XMLSpy library. You can set the Visible flag to False to avoid any confusion about the control for the user.

Adding the Document Control

Document editing window on the MDI Frame
The example project uses one Document control show and edit one XMLSpy document in the main MDI Frame. It is added via the Toolbox window by dragging a rectangle on the destination Form.The Document control also has the Anchor and Dock properties set in order to react on resizing of the Frame window.

Adding the Placeholder Control

Placeholders on the MDI Frame
The example project uses one Placeholder control to embed the XPath Dialog window into the main MDI Frame. It is added via the Toolbox window by dragging a rectangle on the destination Form. To set the type of the Placeholder which should be displayed one has to set the `PlaceholderWindowID` property. This property can also be changed during runtime in the code of the application. The Placeholder control would change its content immediately. The Placeholder also has the Anchor properties set in order to react on resizing of the Frame window.

Retrieving Command Information

The XMLSpyControl gives access to all commands of XMLSpy through its CommandsStructure property. The example project uses the XMLSpyCommands and XMLSpyCommand interfaces to dynamically build a menu in the MDI Frame window.

The code to add the commands will be placed in the MDIMain method of the XMLSpyApplication class in the file MDIMain.cs:

```
public MDIMain()
{
    .
    .
    .
    XMLSpyControlLib.XMLSpyCommands    objCommands;
    objCommands = axXMLSpyControl.CommandsStructure;

    long nCount = objCommands.Count;

    for(long idx = 0;idx < nCount;idx++)
    {
        XMLSpyControlLib.XMLSpyCommand objCommand;
        objCommand = objCommands[(int)idx];

        // We are looking for the Menu with the name IDR_XMLSPY. This menu
        contains
        // the complete main menu of XMLSpy.

        if(objCommand.Label == "IDR_XMLSPY")
        {
            InsertMenuStructure(mainMenu.MenuItems, 1, objCommand, 0, 0,
            false);
        }
    }
    .
    .
    .
}
```

mainMenu is the name of the menu object of the MDI Frame window created in the Visual Studio IDE. InsertMenuStructure takes the XMLSpy menu from the IDR_XMLSPY command object and adds the XMLSpy menu structure to the already existing menu of the sample project. No commands from the **File**, **Project**, or **Window** menu are added.

The new commands are instances of the class CustomMenuItem, which is defined in CustomMenuItem.cs. This class has an additional member to save the XMLSpy command ID, which is taken to execute the command using Exec on selecting the menu item. This code from InsertMenuStructure creates the new command:

```
CustomMenuItem  newMenuItem = new CustomMenuItem();

if(objCommand.IsSeparator)
    newMenuItem.Text = "-";
else
{
    newMenuItem.Text = strLabel;
    newMenuItem.m_XMLSpyCmdID = (int)objCommand.ID;
    newMenuItem.Click += new EventHandler(AltovaMenuItem_Click);
}
```


You can see that all commands get the same event handler `AltovaMenuItem_Click` which does the processing of the command:

```
private void AltovaMenuItem_Click(object sender, EventArgs e)
{
    if(sender.GetType() == System.Type.GetType("XMLSpy
    Application.CustomMenuItem"))
    {
        CustomMenuItemcustomItem = (CustomMenuItem)sender;

        ProcessCommand(customItem.m_XMLSpyCmdID);
    }
}

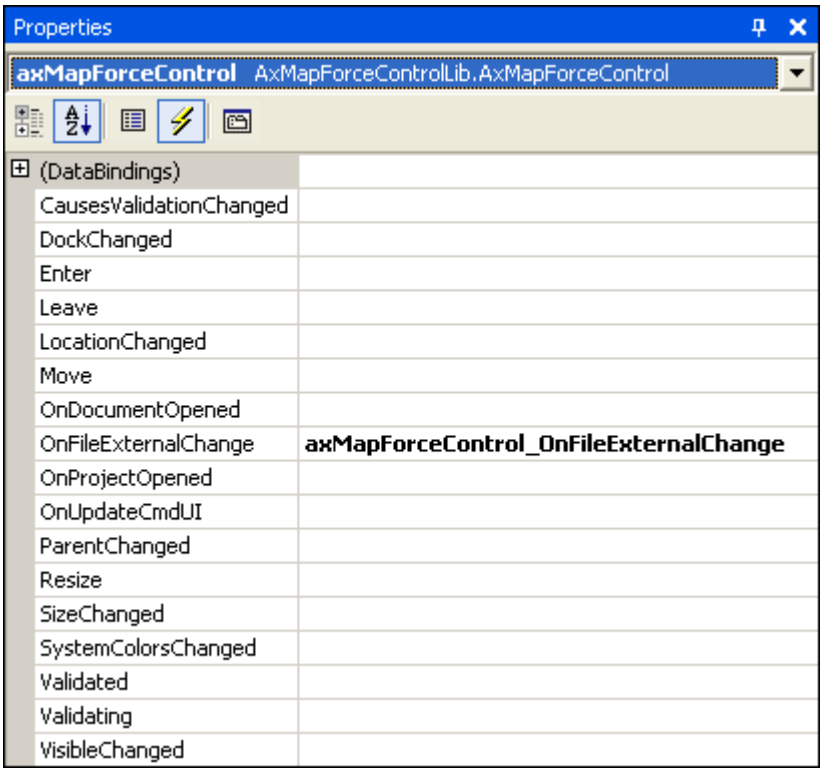
private void ProcessCommand(int nID)
{
    XMLSpyDoc  docXMLSpy = GetCurrentXMLSpyDoc();

    if(docXMLSpy != null)
        docXMLSpy.axXMLSpyControlDoc.Exec(nID);
    else
        axXMLSpyControl.Exec(nID);
}
```

`ProcessCommand` delegates the execution either to the XMLSpyControl itself or to any active XMLSpy document loaded in a `XMLSpyControlDocument` control. This is necessary because the XMLSpyControl has no way to know which document is currently active in the hosting application.

Handling Events

Because all events in the XMLSpy library are based on connection points, you can use the C# delegate mechanism to provide the custom event handlers. You will always find a complete list of events on the property page of each control of the XMLSpy library. The picture below shows the events of the main XMLSpyControl:



As you can see, the example project only overrides the `OnFileExternalChange` event. The creation of the C# delegate is done for you by the C# Framework. All you need to do is to fill the empty event handler. The handler implementation turns off any file reloading and displays a message box to inform the user that a file loaded by the XMLSpyControl has been changed from outside:

```
private void axMapForceControl_OnFileExternalChange(object sender,
AxMapForceControlLib._DMapForceControlEvents_OnFileExternalChangeEvent e)
{
    MessageBox.Show("Attention: The file " + e.strPath + " has been changed
from outside\nbut reloading is turned off in the sample application!");

    // This turns off any file reloading:
    e.varRet = false;
}
```

Testing the Example

After adding the assemblies to the Toolbox (see Introduction), you can run the sample project with F5 without the need to change anything in the code. The main MDI Frame window is created and contains an editing window with an empty XML document and a XPath Dialog window of XMLSpy at the bottom. Use **File | Open** to open the file `OrgChart.xml`, which is in the XMLSpy examples folder. The file is loaded and displayed.

After you load the document, you can try using the XPath dialog.

HTML

This example shows an integration of the XMLSpy control at document-level into a HTML page. The following topics are covered:

- Instantiate a XMLSpyControl ActiveX control object in HTML code
- Instantiate a XMLSpyControlDocument ActiveX control to allow editing a XMLSpy file
- Instantiate one XMLSpyControlPlaceHolder for a XMLSpyControl project window
- Instantiate one XMLSpyControlPlaceHolder to alternatively host one of the XMLSpy helper windows
- Instantiate one XMLSpyControlPlaceHolder ActiveX control to show the XMLSpy validation output window
- Create a simple customer toolbar for some heavy-used XMLSpy commands
- Add some more buttons that use the COM automation interface of XMLSpy
- Use event handlers to update command buttons

This example is available in its entirety in the file `XMLSpyActiveX_ApplicationLevel.htm` within the `C:\Program Files\Altova\XMLSpy2012\Examples\ActiveX\HTML\` folder of your XMLSpy installation.

Note: This example works only in Internet Explorer.

Instantiate the XMLSpyControl

XMLSpyControlThe HTML `OBJECT` tag is used to create an instance of the XMLSpyControl. The Classid is that of XMLSpyControl. Width and height are set to 0 since we use this control as manager control without use for its user interface. The integration level is specified as a parameter within the `OBJECT` tag.

```
<OBJECT id="objXMLSpyXXMLSpyControl"
        Classid="clsid:a258bba2-3835-4c16-8590-72b44f52c471"
        width="0"
        height="0"
        VIEWASTEXT>
   <PARAM NAME="IntegrationLevel" VALUE="1">
</OBJECT>
```

Create Editor Window

The HTML `OBJECT` tag is used to embed an editing window.

```
<OBJECT id="objDoc1"
        Classid="clsid:DFBB0871-DAFE-4502-BB66-08CEB7DF5255"
        width="600"
        height="500"
        VIEWASTEXT>
</OBJECT>
```

Create Project Window

The HTML `OBJECT` tag is used to create a XMLSpyControlPlaceHolder window. The first additional custom parameter defines the placeholder to show the XMLSpy project window. The second parameter loads one of the example projects delivered with your XMLSpy installation

(located in the <yourusername>/MyDocuments folder).

```
<OBJECT id="objProjectWindow"
        Classid="clsid:FDEC3B04-05F2-427d-988C-F03A85DE53C2"
        width="200"
        height="200"
        VIEWASTEXT>
    <PARAM name="PlaceholderWindowID" value="3">
      <PARAM name="FileName" value="Examples/Examples.spp">
</OBJECT>
```

Create Placeholder for Helper Windows

The HTML OBJECT tag is used to instantiate a XMLSpyControlPlaceHolder ActiveX control that can host the different XMLSpy helper windows. Initially, no helper window is shown. See the example file.

```
<OBJECT id="objEHWindow"
        Classid="clsid:135DEEF4-6DF0-47c2-8F8C-F145F5F3F672"
        width="200"
        height="200"
        VIEWASTEXT>
   <PARAM name="PlaceholderWindowID" value="0">
</OBJECT>
```

Three buttons allow us to switch the actual window that will be shown. The JavaScript execute on-button-click sets the property PlaceHolderWindowID to the corresponding value defined in XMLSpyControlPlaceholderWindow.

```
<input type="button" value="EH - Elements" onclick="BtnHelperWindow(0)">
<input type="button" value="EH - Attributes" onclick="BtnHelperWindow(1)">
<input type="button" value="EH - Entities" onclick="BtnHelperWindow(2)">

<SCRIPT ID="Javahandlers" LANGUAGE="javascript">
//
-------------------------------------------------------------------------
// specify which of the windows shall be shown in the placeholder control.
function BtnHelperWindow(i_ePlaceholderWindowID)
{
   objEHWindow.PlaceholderWindowID = i_ePlaceholderWindowID;
}
</SCRIPT>
```

Create a Custom Toolbar

The custom toolbar consists of buttons with images of XMLSpy commands. The command ID numbers can be found in the button elements shown below Command Table.

```
<button id="btnWellFormed" title="Check Well-formedness"
onclick="BtnDoCommand(34049)">
   <img src="..\Images\IDC_CHECK_WELL_FORM.gif" width="16" height="16" />
</button>
<button id="btnValidate" title="Validate" onclick="BtnDoCommand(34174)">
   <img src="..\Images\IDC_VALIDATE.gif" width="16" height="16" />
</button>
```

On clicking one of these buttons the corresponding command ID is sent to the manager control.


```
<SCRIPT ID="Javahandlers" LANGUAGE="javascript">
// ---------------------------------------------------------------
// perform any command specified by cmdID.
// command routing includes application, active document and view.
function BtnDoCommand( cmdID)
{
       objXMLSpyX. Exec(  cmdID );
       msgtext. innerText = "Command " + cmdID + " performed.";
}
</SCRIPT>
```

Create More Buttons

In the example, we add some more buttons to show some automation code.

```
<p>
   <input type="button" value="New File" onclick="BtnNewFile( objDoc1)">
   <input type="button" value="Save File" onclick="BtnSaveFile( objDoc1)">
   <input type="text" title="Path" id="strPath" width="150">
   <input type="button" value="Open OrgChart. xml"
onclick="BtnOpenFile( objDoc1, 'OrgChart. xml')">
   <input type="button" value="Open OrgChart. xsd"
onclick="BtnOpenFile( objDoc1, 'OrgChart. xsd')">
<p>
```

The corresponding JavaScript looks like this:

```
<SCRIPT ID="Javahandlers" LANGUAGE="javascript">
// ---------------------------------------------------------
// open a document in the specified document control window.
function BtnOpenFile( objDocCtrl, strFileName)
{
       // do not use XMLSpyX. Application. OpenDocument(...) to open a document,
       // since then XMLSpyControl wouldn't know a control window to show
       // the document in. Instead:

       objDocCtrl. Open( "C: \Documents and Settings\username\My
Documents\Altova\XMLSpy2012\Examples/" + strFileName);
       objDocCtrl. setActive( );

}

// ---------------------------------------------------------------------
// open a new empty document in the specified document control window.
function BtnNewFile( objDocCtrl)
{
       objDocCtrl. Open( "");
       objDocCtrl. setActive( );
}

// ---------------------------------------------------------------------
// Saves the current file in the specified document control window.
function BtnSaveFile( objDocCtrl)
{
       if( objDocCtrl. Path. length > 0)
              objDocCtrl. SaveDocument( );
       else
       {
              if( strPath. value. length > 0)
              {
                     objDocCtrl. Path = strPath. value;
                     objDocCtrl. Save( );
              }
              else
```

```
                {
                        alert("Please set path for the document first!");
                        strPath.focus();
                }
        }

        objDocCtrl.setActive();
}

// ---------------------------------------------------------------------------
// check validity of current document.
// if validation fails, show validation result in alert box .
function BtnValidate()
{
        // get top-level object of automation interface
        var objApp = objXMLSpyControl.Application;

        // get the active document
        var objDocument = objApp.ActiveDocument;

        if ( objDocument == null )
                alert( "no active document found" );
        else
        {
                // define as arrays to support their usage as return parameters
                var errorText = new Array(1);
                var errorPos = new Array(1);
                var badData = new Array(1);

                var valid = objDocument.IsValid(errorText, errorPos, badData);

                if (! valid)
                {
                        // compose the error description
                        var text = errorText;

                        // access that XMLData object only if filled in
                        if (badData[0] != null)
                                text += "(" + badData[0].Name + "/" +
badData[0].TextValue + ")";


                        alert("Validation error[" + errorPos + "]: " + text);
                }
                else
                        alert("Docuent is valid");
        }
}
</SCRIPT>
```

Create Event Handler to Update Button Status

Availability of a command may vary with every mouseclick or keystroke. The custom event `OnUpdateCmdUI` of XMLSpyControl gives us an opportunity to update the enabled/disabled state of buttons associated with XMLSpy commands. The method `XMLSpyControl.QueryStatus` is used to query whether a command is enabled or not.

```
<SCRIPT LANGUAGE="javascript">

        function objXMLSpyX::OnUpdateCmdUI()
        {
        if ( document.readyState == "complete" )              // 'complete'
        {
```

```
            // update status of buttons
            btnWellFormed.disabled =  ! (objDoc1.QueryStatus(34049) & 0x02);
        // not enabled
            btnValidate.disabled =  ! (objDoc1.QueryStatus(34174) & 0x02);
        // not enabled
        }
        }

        // set activity status of simulated toolbar
</SCRIPT>
```

4.3 Command Table for XMLSpy

Tables in this section list the names and identifiers of all commands that are available within XMLSpy. Every sub-section lists the commands from the corresponding top-level menu of XMLSpy. The left-most column shows the command's menu text to make it easier for you to identify the functionality behind the command. The last sub-section is a collection of those commands that are not accessible via the main menu.

Depending on the edition of XMLSpy you have installed, some of these commands might not be supported. See Query XMLSpy Commands on how to query the current resource structure and command availability.

Use the command identifiers with XMLSpyControl.QueryStatus or XMLSpyControlDocument.QueryStatus to check the current status of a command. Use XMLSpyControl.Exec or XMLSpyControlDocument.Exec to execute a command.

4.3.1 File Menu

Commands from the File menu:

Menu Text	Command Name	ID
New...	ID_FILE_NEW	57600
Open...	ID_FILE_OPEN	57601
Reload	IDC_FILE_RELOAD	34065
Encoding...	IDC_ENCODING	34061
Close	ID_FILE_CLOSE	57602
Close All	IDC_CLOSE_ALL	34050
Save	ID_FILE_SAVE	57603
Save As...	ID_FILE_SAVE_AS	57604
Save to URL...	ID_FILE_SAVE_TO_URL	34209
Save All	ID_FILE_SAVE_ALL	34208
Send by Mail...	ID_FILE_SEND_MAIL	57612
Print...	IDC_PRINT	34103
Print Preview	IDC_PRINT_PREVIEW	34104
Print Setup...	ID_FILE_PRINT_SETUP	57606

Recent File	ID_FILE_MRU_FILE1	57616
Exit	ID_APP_EXIT	57665

4.3.2 Edit Menu

Commands from the Edit menu:

Menu Text	Command Name	ID
Undo	ID_EDIT_UNDO	57643
Redo	ID_EDIT_REDO	57644
Cut	ID_EDIT_CUT	57635
Copy	ID_EDIT_COPY	57634
Paste	ID_EDIT_PASTE	57637
Delete	ID_EDIT_CLEAR	57632
Copy as XML-Text	IDC_COPY_AS_XML_TEXT	33443
Copy as Structured text	IDC_COPY_AS_STRUCTURED_TEXT	33442
Copy XPath	IDC_COPY_XPATH	33444
Pretty-Print XML Text	IDC_PRETTY_PRINT	34101
Select All	ID_EDIT_SELECT_ALL	57642
Find...	ID_EDIT_FIND	57636
Find next	ID_EDIT_REPEAT	57640
Replace...	ID_EDIT_REPLACE	57641
Find in files...	IDC_FIND_IN_FILES	34000
Insert/Remove Bookmark	IDC_TOGGLE_BOOKMARK	34162
Remove All Bookmarks	IDC_REMOVEALLBOOKMARKS	34132
Goto Next Bookmark	IDC_GOTONEXTBOOKMARK	34070
Goto Previous Bookmark	IDC_GOTOPREVBOOKMARK	34071

4.3.3 Project Menu

Commands from the Project menu:

Menu Text	Command Name	ID
New Project	IDC_PROJECT_NEW	34122
Open Project...	IDC_PROJECT_OPEN	34123
Reload Project	IDC_PROJECT_RELOAD	34126
Close Project	IDC_PROJECT_CLOSE	34113
Save Project	IDC_PROJECT_SAVE	34127
Source Control/Open Project...	IDC_SCC_OPEN_PROJECT	34140
Source Control/Enable Source Code Control	IDC_SCC_ENABLE	34137

Source Control/Get latest version...	IDC_SCC_GET	34138
Source Control/Check Out...	IDC_SCC_CHECK_OUT	34135
Source Control/Check In...	IDC_SCC_CHECK_IN	34134
Source Control/Undo Check Out...	IDC_SCC_UNDO_CHECK_OUT	34145
Source Control/Add to Source Control...	IDC_SCC_ADD	34133
Source Control/Remove from Source Control...	IDC_SCC_REMOVE	34143
Source Control/Show History...	IDC_SCC_HISTORY	34139
Source Control/Show Differences...	IDC_SCC_DIFF	34136
Source Control/Properties...	IDC_SCC_PROPERTIES	34141
Source Control/Refresh Status...	IDC_SCC_REFRESH	34142
Source Control/Run Native Interface...	IDC_SCC_RUN	34144
Add Files to Project...	IDC_PROJECT_ADD_FILES	34109
Add URL to Project...	IDC_PROJECT_ADD_URL	34112
Add Active File to Project	IDC_PROJECT_ADD_ACTIVE	34106
Add Active and Related Files to Project	IDC_PROJECT_ADD_RELATED	34111
Add Project Folder to Project...	IDC_PROJECT_ADD_FOLDER	34110
Add External Folder to Project...	IDC_PROJECT_ADD_EXT_FOLDER	34107
Add External Web Folder to Project...	IDC_PROJECT_ADD_EXT_URL_FOLDER	34108
Project Properties...	IDC_PROJECT_PROPERTIES	34124
Recent Project	IDC_RECENT_PROJECT_ID	34265

4.3.4 XML menu

Commands from the XML menu:

Menu Text	Command Name	ID
Insert/Attribute	IDC_INSERT_ATTRIBUTE	33449
Insert/Element	IDC_INSERT_STRUCT	33459
Insert/Text	IDC_INSERT_TEXT	33460
Insert/CData	IDC_INSERT_CDATA	33450
Insert/Comment	IDC_INSERT_COMMENT	33451
Insert/XML	IDC_INSERT_XML	33461
Insert/Processing Instruction	IDC_INSERT_PI	33458
Insert/XInclude	IDC_INSERT_XINCLUDE	34019
Insert/DOCTYPE	IDC_INSERT_DEF_DOCTYPE	33453
Insert/ExternalID	IDC_INSERT_DEF_EXTERNAL_ID	33456
Insert/ELEMENT	IDC_INSERT_DEF_ELEMENT	33454
Insert/ATTLIST	IDC_INSERT_DEF_ATTLIST	33452
Insert/ENTITY	IDC_INSERT_DEF_ENTITY	33455
Insert/NOTATION	IDC_INSERT_DEF_NOTATION	33457
Append/Attribute	IDC_APPEND_ATTRIBUTE	33415

Append/Element	IDC_APPEND_STRUCT	33425
Append/Text	IDC_APPEND_TEXT	33426
Append/CData	IDC_APPEND_CDATA	33416
Append/Comment	IDC_APPEND_COMMENT	33417
Append/XML	IDC_APPEND_XML	33427
Append/Processing Instruction	IDC_APPEND_PI	33424
Append/XInclude	IDC_APPEND_XINCLUDE	34026
Append/DOCTYPE	IDC_APPEND_DEF_DOCTYPE	33419
Append/ExternalID	IDC_APPEND_DEF_EXTERNAL_ID	33422
Append/ELEMENT	IDC_APPEND_DEF_ELEMENT	33420
Append/ATTLIST	IDC_APPEND_DEF_ATTLIST	33418
Append/ENTITY	IDC_APPEND_DEF_ENTITY	33421
Append/NOTATION	IDC_APPEND_DEF_NOTATION	33423
Add child/Attribute	IDC_ADD_CHILD_ATTRIBUTE	33402
Add child/Element	IDC_ADD_CHILD_STRUCT	33412
Add child/Text	IDC_ADD_CHILD_TEXT	33413
Add child/CData	IDC_ADD_CHILD_CDATA	33403
Add child/Comment	IDC_ADD_CHILD_COMMENT	33404
Add child/XML	IDC_ADD_CHILD_XML	33414
Add child/Processing Instruction	IDC_ADD_CHILD_PI	33411
Add child/XInclude	IDC_ADD_CHILD_XINCLUDE	34027
Add child/DOCTYPE	IDC_ADD_CHILD_DEF_DOCTYPE	33406
Add child/ExternalID	IDC_ADD_CHILD_DEF_EXTERNAL_ID	33409
Add child/ELEMENT	IDC_ADD_CHILD_DEF_ELEMENT	33407
Add child/ATTLIST	IDC_ADD_CHILD_DEF_ATTLIST	33405
Add child/ENTITY	IDC_ADD_CHILD_DEF_ENTITY	33408
Add child/NOTATION	IDC_ADD_CHILD_DEF_NOTATION	33410
Convert to/Attribute	IDC_CONVERT_TO_ATTRIBUTE	33429
Convert to/Element	IDC_CONVERT_TO_STRUCT	33439
Convert to/Text	IDC_CONVERT_TO_TEXT	33440
Convert to/CData	IDC_CONVERT_TO_CDATA	33430
Convert to/Comment	IDC_CONVERT_TO_COMMENT	33431
Convert to/XML	IDC_CONVERT_TO_XML	33441
Convert to/Processing Instruction	IDC_CONVERT_TO_PI	33438
Convert to/DOCTYPE	IDC_CONVERT_TO_DEF_DOCTYPE	33433
Convert to/ExternalID	IDC_CONVERT_TO_DEF_EXTERNAL_ID	33436
Convert to/ELEMENT	IDC_CONVERT_TO_DEF_ELEMENT	33434
Convert to/ATTLIST	IDC_CONVERT_TO_DEF_ATTLIST	33432
Convert to/ENTITY	IDC_CONVERT_TO_DEF_ENTITY	33435
Convert to/NOTATION	IDC_CONVERT_TO_DEF_NOTATION	33437

Table/Display as Table	IDC_GRID_VIEW_AS_TABLE	34075
Table/Insert Row	IDC_TABLE_INSERT_ROW	34158
Table/Append Row	IDC_TABLE_APPEND_ROW	34157
Table/Ascending Sort	IDC_TABLE_SORT_ASC	33464
Table/Descending Sort	IDC_TABLE_SORT_DESC	33465
Move left	IDC_MOVE_LEFT	34091
Move right	IDC_MOVE_RIGHT	34092
Enclose in Element	IDC_ENCLOSE_IN_ELEMENT	33446
Evaluate XPath...	IDC_EVALUATE_XPATH	34007
Check well-formedness	IDC_CHECK_WELL_FORM	34049
Validate	IDC_VALIDATE	34174
Update Entry Helpers	IDC_UPDATE_ELEMENT_CHOICE	34173
Namespace prefix...	IDC_NAMESPACE	33462

4.3.5 DTD/Schema Menu

Commands from the DTD/Schema menu:

Menu Text	Command Name	ID
Assign DTD...	IDC_ASSIGN_DTD	34032
Assign Schema...	IDC_ASSIGN_SCHEMA	34033
Include another DTD...	IDC_INCLUDE_DTD	34084
Go to DTD	IDC_GOTO_DTD	34072
Go to Schema	IDC_GOTO_SCHEMA	34074
Go to Definition	IDC_GOTO_DEFINITION	33447
Generate DTD/Schema...	IDC_GENERATE_DTD_SCHEMA	34068
Convert DTD/Schema...	IDC_CONVERT_DTD_SCHEMA	34052
Convert to UML...	IDC_CONVERT_SCHEMA_TO_UML	34008
Generate XML from DB, Excel, EDI with MapForce	IDC_DTD_OPENIN_MAPFORCE	34056
Design HTML/PDF Output in StyleVision...	IDC_DTD_OPENIN_STYLEVISION	34057
Generate Sample XML File...	IDC_GENERATE_XML_FROM_SCHEMA	34069
Generate Program Code...	IDC_GENERATE_CODE_FROM_SCHEMA	34067
Flush memory cache	IDC_FLUSH_CACHED_FILES	34066

4.3.6 Schema Design Menu

Commands from the Schema Design menu:

Menu Text	Command Name	ID
Schema Settings	IDC_SCHEMA_NAMESPACES	33571
Save Diagram...	IDC_SCHEMA_SAVE_DIAGRAM	33581

Generate Documentation	IDC_SCHEMA_DOCUMENTATION	34146
Configure view	IDC_SCHEMA_VIEW_CONFIG	33593
Zoom	IDC_SCHEMA_ZOOM	34150
Display All Globals	IDC_SCHEMA_MODE_GLOBALS	34147
Display Diagram	IDC_SCHEMA_MODE_DIAGRAM	33570
Enable Oracle Schema Extensions	IDC_SCHEMA_ORACLE_EXTENSIONS	33577
Oracle Schema Settings...	IDC_SCHEMA_ORACLE_SCHEMA_SETTINGS	33578
Enable Microsoft SQL Server Schema Extensions	IDC_SCHEMA_SQLSERVER_EXTENSIONS	33588
Named Schema Relationships...	IDC_SCHEMA_SQLSERVER_GLOBAL_RELATIONSHIPS	33589
Unnamed Element Relationships...	IDC_SCHEMA_SQLSERVER_LOCAL_RELATIONSHIPS	33590
Connect to SchemaAgent Server...	IDC_SCHEMA_SCHEMAAGENT_SERVER_CONNECT	33582
Disconnect from SchemaAgent Server	IDC_SCHEMA_SCHEMAAGENT_SERVER_DISCONNECT	33583
Show in SchemaAgent/Schema only	IDC_SCHEMAAGENT_SHOW	33504
Show in SchemaAgent/Schema and all directly referenced	IDC_SCHEMAAGENT_SHOW_RELATED	33507
Show in SchemaAgent/Schema and all referenced	IDC_SCHEMAAGENT_SHOW_ALL	33505
Show in SchemaAgent/Schema and all linked	IDC_SCHEMAAGENT_SHOW_ALL_REACHABLE	33506
Extended Validation	IDC_SCHEMA_EXTVALID_MENU	33539

4.3.7 XSL/XQuery Menu

Commands from the XSL/XQuery menu:

Menu Text	Command Name	ID
XSL Transformation	IDC_TRANSFORM_XSL	33006
XSL:FO Transformation	IDC_TRANSFORM_XSLFO	33007
XSL Parameters/XQuery Variables...	IDC_TRANSFORM_XSL_PARAMS	33008
XQuery Execution	IDC_TRANSFORM_XQUERY	34170
Enable XSLT 2 / XQuery profiling....	IDC_PROFILING_OPTIONS	34105
Assign XSL...	IDC_ASSIGN_XSL	33001
Assign XSL:FO...	IDC_ASSIGN_XSLFO	33002

Assign sample XML file...	IDC_ASSIGN_SAMPLE_XML	33000
Go to XSL	IDC_GOTO_XSL	33004
Start Debugger/Go	ID_PROCESS_XSL	34212
Stop Debugger	ID_XSLT_DEBUGGER_STOP	33017
Restart Debugger	ID_XSLT_DEBUGGER_RESTART	33013
End Debugger Session	ID_XSLT_DEBUGGER_END_SESSION	33011
Step Into	ID_XSLT_DEBUGGER_STEP	33014
Step Out	ID_XSLT_DEBUGGER_STEP_OUT	33015
Step Over	ID_XSLT_DEBUGGER_STEP_OVER	33016
Show Current Execution Node	ID_XSLT_DEBUGGER_GO_TO_CURRENT_EXECUTION_NODES	33012
Insert/Remove Breakpoint	IDC_TOGGLE_BREAKPOINT	34246
Insert/Remove Tracepoint	IDC_TOGGLE_TRACEPOINT	34248
Enable/Disable Breakpoint	IDC_ENABLE_BREAKPOINT	34245
Enable/Disable Tracepoint	IDC_ENABLE_TRACEPOINT	34247
Breakpoints/Tracepoints...	ID_XSLTDEBUGGER_BREAKPOINTS	33009
Debug Windows/Call Stack	ID_XSL_DEBUGWINDOWS_CALLSTACK	34238
Debug Windows/XPath-Watch	ID_XSL_DEBUGWINDOWS_WATCH	34244
Debug Windows/Context	ID_XSL_DEBUGWINDOWS_CONTEXT	34239
Debug Windows/Variables	ID_XSL_DEBUGWINDOWS_VARIABLE	34243
Debug Windows/Messages	ID_XSL_DEBUGWINDOWS_MESSAGES	34240
Debug Windows/Templates	ID_XSL_DEBUGWINDOWS_TEMPLATES	34241
Debug Windows/Info	ID_XSLXQUERY_DEBUGWINDOWS_INFO	34237
Debug Windows/Trace	ID_XSL_DEBUGWINDOWS_TRACES	34242
XSLT/XQuery Settings...	ID_XSLTDEBUGGER_SETTINGS	33010

4.3.8 Authentic Menu

Commands from the Authentic menu:

Menu Text	Command Name	ID

New Document...	IDC_AUTHENTIC_NEW_FILE	34036
Edit Database Data...	IDC_AUTHENTIC_EDIT_DB	34035
Assign a StyleVision Stylesheet...	IDC_ASSIGN_SPS	34034
Edit StyleVision Stylesheet	IDC_EDIT_SPS	34060
Define XML Entities...	IDC_DEFINE_ENTITIES	32805
Hide markup	IDC_MARKUP_HIDE	34087
Show Small markup	IDC_MARKUP_SMALL	34090
Show Large markup	IDC_MARKUP_LARGE	34088
Show Mixed markup	IDC_MARKUP_MIX	34089
Append row	IDC_ROW_APPEND	32806
Insert row	IDC_ROW_INSERT	32809
Duplicate row	IDC_ROW_DUPLICATE	32808
Move row Up	IDC_ROW_MOVE_UP	32811
Move row Down	IDC_ROW_MOVE_DOWN	32810
Delete row	IDC_ROW_DELETE	32807

4.3.9 Convert Menu

Commands from the Convert menu:

Menu Text	Command Name	ID
Import Text file...	IDC_IMPORT_TEXT	34082
Import Database data...	IDC_IMPORT_DATABASE	34080
Import Microsoft Word document...	IDC_IMPORT_WORD	34083
Create XML Schema from DB Structure	IDC_CREATE_DB_SCHEMA	34054
DB Import based on XML Schema	IDC_IMPORT_DB_SCHEMA	34081
Create DB Structure from XML Schema	IDC_CREATE_DB_BASED_ON_SCHEMA	34053
Export to Text files...	IDC_EXPORT_TEXTFILE	34064
Export to a Database...	IDC_EXPORT_DB	34003
Oracle XML DB/Search...	ID_CONVERT_ORACLEXMLDB_QUERY	34207
Oracle XML DB/List Schemas...	ID_ORACLEXMLDB_LISTSCHEMAS	34211
Oracle XML DB/Add Schema...	ID_CONVERT_ORACLEXMLDB_ADDSCHEMA	34204
Oracle XML DB/Browse Oracle XML Documents...	ID_CONVERT_ORACLEXMLDB_BROWSE	34205
Oracle XML DB/Properties...	ID_CONVERT_ORACLEXMLDB_PROPERTIES	34206

4.3.10 View Menu

Commands from the View menu:

Menu Text	Command Name	ID
Text view	IDC_VIEW_TEXT	34180
Enhanced Grid view	IDC_VIEW_GRID	34178

Schema/WSDL Design view	IDC_VIEW_SCHEMA	34179
Authentic view	IDC_VIEW_CONTENT	34177
Browser view	IDC_VIEW_BROWSER	34176
Expand +	IDC_SEL_EXPAND	34152
Collapse -	IDC_SEL_COLLAPSE	34151
Expand fully	IDC_SEL_EXPAND_ALL	33463
Collapse unselected	IDC_COLLAPSE_UNSELECTED	33428
Optimal widths	IDC_OPTIMAL_WIDTHS	34099
Word Wrap	IDC_WORD_WRAP	34181
Go to line/char	IDC_GOTO_LINE	34073
Go to File	IDC_GOTO_FILE	33448
Line Numbers Margin	IDC_TOGGLE_NUMLINEMARGIN	34168
Bookmarks Margin	IDC_TOGGLE_BOOKMARKMARGIN	34163
Source Folding Margin	IDC_TOGGLE_FOLDINGMARGIN	34166
Indentation Guides	IDC_TOGGLE_INDENTGUIDES	34167

4.3.11 Browser Menu

Commands from the Browser menu:

Menu Text	Command Name	ID
Back	IDC_BROWSER_BACK	34039
Forward	IDC_BROWSER_FORWARD	34045
Stop	IDC_BROWSER_STOP	34047
Refresh	IDC_BROWSER_REFRESH	34046
Fonts/Largest	IDC_BROWSER_FONT_LARGEST	34041
Fonts/Larger	IDC_BROWSER_FONT_LARGE	34040
Fonts/Medium	IDC_BROWSER_FONT_MEDIUM	34042
Fonts/Smaller	IDC_BROWSER_FONT_SMALL	34043
Fonts/Smallest	IDC_BROWSER_FONT_SMALLEST	34044
Separate window	IDC_BROWSER_USE_OWN_FRAME	34048

4.3.12 WSDL Menu

Commands from the WSDL menu:

Menu Text	Command Name	ID
Messages/Insert message	ID_WSDL_MESSAGES_ADDNEWMESSAGE	33715
Messages/Delete message	ID_WSDL_MESSAGES_DELETESELECTEDMESSAGE	33717
Messages/Add message part (parameter)	ID_WSDL_MESSAGES_ADDMESSAGEPART	33714
Messages/Delete message part (parameter)	ID_WSDL_MESSAGES_DELETEMESSAGEPART	33716

Operations/Insert Operation	ID_WSDL_OPERATIONS_INSERTOPERATION	33725
Operations/Delete operation	ID_WSDL_OPERATIONS_DELETEOPERATION	33724
Operations/Add input element	ID_WSDL_OPERATIONS_ADDINPUTFUNCTION	33719
Operations/Add output element	ID_WSDL_OPERATIONS_ADDOUTPUTFUNCTION	33721
Operations/Add fault element	ID_WSDL_OPERATIONS_ADDFAULTFUNCTION	33718
Operations/Delete input/output/fault element	ID_WSDL_OPERATIONS_DELETEINPUTOUTPUTFUNCTION	33723
Operations/Add new message to intput/output/fault element	ID_WSDL_OPERATIONS_ADDNEWMESSAGETOTHISELEMENT	33720
Operations/empty operation	ID_WSDL_OPERATIONS_APPENDAOPERATIONTOTHISPORTTYPE	33722
PortType/Insert portType	ID_WSDL_PORTTYPE_INSERTAPORTTYPE	33727
PortType/Delete PortType	ID_WSDL_PORTTYPE_DELETETHISPORTTYPE	33726
Binding/Insert binding	ID_WSDL_BINDING_NEWBINDING	33713
Binding/Delete binding	ID_WSDL_BINDING_DELETEBINDING	33711
Binding/Append Child/soap:body	ID_WSDL_BINDING_APPENDEXTENSIBILITY_SOAPBODY	33706
Binding/Append Child/soap:header	ID_WSDL_BINDING_APPENDEXTENSIBILITY_SOAPHEADER	33708
Binding/Append Child/soap:headerfault	ID_WSDL_BINDING_APPENDEXTENSIBILITY_SOAPHEADERFAULT	33709
Binding/Append Child/soap:fault	ID_WSDL_BINDING_APPENDEXTENSIBILITY_SOAPFAULT	33707
Binding/Append Child/mime:content	ID_WSDL_BINDING_APPENDEXTENSIBILITY_MIMECONTENT	33702
Binding/Append Child/mime:multipartrelated	ID_WSDL_BINDING_APPENDEXTENSIBILITY_MIMEMULTIPARTRELATED	33704
Binding/Append Child/mime:part	ID_WSDL_BINDING_APPENDEXTENSIBILITY_MIMEPART	33705
Binding/Append Child/mime:mimeXml	ID_WSDL_BINDING_APPENDEXTENSIBILITY_MIMEMIMEXML	33703
Binding/Append Child/http:urlencoded	ID_WSDL_BINDING_APPENDEXTENSIBILITY_HTTPURLENCODED	33700
Binding/Append Child/http:urlreplacement	ID_WSDL_BINDING_APPENDEXTENSIBILITY_HTTPURLREPLACEMENT	33701
Binding/Delete extensibility element	ID_WSDL_BINDING_DELETEEXTESIBILITY	33712
Service/Insert service	ID_WSDL_SERVICE_INSERTSERVICE	33731
Service/Delete service	ID_WSDL_SERVICE_DELETETHISSERVICE	33729
Service/Insert port	ID_WSDL_SERVICE_INSERTNEWPORT	33730
Service/Delete port	ID_WSDL_SERVICE_DELETETHISPORT	33728

Types/New schema	ID_WSDL_TYPES_NEWSCHEMA	33733
Types/Edit schema(s) in Schema View	ID_WSDL_TYPES_EDITTHISSCHEMA	33732
Save Diagram...	IDC_WSDL_SAVE_DIAGRAM	34001
Generate Documentation...	ID_WSDL_GENERATEDOCUMENTATION	34233
Reparse WSDL document	IDC_WSDL_REPARSE	33774

4.3.13 SOAPMenu

Commands from the SOAP menu:

Menu Text	Command Name	ID
Create new SOAP request	ID_SOAP_GENERATESOAPMESSAGE	34224
Send request to server	ID_SOAP_SENDREQUESTTOSERVER	34225
Change SOAP request parameters	ID_SOAP_SOAPREQUESTSETTINGS	34227
Soap Debugger Session	ID_SOAP_SOAPDEBUGGER	34226
Go	ID_SOAPDEBUGGER_BUTTONPLAY	34221
Single Step	ID_SOAPDEBUGGER_SINGLESTEP	34222
Break on next Request	ID_SOAPDEBUGGER_BREAKONNEXTREQUEST	34219
Break on next Response	ID_SOAPDEBUGGER_BREAKONNEXTRESPONSE	34220
Stop the proxy server	ID_SOAPDEBUGGER_STOPSERVER	34223
Soap Debugger Options	ID_SOAPDEBUGGEROPTIONS	34218

4.3.14 Tools Menu

Commands from the Tools menu:

Menu Text	Command Name	ID
Spelling...	IDC_SPELL_CHECK	34154
Spelling options...	IDC_SPELL_OPTIONS	34155
Switch to Scripting environment...	ID_WINDOW_SWITCHTOVBA	34231
Show macros...	ID_WINDOW_VBAMACROS	34232
Project/Assign Scripts to Project	ID_SCRIPTINGPRJ_ASSIGN	34214
Project/Unassign Scripts from Project	ID_SCRIPTINGPRJ_UNASSIGN	34215
Project/Project Scripts active	ID_SCRIPTINGPRJ_ACTIVE	34213
Compare open file with...	ID_XMLDIFF_CHOOSE_FILES	34235
Compare directories...	ID_XMLDIFF_CHOOSE_DIRECTORIES	34234
Compare options...	ID_XMLDIFF_SETTINGS	34236
Customize...	IDC_CUSTOMIZE	34055
Options...	IDC_SETTINGS	33300
<placeholder>	ID_SCRIPTING_MACROITEMS	34249

4.3.15 Window Menu

Commands from the Window menu:

Menu Text	Command Name	ID
Cascade	ID_WINDOW_CASCADE	57650
Tile horizontally	ID_WINDOW_TILE_HORZ	57651
Tile vertically	ID_WINDOW_TILE_VERT	57652
Project window	IDC_PROJECT_WINDOW	34128
Info window	IDC_INFO_WINDOW	34085
Entry Helpers	IDC_ENTRY_HELPERS	34062
Output windows	IDC_OUTPUT_DIALOGBARS	34004
Project and Entry Helpers	IDC_PROJECT_ENTRYHELPERS	34006
All on/off	IDC_ALL_BARS	34031

4.3.16 Help Menu

Commands from the Help menu:

Menu Text	Command Name	ID
Table of Contents...	IDC_HELP_CONTENTS	34076
Index...	IDC_HELP_INDEX	34077
Search...	IDC_HELP_SEARCH	34079
Keyboard Map...	IDC_HELP_KEYMAPDLG	34078
Software Activation...	IDC_ACTIVATION	34005
Order Form...	IDC_OPEN_ORDER_PAGE	34094
Registration...	IDC_REGISTRATION	34131
Check for Updates...	IDC_CHECK_FOR_UPDATES	34275
Support Center...	IDC_OPEN_SUPPORT_PAGE	34096
FAQ on the Web...	IDC_SHOW_FAQ	34153
Download Components and Free Tools...	IDC_OPEN_COMPONENTS_PAGE	34093
XMLSpy on the Internet..	IDC_OPEN_XML_SPY_HOME	34098
XMLSpy Training...	ID_HELP_XMLSPYTRAINING	34210
About XMLSpy...	ID_APP_ABOUT	57664

4.4 Accessing XMLSpyAPI

The focus of this documentation is the ActiveX controls and interfaces required to integrate the XMLSpy user interface into your application. To allow you to automate or control the functionality of the integrated components, the following properties give you access to the XMLSpy automation interface (XMLSpyAPI):

XMLSpyControl.Application
XMLSpyControlDocument.Document
XMLSpyControlPlaceHolder.Project

Some restrictions apply to the usage of the XMLSpy automation interface when integrating XMLSpyControl at document-level. See Integration at document level for details.

4.5 Object Reference

Objects:
XMLSpyCommand
XMLSpyCommands
XMLSpyControl
XMLSpyControlDocument
XMLSpyControlPlaceHolder

To give access to standard XMLSpy functionality, objects of the **XMLSpy automation interface** can be accessed as well. See XMLSpyControl.Application, XMLSpyControlDocument.Document and XMLSpyControlPlaceHolder.Project for more information.

4.5.1 XMLSpyCommand

Properties:
ID
Label
IsSeparator
ToolTip
StatusText
Accelerator
SubCommands

Description:
Each Command object can be one of three possible types:

- **Command**: ID is set to a value greater 0 and Label is set to the command name. IsSeparator is false and the SubCommands collection is empty.
- **Separator**: IsSeparator is true. ID is 0 and Label is not set. The SubCommands collection is empty.
- (**Sub**) **Menu**: The SubCommands collection contains Command objects and Label is the name of the menu. ID is set to 0 and IsSeparator is false.

Accelerator

Property: Label as string

Description:
For command objects that are children of the ALL_COMMANDS collection, this is the accelerator key defined for the command. If the command has no accelerator key assigned, this property returns the empty string.

The string representation of the accelerator key has the following format:

```
[ALT+][CTRL+][SHIFT+]key
```

Where key is converted using the Windows Platform SDK function GetKeyNameText.

ID

Property: ID as long

Description:
ID is 0 for separators and menus.
For commands, this is the ID which can be used with Exec and QueryStatus.

IsSeparator

Property: IsSeparator as boolean

Description:
True if the command is a separator.

Label

Property: Label as string

Description:
Label is empty for separators.
For command objects that are children of the ALL_COMMANDS collection, this is a unique name. Command icons are stored in files with this name. See Query Commands for more information.

For command objects that are children of menus, the label property holds the command's menu text.
For sub-menus, this property holds the menu text.

StatusText

Property: Label as string

Description:
For command objects that are children of the ALL_COMMANDS collection, this is the text shown in the status bar when the command is selected.

SubCommands

Property: SubCommands as Commands

Description:
The SubCommands collection holds any sub-commands if this command is actually a menu or submenu.

ToolTip

Property: ToolTip as string

Description:
For command objects that are children of the ALL_COMMANDS collection, this is the text shown as tool-tip.

4.5.2 XMLSpyCommands

Properties:
Count

Item

Description:
Collection of Command objects to get access to command labels and IDs of the XMLSpyControl. Those commands can be executed with the Exec method and their status can be queried with QueryStatus.

Count

Property: Count as long

Description:
Number of Command objects on this level of the collection.

Item

Property: Item (n as long) as Command

Description:
Gets the command with the index n in this collection. Index is 1-based.

4.5.3 XMLSpyControl

Properties:
IntegrationLevel
Appearance
Application
BorderStyle
CommandsList
CommandsStructure (deprecated)
EnableUserPrompts
MainMenu
Toolbars

Methods:
Open
Exec
QueryStatus

Events:
OnUpdateCmdUI
OnOpenedOrFocused
OnCloseEditingWindow
OnFileChangedAlert
OnContextChanged
OnDocumentOpened
OnValidationWindowUpdated

This object is a complete ActiveX control and should only be visible if the XMLSpy library is used in the Application Level mode.

CLSID: a258bba2-3835-4c16-8590-72b44f52c471
ProgID: Altova.XMLSpyControl

Properties

The following properties are defined:

IntegrationLevel
EnableUserPrompts
Appearance
BorderStyle

Command related properties:
CommandsList
MainMenu
Toolbars
CommandsStructure (deprecated)

Access to XMLSpyAPI:
Application

Appearance

Property: Appearance as short

Dispatch Id: *-520*

Description:
A value not equal to 0 displays a client edge around the control. Default value is 0.

Application

Property: Application as Application

Dispatch Id: *1*

Description:
The Application property gives access to the Application object of the complete XMLSpy automation server API. The property is read-only.

BorderStyle

Property: BorderStyle as short

Dispatch Id: *-504*

Description:
A value of 1 displays the control with a thin border. Default value is 0.

CommandsList

Property: CommandList as Commands (read-only)

Dispatch Id: *1004*

Description:

This property returns a flat list of all commands defined available with XMLSpyControl. For more information see C# Sample.

EnableUserPrompts

Property: `EnableUserPrompts` as boolean

Dispatch Id: *1006*

Description:
Setting this property to *false*, disables user prompts in the control. The default value is *true*.

IntegrationLevel

Property: `IntegrationLevel` as `ICActiveXIntegrationLevel`

Dispatch Id: *1000*

Description:
The `IntegrationLevel` property determines the operation mode of the control. See also Integration at the application level and Integration at document level for more information.

Note: It is important to set this property immediately after the creation of the `XMLSpyControl` object.

MainMenu

Property: `MainMenu` as `Command`(read-only)

Dispatch Id: *1003*

Description:
This property gives access to the description of the XMLSpyControl main menu. For more information see C# Sample.

Toolbars

Property: `Toolbars` as `Commands`(read-only)

Dispatch Id: *1005*

Description:
This property returns a list of all toolbar descriptions that describe all toolbars available with XMLSpyControl. For more information see C# Sample.

Methods

The following methods are defined:

Open
Exec
QueryStatus

Exec

Method: `Exec` (`nCmdID` as long) as boolean

Dispatch Id: *6*

Description:
`Exec` calls the `XMLSpy` command with the ID `nCmdID`. If the command can be executed, the method returns `true`. See also `CommandsStructure` to get a list of all available commands and `QueryStatus` to retrieve the status of any command.

Open

Method: `Open` (`strFilePath` as string) as boolean

Dispatch Id: *5*

Description:
The result of the method depends on the extension passed in the argument `strFilePath`. If the file extension is `.sps`, a new document is opened. If the file extension is `.svp`, the corresponding project is opened. If a different file extension is passed into the method, the control tries to load the file as a new component into the active document.

Do not use this method to load documents or projects when using the control in document-level integration mode. Instead, use `XMLSpyControlDocument.Open` and `XMLSpyControlPlaceHolder.OpenProject`.

QueryStatus

Method: `QueryStatus` (`nCmdID` as long) as long

Dispatch Id: *7*

Description:
`QueryStatus` returns the enabled/disabled and checked/unchecked status of the command specified by `nCmdID`. The status is returned as a bit mask.

Bit	Value	Name	Meaning
0	1	Supported	Set if the command is supported.
1	2	Enabled	Set if the command is enabled (can be executed).
2	4	Checked	Set if the command is checked.

This means that if `QueryStatus` returns `0` the command ID is not recognized as a valid XMLSpy command. If `QueryStatus` returns a value of `1` or `5`, the command is disabled.

Events

The XMLSpyControl ActiveX control provides the following connection point events:

OnUpdateCmdUI
OnOpenedOrFocused
OnCloseEditingWindow
OnFileChangedAlert
OnContextChanged

OnDocumentOpened
OnValidationWindowUpdated

OnCloseEditingWindow

Event: `OnCloseEditingWindow` (i_strFilePath as String) as boolean

Dispatch Id: *1002*

Description:
This event is triggered when XMLSpy needs to close an already open document. As an answer to this event, clients should close the editor window associated with *i_strFilePath*. Returning *true* from this event indicates that the client has closed the document. Clients can return *false* if no specific handling is required and XMLSpyControl should try to close the editor and destroy the associated document control.

OnContextChanged

Event: `OnContextChanged` (`i_strContextName` as String, `i_bActive` as bool) as bool

Dispatch Id: *1004*

Description:
This event is triggered when XMLSpy activates or de-actives one of the following operational contexts:

- XSLT Profiling - `"XSLTProfiling"` is passed as the context name
- XSLT / XQuery debugging - `"DebuggingXSLT"` is passed as the context name
- SOAP debugging - `"DebuggingSOAP"` is passed as the context name

OnDocumentOpened

Event: `OnDocumentOpened` (`objDocument` as Document)

Dispatch Id: *1*

Description:
This event is triggered whenever a document is opened. The argument `objDocument` is a `Document` object from the XMLSpy automation interface and can be used to query for more details about the document, or perform additional operations. When integrating on document-level, it is often better to use the event `XMLSpyControlDocument.OnDocumentOpened` instead.

OnFileChangedAlert

Event: `OnFileChangedAlert` (`i_strFilePath` as String) as bool

Dispatch Id: *1001*

Description:
This event is triggered when a file loaded with XMLSpyControl, is changed on the harddisk by another application. Clients should return true, if they handled the event, or false, if XMLSpy should handle it in its customary way, i.e. prompting the user for reload.

OnLicenseProblem

Event: `OnLicenseProblem` (`i_strLicenseProblemText` as String)

Dispatch Id: *1005*

Description:
This event is triggered when XMLSpyControl detects that no valid license is available for this control. In case of restricted user licenses this can happen some time after the control has been initialized. Integrators should use this event to disable access to this control's functionality. After returning from this event, the control will block access to its functionality (e.g. show empty windows in its controls and return errors on requests).

OnOpenedOrFocused

Event: `OnOpenedOrFocused` (`i_strFilePath` as String, `i_bOpenWithThisControl` as bool)

Dispatch Id: *1000*

Description:
When integrating at application level, this event informs clients that a document has been opened, or made active by XMLSpy.

When integrating at document level, this event instructs the client to open the file `i_strFilePath` in a document window. If the file is already open, the corresponding document window should be made the active window.

if `i_bOpenWithThisControl` is `true`, the document must be opened with XMLSpyControl, since internal access is required. Otherwise, the file can be opened with different editors.

OnToolWindowUpdated

Event: `OnToolWindowUpdated( pToolWnd` as long `)`

Dispatch Id: *1006*

Description:
This event is triggered when the tool window is updated.

OnUpdateCmdUI

Event: `OnUpdateCmdUI ()`

Dispatch Id: *1003*

Description:
Called frequently to give integrators a good opportunity to check status of XMLSpy commands using `XMLSpyControl.QueryStatus`. Do not perform long operations in this callback.

OnValidationWindowUpdated

Event: `OnValidationWindowUpdated ()`

Dispatch Id: *3*

Description:
This event is triggered whenever the validation output window, is updated with new information.

4.5.4 XMLSpyControlDocument

Properties:
`Appearance`
`BorderStyle`
`Document`
`IsModified`
`Path`
`ReadOnly`

Methods:
`Exec`
`New`
`Open`
`QueryStatus`
`Reload`
`Save`
`SaveAs`

Events:
`OnDocumentOpened`
`OnDocumentClosed`
`OnModifiedFlagChanged`
`OnContextChanged`
`OnFileChangedAlert`
`OnActivate`

If the XMLSpyControl is integrated in the Document Level mode each document is displayed in an own object of type `XMLSpyControlDocument`. The `XMLSpyControlDocument` contains only one document at the time but can be reused to display different files one after another.

This object is a complete ActiveX control.

```
CLSID: 52A552E6-2AB8-4e3e-B545-BE998233DDA0
ProgID: Altova.XMLSpyControlDocument
```

Properties

The following properties are defined:

ReadOnly
IsModified
Path
Appearance
BorderStyle

Access to XMLSpyAPI:
Document

Appearance

Property: `Appearance` as short

Dispatch Id: *-520*

Description:
A value not equal to `0` displays a client edge around the document control. Default value is `0`.

BorderStyle

Property: `BorderStyle` as short

Dispatch Id: *-504*

Description:
A value of `1` displays the control with a thin border. Default value is `0`.

Document

Property: `Document` as Document

Dispatch Id: *1*

Description:
The `Document` property gives access to the `Document` object of the XMLSpy automation server API. This interface provides additional functionalities which can be used with the document loaded in the control. The property is read-only.

IsModified

Property: `IsModified` as boolean (read-only)

Dispatch Id: *1006*

Description:
`IsModified` is *true* if the document content has changed since the last open, reload or save operation. It is *false*, otherwise.

Path

Property: `Path` as string

Dispatch Id: *1005*

Description:
Sets or gets the full path name of the document loaded into the control.

ReadOnly

Property: `ReadOnly` as boolean

Dispatch Id: *1007*

Description:
Using this property you can turn on and off the read-only mode of the document. If `ReadOnly` is `true` it is not possible to do any modifications.

Methods

The following methods are defined:

Document handling:
`New`
`Open`
`Reload`
`Save`
`SaveAs`

Command Handling:
`Exec`
`QueryStatus`

Exec

Method: `Exec` (`nCmdID` as long) as boolean

Dispatch Id: *8*

Description:
`Exec` calls the XMLSpy command with the ID `nCmdID`. If the command can be executed, the method returns `true`. The client should call the `Exec` method of the document control if there is currently an active document available in the application.

See also `CommandsStructure` to get a list of all available commands and `QueryStatus` to retrieve the status of any command.

New

Method: `New` () as boolean

Dispatch Id: *1000*

Description:
This method initializes a new document inside the control..

Open

Method: `Open` (`strFileName` as string) as boolean

Dispatch Id: *1001*

Description:
`Open` loads the file `strFileName` as the new document into the control.

QueryStatus

Method: `QueryStatus` (`nCmdID` as long) as long

Dispatch Id: *9*

Description:
`QueryStatus` returns the enabled/disabled and checked/unchecked status of the command specified by `nCmdID`. The status is returned as a bit mask.

Bit	Value	Name	Meaning
0	1	Supported	Set if the command is supported.
1	2	Enabled	Set if the command is enabled (can be executed).
2	4	Checked	Set if the command is checked.

This means that if `QueryStatus` returns `0` the command ID is not recognized as a valid XMLSpy command. If `QueryStatus` returns a value of `1` or `5` the command is disabled. The client should call the `QueryStatus` method of the document control if there is currently an active document available in the application.

Reload

Method: `Reload` () as boolean

Dispatch Id: *1002*

Description:
`Reload` updates the document content from the file system.

Save

Method: `Save` () as boolean

Dispatch Id: *1003*

Description:
`Save` saves the current document at the location `Path`.

SaveAs

Method: `SaveAs` (`strFileName` as string) as boolean

Dispatch Id: *1004*

Description:
`SaveAs` sets `Path` to *strFileName* and then saves the document to this location.

Events

The XMLSpyControlDocument ActiveX control provides following connection point events:

`OnDocumentOpened`
`OnDocumentClosed`
`OnModifiedFlagChanged`
`OnContextChanged`
`OnFileChangedAlert`
`OnActivate`
`OnSetEditorTitle`

OnActivate

Event: `OnActivate` ()

Dispatch Id: *1005*

Description:
This event is triggered when the document control is activated, has the focus, and is ready for user input.

OnContextChanged

Event: `OnContextChanged` (`i_strContextName` as String, `i_bActive` as bool) as bool

Dispatch Id: *1004*

Description:
This event is triggered when this document is shown in a different XMLSpy view. The following values are passed:

- Grid view - `"View_0"` is passed as the context name
- Text view - `"View_1"` is passed as the context name
- Browser view - `"View_2"` is passed as the context name
- Schema view - `"View_3"` is passed as the context name
- Authentic view - `"View_4"` is passed as the context name
- WSDL view - `"View_5"` is passed as the context name

OnDocumentClosed

Event: `OnDocumentClosed` (`objDocument` as Document)

Dispatch Id: *1001*

Description:
This event is triggered whenever the document loaded into this control is closed. The argument `objDocument` is a `Document` object from the XMLSpy automation interface and should be used with care.

OnDocumentOpened

Event: `OnDocumentOpened` (`objDocument` as Document)

Dispatch Id: *1000*

Description:
This event is triggered whenever a document is opened in this control. The argument `objDocument` is a `Document` object from the XMLSpy automation interface, and can be used to query for more details about the document, or perform additional operations.

OnDocumentSaveAs

Event: `OnContextDocumentSaveAs` (`i_strFileName` as String)

Dispatch Id: *1007*

Description:
This event is triggered when this document gets internally saved under a new name.

OnFileChangedAlert

Event: `OnFileChangedAlert` () as bool

Dispatch Id: *1003*

Description:
This event is triggered when the file loaded into this document control, is changed on the harddisk by another application. Clients should return true, if they handled the event, or false, if XMLSpy should handle it in its customary way, i.e. prompting the user for reload.

OnModifiedFlagChanged

Event: `OnModifiedFlagChanged` (`i_bIsModified` as boolean)

Dispatch Id: *1002*

Description:
This event gets triggered whenever the document changes between modified and unmodified state. The parameter *i_bIsModifed* is *true* if the document contents differs from the original content, and *false*, otherwise.

OnSetEditorTitle

Event: OnSetEditorTitle ()

Dispatch Id: *1006*

Description:
This event is being raised when the contained document is being internally renamed.

4.5.5 XMLSpyControlPlaceHolder

Properties available for all kinds of placeholder windows:
`PlaceholderWindowID`

Properties for project placeholder window:
`Project`

Methods for project placeholder window:
`OpenProject`
`CloseProject`

The `XMLSpyControlPlaceHolder` control is used to show the additional XMLSpy windows like Overview, Library or Project window. It is used like any other ActiveX control and can be placed anywhere in the client application.

```
CLSID: 135DEEF4-6DF0-47c2-8F8C-F145F5F3F672
ProgID: Altova.XMLSpyControlPlaceHolder
```

Properties

The following properties are defined:

`PlaceholderWindowID`

Access to XMLSpyAPI:
`Project`

Label

Property: `Label` as String (read-only)

Dispatch Id: *1001*

Description:
This property gives access to the title of the placeholder. The property is read-only.

PlaceholderWindowID

Property: `PlaceholderWindowID` as `XMLSpyControlPlaceholderWindow`

Dispatch Id: *1*

Description:

Using this property the object knows which XMLSpy window should be displayed in the client area of the control. The PlaceholderWindowID can be set at any time to any valid value of the XMLSpyControlPlaceholderWindow enumeration. The control changes its state immediately and shows the new XMLSpy window.

Project

Property: Project as Project (read-only)

Dispatch Id: *2*

Description:
The Project property gives access to the Project object of the XMLSpy automation server API. This interface provides additional functionalities which can be used with the project loaded into the control. The property will return a valid project interface only if the placeholder window has PlaceholderWindowID with a value of XMLSpyXProjectWindow (=3). The property is read-only.

Methods

The following method is defined:

OpenProject
CloseProject

OpenProject

Method: OpenProject (strFileName as string) as boolean

Dispatch Id: *3*

Description:
OpenProject loads the file strFileName as the new project into the control. The method will fail if the placeholder window has a PlaceholderWindowID different to XMLSpyXProjectWindow (=3).

CloseProject

Method: CloseProject ()

Dispatch Id: *4*

Description:
CloseProject closes the project loaded the control. The method will fail if the placeholder window has a PlaceholderWindowID different to XMLSpyXProjectWindow (=3).

Events

The XMLSpyControlPlaceholder ActiveX control provides following connection point events:

OnModifiedFlagChanged

OnModifiedFlagChanged

Event: `OnModifiedFlagChanged` (`i_bIsModified` as boolean)

Dispatch Id: *1*

Description:
This event gets triggered only for placeholder controls with a `PlaceholderWindowID` of `XMLSpyXProjectWindow (=3)`. The event is fired whenever the project content changes between modified and unmodified state. The parameter *i_bIsModifed* is *true* if the project contents differs from the original content, and *false*, otherwise.

OnSetLabel

Event: `OnSetLabel( i_strNewLabel` as string)

Dispatch Id: *1000*

Description:
Raised when the title of the placeholder window is changed.

4.5.6 Enumerations

The following enumerations are defined:

`ICActiveXIntegrationLevel`
`XMLSpyControlPlaceholderWindow`

ICActiveXIntegrationLevel

Possible values for the IntegrationLevel property of the XMLSpyControl.

```
ICActiveXIntegrationOnApplicationLevel  = 0
ICActiveXIntegrationOnDocumentLevel     = 1
```

XMLSpyControlPlaceholderWindow

This enumeration contains the list of the supported additional XMLSpy windows.

```
XMLSpyControlNoToolWnd                  =  -1
XMLSpyControlEntryHelperTopToolWnd      =   0
XMLSpyControlEntryHelperMiddleToolWnd   =   1
XMLSpyControlEntryHelperBottomToolWnd   =   2
XMLSpyControlValidatorOutputToolWnd     =   3
XMLSpyControlProjectWindowToolWnd       =   4
XMLSpyControlXSLTDebuggerContextToolWnd =   5
XMLSpyControlXSLTDebuggerCallstackToolWnd =  6
XMLSpyControlXSLTDebuggerVariableToolWnd =   7
XMLSpyControlXSLTDebuggerWatchToolWnd   =   8
XMLSpyControlXSLTDebuggerTemplateToolWnd =   9
XMLSpyControlXSLTDebuggerInfoToolWnd    =  10
XMLSpyControlXSLTDebuggerMessageToolWnd =  11
XMLSpyControlXSLTDebuggerTraceToolWnd   =  12
XMLSpyControlSOAPDebuggerToolWnd        =  13
XMLSpyControlXPathProfilerListToolWnd   =  14
```

```
XMLSpyControlXPathProfilerTreeToolWnd     =  15
XMLSpyControlXPathDialogToolWnd           =  16
XMLSpyControlDBQueryManagerToolWnd        =  17
XMLSpyControlInfoToolWnd                  =  18
XMLSpyControlXSLOutlineToolWnd            =  19
XMLSpyControlSchemaFindToolWnd            =  20
```

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Appendices

Appendices

These appendices contain technical information about XMLSpy and important licensing information. Each appendix contains sub-sections as given below:

Engine Information

- Altova XSLT 1.0 Engine
- Altova XSLT 2.0 Engine
- Altova XQuery 1.0 Engine
- XPath 2.0 and XQuery 1.0 Functions
- Extensions

Datatype Conversions between DBs and XML Schemas

- DBs to XML Schemas
- XML Schemas to DBs

Technical Data

- OS and memory requirements
- Altova XML Parser
- Altova XSLT and XQuery Engines
- Unicode support
- Internet usage

License Information

- Electronic software distribution
- Software activation and license metering
- Copyrights
- End User License Agreement

1 Engine Information

This section contains information about implementation-specific features of the Altova XSLT 1.0 Engine, Altova XSLT 2.0 Engine, and Altova XQuery 1.0 Engine.

1.1 XSLT 1.0 Engine: Implementation Information

The Altova XSLT 1.0 Engine is built into Altova's XMLSpy, StyleVision, Authentic, and MapForce XML products. It is also available in the free AltovaXML package. The Altova XSLT 1.0 Engine implements and conforms to the World Wide Web Consortium's XSLT 1.0 Recommendation of 16 November 1999 and XPath 1.0 Recommendation of 16 November 1999 . Limitations and implementation-specific behavior are listed below.

Limitations

- The **xsl:preserve-space** and **xsl:strip-space** elements are not supported.
- When the `method` attribute of `xsl:output` is set to HTML, or if HTML output is selected by default, then special characters in the XML or XSLT file are inserted in the HTML document directly as special characters; they are not inserted as HTML character references in the output. For instance, the character ` ` (the decimal character reference for a non-breaking space) is not inserted as ` ` in the HTML code, but directly as a non-breaking space.

Implementation's handling of whitespace-only nodes in source XML document

The XML data (and, consequently, the XML Infoset) that is passed to the Altova XSLT 1.0 Engine is stripped of boundary-whitespace-only text nodes. (A boundary-whitespace-only text node is a whitespace-only text node that occurs between two elements within an element of mixed content.) This stripping may have an effect on the value returned by the `fn:position()`, `fn:last()`, and `fn:count()` functions.

For any node selection that selects text nodes also, boundary-whitespace-only text nodes would typically also be included in the selection. However, since the XML Infoset used by the Altova engines has boundary-whitespace-only text nodes stripped from it, these nodes are not present in the XML Infoset. As a result, the size of the selection and the numbering of nodes in the selection will be different than that for a selection which included these text nodes. The `fn:position()`, `fn:last()`, and `fn:count()` functions, therefore, could produce results that are different from those produced by some other processors.

A situation in which boundary-whitespace-only text nodes are evaluated as siblings of other elements arises most commonly when `xsl:apply-templates` is used to apply templates. When the `fn:position()`, `fn:last()`, and `fn:count()` functions are used in patterns with a name test (for example, `para[3]`, which is short for `para[position()=3]`), boundary-whitespace-only nodes are irrelevant since only the named elements (`para` in the above example) are selected. (Note, however, that boundary-whitespace-only nodes **are** relevant in patterns that use the wildcard, for example, `*[10]`.)

Note: If a boundary-whitespace-only text node is required in the output, then insert the required whitespace within one of the two adjoining child elements. For example, the XML fragment:

```
<para>This is <b>bold</b> <i>italic</i>.</para>
```

when processed with the XSLT template

```
<xsl:template match="para">
   <xsl:apply-templates/>
</xsl:template>
```

will produce:

```
This is bolditalic.
```


To get a space between `bold` and `italic` in the output, insert a space character within either the `<b>` or `<i>` elements in the XML source. For example:

```
<para>This is <b>bold</b> <i> italic</i>.</para> or
<para>This is <b>bold&#x20;</b> <i>italic</i>.</para> or
<para>This is <b>bold</b><i>&#x20;italic</i>.</para>
```

When any of the `para` elements above is processed with the same XSLT template given above, it will produce:

```
This is bold italic.
```

1.2 XSLT 2.0 Engine: Implementation Information

The Altova XSLT 2.0 Engine is built into Altova's XMLSpy, StyleVision, Authentic, and MapForce XML products. It is also available in the free AltovaXML package. This section describes the engine's implementation-specific aspects of behavior. It starts with a section giving general information about the engine, and then goes on to list the implementation-specific behavior of XSLT 2.0 functions.

For information about implementation-specific behavior of XPath 2.0 functions, see the section, XPath 2.0 and XQuery 1.0 Functions.

1.2.1 General Information

The Altova XSLT 2.0 Engine conforms to the World Wide Web Consortium's (W3C's) XSLT 2.0 Recommendation of 23 January 2007. Note the following general information about the engine.

Backwards Compatibility

The Altova XSLT 2.0 Engine is backwards compatible. The only time the backwards compatibility of the XSLT 2.0 Engine comes into play is when using the XSLT 2.0 Engine of Altova XML to process an XSLT 1.0 stylesheet. Note that there could be differences in the outputs produced by the XSLT 1.0 Engine and the backwards-compatible XSLT 2.0 Engine.

In all other Altova products, the backwards-compatibility issue never arises. This is because these products automatically select the appropriate engine for the transformation. For example, consider that in XMLSpy you specify that a certain XML document be processed with an XSLT 1.0 stylesheet. When the transformation command is invoked, XMLSpy automatically selects the XSLT 1.0 Engine of XMLSpy to carry out the transformation.

Note: The stylesheet version is specified in the `version` attribute of the `stylesheet` or `transform` element of the stylesheet.

Namespaces

Your XSLT 2.0 stylesheet should declare the following namespaces in order for you to be able to use the type constructors and functions available in XSLT 2.0. The prefixes given below are conventionally used; you could use alternative prefixes if you wish.

Namespace Name	Prefix	Namespace URI
XML Schema types	`xs:`	`http://www.w3.org/2001/XMLSchema`
XPath 2.0 functions	`fn:`	`http://www.w3.org/2005/xpath-functions`

Typically, these namespaces will be declared on the `xsl:stylesheet` or `xsl:transform` element, as shown in the following listing:

```
<xsl:stylesheet version="2.0"
   xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:fn="http://www.w3.org/2005/xpath-functions"
   ...
</xsl:stylesheet>
```

The following points should be noted:

- The Altova XSLT 2.0 Engine uses the XPath 2.0 and XQuery 1.0 Functions namespace (listed in the table above) as its **default functions namespace**. So you can use XPath 2.0 and XSLT 2.0 functions in your stylesheet without any prefix. If you declare the XPath 2.0 Functions namespace in your stylesheet with a prefix, then you can additionally use the prefix assigned in the declaration.
- When using type constructors and types from the XML Schema namespace, the prefix used in the namespace declaration must be used when calling the type constructor (for example, `xs:date`).
- With the CRs of 23 January 2007, the `untypedAtomic` and duration datatypes (`dayTimeDuration` and `yearMonthDuration`), which were formerly in the XPath Datatypes namespace (typically prefixed `xdt:`) have been moved to the XML Schema namespace.
- Some XPath 2.0 functions have the same name as XML Schema datatypes. For example, for the XPath functions `fn:string` and `fn:boolean` there exist XML Schema datatypes with the same local names: `xs:string` and `xs:boolean`. So if you were to use the XPath expression `string('Hello')`, the expression evaluates as `fn:string('Hello')` —not as `xs:string('Hello')`.

Schema-awareness
The Altova XSLT 2.0 Engine is schema-aware.

Whitespace in XML document
By default, the Altova XSLT 2.0 Engine strips all boundary whitespace from boundary-whitespace-only nodes in the source XML document. The removal of this whitespace affects the values that the `fn:position()`, `fn:last()`, `fn:count()`, and `fn:deep-equal()` functions return. For more details, see Whitespace-only Nodes in XML Document in the XPath 2.0 and XQuery 1.0 Functions section.

Note: If a boundary-whitespace-only text node is required in the output, then insert the required whitespace within one of the two adjoining child elements. For example, the XML fragment:

```
<para>This is <b>bold</b> <i>italic</>.</para>
```

when processed with the XSLT template

```
<xsl:template match="para">
   <xsl:apply-templates/>
</xsl:template>
```

will produce:

```
This is bolditalic.
```

To get a space between `bold` and `italic` in the output, insert a space character within either the `<b>` or `<i>` elements in the XML source. For example:

```
<para>This is <b>bold</b> <i> italic</>.</para>  or
<para>This is <b>bold&#x20;</b> <i>italic</>.</para>  or
<para>This is <b>bold</b><i>&#x20;italic</>.</para>
```

When such an XML fragment is processed with the same XSLT template given above, it will produce:

```
This is bold italic.
```

XSLT 2.0 elements and functions

Limitations and implementation-specific behavior of XSLT 2.0 elements and functions are listed in the section XSLT 2.0 Elements and Functions.

XPath 2.0 functions
Implementation-specific behavior of XPath 2.0 functions is listed in the section XPath 2.0 and XQuery 1.0 Functions.

1.2.2 XSLT 2.0 Elements and Functions

Limitations
The **xsl:preserve-space** and **xsl:strip-space** elements are not supported.

Implementation-specific behavior
Given below is a description of how the Altova XSLT 2.0 Engine handles implementation-specific aspects of the behavior of certain XSLT 2.0 functions.

xsl:result-document
Additionally supported encodings are: `x-base16tobinary` and `x-base64tobinary`.

function-available
The function tests for the availability of in-scope functions (XSLT 2.0, XPath 2.0, and extension functions).

unparsed-text
The `href` attribute accepts (i) relative paths for files in the base-uri folder, and (ii) absolute paths with or without the `file://` protocol. Additionally supported encodings are: `x-binarytobase16` and `x-binarytobase64`.

unparsed-text-available
The `href` attribute accepts (i) relative paths for files in the base-uri folder, and (ii) absolute paths with or without the `file://` protocol. Additionally supported encodings are: `x-binarytobase16` and `x-binarytobase64`.

Note: The following encoding values, which were implemented in earlier versions of AltovaXML are now deprecated: `base16tobinary`, `base64tobinary`, `binarytobase16` and `binarytobase64`.

1.3 XQuery 1.0 Engine: Implementation Information

The Altova XQuery 1.0 Engine is built into Altova's XMLSpy and MapForce XML products. It is also available in the free AltovaXML package. This section provides information about implementation-defined aspects of behavior.

Standards conformance

The Altova XQuery 1.0 Engine conforms to the World Wide Web Consortium's (W3C's) XQuery 1.0 Recommendation of 23 January 2007. The XQuery standard gives implementations discretion about how to implement many features. Given below is a list explaining how the Altova XQuery 1.0 Engine implements these features.

Schema awareness

The Altova XQuery 1.0 Engine is **schema-aware**.

Encoding

The UTF-8 and UTF-16 character encodings are supported.

Namespaces

The following namespace URIs and their associated bindings are pre-defined.

Namespace Name	Prefix	Namespace URI
XML Schema types	`xs:`	`http://www.w3.org/2001/XMLSchema`
Schema instance	`xsi:`	`http://www.w3.org/2001/XMLSchema-instance`
Built-in functions	`fn:`	`http://www.w3.org/2005/xpath-functions`
Local functions	`local:`	`http://www.w3.org/2005/xquery-local-functions`

The following points should be noted:

- The Altova XQuery 1.0 Engine recognizes the prefixes listed above as being bound to the corresponding namespaces.
- Since the built-in functions namespace listed above is the default functions namespace in XQuery, the `fn:` prefix does not need to be used when built-in functions are invoked (for example, `string("Hello")` will call the `fn:string` function). However, the prefix `fn:` can be used to call a built-in function without having to declare the namespace in the query prolog (for example: `fn:string("Hello")`).
- You can change the default functions namespace by declaring the `default function namespace` expression in the query prolog.
- When using types from the XML Schema namespace, the prefix `xs:` may be used without having to explicitly declare the namespaces and bind these prefixes to them in the query prolog. (Example: `xs:date` and `xs:yearMonthDuration`.) If you wish to use some other prefix for the XML Schema namespace, this must be explicitly declared in the query prolog. (Example: `declare namespace alt = "http://www.w3.org/2001/XMLSchema"; alt:date("2004-10-04")`.)
- Note that the `untypedAtomic`, `dayTimeDuration`, and `yearMonthDuration` datatypes have been moved, with the CRs of 23 January 2007, from the XPath Datatypes namespace to the XML Schema namespace, so: `xs:yearMonthDuration`.

If namespaces for functions, type constructors, node tests, etc are wrongly assigned, an error is

reported. Note, however, that some functions have the same name as schema datatypes, e.g. `fn:string` and `fn:boolean`. (Both `xs:string` and `xs:boolean` are defined.) The namespace prefix determines whether the function or type constructor is used.

XML source document and validation
XML documents used in executing an XQuery document with the Altova XQuery 1.0 Engine must be well-formed. However, they do not need to be valid according to an XML Schema. If the file is not valid, the invalid file is loaded without schema information. If the XML file is associated with an external schema and is valid according to it, then post-schema validation information is generated for the XML data and will be used for query evaluation.

Static and dynamic type checking
The static analysis phase checks aspects of the query such as syntax, whether external references (e.g. for modules) exist, whether invoked functions and variables are defined, and so on. No type checking is done in the static analysis phase. If an error is detected in the static analysis phase, it is reported and the execution is stopped.

Dynamic type checking is carried out at run-time, when the query is actually executed. If a type is incompatible with the requirement of an operation, an error is reported. For example, the expression `xs:string("1") + 1` returns an error because the addition operation cannot be carried out on an operand of type `xs:string`.

Library Modules
Library modules store functions and variables so they can be reused. The Altova XQuery 1.0 Engine supports modules that are stored in **a single external XQuery file**. Such a module file must contain a `module` declaration in its prolog, which associates a target namespace. Here is an example module:

```
module namespace libns="urn:module-library";
declare variable $libns:company := "Altova";
declare function libns:webaddress() { "http://www.altova.com" };
```

All functions and variables declared in the module belong to the namespace associated with the module. The module is used by importing it into an XQuery file with the `import module` statement in the query prolog. The `import module` statement only imports functions and variables declared directly in the library module file. As follows:

```
import module namespace modlib = "urn:module-library" at
   "modulefilename.xq";
if    ($modlib:company = "Altova")
then   modlib:webaddress()
else   error("No match found.")
```

External functions
External functions are not supported, i.e. in those expressions using the `external` keyword, as in:

```
declare function hoo($param as xs:integer) as xs:string external;
```

Collations
The default collation is the Unicode codepoint collation. No other collation is currently supported. Comparisons, including the `fn:max` function, are based on this collation.

Character normalization
No character normalization form is supported.

Precision of numeric types

- The `xs:integer` datatype is arbitrary-precision, i.e. it can represent any number of digits.
- The `xs:decimal` datatype has a limit of 20 digits after the decimal point.
- The `xs:float` and `xs:double` datatypes have limited-precision of 15 digits.

XQuery Instructions Support
The `Pragma` instruction is not supported. If encountered, it is ignored and the fallback expression is evaluated.

XQuery Functions Support
For information about implementation-specific behavior of XQuery 1.0 functions, see the section, XPath 2.0 and XQuery 1.0 Functions.

1.4 XPath 2.0 and XQuery 1.0 Functions

XPath 2.0 and XQuery 1.0 functions are evaluated by:

- the **Altova XPath 2.0 Engine**, which (i) is a component of the Altova XSLT 2.0 Engine, and (ii) is used in the XPath Evaluator of Altova's XMLSpy product to evaluate XPath expressions with respect to the XML document that is active in the XMLSpy interface.
- the **Altova XQuery 1.0 Engine**.

This section describes how XPath 2.0 and XQuery 1.0 functions are handled by the Altova XPath 2.0 Engine and Altova XQuery 1.0 Engine. Only those functions are listed, for which the behavior is implementation-specific, or where the behavior of an individual function is different in any of the three environments in which these functions are used (that is, in XSLT 2.0, in XQuery 1.0, and in the XPath Evaluator of XMLSpy). Note that this section does not describe how to use these functions. For more information about the usage of functions, see the World Wide Web Consortium's (W3C's) XQuery 1.0 and XPath 2.0 Functions and Operators Recommendation of 23 January 2007.

1.4.1 General Information

Standards conformance

- The Altova XPath 2.0 Engine implements the World Wide Web Consortium's (W3C's) XPath 2.0 Recommendation of 23 January 2007. The Altova XQuery 1.0 Engine implements the World Wide Web Consortium's (W3C's) XQuery 1.0 Recommendation of 23 January 2007. The XPath 2.0 and XQuery 1.0 functions support in these two engines is compliant with the XQuery 1.0 and XPath 2.0 Functions and Operators Recommendation of 23 January 2007.
- The Altova XPath 2.0 Engine conforms to the rules of XML 1.0 (Fourth Edition) and XML Namespaces (1.0).

Default functions namespace

The default functions namespace has been set to comply with that specified in the standard. Functions can therefore be called without a prefix.

Boundary-whitespace-only nodes in source XML document

The XML data (and, consequently, the XML Infoset) that is passed to the Altova XPath 2.0 Engine and Altova XQuery 1.0 Engine is stripped of boundary-whitespace-only text nodes. (A boundary-whitespace-only text node is a child whitespace-only text node that occurs between two elements within an element of mixed content.) This stripping has an effect on the value returned by the `fn:position()`, `fn:last()`, `fn:count()`, and `fn:deep-equal()` functions.

For any node selection that selects text nodes also, boundary-whitespace-only text nodes would typically also be included in the selection. However, since the XML Infoset used by the Altova engines has boundary-whitespace-only text nodes stripped from it, these nodes are not present in the XML Infoset. As a result, the size of the selection and the numbering of nodes in the selection will be different than that for a selection which included these text nodes. The `fn:position()`, `fn:last()`, `fn:count()`, and `fn:deep-equal()` functions, therefore, could produce results that are different from those produced by some other processors.

A situation in which boundary-whitespace-only text nodes are evaluated as siblings of other elements arises most commonly when `xsl:apply-templates` is used to apply templates. When the `fn:position()`, `fn:last()`, and `fn:count()` functions are used in patterns with

a name test (for example, `para[3]`, which is short for `para[position()=3]`), boundary-whitespace-only nodes are irrelevant since only the named elements (`para` in the above example) are selected. (Note, however, that boundary-whitespace-only nodes **are** relevant in patterns that use the wildcard, for example, `*[10]`.)

Numeric notation
On output, when an `xs:double` is converted to a string, scientific notation (for example, `1.0E12`) is used when the absolute value is less than 0.000001 or greater than 1,000,000. Otherwise decimal or integer notation is used.

Precision of `xs:decimal`
The precision refers to the number of digits in the number, and a minimum of 18 digits is required by the specification. For division operations that produce a result of type `xs:decimal`, the precision is 19 digits after the decimal point with no rounding.

Implicit timezone
When two `date`, `time`, or `dateTime` values need to be compared, the timezone of the values being compared need to be known. When the timezone is not explicitly given in such a value, the implicit timezone is used. The implicit timezone is taken from the system clock, and its value can be checked with the `fn:implicit-timezone()` function.

Collations
Only the Unicode codepoint collation is supported. No other collations can be used. String comparisons, including for the `fn:max` and `fn:min` functions, are based on this collation.

Namespace axis
The namespace axis is deprecated in XPath 2.0. Use of the namespace axis is, however, supported. To access namespace information with XPath 2.0 mechanisms, use the `fn:in-scope-prefixes()`, `fn:namespace-uri()` and `fn:namespace-uri-for-prefix()` functions.

Static typing extensions
The optional static type checking feature is not supported.

1.4.2 Functions Support

The table below lists (in alphabetical order) the implementation-specific behavior of certain functions. The following general points should be noted:

- In general, when a function expects a sequence of one item as an argument, and a sequence of more than one item is submitted, then an error is returned.
- All string comparisons are done using the Unicode codepoint collation.
- Results that are QNames are serialized in the form `[prefix:]localname`.

Function Name	Notes

base-uri	• If external entities are used in the source XML document and if a node in the external entity is specified as the input node argument of the base-uri() function, it is still the base URI of the including XML document that is used—not the base URI of the external entity. • The base URI of a node in the XML document can be modified using the xml:base attribute.

collection	• The argument is a relative URI that is resolved against the current base URI.
	• If the resolved URI identifies an XML file, then this XML file is treated as a catalog which references a collection of files. This file must have the form:
	`<collection>`
	`  <doc href="uri-1" />`
	`  <doc href="uri-2" />`
	`  <doc href="uri-3" />`
	`</collection>`
	The files referenced by the href attributes are loaded, and their document nodes are returned as a sequence.
	• If the resolved URI does not identify an XML file with the catalog structure described above, then the argument string (in which wildcards such as ? and * are allowed) is used as a search string. XML files with names that match the search expression are loaded, and their document nodes are returned as a sequence. See examples below.
	• XSLT example: The expression collection("c:\MyDocs*.xml")//Title returns a sequence of all DocTitle elements in the .xml files in the MyDocs folder.
	• XQuery example: The expression {for $i in collection(c:\MyDocs*.xml) return element doc{base-uri($i)}} returns the base URIs of all the .xml files in the MyDocs folder, each URI being within a doc element.
	• The default collection is empty.

Function Name	Notes
count	• See note on whitespace in the General Information section.
current-date, current-dateTime, current-time	• The current date and time is taken from the system clock. • The timezone is taken from the implicit timezone provided by the evaluation context; the implicit timezone is taken from the system clock. • The timezone is always specified in the result.
deep-equal	• See note on whitespace in the General Information section.

doc	• An error is raised only if no XML file is available at the specified location or if the file is not well-formed. The file is validated if a schema is available. If the file is not valid, the invalid file is loaded without schema information.
id	• In a well-formed but invalid document that contains two or more elements having the same ID value, the first element in document order is returned.
in-scope-prefixes	• Only default namespaces may be undeclared in the XML document. However, even when a default namespace is undeclared on an element node, the prefix for the default namespace, which is the zero-length string, is returned for that node.
last	• See note on whitespace in the General Information section.
lower-case	• The Unicode character set is supported.
normalize-unicode	• The normalization forms NFC, NFD, NFKC, and NFKD are supported.

Function Name	Notes
position	• See note on whitespace in the General Information section.
resolve-uri	• If the second, optional argument is omitted, the URI to be resolved (the first argument) is resolved against the base URI from the static context, which is the URI of the XSLT stylesheet or the base URI given in the prolog of the XQuery document. • The relative URI (the first argument) is appended after the last "/" in the path notation of the base URI notation. • If the value of the first argument is the zero-length string, the base URI from the static context is returned, and this URI includes the file name of the document from which the base URI of the static context is derived (e.g. the XSLT or XML file).
static-base-uri	• The base URI from the static context is the base URI of the XSLT stylesheet or the base URI specified in the prolog of the XQuery document. • When using XPath Evaluator in the XMLSpy IDE, the base URI from the static context is the URI of the active XML document.
upper-case	• The Unicode character set is supported.

1.5 Extensions

There are several ready-made functions in programming languages such as Java and C# that are not available as XPath 2.0 / XQuery 1.0 functions or as XSLT 2.0 functions. A good example of such functions are the math functions available in Java, such as `sin()` and `cos()`. If these functions were available to the designers of XSLT stylesheets and XQuery queries, it would increase the application area of stylesheets and queries and greatly simplify the tasks of stylesheet creators.

Altova Engines (XSLT 1.0, XSLT 2.0, and XQuery 1.0), which are used in a number of Altova products, support the use of extension functions in Java and .NET. The Altova XSLT Engines additionally support MSXSL scripts for XSLT 1.0 and 2.0 and Altova's own extension functions.

You should note that extension functions are always called from XPath expressions. This section describes how to use extension functions and MSXSL scripts in your XSLT stylesheets and XQuery queries. These descriptions are organized into the following sections:

- Java Extension Functions
- .NET Extension Functions
- MSXSL Scripts for XSLT
- Altova Extension Functions

The two main issues considered in the descriptions are: (i) how functions in the respective libraries are called; and (ii) what rules are followed for converting arguments in a function call to the required input format of the function, and what rules are followed for the return conversion (function result to XSLT/XQuery data object).

Requirements
For extension functions support, a Java Runtime Environment (for access to Java functions) and .NET Framework 2.0 (minimum, for access to .NET functions) must be installed on the machine running the XSLT transformation or XQuery execution, or must be accessible for the transformations.

1.5.1 Java Extension Functions

A Java extension function can be used within an XPath or XQuery expression to invoke a Java constructor or call a Java method (static or instance).

A field in a Java class is considered to be a method without any argument. A field can be static or instance. How to access fields is described in the respective sub-sections, static and instance.

This section is organized into the following sub-sections:

- Java: Constructors
- Java: Static Methods and Static Fields
- Java: Instance Methods and Instance Fields
- Datatypes: XSLT/XQuery to Java
- Datatypes: Java to XSLT/XQuery

Form of the extension function
The extension function in the XPath/XQuery expression must have the form `prefix:fname()`.

- The `prefix:` part identifies the extension function as a Java function. It does so by

associating the extension function with an in-scope namespace declaration, the URI of which must begin with `java:` (*see below for examples*). The namespace declaration should identify a Java class, for example: `xmlns:myns="java:java.lang.Math"`. However, it could also simply be: `xmlns:myns="java"` (without a colon), with the identification of the Java class being left to the `fname()` part of the extension function.

- The `fname()` part identifies the Java method being called, and supplies the arguments for the method (*see below for examples*). However, if the namespace URI identified by the `prefix:` part does not identify a Java class (*see preceding point*), then the Java class should be identified in the `fname()` part, before the class and separated from the class by a period (*see the second XSLT example below*).

Note: The class being called must be on the classpath of the machine.

XSLT example

Here are two examples of how a static method can be called. In the first example, the class name (`java.lang.Math`) is included in the namespace URI and, therefore, must not be in the `fname()` part. In the second example, the `prefix:` part supplies the prefix `java:` while the `fname()` part identifies the class as well as the method.

```
<xsl:value-of xmlns:jMath="java:java.lang.Math"
              select="jMath:cos(3.14)" />

<xsl:value-of xmlns:jmath="java"
              select="jmath:java.lang.Math.cos(3.14)" />
```

The method named in the extension function (`cos()` in the example above) must match the name of a public static method in the named Java class (`java.lang.Math` in the example above).

XQuery example

Here is an XQuery example similar to the XSLT example above:

```
<cosine xmlns:jMath="java:java.lang.Math">
   {jMath:cos(3.14)}
</cosine>
```

User-defined Java classes

If you have created your own Java classes, methods in these classes are called differently according to: (i) whether the classes are accessed via a JAR file or a class file, and (ii) whether these files (JAR or class) are located in the current directory (the same directory as the XSLT or XQuery document) or not. How to locate these files is described in the sections User-Defined Class Files and User-Defined Jar Files. Note that paths to class files not in the current directory and to all JAR files must be specified.

User-Defined Class Files

If access is via a class file, then there are two possibilities:

- The class file is in a package. The XSLT or XQuery file is in the same folder as the Java package.
- The class file is not packaged. The XSLT or XQuery file is in the same folder as the class file.
- The class file is in a package. The XSLT or XQuery file is at some random location.
- The class file is not packaged. The XSLT or XQuery file is at some random location.

Consider the case where the class file is not packaged and is in the same folder as the XSLT or XQuery document. In this case, since all classes in the folder are found, the file location does not need to be specified. The syntax to identify a class is:

```
java:classname
```

where

`java:` indicates that a user-defined Java function is being called; (Java classes in the current directory will be loaded by default)
`classname` is the name of the required method's class

The class is identified in a namespace URI, and the namespace is used to prefix a method call.

Class file packaged, XSLT/XQuery file in same folder as Java package
The example below calls the `getVehicleType()` method of the `Car` class of the `com.altova.extfunc` package. The `com.altova.extfunc` package is in the folder `JavaProject`. The XSLT file is also in the folder `JavaProject`.

```
<xsl:stylesheet version="2.0"
       xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
       xmlns:xs="http://www.w3.org/2001/XMLSchema"
       xmlns:fn="http://www.w3.org/2005/xpath-functions"
       xmlns:car="java:com.altova.extfunc.Car" >
<xsl:output exclude-result-prefixes="fn car xsl fo xs"/>

<xsl:template match="/">
   <a>
   <xsl:value-of select="car:getVehicleType()"/>
   </a>
</xsl:template>

</xsl:stylesheet>
```

Class file not packaged, XSLT/XQuery file in same folder as class file
The example below calls the `getVehicleType()` method of the `Car` class of the `com.altova.extfunc` package. The `Car` class file is in the following folder location: `JavaProject/com/altova/extfunc`. The XSLT file is also in the folder `JavaProject/com/altova/extfunc`.

```
<xsl:stylesheet version="2.0"
       xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
       xmlns:xs="http://www.w3.org/2001/XMLSchema"
       xmlns:fn="http://www.w3.org/2005/xpath-functions"
       xmlns:car="java:Car" >
<xsl:output exclude-result-prefixes="fn car xsl fo xs"/>

<xsl:template match="/">
   <a>
   <xsl:value-of select="car:getVehicleType()"/>
   </a>
</xsl:template>

</xsl:stylesheet>
```


Class file packaged, XSLT/XQuery file at any location

The example below calls the `getCarColor()` method of the `Car` class of the `com.altova.extfunc` package. The `com.altova.extfunc` package is in the folder `JavaProject`. The XSLT file is at any location. In this case, the location of the package must be specified within the URI as a query string. The syntax is:

```
java:classname[?path=uri-of-package]
```

where

`java:` indicates that a user-defined Java function is being called
`uri-of-package` is the URI of the Java package
`classname` is the name of the required method's class

The class is identified in a namespace URI, and the namespace is used to prefix a method call. The example below shows how to access a class file that is located in another directory than the current directory.

```
<xsl:stylesheet version="2.0"
       xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
       xmlns:xs="http://www.w3.org/2001/XMLSchema"
       xmlns:fn="http://www.w3.org/2005/xpath-functions"
       xmlns:car="
java:com.altova.extfunc.Car?path=file:///C:/JavaProject/" >

   <xsl:output exclude-result-prefixes="fn car xsl xs"/>

   <xsl:template match="/">
      <xsl:variable name="myCar" select="car:new('red')" />
      <a><xsl:value-of select="car:getCarColor($myCar)"/></a>
   </xsl:template>

   </xsl:stylesheet>
```

Class file not packaged, XSLT/XQuery file at any location

The example below calls the `getCarColor()` method of the `Car` class of the `com.altova.extfunc` package. The `com.altova.extfunc` package is in the folder `JavaProject`. The XSLT file is at any location. The location of the class file is specified within the namespace URI as a query string. The syntax is:

```
java:classname[?path=uri-of-classfile]
```

where

`java:` indicates that a user-defined Java function is being called
`uri-of-classfile` is the URI of the folder containing the class file
`classname` is the name of the required method's class

The class is identified in a namespace URI, and the namespace is used to prefix a method call. The example below shows how to access a class file that is located in another directory than the current directory.

```
<xsl:stylesheet version="2.0"
       xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
       xmlns:xs="http://www.w3.org/2001/XMLSchema"
       xmlns:fn="http://www.w3.org/2005/xpath-functions"
       xmlns:car="
java:Car?path=file:///C:/JavaProject/com/altova/extfunc/" >
```

```
<xsl:output exclude-result-prefixes="fn car xsl xs"/>

<xsl:template match="/">
   <xsl:variable name="myCar" select="car:new('red')" />
   <a><xsl:value-of select="car:getCarColor($myCar)"/></a>
</xsl:template>

</xsl:stylesheet>
```

Note: When a path is supplied via the extension function, the path is added to the ClassLoader.

User-Defined Jar Files

If access is via a JAR file, the URI of the JAR file must be specified using the following syntax:

```
xmlns:classNS="java:classname?path=jar:uri-of-jarfile!/"
```

The method is then called by using the prefix of the namespace URI that identifies the class: `classNS:method()`

In the above:

`java:` indicates that a Java function is being called
`classname` is the name of the user-defined class
`?` is the separator between the classname and the path
`path=jar:` indicates that a path to a JAR file is being given
`uri-of-jarfile` is the URI of the jar file
`!/` is the end delimiter of the path
`classNS:method()` is the call to the method

Alternatively, the classname can be given with the method call. Here are two examples of the syntax:

```
xmlns:ns1="java:docx.layout.pages?path=jar:file:///c:/projects/docs/docx.jar!/
"
   ns1:main()

   xmlns:ns2="java?path=jar:file:///c:/projects/docs/docx.jar!/"
   ns2:docx.layout.pages.main()
```

Here is a complete XSLT example that uses a JAR file to call a Java extension function:

```
<xsl:stylesheet version="2.0"
      xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
      xmlns:xs="http://www.w3.org/2001/XMLSchema"
      xmlns:fn="http://www.w3.org/2005/xpath-functions"
      xmlns:car="java?path=jar:file:///C:/test/Car1.jar!/" >
<xsl:output exclude-result-prefixes="fn car xsl xs"/>

<xsl:template match="/">
      <xsl:variable name="myCar" select="car:Car1.new('red')" />
      <a><xsl:value-of select="car:Car1.getCarColor($myCar)"/></a>
</xsl:template>

<xsl:template match="car"/>
```



```
</xsl:stylesheet>
```

Note: When a path is supplied via the extension function, the path is added to the ClassLoader.

Java: Constructors

An extension function can be used to call a Java constructor. All constructors are called with the pseudo-function `new()`.

If the result of a Java constructor call can be implicitly converted to XPath/XQuery datatypes, then the Java extension function will return a sequence that is an XPath/XQuery datatype. If the result of a Java constructor call cannot be converted to a suitable XPath/XQuery datatype, then the constructor creates a wrapped Java object with a type that is the name of the class returning that Java object. For example, if a constructor for the class `java.util.Date` is called (`java.util.Date.new()`), then an object having a type `java.util.Date` is returned. The lexical format of the returned object may not match the lexical format of an XPath datatype and the value would therefore need to be converted to the lexical format of the required XPath datatype and then to the required XPath datatype.

There are two things that can be done with a Java object created by a constructor:

- It can be assigned to a variable:
  ```
  <xsl:variable name="currentdate" select="date:new()" xmlns:date="
  java:java.util.Date" />
  ```
- It can be passed to an extension function (*see Instance Method and Instance Fields*):
  ```
  <xsl:value-of select="date:toString(date:new())" xmlns:date="
  java:java.util.Date" />
  ```

Java: Static Methods and Static Fields

A static method is called directly by its Java name and by supplying the arguments for the method. Static fields (methods that take no arguments), such as the constant-value fields `E` and `PI`, are accessed without specifying any argument.

XSLT examples

Here are some examples of how static methods and fields can be called:

```
<xsl:value-of xmlns:jMath="java:java.lang.Math"
              select="jMath:cos(3.14)" />

<xsl:value-of xmlns:jMath="java:java.lang.Math"
              select="jMath:cos( jMath:PI() )" />

<xsl:value-of xmlns:jMath="java:java.lang.Math"
              select="jMath:E() * jMath:cos(3.14)" />
```

Notice that the extension functions above have the form `prefix:fname()`. The prefix in all three cases is `jMath:`, which is associated with the namespace URI `java:java.lang.Math`. (The namespace URI must begin with `java:`. In the examples above it is extended to contain the class name (`java.lang.Math`).) The `fname()` part of the extension functions must match the name of a public class (e.g. `java.lang.Math`) followed by the name of a public static method with its argument/s (such as `cos(3.14)`) or a public static field (such as `PI()`).

In the examples above, the class name has been included in the namespace URI. If it were not

contained in the namespace URI, then it would have to be included in the `fname()` part of the extension function. For example:

```
<xsl:value-of xmlns:java="java:"
              select="java:java.lang.Math.cos(3.14)" />
```

XQuery example
A similar example in XQuery would be:

```
<cosine xmlns:jMath="java:java.lang.Math">
   {jMath:cos(3.14)}
</cosine>
```

Java: Instance Methods and Instance Fields

An instance method has a Java object passed to it as the first argument of the method call. Such a Java object typically would be created by using an extension function (for example a constructor call) or a stylesheet parameter/variable. An XSLT example of this kind would be:

```
<xsl:stylesheet version="1.0" exclude-result-prefixes="date"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:date="java:java.util.Date"
  xmlns:jlang="java:java.lang">
  <xsl:param name="CurrentDate" select="date:new()"/>
  <xsl:template match="/">
      <enrollment institution-id="Altova School"
                  date="{date:toString($CurrentDate)}"
                  type="{jlang:Object.toString(jlang:Object.getClass( date:new()
))}">
      </enrollment>
  </xsl:template>
</xsl:stylesheet>
```

In the example above, the value of the node `enrollment/@type` is created as follows:

1. An object is created with a constructor for the class `java.util.Date` (with the `date:new()` constructor).
2. This Java object is passed as the argument of the `jlang.Object.getClass` method.
3. The object obtained by the `getClass` method is passed as the argument to the `jlang.Object.toString` method.

The result (the value of `@type`) will be a string having the value: `java.util.Date`.

An instance field is theoretically different from an instance method in that it is not a Java object per se that is passed as an argument to the instance field. Instead, a parameter or variable is passed as the argument. However, the parameter/variable may itself contain the value returned by a Java object. For example, the parameter `CurrentDate` takes the value returned by a constructor for the class `java.util.Date`. This value is then passed as an argument to the instance method `date:toString` in order to supply the value of `/enrollment/@date`.

Datatypes: XPath/XQuery to Java

When a Java function is called from within an XPath/XQuery expression, the datatype of the function's arguments is important in determining which of multiple Java classes having the same name is called.

In Java, the following rules are followed:

- If there is more than one Java method with the same name, but each has a different number of arguments than the other/s, then the Java method that best matches the number of arguments in the function call is selected.
- The XPath/XQuery string, number, and boolean datatypes (*see list below*) are implicitly converted to a corresponding Java datatype. If the supplied XPath/XQuery type can be converted to more than one Java type (for example, `xs:integer`), then that Java type is selected which is declared for the selected method. For example, if the Java method being called is `fx(decimal)` and the supplied XPath/XQuery datatype is `xs:integer`, then `xs:integer` will be converted to Java's `decimal` datatype.

The table below lists the implicit conversions of XPath/XQuery string, number, and boolean types to Java datatypes.

`xs:string`	`java.lang.String`
`xs:boolean`	`boolean` (primitive), `java.lang.Boolean`
`xs:integer`	int, long, short, byte, float, double, and the wrapper classes of these, such as `java.lang.Integer`
`xs:float`	`float` (primitive), `java.lang.Float`, `double` (primitive)
`xs:double`	`double` (primitive), `java.lang.Double`
`xs:decimal`	`float` (primitive), `java.lang.Float`, `double` (primitive), `java.lang.Double`

Subtypes of the XML Schema datatypes listed above (and which are used in XPath and XQuery) will also be converted to the Java type/s corresponding to that subtype's ancestor type.

In some cases, it might not be possible to select the correct Java method based on the supplied information. For example, consider the following case.

- The supplied argument is an `xs:untypedAtomic` value of 10 and it is intended for the method `mymethod(float)`.
- However, there is another method in the class which takes an argument of another datatype: `mymethod(double)`.
- Since the method names are the same and the supplied type (`xs:untypedAtomic`) could be converted correctly to either `float` or `double`, it is possible that `xs:untypedAtomic` is converted to `double` instead of `float`.
- Consequently the method selected will not be the required method and might not produce the expected result. To work around this, you can create a user-defined method with a different name and use this method.

Types that are not covered in the list above (for example `xs:date`) will not be converted and will generate an error. However, note that in some cases, it might be possible to create the required Java type by using a Java constructor.

Datatypes: Java to XPath/XQuery

When a Java method returns a value, the datatype of the value is a string, numeric or boolean type, then it is converted to the corresponding XPath/XQuery type. For example, Java's `java.lang.Boolean` and `boolean` datatypes are converted to `xsd:boolean`.

One-dimensional arrays returned by functions are expanded to a sequence. Multi-dimensional arrays will not be converted, and should therefore be wrapped.

When a wrapped Java object or a datatype other than string, numeric or boolean is returned, you can ensure conversion to the required XPath/XQuery type by first using a Java method (e.g `toString`) to convert the Java object to a string. In XPath/XQuery, the string can be modified to fit the lexical representation of the required type and then converted to the required type (for example, by using the `cast as` expression).

1.5.2 .NET Extension Functions

If you are working on the .NET platform, you can use extension functions written in any of the .NET languages (for example, C#). A .NET extension function can be used within an XPath or XQuery expression to invoke a constructor, property, or method (static or instance) within a .NET class.

A property of a .NET class is called using the syntax `get_PropertyName()`.

This section is organized into the following sub-sections:

- .NET: Constructors
- .NET: Static Methods and Static Fields
- .NET: Instance Methods and Instance Fields
- Datatypes: XSLT/XQuery to .NET
- Datatypes: .NET to XSLT/XQuery

Form of the extension function
The extension function in the XPath/XQuery expression must have the form `prefix:fname()`.

- The `prefix:` part is associated with a URI that identifies the .NET class being addressed.
- The `fname()` part identifies the constructor, property, or method (static or instance) within the .NET class, and supplies any argument/s, if required.
- The URI must begin with `clitype:` (which identifies the function as being a .NET extension function).
- The `prefix:fname()` form of the extension function can be used with system classes and with classes in a loaded assembly. However, if a class needs to be loaded, additional parameters containing the required information will have to be supplied.

Parameters
To load an assembly, the following parameters are used:

`asm`	The name of the assembly to be loaded.
`ver`	The version number (maximum of four integers separated by periods).
`sn`	The key token of the assembly's strong name (16 hex digits).
`from`	A URI that gives the location of the assembly (DLL) to be loaded. If the URI is relative, it is relative to the XSLT or XQuery document. If this parameter is present, any other parameter is ignored.
`partialname`	The partial name of the assembly. It is supplied to `Assembly.LoadWith.PartialName()`, which will attempt to load the assembly. If `partialname` is present, any other parameter is ignored.

loc	The locale, for example, en-US. The default is neutral.

If the assembly is to be loaded from a DLL, use the from parameter and omit the sn parameter. If the assembly is to be loaded from the Global Assembly Cache (GAC), use the sn parameter and omit the from parameter.

A question mark must be inserted before the first parameter, and parameters must be separated by a semi-colon. The parameter name gives its value with an equals sign (*see example below*).

Examples of namespace declarations

An example of a namespace declaration in XSLT that identifies the system class System.Environment:

```
xmlns:myns="clitype:System.Environment"
```

An example of a namespace declaration in XSLT that identifies the class to be loaded as Trade.Forward.Scrip:

```
xmlns:myns="clitype:Trade.Forward.Scrip?asm=forward;version=10.6.2.1"
```

An example of a namespace declaration in XQuery that identifies the system class MyManagedDLL.testClass:. Two cases are distinguished:

1. When the assembly is loaded from the GAC:

```
declare namespace cs="clitype:MyManagedDLL.testClass?asm=MyManagedDLL;
ver=1.2.3.4;loc=neutral;sn=b9f091b72dccfba8";
```

2. When the assembly is loaded from the DLL (complete and partial references below):

```
declare namespace
cs="clitype:MyManagedDLL.testClass?from=file:///C:/Altova
Projects/extFunctions/MyManagedDLL.dll;

declare namespace
cs="clitype:MyManagedDLL.testClass?from=MyManagedDLL.dll;
```

XSLT example

Here is a complete XSLT example that calls functions in system class System.Math:

```
<xsl:stylesheet version="2.0"
   xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:fn="http://www.w3.org/2005/xpath-functions">
   <xsl:output method="xml" omit-xml-declaration="yes" />
   <xsl:template match="/">
      <math xmlns:math="clitype:System.Math">
         <sqrt><xsl:value-of select="math:Sqrt(9)"/></sqrt>
         <pi><xsl:value-of select="math:PI()"/></pi>
         <e><xsl:value-of select="math:E()"/></e>
         <pow><xsl:value-of select="math:Pow(math:PI(), math:E())"/></pow>
      </math>
   </xsl:template>
</xsl:stylesheet>
```

The namespace declaration on the element math associates the prefix math: with the URI clitype:System.Math. The clitype: beginning of the URI indicates that what follows identifies either a system class or a loaded class. The math: prefix in the XPath expressions associates the extension functions with the URI (and, by extension, the class) System.Math. The extension functions identify methods in the class System.Math and supply arguments

where required.

XQuery example
Here is an XQuery example fragment similar to the XSLT example above:

```
<math xmlns:math="clitype:System.Math">
   {math:Sqrt(9)}
</math>
```

As with the XSLT example above, the namespace declaration identifies the .NET class, in this case a system class. The XQuery expression identifies the method to be called and supplies the argument.

.NET: Constructors

An extension function can be used to call a .NET constructor. All constructors are called with the pseudo-function `new()`. If there is more than one constructor for a class, then the constructor that most closely matches the number of arguments supplied is selected. If no constructor is deemed to match the supplied argument/s, then a `'No constructor found'` error is returned.

Constructors that return XPath/XQuery datatypes
If the result of a .NET constructor call can be implicitly converted to XPath/XQuery datatypes, then the .NET extension function will return a sequence that is an XPath/XQuery datatype.

Constructors that return .NET objects
If the result of a .NET constructor call cannot be converted to a suitable XPath/XQuery datatype, then the constructor creates a wrapped .NET object with a type that is the name of the class returning that object. For example, if a constructor for the class `System.DateTime` is called (with `System.DateTime.new()`), then an object having a type `System.DateTime` is returned.

The lexical format of the returned object may not match the lexical format of a required XPath datatype. In such cases, the returned value would need to be: (i) converted to the lexical format of the required XPath datatype; and (ii) cast to the required XPath datatype.

There are three things that can be done with a .NET object created by a constructor:

- It can be used within a variable:
  ```
  <xsl:variable name="currentdate" select="date:new(2008, 4, 29)"
  xmlns:date="clitype:System.DateTime" />
  ```
- It can be passed to an extension function (*see Instance Method and Instance Fields*):
  ```
  <xsl:value-of select="date:ToString(date:new(2008, 4, 29))" xmlns:date
  ="clitype:System.DateTime" />
  ```
- It can be converted to a string, number, or boolean:
- ```
  <xsl:value-of select="xs:integer(data:get_Month(date:new(2008, 4, 29)))
  " xmlns:date="clitype:System.DateTime" />
  ```

.NET: Static Methods and Static Fields

A static method is called directly by its name and by supplying the arguments for the method. The name used in the call must exactly match a public static method in the class specified. If


  ```

the method name and the number of arguments that were given in the function call matches more than one method in a class, then the types of the supplied arguments are evaluated for the best match. If a match cannot be found unambiguously, an error is reported.

**Note:** A field in a .NET class is considered to be a method without any argument. A property is called using the syntax `get_PropertyName()`.

**Examples**

An XSLT example showing a call to a method with one argument (`System.Math.Sin(arg)`):

```
<xsl:value-of select="math:Sin(30)" xmlns:math="clitype:System.Math"/>
```

An XSLT example showing a call to a field (considered a method with no argument) (`System.Double.MaxValue()`):

```
<xsl:value-of select="double:MaxValue()" xmlns:double="
clitype:System.Double"/>
```

An XSLT example showing a call to a property (syntax is `get_PropertyName()`) (`System.String()`):

```
<xsl:value-of select="string:get_Length('my string')" xmlns:string="
clitype:System.String"/>
```

An XQuery example showing a call to a method with one argument (`System.Math.Sin(arg)`):

```
<sin xmlns:math="clitype:System.Math">
   { math:Sin(30) }
</sin>
```

.NET: Instance Methods and Instance Fields

An instance method has a .NET object passed to it as the first argument of the method call. This .NET object typically would be created by using an extension function (for example a constructor call) or a stylesheet parameter/variable. An XSLT example of this kind would be:

```
<xsl:stylesheet version="2.0"
   xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:fn="http://www.w3.org/2005/xpath-functions">
   <xsl:output method="xml" omit-xml-declaration="yes"/>
   <xsl:template match="/">
      <xsl:variable name="releasedate"
         select="date:new(2008, 4, 29)"
         xmlns:date="clitype:System.DateTime"/>
      <doc>
         <date>
            <xsl:value-of select="date:ToString(date:new(2008, 4, 29))"
               xmlns:date="clitype:System.DateTime"/>
         </date>
         <date>
            <xsl:value-of select="date:ToString($releasedate)"
               xmlns:date="clitype:System.DateTime"/>
         </date>
      </doc>
   </xsl:template>
</xsl:stylesheet>
```

In the example above, a `System.DateTime` constructor (`new(2008, 4, 29)`) is used to create a .NET object of type `System.DateTime`. This object is created twice, once as the value of the variable `releasedate`, a second time as the first and only argument of the `System.DateTime.ToString()` method. The instance method `System.DateTime.ToString()` is called twice, both times with the `System.DateTime` constructor (`new(2008, 4, 29)`) as its first and only argument. In one of these instances, the variable `releasedate` is used to get the .NET object.

Instance methods and instance fields
The difference between an instance method and an instance field is theoretical. In an instance method, a .NET object is directly passed as an argument; in an instance field, a parameter or variable is passed instead—though the parameter or variable may itself contain a .NET object. For example, in the example above, the variable `releasedate` contains a .NET object, and it is this variable that is passed as the argument of `ToString()` in the second `date` element constructor. Therefore, the `ToString()` instance in the first `date` element is an instance method while the second is considered to be an instance field. The result produced in both instances, however, is the same.

Datatypes: XPath/XQuery to .NET

When a .NET extension function is used within an XPath/XQuery expression, the datatypes of the function's arguments are important for determining which one of multiple .NET methods having the same name is called.

In .NET, the following rules are followed:

- If there is more than one method with the same name in a class, then the methods available for selection are reduced to those that have the same number of arguments as the function call.
- The XPath/XQuery string, number, and boolean datatypes (*see list below*) are implicitly converted to a corresponding .NET datatype. If the supplied XPath/XQuery type can be converted to more than one .NET type (for example, `xs:integer`), then that .NET type is selected which is declared for the selected method. For example, if the .NET method being called is `fx(double)` and the supplied XPath/XQuery datatype is `xs:integer`, then `xs:integer` will be converted to .NET's `double` datatype.

The table below lists the implicit conversions of XPath/XQuery string, number, and boolean types to .NET datatypes.

`xs:string`	`StringValue, string`
`xs:boolean`	`BooleanValue, bool`
`xs:integer`	`IntegerValue, decimal, long, integer, short, byte, double, float`
`xs:float`	`FloatValue, float, double`
`xs:double`	`DoubleValue, double`
`xs:decimal`	`DecimalValue, decimal, double, float`

Subtypes of the XML Schema datatypes listed above (and which are used in XPath and XQuery) will also be converted to the .NET type/s corresponding to that subtype's ancestor type.

In some cases, it might not be possible to select the correct .NET method based on the supplied information. For example, consider the following case.

- The supplied argument is an `xs:untypedAtomic` value of 10 and it is intended for the method `mymethod(float)`.
- However, there is another method in the class which takes an argument of another datatype: `mymethod(double)`.
- Since the method names are the same and the supplied type (`xs:untypedAtomic`) could be converted correctly to either `float` or `double`, it is possible that `xs:untypedAtomic` is converted to `double` instead of `float`.
- Consequently the method selected will not be the required method and might not produce the expected result. To work around this, you can create a user-defined method with a different name and use this method.

Types that are not covered in the list above (for example `xs:date`) will not be converted and will generate an error.

Datatypes: .NET to XPath/XQuery

When a .NET method returns a value and the datatype of the value is a string, numeric or boolean type, then it is converted to the corresponding XPath/XQuery type. For example, .NET's `decimal` datatype is converted to `xsd:decimal`.

When a .NET object or a datatype other than string, numeric or boolean is returned, you can ensure conversion to the required XPath/XQuery type by first using a .NET method (for example `System.DateTime.ToString()`) to convert the .NET object to a string. In XPath/XQuery, the string can be modified to fit the lexical representation of the required type and then converted to the required type (for example, by using the `cast as` expression).

1.5.3 MSXSL Scripts for XSLT

The `<msxsl:script>` element contains user-defined functions and variables that can be called from within XPath expressions in the XSLT stylesheet. The `<msxsl:script>` is a top-level element, that is, it must be a child element of `<xsl:stylesheet>` or `<xsl:transform>`.

The `<msxsl:script>` element must be in the namespace `urn:schemas-microsoft-com:xslt` (*see example below*).

Scripting language and namespace

The scripting language used within the block is specified in the `<msxsl:script>` element's `language` attribute and the namespace to be used for function calls from XPath expressions is identified with the `implements-prefix` attribute (*see below*).

```
<msxsl:script language="scripting-language" implements-prefix="user-namespace-
prefix">

   function-1 or variable-1
   ...
   function-n or variable-n

</msxsl:script>
```

The `<msxsl:script>` element interacts with the Windows Scripting Runtime, so only languages that are installed on your machine may be used within the `<msxsl:script>` element. **The .NET**

Framework 2.0 platform or higher must be installed for MSXSL scripts to be used. Consequently, the .NET scripting languages can be used within the `<msxsl:script>` element.

The `language` attribute accepts the same values as the `language` attribute on the HTML `<script>` element. If the `language` attribute is not specified, then Microsoft JScript is assumed as the default.

The implements-prefix attribute takes a value that is a prefix of a declared in-scope namespace. This namespace typically will be a user namespace that has been reserved for a function library. All functions and variables defined within the `<msxsl:script>` element will be in the namespace identified by the prefix specified in the `implements-prefix` attribute. When a function is called from within an XPath expression, the fully qualified function name must be in the same namespace as the function definition.

Example

Here is an example of a complete XSLT stylesheet that uses a function defined within a `<msxsl:script>` element.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:fn="http://www.w3.org/2005/xpath-functions"
   xmlns:msxsl="urn:schemas-microsoft-com:xslt"
   xmlns:user="http://mycompany.com/mynamespace">

  <msxsl:script language="VBScript" implements-prefix="user">
    <![CDATA[
    ' Input: A currency value: the wholesale price
    ' Returns: The retail price: the input value plus 20% margin,
    ' rounded to the nearest cent
    dim a as integer  = 13
    Function AddMargin(WholesalePrice) as integer
      AddMargin = WholesalePrice * 1.2 + a
    End Function
  ]]>
  </msxsl:script>

  <xsl:template match="/">
    <html>
      <body>
        <p>
          <b>Total Retail Price =
            $<xsl:value-of select="user:AddMargin(50)"/>
          </b>
          <br/>
          <b>Total Wholesale Price =
            $<xsl:value-of select="50"/>
          </b>
        </p>
      </body>
    </html>
  </xsl:template>
</xsl:stylesheet>
```

Datatypes

The values of parameters passed into and out of the script block are limited to XPath datatypes. This restriction does not apply to data passed among functions and variables within the script block.

Assemblies

An assembly can be imported into the script by using the **msxsl:assembly** element. The assembly is identified via a name or a URI. The assembly is imported when the stylesheet is compiled. Here is a simple representation of how the msxsl:assembly element is to be used.

```
<msxsl:script>
    <msxsl:assembly name="myAssembly.assemblyName" />
    <msxsl:assembly href="pathToAssembly" />

    ...

</msxsl:script>
```

The assembly name can be a full name, such as:

```
"system.Math, Version=3.1.4500.1 Culture=neutral
PublicKeyToken=a46b3f648229c514"
```

or a short name, such as "myAssembly.Draw".

Namespaces

Namespaces can be declared with the **msxsl:using** element. This enables assembly classes to be written in the script without their namespaces, thus saving you some tedious typing. Here is how the msxsl:using element is used so as to declare namespaces.

```
<msxsl:script>
    <msxsl:using namespace="myAssemblyNS.NamespaceName" />

    ...

</msxsl:script>
```

The value of the namespace attribute is the name of the namespace.

1.5.4 Altova Extension Functions

Altova extension functions are in the namespace **http://www.altova.com/xslt-extensions** and are indicated in this section with the prefix **altova:** , which is assumed to be bound to the namespace given above.

The following extension functions are supported in the current version of your Altova product in the manner described below. However, note that in future versions of your product, support for one or more of these functions might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

General functions

- **altova:evaluate()**
- **altova:distinct-nodes()**
- **altova:encode-for-rtf()**
- **altova:xbrl-labels()**
- **altova:xbrl-footnotes()**
- **altova:generate-auto-number()**
- **altova:reset-auto-number()**

- altova:get-temp-folder()

General Functions

The following extension functions are supported in the current version of your Altova product in the manner described below. However, note that in future versions of your product, support for one or more of these functions might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

- altova:evaluate()
- altova:distinct-nodes()
- altova:encode-for-rtf()
- altova:xbrl-labels()
- altova:xbrl-footnotes()
- altova:generate-auto-number()
- altova:reset-auto-number()
- altova:get-temp-folder()

altova:evaluate()

The `altova:evaluate()` function takes an XPath expression, passed as a string, as its mandatory argument. It returns the output of the evaluated expression.

```
altova:evaluate( XPathExp as xs:string)
```

For example:

```
altova:evaluate('//Name[1]')
```

In the example above, note that the expression `//Name[1]` is passed as a string by enclosing it in single quotes. The `altova:evaluate` function returns the contents of the first `Name` element in the document.

The `altova:evaluate` function can take additional (optional) arguments. These arguments are, respectively, the values of variables with the names `p1`, `p2`, `p3` ... `pN` that can be used in the XPath expression.

```
altova:evaluate( XPathExp as xs:string [, p1value ... pNvalue])
```

where

- the variable names must be of the form `pX`, `X` being an integer
- the sequence of the function's arguments, from the second argument onwards corresponds to the sequence of variables named `p1` to `pN`. So the second argument will be the value of the variable `p1`, the third argument that of the variable `p2`, and so on.
- The variable values must be of type `item*`

For example:

```
<xsl:variable name="xpath" select="'$p3, $p2, $p1'" />
<xsl:value-of select="altova:evaluate( $xpath, 10, 20, 'hi' )" />
```

Outputs "`hi 20 10`*"*

In the above listing, notice the following:

- The second argument of the `altova:evaluate` expression is the value assigned to the variable `$p1`, the third argument that assigned to the variable `$p2`, and so on.
- Notice that the fourth argument of the function is a string value, indicated by its being enclosed in quotes.
- The `select` attribute of the `xs:variable` element supplies the XPath expression. Since this expression must be of type `xs:string`, it is enclosed in single quotes.

The following examples further illustrate usage:

```
<xsl:variable name="xpath" select="'$p1'" />
<xsl:value-of select="altova:evaluate( $xpath, //Name[1] )" />
```
Outputs value of the first `Name` *element.*

```
<xsl:variable name="xpath" select="'$p1'" />
<xsl:value-of select="altova:evaluate( $xpath, '//Name[1]' )" />
```
Outputs "`//Name[1]`*"*

The `altova:evaluate()` extension function is useful in situations where an XPath expression in the XSLT stylesheet contains one or more parts that must be evaluated dynamically. For example, consider a situation in which a user enters his request for the sorting criterion and this criterion is stored in the attribute `UserReq/@sortkey`. In the stylesheet, you could then have the expression :

```
<xsl:sort select="altova:evaluate(../UserReq/@sortkey)" order="ascending"/
>
```

The `altova:evaluate()` function reads the `sortkey` attribute of the `UserReq` child element of the parent of the context node. Say the value of the `sortkey` attribute is `Price`, then `Price` is returned by the `altova:evaluate()` function and becomes the value of the `select` attribute:

```
<xsl:sort select="Price" order="ascending"/>
```

If this `sort` instruction occurs within the context of an element called `Order`, then the `Order` elements will be sorted according to the values of their `Price` children. Alternatively, if the value of `@sortkey` were, say, `Date`, then the `Order` elements would be sorted according to the values of their `Date` children. So the sort criterion for `Order` is selected from the `sortkey` attribute at runtime. This could not have been achieved with an expression like:

```
<xsl:sort select="../UserReq/@sortkey" order="ascending"/>
```

In the case shown above, the sort criterion would be the `sortkey` attribute itself, not `Price` or `Date` (or any other current content of `sortkey`).

Variables can be used in the `altova:evaluate()` extension function as shown in the examples below:

- Static variables: `<xsl:value-of select="$i3, $i2, $i1" />`
  Outputs the values of three variables.

- Dynamic XPath expression with dynamic variables:
  ```
  <xsl:variable name="xpath" select="'$p3, $p2, $p1'" />
  <xsl:value-of select="altova:evaluate( $xpath, 10, 20, 30 )" />
  ```
  Outputs "`30 20 10`*"*

- Dynamic XPath expression with no dynamic variable:
  ```
  <xsl:variable name="xpath" select="'$p3, $p2, $p1'" />
  <xsl:value-of select="altova:evaluate( $xpath )" />
  ```
  Outputs error: No variable defined for $p3.

Note: The static context includes namespaces, types, and functions—but not variables—from the calling environment. The base URI and default namespace are inherited.

altova: distinct-nodes()

The `altova: distinct-nodes()` function takes a set of one or more nodes as its input and returns the same set minus nodes with duplicate values. The comparison is done using the XPath/XQuery function `fn: deep-equal`.

```
altova: distinct-nodes( $arg as node()* )  as node()*
```

altova: encode-for-rtf()

The `altova: encode-for-rtf()` function converts the input string into code for RTF.

```
altova: encode-for-rtf( $inputstr as xs: string?,
$preserveallwhitespace as xs: boolean,
$preservenewlines as xs: boolean) as xs: string
```

Whitespace and new lines will be preserved according to the boolean value specified for their respective parameters.

altova: xbrl-labels()

The `altova: xbrl-labels()` function takes two input arguments: a node name and the taxonomy file location containing the node. The function returns the XBRL labels associated with the input node.

```
altova: xbrl-labels( $name as xs: QName, $file as xs: string )  as node()*
```

altova: xbrl-footnotes()

The `altova: footnotes()` function takes a node as its input argument and returns the set of XBRL footnote nodes referenced by the input node.

```
altova: footnotes( $arg as node() )  as node()*
```

altova: generate-auto-number(id as xs: string, start-with as xs: integer, increment as xs: integer, reset-on-change as xs: string)

Generates a series of numbers having the specified ID. The start integer and the increment is specified.

altova: reset-auto-number(id as xs: string)

This function resets the auto-numbering of the auto-numbering series specified with the ID argument. The series is reset to the start integer of the series (see `altova: generate-auto-number` above).

altova: get-temp-folder as xs: string

Gets the temporary folder.

2 Datatypes in DB-Generated XML Schemas

When an XML Schema is generated from a database (DB), the datatypes specific to that DB are converted to XML Schema datatypes. The mappings of DB datatypes to XML Schema datatypes for commonly used DBs are given in this Appendix. Select from the list below.

2.1 MS Access

When an XML Schema is generated from an MS Access database (DB), the MS Access DB datatypes are converted to XML Schema datatypes as listed in the table below.

MS Access Datatype	XML Schema Datatype
GUID	xs:ID
char	xs:string
varchar	xs:string
memo	xs:string
bit	xs:boolean
Number(single)	xs:float
Number(double)	xs:double
Decimal	xs:decimal
Currency	xs:decimal
Date/Time	xs:dateTime
Number(Long Integer)	xs:integer
Number(Integer)	xs:short
Number(Byte)	xs:byte
OLE Object	xs:base64Binary

2.2 MS SQL Server

When an XML Schema is generated from an MS SQL Server database (DB), the MS SQL Server DB datatypes are converted to XML Schema datatypes as listed in the table below.

MS SQL Server Datatype	XML Schema Datatype
uniqueidentifier	xs:ID
char	xs:string
nchar	xs:string
varchar	xs:string
nvarchar	xs:string
text	xs:string
ntext	xs:string
sysname	xs:string
bit	xs:boolean
real	xs:float
float	xs:double
decimal	xs:decimal
money	xs:decimal
smallmoney	xs:decimal
datetime	xs:dateTime
smalldatetime	xs:dateTime
binary	xs:base64Binary
varbinary	xs:base64Binary
image	xs:base64Binary
integer	xs:integer
smallint	xs:short
bigint	xs:long
tinyint	xs:byte

2.3 MySQL

When an XML Schema is generated from a MySQL database (DB), the MySQL DB datatypes are converted to XML Schema datatypes as listed in the table below.

MySQL Datatype	XML Schema Datatype
char	xs:string
varchar	xs:string
text	xs:string
tinytext	xs:string
mediumtext	xs:string
longtext	xs:string
tinyint(1)	xs:boolean
float	xs:float
double	xs:double
decimal	xs:decimal
datetime	xs:dateTime
blob	xs:base64Binary
tinyblob	xs:base64Binary
mediumblob	xs:base64Binary
longblob	xs:base64Binary
smallint	xs:short
bigint	xs:long
tinyint	xs:byte

2.4 Oracle

When an XML Schema is generated from an Oracle database (DB), the Oracle DB datatypes are converted to XML Schema datatypes as listed in the table below.

Oracle Datatype	XML Schema Datatype
ROWID	xs:ID
CHAR	xs:string
NCHAR	xs:string
VARCHAR2	xs:string
NVARCHAR2	xs:string
CLOB	xs:string
NCLOB	xs:string
NUMBER (with check constraint applied)*	xs:boolean
NUMBER	xs:decimal
FLOAT	xs:double
DATE	xs:dateTime
INTERVAL YEAR TO MONTH	xs:gYearMonth
BLOB	xs:base64Binary

* If a check constraint is applied to a column of datatype NUMBER, and the check constraint checks for the values 0 or 1, then the NUMBER datatype for this column will be converted to an XML Schema datatype of xs:boolean. This mechanism is useful for generating an xs:boolean datatype in the generated XML Schema.

2.5 ODBC

When an XML Schema is generated from an ODBC database (DB), the ODBC DB datatypes are converted to XML Schema datatypes as listed in the table below.

ODBC Datatype	XML Schema Datatype
SQL_GUID	xs:ID
SQL_CHAR	xs:string
SQL_VARCHAR	xs:string
SQL_LONGVARCHAR	xs:string
SQL_BIT	xs:boolean
SQL_REAL	xs:float
SQL_DOUBLE	xs:double
SQL_DECIMAL	xs:decimal
SQL_TIMESTAMP	xs:dateTime
SQL_DATE	xs:date
SQL_BINARY	xs:base64Binary
SQL_VARBINARY	xs:base64Binary
SQL_LONGVARBINARY	xs:base64Binary
SQL_INTEGER	xs:integer
SQL_SMALLINT	xs:short
SQL_BIGINT	xs:long
SQL_TINYINT	xs:byte

2.6 ADO

When an XML Schema is generated from an ADO database (DB), the ADO DB datatypes are converted to XML Schema datatypes as listed in the table below.

ADO Datatype	XML Schema Datatype
adGUID	xs:ID
adChar	xs:string
adWChar	xs:string
adVarChar	xs:string
adWVarChar	xs:string
adLongVarChar	xs:string
adWLongVarChar	xs:string
adVarWChar	xs:string
adBoolean	xs:boolean
adSingle	xs:float
adDouble	xs:double
adNumeric	xs:decimal
adCurrency	xs:decimal
adDBTimeStamp	xs:dateTime
adDate	xs:date
adBinary	xs:base64Binary
adVarBinary	xs:base64Binary
adLongVarBinary	xs:base64Binary
adInteger	xs:Integer
adUnsignedInt	xs:unsignedInt
adSmallInt	xs:short
adUnsignedSmallInt	xs:unsignedShort
adBigInt	xs:long
adUnsignedBigInt	xs:unsignedLong
adTinyInt	xs:byte
adUnsignedTinyInt	xs:unsignedByte

2.7 Sybase

When an XML Schema is generated from a Sybase database (DB), the Sybase DB datatypes are converted to XML Schema datatypes as listed in the table below.

Sybase Datatype	XML Schema Datatype
char	xs:string
nchar	xs:string
varchar	xs:string
nvarchar	xs:string
text	xs:string
sysname-varchar(30)	xs:string
bit	xs:boolean
real	xs:float
float	xs:float
double	xs:double
decimal	xs:decimal
money	xs:decimal
smallmoney	xs:decimal
datetime	xs:dateTime
smalldatetime	xs:dateTime
timestamp	xs:dateTime
binary<=255	xs:base64Binary
varbinary<=255	xs:base64Binary
image	xs:base64Binary
integer	xs:integer
smallint	xs:short
tinyint	xs:byte

3 Datatypes in DBs Generated from XML Schemas

When a DB structure is created from an XML Schema, the datatypes specific to that DB are generated from XML Schema datatypes. The mappings of XML Schema datatypes to DB datatypes for commonly used DBs are given in this Appendix. Select from the list below.

3.1 MS Access

When an MS Access database (DB) is created from an XML Schema, the XML Schema datatypes are converted to MS Access datatypes as listed in the table below.

XML Schema Datatype	MS Access Datatype
xs:ID	GUID
xs:string	If no facets varchar (255)
	Size = either length or maxLength
	If Size <= 255 varchar (n)
	else memo
xs:normalizedString	Same as xs:string
xs:token	Same as xs:string
xs:Name	Same as xs:string
xs:NCName	Same as xs:string
xs:anyURI	Same as xs:string
xs:QName	Same as xs:string
xs:NOTATION	Same as xs:string
xs:boolean	bit
xs:float	Number (single)
xs:double	Number (double)
xs:decimal	Decimal
xs:duration	Date/Time
xs:dateTime	Date/Time
xs:time	Date/Time
xs:date	Date/Time
xs:gYearMonth	Date/Time
xs:gYear	Date/Time
xs:gMonthDay	Date/Time
xs:gDay	Date/Time
xs:gMonth	Date/Time
xs:hexBinary	If no facets varbinary (255)
	Size = either length or maxLength
	If Size <= 8000 varbinary
	else image (OLE Object)
xs:base64Binary	Same as xs:hexBinary

xs:integer	Number (Long Integer)
xs:int	Number (Long Integer)
xs:negativeInteger	Number (Long Integer); value constraint
xs:positiveInteger	Number (Long Integer); value constraint
xs:nonNegativeInteger	Number (Long Integer); value constraint
xs:nonPositiveInteger	Number (Long Integer); value constraint
xs:unsignedInt	Number (Long Integer)
xs:short	-- no equivalent --
xs:unsignedShort	-- no equivalent --
xs:long	-- no equivalent --
xs:unsignedLong	-- no equivalent --
xs:byte	Number (Byte)
xs:unsignedByte	Number (Byte)

3.2 MS SQL Server

When an XML Schema is generated from an MS SQL Server database (DB), the MS SQL Server DB datatypes are converted to XML Schema datatypes as listed in the table below.

XML Schema Datatype	MS SQL Server Datatype
ID	uniqueidentifier
xs:string	If no facets
	{ if UNICODE nvarchar (255)
	else varchar (255) }
	else
	{ if UNICODE
	(Size = either length or maxLength)
	If Size <= 4000
	if FacetLengthIsSet then nChar
	else nVarChar
	if Size <= 1073741823 then nText }
	else
	{ if NON-UNICODE
	(Size = either length or maxLength)
	If Size <= 8000
	if FacetLengthIsSet then char
	else varchar
	if Size <= 2147483647 then text }
xs:normalizedString	Same as xs:string
xs:token	Same as xs:string
xs:Name	Same as xs:string
xs:NCName	Same as xs:string
xs:anyURi	Same as xs:string
xs:QName	Same as xs:string
xs:NOTATION	Same as xs:string
xs:boolean	bit
xs:float	real
xs:double	float
xs:decimal	decimal
xs:duration	datetime

xs:dateTime	datetime
xs:time	datetime
xs:date	datetime
xs:gYearMonth	datetime
xs:gYear	datetime
xs:gMonthDay	datetime
xs:gDay	datetime
xs:gMonth	datetime
xs:hexBinary	If no facets varbinary (255)
	(Size = either length or maxLength
	If Size <= 8000
	if FacetLengthIsSet then binary
	else varbinary
	if Size <= 2147483647 then image
xs:base64Binary	Same as xs:hexBinary
xs:integer	int
xs:int	int
xs:negativeInteger	Int (constrained to {...,-2,-1})
xs:positiveInteger	Int (constrained to {1,2,...})
xs:nonNegativeInteger	int (constrained to {0,1,2,...})
xs:nonPositiveInteger	int (constrained to {...,-2,-1,0})
xs:unsignedInt	int (additional constraints)
xs:short	smallint
xs:unsignedShort	smallint (additional constraints)
xs:long	bigint
xs:unsignedLong	bigint (additional constraints)
xs:byte	tinyint
xs:unsignedByte	tinyint (additional constraints)

3.3 MySQL

When an XML Schema is generated from a MySQL database (DB), the MySQL DB datatypes are converted to XML Schema datatypes as listed in the table below.

XML Schema Datatype	MySQL Datatype
xs:ID	varchar(255)
xs:string	If no facets then varchar (255)
	else if facet length is set and <= 255 then char
	else if facet maxLength set and <= 255 then varchar
	else if maxLength is set and <= 65545 then text
	else if maxlength is set and <= 16777215 then mediumtext
	else if maxlength is set and <= 429496295 then longtext
xs:normalizedString	*Same as* xs:string
xs:token	*Same as* xs:string
xs:Name	*Same as* xs:string
xs:NCName	*Same as* xs:string
xs:anyURI	*Same as* xs:string
xs:QName	*Same as* xs:string
xs:NOTATION	*Same as* xs:string
xs:boolean	tinyint(1)
xs:float	float
xs:double	double
xs:decimal	decimal
xs:duration	timestamp
xs:dateTime	datetime
xs:time	time
xs:date	date
xs:gYearMonth	timestamp(4)
xs:gYear	year(4)
xs:gMonthDay	timestamp(8); constraints to check month, day
xs:gDay	timestamp(8); constraints to check day
xs:gMonth	timestamp(8); constraints to check month

xs:hexBinary	If no facets then blob (255)
	else if facet length is set and <= 255 then blob
	else if facet maxLength is set and <= 255 then tinyblob
	else if maxlength is set and <= 65545 then blob
	else if maxlength is set and <= 16777215 then mediumblob
	else if maxlength is set and <= 429496295 then longblob
xs:base64Binary	*Same as* xs:hexBinary
xs:integer	Integer
xs:int	int
xs:negativeInteger	Integer (constrained to {...,-2,-1})
xs:positiveInteger	Integer (constrained to {1,2,...})
xs:nonNegativeInteger	Integer (constrained to {0,1,2,...})
xs:nonPositiveInteger	Integer (constrained to {...,-2,-1,0})
xs:unsignedInt	Int (additional constraints)
xs:short	Smallint
xs:unsignedShort	Smallint (additional constraints)
xs:long	Bigint
xs:unsignedLong	Bigint (additional constraints)
xs:byte	Tinyint
xs:unsignedByte	Tinyint (additional constraints)

3.4 Oracle

When an XML Schema is generated from an Oracle database (DB), the Oracle DB datatypes are converted to XML Schema datatypes as listed in the table below.

XML Schema Datatype	Oracle Datatype
xs:ID	ROWID
xs:string	If no facets
	if UNICODE then NVARCHAR2 (255)
	else VARCHAR2 (255)
	else if UNICODE
	(Size = either length or maxLength)
	If Size <= 2000 then NCHAR
	if Size <= 4000 then NVARHCAR2
	if Size <= 4 Gigabytes then NCLOB
	else if NON-UNICODE
	(Size = either length or maxLength)
	If Size <= 2000 then CHAR
	if Size <= 4000 then VARCHAR2
	if Size <= 4 Gigabytes then CLOB
xs:normalizedString	*Same as* xs:string
xs:token	*Same as* xs:string
xs:Name	*Same as* xs:string
xs:NCName	*Same as* xs:string
xs:anyURI	*Same as* xs:string
xs:QName	*Same as* xs:string
xs:NOTATION	*Same as* xs:string
xs:boolean	NUMBER with constraint Boolean
xs:float	FLOAT
xs:double	FLOAT
xs:decimal	NUMBER
xs:duration	TIMESTAMP
xs:dateTime	TIMESTAMP
xs:time	DATE
xs:date	DATE
xs:gYearMonth	INTERVAL YEAR TO MONTH

xs:gYear	DATE
xs:gMonthDay	DATE
xs:gDay	DATE
xs:gMonth	DATE
xs:hexBinary	if no facets then RAW(255)
	(Size = either length or maxLength)
	If Size <= 2000 then RAW(X)
	else Size <= 2 Gigabytes then LONG RAW(X)
	if Size <= 4 Gigabytes then BLOB(X)
xs:base64Binary	BLOB
xs:integer	NUMBER
xs:int	NUMBER
xs:negativeInteger	NUMBER(constrained to {...,-2,-1})
xs:positiveInteger	NUMBER(constrained to {1,2,...})
xs:nonNegativeInteger	NUMBER(constrained to {0,1,2,...})
xs:nonPositiveInteger	NUMBER(constrained to {...,-2,-1,0})
xs:unsignedInt	NUMBER(additional constraints)
xs:short	NUMBER
xs:unsignedShort	NUMBER(additional constraints)
xs:long	NUMBER
xs:unsignedLong	NUMBER(additional constraints)
xs:byte	BLOB
xs:unsignedByte	BLOB(additional constraints)

4 Technical Data

This section contains useful background information on the technical aspects of your software. It is organized into the following sections:

- OS and Memory Requirements
- Altova XML Parser
- Altova XSLT and XQuery Engines
- Unicode Support
- Internet Usage

4.1 OS and Memory Requirements

Operating System
Altova software applications are:

- 32-bit Windows applications for Windows XP, Windows Server 2003 and 2008, Windows Vista, and Windows 7, or
- 64-bit Windows applications for Windows Vista and Windows 7

Memory
Since the software is written in C++ it does not require the overhead of a Java Runtime Environment and typically requires less memory than comparable Java-based applications. However, each document is loaded fully into memory so as to parse it completely and to improve viewing and editing speed. The memory requirement increases with the size of the document.

Memory requirements are also influenced by the unlimited Undo history. When repeatedly cutting and pasting large selections in large documents, available memory can rapidly be depleted.

4.2 Altova XML Parser

When opening any XML document, the application uses its built-in validating parser (the Altova XML Parser) to check for well-formedness, validate the document against a schema (if specified), and build trees and Infosets. The Altova XML Parser is also used to provide intelligent editing help while you edit documents and to dynamically display any validation error that may occur.

The built-in Altova XML Parser implements the Final Recommendation of the W3C's XML Schema specification. New developments recommended by the W3C's XML Schema Working Group are continuously being incorporated in the Altova Parser, so that Altova products give you a state-of-the-art development environment.

4.3 Altova XSLT and XQuery Engines

Altova products use the Altova XSLT 1.0 Engine, Altova XSLT 2.0 Engine, and Altova XQuery 1.0 Engines. Documentation about implementation-specific behavior for each engine is in the section Engine Information, in Appendix 1 of the product documentation, should that engine be used in the product.

These three engines are also available in the AltovaXML package, which can be downloaded from the Altova website free of charge. Documentation for using the engines is available with the AltovaXML package.

4.4 Unicode Support

Unicode is the 16-bit character-set (extendable to 32-bit) defined by the Unicode Consortium. It provides a unique number for every character,

- no matter what the platform,
- no matter what the program,
- no matter what the language.

Fundamentally, computers just deal with numbers. They store letters and other characters by assigning a number for each one. Before Unicode was invented, there were hundreds of different encoding systems for assigning these numbers. No single encoding could contain enough characters: for example, the European Union alone requires several different encodings to cover all its languages. Even for a single language like English, no single encoding was adequate for all the letters, punctuation, and technical symbols in common use.

These encoding systems used to conflict with one another. That is, two encodings used the same number for two different characters, or different numbers for the same character. Any given computer (especially servers) needs to support many different encodings; yet whenever data is passed between different encodings or platforms, that data always runs the risk of corruption.

Unicode is changing all that!
Unicode provides a unique number for every character, no matter what the platform, no matter what the program, and no matter what the language. The Unicode Standard has been adopted by such industry leaders as Apple, HP, IBM, JustSystems, Microsoft, Oracle, SAP, Sun, Base and many others.

Unicode is required by modern standards such as XML, Java, ECMAScript (JavaScript), LDAP, CORBA 3.0, WML, etc., and is the official way to implement ISO/IEC 10646. It is supported in many operating systems, all modern browsers, and many other products. The emergence of the Unicode Standard, and the availability of tools supporting it, are among the most significant recent global software technology trends.

Incorporating Unicode into client-server or multi-tiered applications and web sites offers significant cost savings over the use of legacy character sets. Unicode enables a single software product or a single web site to be targeted across multiple platforms, languages and countries without re-engineering. It allows data to be transported through many different systems without corruption.

4.4.1 Windows XP

Altova's XML products provide full Unicode support. To edit an XML document, you will also need a font that supports the Unicode characters being used by that document.

Please note that most fonts only contain a very specific subset of the entire Unicode range and are therefore typically targeted at the corresponding writing system. Consequently you may encounter XML documents that contain "unprintable" characters, because the font you have selected does not contain the required glyphs. Therefore it can sometimes be very useful to have a font that covers the entire Unicode range - especially when editing XML documents from all over the world.

The most universal font we have encountered is a typeface called Arial Unicode MS that has been created by Agfa Monotype for Microsoft. This font contains over 50,000 glyphs and covers the entire set of characters specified by the Unicode 2.1 standard. It needs 23MB and is included with Microsoft Office 2000.

We highly recommend that you install this font on your system and use it with the application if you are often editing documents in different writing systems. This font is not installed with the "Typical" setting of the Microsoft Office setup program, but you can choose the Custom Setup option to install this font.

In the `/Examples` folder in your application folder you will also find a new XHTML file called `Unicode-UTF8.html` that contains the sentence "When the world wants to talk, it speaks Unicode" in many different languages ("Wenn die Welt miteinander spricht, spricht sie Unicode") and writing-systems (世界的に話すなら、Unicode です。) - this line has been adopted from the 10th Unicode conference in 1997 and is a beautiful illustration of the importance of Unicode for the XML standard. Opening this file will give you a quick impression on what is possible with Unicode and what writing systems are supported by the fonts available on your PC installation.

4.4.2 Right-to-Left Writing Systems

Please note that even under Windows NT 4.0 any text from a right-to-left writing-system (such as Hebrew or Arabic) is not rendered correctly except in those countries that actually use right-to-left writing-systems. This is due to the fact that only the Hebrew and Arabic versions of Windows NT contains support for rendering and editing right-to-left text on the operating system layer.

4.5 Internet Usage

Altova applications will initiate Internet connections on your behalf in the following situations:

- If you click the "Request evaluation key-code" in the Registration dialog (**Help | Software Activation**), the three fields in the registration dialog box are transferred to our web server by means of a regular http (port 80) connection and the free evaluation key-code is sent back to the customer via regular SMTP e-mail.
- If you use the URL mode of the Open dialog box to open a document directly from a URL (**File | Open | Switch to URL**), that document is retrieved through a http (port 80) connection. (*This functionality is available in XMLSpy and Authentic Desktop.*)
- If you open an XML document that refers to an XML Schema or DTD and the document is specified through a URL, it is also retrieved through a http (port 80) connection once you validate the XML document. This may also happen automatically upon opening a document if you have instructed the application to automatically validate files upon opening in the File tab of the Options dialog (**Tools | Options**). (*This functionality is available in XMLSpy and Authentic Desktop.*)
- If you are using the Send by Mail... command (**File | Send by Mail**) in XMLSpy, the current selection or file is sent by means of any MAPI-compliant mail program installed on the user's PC.
- As part of Software Activation and LiveUpdate as further described in this manual and the Altova Software License Agreement.

5 License Information

This section contains:

- Information about the distribution of this software product
- Information about the intellectual property rights related to this software product
- The End User License Agreement governing the use of this software product

Please read this information carefully. It is binding upon you since you agreed to these terms when you installed this software product.

5.1 Electronic Software Distribution

This product is available through electronic software distribution, a distribution method that provides the following unique benefits:

- You can evaluate the software free-of-charge before making a purchasing decision.
- Once you decide to buy the software, you can place your order online at the Altova website and immediately get a fully licensed product within minutes.
- When you place an online order, you always get the latest version of our software.
- The product package includes a comprehensive integrated onscreen help system. The latest version of the user manual is available at www.altova.com (i) in HTML format for online browsing, and (ii) in PDF format for download (and to print if you prefer to have the documentation on paper).

30-day evaluation period
After downloading this product, you can evaluate it for a period of up to 30 days free of charge. About 20 days into this evaluation period, the software will start to remind you that it has not yet been licensed. The reminder message will be displayed once each time you start the application. If you would like to continue using the program after the 30-day evaluation period, you have to purchase an Altova Software License Agreement, which is delivered in the form of a key-code that you enter into the Software Activation dialog to unlock the product. You can purchase your license at the online shop at the Altova website.

Helping Others within Your Organization to Evaluate the Software
If you wish to distribute the evaluation version within your company network, or if you plan to use it on a PC that is not connected to the Internet, you may only distribute the Setup programs, provided that they are not modified in any way. Any person that accesses the software installer that you have provided, must request their own 30-day evaluation license key code and after expiration of their evaluation period, must also purchase a license in order to be able to continue using the product.

For further details, please refer to the Altova Software License Agreement at the end of this section.

5.2 Software Activation and License Metering

As part of Altova's Software Activation, the software may use your internal network and Internet connection for the purpose of transmitting license-related data at the time of installation, registration, use, or update to an Altova-operated license server and validating the authenticity of the license-related data in order to protect Altova against unlicensed or illegal use of the software and to improve customer service. Activation is based on the exchange of license related data such as operating system, IP address, date/time, software version, and computer name, along with other information between your computer and an Altova license server.

Your Altova product has a built-in license metering module that further helps you avoid any unintentional violation of the End User License Agreement. Your product is licensed either as a single-user or multi-user installation, and the license-metering module makes sure that no more than the licensed number of users use the application concurrently.

This license-metering technology uses your local area network (LAN) to communicate between instances of the application running on different computers.

Single license
When the application starts up, as part of the license metering process, the software sends a short broadcast datagram to find any other instance of the product running on another computer in the same network segment. If it doesn't get any response, it will open a port for listening to other instances of the application.

Multi license
If more than one instance of the application is used within the same LAN, these instances will briefly communicate with each other on startup. These instances exchange key-codes in order to help you to better determine that the number of concurrent licenses purchased is not accidentally violated. This is the same kind of license metering technology that is common in the Unix world and with a number of database development tools. It allows Altova customers to purchase reasonably-priced concurrent-use multi-user licenses.

We have also designed the applications so that they send few and small network packets so as to not put a burden on your network. The TCP/IP ports (2799) used by your Altova product are officially registered with the IANA (*see* the IANA website (http://www.iana.org/) *for details*) and our license-metering module is tested and proven technology.

If you are using a firewall, you may notice communications on port 2799 between the computers that are running Altova products. You are, of course, free to block such traffic between different groups in your organization, as long as you can ensure by other means, that your license agreement is not violated.

You will also notice that, if you are online, your Altova product contains many useful functions; these are unrelated to the license-metering technology.

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