User and Reference Manual

Altova StyleVision 2010 User & Reference Manual

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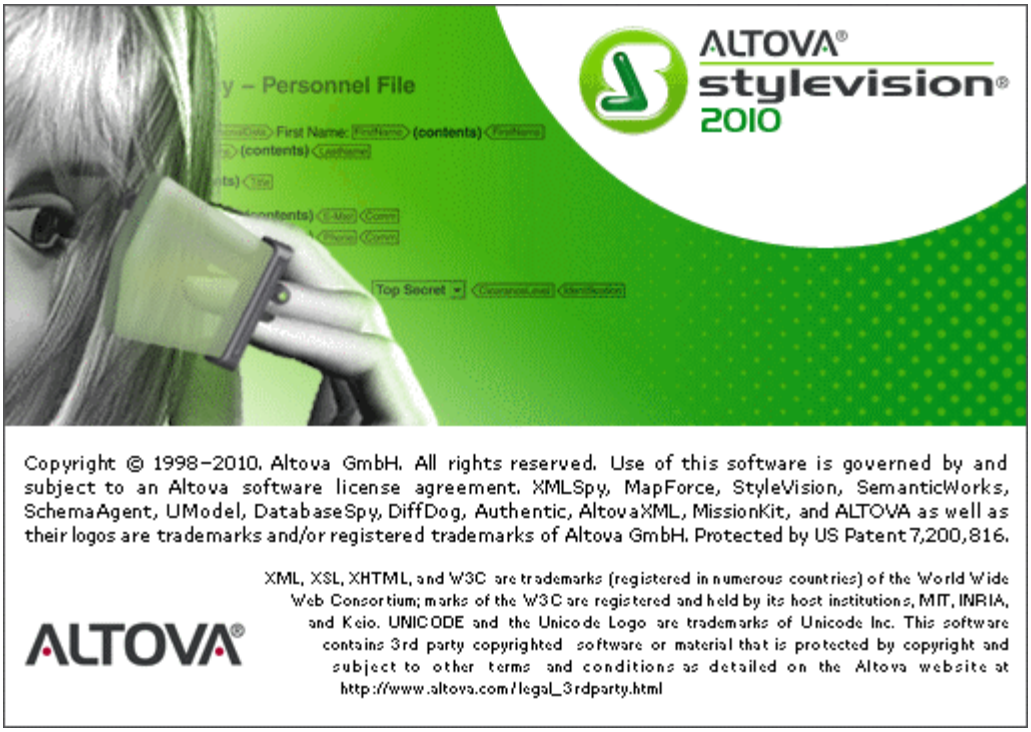
Altova StyleVision 2010

1 Altova StyleVision 2010

Altova® StyleVision® 2010 Enterprise Edition is an application for graphically designing and editing StyleVision Power Stylesheets, available in 64-bit and 32-bit versions. A StyleVision Power Stylesheet (SPS) can be used for the following purposes:

- To control a graphical WYSIWYG view of **XML documents in Authentic View**, which is an XML document editor available in the following Altova products: Altova XMLSpy, Altova StyleVision, Altova Authentic Desktop, and Altova Authentic Browser. It enables you to easily create electronic forms based on XML documents.
- To enable the editing of **databases (DBs) via Authentic View** and to generate database reports in HTML, RTF, PDF, and Word 2007-and-higher format.
- To generate **XSLT stylesheets** based on the SPS design. (Both XSLT 1.0 and XSLT 2.0 are supported.) The XSLT stylesheets can be used outside StyleVision to transform XML documents into outputs such as HTML, RTF (Rich Text Format, used by word processing applications such as MS Word), XSL-FO (used to generate PDF and PostScript files), and Word 2007-and-higher.
- To generate, directly from within StyleVision, **HTML, RTF, XSL-FO, PDF, and Word 2007-and-higher output** from an XML document. In the case of DB-based SPSs, StyleVision can additionally generate, for each SPS, an XML Schema based on the DB and an XML instance document that adheres to this schema and contains data from the DB.

StyleVision also enables you to import an HTML document and create an XML document from it.



Altova website: Stylesheet Designer, XSLT Designer

Chapter 2

About this Documentation

2 About this Documentation

This documentation is the user manual delivered with StyleVision. It is available as the built-in Help system of StyleVision, can be viewed online at the Altova website, and can also be downloaded from there as a PDF, which you can print.

The user manual is organized into the following sections:

- An introduction, which explains what an SPS is and introduces the main features and concepts of StyleVision.
- A description of the user interface, which provides an overview of the StyleVision GUI.
- A tutorial section, which is a hands-on exercise to familiarize you with StyleVision features.
- Usage Overview, which describes usage at a high level: for example, schema sources used to create an SPS, the broad design process, Authentic View deployment, and projects.
- SPS File Content, which explains how static (stylesheet-originated) and dynamic (XML document-originated) components are created and edited in the SPS.
- SPS File Structure, which shows how an SPS file can be structured and modularized, and describes the handling of StyleVision's templates.
- SPS File Advanced Features, which describes advanced design features, such as the automatic generation of calculations, the setting up of conditions, grouping and sorting on user-defined criteria, and how to build tables of contents and cross-references in the output document.
- SPS File Presentation, which explains how SPS components are formatted and laid out.
- SPS File Additional Editing Functionality, which describes a range of additional features that can make your SPS more powerful. These features include: global resources for leveraging functionality in other Altova products, additional validation, scripts, and variables and parameters.
- SPS File and Databases, which explains how databases can be used with SPSs.
- SPS File and XBRL, which describes how output can be designed for XBRL documents in StyleVision's XBRL View.
- Authentic View, which describes how XML documents are edited in Authentic View. The StyleVision GUI contains an Authentic View preview tab, in which you can immediately test the Authentic View output.
- Automated Processing, which explains how the generation of output files can be automated.
- StyleVision's integration features, which contains the documentation for integrating StyleVision in other applications. There is also information on how to use StyleVision in Visual Studio and Eclipse.
- A reference section containing descriptions of all symbols and commands used in StyleVision.
- Appendices containing information about the Altova XSLT Engine information and the conversion of DB datatypes to XML Schema datatypes; technical data about StyleVision; and license information.

How to use

We suggest you read the Introduction, User Interface and Usage Overview sections first in order to get an overview of StyleVision features and general usage. Doing the tutorial next would provide hands-on experience of creating an SPS. The SPS File sections (SPS File Content, SPS File Structure, SPS File Advanced Features, SPS File Presentation, SPS File Additional Functionality, SPS File and Databases) provide detailed descriptions of how to use various StyleVision features. For subsequent reference, the Reference section provides a

concise description of all toolbar icon, design symbols, and menu commands, organized according to toolbar and menu. The Authentic View and Command Line Interface: StyleVisionBatch sections provide, respectively, information about editing in Authentic View and calling StyleVision from the command line.

Support options

Should you have any question or problem related to StyleVision, the following support options are available:

1. Check the Help file (this documentation). The Help file contains a full text-search feature, besides being fully indexed.
2. Check the FAQs and Discussion Forum at the Altova Website.
3. Contact Altova's Support Center.

Commonly used abbreviations
The following abbreviations are used frequently in this documentation:

- **SPS**: StyleVision Power Stylesheet
- **DB**: Database
- **CSS**: Cascading Style Sheets
- **FAQ**: Frequently Asked Questions

Chapter 3

New Features

3 New Features

Features that are new in StyleVision **Version 2010 Release 3** are listed below.

- Value Formatting (Formatting Numeric Datatypes): The earlier Input Formatting mechanism has been extended to enable—only in the Enterprise Edition—the formatting of Inline XBRL values when they are output in an (X)HTML report. The older Input Formatting feature remains unchanged but has been renamed to Value Formatting.
- Inline XBRL: The SPS design can generate Inline XBRL elements in the (X)HTML output. These Inline XBRL elements can subsequently be extracted by an external processor that generates valid XBRL documents from (X)HTML documents.
- Global templates can now be created for any node or type in the schema. In earlier versions of StyleVision, global templates could only be created for global elements and global types. They can now be created on any node or type, and even for any item returned by an XPath expression.
- 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.

3.1 Version 2010

Version 2010 Release 1

Features that are new in StyleVision **Version 2010 Release 1** are listed below. Some of these new features have required a modification in the way older features are handled. In such cases, the existing feature continues to behave as before, but uses one or more of the newer mechanisms. The way a new feature affects existing features is also noted in the list below.

- Layout Containers: A Layout Container is a block in which Design Elements can be laid out and absolutely positioned within the block.
- Blueprints: Within a Layout Container an image of a form can be used as an underlay blueprint for the design. With the help of a blueprint, an existing design can be reproduced accurately.
- Document Sections: Documents can be divided into sections, with each section having its own properties, such as page layout properties. This enables different parts of a document to be presented differently. *Older features affected:* Previous designs had no sections. These designs will now be created as documents with one section, the Initial Document Section. Page properties and page layout properties, which were previously specified for the document as a whole, are now specified for the Initial Document Section. The cover page for print output of previous versions will be created in the new version as a template within the Initial Document Section.
- Page columns: Pages can be specified to have columns.
- User-Defined Templates: A template can be generated for a sequence of items by an XPath expression you specify. These items may be atomic values or nodes. An XPath expression enables the selection of nodes to be more specific, allowing conditions and filters to be used for the selection. Furthermore, templates can be built for atomic values, thus enabling structures to be built that are independent of the schema structure. *Older features affected:* Variable Iterators, which were used to create a template for a variable, now create a variable on a node template and then a User-Defined template for that variable.
- User-Defined Elements: This feature is intended to enable presentation language elements (such as HTML, XSLT, and XSL-FO) to be freely inserted at any location in the design.
- User-Defined XML Text Blocks: XML Text blocks can be freely inserted at any location in the design, and these blocks will be created at that location in the generated XSLT stylesheet.
- XSLT Templates: XSLT files can be imported into the generated stylesheets. If a node in the XML instance document is matched to a template in the imported XSLT file and no other template takes precedence over the imported template, then the imported template will be used. Additionally, named templates in the imported XSLT file can be called from within the design.
- Variables: A variable can now be declared on a template and take a value that is specified with an XPath expression. Previously, the value of a variable was limited to the selection of the node on which it was created. Variables in the 2010 version allow any XPath expression to be specified as the value of the variable. *Older features affected:* Variables and Variable Iterators. Variables from older versions are now created on the relevant template and are given a value that selects the same template. Variable Iterators are replaced with a combination of a Variable and a User-Defined Template; see User-Defined Templates below.
- Inserting Design Elements: Design Elements (paragraphs, lists, images, etc) can be inserted first, and an XML node from the schema tree assigned to the Design Element afterwards. This is in addition to the existing mechanism by which a schema nodes is dragged into the design and a Design Element created for it.
- Hide Markup in Design View: Markup tags in Design View can be hidden and collapsed, thus freeing up space in Design View.
- Java and .NET functions in Auto-Calculations: Native Java and .NET functions can be

used in the XPath expressions of Auto-Calculations. This makes the function libraries of Java and .NET accessible to the SPS.

- Disable output escaping: A setting that defines whether text output will be escaped or not. A character is said to be escaped when it is written as a character entity (such as `&` or `&#65;`). This feature is useful when outputting text that contains program code.
- Pixel Resolution: Pixel length units in the SPS are converted to absolute units for print output according to a factor that the SPS designer specifies.
- Default length units: can be specified in the Options dialog (**Tools | Options**).
- XHTML output: When XHTML is specified as the HTML output preference in the document's properties (**File | Properties**), an XHTML document is generated for the HTML output.
- Printout of Design: The design in Design View can be printed with or without tags.

Version 2010 Release 2

Features that are new in StyleVision **Version 2010 Release 2** are listed below.

- Enterprise and Professional editions are each available as separate 64-bit and 32-bit applications.
- Editable Variables in Authentic enable the Authentic View user to edit variables and consequently to control the display of content in Authentic View.
- Parameters for Design Fragments allow design fragments to be used with different parameter values for each usage instance. A different parameter value can be assigned to a design fragment at each location where the design fragment is used in the SPS.
- First and last page headers and footers can be specified separately. This is in addition to different headers and footer for odd-numbered and even-numbered pages and for different document sections.
- Layout Boxes and Lines can be moved and resized using the keyboard.
- Templates around table rows or columns can be added or deleted without modifying the content or formatting of the row or column involved.
- Text in tables and in layout boxes can be rotated clockwise or anti-clockwise so that it is vertical.
- Filters can be set on global templates where these are used in the main template.
- Design fragments can be dragged from the Schema Tree, in addition to being available in the Design Tree.

Chapter 4

Introduction

4 Introduction

This section introduces you to **Altova® StyleVision® 2010**. It consists of the following sub-sections:

- What Is an SPS?, which explains the role of an SPS in an XML environment and with respect to StyleVision.
- Product Features, which provides an overview of the key features of StyleVision.
- Terminology, which lists terms used in the StyleVision user interface and in this documentation.
- Setting up StyleVision, which describes how StyleVision is to be correctly set up.

4.1 What Is an SPS?

A StyleVision Power Stylesheet (or SPS) is an extended XSLT stylesheet which is used:

1. to control the display and entry of data in the Authentic View of XML documents and databases (DBs); and
2. to specify the output design of an XML document transformation.

An SPS is saved with the file extension `.sps`.

Design of the SPS
An SPS is created graphically in StyleVision. It is based on a schema (DTD or XML Schema); if the SPS is to be used with a DB, it is based on an XML Schema generated automatically by StyleVision from the DB structure. The design of the SPS is flexible. It can contain dynamic and static content. The dynamic content is the data in one or more XML documents or DBs. The static content is content entered directly in the SPS. Dynamic content can be included in the design either as straight text or within components such as input fields, combo boxes, and tables. Additionally, dynamic content can be manipulated (using Auto-Calculations) and can be displayed if certain conditions in the source document are fulfilled. Different pieces of content can be placed at various and multiple locations in the SPS. Also, the SPS can contain various other components, such as images, hyperlinks, and JavaScript functions. Each component of the SPS can then be formatted for presentation as required.

The SPS and Authentic View
When a finished SPS is associated with an XML document or DB, that XML document or DB can be edited in Authentic View. Authentic View is an ideal solution for enabling the distributed and graphical editing of an XML document or DB. Multiple users can edit an XML document or DB in the graphical user interface presented by Authentic View. In StyleVision, as you design an SPS, you can preview and test the SPS (in the Authentic View tab for that SPS). For a detailed description of how SPSs work with Authentic View, see SPS and Authentic View.

The SPS and XSLT stylesheets
After you have completed designing the SPS, you can generate XSLT stylesheets based on the design you have created. StyleVision supports both XSLT 1.0 and XSLT 2.0, and from a single SPS, you can generate XSLT stylesheets for HTML, RTF, XSL-FO, and Word 2007-and-higher output (*XSL-FO and Word 2007-and-higher in Enterprise edition only; RTF in Enterprise and Professional Editions; in Standard Edition only HTML output is supported*). The generated XSLT stylesheets can be used in external transformations to transform XML documents based on the same schema as the SPS from which the XSLT stylesheet was generated. For more information about procedures used with XSLT stylesheets, see the section Generated Files.

The SPS and output
You can also use StyleVision to directly generate output (*HTML, RTF, XSL-FO, and PDF in Enterprise Edition; HTML in Professional and Standard Editions*). The tabs for Output Views display the output for the active SPS document directly in the StyleVision GUI. The required output can also be generated to file: (i) from within the GUI via the **File | Save Generated Files** command; or (ii) by invoking StyleVision via the command line.

Authentic View in Altova Products

Authentic View is a graphical XML document editor available in the following Altova products:

* Altova XMLSpy
* Altova Authentic Desktop
* Altova Authentic Browser
* Altova StyleVision

4.2 Product Features

The main product features of StyleVision are listed below in two groups:

- General product features, which are high-level features
- SPS design features, which are features related to the design of the SPS

General product features

Given below is a list of the main high-level features of StyleVision.

- Enterprise and Professional editions are each available as separate 64-bit and 32-bit applications.
  - The SPS can use multiple schemas and/or a single database (DB) source, thus enabling the use of multiple XML document sources together with a DB source.
  - Multiple SPS designs can be open simultaneously, with one being active at any given time. Each SPS design is shown in a separate tab.
  - Template filters allow you to customize the display of the design document. With this feature you can disable the display of templates that are not currently being edited, thus increasing editing efficiency.
  - Hide Markup in Design View: Markup tags in Design View can be hidden and collapsed, thus freeing up space in Design View.
  - While designing the SPS, Authentic View, output views and stylesheets can be displayed by clicking the respective tabs. This enables you to quickly preview the output and the XSLT code, and test Authentic View features.
  - When an SPS is associated with an XML source document or source DB, the source document can be edited directly in the Authentic View of StyleVision.
  - DB reports can either be viewed in StyleVision or saved as HTML, RTF, PDF, and Word 2007-and-higher files.
  - IBM DB2 databases, which contain XML columns, are supported.
  - A DB can be queried directly from StyleVision.
  - Both XSLT versions (1.0 and 2.0) are supported. XSLT 2.0 provides powerful data access and manipulation features.
  - XBRL taxonomies can be loaded and an SPS can be built based on the taxonomy.
  - Altova Global Resources can be used to locate source files such as schema, XML, and CSS. The Global Resources mechanism enables faster and better development and testing by allowing developers to quickly change source data and to use the functionality of other Altova applications from within StyleVision.
  - In the Enterprise and Professional Editions, multiple output formats (HTML, RTF, PDF, and Word 2007-and-higher) are generated from a single SPS design.
  - Conditions can be set on SPS components to process them differently for different outputs. With this level of granularity, different outputs can be flexibly structured to take in the requirements of that particular output.
  - Both XSLT files and output files can be generated and saved, either directly from within the GUI or by calling StyleVision from the command line.
  - HTML documents can be converted to XML.
  - StyleVision functionality can be called from the command line.
  - StyleVision functionality can be integrated in external applications, and StyleVision an integrated in Visual Studio and Eclipse.

SPS design features

Given below is a list of the main StyleVision features specific to designing the SPS.

- The SPS can contain static text, which you enter in the SPS, and dynamic text, which is selected from the source document/s.

- Dynamic content is inserted in the design by dragging-and-dropping nodes, including specific datatypes, from the schema sources. Dynamic design Elements (paragraphs, lists, images, etc) can also be inserted first, and an XML node from the schema tree assigned to the Design Element afterwards.
- Dynamic content can be inserted as text, or in the form of a data-entry device (such as an input field or combo box). When inserted as a data-entry device such as a combo box, additional possibilities are available. For example, the value of the node can be selected (by the Authentic View user) from a list of enumerations.
- An XBRL Table Wizard can automatically generate a dynamic SPS table according to your input.
- The structure of the design is specified and controlled in a single main template. This structure can be modified by optional templates for individual elements—known as global templates because they can be applied globally for that element.
- Global templates can also be created for individual datatypes, thus enabling processing to be handled also on the basis of types.
- User-Defined Templates: A template can be generated for a sequence of items by an XPath expression you specify. These items may be atomic values or nodes. An XPath expression enables the selection of nodes to be more specific, allowing conditions and filters to be used for the selection.
- User-Defined Elements: This feature is intended to enable presentation language elements (such as HTML, XSLT, and XSL-FO) to be freely inserted at any location in the design.
- User-Defined XML Text Blocks: XML Text blocks can be freely inserted at any location in the design, and these blocks will be created at that location in the generated XSLT stylesheet.
- Design Fragments enable the modularization and re-use of templates within an SPS, and also across multiple SPSs (*see modular SPSs*), in a manner similar to the way functions are used.
- SPS modules can be added to other SPS modules, thus making objects defined in one SPS module available to other modules. This enables re-use of module objects across multiple SPSs and makes maintenance easier.
- XSLT Templates: XSLT files can be imported into the generated stylesheets. If a node in the XML instance document is matched to a template in the imported XSLT file and no other template takes precedence over the imported template, then the imported template will be used. Additionally, named templates in the imported XSLT file can be called from within the design.
- Document Sections: Documents can be divided into sections, with each section having its own properties, such as page layout properties. This enables different parts of a document to be presented differently.
- Layout Containers: A Layout Container is a block in which Design Elements can be laid out and absolutely positioned within the block.
- Blueprints: Within a Layout Container an image of a form can be used as an underlay blueprint for the design. With the help of a blueprint, an existing design can be reproduced accurately.
- A common feature of XML documents is the repeating data structure. For example, an office department typically has several employees. The data for each employee would be stored in a data structure which is repeated for each employee. In the SPS, the processing for each such data structure is defined once and applied to each relevant node in turn (the employee node in our example).
- Multiple tables of contents can be inserted in XSLT 2.0 SPSs.
- Repeating data structures can also be inserted as dynamic tables. This provides looping in a structured, table format, with each loop through the data structure producing a row (or, if required, a column) of the table.
- A repeating element can be sorted on one or more sort-keys you select, and the sorted element set is sent to the output (HTML, RTF, PDF, and Word 2007-and-higher).
- Variables: A variable can now be declared on a template and take a value that is

specified with an XPath expression. Previously, the value of a variable was limited to the selection of the node on which it was created. Variables in the 2010 version allow any XPath expression to be specified as the value of the variable.

- Nodes can be grouped on the basis of common data content (for example, the common value of an attribute value) and their positions.
- The conditional templates feature enables one of a set of templates to be processed according to what conditions in the XML document or system environment are fulfilled. This enables processing that is conditional on information contained in the source document or that cannot be known to the SPS document creator at the time of creation (for example, the date of processing). The available conditions are those that can be tested using XPath 1.0 or XPath 2.0 expressions.
- Auto-Calculations enable you to manipulate data from the source document/s and to display the result. This is useful, when you wish to perform calculations on numbers (for example, sum the prices in an invoice), manipulate strings (for example, change hyphens to slashes), generate content, etc. The available manipulations are those that can be effected using XPath 1.0 or XPath 2.0 expressions. Native Java and .NET functions can be used in the XPath expressions of Auto-Calculations.
- When data is edited in Authentic View, the result of Auto-Calculations can also be passed to a node in the source document. This procedure is referred to as updating the XML node (with the value of the Auto-Calculation).
- Additional validation enables individual XML document nodes to be validated (additionally to schema validation) against an XPath expression defined for that node. In this way, Authentic View users can be alerted when the data they enter is invalid; a customized error message for the node can indicate the problem.
- Images can be inserted in the design. The URI for the image can be static (entered in the SPS), or dynamic (taken from a node in the source document), or a combination of both static and dynamic parts.
- Two types of lists can be created: static and dynamic. In a static list, each list item is defined in the SPS. In a dynamic list, a node is created as a list item; the values of all instances of that node are created as the items of the list.
- Static and dynamic links can be inserted in the design. The target URI can be static (entered in the SPS), or dynamic (taken from a node in the source document), or a combination of both static and dynamic parts.
- Static bookmarks can be inserted. These serve as anchors that can be linked to with a hyperlink.
- Parameters can be declared globally for the entire SPS. A parameter is declared with a name and a string value, and can be used in XPath expressions in the SPS. The parameter value you declare is the default value and can be overridden by a value passed from the command line.
- With the Input Formatting feature, the contents of numeric XML Schema datatype nodes can be formatted as required for Authentic View display and, in the case of some formats, optionally for output display. Input Formatting can also be used to format the result of an Auto-Calculation.
- JavaScript functions can be used in the SPS to provide user-defined functionality for Authentic View and HTML output.
- A number of predefined HTML formats are available via the GUI and can be applied to individual SPS components.
- A large number of CSS text formatting and layout properties can be applied to individual SPS components via the Styles sidebar.
- Additionally, CSS styles can be defined for HTML selectors at the global level of an SPS and in external CSS stylesheets. These style rules will be applied to Authentic View and HTML output, thus providing considerable formatting and layout flexibility.
- Styles can also be assigned using XPath expressions. This enables style property values to be selected from XML documents and to set property values conditionally.
- For paged output (typically RTF, PDF, and Word 2007-and-higher), a number of page layout options, such as orientation, margins, page-numbering, and headers and footers,

can be specified in the SPS.

4.3 Terminology

This section lists terms used in the StyleVision GUI and in this documentation. Terms are organized into the groups listed below, and within each group, they are listed alphabetically.

Note: If a link below points to a term already in the viewport, the screen display will not change when the link is clicked; in such cases, look for the target term in the current display.

Altova product-related terms

A list of terms that relate to Altova products.

Authentic View An XML document editor view available in the following Altova products: Altova XMLSpy; Altova StyleVision; Altova Authentic Desktop; Altova Authentic Browser. For more details about Authentic View and Altova products, visit the Altova website.

SPS The abbreviated form of StyleVision Power Stylesheet, it is used throughout this documentation to refer to the design document created in StyleVision and saved as a file with the `.sps` extension. For a detailed description, see What Is an SPS?.

Global resource An alias for a set of files, a set of folders, or a set of databases. Each alias has a set of configurations and each configuration is mapped to a resource. In StyleVision, when a global resource is used, the resource can be changed by changing the active configuration in StyleVision.

General XML terms

Definitions of certain XML terms as used in this documentation.

schema A schema *(with lowercase 's')* refers to any type of schema. Schemas supported by StyleVision are XML Schema (*capitalized*) and DTD.

XML Schema In this documentation, XML Schema (*capitalized*) is used to refer to schemas that are compliant with the W3C's XML Schema specification. XML Schema is considered to be a subset of all schemas (*lowercased*).

URI and URL In this documentation, the more general URI is used exclusively—even when the identifier has only a "locator" aspect, and even for identifiers that use the `http` scheme.

XSLT and XPath terms

There have been changes in terminology from XSLT 1.0 and XPath 1.0 to XSLT 2.0 and XPath 2.0. For example, what was the root node in XPath 1.0 is the document node in XPath 2.0. In this documentation, we use XSLT 2.0 and XPath 2.0 terminology.

absolute XPath A path expression that starts at the root node of the tree containing the context node. In StyleVision, when entering path expressions in dialogs, the expression can be entered as an absolute path if you check the Absolute XPath check box in the dialog. If this check box is unchecked, the path is relative to the context node.

context item / context node The context item is the item (node or string value) relative to which an expression is evaluated. A context node is a context item that is a node. The context item can change within an expression, for example, with each location step, or within a filter expression (predicate).

current node The current node is the node being currently processed. The current node is the same as the context node in expressions that do not have sub-expressions. But where there are sub-expressions, the context node may change. Note that the `current()` function is an XSLT function, not an XPath function, and cannot therefore be used in StyleVision's Auto-Calculations and Conditional Templates. To select the current node in an expression use the `for` expression of XPath 2.0.

document element In a well-formed XML document, the outermost element is known as the document element. It is a child of the document node, and, in a well-formed XML document, there is only one document element. In the GUI the document element is referred to as the root element.

document node The document node represents and contains the entire document. It is the root node of the tree representation of the document, and it is represented in an XPath expression as: `'/'`. In the Schema Tree window of StyleVision, it is represented by the legend: `'/ Root elements'`.

StyleVision-specific terms

Terms that refer to StyleVision mechanisms, concepts, and components.

Blueprint image A blueprint image is one that is used as the background image of a layout container, and would typically be the scan of a form. The SPS design can be modelled on the blueprint image, thus recreating the form design.

dynamic items Items that originate in XML data sources. Dynamic items may be text, tables, and lists; also images and hyperlinks (when the URIs are dynamic).

global element An element in the Global Elements list in the Schema Tree window. In an XML Schema, all elements defined as global elements will be listed in the Global Elements list. In a DTD, all elements are global elements and are listed in the Global Elements list. Global templates can be defined only for global elements.

global template A global template may be defined for a global element. Once defined, a global template can be used for that element wherever that element occurs in the document. Alternatively to the global template, processing for a global element may be defined in a local template.

Layout container	A Layout Container is a design block in which design elements can be laid out and absolutely positioned. If a design is to be based on a form, it can be created as a Layout Container, so that design elements of the form can be absolutely positioned. Alternatively, a design can be free-flowing and have layout containers placed within the flow of the document.
local template	A local template is the template that defines how an element (global or non-global) is processed within the main template. The local template applies to that particular occurrence of the element in the main template. Instead of the local template, a global template can be applied to a given occurrence of an element in the main template.
main schema	One of the assigned schema sources is designated the main schema; the document node of the Working XML File associated with the main schema is used as the starting point for the main template.
main template	The main entry-point template. In StyleVision, this template matches the document element and is the first to be evaluated by the XSLT processor. In the Schema Tree window, it is listed as the child of the document node. The main template defines the basic output document structure and defines how the input document/s are to be processed. It can contain local templates and can reference global templates.
output	The output produced by processing an XML document with an XSLT stylesheet. Output files that can be generated by StyleVision would be HTML, RTF, PDF, and Word 2007-and-higher format. Authentic View is not considered an output, and is referred to separately as Authentic View. XSLT stylesheets generated by StyleVision are also not considered output and are referred to separately as XSLT stylesheets.
static items	Items that originate in the SPS and not in XML data sources. Static items may be text, tables, and lists; also images, hyperlinks, and bookmarks (when the URIs are static).
SPS component	An SPS component can be: (i) a schema node (for example, an element node); (ii) a static SPS component such as an Auto-Calculation or a text string; or (iii) a predefined format (represented in the SPS by its start and end tags).
template	Defined loosely as a set of instructions for processing a node or group of nodes.
Template XML File	A Template XML File is assigned to an SPS in StyleVision (Enterprise and Professional editions). It is an XML file that provides the starting data of a new XML document created with a given SPS when that SPS is opened in Authentic View. The Template XML File must be conformant with the schema on which the SPS is based.
User-defined element	An element that is neither a node in the schema tree nor a predefined element or a design element, but one that is specified by the user. An element can be specified with attributes.
User-defined template	A template that is created for a sequence specified in an XPath expression.
User-defined XML text blocks	XML Text blocks can be freely inserted at any location in the design

Working XML/XBRL File	A Working XML/XBRL File is an XML data file that is assigned to an SPS in StyleVision in order to preview the Authentic View and output of the XML document in StyleVision. Without a Working XML/XBRL File, the SPS in StyleVision will not have any dynamic XML data to process. If the SPS is based on a schema that has more than one global element, there can be ambiguity about which global element is the document element. Assigning a Working XML/XBRL File resolves such ambiguity (because a valid XML document will, by definition, have only one document element). Note that XBRL functionality is available only in the Enterprise edition.
XML document	XML document is used in two senses: (i) to refer to a specific XML document; (ii) to refer to any XML data source, including DB sources (from which XML data documents are generated for use with an SPS). Which sense is intended should be clear from the context.

4.4 Setting up StyleVision

Altova StyleVision runs on Windows XP, Windows Vista, and Windows 7. After downloading StyleVision from the Altova website, double-click the executable (`.exe`) file to run the setup program. The setup program will install StyleVision at the desired location. The Altova XSLT Engines (1.0 and 2.0) are built into StyleVision and are used for all internal transformations. You, therefore, do not need to install an XSLT Engine additionally to your StyleVision installation.

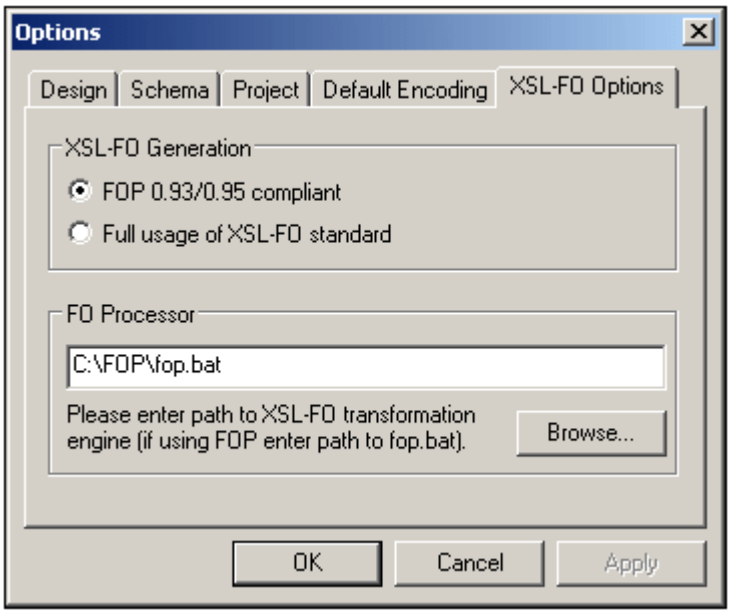
You will, however, need to have the following components installed:

- Internet Explorer 5.5 or later, for Authentic View and HTML Preview. Internet Explorer 6.0 and later has better XML support and is recommended.
- Microsoft Word 2000 or later, for RTF Preview. Microsoft Word 2003 or later is recommended.
- An FO processor of your choice, for PDF Preview. We recommend FOP 0.95, which is the Apache XML Project's FO processor. If you notice that there are memory problems with FOP 0.95, we recommend that you use FOP 0.93. Installers for both FOP 0.95 and 0.93 are available in the Downloads section of the Altova website. For the XSLT transformation to XSL-FO, StyleVision offers an option for filtering out XSL-FO properties that are not supported by FOP 0.93/0.95. Using this filter (*see screenshot below*) would be useful only when the FOP processor is used. For some FO processors (including FOP), additional components, such as the Java Runtime Environment, may be required.
- Adobe Acrobat Reader, for PDF Preview (Acrobat Reader 6.0 or later is recommended).
- Microsoft Word 2007-and-higher or Microsoft's Word 2007-and-higher Viewer, for previewing Word 2007-and-higher output in the Word 2007-and-higher Preview tab. Microsoft Word 2003 with compatibilty pack can be used for previewing Word 2007-and-higher output, but is sometimes unable to render Word 2007-and-higher files properly.

Note: In this documentation, we use the abbreviation **Word 2007+** to refer to Microsoft Word 2007 or higher versions of this program.

Note: If there is a problem with an embedded preview, StyleVision will attempt to open the preview document in an external application (usually MS Word or Adobe Reader). An error message about the embedded preview will appear in StyleVision. If the preview document is opened in an external application, you will need to close the external application before regenerating the temporary output document, otherwise you will get an error message saying the file is being used by another process. You should also close the external application before closing the SPS design, otherwise StyleVision will not be able to close the temporary output document due to the file lock placed on the document by the external application.

Note on FO processors
StyleVision can pass the XSL-FO document (generated by transforming the source document) to an FO processor of your choice. In the FO Processor input field of the Options dialog (**Tools | Options | XSL-FO**) (*screenshot below*), enter the location of the file that starts the FO processor. The FO processor you select is used to generate the PDF Preview as well as the PDF files created via the **File | Save Generated Files** command.



The FOP processor of the Apache XML Project (versions 0.95 and 0.93) are available free of charge as installer packages at the Components Download page on the Altova website. This package downloads, installs, and configures FOP for use within your product interface. However, you still have to select the FOP executable (`fop.bat`) in the Options dialog. Alternatively, you could download FOP from the Apache Website. Note that FOP requires a Java Runtime Environment, downloadable free of charge from Sun's Developer Network Site.

After you have installed the FO processor, you should set the XSL-FO compliance level in the Options dialog (**Tools | Options | XSL-FO**).

Note: Since conformance levels between any two FO processors can differ widely, and since the XSL-FO specification may be interpreted differently from processor to processor, the PDF produced by different processors from a single FO file could be different.

Note: When a large document is processed by FOP (Apache's FO processor), data in memory is discarded each time a new document section is processed. If you wish to reduce memory use, therefore, it is best to structure your document into multiple document sections.

Command line utility: StyleVisionBatch
A command line utility, `StyleVisionBatch.exe`, is included in the installation. This utility can be used to call the file-generation functionality of StyleVision from the command line. StyleVisionBatch is located in the StyleVision application folder.

AltovaXML
AltovaXML can be used to transform XML to the required output format.

4.5 Authentic View in Altova Products

Authentic View is a graphical XML document editor available in the following Altova products:

* Altova XMLSpy
* Altova Authentic Desktop
* Altova Authentic Browser
* Altova StyleVision

Enterprise editions of Authentic View applications
The following SPS functionality is enabled **only in the Enterprise editions** of Altova's Authentic View applications:

- Absolute positioning (layout containers)
- Java and .Net function calls from XPath expressions in Auto-Calculations
- Variables
- User-Defined Elements and XML Text Blocks

If any of this functionality is present in an SPS that is opened in a non-Enterprise edition of an Authentic View application (say, XMLSpy Professional Edition), then the application displays a message saying that this functionality is available only in the Enterprise edition of the application.

Note: StyleVision Enterprise Edition supports the Enterprise Edition of Authentic View, whereas StyleVision Professional Edition supports the Community Edition of Authentic View.

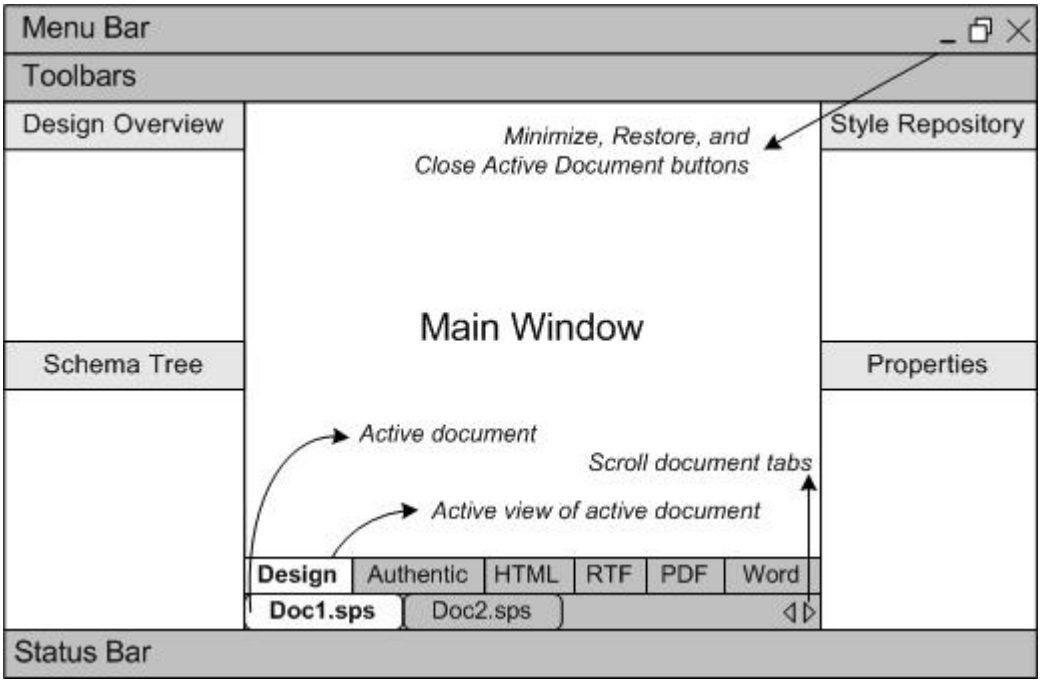
Chapter 5

User Interface

5 User Interface

The StyleVision GUI (*illustration below*) consists of the following parts:

- A **menu bar**. Click on a menu to display the items in that menu. All menus and their items are described in the User Reference section. The menu bar also contains the Minimize, Restore, and Close Active Document buttons.
- A **toolbar area**. The various toolbars and the command shortcuts in each toolbar are described in the User Reference section.
- A tabbed **Main Window**, which displays one or more open SPS documents at a time. In this window, you can edit the design of the SPS, edit the content of Authentic View, and preview the XSLT stylesheets and output.
- The **Design sidebars**—the Design Overview, Schema Tree, Design Tree, Style Repository, Styles, Properties, and Project windows—which can be docked within the application GUI or made to float on the screen.
- A **status bar**, which displays application status information. If you are using the 64-bit version of StyleVision, this is indicated in the status bar with the suffix (x64) after the application name. There is no suffix for the 32-bit version.

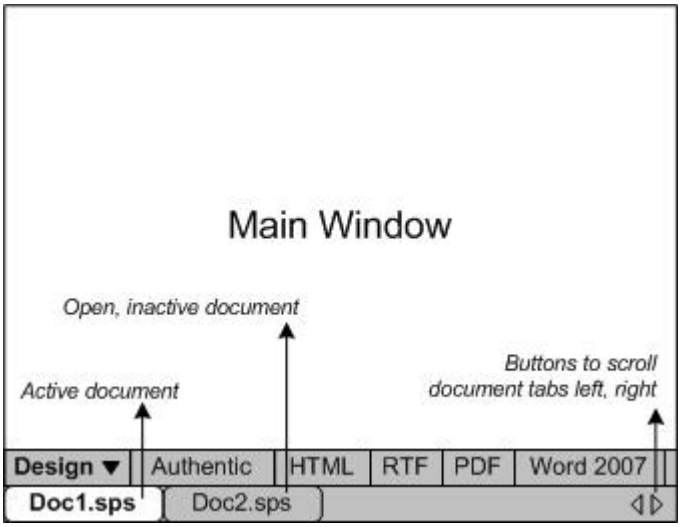


The Main Window and Design sidebars are described in more detail in the sub-sections of this section.

Note: The menu bar and toolbars can be moved by dragging their handles to the required location.

5.1 Main Window

The **Main Window** (*illustration below*) is where the SPS design, Authentic View, XSLT stylesheets, and output previews are displayed.



SPS documents in the Main Window

- Multiple SPS documents can be open in StyleVision, though only one can be active at any time. The names of all open documents are shown in tabs at the bottom of the Main Window, with the tab of the active document being highlighted.
- To make an open document active, click its tab. Alternatively, use the options in the Windows menu.
- If so many documents are open that all document tabs are not visible in the document-tab bar, then click the appropriate scroll button (at the right of the document-tab bar; *see illustration above*) to scroll the tabs into view.
- To close the active document, click the **Close Document** button in the menu bar at the top right of the application window (or select **File | Close**).

Document views

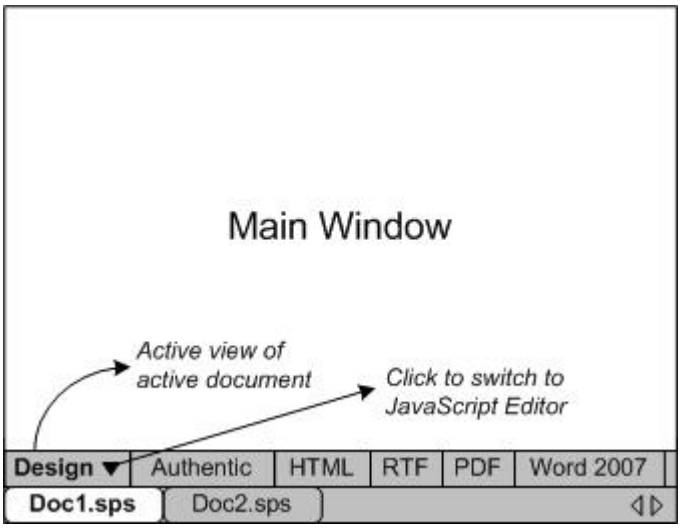
A document is displayed in the following views, one of which can be active at a time:

- Design View, in which you design the SPS and edit JavaScript functions for use in that SPS. The view can be toggled between the design document and the JavaScript Editor by clicking the dropdown menu arrow and selecting Design or JavaScript, as required.
- Authentic View, which enables you to immediately see the Authentic View of an XML document (the Working XML File). The SPS is dynamically applied to the Working XML File, thus enabling you to try out Authentic View.
- Output Views (HTML, RTF, PDF, and Word 2007+ output). These views are a preview of the actual output format and of the XSLT stylesheet used to generate that output. The view can be toggled between the output preview and the XSLT stylesheet by clicking the dropdown menu arrow and making the appropriate selection.

Each of the views listed above is available as a tab at the bottom of the Main Window in the Views Bar. To select a view, click on its tab. The tab of the selected view is highlighted.

Design View

The **Design View** (*illustration below*) is the view in which the SPS is designed. In Design View, you create the design of the output document by (i) inserting content (using the sidebars, the keyboard, and the various content creation and editing features provided in the menus and toolbars); and (ii) formatting the content using the various formatting features provided in the sidebars and menus. These aspects of the Design View are explained in more detail below.



Design View can also be switched to a JavaScript Editor, in which you can create and edit JavaScript functions which then become available in the GUI for use in the SPS. To switch to the JavaScript Editor, click the dropdown button in the Design tab (*see illustration*) and select JavaScript from the dropdown menu. To switch back to Design View, click the dropdown button in the JavaScript tab and select Design from the dropdown menu.

In Design View, the SPS can have several templates: the main template, global templates, page layout templates, and Design Fragments. You can control which of these template types is displayed in Design View by using Template Display Filters, which are available as toolbar icons . These display filters will help you optimize and switch between different displays of your SPS.

Displaying markup tags

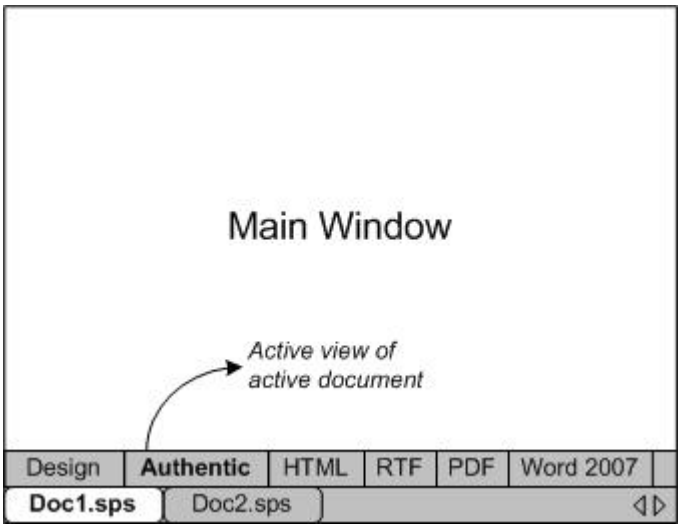
The display of markup tags in Design View can be controlled via the markup icons (*below*).

The icons shown above are toggles. They are, from left: (i) Show small design markups (tags without names); and (ii) Show large design markups (tags with names). When small markup is switched on, the path to a node is displayed when you mouseover that node.

Authentic View

In the **Authentic View** tab of the Main Window, you can view and edit the Working XML File in its Authentic View. This view enables you (i) to see how your Authentic XML document will look, and (ii) to test the Authentic View created by the SPS. This is particularly useful if you wish to test the dynamic features of Authentic View. For example, you could test how Authentic View behaves when you:

- Add new elements and attributes
- Add new paragraphs or table rows
- Change values that affect conditional templates



Authentic View and the Working XML File

In order for Authentic View to be displayed, a Working XML File must be assigned to the active SPS document This Working XML File must be valid according to the schema on which the SPS is based.

StyleVision creates a temporary XML file that is based on the Working XML File, and it is this temporary file that is displayed in the Authentic View tab of the Main Window. Modifications that you make in Authentic View will modify the temporary XML file. The Working XML File itself will not be modified till you explicitly save the modifications (with the menu command **File | Save Authentic XML Data**).

If no Working XML File is assigned, you will be prompted to assign a Working XML File when you click the Authentic View tab.

Authentic View limitations

The Authentic View in the Main Window is similar to the full-fledged Authentic View available in XMLSpy and Authentic Desktop except in the following major respects:

- Authentic View sidebars are not available in the GUI. To insert or append nodes, you must right-click and use the context menus.
- XML tables are not available for insertion.
- Text state icons are not available.

To test these features, you should use the full-fledged Authentic View in XMLSpy or Authentic Desktop. A full description of how to use Authentic View is given in the section Editing in Authentic View. For additional information, please see the Authentic View tutorial in the XMLSpy or Authentic Desktop user manual.

Enterprise editions of Authentic View applications
The following SPS functionality is enabled **only in the Enterprise editions** of Altova's Authentic View applications:

- Absolute positioning (layout containers)
- Java and .Net function calls from XPath expressions in Auto-Calculations
- Variables
- User-Defined Elements and XML Text Blocks

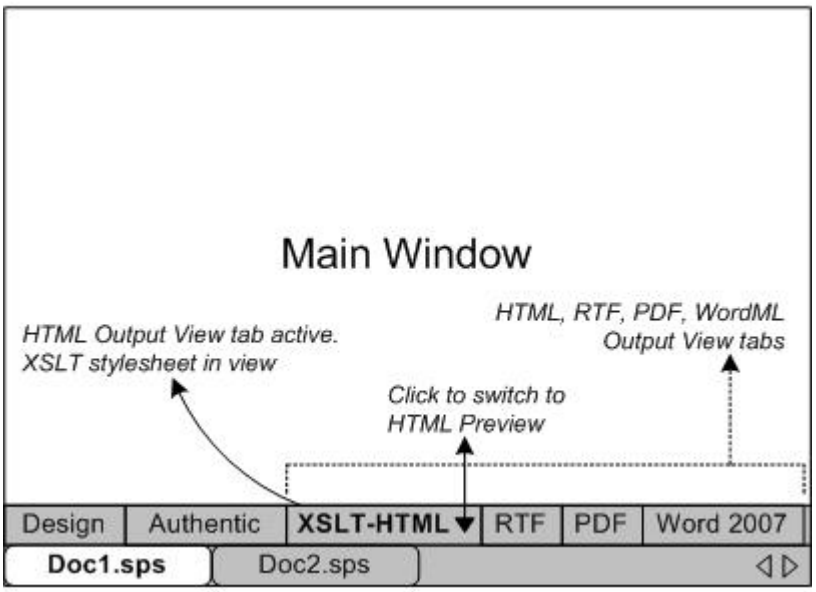
If any of this functionality is present in an SPS that is opened in a non-Enterprise edition of an Authentic View application (say, XMLSpy Professional Edition), then the application displays a message saying that this functionality is available only in the Enterprise edition of the application.

Note: StyleVision Enterprise Edition supports the Enterprise Edition of Authentic View, whereas StyleVision Professional Edition supports the Community Edition of Authentic View.

Output Views

There are four **Output View** tabs, one each for HTML, RTF, PDF, and Word 2007+ outputs. Each output view tab (*illustration below*) displays: (i) the XSLT stylesheet for that output; and (ii) a preview of the output produced by transforming the Working XML File with the XSLT stylesheet. In the PDF Preview tab there are two additional tab options: (i) XSL-FO, which displays the FO document produced by processing the XML document with the XSLT-FO (XSLT stylesheet); and (ii) FO Result, which displays the message output of the FO Processor when processing the FO document for PDF output.

In an Output View tab, the view can be switched between the XSLT stylesheet and the output preview by clicking the dropdown button in the Output View tab and selecting the XSLT option or the output preview option as required.



XSLT view
The XSLT view displays the XSLT stylesheet generated for that output format from the currently active SPS. The stylesheet is generated afresh each time the XSLT view is selected.

A stylesheet in an Output View tab is displayed with line-numbering and expandable/collapsible elements; click the + and – icons in the left margin to expand/collapse elements. The stylesheet in XSLT view cannot be edited, but can be searched (select **Edit | Find**) and text from it can be copied to the clipboard (with **Edit | Copy**).

Note: The XSLT stylesheets generated from the SPS can be separately generated and saved using the **File | Save Generated Files** command.

Output preview
The Output preview displays the output produced by transforming the Working XML File with the XSLT stylesheet for that output format. The output is generated afresh each time the Output preview tab is clicked. Note that it is the saved version of the Working XML File that is transformed—not the temporary version that is edited with Authentic View. This means that any modifications made in Authentic View will be reflected in the Output preview only after these modifications have been saved to the Working XML File (**File | Save Authentic XML Data**).

If no Working XML File is assigned when the Output preview is selected in the Output View tab, you will be prompted to assign a Working XML File. For DB-based SPSs, there is no need to assign a Working XML File since a temporary non-editable XML file is automatically generated when the DB is loaded and this XML file is used as the Working XML File.

Note: The output files generated from the SPS can be separately generated and saved using the **File | Save Generated Files** command.

5.2 Sidebars

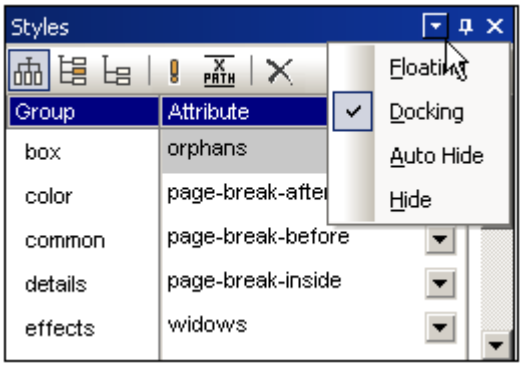
The **Sidebars** (also called sidebar windows or windows) are GUI components that help you design the SPS and provide you with information related to the active view. Each sidebar (*listed below*) is described in a sub-section of this section.

- Design Overview
- Schema Tree
- Design Tree
- Style Repository
- Styles
- Properties
- Project

Layout of the views
The layout of a view refers to what sidebars are available in that view and how these sidebars are positioned within the GUI. Layouts can be customized for separate view categories, and the customization consists of two parts: (i) switching or or off the display of individual sidebars in a view (via the **View** menu or by right-clicking the sidebar's title bar and selecting **Hide**); (ii) positioning the sidebar within the GUI as required. The layout defined in this way for a view category is retained for that particular view category till changed. So, for example, if in Design View, all the sidebars except the Messages sidebar are switched on, then this layout is retained for Design View over multiple view changes, till the Design View layout is changed. Note that the layout defined for any output preview (HTML, RTF, PDF, and Word 2007+ Previews) applies to all output previews. The view categories are: (i) no document open; (ii) Design View; (iii) Output Views; and (iv) Authentic View.

Docking and floating the Sidebar windows
Sidebar windows can be docked in the StyleVision GUI or can be made to float on your screen. To dock a window, drag the window by its title bar and drop it on any one of the four inner or four outer arrowheads that appear when you start to drag. The inner arrowheads dock the dragged window relative to the window in which the inner arrowheads appear. The four outer arrowheads dock the dragged window at each of the four edges of the interface window. To make a window float, (i) double-click the title bar; or (ii) drag the title bar and drop it anywhere on the screen except on the arrowheads that appear when you start to drag.

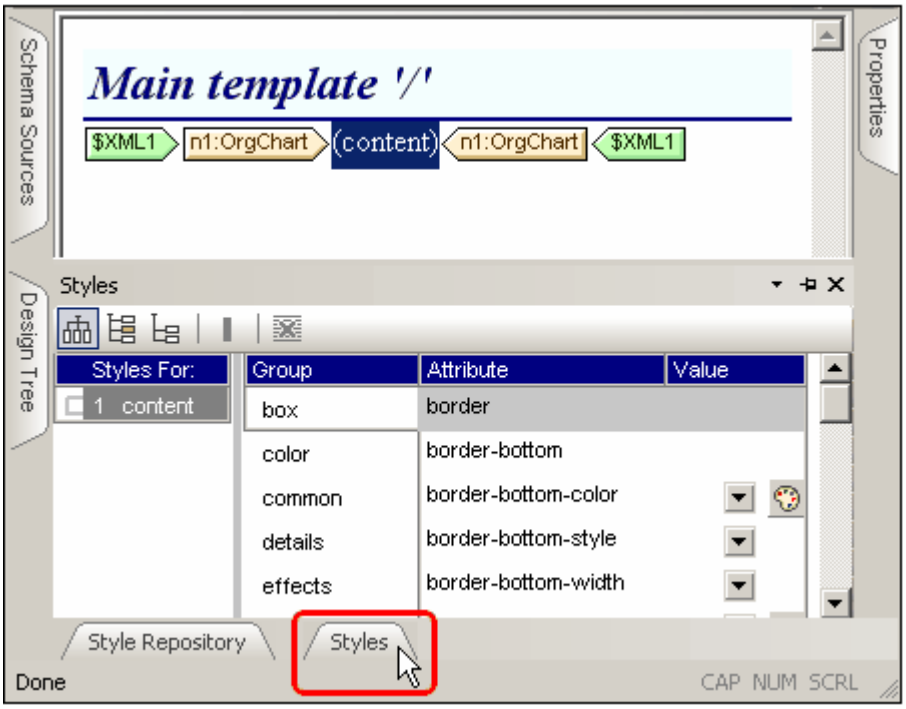
Alternatively, you can also use the following mechanisms. To float a docked window, click the **Menu** button at the top-right of a docked window (*see screenshot below*) and select Floating. This menu can also be accessed by right-clicking the title bar of the docked window.



To dock a floating window, right-click the title bar of the floating window and select Docking from the menu that appears; the window will be docked in the position in which it was last docked.

Auto-Hiding Design sidebar windows
A docked window can be auto-hidden. When a sidebar window is auto-hidden, it is minimized to a tab at the edge of the GUI. In the screenshot below, all five sidebars have been auto-hidden: two at the left edge of the GUI, two at the bottom edge, and one at the right edge.

Placing the cursor over the tab causes that window to roll out into the GUI and over the Main Window. In the screenshot below, placing the cursor over the Styles tab causes the Styles sidebar to roll out into the Main Window.



Moving the cursor out of the rolled-out window and from over its tab causes the window to roll back into the tab at the edge of the GUI.

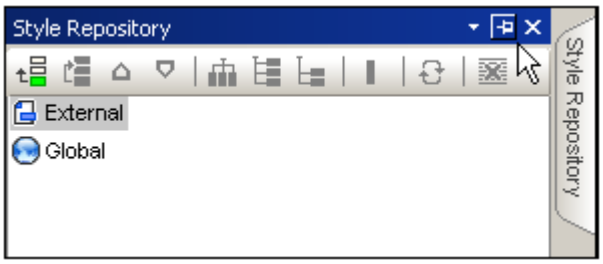
The Auto-Hide feature is useful if you wish to move seldom-used sidebars out of the GUI while at the same time allowing you easy access to them should you need them. This enables you to

create more screen space for the Main Window while still allowing easy access to Design sidebar windows.

To auto-hide a window, in a docked window, click the Auto Hide button (the drawing pin icon) at the top right of the window (*screenshot below*). Alternatively, in the Menu, select Auto Hide; (to display the Menu, right-click the title bar of the window or click the Menu button in the title bar of the docked window).

The window will be auto-hidden.

To switch the Auto-Hide feature for a particular window off, place the cursor over the tab so that the window rolls out, and then click the Auto Hide button (*screenshot below*). Alternatively, in the Menu, deselect Auto Hide; (to display the Menu, right-click the title bar of the window or click the Menu button in the title bar of the window).



Note: When the Auto-Hide feature of a sidebar window is off, the drawing pin icon of that window points downwards; when the feature is on, the drawing pin icon points left.

Hiding (closing) sidebar windows

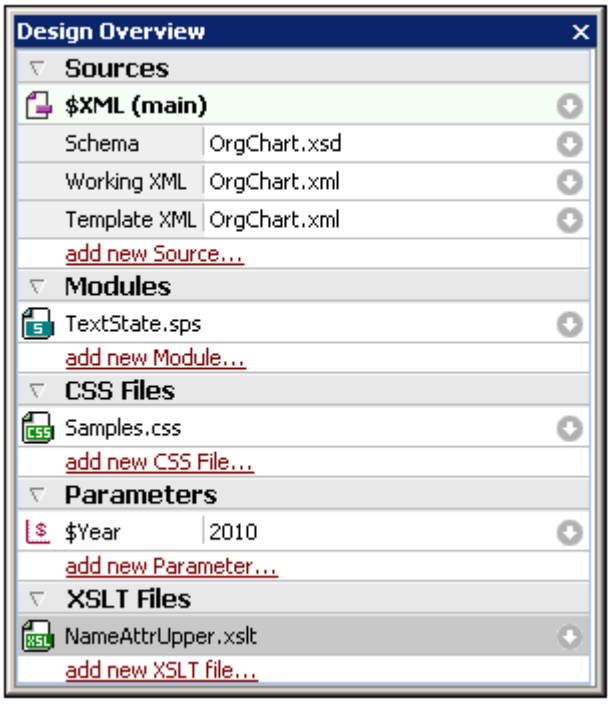
When a sidebar window is hidden it is no longer visible in the GUI, in either its maximized form (docked or floating) or in its minimized form (as a tab at an edge of the GUI, which is done using the Auto-Hide feature).

To hide a window, click the **Close** button at the top right of a docked or floating window (*screenshot below*). Alternatively, in the Menu, select **Hide**; (to display the Menu, right-click the title bar of the window or click the Menu button in the title bar of the window).

To make a hidden (or closed) window visible again, select the name of the Design sidebar in the **View** menu. The Design sidebar window is made visible in the position at which it was (docked or floating) when it was was hidden.

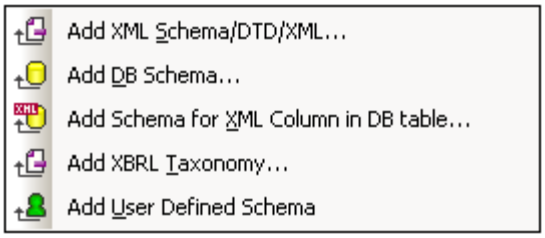
Design Overview

The **Design Overview** sidebar (*screenshot below*) enables you to add schema sources, global parameters, SPS modules, and CSS files to the active SPS. It gives you an overview of these components and enables you to manage them conveniently in one location.



Adding schema sources

Schema sources may be added to an empty SPS or to an SPS with an already existing schema source. A schema source is added by clicking the command **Add New Source** under the Sources heading. This pops up a menu (*screenshot below*) that enables you to add: (i) an XML Schema or DTD or an XML Schema that is automatically generated by StyleVision from an XML file; (ii) a schema generated by StyleVision from a DB; (iii) an XBRL taxonomy; or (iv) a user-defined schema.



The Working XML File and Template XML File

When a schema is added, it is listed under the Sources item. Each schema has two sub-items :

- The Working XML File.
- The Template XML File.

Adding modules, CSS files, parameters, and XSLT files
Click the respective **Add New** commands at the bottom of the Modules, CSS Files, Parameters and XSLT Files sections to add a new item to the respective section.

Design Overview features
The following features are common to each section (Sources, Parameters, etc) in the Design Overview sidebar:

- Each section can be expanded or collapsed by clicking the triangular arrowhead to the left of the section name.
- Files in the Sources, Modules, and CSS Files sections are listed with only their file names. When you mouseover a file name, the full file path is displayed in a popup.
- Items that are listed in gray are present in an imported module, not in the SPS file currently active in the GUI.
- Each section also has a **Add New <Item>** command at the bottom of the section, which enables you to add a new item to that section. For example, clicking the **Add New Parameter** command adds a new parameter to the SPS and to the Parameters list in the Design Overview.
- Each item in a section has a context menu which can be accessed either by right-clicking that item or clicking its **Context Menu** icon (the downward-pointing arrow to the right of the item).
- The **Remove** icon in the toolbar removes the selected item. This command is also available in context menus if the command is applicable.
- The toolbar icon **Edit File in XMLSpy** starts the selected file in the Altova application XMLSpy. This command is also available in context menus if the command is applicable.
- The toolbar icons **Move Up** and **Move Down** are applicable only when one of multiple modules in the Modules section is selected. Each button moves the selected module, respectively, up or down relative to the immediately adjacent module. The commands are also available in context menus where applicable.

Sources
The Sources section lists the schema that the SPS is based on and the Working XML File and Template XML File assigned to the SPS. You can change each of these file selections by accessing its context menu (by right-clicking or clicking the Context Menu icon), and then selecting the appropriate **Assign...** option.

In the Enterprise Edition of XMLSpy, multiple schema sources can be used in an SPS. In the Enterprise Edition, therefore, the **Add New Schema Source** command enables you to add additional schema sources. When more than one schema source is present, one of these must be set as the main schema source, and it is indicated by the word `( main)` next to its header. By default the main schema source is the first schema source to have been added. If you wish to set another schema source as the main schema, select it, and in the context menu select the **Set as Main Schema** command.

Modules
The Modules section lists the SPS modules used by the active SPS. New modules are appended to the list by clicking the **Add New Module** command and browsing for the required SPS file. Since the order in which the modules are listed is significant, if more than one module is listed, the **Move Up / Move Down** command/s (in the toolbar and context menu) become active when a module is selected. The selected module can be moved up or down by clicking the required command. The context menu also provides a command for opening the selected

module in StyleVision.

Note: The Design Overview sidebar provides an overview of the modules, enabling you to manage modules at the file level. The various module objects (objects inside the modules), however, are listed in the Design Tree sidebar.

CSS Files
The CSS Files section lists the CSS files used by the active SPS. New CSS files are appended to the list by clicking the **Add New CSS File** command and browsing for the required CSS file. Since the order in which the CSS files are listed is significant, if more than one CSS file is listed, the **Move Up / Move Down** command/s (in the toolbar and context menu) become active when a CSS file is selected. The selected CSS file can be moved up or down by clicking the required command. The context menu also provides a command for opening the selected module in XMLSpy.

Note: The Design Overview sidebar provides an overview of the CSS files, enabling you to manage CSS files at the file level. The various CSS rules inside the CSS files, however, are listed in the Style Repository sidebar.

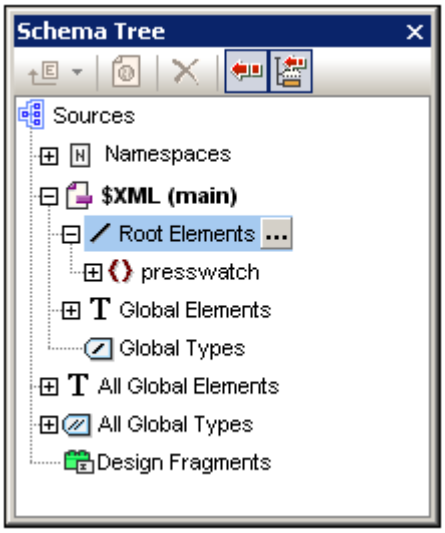
Parameters
The Parameters section lists the global parameters in the SPS. You can add new parameters using the **Add New Parameter** command at the bottom of the section. Double-clicking the parameter name or value enables you to edit the name or value, respectively. To remove a parameter, select the parameter and then click the **Remove** icon in the Design Overview toolbar or the **Remove** command in the context menu.

XSLT Files
The XSLT Files section lists the XSLT files that have been imported into the SPS. XSLT templates in these XSLT files will be available to the stylesheet as global templates. For a complete description of how this works, see XSLT Templates.

Schema Tree

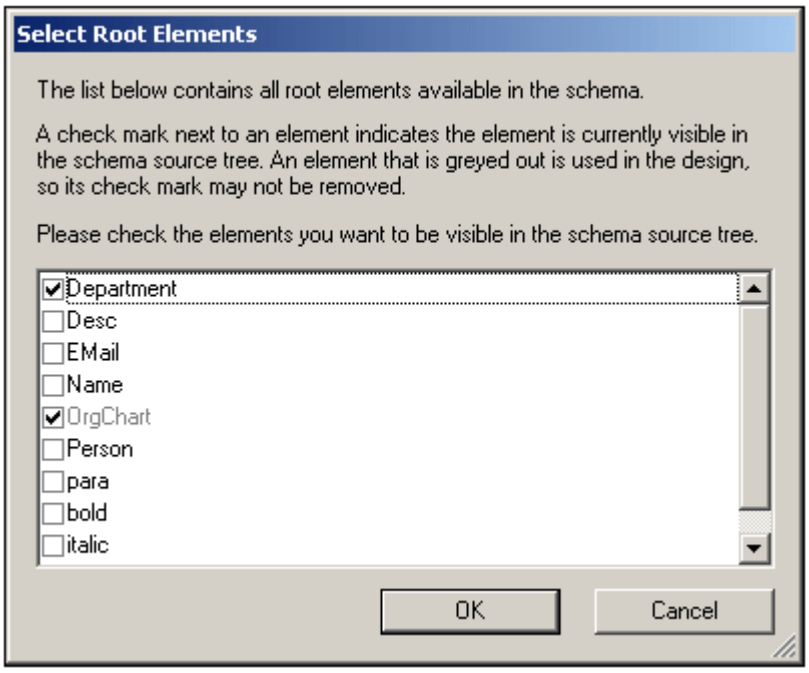
The **Schema Tree** sidebar (*screenshot below*) enables you to do the following:

- Select multiple root elements (document elements) for a schema.
- Drag nodes (elements, attributes, global types) from a schema tree and drop them into the design. These nodes represent the XML content that is to be included in the output.
- View listings of all global elements and types in all schema sources. Enables a global element or global type to be created as a global template.
- View a listing of all namespaces used in the SPS.



Root elements
For each schema, under the `$XML heading`, the selected Root elements (or document elements) are listed. This list consists of all the root elements you select for the schema (see below for how to do this). Each root element can be expanded to show its content model tree. It is from the nodes in these root element trees that the content of the main template is created. Note that the entry point of the main template is the document node of the main schema, which you can select or change at any time (see below for how to do this).

To select the root elements for a schema, do the following: Click the **Select** ... button at the right of the `Root Elements` item. This pops up the Select Root Elements dialog (*screenshot below*), in which you can select which of the global elements in the schema is/are to be the root elements. See SPS Structure | Schema Sources for an explanation of the possibilities offered by a selection of multiple root elements.



Additionally, all the global elements in all added schemas are listed under the All Global Elements item. For each global element, a global template can be created.

Global elements and global types
Global elements and global types can be used to create global templates which can be re-used in other templates. Additionally, global types can also be used directly in templates.

Design Fragments
All the Design Fragments in the document are listed under this item and can be viewed when the Design Fragments item is expanded. The following Design Fragment functionality is available:

- Double-clicking the name of a Design Fragment in the Schema Tree enables the name of that Design Fragment to be edited.
- A Design Fragment can be enabled or disabled by, respectively, checking or unchecking the check box next to the Design Fragment.
- S Design Fragment can be dragged from the schema tree into the design.

See the section Design Fragments for information about working with Design Fragments.

Namespaces
The namespaces used in the SPS are listed under the Namespaces heading together with their prefixes. The namespaces in this list come from two sources: (i) namespaces defined in the referenced schema or schemas (*see note below*); and (ii) namespaces that are added to every newly created SPS by default. Referring to such a list can be very useful when writing XPath expressions. Additionally, you can set an XPath default namespace for the entire SPS by double-clicking the value field of the `xpath-default-ns` entry and then entering the namespace.

Note: If you wish to add a namespace to an SPS or to an XSLT stylesheet being generated from an SPS, the namespace must be added to the top-level `schema` element of the

XML Schema on which the SPS is based.

Toolbar and schema tree icons
The following toolbar icons are shortcuts for common Schema Tree sidebar commands.


In a user-defined schema, adds a child element to the document element or appends a sibling element to the selected element. More commands for building a user-defined schema are available by clicking the dropdown arrow of the icon.

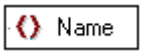

Make/Remove Global Template, enabled when a global element or global type is selected.


Remove the selected item.

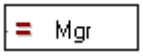

Synchronize tree toggle. When toggled on (icon has border), selecting a node in the tree selects (i) the corresponding node in the design, and (ii) the corresponding node in the Design Tree if the Synchronize Tree icon in the Design Tree window is toggled on. When toggled off, the corresponding node in the design is not selected. Switch the toggle off if dragging a node from the tree and dropping it to the desired location in the design proves difficult.


When toggled on, the expanded items auto-collapse.

Symbols used in schema trees
Given below is a list of the symbols in schema trees.



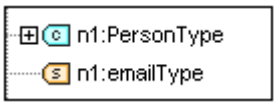
Element.



Attribute.

Element with child elements. Double-clicking the element or the +/- symbol to its left causes the element to expand/collapse.

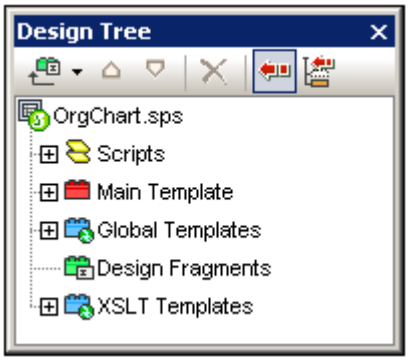
DB Filter applied. Applies only to top-level data table elements in the schema tree.



Global types can be either complex or simple. Complex types are indicated with a cyan icon, simple types with a brown icon.

Design Tree

The **Design Tree** sidebar (*screenshot below*) provides an overview of the SPS design.



At the root of the Design Tree is the name of the SPS file; the location of the file is displayed in a pop-up when you mouseover. The next level of the Design Tree is organized into the following categories:

- Scripts, which shows all the JavaScript functions that have been defined for the SPS using the JavaScript Editor of StyleVision.
- Main Template, which displays a detailed structure of the main template.
- Global Templates, which lists the global templates in the current SPS, as well as the global templates in all included SPS modules.
- Design Fragments, which shows all the Design Fragments in the design, and their structures.
- XSLT Templates, which provides the capability to view XSLT templates in imported XSLT files.

Toolbar icons

The following toolbar icons are shortcuts for common Schema Tree sidebar commands.

Adds a Design Fragment, main template, or layout item to the design. Clicking the left-hand part of the icon adds a Design Fragment. Clicking the dropdown arrow drops down a list with commands to add a Design Fragment or any of various layout items.

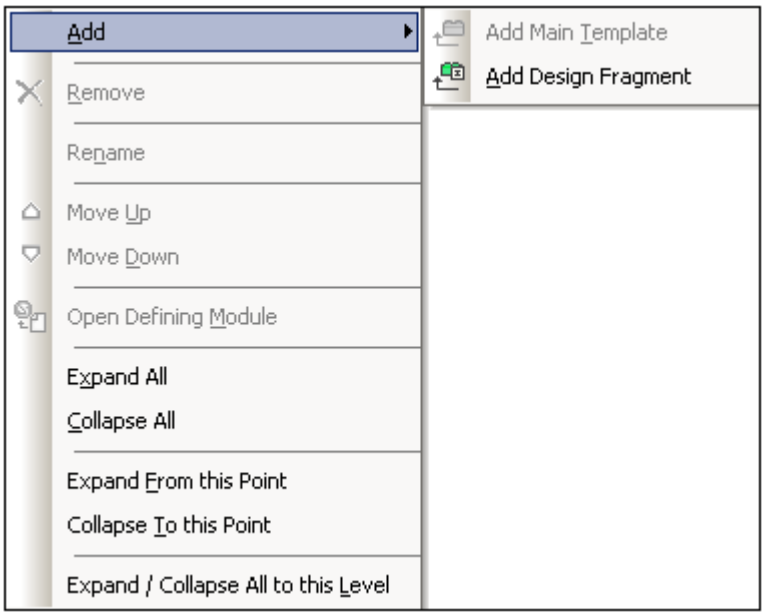
Remove the selected item; icon is active when item in the Global Templates or Layout sub-trees is selected.

Synchronize tree toggle. When toggled on (icon has border), selecting a node in the tree selects (i) the corresponding node in the design, and (ii) the corresponding node in the schema tree if the Synchronize Tree icon in the schema tree is toggled on. When toggled off, the corresponding nodes in the design and schema tree are not selected.

Auto-collapses items in the design tree when the selection is synchronized.

Modifying the Design Tree display

The display of the Design Tree can be modified via the context menu (*screenshot below*), which pops up on right-clicking an item in the Design Tree.



A description of the context menu commands is given in the following table.

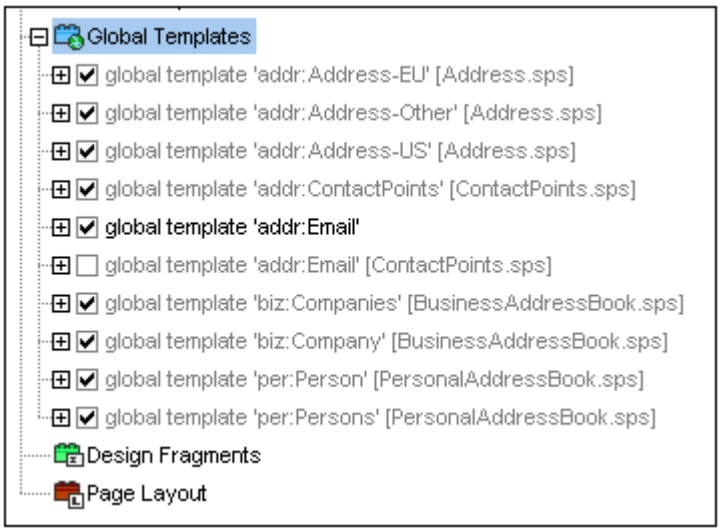
Add	Enables a main template (when none exists) and a design fragment to be added.
Remove (Item)	Removes the selected item from the Design Tree and the Design.
Rename	Enables Design Fragments to be renamed.
Move Up/Down	Disabled.
Open defining module	Disabled.
Expand All	Expands all expandable items in all categories of the Design Tree.
Collapse All	Collapses the entire Design Tree to the top-level item, which is the location of the SPS file.
Expand from This Point	Expands all expandable items in the selected item.
Collapse to This Point	Collapses all items within the selected item, up to the selected item.
Expand/Collapse All to This Level	Expands or collapses all categories to the level of the selected item.

Scripts and Main Template

The Scripts listing displays all the scripts in the Design, including those in imported modules. The Main Template listing displays a tree of the main template. Items in the tree and the design can be removed by right-clicking the item and selecting **Remove**.

Global Templates

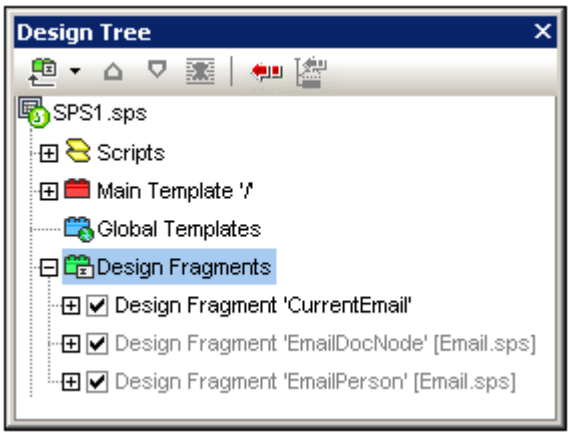
The Global Templates item lists all global templates in the current SPS and in all added SPS modules. Global templates defined in the current SPS are displayed in black, while global templates that have been defined in added modules are displayed in gray (*see screenshot below*). Each global template has a check box to its left, which enables you to activate or deactivate it.



A global template in the current SPS (not one in an added module) can be removed by selecting it and clicking the **Remove** button in the toolbar or the **Remove** command in the context menu. The component is removed from the design and the tree.

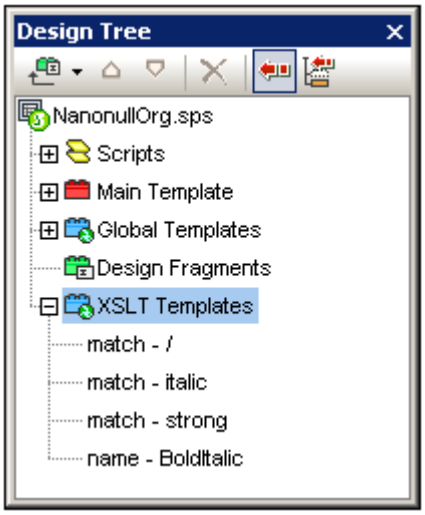
Design Fragments

The Design Fragments item lists all the Design Fragments in the current SPS and in all added SPS modules. Design Fragments defined in the current SPS are displayed in black, while Design Fragments that have been defined in added modules are displayed in gray (*see screenshot below*). Each Design Fragment has a check box to its left, which enables you to activate or deactivate it. A Design Fragment in the current SPS (not one in an added module) can be removed by selecting it and clicking the **Remove** button in the toolbar or the **Remove** command in the context menu. The component is removed from the design and the tree.



Each Design Fragment is designed as a tree with expandable/collapsible nodes. Any component in a Design Fragment tree (that is defined in the current SPS) can be removed by selecting it and clicking the **Remove** button in the toolbar or the **Remove** command in the context menu. The component is removed from the design and the tree.

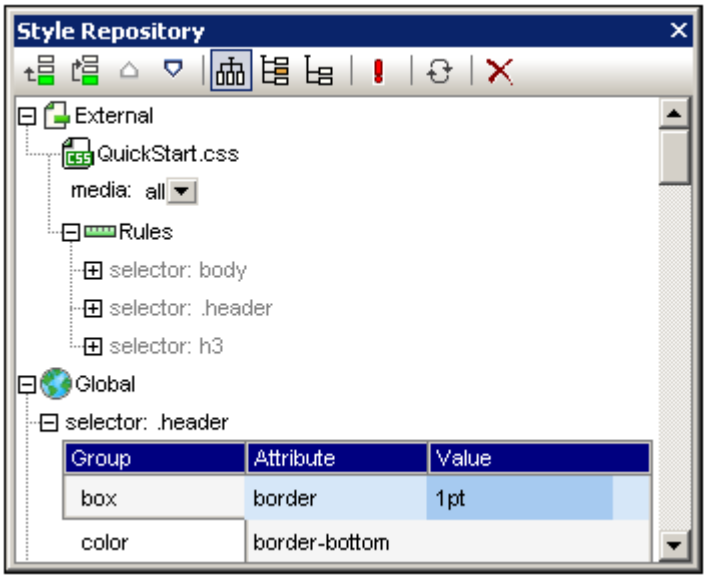
XSLT Templates
In the Design Tree sidebar (*screenshot below*), the XSLT Templates contained in the imported XSLT file are displayed under the XSLT Templates heading.



There are two types of imported XSLT templates: (i) match templates (indicated by *Match*), and (ii) named templates (indicated by *Name*). In the Design Tree, these two types are listed with (i) the value of the `select` attribute of match templates, and (ii) by the value of the `name` attribute of named templates, respectively. For a complete description of how XSLT Templates work, see XSLT Templates.

Style Repository

In the **Style Repository** sidebar (*screenshot below*), you can assign external CSS stylesheets and define global CSS styles for the SPS. Style rules in external CSS stylesheets and globally defined CSS styles are applied to Authentic View and the HTML output document. Note that for RTF, PDF and Word 2007+ output, styles applied to certain selectors will be discarded (see Defining CSS Styles Globally for details); these rules are identified in the Style Repository (*see screenshot below*).



The Style Repository sidebar contains two listings, **External** and **Global**, each in the form of a tree. The External listing contains a list of external CSS stylesheets associated with the SPS. The Global listing contains a list of all the global styles associated with the SPS.

The structure of the listings in the Style Repository is as follows:

```
External
- CSS-1.css (Location given in popup that appears on mouseover)
  - Media (can be defined in Style Repository window)
  - Rules (non-editable; must be edited in CSS file)
    - Selector-1
      - Property-1
      - ...
      - Property-N
    - ...
    - Selector-N
+ ...
+ CSS-N.css
Global
- Selector-1
  + Selector-1 Properties
- ...
+ Selector-N
```

Precedence of style rules

If a global style rule and a style rule in an external CSS stylesheet have selectors that identify the same document component, then the global style rule has precedence over that in the external stylesheet, and will be applied. If two or more global style rules select the same document component, then the rule that is listed last from among these rules will be applied.

Likewise, if two or more style rules in the external stylesheets select the same document component, then the last of these rules in the last of the containing stylesheets will be applied

Managing styles in the Style Repository
In the Style Repository sidebar you can do the following, using either the icons in the toolbar and/or items in the context menu:

Add: The **Add** icon  adds a new external stylesheet entry to the External tree or a new global style entry to the Global tree, respectively, according to whether the External or Global tree was selected. The new entry is appended to the list of already existing entries in the tree. The **Add** command is also available in the context menu. For more details about using external stylesheets and global styles, see Working with CSS Styles. Note that an external CSS stylesheet can also be added or a stylesheet removed via the Design Overview sidebar.

Insert: The **Insert** icon  inserts a new external stylesheet entry above the selected external stylesheet (in the External tree) or a new global style entry above the selected global style (in the Global tree). The **Insert** command is also available in the context menu. For more details about using external stylesheets and global styles, see Working with CSS Styles.

Move Up/Down: The **Move Up** icon  and **Move Down** icon  move the selected external stylesheet or global style respectively up and down relative to the other entries in its tree. These commands are useful for changing the priority of external stylesheets relative to each other and of global style rules relative to each other. The **Move Up** and **Move Down** commands are also available in the context menu. For more details about how to change the precedence of styles, see Working with CSS Styles.

Views of global style properties: The properties of a global style can be displayed in one of three views: (i) by property group; (ii) all properties sorted alphabetically; (iii) properties with values defined, sorted alphabetically. The view can be changed for each style individually. To change the properties view of a global style, select that style and click one of the View icons in the Style Repository toolbar: **Grouped**  ; **List All**  ; and **List Non-Empty**  . These commands are also available in the context menu under the **View Mode** item.

Toggle Important: Clicking the Toggle Important icon  sets the CSS value `! important` on or off for the selected CSS rule.

Reload All: The **Reload All** icon  reloads all the external CSS stylesheets.

Reset: The **Reset** icon  deletes the selected external stylesheet or global style.

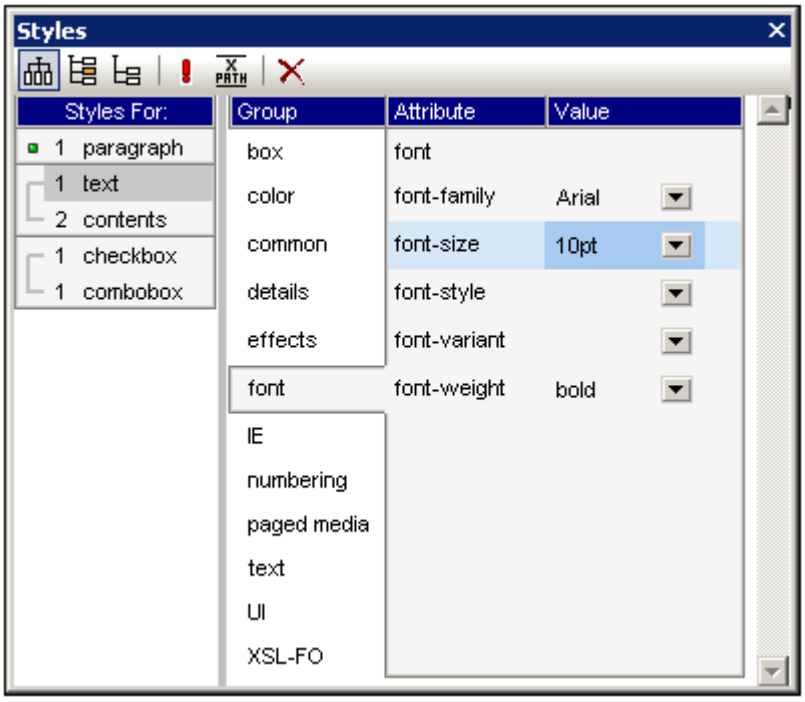
Expand/Collapse All: All expandable items in both the External and Global trees can be expanded and collapsed with one click using the **Expand All** and **Collapse All** commands in the context menu, respectively.

Editing CSS styles in the Style Repository
The following editing mechanisms are provided in the Style Repository:

- You can add and remove a CSS Stylesheet, and you can specify the media to which each external CSS stylesheet applies. How to do this is explained in the section External CSS Stylesheets.
- Global styles can have their selectors and properties directly edited in the Style Repository window. How this is done is described in the section Defining CSS Styles Globally.

Styles

The **Styles** sidebar (*screenshot below*) enables CSS styles to be defined locally for SPS components selected in the Design View.



The Styles sidebar is divided into two broad parts:

- The **Styles For column**, in which the selected component types are listed. One of these component types may be selected at a time for styling. (In the screenshot above, the *1 text* component is selected.) For detailed information about the selection of component types, see Selecting SPS Components to Style.
- The **Property Definitions column**, in which CSS properties are defined for the component type/s selected in the Styles For column. The Property Definitions column can be displayed in three views (*see below*). For the details of how to set local property definitions, see Setting CSS Property Values. The XPath icon toggles on and off the application of XPath expressions as the source of property values. With a property selected, if the XPath icon is toggled on, then an XPath expression can be entered for this property and the return value of the XPath expression is used as the value of that property. In this way, the value of a node in an XML document can be returned, at runtime, as the value of a property. When the XPath icon is toggled off, a static value can be entered as the value of the property.

Three views of Property Definitions
The Property Definitions column shows the properties of the component selected in Design View. The display is available in three views (*listed below*) and can be switched between each other by clicking the respective buttons in the toolbar of the Entry Helper:

- **Grouped**: The properties are organized into groups. In this view, the Property Definitions column is divided into three columns: Group, Attribute, and Value. All the available property groups are displayed in the Group column. When a group is selected, the properties of that group are displayed in the Attribute column. If a value for a

property is defined, the value appears in the Value column.

- **List All**  : All properties of all groups are listed in a single alphabetically ordered list. The Attribute column is listed first, followed by the Group column and then the Value column.
- **List Non-Empty**  : Only properties that have values defined are listed. The columns are ordered, from left to right, as follows: Attribute, Group, and Value. In this view, it will not be possible to define a value for a new property—because no undefined property is listed. However, this is a quick way to see all the defined properties for the selected component type, and the displayed properties can be edited.

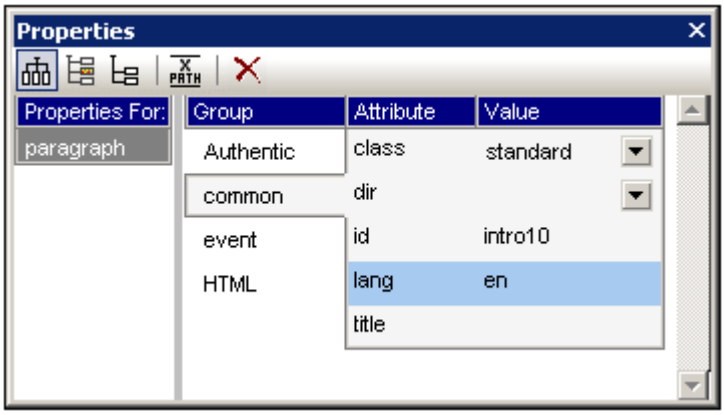
Views can also be changed by right-clicking any item in the Property Definitions column, selecting **View Mode**, and then the required view.

Toggle Important and Reset toolbar icons

Clicking the Toggle Important icon  sets the CSS value `! important` on or off for the selected CSS rule. Clicking the Reset icon  resets the value of the selected property.

Properties

The **Properties** sidebar (*screenshot below*) enables properties to be defined for SPS components selected in the Design View.



The Properties sidebar is divided into two broad parts:

- The **Properties For column**, in which the selected component types are listed. One of these component types may be selected at a time and properties assigned for it. (In the screenshot above, the *paragraph* component is selected.) For detailed information about how components with properties are grouped, see the section Components and their Property Groups below.
- The **Property Definitions column**, in which component properties are defined for the component type selected in the Properties For column. The Property Definitions column can be displayed in three views (*see below*). For the details of what properties are in each property group, see the section Property Groups below.

Three views of Property Definitions

The Property Definitions column shows the properties of the component selected in Design View. The display is available in three views (*listed below*) and can be switched between each other by clicking the respective buttons in the toolbar of the Entry Helper:

- **Grouped** : The properties are organized into groups. In this view, the Property Definitions column is divided into three columns: Group, Attribute, and Value. All the available property groups are displayed in the Group column. When a group is selected, the properties of that group are displayed in the Attribute column. If a value for a property is defined, the value appears in the Value column.
- **List All** : All properties of all groups are listed in a single alphabetically ordered list. The Attribute column is listed first, followed by the Group column and then the Value column.
- **List Non-Empty** : Only properties that have values defined are listed. The columns are ordered, from left to right, as follows: Attribute, Group, and Value. In this view, it will not be possible to define a value for a new property—because no undefined property is listed. However, this is a quick way to see all the defined properties for the selected component type, and the displayed properties can be edited.

Views can also be changed by right-clicking any item in the Property Definitions column, selecting **View Mode**, and then the required view.

Reset toolbar icon

Clicking the Reset icon  resets the value of the selected property to its default.

Components and their property groups

The availability of property groups is context-sensitive. What property groups are available depends on what design component is selected. The table below lists SPS components and the property groups they have.

Component	Property Group
Template	Authentic
Content	Authentic; Common; Event
Text	Common; Event
Auto-Calculation	AutoCalc; Authentic; Common; Event
Condition Branch	When
Data-Entry Device	Authentic; Common; [Data-Entry Device]; Event; HTML
Image	Image; Authentic; Common; Event; HTML
Link	Link; Authentic; Common; Event; HTML
Table	Authentic; Common; Event; HTML
Paragraph	Paragraph; Authentic; Common; Event; HTML

The following points about component types should be noted:

- Template components are the main template, global templates, and all schema nodes in the design.
- Content components are the `content` and `rest-of-contents` placeholders. These represent the text content of a node or nodes from the XML document.
- A text component is a single string of static text. A single string extends between any two components other than text components, and includes whitespace, if any is present.
- Data-entry devices are input field, multiline input fields, combo boxes, check boxes, radio buttons and buttons; their properties cover the data-entry device as well as the contents of the data-entry device, if any.
- A table component refers to the table structure in the design. Note that it contains sub-components, which are considered components in their own right. The sub-components are: row, column, cell, header, and footer.
- A paragraph component is any predefined format.

The table below contains descriptions of each property group.

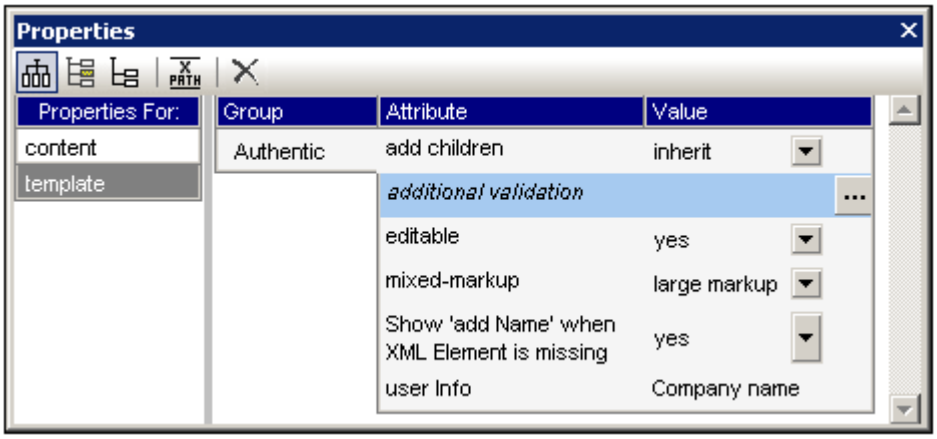
Property Group	Description
AutoCalc	These properties are enabled when an Auto-Calculation is selected. The `Input Formatting` property specifies the formatting of an Auto-Calculation that is a numeric or date datatype. The `XPath` property specifies the XPath expression that is used for the Auto-Calculation.
Authentic	These are SPS-specific properties that are available for templates, contents, AutoCalculations, data-entry devices, images, links, tables, and paragraphs. What properties within the group are available are component-specific. For more details, see Authentic Node Properties.
Common	The *Common* property group is available for all component types except the Template and AutoCalc component types. It contains the following properties that can be defined for the component: `class` (a class name), `dir` (the writing direction), `id` (a unique ID), `lang` (the language), and `title` (a name).
Data-Entry Device	Specifies the value range of combo boxes, check boxes, and radio buttons. Note that this property group does not apply to input fields and buttons.
Event	Contains properties that enable JavaScript functions to be defined for the following client-side HTML events: `onclick`, `ondblclick`, `onkeydown`, `onkeypressed`, `onkeyup`, `onmousedown`, `onmousemove`, `onmouseout`, `onmouseover`, `onmouseup`.
HTML	Available for the following component types: data-entry devices; image; link; table; paragraphs. Note that there are different types of data-entry devices and paragraphs, and that tables have sub-components. These properties are HTML properties that can be set on the corresponding HTML elements (`img`, `table`, `p`, `div`, etc). The available properties therefore vary according to the component selected. Values for these properties can be selected using XPath expressions.

In addition, there are component-specific properties for images, links, paragraphs and other predefined formats, and condition branches. These properties are described in the respective sections.

Setting property values

Property values can be entered in one, two, or three ways, depending on the property (*see screenshot below*):

- Entered directly in the Value column. To do this, select a property, double-click in its Value column, enter the value using the keyboard, and press **Enter** or click anywhere in the GUI.
- By selecting a value from the dropdown list of the combo box for that property. Click the down arrow of the combo box to drop down the list of property-value options.
- By using the Edit button  at the right-hand side of the Value column for that property. Clicking the Edit button pops up a dialog relevant to that property. For example, the sidebar for the `Format` property in the screenshot below pops up the Input Formatting dialog, while that for the `XPath` property pops up the Edit XPath Expression dialog.



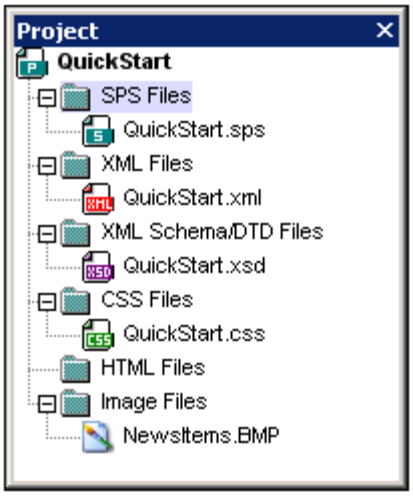
For some properties, in the Common and HTML groups of properties, XPath expressions can be used to provide the values of the property. The XPath icon toggles on and off the application of XPath expressions as the source of property values. With a property selected, if the XPath icon is toggled on, then an XPath expression can be entered for this property and the return value of the XPath expression is used as the value of that property. In this way, the value of a node in an XML document can be returned, at runtime, as the value of a property. When the XPath icon is toggled off, a static value can be entered as the value of the property.

Modifying or deleting a property value

To modify a property value, use any of the applicable methods described in the previous paragraph, Setting Property Values. To delete a property value, select the property and click the Reset icon in the toolbar of the Properties sidebar.

Project

The **Project** sidebar (*screenshot below*) shows the currently active project. All commands in the Project menu apply to the currently active project. The currently active project can be changed by either creating a new project (**Project | New Project**) or by opening an existing project (**Project | Open Project**).



StyleVision projects are an efficient way of grouping, managing, and working with related files. Once collected in a project, files can be accessed easily from the Project sidebar when designing an SPS. For example, an SPS file can be dragged from the Project sidebar to the Design Tree sidebar and created there as a module; or an image file can be dropped into the design as a static image; or a CSS stylesheet can be dragged to the Style Repository sidebar as an external stylesheet.

A complete description of how to work with projects is given in the section Projects in StyleVision.

Chapter 6

Quick Start Tutorial

6 Quick Start Tutorial

The objective of this tutorial is to take you quickly through the the key steps in creating an effective SPS. It starts with a section on creating and setting up the SPS, shows you how to insert content in the SPS, how to format the components of the SPS, and how to use two powerful SPS features: Auto-Calculations and conditions. Along the way you will get to know how to structure your output efficiently and how to use a variety of structural and presentation features.

Files required
Files related to this Quick Start tutorial are in the application folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart`:

- `QuickStart.xsd`, the XML Schema file on which the SPS is based.
- `QuickStart.xml`, the Working XML File, which is the source of the data displayed in the output previews.
- `QuickStart.sps`, which is the finished SPS file; you can compare the SPS file you create with this file.
- `QuickStart.css`, which is the external CSS stylesheet used in the tutorial.
- `NewsItems.BMP`, an image file that is used in the SPS.

Doing the tutorial
It is best to start at the beginning of the tutorial and work your way through the sections. Also, you should open the XSD and XML files before starting the tutorial and take a look at their structure and contents. Keep the XSD and XML files open while doing the tutorial, so that you can refer to them. Save your SPS document with a name other than `QuickStart.sps` (say `MyQuickStart.sps`) so that you do not overwrite the supplied SPS file. And, of course, remember to save after successfully completing every part.

6.1 Creating and Setting Up a New SPS

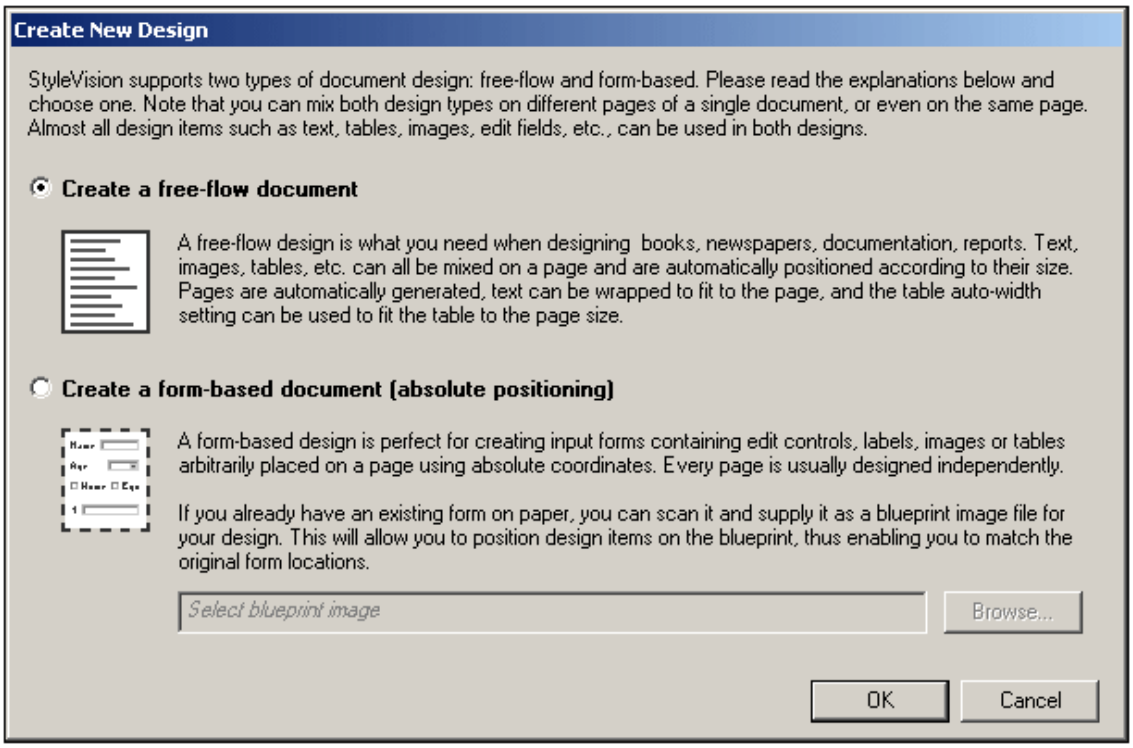
In this section, you will learn:

- How to create a new SPS document.
- How to add a schema source for the SPS.
- How to select the XSLT version of the SPS.
- How to assign the Working XML File.
- How to specify the output encoding.
- How to save the SPS document.

Creating a new SPS document

Create a new SPS document by clicking **File | New | New (Empty)** or select **New (Empty)** in the dropdown list of the New icon in the application toolbar. The Create New Design dialog pops up.

The Create New Design dialog (*screenshot below*) prompts you to select either: (i) a free-flowing document design, or (ii) a form-based document design (in which components are positioned absolutely, as in a layout program).



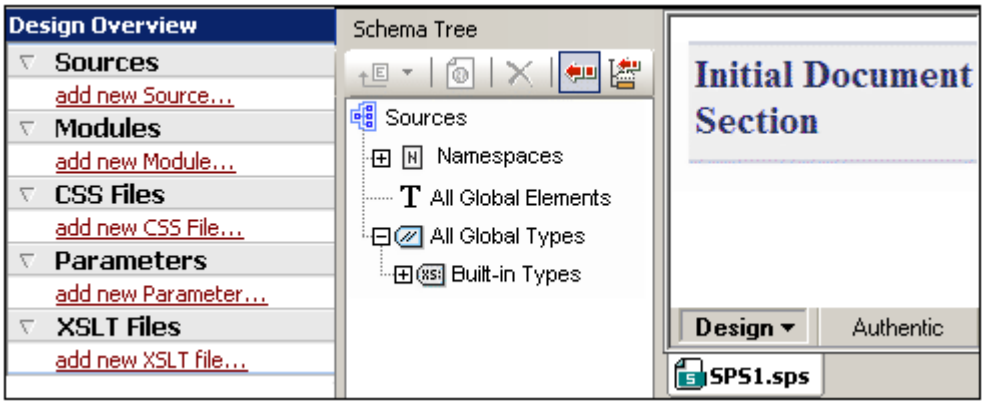
In a free-flowing document design, document content is laid out to fit the output media object or viewer (paper or screen). Items in the document content can only be placed relative to each other, and not absolutely. This kind of design is suited for documents such as reports, articles, and books.

In a form-based document, a single Layout Container is created, in which design components can be positioned absolutely. The dimensions of the Layout Container are user-defined, and Layout Boxes can be positioned absolutely within the Layout Container and document content can be placed within individual Layout Boxes. If you wish the design of your SPS to replicate a

specific form-based design, you can use an image of the original form as a blueprint image. The blueprint image can then be included as the background image of the Layout Container. The blueprint image is used to help you design your form; it will not be included in the output.

You will be creating a free-flowing document, so select this option by clicking the *Create a free-flow document* radio button, then click **OK**.

A new document titled `SPS1.sps` is created and displayed in Design View (*screenshot below*).

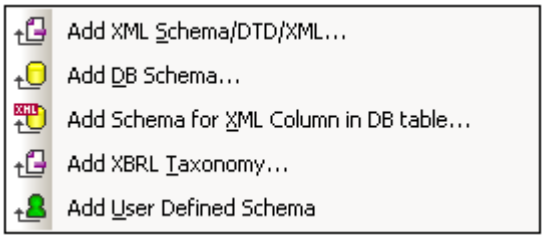


In Design View, an empty main template is displayed. In the Design Overview and Schema Tree sidebars, there are no schema entries.

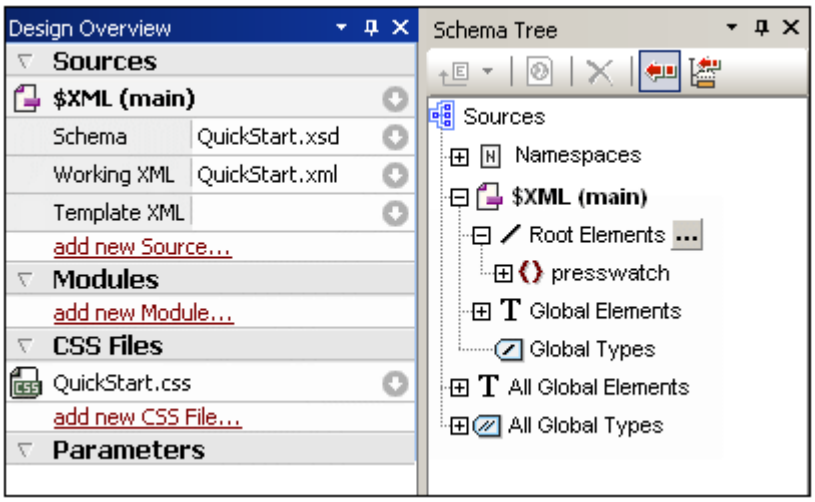
Adding a schema source

For this SPS, you will use the schema, `QuickStart.xsd`. To add this schema as the schema source, do the following:

1. In the Design Overview sidebar, under the Sources heading, click the **Add New Source** command (*screenshot above*). In the menu that pops up (*screenshot below*), select **Add XML Schema/DTD/XML**.



2. In the Open dialog that pops up browse for the file `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart\QuickStart.xsd`, and click **Open**.
3. You will be prompted to select a Working XML File. Select the option to select the file from the filesystem, then browse for the file `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart\QuickStart.xml`, and click **Open**. The schema will be added as a schema source in the Design Overview sidebar and in the Schema Tree sidebar (*screenshot below*). Also, in the Design Overview, the Working XML File you chose will be assigned to the schema.



You should note the following points: (i) In Design Overview, the `$XML` entry for the schema source lists the schema and the Working XML File and Template XML File; (ii) In the Schema Tree sidebar, the Root Elements tree would list the one or more root elements (document elements) you select from among the global elements defined in the schema. In the case of this schema, the element `presswatch` is selected by default because it is the one global element in the schema that lies clearly at the top of the hierarchy defined in the schema; (iii) All global elements in the schema are listed in the All Global Elements tree.

Selecting the XSLT version

For this SPS you will use XSLT 2.0. To specify the XSLT version, in the application toolbar, click the XSLT 20 icon.

Assigning or changing the Working XML File

While adding the XML Schema to the SPS in the previous step, you also assigned a Working XML File to the schema. A Working XML File provides the SPS with a source of XML data to process. To assign, change, or unassign a Working XML File for a given schema, in the Design Overview sidebar, right-click anywhere in the Working XML File line you wish to modify (or click the Context Menu icon at the right), and select the required command from the context menu that pops up. The Working XML File is now assigned, and the filename is entered in the Design Overview. Before proceeding, ensure that you have correctly assigned the file `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart\QuickStart.xml` as the Working XML File.

Specifying the encoding of output

In the Default Encoding tab of the Options dialog (**Tools | Options**), set the HTML encoding to Unicode UTF-8, and RTF and PDF encoding to UTF-8.

Saving the SPS document

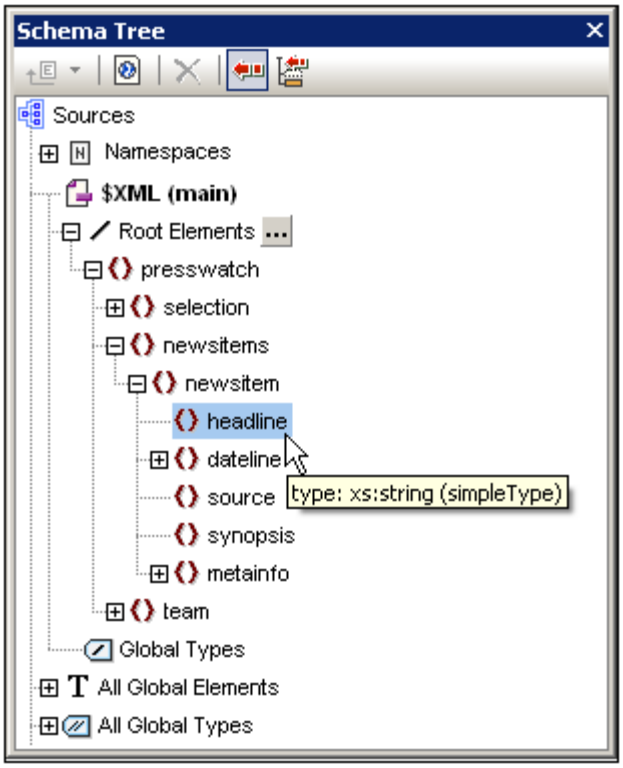
After you have set up the SPS as described above, save it as `MyQuickStart.sps` in the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart` folder. Do this by clicking the menu command **File | Save Design** or **Ctrl+S**, and then entering the file name in the Save Design dialog that pops up.

6.2 Inserting Dynamic Content (from XML Source)

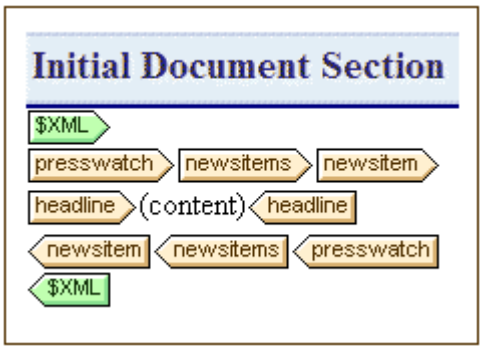
This section introduces mechanisms to insert data from nodes in the XML document. In it you will learn how to drag element and attribute nodes from the schema tree into the design and create these nodes as contents. When a node is created as contents, the data in it is output as a string which is the concatenation of the content of that element's child text nodes and the text nodes of all descendant elements.

Inserting element contents
In your SPS, do the following:

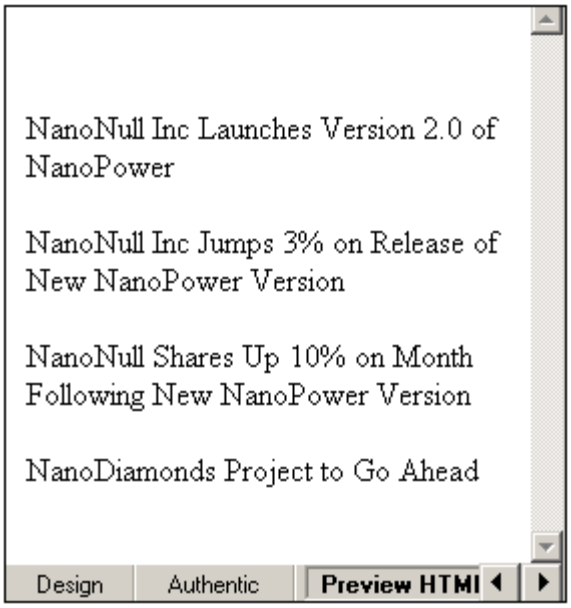
1. In the Schema Tree sidebar, expand the schema tree up to the children of the `newsitem` element (*screenshot below*).



2. Select the `headline` element (notice that the element's datatype is displayed in a pop-up when you mouseover; *screenshot above*). Drag the element into Design View, and, when the arrow cursor turns to an insertion point, drop it into the main template.
3. In the context menu that pops up, select **Create Contents**. The start and end tags of the `headline` element are inserted at the point where you dropped the `headline` element, and they contain `the content` placeholder. The `headline` tags are surrounded by the start and end tags of the ancestor elements of `headline` (*screenshot below*).
4. In the design put elements on different lines (by pressing **Enter**) as shown in the screenshot below.



Click the HTML tab to see a preview of the HTML output (*screenshot below*). The HTML preview shows the contents of the `headline` child elements of `newsitem`, each as a text string.



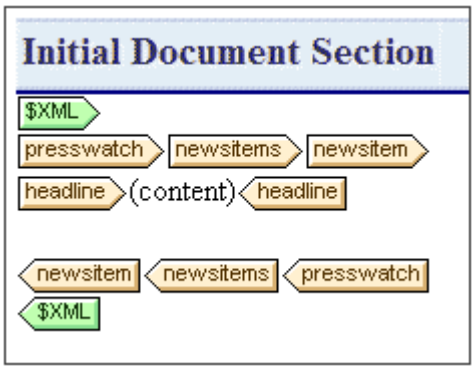
You should also check the preview of Authentic View and the RTF, PDF, and Word 2007+ output.

Note: You can also create the contents of a node by: (i) clicking the the Insert Contents icon in the Insert Design Elements toolbar, (ii) clicking at location in the design, (iii) selecting, from the Schema Selector tree that pops up, the node for you wish to create contents.

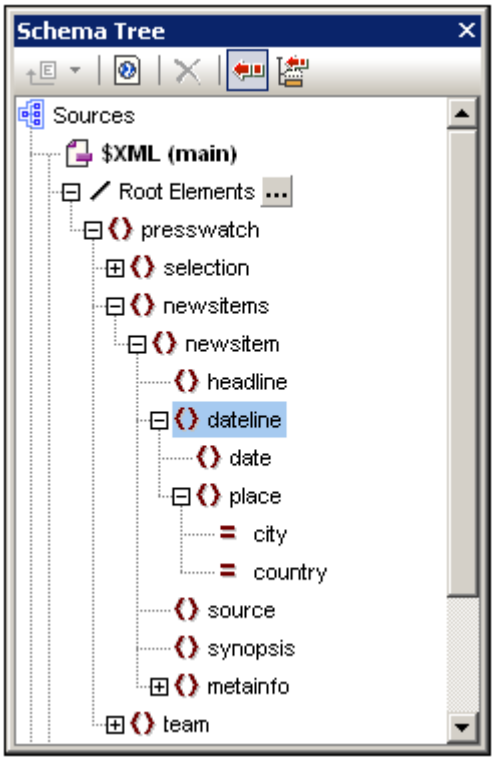
Inserting attribute contents

When an element is inserted into the design as contents, the contents of its attributes are not automatically inserted. You must explicitly drag the attribute node into the design for the attribute's value to be output. In your SPS, now do the following:

1. Place the cursor after the end tag of the `headline` element and press **Enter**. This produces an empty line (*screenshot below*).

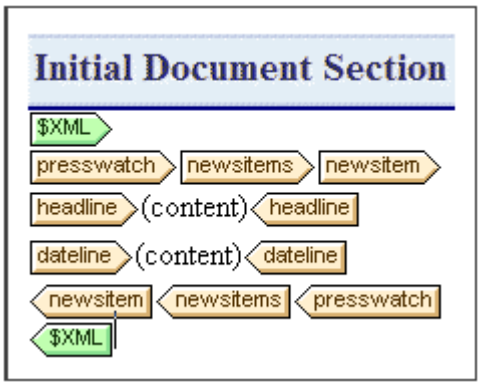


2. In the Schema Tree sidebar, expand the `dateline` element (*screenshot below*).

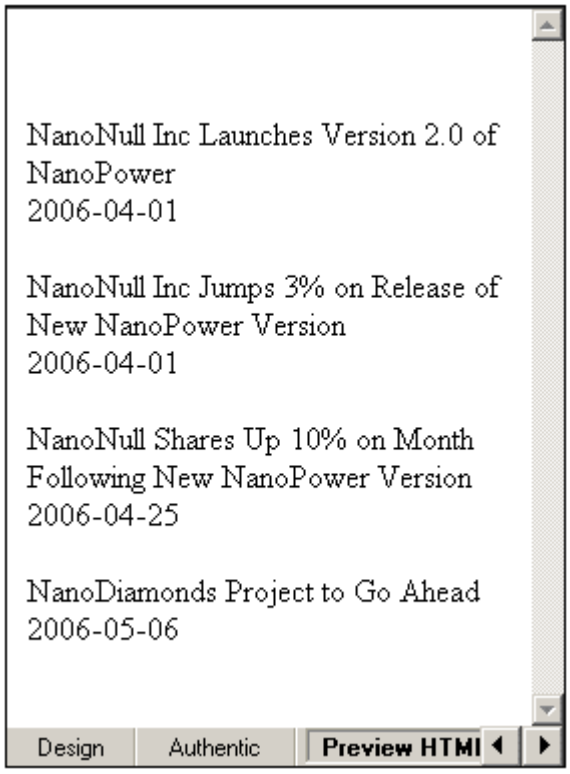


Notice that the `dateline` element has two child elements, `date` and `place`, and that the `place` element has two attributes, `city` and `country`.

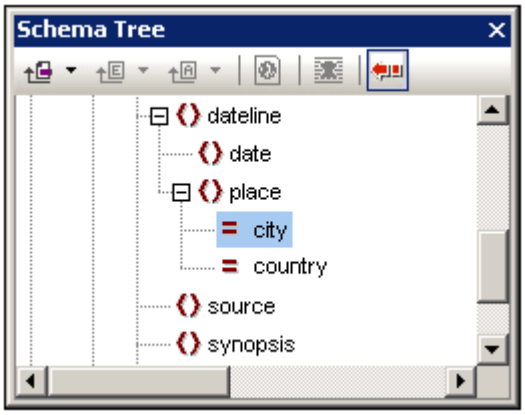
3. Drag the `dateline` element into the design and drop it at the beginning of the newly created empty line (*screenshot below*).



4. Switch to HTML Preview and look carefully at the output of `dateline` (*screenshot below*).

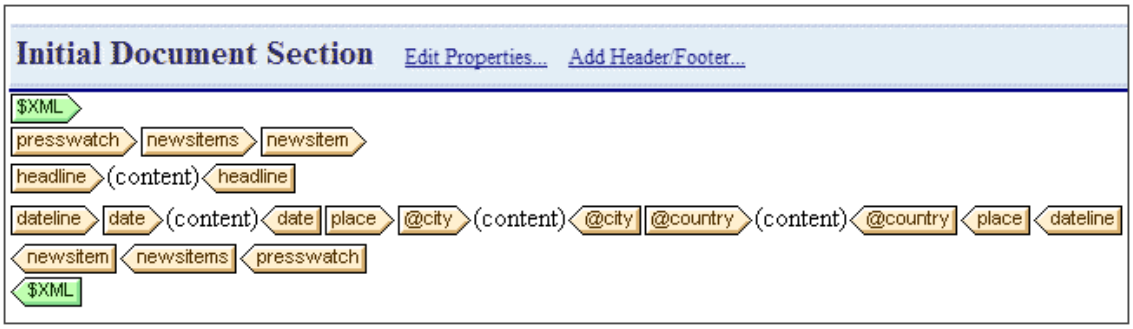


   Notice that while the contents of the `date` children of `dateline` elements have been output, no contents have been output for the `place` children of `dateline`. This is because the `place` data is contained in the attributes `city` and `country` and attribute contents are not output when the attribute's parent element is processed.
5. In Design View, go to the menu command **Authentic | Auto-Add Date Picker**, and toggle it off to deactivate the auto-addition of the date picker. (The icon will have no border when toggled off.) This step is required if the date picker is not to be inserted automatically when a node of type `xs:date` or `xs:dateTime` is inserted into the design (which you will do in the next step). Drag the `date` element from the Schema Tree sidebar and drop it (create it as contents) in between the start and end tags of the `dateline` element.
6. Select the `city` attribute of the `dateline/place` element (*screenshot below*) in the Schema Tree sidebar.



7. Drag the `@city` attribute node into Design View, and drop it (create as contents) just after the end tag of the `date` element.
8. Drag the `@country` attribute node into Design View, and drop it (create as contents) just after the end tag of the `@city` attribute.

When you are done, the SPS design should look something like this:

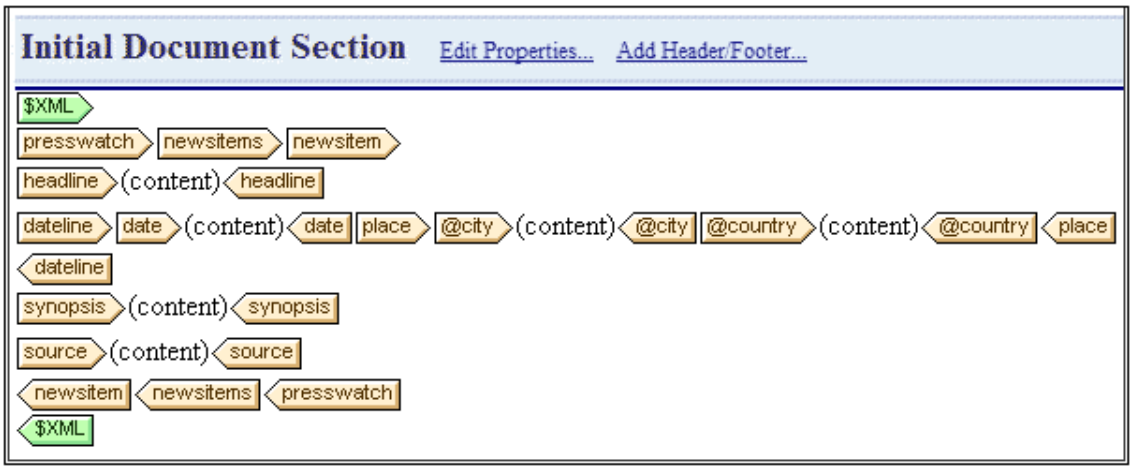


The HTML Preview will look like this:

Notice that the values of the `@city` and `@country` attributes are now included in the output.

Adding more dynamic content

The contents of elements and attributes from the XML data source can be inserted anywhere in the design using the method described above. To complete this section, add the `synopsis` and `source` elements to the design so that the design now looks like this:



Notice that the `synopsis` element has been placed before the `source` element, which is not the order in which the elements are in the schema. After you have added the `synopsis` and `source` elements to the design, check the HTML preview to see the output. This is an important point to note: that the order in which nodes are placed in the main template is how you specify the structure of the output.

Another important point to note at this stage is the form in which a node is created in the design. In the HTML preview, you will see that all the nodes included in the design have been sent to the output as text strings. Alternatively to being output as a text string, a node can be output in some other form, for example, as a table or a combo box. In this section, you have, by creating all the nodes as `(contents)`, specified that the output form of all nodes are text strings. In the section, Using Conditions, you will learn how to create a node as a combo box, and in the section, Using Global Templates and Rest-of-Contents, how to create a node as a (dynamic) table.

Make sure to save the file before moving to the next section.

6.3 Inserting Static Content

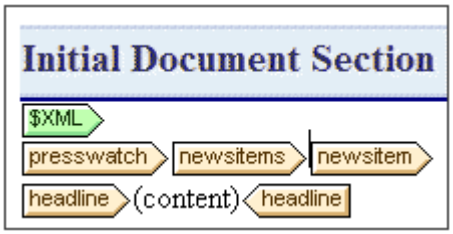
Static content is content you enter directly in the design—as opposed to content that comes from the XML source. A variety of static components can be entered in an SPS design. In this part of the tutorial, you will learn how to insert the following static components:

- An image
- A horizontal line
- Text

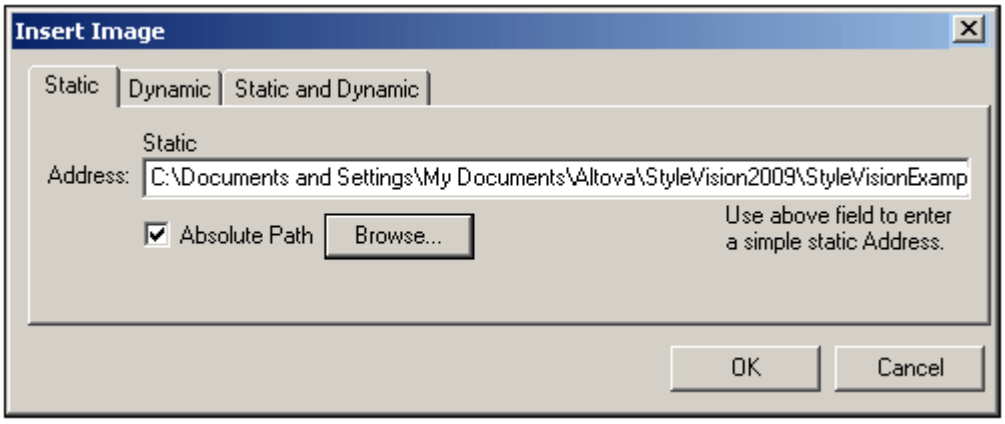
Inserting a static image

The static image to insert is `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart\NewsItems.BMP`, which will be used as the header of the document. To insert this image at the head of the document, do the following:

1. Place the cursor between the start-tags of `newsitems` and `newsitem` (*screenshot below*).

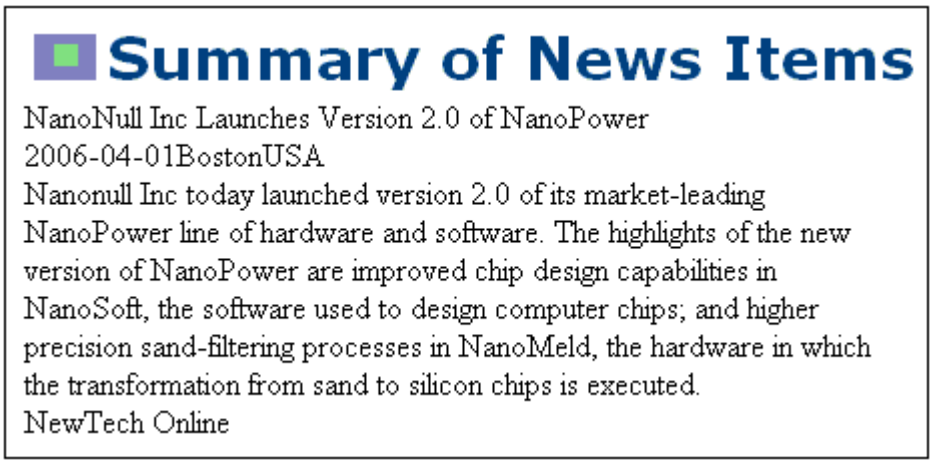


   Notice that the cursor is within the `newsitems` element but outside the `newsitem` element. It will therefore be inserted in the output once, at the start of processing of the `newsitems` element (because there is only one `newsitems` element defined in the schema).
2. Right-click, and select **Insert | Image**. The Insert Image dialog pops up (*screenshot below*).



3. In the Static tab, click the Absolute Path, then browse for the file `NewsItems.BMP` and select it.
4. Click **OK** to finish.

The HTML preview will look something like this:



Inserting horizontal lines
The first horizontal line you will insert is between the document header and document body. Do this as follows:

1. Place the cursor immediately after the recently inserted static image.
2. Right-click, and select **Insert | Horizontal Line**. A horizontal line is inserted.

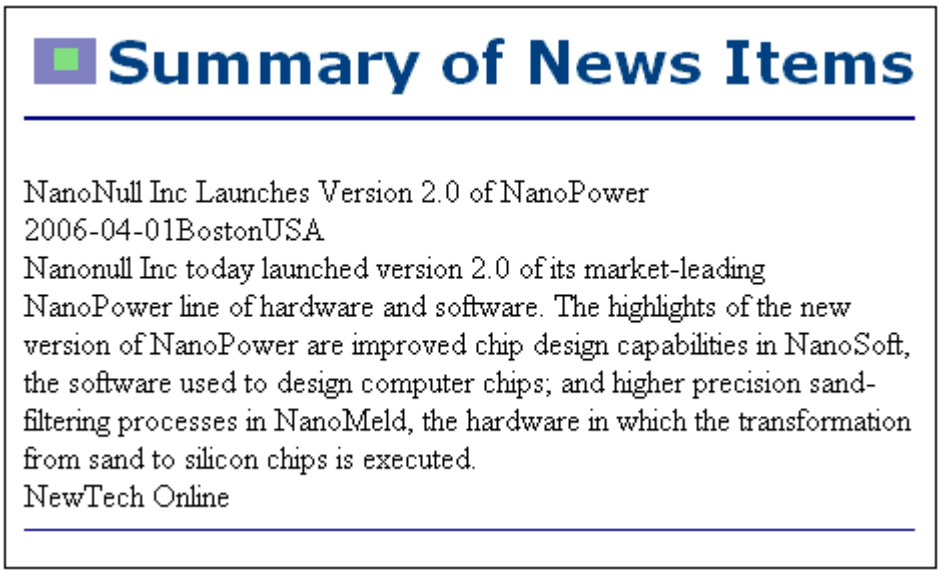
Set properties for the line as follows:

1. With the line selected in Design View, in the Properties sidebar, select the *line* component (in the Properties For column) and then the *HTML* group of properties.
2. Assign `color` and `size` properties for the line.
3. With the line selected in Design View, in the Styles sidebar, select the *line* component and then the *box* group of properties. Define a `margin-bottom` property of `12pt`.
4. Check the output in HTML Preview.

Now insert a horizontal line at the end of each news item. To do this the cursor would have to be placed immediately before the end-tag of the `newsitem` element. This will cause the line to be output at the end of each `newsitem` element.

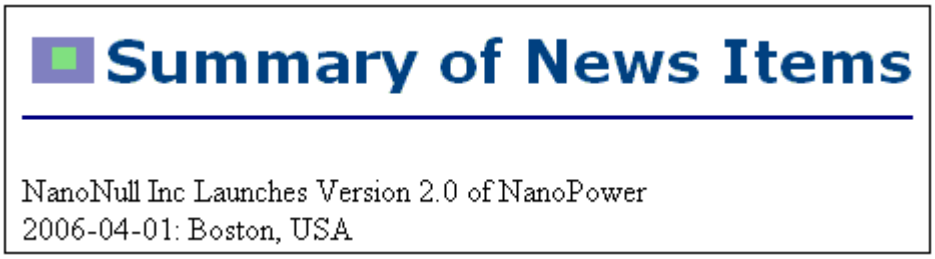
Inserting static text
You have already added static text to your design. When you pressed the **Enter** key to obtain new lines (in the section Inserting Dynamic Content (from XML Source)), whitespace (static text) was added. In this section, you will add a few static text characters to your design.

The SPS you have designed up to this point will produce output which looks something like this:



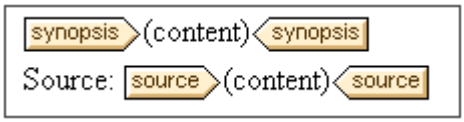
Notice that in the output of the `dateline` element, the contents of the `date` element and `place/@city` and `place/@country` attributes are run together without spacing. You can add the spacing as static text. In the design, place the cursor after the `date` element and enter a colon and a space. Next, enter a comma and space after the `@city` attribute (*screenshot below*)

This part of the output will now look like this:



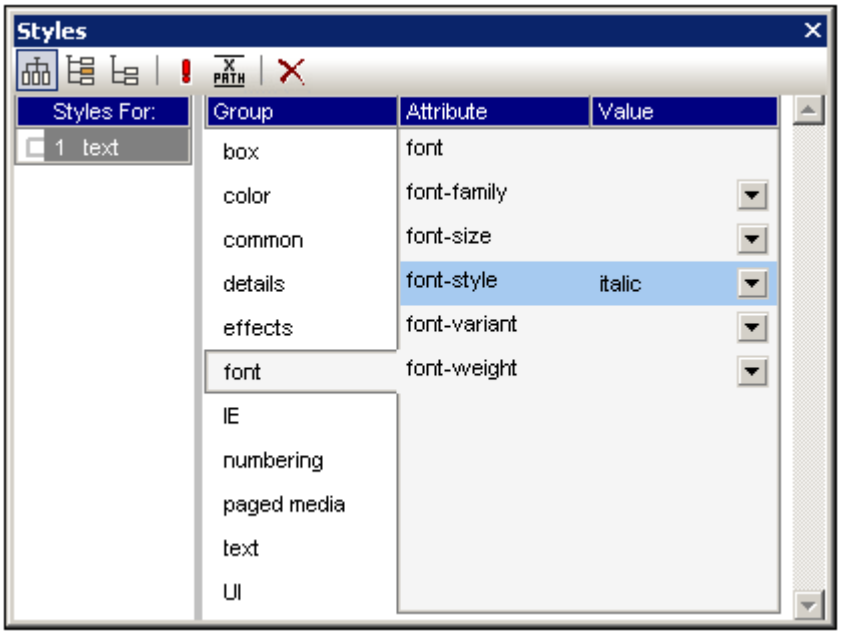
Notice the colon, spacing and comma in the `dateline` output. All of these text items are static text items that were inserted directly in the design.

You will now add one more item of static text. In the design, type in the string "`Source:  `" just before the start-tag of the `source` element (*screenshot below*).

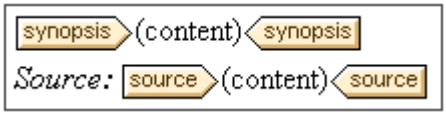


Formatting static text

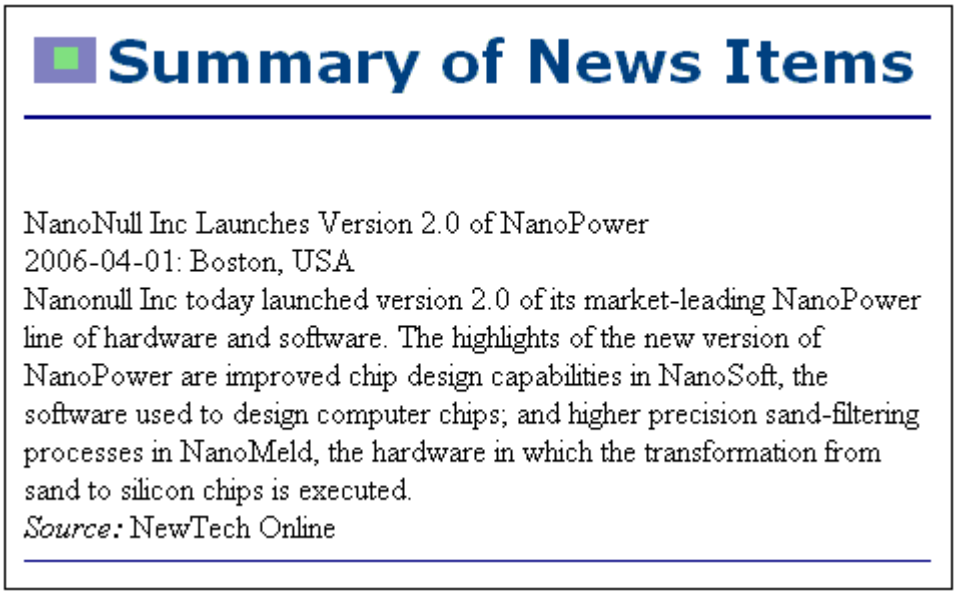
To format static text, highlight the text to be formatted and specify local style properties. In the design, highlight the text "`Source: `" that you just typed. In the Styles sidebar (*screenshot below*), notice that the *1 text* component is selected. Now select the *font* group of properties, and, for the `font-style` property (*screenshot below*), select the `italic` option from the dropdown menu.



The static text (that is, the string "`Source: `") will be give an italic style in the design, and will look like this:



The output will look like this in HTML Preview:



If you think there is too little vertical space between the source item and the horizontal line separating two `newsitem` elements, then, in the design, insert a blank line between the source and the horizontal line (by pressing **Enter**).

After you are done, save the file.

In this section you have learned how to insert static content and format it. In the next section you will learn more about how design components can be formatted using CSS principles and properties.

6.4 Formatting the Content

StyleVision offers a powerful and flexible styling mechanism, based on CSS, for formatting components in the design. The following are the key aspects of StyleVision's styling mechanism:

- CSS style rules can be defined for both block components and inline components.
- Predefined formats are block components that have inherent styles and can be used as wrappers for a group of adjacent components that need to be treated as a block. The inherent styles of these predefined formats can be overridden by styles you specify.
- Class attributes can be declared on components in the design, and the class can be used as a selector for external or global style rules.
- You can specify styles at three levels. These are, in increasing order of priority: (i) style rules in external stylesheets, (ii) global style rules, and (iii) local style rules. Note, however, that certain types of selectors in external and global style rules, such as name-based selectors (`h1`, `a`, `img`, etc), will apply only to Authentic View and HTML output, not to RTF, PDF, and Word 2007+ output. Rules that have class selectors will apply to HTML, RTF, PDF, and Word 2007+ formats.

In this section, you will learn how to:

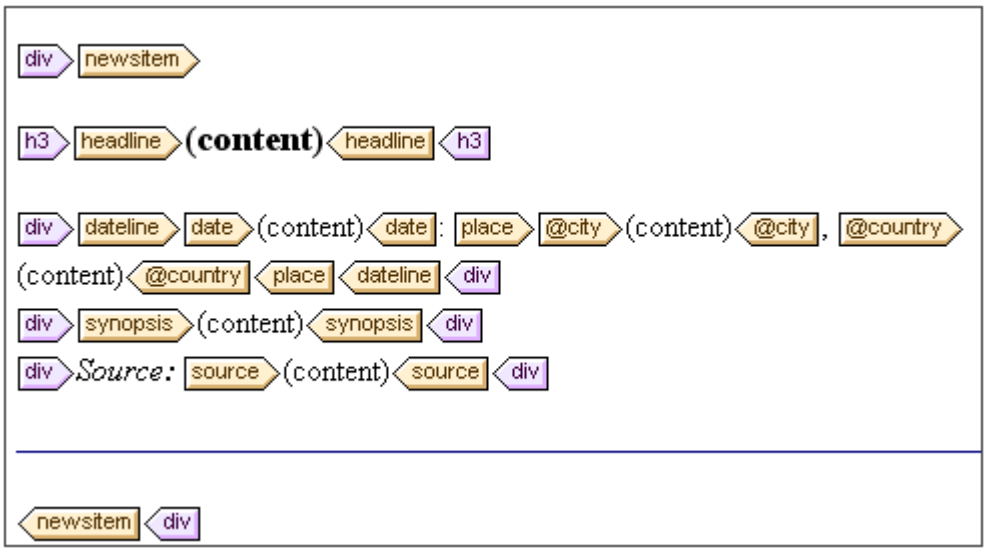
- Assign predefined formats
- Assign a component a class attribute
- Define styles in an external CSS stylesheet and add this stylesheet to the style repository of the SPS
- Define global style rules
- Define local styles for a selection of multiple design components
- Define local styles for a single component

Assigning predefined formats

One reason to assign a predefined format is to give a component the inherent styling of that predefined format. In the design, select the `headline` element and then select **Insert | Special Paragraph | Heading 3 (h3)** (alternatively use the Predefined Formats combo box in the toolbar). The predefined format tags are created around the `headline` element (*screenshot below*).

Notice that the font properties of the contents change and that vertical spacing is added above and below the predefined format. These property values are inherent in the `h3` predefined format.

Another use of predefined formats is to group design components in a block so that they can be formatted as a block or assigned inline properties as a group. The most convenient predefined property for this purpose is the `div` predefined format, which creates a block without spacing above or below. In your design, assign the `newsitem`, `dateline`, `synopsis`, and `source` nodes separate `div` components. Your design should look something like the screenshot below. Note that the static text "`Source:  `" is also included in the `div` component that contains the `source` element, and that the entire `newsitem` element is inside a `div` component.

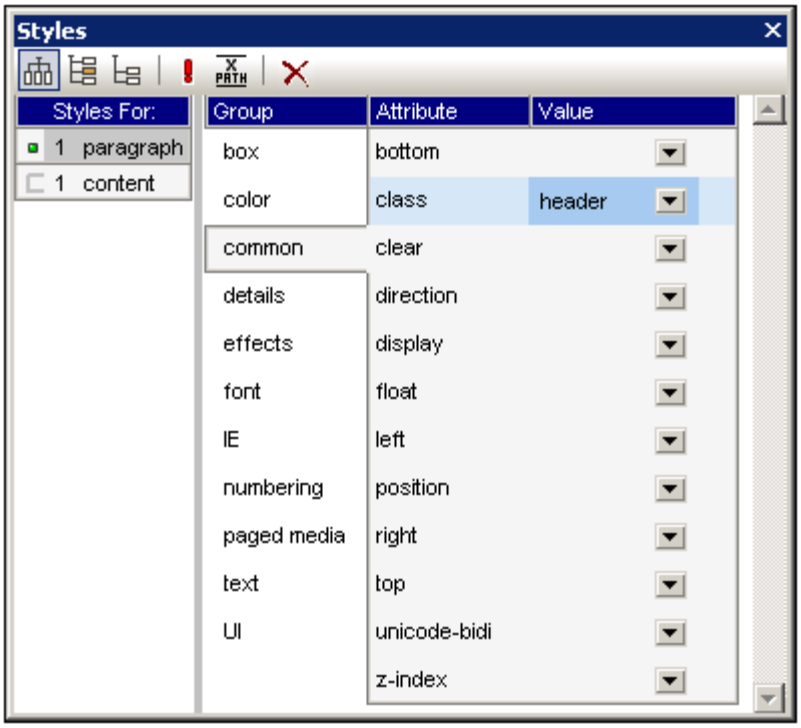


You have now grouped components together in different `div` blocks. Later in this section, you will learn how to assign styles to such blocks of grouped components.

Assigning components to class attributes

A style rule can be defined for a class of components. For example, all headers can be defined to have a set of common properties (for example, a particular font-family, font-weight, and color). To do this you must do two things: (i) assign the components that are to have the common properties to a single class; (ii) define the styling properties for that class.

In your design, select the `h3` tag, and in the Styles sidebar, select *1 paragraph* (to select the predefined format), and the *common* group of properties. Double-click in the Value field of the `class` property and enter `header`.



This particular instance of the `h3` format is now assigned to a class named `header`. When you define styling properties for the `header` class (styles from an external stylesheet or global SPS styles), these properties will be applied to all components in the SPS that have the `header` class.

Adding an external CSS stylesheet to the style repository

Style rules in an external CSS stylesheet can be applied to components in the SPS design. External stylesheets must, however, first be added to the style repository in order for rules in them to be applied to components. In the Style Repository sidebar (in Design View), do the following:

1. Select the `External` item.
2. Click the **Add** button in the toolbar. This pops up the Open dialog.
3. Browse for the file `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\QuickStart\QuickStart.css` and click **Open**.

The stylesheet is added to the style repository. It contains the following rules that are relevant at this stage:

```
.header   {
           font-family: "Arial", sans-serif;
           font-weight: bold;
           color: red;
          }

h3        {
           font-size: 12pt;
          }
```

The style rules for the `header` class and `h3` element are combined and produce the following HTML output for the `headline` element.

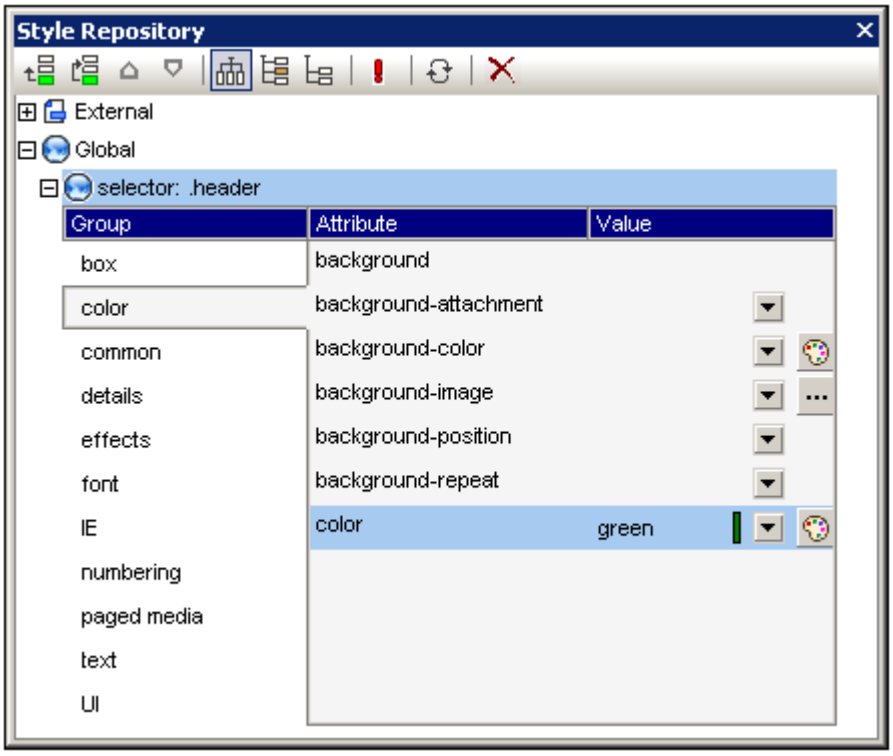
Note: The rule using the class selector (`.header`) is applied to RTF, PDF, and Word 2007+ output as well, but the rule with the `h3` name selector is applied to Authentic View and HTML output only.

Defining global style rules

Global style rules can be defined for the entire SPS using CSS selectors. The rules are defined

directly in the Style Repository sidebar. Create a global style rule for the `header` class as follows:

1. With Design View active, in the Style Repository sidebar, select the Global item.
2. Click the **Add** button in the toolbar. This creates an empty rule for the wildcard selector (`*`), which is highlighted.
3. Type in `.header` to replace the wildcard as the selector.
4. In the *color* group of properties, select `green` from the dropdown list of the `color` property values (*screenshot below*).



Where the global style rule defines a property that is also defined in the external stylesheet (the `color` property), the property value in the global rule takes precedence. In the HTML preview, the contents of the headline will therefore be green. Other property definitions from the external stylesheet (not over-ridden by a property in a global style rule) are retained (in this case, `font-family` and `font-weight`).

Note: Since the global style rule uses the class selector, this rule also applies to RTF, PDF, and Word 2007+ output—in addition to Authentic View and HTML output.

Defining local styles for multiple components at once

Local styles can be defined for multiple components at once. In your design, to specify that the entire text contents of a news item should have Arial as its font, click the `div` component surrounding the `newsitem` element and, in the Styles sidebar, in the Styles For column, select `1 paragraph`. Then, in the *font* group of properties, assign `Arial` as the `font-family`. This property setting will be inherited by all five descendant predefined formats.

Now, in the design, select the three `div` components surrounding the `dateline`, `synopsis`, and `source` nodes (by keeping the **Shift** key pressed as you click each `div` component). In the Styles sidebar, select `3 paragraphs`, then the *font* group of properties, and set a `font-size` of `10pt`. (The `h3` component was not selected because it already has the required `font-size` of `12pt`.)

Finally, in the design, select the `div` component surrounding the `dateline` element. In the Styles For column of the Styles sidebar, select `1 paragraph`. In the *font* group of properties, set `font-weight` to `bold` and `font-style` to `italic`. In the *color* group of properties, set `color` to `gray`. The output of the dateline will look like this

Notice that the styling defined for the `div` component has been applied to the static text within the `div` component as well (that is, to the colon and the comma).

Defining local styles for a single component

A local style defined on a single component overrides all other styles defined at higher levels of the SPS for that component. In the design, select the `headline` element and assign it a color of navy (`color` property in the *color* group of properties). The locally defined property (`color: navy`) overrides the global style for the `.header` class (`color: green`).

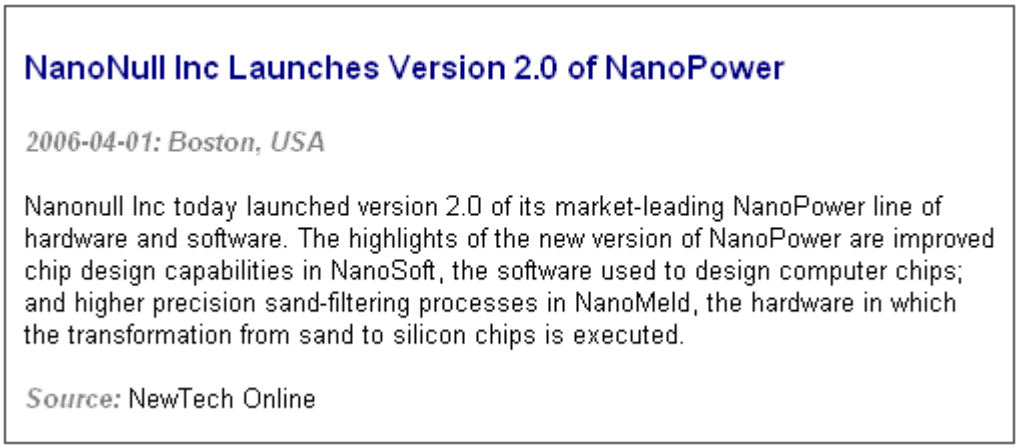
Select the `div` component surrounding the `source` element. In the Styles sidebar, with the `1 paragraph` item in the Styles For column selected, set the `color` property (in the *color* group of properties) to `gray`. In the *font* group of properties, set `font-weight` to `bold`. These values are applied to the static text. Remember that in the last section the static text "`Source: `" was assigned a `font-style` value of `italic`. The new properties (`font-weight: bold` and `color: gray` are additional to the `font-style: italic` property).

Now, in Design View, select the `( content)` placeholder of the `source` element. In the Styles For column, with *1 content* selected, set the `color` property (in the *color* group of properties) to `black`. In the *font* group of properties, set `font-weight` to `normal`. The new properties are set on the `contents` placeholder node of the `source` element and override the properties defined on the `div` component (*see screenshot below*).

Completing the formatting

To complete the formatting in this section, select the `div` component on the `synopsis` element and, in the Predefined Formats combo box in the toolbar, select `p`. This gives the block the inherent styles of the HTML's `p` element. The HTML preview should now look something like

this:



After you are done, save the file.

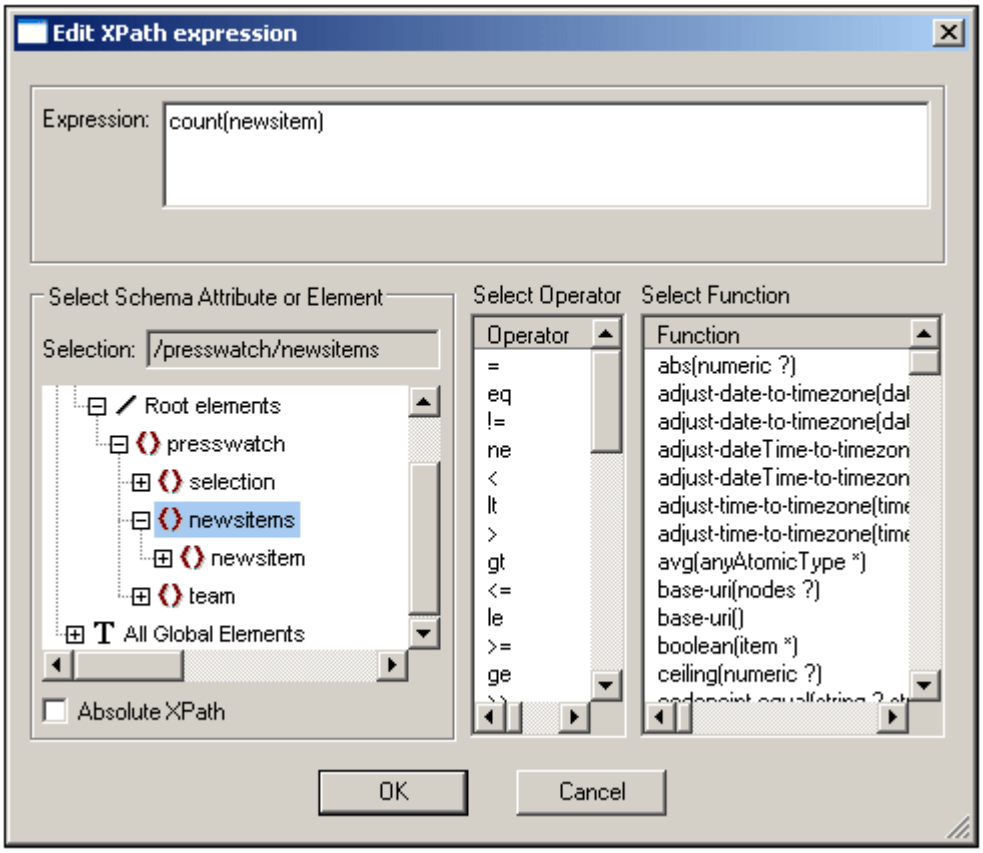
6.5 Using Auto-Calculations

Auto-Calculations are a powerful mechanism for providing additional information from the available XML data. In this section you will add two pieces of information to the design: the total number of news items and the time period covered by the news items in the XML document. Neither piece of information is directly available in the XML document but has to be calculated or manipulated from the available data.

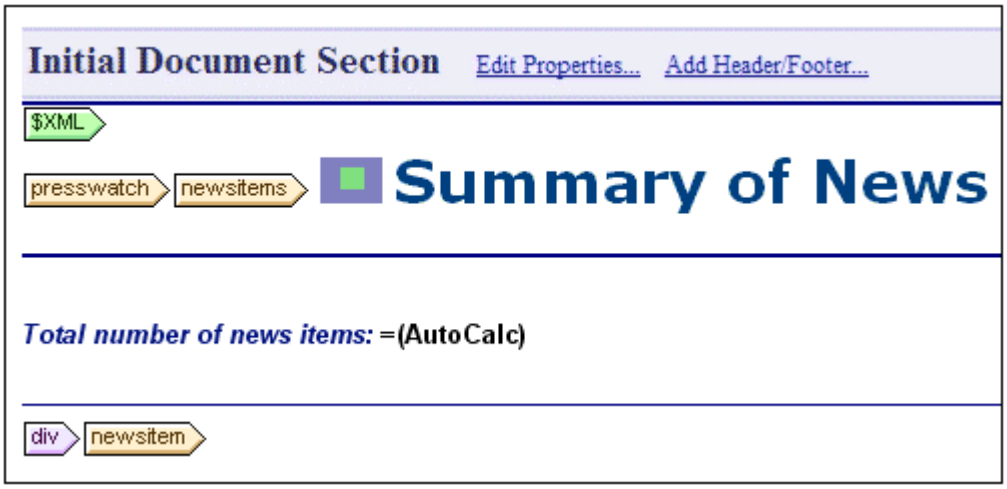
Counting the news item nodes
In the design, do the following:

1. Create space, as shown in the screenshot below, for a line of static text (on which the Auto-Calculation will also be placed). Use the **Return** key to add new lines and insert a horizontal line below the space you create (*see screenshot*).

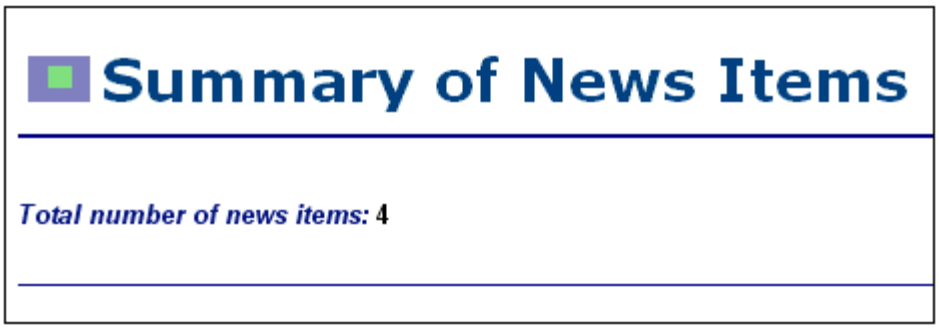
2. Type in the static text "`Total number of news items:` " as shown in the screenshot above.
3. Apply local styling of your choice to the static text. Do this as described in the section Formatting the Content.
4. Place the cursor after the colon and select **Insert | Auto-Calculation | Value**. This pops up the Edit XPath Expression dialog (*screenshot below*). (Alternatively, you can right-click and select the command in the context menu.)



5. In the schema tree, note that the context node is `newsitems`, which is highlighted. Now, in the Expression text box either type in the expression `count( newsitem)` or build the expression using the sidebars. (Double-click the `count` function to enter it, then place the cursor within the parentheses of the function and double-click the `newsitem` node in the schema tree.
6. Click **OK** to finish. The Auto-Calculation is inserted in the design at the cursor location (*screenshot below*). Format the Auto-Calculation using local styles.



Your HTML output will look like this:

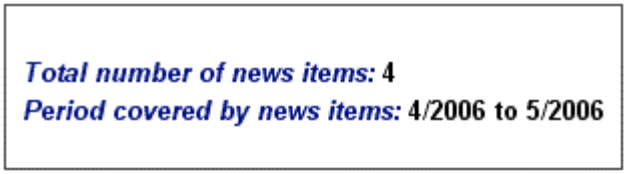


Displaying the period covered by news items
The period covered by the news items can be obtained by getting the date of the earliest news item and the date of the latest news item. This can be achieved with XPath expressions like those given below. The first expression outputs the contents of the `date` node. The second expression is a refinement, outputting just the month and year values in the `date` node. You can use either of these.

- `concat( min( //date), ' to ', max( //date)).`
- `concat( month-from-date( min( //date)), '/', year-from-date( min( //date)), ' to ', month-from-date( max( //date)), '/', year-from-date( max( //date)))`

In the design, insert the static text and Auto-Calculation as shown in the screenshot below. Apply whatever local styling you like.

The HTML preview will look something like this:



After you are done, save the file.

6.6 Using Conditions

If you look at `QuickStart.xml`, you will see that each `newsitem` element has a `metainfo` child element, which in turn can contain one or more `relevance` child elements. In the SPS design, you can create a combo box that has a dropdown list which you can populate with unique `relevance` element values. When the Authentic View user selects an item from the dropdown list in the combo box, that item can be passed as a value to a node in the XML document. A condition can test what the user selection is (by looking up that node) and provide appropriate processing (displays) for each user selection. In this section, you will create a conditional template that displays those news items that have a `relevance` element that matches the user selection.

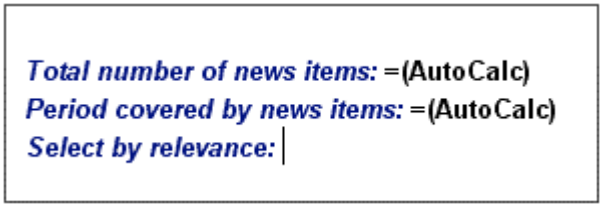
We will proceed as follows:

1. Create a combo box in which the Authentic View user can select the `byrelevance` value. The values in the dropdown list of the combo box are obtained by using an XPath expression, which dynamically compiles a list of all unique `relevance` node values.
2. Insert a condition around the `newsitem` element. This condition selects all `newsitem` elements that have a `relevance` element with content matching the content of the `byrelevance` node. The content that is surrounded by a branch of a condition is know as a conditional template.
3. Within the conditional template, list each `relevance` node of that news item.
4. Highlight the `relevance` element (in the list of `relevance` elements) that matches the `byrelevance` element. This is done by creating a condition to select such `relevance` elements and then applying special formatting to this conditional template.
5. In the condition for the `newsitem` element, insert a branch that selects all news items.

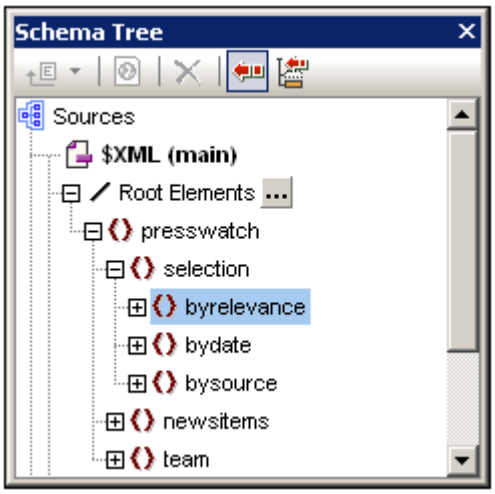
Creating the combo box to select unique node values

In the XML document, the node that will contain the user selection is `/presswatch/selection/byrelevance`. This is the node you will create as the combo box. Do this as follows:

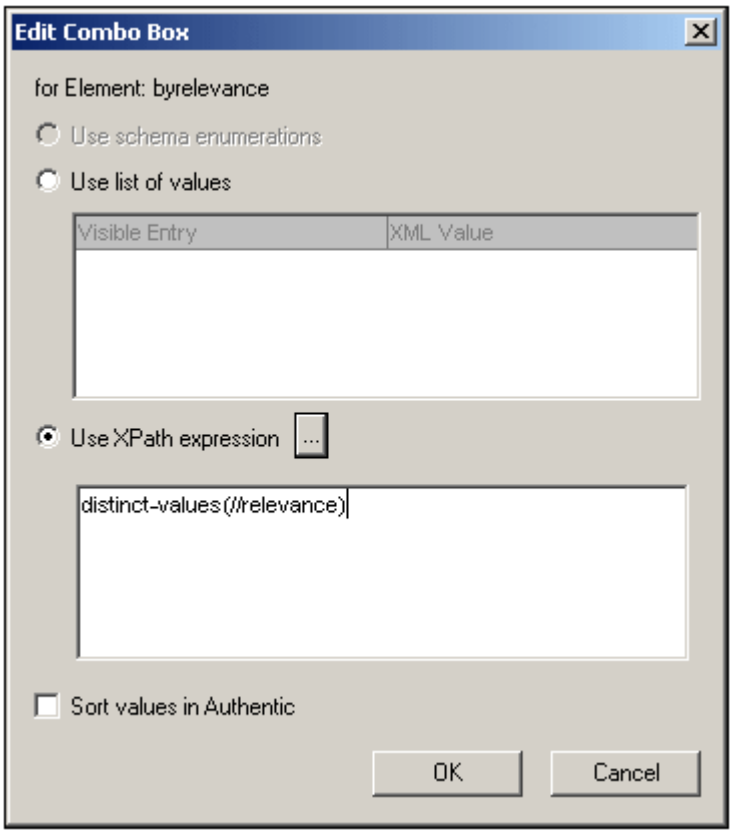
1. Insert the static text "`Select by relevance:` " at the head of the document and just below the second Auto-Calculation (*screenshot below*).



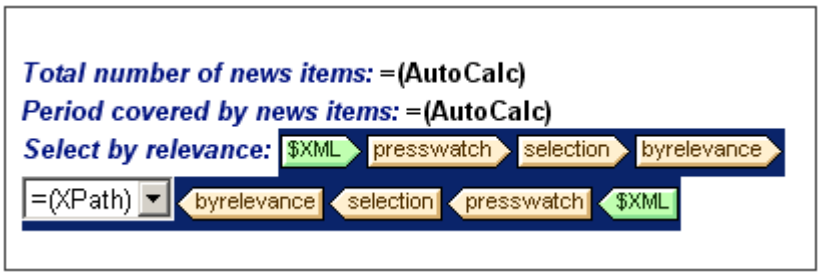
2. Drag the `byrelevance` node from the Schema Tree sidebar (*screenshot below*), and drop it after the newly entered static text.



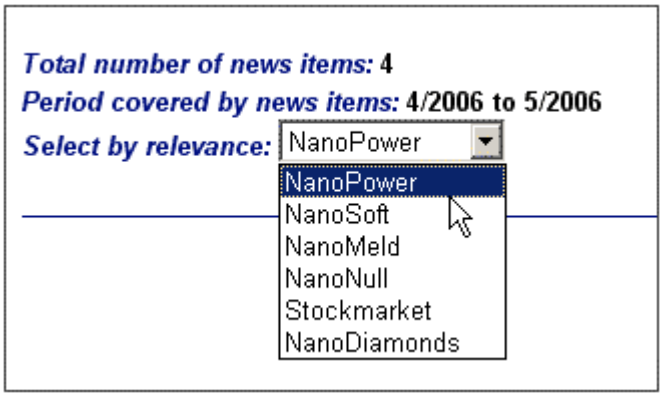
3. In the context menu that appears, select Create Combo Box. This pops up the dialog shown below.



4. In the Edit Combo Box dialog (*screenshot above*), select Use XPath Expression, and enter the XPath expression: `distinct-values( //relevance)` . This expression selects unique values of all `relevance` elements in the XML document.
5. Click **OK** to finish. The combo box is inserted and the design will look something like this:

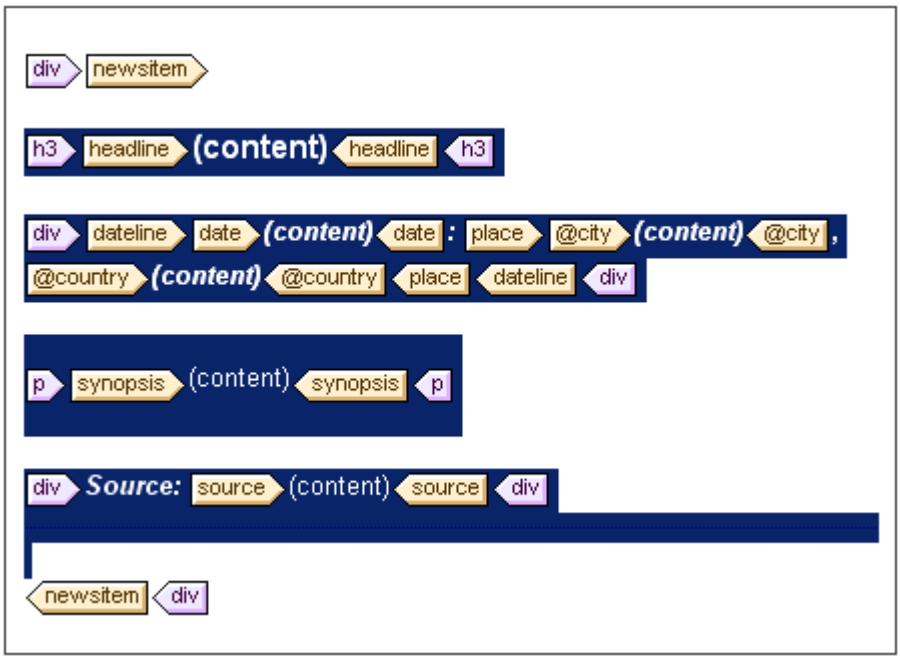


6. Switch to Authentic View. When you click the dropdown arrow of the combo box, notice that the list contains the unique values of all `relevance` nodes (*screenshot below*). Check this against the XML document. This is a dynamic listing that will be augmented each time a new `relevance` value is added to the XML document.

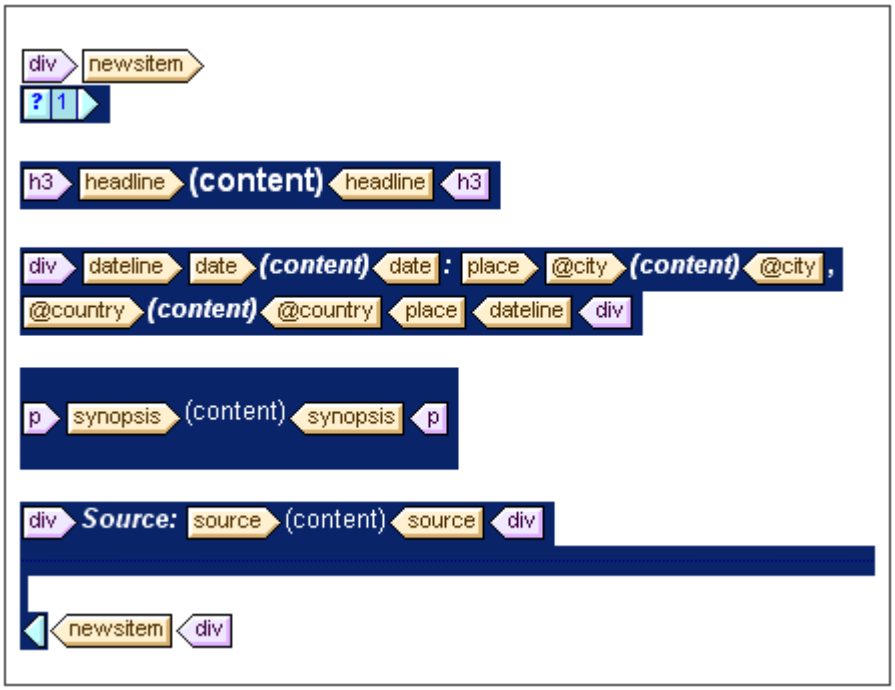


Inserting a condition to display news items having the selected `relevance`
The condition selects `newsitem` elements that have a `metainfo/relevance` element with a value that is the same as that selected by the user (and passed to the `/presswatch/selection/byrelevance` element). Insert the condition as follows:

1. Select the contents of the `newsitem` part of the design which is to be contained inside the condition (highlighted in the screenshot below).



2. Select the menu command (or context menu command) **Enclose with | Condition**. This pops up the Edit XPath expression.
3. Enter the expression `metainfo/relevance=/presswatch/selection/byrelevance`. This expression evaluates to true when the value of the `metainfo/relevance` descendant of the current `newsitem` is the same as the value of the `/presswatch/selection/byrelevance` element (the user selection).
4. Click **OK**. The condition is created around the contents of the `newsitem` element (*screenshot below*).



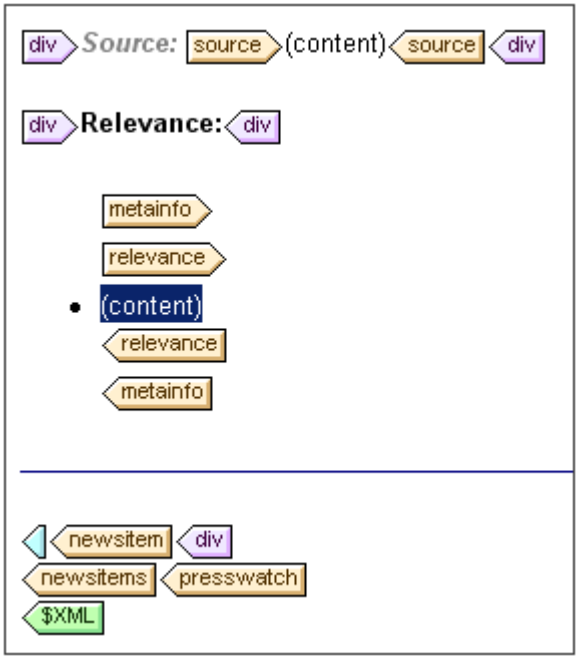
Note that there is a single branch in this condition. News items for which the condition test evaluates to true are displayed, those for which the condition test does not evaluate to true are

not displayed. The condition in this case, therefore, works as a filter. Later in this section, you will add a second branch to this condition.

Inserting the `relevance` node as a list

In order to display the `relevance` nodes of each `newsitem` element, insert them in the design as follows (`see screenshot below`):

1. Create some vertical space below the `div` component for the `source` element and within the end-tag of the conditional template.
2. Type in the static text "`Relevance: `" and create a predefined format of `div` around it (highlight the static text and insert the predefined format).
3. Drag the `relevance` element from the Root elements tree in the Schema Tree sidebar and drop it into the design below the static text `Relevance: `.
4. Create it as a list. (In the context menu that pops up when you drop the node in the design, select Bullets and Numbering, and then select the desired list format.)
5. Apply text formatting to the contents of the list. When you are done, the design should look something like this:

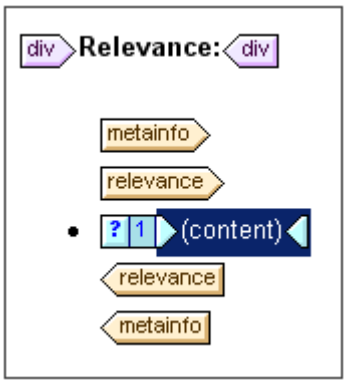


Now, in Authentic View, check the results for different selections of `relevance`; use the combo box to change the selection.

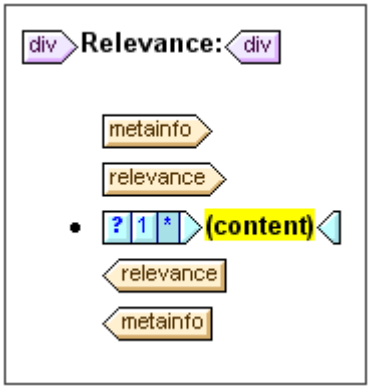
Making the selected `relevance` element bold

Some news items have more than one `relevance` element. In such cases, the design would be improved if the relevance that matches the user-selection were visually highlighted while the others were not. You can do this in the following way:

1. Select the `relevance` element in the design.
2. Insert a condition, giving it an XPath expression of: . `=/presswatch/selection/byrelevance`. This creates a condition with a single branch (*screenshot below*) that selects `relevance` elements that match the `byrelevance` element.



3. Select the `contents` placeholder and give it a local formatting (in the Styles sidebar) of bold (*font* group) and yellow background-color (*color* group).
4. Right-click the condition and, from the context menu, select **Copy Branch**.
5. In the Edit XPath Expression dialog that pops up, check the Otherwise check box (below the expression text box).
6. Click **OK** to finish. A new branch (`Otherwise`) is created (*screenshot below*). This condition branch selects all `relevance` elements that do not match the `byrelevance` element.



7. Notice that the contents of the `Otherwise` branch are a copy of the first branch; the `contents` placeholder is bold and has a yellow background. Remove this formatting (bold and background-color) from the `contents` placeholder.

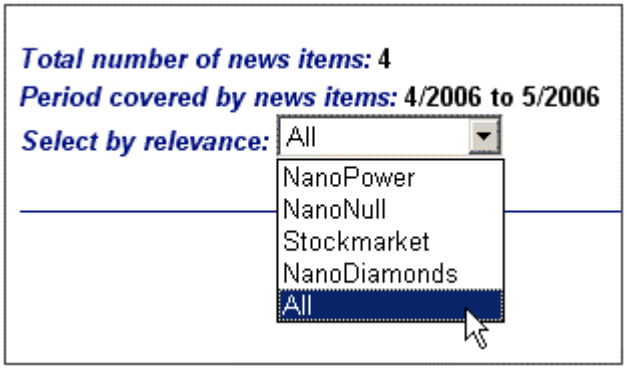
You have put a condition with two branches (each with its conditional template) that carries out the following test on each `relevance` element: (i) if the contents of `relevance` match those of `/presswatch/selection/byrelevance`, then the contents of `relevance` are displayed bold and with a yellow background. Otherwise (the second branch) they are displayed normal. Check this in Authentic View.

Modifying the combo box and inserting a second condition branch

In the combo box where the Authentic View user selects a `byrelevance` value, there is no dropdown list option for selecting all news items. To include this option do the following:

1. In Design View, select the combo box.
2. In the Properties sidebar, with *combobox* selected in the Properties For column, click the **Edit** button of the `content origin` property (in the *combo box* group of properties).
3. In the Edit XPath Expression dialog that pops up, modify the XPath expression from `distinct-values(//relevance)` to `distinct-values(//relevance), 'All'`. This adds the string `All` to the sequence of items returned by the XPath expression.

4. Check the dropdown list of the combo box in Authentic View (*screenshot below*).



Now if the user selection is `All`, then this value (`All`) is passed to the node `/presswatch/selection/byrelevance`. The idea is that when the `byrelevance` node contains the value All, all news items should be displayed.

The condition that displays the news item template has a single branch with the expression `metainfo/relevance=/presswatch/selection/byrelevance`. Since no `metainfo/relevance` node has the value `All`, no news item will be displayed when `All` is te value of the `byrelevance` node. What you have to do is create a second branch for the condition, which will test for a value of `All`. By creating the news item template within this branch, you will be outputting the news item if the test is true. Do this as follows:

1. In Design View, select the news item condition.
2. Right-click the condition and, from the context menu, select **Copy Branch**.
3. In the Edit XPath Expression dialog that pops up, enter the expression: `/presswatch/selection/byrelevance='All'`.
4. Click **OK** to finish. A second branch is created.

The second branch has as its contents the same template as the first branch. What the second branch does is output the news item template if the user selection is `All`.

After you have completed this section, save the design.

6.7 Using Global Templates and Rest-of-Contents

Global templates are useful for specifying the processing of an element globally. This enables the rules of the global template (defined in one location) to be used at multiple locations in the stylesheet. A global template can be used in two ways:

- The rules of the global template can be copied to the local template.
- A local template (in the main template) can pass processing of that node to the global template, after completing which processing resumes in the main template; in this case, the global template is said to be invoked or used.

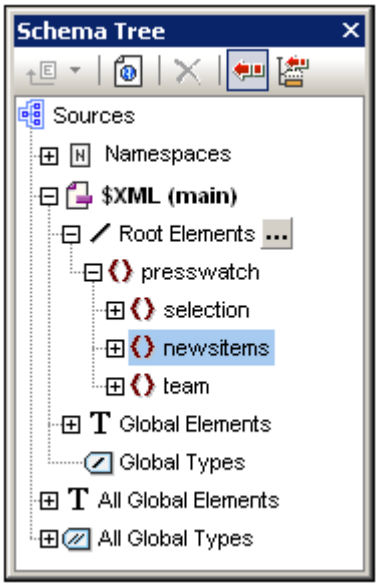
There are two mechanisms that are used to invoke a global template from the main template:

- A local template references a global template.
- A `( rest-of-contents)` instruction in the main template applies templates to the descendant elements of the current element (that is, to the rest-of-contents of the current element). If a global template exists for one of the descendant elements, the global template is applied for that element. Otherwise the built-in template for elements is applied.

In this section, you will create a design for the team-members' template using the rest-of-contents instruction and a global template for the global element `member`.

Inserting the `rest-of-contents` instruction

The broad structure of the schema is shown in the screenshot below.



The document element `presswatch` contains three children: (i) `selection`; (ii) `newsitems`; and (iii) `team`. The main template you have created this far processes the `/presswatch` element. Within the `presswatch` element, only the `newsitems` element is processed. The `selection` and `team` elements are not processed within the `presswatch` element (although `selection` has been processed within the `newsitems` element). Inserting the `rest-of-contents` instruction within `presswatch` will therefore cause the `selection` and `team` elements to be processed.

Insert the `rest-of-contents` instruction in the design by placing the cursor between the end-tags of `newsitems` and `presswatch`, and selecting the menu command or context menu command **Insert | Rest of Contents**. The `rest-of-contents` placeholder is inserted (

screenshot below).

If you look at the HTML preview, you will see a string of text (*screenshot below*):

This string is the result of the application of the built-in templates to the `selection` and `team` elements. The built-in template for elements processes child elements. The built-in template for text nodes outputs the text in the text node. The combined effect of these two built-in templates is to output the text content of all the descendant nodes of the `selection` and `team` elements. The text `All` comes from `selection/byrelevance`, and is followed by the text output of `team/member` descendant nodes, `first`, `last`, `email`, in document order. Note that the `id` attribute of `member` is not output (because, as an attribute, it is not considered a child of `member`).

Creating a global template for `selection`

Since the content of `selection` is not required in the output, you should create an empty global template for `selection` so that its contents are not processed. Do this as follows:

1. In Design View, right-click `selection` in the All Global Elements tree in the Schema Tree sidebar.
2. In the context menu that pops up, select **Make / Remove Global Template**. A global template for `selection` is created (*screenshot below*).

3. In the global template, click the `contents` placeholder.and press the **Delete** key of your keyboard. The contents placeholder is deleted.
4. Check the HTML preview. The text `All` is no longer present in the line of text output by the built-in templates (*screenshot below*).

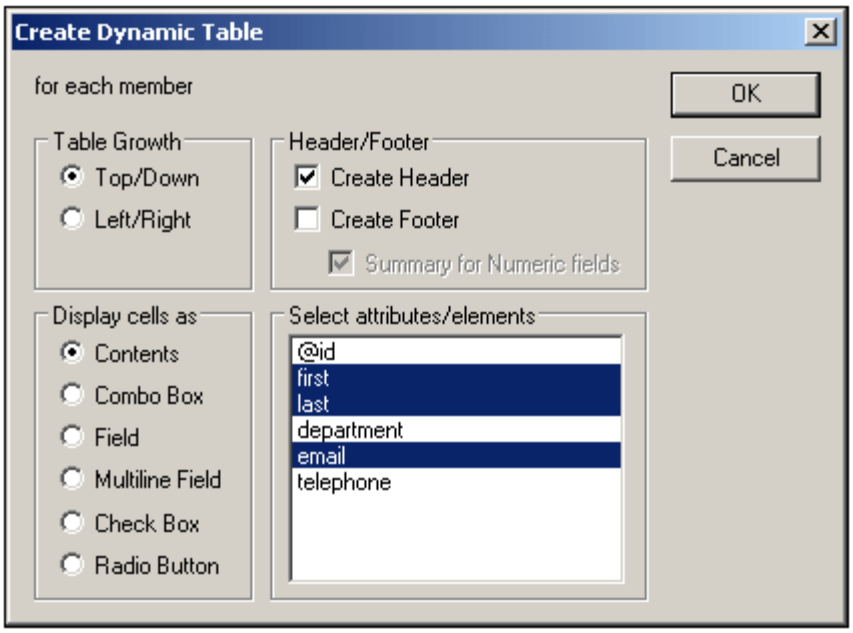
Since the global template for `selection` is empty, the child elements of `selection` are not processed.

Creating a global template for `team/member`

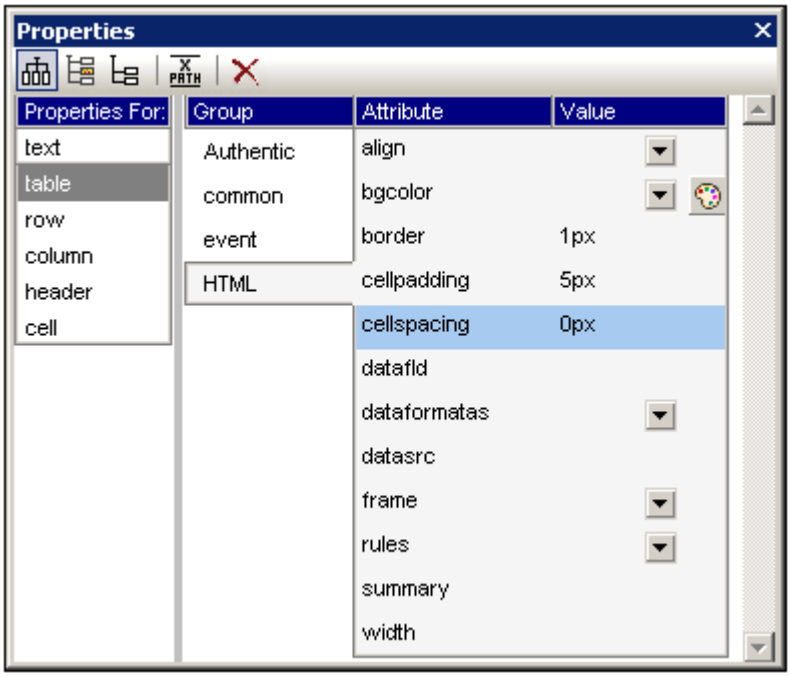
The objective is to create a table to display details of the members of the press monitoring team. This table will be created in a global template for the `team` element. Do this as follows:

1. Create a global template for the element `team` (right-click `team` in the All Global Elements list of the Schema Tree sidebar and select **Make / Remove Global Template**).
2. In the All Global Elements list, expand the `team` element and drag its `member` child element into the global template of `team` (in the design).

3. In the context menu that pops up when you drop the element into the global template of `team`, select **Create Table**. This pops up the Create Dynamic Table dialog (*screenshot below*).



4. In the attributes/elements list deselect `@id`, `department` and `telephone` (*see screenshot*), and click **OK**. The dynamic table is created.
5. Place the cursor in the dynamic table, and in the Properties sidebar, with `table` selected in the Properties For column, specify table properties as shown in the screenshot below.



6. Set additional properties as required in the Properties and Styles sidebars. For example, a background color can be set for the header row by placing the cursor in the header row, and with `row` selected in the Properties For column of the Styles sidebar,

specifying a value for the `background-color` property (*color* group). You can also edit the headers, which are strings of static text. Also, if the `content` placeholder of the `team` element is still present in the global template, delete it.

The HTML preview of the table will look something like this:

First	Last	Email
Andrew	Bentinck	a.bentinck@nanonull.com
Nadia	Edwards	n.edwards@nanonull.com
John	Edwards	j.edwards@nanonull.com
Janet	Ashe	j.ashe@nanonull.com

6.8 That's It!

Congratulations for having successfully completed the tutorial. You have learned the most important aspects of creating an SPS:

- How to create the structure of the document (main template and global templates).
- How to insert dynamic and static content in the design, using a variety of dynamic and static SPS components..
- How to use CSS styles, in external stylesheets, in global style rules, and in local style rules.
- How to use Auto-Calculations to derive additional information from the available XML data.
- How to use conditions to filter the XML data and how to obtain different outputs depending on values in the XML data.
- How to use global templates and rest-of-contents.

For a more detailed description of these features, see the corresponding sections in the following four sections:

- SPS File: Content
- SPS File: Structure
- SPS File: Advanced Features
- SPS File: Presentation
- SPS File: Additional Functionality

These sections also contain descriptions of several other StyleVision features not encountered in the Quick Start tutorial.

Using the SPS

After completing the SPS, you should also try out the two main uses of SPS:

- Editing XML documents in the Authentic View of XMLSpy or Authentic Desktop. (The Enterprise and Professional editions contain an Authentic View preview tab, which does not have a few features such as sidebars and Text State Icons.) These two products provide a full-feature Authentic View, in which you can try out the sidebars and context menu. To edit `QuickStart.xml` in Authentic View in XMLSpy or Authentic Desktop, associate the XML file with `MyQuickStart.sps` and switch to Authentic View.
- Generating XSLT stylesheets for transforming the XML file to HTML, RTF, and PDF output. The XSLT stylesheets can be generated using the File | Save Generated Files command or via the command line. Try generating XSLT stylesheets from `MyQuickStart.sps` and then using these stylesheets to transform `QuickStart.xml`.

Chapter 7

Usage Overview

7 Usage Overview

Objectives
SPS documents that you create in StyleVision can be used for two broad purposes:

- To control the display of XML source documents in Authentic View and to enable data to be entered in XML documents or DBs via the Authentic View interface.
- To generate XSLT stylesheets for HTML, RTF, PDF, and Word 2007+ output.

In this way, the SPS can be used to enable XML document editing and to generate HTML, RTF, PDF, and Word 2007+ output from the edited XML document. Additionally, the generated XSLT stylesheets can be used to transform other XML documents based on the same schema as the SPS.

Steps for creating an SPS
Given below is an outline of the steps involved in creating a new SPS.

1. Assign a schema to the newly created empty SPS. The schema may be: (i) a schema file (DTD or XML Schema); (ii) an XML Schema generated from a DB (*Enterprise and Professional editions only*); (iii) a schema based on an XBRL taxonomy (*Enterprise edition only*); (iv) a user-defined schema (created directly in StyleVision). This is done in the Design Overview sidebar. If required, additional schemas can be added (via the Design Overview sidebar) so that nodes in multiple XML documents can be addressed. Alternatively, a new SPS can be created directly with a schema via the **File | New** command.
2. Assign a Working XML File to the SPS. The Working XML File provides the XML data processed by the SPS when generating Authentic View and output previews. The Working XML File is assigned in the Design Overview sidebar. The Working XML File enables you to preview output in StyleVision. If required, the Working XML Files for additional schemas can be assigned (via the Design Overview sidebar) to enable previews involving multiple XML documents.
3. Select the required XSLT version.
4. The SPS document is designed in Design View using the various design components available to the designer. The design process consists of creating a document structure and defining presentation properties. If print output is required, then additional print formatting properties can be specified.
5. The Authentic View and outputs are tested. If modifications to the design are required, these are made and the SPS document is re-tested.
6. If XSLT files or output files are required, these are generated.
7. If required, assign a Template XML File. The Template XML File provides the starting data for a new XML document that can be edited in Authentic View using the SPS.
8. The SPS is deployed for use among multiple Authentic View users.

7.1 SPS and Sources

Creating a new SPS file
To create a new SPS document, select an option from under the **File | New (Ctrl+N)** command or click the **New Design** icon  in the Standard toolbar. A new SPS document is created and is displayed in Design View. The new document is given a provisional name of `SPSX.sps`, where `X` is an integer corresponding to the position of that SPS document in the sequence of new documents created since the application was started.

After a new SPS document is created, the source files for the SPS must be assigned.

Assigning source files for the SPS
There are three types of source files that can be assigned to an SPS:

- Schema sources
- Working XML File
- Template XML File

These source file assignments are made in the Design Overview sidebar. How to make the assignments is described in the section, Design Overview. The significant points about each type of source file are given below.

Schema sources
At least one schema source file must be assigned to an SPS so that a structure for the design document can be created. Optionally, additional schema sources can be assigned. This enables nodes from other documents to be addressed, and thus included, in the SPS. Schema sources are assigned in the Design Overview sidebar. A schema may be an XML Schema file (`.xsd` file), an XML Schema generated from an XML file, an XML Schema generated from a DB file, a DTD, a schema based on an XBRL taxonomy, or a user-defined schema. One of the assigned schema sources is designated the main schema. The main schema is significant because the document node of the Working XML File associated with the main schema is used as the starting point for the main template. For each schema, one optional Working XML File and one optional Template XML File can be assigned.

Note: If you wish to add a namespace to an SPS or to an XSLT stylesheet being generated from an SPS, the namespace must be added to the top-level `schema` element of the XML Schema on which the SPS is based.

Working XML File
Each schema source can, optionally, have a Working XML File associated with it. The function of the Working XML File is to provide the XML data source for output previews in StyleVision, and it must therefore be valid according to the schema with which it is associated. The Working XML File is assigned in the Design Overview sidebar.

Template XML File
Each schema source can have a Template XML File optionally associated with it. The function of the Template XML File is to provide the starting data of the new XML document that is created each time that SPS is opened in the Authentic View of a product other than StyleVision. The Template XML File must be valid according to the schema with which it is associated. It is assigned in the Design Overview sidebar.

7.2 Creating the Design

In the SPS design, you specify:

1. What content (from the XML document or DB) should go to the output; additionally content can be inserted directly in the SPS for inclusion in the output;
2. How the output should be structured; and
3. What presentation (formatting) properties are applied to the various parts of the output.

Content for output
The content for the output can come from:

1. The XML document or DB, or from multiple XML documents and the DB, to which the SPS is applied. Content from the XML document is included in the SPS by dragging the required XML data node from the relevant schema tree in the Schema Tree sidebar and dropping this node at the desired place in the SPS.
2. An external XML document that is accessible to the application (that is, to StyleVision or an Authentic View product). By using the `doc()` function of XPath 2.0 in an Auto-Calculation, content from external XML document sources can be accessed. An XML document accessed via the `doc()` function in an XPath expression does not need to be referenced via the Schema Sources associations.
3. The SPS itself. Text and other content (such as images and tables) can be inserted directly in the SPS using the keyboard and other GUI features. Such input is independent of the XML document.
4. Manipulated dynamic (XML source) data, with the manipulations being achieved using XPath 1.0 and XPath 2.0 expressions. Manipulations are typically achieved with Auto-Calculations.
5. For the HTML output, JavaScript functions can be used to generate content.

Structure of output
In the SPS design, the structure of the output can be controlled by using either: (i) a procedural approach, in which the output structure is specified in an entry-level template (StyleVision's main template) and can be independent of the structure of the XML document; (ii) a declarative approach, in which template rules are declared for various nodes (StyleVision's global templates), thus generating an output that follows the structure of the XML document; or (iii) a combination of the procedural and declarative approaches. In Design View, you can use a mix of main template and global templates to obtain the desired structure for the output document. The use of Modular SPSs and Design Fragments provides additional flexibility in the way an SPS is structured.

Presentation (or formatting) of the output
In Design View, presentation properties are applied to design components using CSS styles. Styles can be defined locally on the component, for HTML selectors declared at the document level, and for HTML selectors declared in an external CSS stylesheet. Additionally, certain HTML elements can be applied to components using predefined formats. Specifying presentation properties is described in detail in the section, Presentation Procedures.

7.3 XSLT and XPath Versions

An SPS is essentially an XSLT stylesheet. For each SPS you must set the XSLT version: 1.0 or 2.0. You do this by clicking the appropriate toolbar icon:  or  . The selection you make determines two things:

- Which of the two XSLT engines in StyleVision is used for transformations; StyleVision has separate XSLT 1.0 and XSLT 2.0 engines.
- What XSLT functionality (1.0 or 2.0) is displayed in the interface and allowed in the SPS . For example, XSLT 2.0 uses XPath 2.0, which is a much more powerful language than XPath 1.0 (which is used in XSLT 1.0). Additionally, some SPS features, such as the table-of-contents feature, is available only with XSLT 2.0.

XSLT transformations

XSLT transformations in StyleVision are used: (i) to generate output views in the interface; and (ii) to generate and save output files (HTML, RTF, PDF, and Word 2007+) from within the interface and from the command line. The XSLT engine used for transformations (Altova XSLT 1.0 Engine or Altova XSLT 2.0 Engine) corresponds to the XSLT version selected in the SPS.

XSLT functionality in GUI

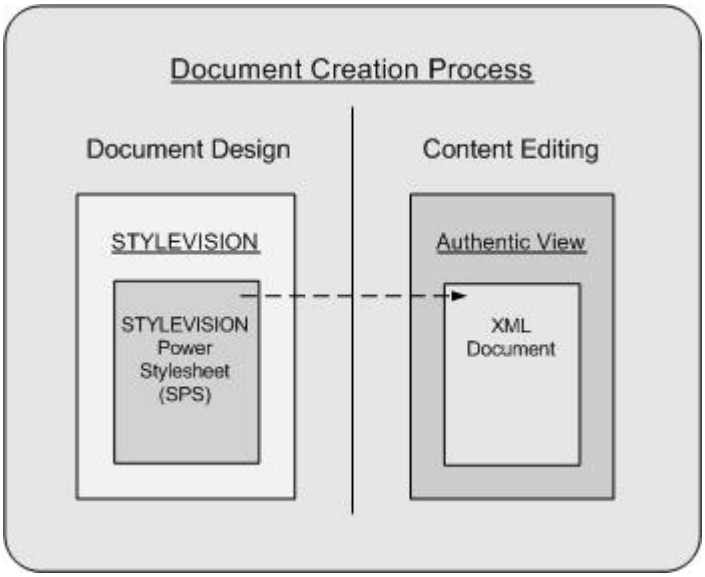
The functionality appropriate for each XSLT version relates mostly to the use of the correct XPath version (XPath 1.0 for XSLT 1.0 and XPath 2.0 for XSLT 2.0). XPath expressions are widely used in StyleVision—most commonly in features such as Auto-Calculations and Conditional Templates—and there are interface mechanisms that require, and help you build, XPath expressions. The functionality of the correct XPath version is automatically made available in the interface according to the XSLT version you select.

7.4 SPS and Authentic View

One of the core uses of the SPS you create with StyleVision is to control the input of data and the display of an XML document in Authentic View, which is a document view available in Altova products. With Authentic View, users who are unfamiliar with XML can easily enter and edit XML document content correctly.

A document creation and editing process that involves Authentic View consists of two separate stages:

- ***Document design.*** The Authentic View of the XML document, which is graphical view, is designed in StyleVision. The design document is an SPS. The SPS not only processes the XML document for display in Authentic View and for final output; it also provides mechanisms, in Authentic View, for **inputting data into the XML file or DB.**

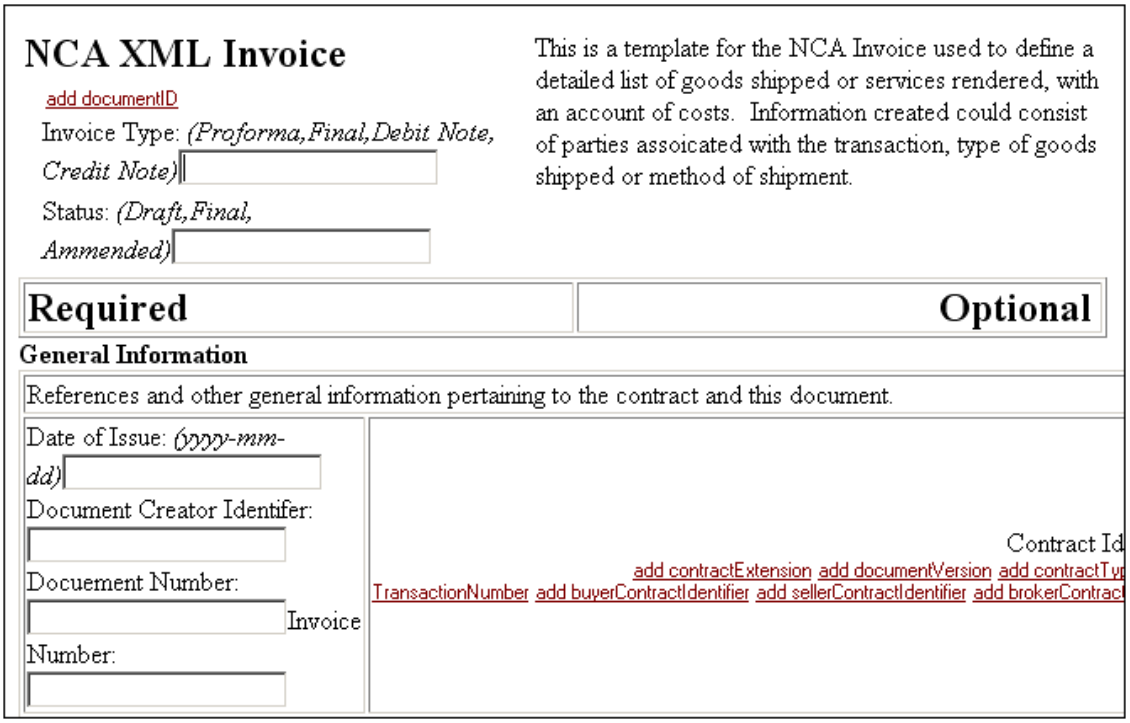


- ***Content editing.*** This SPS created in the document design stage is linked to the XML document to be edited. (The XML document must be valid according to the schema on which the SPS is based.) An XML document which is linked to an SPS is presented graphically in the Authentic View of an Altova product as the Authentic View of that XML document. When a new Authentic XML document is created, it can be assigned an SPS and then be edited in Authentic View using the document template (Template XML File) and controls specified in the SPS. If an existing XML document is opened and assigned an SPS, the existing data is displayed in Authentic View according to the design in the SPS, and the document can be edited in Authentic View.

The user of Authentic View is not expected to be knowledgeable about either XML or the schema being used for the document. The document display in Authentic View should make content editing as easy and non-technical as possible. It is, therefore, the task of the person who designs the SPS to produce a user-friendly Authentic View display. For detailed information about using Authentic View, see the Authentic View documentation in the user manual of XMLSpy or Authentic Desktop.

SPSs for standard industry schemas
Altova's Authentic View package includes SPSs for a number of standard industry schemas. Users can therefore immediately create an XML document based on a standard schema in

Authentic View. The screenshot below shows a partial Authentic View of the NCA Invoice standard.



You can easily customize any of the supplied standard industry SPSs, which are available in the **`Examples/IndustryStandards`** folder of your application folder.

7.5 Synchronizing StyleVision and Authentic

Each new release of StyleVision contains features that add to the power and capability of Authentic View. However, the following must be taken into account:

- An SPS file created with a later version of StyleVision might be incompatible with an older version of Authentic View.
- New SPS file functionality (created using a later version of StyleVision) will be interpretable only by a corresponding version (or later) of Authentic View.

So, if a later version of StyleVision is used to create an SPS file, all deployed Authentic View products must be synchronized with this version of StyleVision. This means, for example, that if **StyleVision 2008 release 2** was used to create an SPS file, then **Authentic Desktop 2008 release 2** (or another Authentic View product from this release) must be used to properly edit this SPS file.

Note that a later version of an Authentic View product will be able to interpret SPSs created with previous versions of StyleVision.

Synchronization steps when a deployed SPS file is modified using a later version of StyleVision

If an SPS is already deployed among multiple Authentic View users, and if, subsequently, new Authentic View functionality is added to the SPS using a later version of StyleVision, then the developer should go about the task of synchronization in the following sequence:

1. The developer obtains a license key for the new version of Authentic View for himself.
2. The developer successfully tests SPS modifications using the new StyleVision and Authentic View pair.
3. The new version of the Authentic View product is distributed to all Authentic View users.
4. Only after all three steps above have been successfully carried out, should the modified SPS be deployed to Authentic View users.

7.6 Generated Files

In StyleVision, XSLT stylesheets and output files can be generated using the **File | Save Generated Files** command or the command line utility, `StyleVisionBatch.exe`. Alternatively, if you wish only to validate or transform XML using XSLT, you can do this directly with the Altova engines and without having to call StyleVision. The Altova engines are available at the Altova website as the free Altova product, AltovaXML.

The following files can be generated from StyleVision:

- XSLT stylesheets based on the SPS design. Separate XSLT stylesheets are generated for HTML, RTF, PDF, and Word 2007+ output.
- Output files generated by processing the Working XML File assigned in the SPS with the XSLT stylesheets generated from the SPS. The command line utility offers the option of specifying XML files other than the Working XML File as the XML input.

The markup for the output is contained in the SPS. The data for the output is contained in the XML document or DB. It is the XSLT stylesheet that brings markup and data together in the output. Both the XSLT stylesheets as well as the actual output can be previewed in StyleVision in the Output Views.

Note: If you wish to add a namespace to an SPS or to an XSLT stylesheet being generated from an SPS, the namespace must be added to the top-level `schema` element of the XML Schema on which the SPS is based.

Given below are important points to note about the generated documents:

- ***HTML output and stylesheets:*** (1) The formatting and layout of the generated HTML document will be identical to the HTML Preview of StyleVision and near-identical to the Authentic View of the XML document. (2) Data-input devices (text input fields, check boxes, etc) in the HTML file do not allow input. These data-input devices are intended for XML data input in Authentic View and, though they are translated unchanged into the graphical HTML equivalents, they cannot be used for data-entry in the HTML document.

- ***RTF output and stylesheets:*** (1) The RTF design requires specifications for paged media. You can provide these specifications (cover page design, left/right pagination, etc) in the Properties sidebar and the Design Tree sidebar. Note that these design specifications are used for both RTF and PDF (XSL-FO) output. (2) If data-input devices have been used in the SPS, then, where possible, these are rendered as graphics on the RTF page. When a data-entry device cannot easily be simulated as a graphic (e.g. check boxes), a substitute presentation is used.

- ***PDF output and stylesheets for FO:*** (1) To render a document to paged media requires some special specifications, such as for left/right pagination, the location and composition of headers and footers, the design of a cover page, etc. You can design these additional features for your document (using the Properties sidebar and Design Tree sidebar), and these are included in the XSLT stylesheet for XSL-FO. Note that these design specifications are used not only for PDF (XSL-FO) output, but also for RTF and Word 2007+. (2) If data-input devices have been used in the SPS, then, where possible, these are rendered as graphics on the PDF page. When a data-entry device cannot easily be simulated as a graphic (e.g. check boxes), a substitute presentation is used.

- ***Word 2007+ output and stylesheets:*** You can design paged media features, such as pagination, headers and footers, and a cover page. These additional features for your

document (using the Properties sidebar and Design Tree sidebar), and these are included in the XSLT stylesheet for XSL-FO. Note that these design specifications are used not only for PDF (XSL-FO) output, but also for RTF and Word 2007+.

RTF output
RTF output is generated from your XML file in a single step by processing the XML document with the XSLT-for-RTF file generated from the SPS. The properties of the RTF output are defined in the SPS, and you can preview the output in the RTF Preview window. To obtain the RTF file, you must generate it (using **File | Save Generated Files** or the command line).

Note: If there is a problem with an embedded preview, StyleVision will attempt to open the preview document in an external application (usually MS Word or Adobe Reader). An error message about the embedded preview will appear in StyleVision. If the preview document is opened in an external application, you will need to close the external application before regenerating the temporary output document, otherwise you will get an error message saying the file is being used by another process. You should also close the external application before closing the SPS design, otherwise StyleVision will not be able to close the temporary output document due to the file lock placed on the document by the external application.

PDF output
Generating PDF output from your XML file is a two-step process:

1. An XSLT transformation is used to transform the XML file into an XSL-FO file (FO file). In the transformation process, page sequencing and page layout properties are added, so that the FO file contains this information in addition to the content.
2. The FO file is processed by an FO processor to generate the PDF.

The XSLT-for-FO and the PDF output can be previewed in the PDF Preview tab. The XSLT-for-FO, the FO document, and the PDF document can be generated using **File | Save Generated Files** or the command line. The FO document can also be generated using AltovaXML.

Note: If there is a problem with an embedded preview, StyleVision will attempt to open the preview document in an external application (usually MS Word or Adobe Reader). An error message about the embedded preview will appear in StyleVision. If the preview document is opened in an external application, you will need to close the external application before regenerating the temporary output document, otherwise you will get an error message saying the file is being used by another process. You should also close the external application before closing the SPS design, otherwise StyleVision will not be able to close the temporary output document due to the file lock placed on the document by the external application.

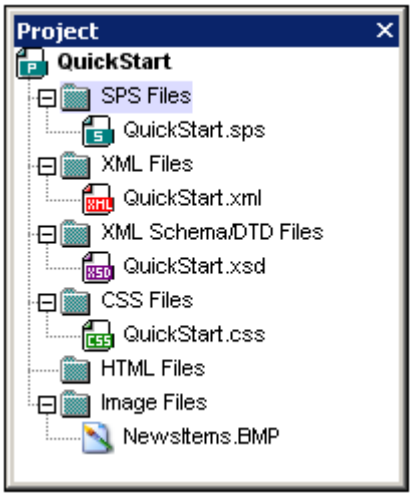
Word 2007+ output
Word 2007+ output is generated from your XML file in a single step by processing the XML document with the XSLT-for-Word 2007+ file generated from the SPS. The properties of the Word 2007+ output are defined in the SPS, and you can preview the output in the Word 2007+ Preview window. To obtain the Word 2007+ file, you must generate it (using **File | Save Generated Files** or the command line).

Note: If there is a problem with an embedded preview, StyleVision will attempt to open the preview document in an external application (usually MS Word or Adobe Reader). An error message about the embedded preview will appear in StyleVision. If the preview

document is opened in an external application, you will need to close the external application before regenerating the temporary output document, otherwise you will get an error message saying the file is being used by another process. You should also close the external application before closing the SPS design, otherwise StyleVision will not be able to close the temporary output document due to the file lock placed on the document by the external application.

7.7 Projects in StyleVision

Files that are related to each other can be collected in a project in the Project sidebar (*screenshot below*). This enables the files in a project to be accessed easily when designing an SPS. For example, an SPS file can be dragged from the Project sidebar to the Design Tree sidebar and created there as a module; or an image file can be dropped into the design as a static image; or a CSS stylesheet can be dragged to the Style Repository sidebar as an external stylesheet.



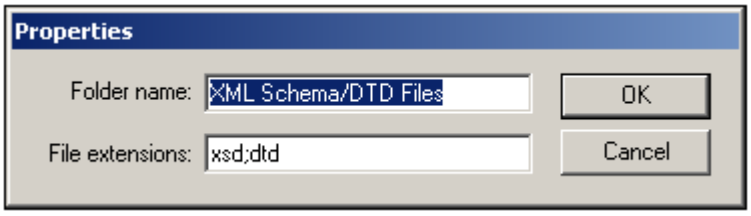
Creating and saving a project

A new project is created using the **Project | Create Project** command. When it is created, a project contains separate folders for separate types (*see screenshot above*). File types are assigned to a folder via the folder's Properties dialog. A project is named when it is saved (with the extension `.svp`) for the first time. To subsequently change the name of a project, you change the project file's name at its location, using an application such as Windows File Explorer.

Project folders

Folders can be added both to the main project folder as well as to folders within the main project folder and to sub-folders down to an unlimited number of levels. Three types of folders can be added: (i) a project folder; (ii) an external folder (which is added by browsing and selecting); (iii) an external web folder (which is added via a URL). Each of these three folder types is added to the main project folder using the following Project commands, respectively: (i) **Add Project Folder to Project**; (ii) **Add External Project Folder to Project**; (iii) **Add External Web Folder to Project**. To add each of these folder types to a folder or sub-folder within the main project, select the relevant command from the context menu for that folder or sub-folder.

Each folder can be assigned one or more file types in its Properties dialog (*screenshot below*). To pop up the Properties dialog, right-click the folder for its context menu, and select **Properties**.



In the Properties menu, you can edit the folder name and the file type extensions for that folder (each file type extension must be separated by a semi-colon). Project folder names can also be edited by selecting the folder in the Project sidebar, pressing **F2**, and editing the name.When a folder has file type extensions defined for it, files with that extension, when added using the **Add File to Project** command, are added to the folder. If more than one folder has the same file type extension defined, the file is added to the first folder in the Project sidebar having that extension. In the Project sidebar, folders can be reordered using drag-and-drop. However, on the first level (that is at the level immediately below the main project folder), folders are ordered as follows: (i) project folders; (ii) external folders; (iii) external web folders.

Project files

Files can be added both to the main project folder as well as to folders and sub-folders within the main project folder. Files can be added using the following commands in the Project menu:

- ***Add Files to Project***: One or more files are selected in a Browse window for addition. Each of the added files goes into the first folder for which its file type extension has been defined.
- ***Add Global Resource to Project***. A file is added via a global resource.
- ***Add URL to Project***: A file is added via its URL (which is defined in the Add URL to Project dialog).
- ***Add Active File to Project***: The active (SPS) file is added to the first folder in the Project sidebar that has .sps defined as its file type extension.
- ***Add Active and Related Files to Project***: The active (SPS) file plus related files, such as the schema/s, Working XML Files, CSS files, static image files, etc, are added to the project, in their respective folders as determined by the file type extensions of the folders. This is a very useful command for quickly gathering into a project all the files relevant to a given design.

The commands listed above add files to the main project according to the file type extensions of the folders in the main project folder. To add files to specific folders or sub-folders, right-click the required folder, and in the context menu that pops up, select the corresponding command. Within a folder, files are listed in alphabetical order. Note files can also be dragged to another folder. To see the location of a file, click the **Properties** command in its context menu.

Global resources

A global resource of file- or folder-type can be added to a folder. A file-type global resource is an alias for a file resource. An alias can have multiple configurations with each configuration pointing to a file resource. So if a global resource is used in a project, it can link to any of the target resources, depending on which configuration is currently active in StyleVision. A folder-type global resource, similarly, is an alias that can target any one of multiple folders according to the configuration that is currently active. If a folder-type global resource is used in the design to identify a file (say, a Working XML File or CSS file), the folder-type global resource will identify a folder only; the path from that folder to the required file will need to be specified additionally. For more information on how to use global resources, see Using Global Resources.

Drag-and-drop

In the Project sidebar, 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 sidebar.

Using projects

Files in a project can be used in various ways depending on what kind of file it is. For each file in the Project sidebar, the actions available are listed in its context menu (right-click to display). Additionally, dragging the file to a location where an action can be executed pops up a menu that contains the relevant command/s; in the case of some commands, the command is executed directly the file is dropped at the relevant location. Given below is a list of available actions for various file types.

SPS Files

- *Open Design* opens the SPS in a new design window. (You can also drag the file into Design View to use this command.)
- *Import as Module* imports the SPS as a module in the currently active SPS; the imported file will be listed under the Modules heading in the Design Tree. (You can also import the file as a module by dragging it to the Modules heading in the Design Overview sidebar.)

XML Files

- *Edit File in XMLSpy* opens the XML file in XMLSpy.
- *Create New Design* creates a new SPS. The schema for the SPS is an XML Schema generated from the XML document. The Working XML File of the SPS is the XML file. (You can also drag the file into the Main Template bar of Design View to use this command.)
- *Add as New Schema Source* adds an XML Schema generated from the XML file as an additional schema source; the XML file is assigned as the Working XML File for this new schema source. (You can also drag the file to the *Schema* entry of the Design Overview sidebar to generate a schema and add the schema as a new schema source.)
- *Assign as Working XML File* assigns the XML File as the Working XML File of the SPS. (You can also drag the file to the *Working XML* entry of the Design Overview sidebar to add it as the Working XML File.)
- *Assign as Template XML File* assigns the XML File as the Template XML File of the SPS. (You can also drag the file to the *Template XML* entry of the Design Overview sidebar to add it as the Template XML File.)
- ***Note:*** When an XML file is double-clicked, one of three actions will be executed according to what is specified in the Project tab of the **Options** dialog: (i) Edit file in XMLSpy; (ii) Create a new design based on the XML file; (iii) Ask the user which action to execute.

XML Schema / DTD Files

- *Edit File in XMLSpy* opens the schema file in XMLSpy.
- *Create New Design* creates a new SPS based on the selected schema. (You can also drag the file into the Main Template bar of Design View to create a new SPS with the selected schema as the schema source.)
- *Add as New Schema Source* adds an XML Schema generated from the XML file as an additional schema source; the XML file is assigned as the Working XML File for this new schema source. (You can also drag the file to the *Schema* entry of the Design Overview sidebar to create an additional schema source.)
- *Assign as Schema File* assigns the selected schema as the schema source of the currently active SPS, replacing the current schema source. This command is most useful for quickly changing schemas, for example, if the schema location has changed or to correct a wrong assignment. (To use this command, you can also drag the file to the *Schema* entry of the Design Overview sidebar.)
- ***Note:*** When a schema file is double-clicked, one of three actions will be executed according to what is specified in the Project tab of the **Options** dialog: (i) Edit file in XMLSpy; (ii) Create a new design based on the schema file; (iii) Ask the user which

action to execute.

CSS Files

- *Edit File in XMLSpy* opens the CSS file in XMLSpy.
- *Import into Style Repository* adds the CSS file to the External CSS files of the Style Repository (External heading in the Styles Repository sidebar). (You can also drag the file to the External heading in the Styles Repository sidebar to import the file into the style repository.)

HTML Files

- *Edit File in XMLSpy* opens the HTML file in XMLSpy.
- *Open* opens the HTML file in the default browser.
- *Create New Design* creates a new SPS, in which you can create the schema based on the HTML document. (You can also drag the file into Design View to use this command.)

Image Files

- *Open* opens the image file in the default image viewer / editing application.
- *Insert Image in Design* inserts the image as a static image in the SPS. (You can also insert the image at a particular location by dragging it there.)

All file types

- *Explore Containing Folder* opens a Windows File Explorer window displaying the contents of the folder in which the selected file is located.
- *Cut, Copy, Paste, Delete* commands work in the standard Windows way, cutting and copying the selected file to the clipboard; pasting files from the clipboard; and deleting. These commands also work for a selection of multiple files.
- *Select All* selects all the files in the project.
- *Properties* pops up the Properties dialog, in which the location of the file is given.

Using projects

Files in a project can be used in various ways depending on what kind of file it is. For each file in the Project sidebar, the actions available are listed in its context menu (right-click to display). Additionally, dragging the file to a location where an action can be executed pops up a menu that contains the relevant command/s. Given below is a list of available actions for various file types.

7.8 Catalogs in StyleVision

StyleVision supports a subset of the OASIS XML catalogs mechanism. The catalog mechanism enables StyleVision 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 StyleVision works as outlined below.

RootCatalog.xml

When StyleVision 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%` there 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 WSDL) 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 StyleVision 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 StyleVision application folder. The file `CustomCatalog.xml` is located in your `MyDocuments/Altova/StyleVision` 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\Common2010
`%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 (non-roaming) 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 an XML editor that can read catalogs, such as Altova 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 the local file that is referenced 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 StyleVision

When creating entries in CustomCatalog.xml (or any other catalog file that is to be read by StyleVision), 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 `rewritsSystem` 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.

More information

For more information on catalogs, see the XML Catalogs specification.

Chapter 8

SPS File: Content

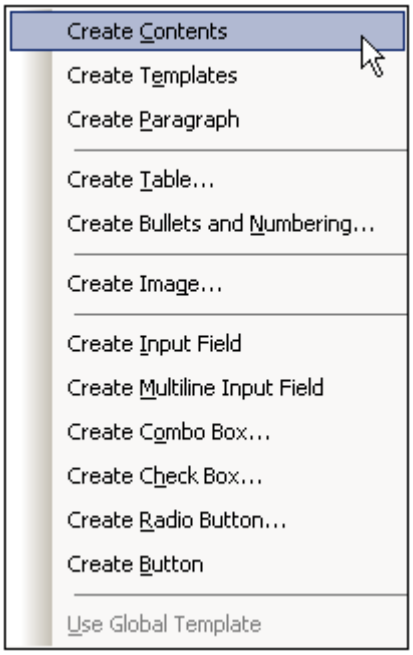
8 SPS File: Content

This section describes in detail the core procedures used to create and edit SPS document components that are used to create locations in te document design for XML data ontent. The procedures are listed below and described in detail in the sub-sections of this section. These mechanisms are used to design any kind of template: main, global, or named.

- Inserting XML Content as Text. XML data can be inserted in the design by dragging the relevant nodes (element, attribute, type, or CDATA) into the design and creating them as `(contents)` or `(rest-of-contents)`.
- Working with Tables. Tables can be inserted by (i) the SPS designer, directly in the SPS design (static tables) or using XML document sub-structures, and (ii) the Authentic View user.
- Creating Lists. Static lists, where the list structure is entered in the SPS design, and dynamic lists, where an XML document sub-structure is created as a list, provide powerful data-ordering capabilities.
- Using Graphics: Graphics can be inserted in the SPS design using a variety of methods to determine the target URI (static, dynamic, a combination of both, and unparsed entity URIs).
- Using Data-Entry Devices. XML data can be input by the Authentic View user via data-entry devices such as input fields and combo boxes. This provides a layer of user help as well as of input constraints. Individual nodes in the XML document can be created as data-entry devices.
- The Change-To Feature. This feature enables a different node to be selected as the match for a template and allows a node to be changed to another content type.

8.1 Inserting XML Content as Text

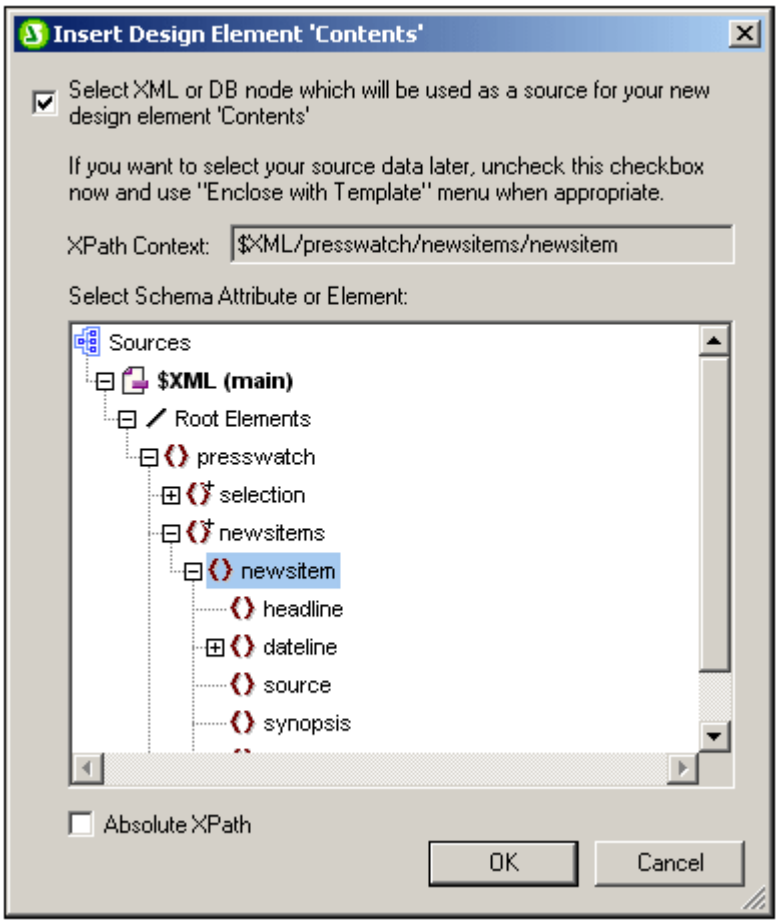
Data from a node in the XML document is included in the design by dragging the corresponding schema node from the Schema Tree window and dropping it into the design. When the schema node is dropped into the design, a menu pops up with options for how the node is to be created in the design (*screenshot below*).



Types of schema nodes
Schema nodes that can be dropped from the Schema Tree sidebar into the design are of three types: (i) element nodes; (ii) attribute nodes; and (iii) datatype nodes.

Using the Insert Contents toolbar icon
The **Insert Contents** icon in the Insert Design Elements toolbar also enables you to insert the contents of a node in the design. Insert contents as follows:

1. Select the Insert Contents icon.
2. Click the location in the design where you wish to insert contents. The Insert Contents Selector pops up (*screenshot below*).



3. The context of the insertion location in the design is displayed in the *XPath Context* field. Select the node for which you wish to create contents.
4. Click **OK**. The `contents` placeholder is created. If the node you selected is anything other than the context node, additional template tags with the path to the selected node will be created around the `contents` placeholder.

Outputting text content of nodes

To output the text contents of the node, the node should be created as contents. When a node is created as contents, the node will look something like this in the design document:

In the screenshot above, the `Desc` element has been created as contents. The output will display the text content of `Desc`. If `Desc` has descendant elements, such as `Bold` and `Italic`, then the text content of the descendant elements will also be output as part of the contents of `Desc`. Note that attribute nodes of `Desc` are not considered its child nodes, and the contents of the attribute nodes will therefore not be output as part of the contents of `Desc`. Attribute nodes have to be explicitly inserted in order to be processed.

CDATA sections

If CDATA sections are present in the XML document they will be output, and in Authentic View, are indicated with tags when markup is switched on (using the menu command **Authentic | Markup**). CDATA sections can also be inserted in the XML document when editing the document in Authentic View (via the context menu).

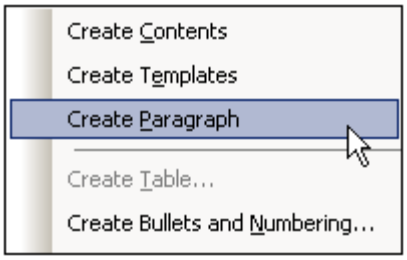
In this section
In the sub-sections of this section, we describe other aspects of inserting XML content as text:

- How the text content of a node can be marked up with a predefined format directly when the node is inserted.
- How the structure of the source schema determines the effect of Authentic View usage.
- How descendant nodes not explicitly included within a node can be included for processing. See Rest-of-Contents.

Note: You can create an **empty template rule** by deleting the `( content)` placeholder of a node. An empty template rule is useful if you wish to define that some node not be processed, i.e. produce no output.

Inserting Content with a Predefined Format

The text content of a node can be directly inserted with the markup of one of StyleVision's predefined formats. To do this, drag the node from the Schema Tree window and drop it at the desired location. In the menu that pops up, select **Create Paragraph** (*screenshot below*).



The predefined format can be changed by selecting the predefined format tag and then choosing some other predefined format from the Format combo box in the toolbar (*screenshot below*) or using the menu command **Insert | Format**.

The predefined format can also be changed by changing the value of the `paragraph type` property of the *paragraph* group of properties in the Properties window, or by changing the paragraph type via the node-template's context menu command, **Enclose With | Special Paragraph**.

Each paragraph type has particular formatting features that can be used to advantage. Note that the `pre` format type enables carriage returns and linefeeds to be output as such instead of them being normalized to whitespace.

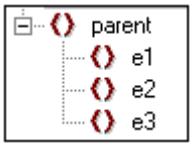
Adding Elements in Authentic View

When creating elements in the design, the way you create the elements determines how Authentic View will respond to user actions like pressing the Tab key and clicking the `Add. . .` prompt. The basic issue is what elements are created in Authentic View when an element is added by the user. For example, when the user adds an element (say, by clicking the **Insert Element** icon in the Elements sidebar), what child elements are created automatically?

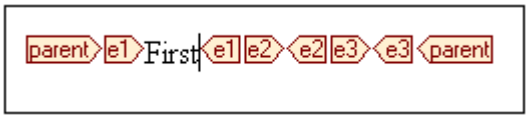
The most important point to bear in mind is that Authentic View follows the structure specified in the underlying schema. In order to ensure that Authentic View implements the schema structure correctly there are a few design rules you should keep in mind. These are explained below.

Unambiguous content model

A content model is considered unambiguous when it consists of a single sequence (with `maxOccurs=1`) of child elements (with no choices, groups, substitutions, etc). In such cases, when the element is added, the sequence of child elements is unambiguously known, and they are automatically added. In the screenshot example below, the three child elements are all mandatory and can occur only once.



When the element `parent` is added in Authentic View, its child elements are automatically inserted (*screenshot below*). Pressing the tab key takes you to the next element in the sequence.



If the `e2` element were optional, then, when the element `parent` is added in Authentic View, the elements `e1` and `e3` are automatically inserted, and the element `e2` appears in the Elements sidebar so that it can be inserted if desired (*screenshot below*). Pressing the tab key in `e1` takes the user to `e3`.

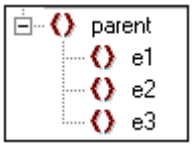
The above content model scenario is the only scenario Authentic View considers unambiguous. All other cases are considered ambiguous, and in order for Authentic View to disambiguate and efficiently display the desired elements the design must adhere to a few simple rules. These are explained below.

Ambiguous content model
For Authentic View to correctly and efficiently display elements correctly while an XML document is being edited, the SPS must adhere to the following rules.

- Child elements will be displayed in the order in which they are laid out in the design.
- In order for Authentic View to disambiguate among sibling child elements, all child elements should be laid out in the design document in the required order **and within a single parent node**. If the sibling relationship is to be maintained in Authentic View, it is incorrect usage to lay out each child element of a single parent inside multiple instances of the parent node.

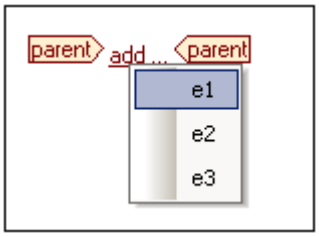
These two rules are illustrated with the following example.

We consider a content model of an element `parent`, which consists of a single sequence of mandatory child elements. This content model is similar to the unambiguous content model discussed above, with one difference: the single sequence is optional, which makes the content model ambiguous—because the presence of the sequence is not a certainty. If you create a design document as shown in the screenshot below, there will be ambiguity in Authentic View.

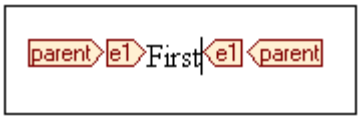


The Authentic View of the `parent` element will look like this (since the sequence is optional):

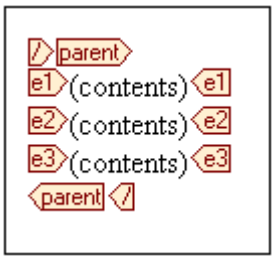
Clicking `add...` pops up a menu of the three child elements:



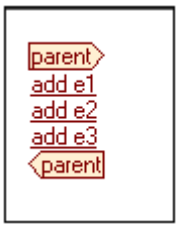
If you select one of these elements, it will be inserted (*screenshot below*), but since Authentic View cannot disambiguate the sequence it does not insert any of the remaining two elements, nor does it offer you the opportunity of inserting them:



The **correct** way to design this content model (following the rules given above) would be to explicitly create the required nodes in the desired order within the single parent node. The design document would look like this:



Note that all three child elements are placed **inside a single parent node**. The design shown above would produce the following Authentic View:



The Authentic View user clicks the respective `add element` prompt to insert the element and its content.

Note:

- If an element can occur multiple times, and if the rules above are followed, then the element appears in the sidebar till the number of occurrences in Authentic View equals the maximum number of occurrences allowed by the schema (`maxOccurs`).
- Creating each child element inside a separate parent node (*see screenshot below*) not only creates isolated child–parent relationships for each child element so instantiated; it also increases processing time because the parent node has to be re-traversed in order to locate each child element.

Rest-of-Contents

The `rest-of-contents` placeholder applies templates to all the remaining child elements of the element for which the template has been created. As an example consider the following:

- An element `parent` has 4 child elements, `child1` to `child4`.
- In the template for element `parent`, some processing has been explicitly defined for the `child1` and `child4` child elements.

This results in only the `child1` and `child4` child elements being processed. The elements `child2` and `child3` will not be processed. Now, if the `rest-of-contents` placeholder is inserted within the template for `parent`, then, not only will `child1` and `child4` be processed using the explicitly defined processing rules in the template. Additionally, templates will be applied for the `child2` and `child3` child elements. If global templates for these are defined then the global templates will be used. Otherwise the built-in default templates (for element, attribute, and text nodes) will be applied.

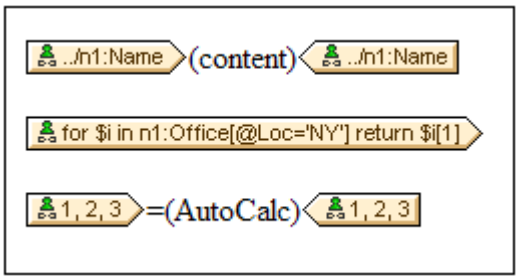
Important: It is important to note what nodes are selected for `rest-of-contents`.

- As described with the example above, all child element nodes and child text nodes are selected by the `rest-of-contents` placeholder. (Even invalid child nodes in the XML document will be processed.)
- Attribute nodes are not selected; they are not child nodes, that is, they are not on the child axis of XPath.
- If a global template of a child element is used in the parent template, then the child element does not count as having been used locally. As a result, the `rest-of-contents` placeholder will also select such child elements. However, if a global template of a child element is "copied locally", then this usage counts as local usage, and the child element will not be selected by the `rest-of-contents` placeholder.

Note: You can create an **empty template rule** by deleting the `( content)` placeholder of a node. An empty template rule is useful if you wish to define that some node not be processed, i.e. produce no output.

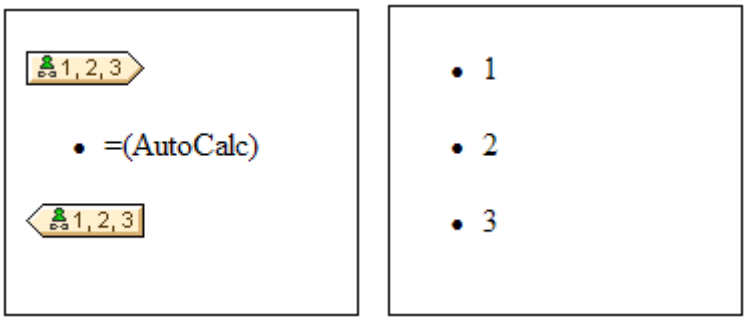
8.2 User-Defined Templates

User-Defined Templates are templates for items generated by an XPath expression you specify. These items may be atomic values or nodes. In the screenshot below, which shows three User-Defined Templates, note the User-Defined Template icon on the left-hand side of the tags. User-Defined Templates are very useful because they provide extraordinary flexibility for creating templates. Note, however, that content generated by User-Defined Templates **cannot be edited in Authentic View**.



The XPath expression of each of the three User-Defined templates shown in the screenshot above do the following:

- Selects a node in a source schema. By using an XPath expression, any node in any of the schema sources can be reached from within any context node. If StyleVision can unambiguously target the specified node, the template will be changed automatically from a User-Defined Template to a normal template, enabling Authentic View editing. If it is a User-Defined Template, this will be indicated by the green User-Defined Template icon on the left-hand side of the template tags.
- Selects a node that fulfills a condition specified by the `for` construct of XPath 2.0. Such templates can never resolve to normal templates (but will remain User-Defined Templates) because the `for` construct does not allow StyleVision to unambiguously resolve the target from only the schema information it currently has at its disposal.
- Selects a sequence of atomic values `{1, 2, 3}`. While it is allowed to create a template for an atomic value, you cannot use the `contents` placeholder within such a template. This is because the `xsl:apply-templates` instruction (which is what the `contents` placeholder generates) can only be applied to node items (not atomic values). You could, however, use an Auto-Calculation in combination with some design element such as a list. For example, the User-Defined Template at left would generate the output at right.



Note: If the SPS uses XSLT 1.0, then the XPath expression you enter must return a node-set. Otherwise an error is reported.

Advantage of using XPath to select template node

The advantage of selecting a schema node via an XPath expression (User-Defined Templates) is that the power of XPath's path selector mechanism can be used to select any node or sequence of items, as well as to filter or set conditions for the node selection. As a result, specific XML document nodes can be targeted for any given template. For instance, the XPath expression `//Office/Department[@Location="NY"]` will select only those `Department` nodes that have `Location` attribute with a value of `NY`. Also see the other examples above.

Note: If an XPath expression contains multiple location path steps, then it is significant—especially for grouping and sorting—whether brackets are placed around the multiple location path steps or not. For example, the XPath expression `/Org/Office/Dept` will be processed differently than `(/Org/Office/Dept)`. For the former expression (without brackets), the processor loops through each location step. For the latter expression (with brackets), all the `Dept` elements of all `Office` elements are returned in one undifferentiated nodeset.

Brackets	Underlying XSLT Mechanism	Effect
No	`<xsl:for-each select="Org"> <xsl:for-each select="Office"> <xsl:for-each select="Dept"> ... </xsl:for-each> </xsl:for-each> </xsl:for-each>`	Each `Office` element has its own `Dept` population. So grouping and sorting can be done within each `Office`.
Yes	`<xsl:for-each select="/Org/Office/Dept"> ... </xsl:for-each>`	The `Dept` population extends over all `Office` elements and across `Org`.

This difference in evaluating XPath expressions can be significant for grouping and sorting.

Inserting a User-Defined Template

To insert a User-Defined Template, do the following:

1. Click the **Insert User-Defined Template** icon in the Insert Design Elements toolbar and then click the design location where you wish to insert the template. Alternatively, right-click the design location where you wish to insert the template and, from the context menu that appears, select the **Insert User-Defined Template** command.
2. In the Edit XPath Expression dialog that pops up, enter the XPath expression you want, and click **OK**. Note that the context node of the XPath expression will be the node within which you have clicked. An empty node template will be created. Sometimes a joined node is created. When a node is joined, the targeted instance nodes are selected as if at a single level, whereas if a node is not joined (that is if it is split into multiple hierarchic levels), then the node selection is done by looping through each instance node at every split level. The nodeset returned in both cases of selection (joined and split) is the same unless a grouping or sorting criterion is specified. For a discussion of the effect joined nodes have on the grouping and sorting mechanisms, see Node-Template Operations.

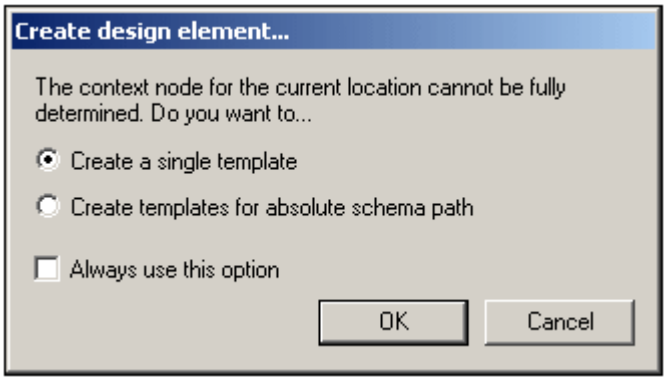
Editing a Template Match

The node selection of any node template (user-defined or normal) can be changed by using an

XPath expression to select the new match expression. To edit the template match of a node template, right-click the node template, then select the **Edit Template Match** command. This pops up the Edit XPath Expression dialog, in which you enter the XPath expression to select the new node. Then click **OK**.

Adding nodes to User-Defined Templates

If a node from the schema tree is added to a User-Defined Template, the context for the new node will not be known if the User-Defined Template has been created for a node or sequence that cannot be placed in the context of the schema source of the SPS. You will therefore be prompted (*screenshot below*) about how the new node should be referenced: (i) by its name (essentially, a relative path), or (ii) by a full path from the root of the schema source.



Prompting for advice on how to proceed is the default behavior. This default behavior can be changed in the Design tab of the Tool | Options dialog.

8.3 User-Defined Elements, XML Text Blocks

User-Defined Elements and User-Defined XML Text Blocks enable, respectively, (i) any element, and (ii) any XML text block to be inserted into the design. The advantage of these features is that designers are not restricted to adding XML elements and design elements from source schemas and the palette of StyleVision design elements. They can create (i) templates for elements they define (User-Defined Elements), and (ii) independent and self-contained XML code (User-Defined Blocks) that creates objects independently (for example ActiveX objects).

There is one important difference between User-Defined Elements and User-Defined XML Text Blocks. A User-Defined Element is created in the design as a template node for a single XML element (with attributes). All content of this template must be explicitly created. This content consists of the various design elements available to the SPS. A User-Defined XML Text Block may not contain any design element; it is an independent, self-contained block. Since a User-Defined Element is created empty, it does not lend itself for the creation of an object requiring a number of lines of code. For the latter purpose, User-Defined XML Text Blocks should be used.

Note: User-Defined Elements and User-Defined Text Blocks are supported in Authentic View only in the Enterprise Editions of Altova products.

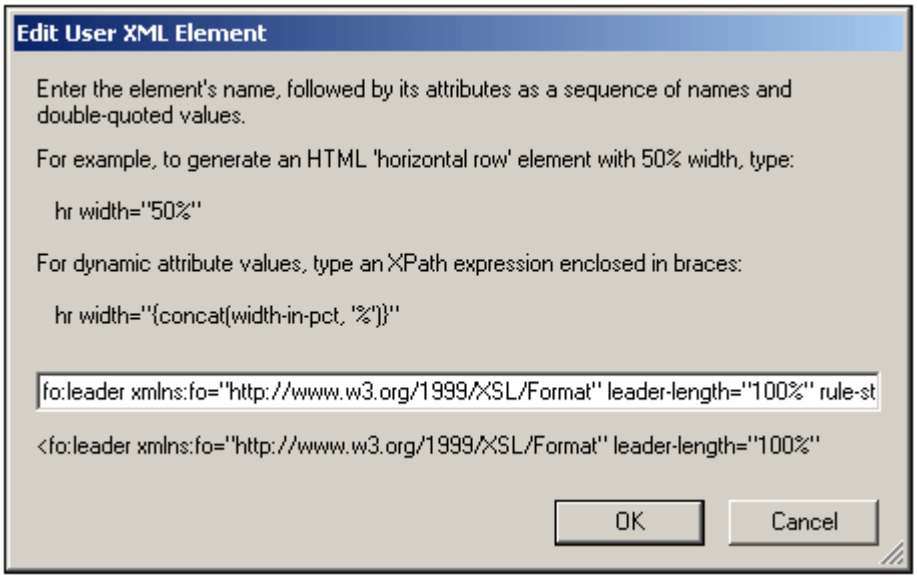
User-Defined Elements

User-Defined Elements are elements that you can generate in the output without these elements needing to be in any of the schema sources of the SPS. This means that an element from any namespace (HTML or XSL-FO for example) can be inserted at any location in the design. SPS design elements can then be inserted within the inserted element.

Note: User-Defined Elements are supported in Authentic View only in the Enterprise Editions of Altova products.

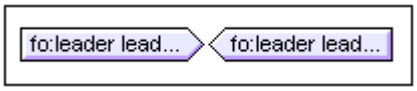
The mechanism for using User-Defined Elements is as follows:

1. Right-click at the location in the design where you wish to insert the User-Defined Element.
2. From the context menu that appears, select **Insert User-Defined Item | User-Defined Element**.
3. In the dialog that appears (*screenshot below*), enter the element name, the desired attribute-value pairs, and, a namespace declaration for the element if the document does not contain one.



In the screenshot above an XSL-FO element called `leader` is created. It has been given a prefix of `fo:` , which is bound to the namespace declaration `xmlns:fo="http://www.w3.org/1999/XSL/Format"`. The element has a number of attributes, including `leader-length` and `rule-style`, each with its respective value. The element, its attributes, and its namespace declaration must be entered without the angular tag brackets.

4. Click **OK** to insert the element in the design. The element is displayed in the design as an empty template with start and end tags (*screenshot below*).



5. You can now add content to the template as for any other template. The User-Defined Element may contain static content, dynamic content from the XML document, as well as more additional User-Defined Elements (*see screenshot below*).

Note: A User-Defined Element that is intended for a particular output should be enclosed in a suitable output-based condition so as to avoid unexpected results in alternative outputs.

User-Defined XML Text Blocks

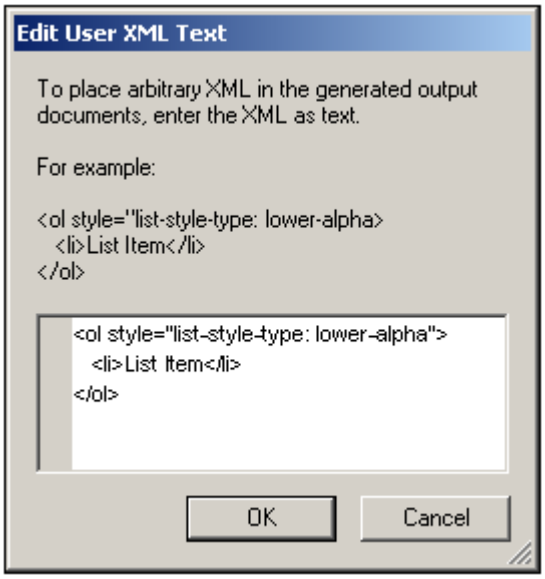
A User-Defined XML Text Block is an XML fragment that will be inserted into the XSLT code generated by the SPS. It is placed in the SPS design as a self-contained block to which no design element may be added. Such an XML Text Block should therefore be applicable as XSLT code at the location in the stylesheet at which it occurs.

The usefulness of this feature is that it provides the stylesheet designer a mechanism with which to insert XSLT fragments and customized code in the design. For example, an ActiveX obect can be inserted within an HTML `SCRIPT` element.

Note: This feature will be enabled **only in Enterprise editions of Authentic View** (that is, in the Enterprise editions of StyleVision, Authentic Desktop, Authentic Browser, and XMLSpy).

To insert an XML Text Block, do the following:

1. Right-click at the location in the design where you wish to insert the User-Defined Block.
2. From the context menu that appears, select **Insert User-Defined Item | User-Defined Block**.
3. In the dialog that now appears (*screenshot below*), enter the XML Text Block you wish to insert. Note that the XML text block should be well-formed XML to be accepted by the dialog.



In the screenshot above an XML Text Block is added that generates an HTML ordered list.

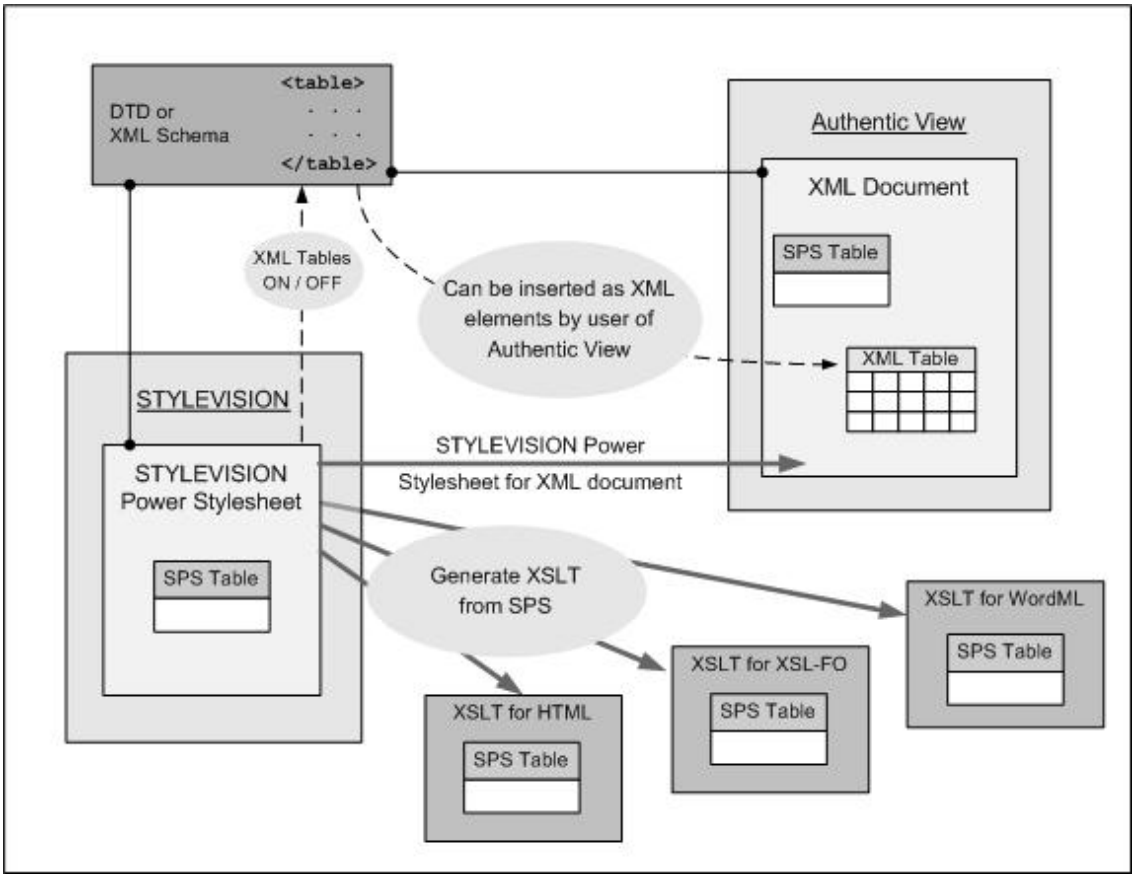
4. Click **OK** to insert the element in the design. The XML Text Block is displayed in the design as a text box.

Note: An XML Text Block that is intended for a particular output should be enclosed in a suitable output-based condition so as to avoid unexpected results in alternative outputs.

8.4 Tables

In an SPS, two types of tables are used: **SPS tables** and **XML tables**. There are differences between the two types, and it is important to understand these. This section contains a detailed description of SPS tables and XML tables, and instructions about how to use them. For now, we look at the broad picture.

The illustration below shows the relationship of SPS tables and XML tables to the SPS and to the XML document.



SPS tables
An **SPS table** is a component of an SPS, and is created and formatted using StyleVision. If present in an SPS, an SPS table appears in Authentic View as well as in the XSLT stylesheets you generate with StyleVision.

The structure of an SPS table is specified by the person who designs the SPS. An SPS table can be created anywhere in an SPS, and any number of SPS tables can be created.

SPS tables are entirely presentational devices and are represented using the presentational vocabulary of Authentic View and the output format. The **structure** of an SPS table is **not represented by nodes in the XML document**—although the content of table cells may come from nodes in the XML document. SPS tables occur in three types of output:

- Rendered in Authentic View; a vocabulary specific to Authentic View is used to mark up SPS tables.
- In StyleVision-generated XSLT stylesheets for HTML output, SPS tables are marked up as HTML tables.

- In StyleVision-generated XSLT stylesheets for RTF output, SPS tables are marked up as RTF tables.
- In StyleVision-generated XSLT stylesheets for XSL-FO output, SPS tables are marked up as XSL-FO tables.
- In StyleVision-generated XSLT stylesheets for Word 2007+ output, SPS tables are marked up as Word 2007+ tables.

There are two types of SPS tables:

- **Static tables** are built up, step-by-step, by the person designing the SPS. After the table structure is created, the content of each cell is defined separately. The content of cells can come from random locations in the schema tree and even can be of different types. Note that the rows of a static table do not represent a repeating data structure. This is why the table is said to be static: it has a fixed structure that does not change with the XML content.
- **Dynamic tables** are intended for data structures in the XML document that repeat. They can be created for schema elements that have a substructure—that is, at least one child attribute or element. Any element with a substructure repeats if there is more than one instance of it. Each instance of the element would be a row in the dynamic table, and all or some of its child elements or attributes would be the columns of the table. A dynamic table's structure, therefore, reflects the content of the XML file and changes dynamically with the content.

XML tables

An XML table is created by the **Authentic View user** as a data structure in the XML document. The purpose of XML tables is to give the Authentic View user the option of inserting a table-type data structure in the XML document. This XML data structure can then be transformed to the table markup of the output format.

The data structure for an XML table must correspond to either the HTML or CALS table model. One element in the XML document corresponds to the `table` element of the CALS or HTML table model, and must have a substructure that corresponds to either the CALS or HTML table model. An XML table can be inserted at any point in the XML document where it is allowed according to the schema. An XML table is formatted after it is inserted in the XML document.

Shown below is the Authentic View of an XML table that corresponds to the HTML table model.

Name	Phone
John Merrimack	6517890
Joe Concord	6402387

Data that is entered into the table's cells is entered as content of the corresponding XML elements. For example, the HTML text fragment for the XML table shown in the illustration above looks like this:

```
<table border="1" width="40%">
  <tbody>
    <tr>
      <td>Name</td>
      <td>Phone</td>
    </tr>
    <tr>
      <td>John Merrimack</td>
      <td>6517890</td>
    </tr>
    <tr>
      <td>Joe Concord</td>
      <td>6402387</td>
```



```
    </tr>
  </tbody>
</table>
```

The original XML document might look like this:

```
<phonelist border="1" width="40%">
  <items>
    <person>
      <name>Name</name>
      <phone>Phone</phone>
    </person>
    <person>
      <name>John Merrimack</name>
      <phone>6517890</phone>
    </person>
    <person>
      <name>Joe Concord</name>
      <phone>6402387</phone>
    </person>
  </items>
</phonelist>
```

Note that element names in the XML document do not need to be related to table terminology; the table structure, however, corresponds to the HTML table model (it could also correspond to the CALS table model in order to be allowed as an XML table). Also note the following:

- An XML table can be inserted at any location in the XML document where, according to the schema, a table is allowed.
- In Authentic View, data is entered directly into table cells. This data is stored as the content of the corresponding XML table element.
- The formatting properties of an XML table are assigned in Authentic View.

Note that XSLT stylesheets generated with StyleVision will not contain XML tables—because no template for the XML table is automatically included in the SPS.

Summary for designer

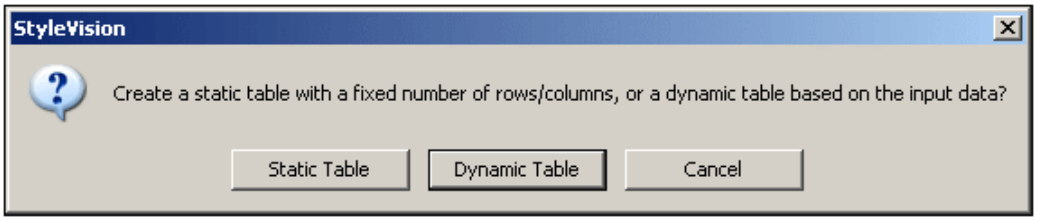
From the document designer's perspective, the following points should be noted:

- An **SPS table** occurs in the XML document at a location determined by the designer of the document—not the user of Authentic View. The structure and formatting of SPS tables are specified by the designer of the SPS in StyleVision.
- The location, structure, and formatting of **XML tables** are specified by the user of Authentic View. The user may insert an XML table wherever this is allowed by the schema (remember: the table element corresponds to an element in the schema). Note also that the table format of XML tables is available only in Authentic View. The HTML, RTF, PDF, and Word 2007+ output will not automatically display a table format. You will have to create your own template/s to match the table element, and manually add these to the generated XSLT stylesheets.

Static Tables

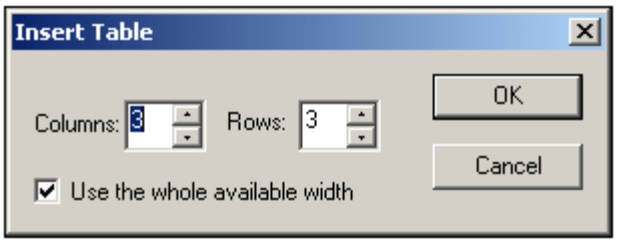
To create a static table, do the following:

1. Use one of the following commands: **Table | Insert Table** or **Insert | Table**, or click the  **Insert Table** icon in the Insert Design Elements toolbar.
2. All of these commands pop up the Create Table dialog (*screenshot below*).

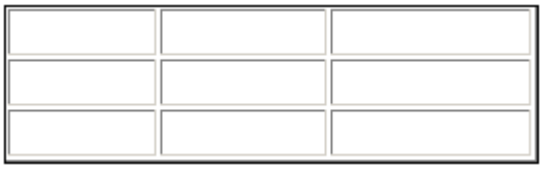


Click **Static Table**.

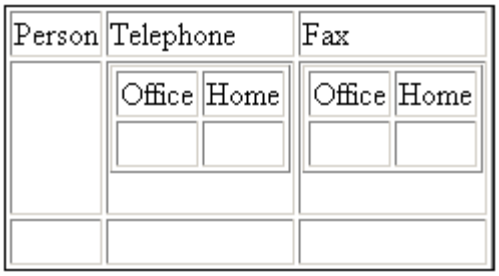
3. The Insert Table dialog (*screenshot below*) pops up, in which you specify the dimensions of the table and specify whether the table should occupy the whole available width.



4. Click OK. An empty table with the specified dimensions, as shown below, is created.



5. You can now enter content into table cells using regular StyleVision features. Cell content could be text, or elements dragged from the schema tree, or objects such as images and nested tables. The figure below shows a table containing nested tables.



Static SPS tables are especially well-suited for organizing XML data that is randomly situated in the schema hierarchy, or for static content (content not derived from an XML source).

Deleting columns, rows, and tables

To delete a column, row, or table, place the cursor in the column, row, or table to be deleted, and click the menu item **Table | Delete Column**, **Table | Delete Row**, or **Table | Delete Table**, respectively. If you have nested tables, these commands will apply, respectively, to the column,

row, and table containing the cursor.

Toolbar table editing icons
The table editing icons, which are by default in the second row of the toolbar, are shortcuts to the **Table** menu commands. These commands allow you to insert, delete, edit the structure of, and assign formatting properties to the static table. These icons can also be used for dynamic SPS tables. They **cannot be used for XML tables**, since XML tables cannot be created in StyleVision but must be created in Authentic View by the user. XML tables can only be enabled in StyleVision.

Structure of static tables for PDF output
To ensure that tables are correctly rendered in the PDF output, the number of columns specified for a table (in the FO document) must be correct. (The number of columns can vary from row to row when cells span columns.) The following two points should be noted to ensure correct table definition for PDF output:

- The number of columns in a table is the maximum number of columns in any row when all rows are considered. For example, if a table has three rows, with Row1 having 6 columns, Row2 having 5 columns, and Row3 having 7 columns, the number of columns in the table is 7. It is best, therefore, to specify, when inserting the static table, that the table should have 7 columns. Cells in the table can subsequently be joined (using **Table** menu commands) so that they span columns. It is important to note that splitting a cell creates a new column in the graphic view but that is not added to the table's column count. In such an event, the table structure and dimensions will be incorrectly rendered in the PDF.
- If the width of columns is to be specified, the total of all columns should add up to 100% or to an absolute measurement that is smaller than the width of the body-area of the page.
- Make sure that widths are defined for each column, and not only for cells of a table. To check whether column widths have been correctly assigned, click the XSL-FO tab and check the widths of the `fo:table-column` child elements of the `fo:table` tag. For example, consider the table definition below:

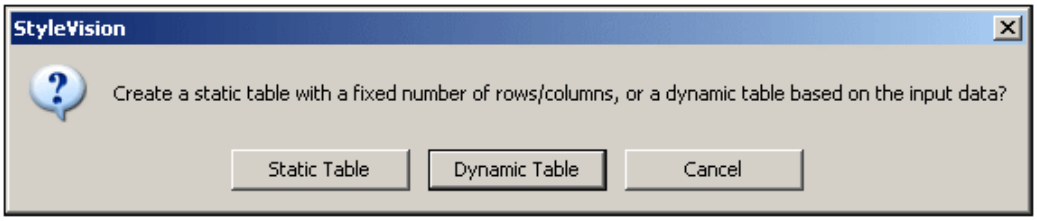
```
<fo:table width="100%" space-before.optimum="1pt" space-after.optimum="
2pt">
  <fo:table-column column-width="proportional-column-width(15)" />
  <fo:table-column column-width="proportional-column-width(15)" />
  <fo:table-column column-width="proportional-column-width(20)" />
  <fo:table-column column-width="proportional-column-width(20)" />
  <fo:table-column column-width="proportional-column-width(30)" />
<fo:table-body>
```

In the listing above, the table is defined as having 5 columns, with the widths of each column being given in percentages.

Dynamic Tables

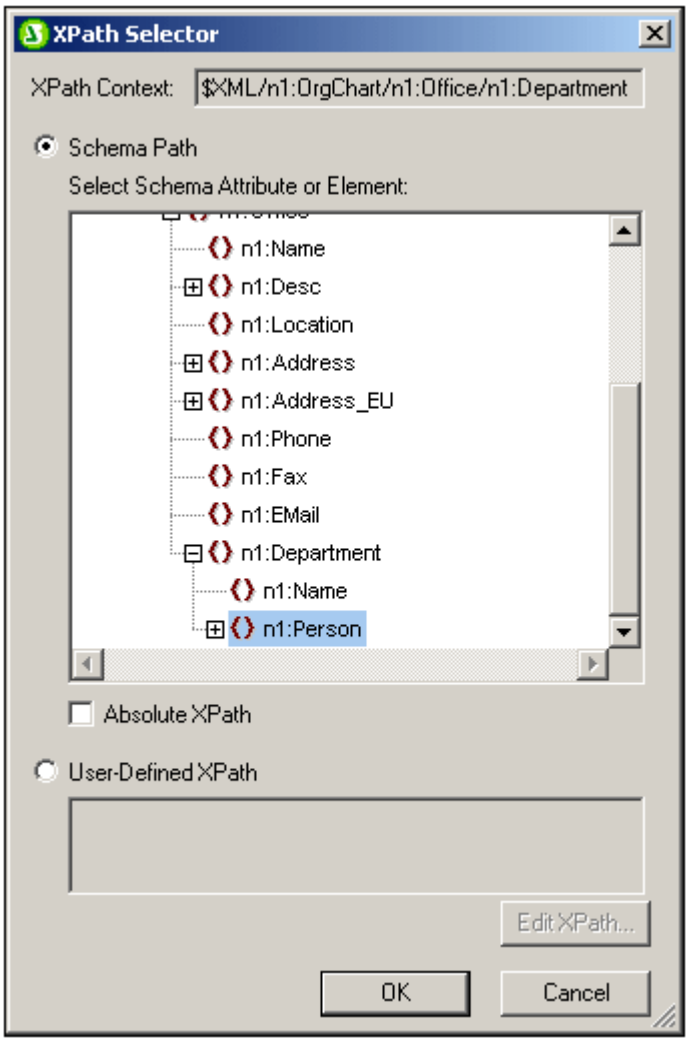
To insert a dynamic table, do the following:

1. Use one of the following commands: **Table | Insert Table** or **Insert | Table**, or click the  **Insert Table** icon in the Insert Design Elements toolbar.
2. All of these commands pop up the Create Table dialog (*screenshot below*). If you clicked the Insert Table icon in the toolbar, the Create Table dialog will pop up when you click at the location in the design where you want to insert the table.



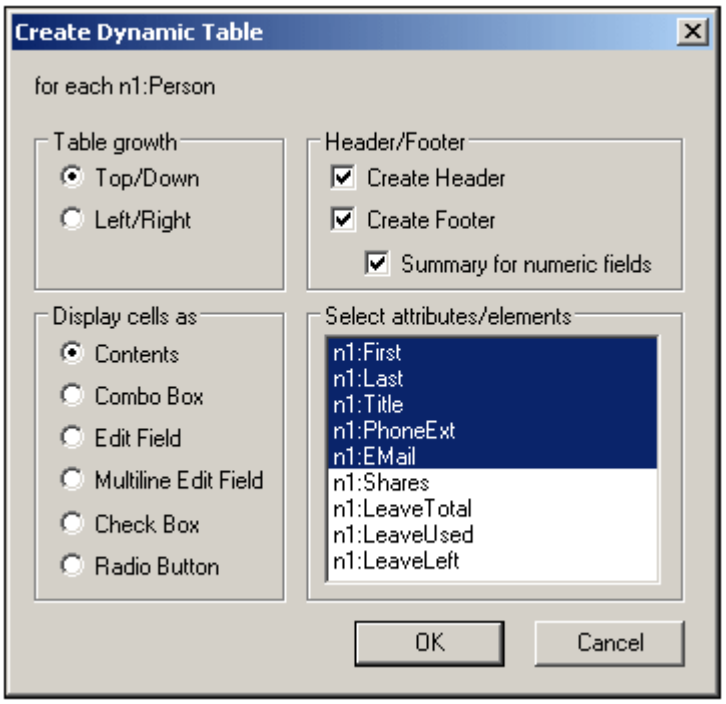
Click **Dynamic Table**.

3. In the XPath Selector dialog (*screenshot below*) that pops up, notice that the XPath Context is the context of the insertion location, and it cannot be changed in the dialog. Select the node that is to be created as the dynamic table. In the screenshot below, the context node is `n1:Department`, and the `n1:Person` node has been selected as the node to be created as a table.



If you select the User-defined XPath option, then you can enter an XPath expression to select the node to be created as the dynamic table.

4. Click **OK**. The Create Dynamic Table dialog (*screenshot below*) pops up.



5. The child elements and attributes of the element that has been dragged into the Design window are displayed In the "Select attributes/element" list and can be created as columns of the table. Deselect the child nodes that you do not want and select any attribute/element you want to include as columns. (In the figure above, the elements `Shares`, `LeaveTotal`, `LeaveUsed` and `LeaveLeft` have been deselected.) An explanation of teh other options is given below. Click **OK** when done. Note that columns are created only for child elements and attributes, but for no descendant on a lower level.

Note: If you specified a User-defined XPath to select the node to be created as the dynamic table, then StyleVision will probably not know unambiguously which node is being targeted. Consequently, the Create Dynamic Table will, in such cases, not display a list of child attributes/elements to select as the fields (columns) of the table. The table that is created will therefore have to be manually populated with node content. This node content should be child attributes/elements of the node selected to be created as the table.

Note: Another way of creating a schema node as a table is to drag the node from the schema tree into the design and to specify, when it is dropped, that it be created as a table.

Table grows down or right

When a table grows top-down, this is what it would look like:

name	street	city	state	zip
ipo:name (contents) ipo:name	ipo:street (contents) ipo:street	ipo:city (contents) ipo:city	ipo:state (contents) ipo:state	ipo:zip (contents) ipo:zip

When a table grows left-right it looks like this:

Headers and footers
Columns and rows can be given headers, which will be the names of the column and row elements. Column headers are created at the top of each column. Row headers are created on the left hand side of a row. To include headers, check the Create Header check-box. If the table grows top-down, creating a header, creates a header row above the table body. If the table grows left-right, creating a header, creates a column header to the left of the table body.

To include footers, check the Create Footer check-box. Footers, like headers, can be created both for columns (at the bottom of columns) and rows (on the right hand side of a row). The footer of numeric columns or rows will sum each column or row if the *Summary for Numeric Fields* check box is checked.

Via the **Table** menu, header and footer cells can be joined and split, and rows and columns can be inserted, appended, and deleted; this gives you considerable flexibility in structuring headers and footers. Additionally, headers and footers can contain any type of static or dynamic content, including conditional templates and auto-calculations.

Note: Headers and footers must be created when the dynamic table is defined. You do this by checking the Create Header and Create Footer options in the Create Dynamic Table dialog. Appending or inserting a row within a dynamic table does not create headers or footers but an extra row. The difference is significant. With the Create Header/Footer commands, real headers and footers are added to the top and bottom of a table, respectively, and to the top and bottom of the table on new pages if the table runs on to a new PDF page. If a row is inserted or appended, then the row occurs for each occurrence of the element that has been created as a dynamic table.

Nested dynamic tables
You can nest one dynamic table within another dynamic table if the element for which the nested dynamic table is to be created is a child of the element that has been created as the containing dynamic table. Do the following:

1. Create the outer dynamic table so that the child element to be created as a dynamic table is created as a column.
2. In the dynamic table in Design View, right-click the child element.
3. Select **Change to | Table**. This pops up the Create Dynamic Table dialog.
4. Define the properties of the nested dynamic table.

To nest a dynamic table in a static table, drag the element to be created as a dynamic table into the required cell of the static table. When you drop it, select **Create Table** from the context menu that appears.

Tables for elements with text content
To create columns (or rows) for child elements, the element being created as a table must have a **child element or attribute node**. Having a **child text node** does not work. If you have this

kind of situation, then create a child element called, say, `Text`, and put your text node in the `TableElement/Text` elements. Now you will be able to create `TableElement` as a dynamic table. This table will have one column for `Text` elements. Each row will therefore contain one cell containing the text node in `Text`, and the rows of the table will correspond to the occurrences of the `TableElement` element.

Contents of table body cells

When you create a dynamic table, you can create the node content as any one of a number of StyleVision components. In the examples above, the table body cells were created as contents; in the Create Dynamic Table dialog, the option for Display Cells As is *contents*. They could also have been created as data-entry devices. There are two points to note here:

- The setting you select is a global setting for all the table body cells. If you wish to have an individual cell appear differently, edit the cell after you have created the table: right-click in the cell and, in the context menu that appears, select "Change to" and then select the required cell content type.
- If you create cells as element contents, and if the element has descendant elements, then the content of the cell will be a concatenation of the text strings of the element and all its descendant elements.

Deleting columns, rows, and tables

To delete a column, row, or table, place the cursor in the column, row, or table to be deleted, and click the menu item **Table | Delete Column**, **Table | Delete Row**, or **Table | Delete Table**, respectively. If you have nested tables, the table immediately containing the cursor will be deleted when the **Table | Delete Table** command is used.

Toolbar table editing icons

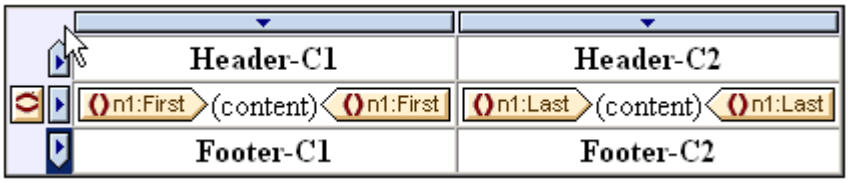
The table editing icons in the toolbar are shortcuts to the **Table** menu commands. These commands allow you to insert, delete, edit the structure of, and assign formatting properties to the dynamic table. These icons can also be used for static tables. They **cannot be used for XML tables**, since XML tables cannot be created in StyleVision but must be created in Authentic View by the user. XML tables can only be enabled in StyleVision.

Creating dynamic tables in global templates

You can also create dynamic tables in global templates. The process works in the same way as for the Root Template (given above). The important point to note is that, in a global template, a dynamic table can only be created for **descendant elements** of the global template node; it cannot be created for the global template node itself. For example, if you wish to create a dynamic table for the element `authors` within a global template, then this dynamic table must be created within the global template of the parent element of `authors`, say `contributors`. It cannot be created within the global template of the `authors` element.

Tables in Design View

The main components of static and dynamic SPS tables are as shown in the screenshots below with the table markup (**Table | View Table Markup**) switched on.



The screenshot above shows a simple table that grows top-down and that has a header and footer.

- A column is indicated with a rectangle containing a downward-pointing arrowhead. Column indicators are located at the top of columns. To select an entire column—say, to assign a formatting property to that entire column—click the column indicator of that column.
- A row is indicated with a rectangle containing a rightward-pointing arrow. Click a row indicator to select that entire row.
- In tables that grow top-down (*screenshot above*), headers and footers are indicated with icons pointing up and down, respectively. In tables that grow left-right, headers and footers are indicated with icons pointing left and right, respectively (*screenshot below*).
- To select the entire table, click in the top left corner of the table (in the screenshots above and below, the location where the arrow cursor points).
- When any table row or column is selected, it is highlighted with a dark blue background. In the screenshot above, the footer is selected.
- In tables that grow top-down, the element for which the table has been created is shown at the extreme left, outside the column-row grid (*screenshot above*). In tables that grow left-right, the element for which the table has been created is shown at the top, outside the column-row grid (*screenshot below*).

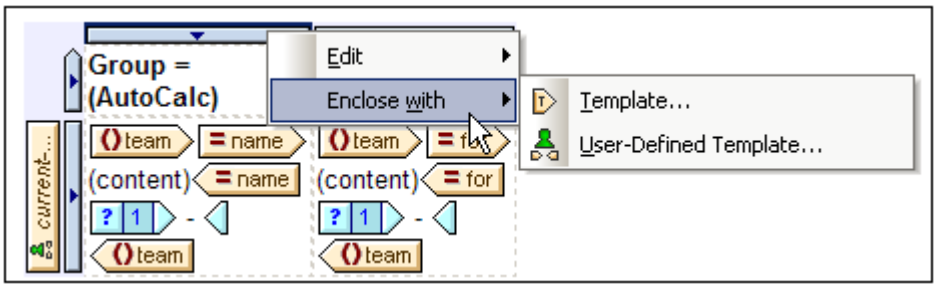
After a column or row or table has been selected, styles and/or properties can be set for the selection in the Styles and Properties Windows.

Drag-and-drop functionality

The columns and rows of an SPS table (static or dynamic) can be dragged to alternative locations within the same table and dropped there.

Enclosing and removing templates on rows and columns

A row or column can be enclosed with a template by right-clicking the row or column indicator and, from the context menu that pops up (*screenshot below*), selecting **Enclose With | Template** or **Enclose With | User-Defined Template**. In the next step, you can select a node from the schema tree or enter an XPath expression for a User-Defined Template. A template will be created around the row or column.



A template that is around a row or column can also be removed while leaving the row or column itself intact. To do this, select the template tag and press the **Delete** key.

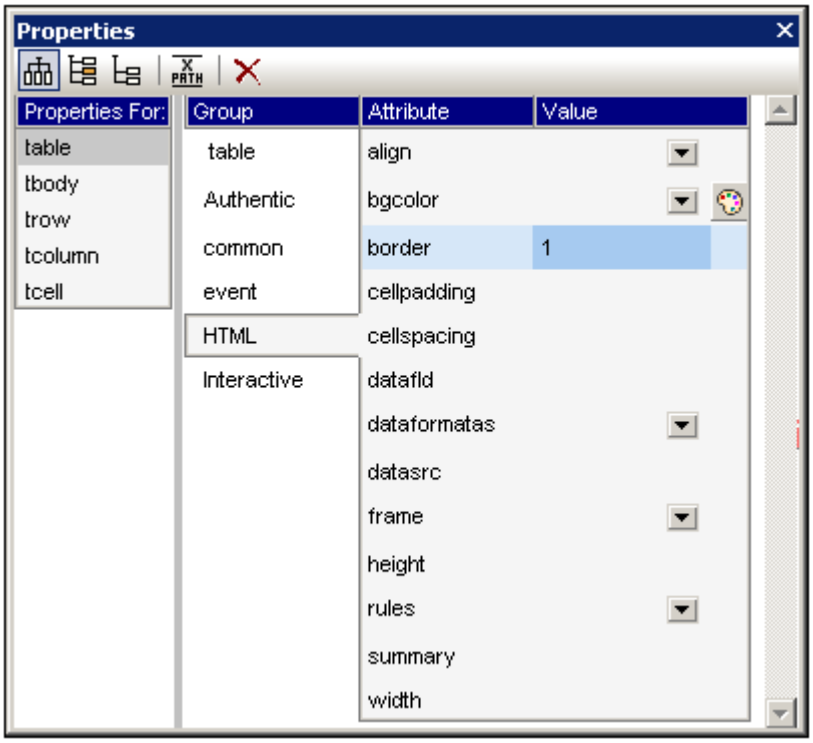
The enclosing with, and removing, templates feature is useful if you wish to remove a template without removing the contents of a row or column, and then, if required, enclosing the row or column with another template. Enclosing with a User-Defined Template also allows the use of interesting template-match results within the row or column (via Auto-Calculations, for example).

Table Formatting

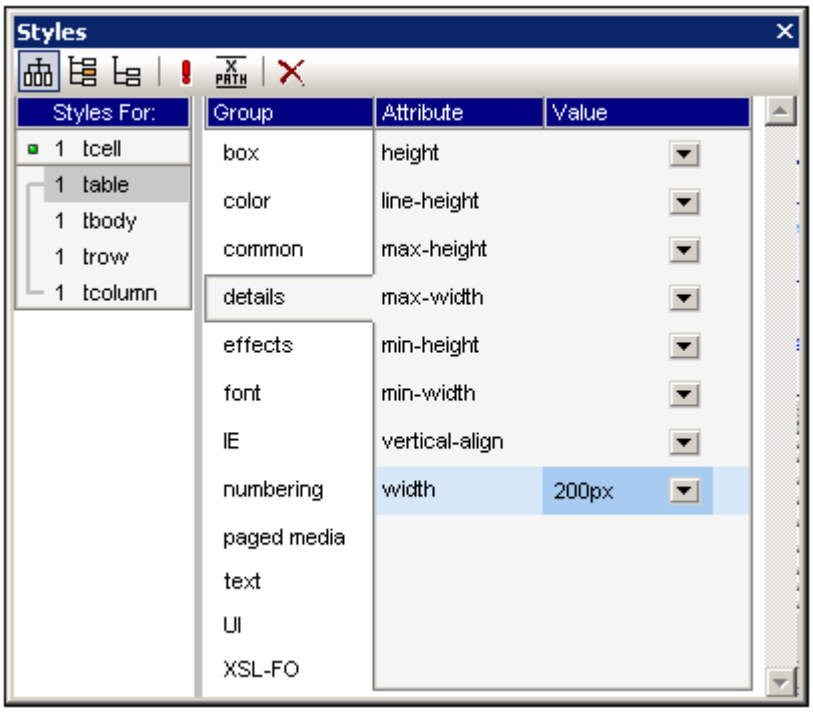
Static and dynamic tables can be formatted using:

1. HTML table formatting properties (in the Properties sidebar)
2. CSS (styling) properties (in the Styles sidebar).

Properties sidebar
The HTML table formatting properties are available in the Properties sidebar (*screenshot below*). These properties are available in the HTML group of properties for the table component and its sub-components (body, row, column, and cell).



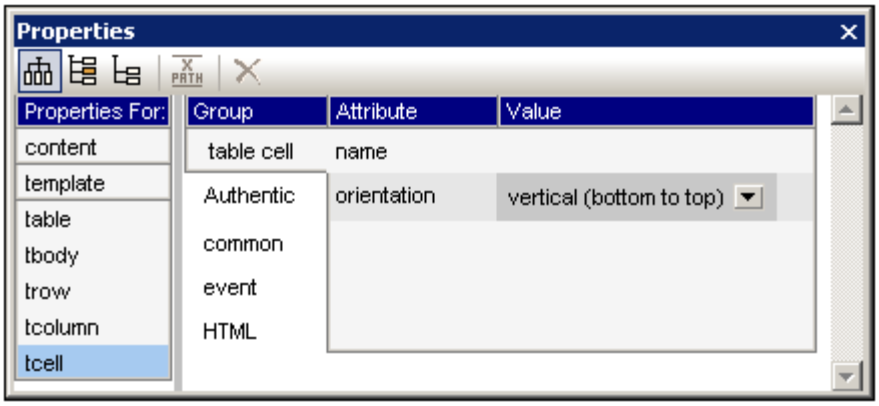
Styles sidebar
The CSS table formatting properties are available in the Styles sidebar (*screenshot below*). CSS properties are available for the table component and its sub-components (body, row, column, and cell).



Note: If all table cells in a row are empty, Internet Explorer collapses the row and the row might therefore not be visible. In this case, you should use the HTML workaround of putting a non-breaking space in the appropriate cell/s.

Vertical text

Text in table cells can be rotated 90 degrees clockwise or anti-clockwise, so that the text is vertical, reading from top-to-bottom or bottom-to-top, respectively. To do this, in the design, select the content in the table cell that is to be rotated and, in the Properties sidebar (*screenshot below*), select `tcell`. In the *Table Cell* group of properties, select the required value for the *Orientation* property.



Note the following points:

- The rotation will be applied to the output, but will not be be displayed in the design.
- This property is intended to be applied to text and should not be used for other content.
- Besides being applicable to text in table cells, the property can also be applied to text in Text boxes.

Table formatting via Properties and Styles
Some formatting properties are available in both the Properties sidebar as well as in the Styles sidebar. The table below lists some of the more important table properties available in both sidebars.

Table component	Properties sidebar	Styles sidebar
Table	border, frame, rules; cellpadding, cellspacing; bgcolor; height, width *(overriden by height, width in Styles sidebar if the latter exist); align*	borders and padding in Box styles; height, width in Details group (*they override height and width in Properties sidebar*); color, font, and text styles
Body	align, valign	height, vertical-align; color, font, and text styles
Column	align, valign	width, vertical-align; color, font, and text styles; box styles
Row	align, valign	height, vertical-align; color, font, and text styles; box styles
Cell	align, valign	height, width, vertical-align; color, font, and text styles; box styles

Height and width
The height and width of tables, rows, columns, and cells must be set in the Styles sidebar (in the Details group of styles). When a table, column, or row is resized in the display by using the mouse, the altered values are entered automatically in the appropriate style in the Styles sidebar. Note, however, that the height and width styles are not supported for cells that are spanned (rowspans or colspans).

Giving alternating rows different background colors
If you want alternating background colors for the rows of your dynamic table, do the following:

1. Select the row indicator of the row for which alternating background colors are required. Bear in mind that, this being a dynamic table, one element is being created as a row, and the design contains a single row, which corresponds to the element being created as a table.
2. With the row indicator selected, in the Properties sidebar, click the *Properties for:* `trow`.
3. Select the `bgcolor` property.
4. Click the XPath icon in the toolbar of the Properties window, and, in the Edit XPath Expression dialog that appears, enter an XPath expression similar to this:

   ```
   if ( position() mod 2 = 0 ) then "white" else "gray"
   ```

   This XPath expression specifies a `bgcolor` of white for even-numbered rows and a `bgcolor` of gray for odd-numbered rows

You can extend the above principle to provide even more complex formatting.

Numbering the rows of a dynamic table
You can number the rows of a dynamic table by using the `position()` function of XPath. To do

this, first insert a column in the table to hold the numbers, then insert an Auto-Calculation in the cell of this column with an XPath of: `position()`. Since the context node is the element that corresponds to the row of the dynamic table, the `position()` function returns the position of each row element in the set of all row elements.

Table headers and footers in PDF output

If a table flows over on to more than one page, then the table header and footer appear on each page that contains the table. The following points should be noted:

- If the footer contains Auto-Calculations, the footer that appears at the end of the table segment on each page contains the Auto-Calculations for the whole table—not those for only the table segment on that page.
- The header and footer will not be turned off for individual pages (for example, if you want a footer only at the end of the table and not at the end of each page). In

In order to omit the header or footer being displayed each time the page breaks, use the `table-omit-header-at-break` and/or `table-omit-footer-at-break` properties (attributes) on the `table` element. These properties are available in the Styles sidebar, in the XSL-FO group of properties for the table. To omit the header or footer when the page breaks, specify a value of `true` for the respective attribute. (Note that the default value is `false`. So not specifying these properties has the effect of inserting headers and footers whenever there is a break.)

Hyphenating content of table cells

If you wish to hyphenate text in table cells, you must explicitly set the hyphenate option for the respective block/s.

Row and Column Display

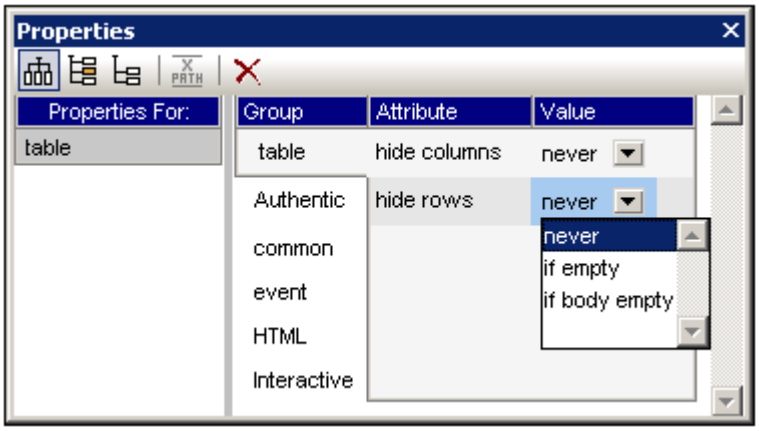
For tables, the following row and column display options are available in the **HTML output only** . These features are **not supported in Authentic View** and they require XSLT 2.0 to be selected as the XSLT version of the SPS.

- Empty rows and columns can be automatically hidden.
- Each column can have a **Close** button, which enables the user to hide individual columns.
- Row elements with descendant relationships can be displayed with expand/collapse buttons.

Hiding empty rows and columns by default

To hide empty rows and/or columns in the HTML output, do the following:

1. In Design View, select the table or any part of it (column, row, cell).
2. In the Properties entry helper, select properties for *Table*, and the *Table* group of properties (*screenshot below*).



3. Select the required value for the *Hide Columns* and *Hide Rows* properties. The options for each of these two properties are the same: *Never*, *If empty*, and *If body empty*. The *If empty* option hides the column or row if the entire column/row (including header and footer) is empty. *If body empty* requires only that the body be empty.

Note: If a non-XBRL table has row or column spans (where cells of a row or a column have been joined), the hiding of empty rows and columns might not work.

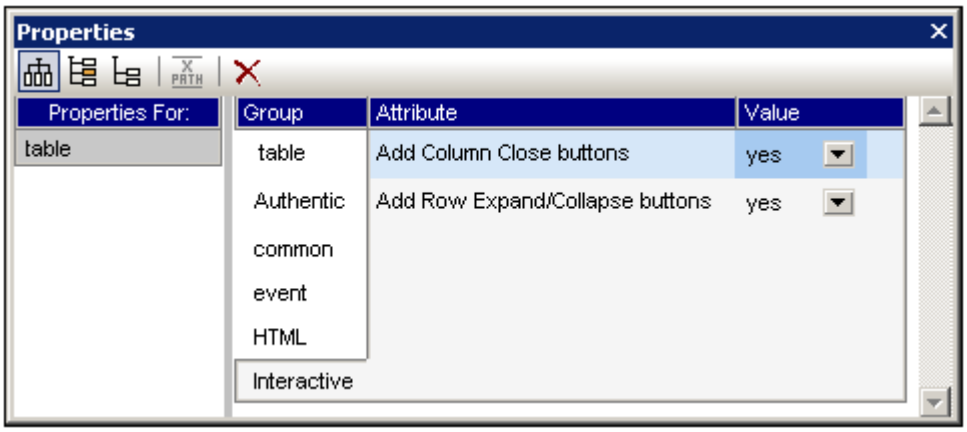
User interaction to hide columns expand/collapse rows

It can be specified in the design that each table column contain a **Close** button in the HTML output (*see screenshot below*). The user can then hide individual columns by clicking the **Close** button. After the user hides a column, a plus symbol appears in the first column (*see screenshot below*). Clicking this symbol re-displays all hidden columns.

Balance Sheet (in Millions)	2004-09-30	2004-07-01 - 2004-09-30	2003-12-31	2004-01-01
Assets, Total	€21.49		€24.02	
Current Assets, Total	€10.65		€12.32	
Non Current Assets, Total	€10.85		€11.7	
Liabilities and Equity, Total	€21.49		€24.02	
Liabilities, Total	€8.9		€10.79	
Minority Interests				
Equity, Total	€12.59		€13.23	
Issued Capital and Reserves	€12.59		€13.23	

Also, row elements that have descendant elements can be displayed in the HTML output with an expand/collapse (plus/minus) symbol next to it (*see screenshot above*). Clicking these symbols in the HTML output expands or collapses that row element. In the design, you can specify indentation for individual rows using CSS properties.

The settings for these two features are made in the *Interactive* group of properties of the *Table* properties (*screenshot below*).



The options for both properties are *Yes* (to add the feature) and *No* (to not add the feature).

XML Tables

An XML table is defined as a hierarchical XML structure, the elements of which contain the cell content of the table. This XML structure must correspond exactly to the CALS or HTML table model. In order for **users of Authentic View** to be able to insert XML tables the following two conditions must be fulfilled:

- An element must exist in the schema (DTD or XML Schema) with a content model corresponding either to the HTML or CALS table model
- XML tables must be enabled in the StyleVision Power Stylesheet

Note: The purpose of XML tables is to give the **user of Authentic View** the option of entering data as a table in Authentic View. This data **will be displayed as a table in Authentic View but will not automatically be displayed as a table in HTML, RTF, PDF, and Word 2007+ output**. This is because no default processing for the XML table elements is defined. In order to obtain table formatting in the HTML, RTF, PDF, and Word 2007+ output, you must manually define your own templates to provide processing for the XML table elements, and add these templates to the generated XSLT files. If you wish to have a table in your HTML, RTF, PDF, and Word 2007+ output, we recommend that you use static and/or dynamic SPS tables.

To enable XML table functionality, the following three steps are required:

1. Define the content model of the table element to match either the CALS or HTML table structure.
2. Insert the **parent of the table element** in the design as contents.
3. Enable XML tables in the SPS.

Defining the table content model in the schema

The `table` element in the schema must have a content model corresponding to either the HTML or the Exchange model subset of the CALS table model. The content model of the `table` element in your schema **must correspond exactly** with either of these two table models, i.e. all elements and attributes defined in the table model must be correspondingly present in the element content model. For information about the CALS table model, see the CALS table model at OASIS. For an example of a `table` element having an HTML table structure, see the HTML-OrgChart XML Schema in the Examples folder (`HTML-OrgChart.xsd`).

A table model corresponding to the HTML table model would have a structure as shown in the XML fragment below.

```
<table>
  <tbody>
    <tr>
      <td/>
    </tr>
  </tbody>
</table>
```

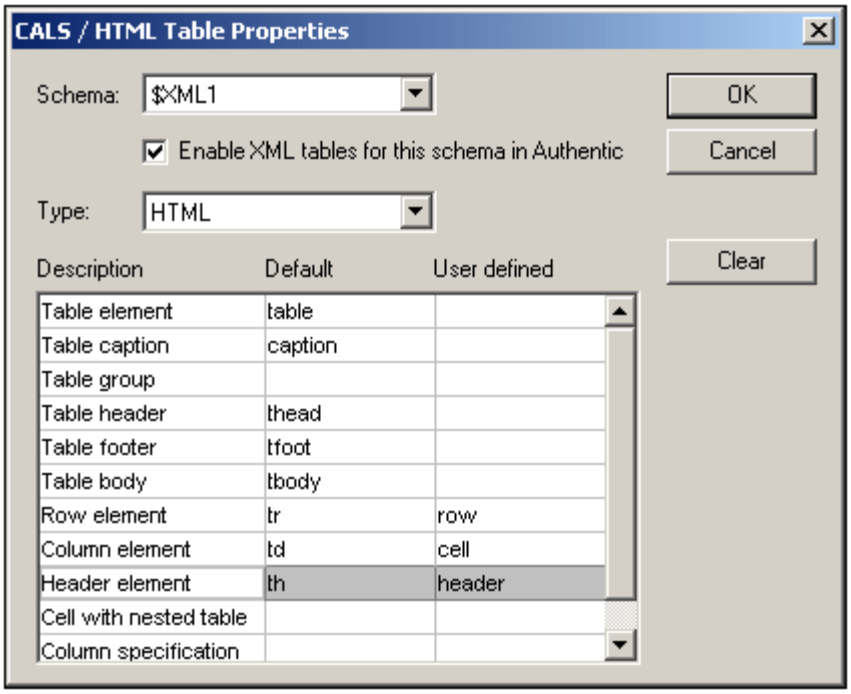
The element names in the example above are the default names you will find in the SPS. If the names of the table elements in your schema do not match these default names, you must map the names of the table elements in your schema to the default names in the CALS / HTML Table Properties dialog (**Authentic | CALS/HTML Tables**). You can do this when you check the Enable XML tables option in the dialog. If there is more than one element in the schema that has a valid table content model, then the mapping to the default names determines which element will be used as the table element.

Caution: If an element called `table` exists in the schema, it will be treated as the XML table element if XML tables have been enabled in the StyleVision Power Stylesheet (because `table` is the default name for the table element in the SPS). This could lead to errors if the element

`table` is not intended to be used as a table element.

Insert the parent of the table element in the design
The parent of the table element must be inserted in the design. To do this, drag the parent element of the table element into the design and create it as contents.

Enabling XML tables with StyleVision
In order for the user of Authentic View to be able to create XML tables in an XML document, XML tables must be enabled in the SPS. To enable XML tables, click **Authentic | CALS/HTML Tables**. This pops up the CALS / HTML Table Properties dialog (*screenshot below*).

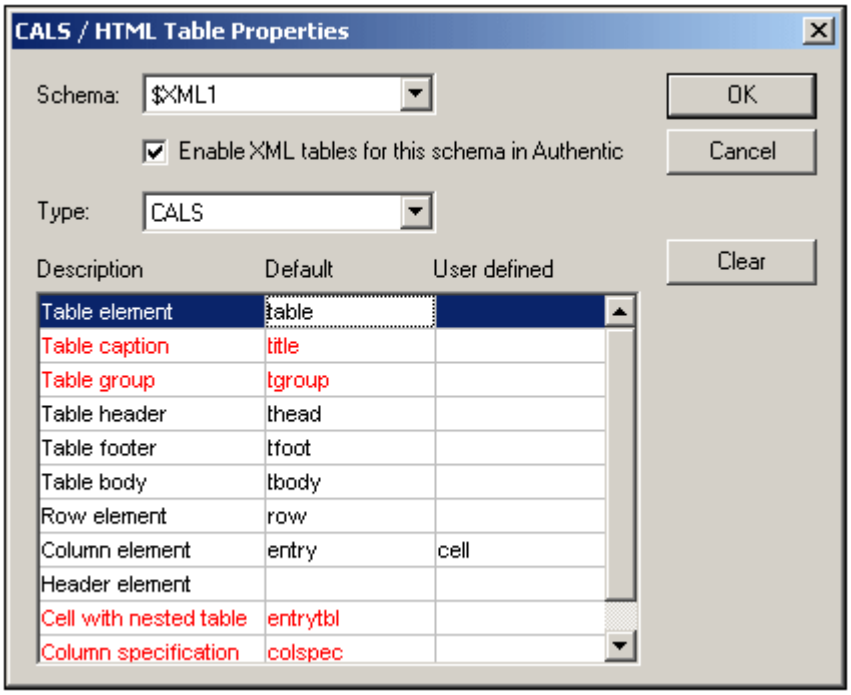


With the relevant schema selected, check the "Enable XML tables in Authentic" check-box.

Then select the table model type: either HTML or CALS. The screenshot above shows the default names for the HTML table model. If an element in the table model in your schema matches a default element name, the default element name is colored black, otherwise red. If a corresponding element exists in your schema for a default element in the CALS/HTML table model, then you can map your schema element to the default by entering its name in the User Defined column for that default element. The screenshot above indicates the following about the schema:

- There is an element called `table` with a content model the same as the HTML table model (all default names appear black).
- The elements corresponding to the default `tr`, `td`, and `th` are `row`, `cell`, and `header`, respectively.

The content model of a `table` element that follows the HTML model would not correspond with the CALS table model, which is different. Given below is a screenshot of the CALS / HTML Table Properties dialog (for the same schema as above) with the table model type set to CALS.



Notice the following:

- The default CALS table elements that do not exist in the schema are colored red. Those CALS table model elements that do exist in the `table` element's content model appear black, including `row`.
- The `entry` element has been mapped to `cell`; this causes both `entry` and `cell` to be displayed in black.

If you wish to use the CALS table model, you should alter the schema to properly include the missing elements and attributes. Once you have selected the appropriate table model, click OK. XML tables are now ready to be used in Authentic View.

Note:
The following general points about XML tables should be noted:

- The `table` element can only be inserted at locations in the XML document where the schema allows the table element.
- You, as the person who designs the SPS, only enables XML tables. It is the Authentic View user who inserts an XML table at his or her discretion.
- An XML table is structured and formatted in Authentic View, that is, by the Authentic View user. The formatting of an XML table cannot be controlled through the SPS.
- In the CALS table model, the `cols` attribute of the Table group element (`tgroup`) specifies the number of columns in the table. This attribute–value pair is entered (both attribute and value) into the XML document when the Authentic View user inserts an XML table. This is because the user must specify the number of columns when inserting the table. The value of this attribute changes automatically whenever a column is inserted, appended, or deleted using the Authentic View GUI tools. The `cols` attribute is therefore not shown in the Attributes sidebar and its value, therefore, cannot be modified there.
- The `spanspec` element is not supported.
- Data entered in the cells of an XML table is entered as content of the `entry` element (in the case of a CALS table) or `td` element (HTML table), or corresponding user-defined element, as the case may be.

- To obtain the content of XML tables in HTML , RTF, PDF, and Word 2007+output, you must generate the XSLT (**File | Save Generated Files**) and, in it, manually create a template for outputting the table element.

8.5 Lists

There are two types of lists that can be created in the SPS:

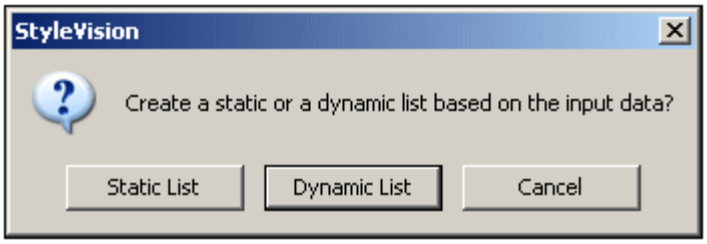
- Static lists, which are lists, the contents of which are entered directly i the SPS. The list structure is not dynamically derived from the structure of the XML document.
- Dynamic lists, which are lists that derive their structure and contents dynamically from the XML document.

How to create these two list types are described in detail in the sub-sections of this section.

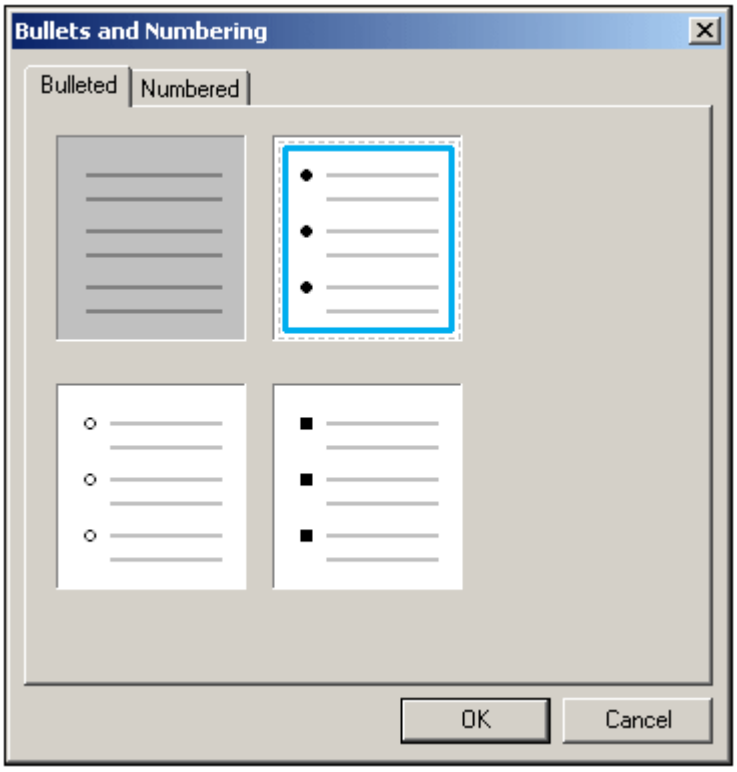
Static Lists

A static list is one in which list item contents are entered directly in the SPS. To create a static list, do the following:

1. Place the cursor at the location in the design where you wish to create the static list and select the **Insert | Bullets and Numbering** menu command. This pops up a dialog asking whether you wish to create a static list or dynamic list (*screenshot below*).



2. Click **Static List**. This pops up the Bullets and Numbering dialog (*screenshot below*).



3. Select the desired list item marker and click **OK**. An empty list item is created.
4. Type in the text of the first list item.
5. Press **Enter** to create a new list item.

To create a nested list, place the cursor inside the list item that is to contain the nested list and click the **Insert | Bullets and Numbering** menu command. Then use the procedure described above once again.

Note: You can also create a static list by placing the cursor at the location where the list is to be created and clicking the Bulleted List or Numbered List icons in the Insert Design Elements toolbar. The first list item will be created at the cursor insertion point.

Changing static text to a list
There are two ways to change static text to a list:

- Highlight the text to change, click **Insert | Bullets and Numbering**, select the desired marker type, and click **OK**. If the text contains a CR-LF, carriage-return and/or linefeed (inserted by pressing the **Enter** key), then separate list items are created for each text fragment separated by a CR-LF.
- With the cursor placed in a text fragment, click **Insert | Bullets and Numbering**, select the desired marker type, and click **OK**. That text fragment, till the CR-LF separators on either side, is created as a list item.

Dynamic Lists

Dynamic lists display the content of a set of sibling nodes of the same name, with each node represented as a single list item in the list. The element, the instances of which are to appear as the list items of the list, is created as the list. The mechanism and usage are explained below.

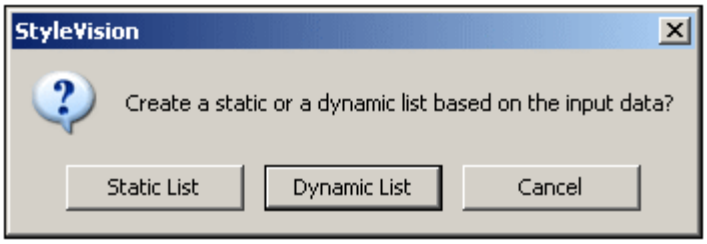
General usage mechanism

- Any element can be created as a list.
- When an element is created as a list, the instances of that element are created as the items of the list. For example, if in a `department` element, there are several `person` elements (i.e. instances), and you wanted to create a list of all the persons in the department, then you must create the `person` element as the list.
- Once the list has been created for the element, you can modify the appearance or content of the list or list item by inserting additional static or dynamic content such as text, Auto-Calculations, dynamic content, etc.

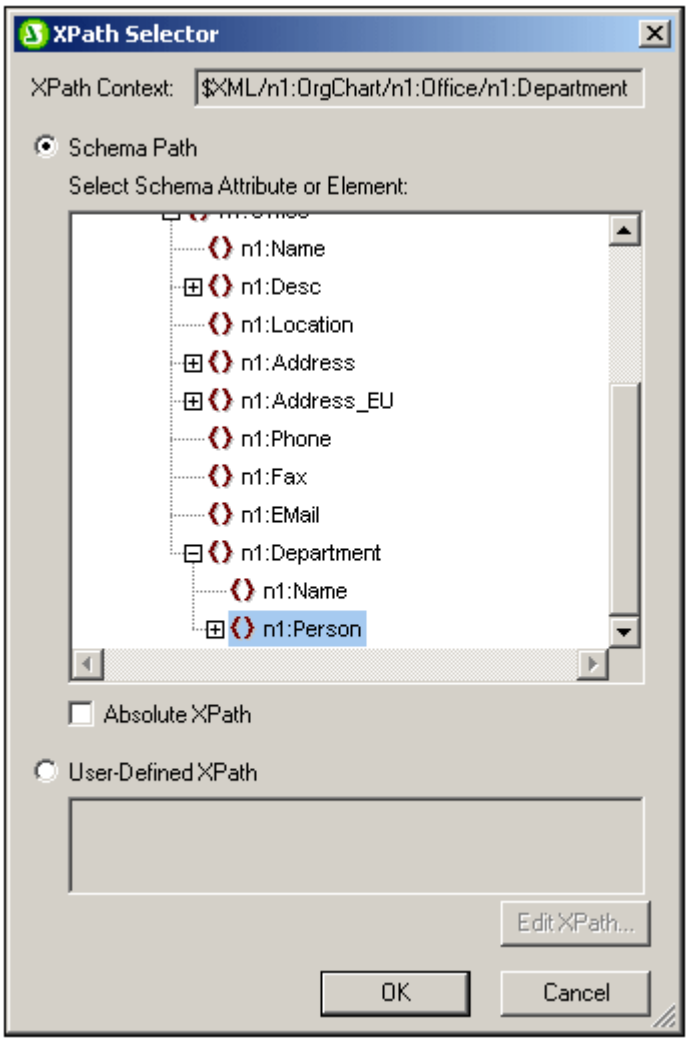
Creating a dynamic list

Create a dynamic list as follows:

1. Place the cursor at the location in the design where you wish to create the static list and select the **Insert | Bullets and Numbering** menu command. This pops up a dialog asking whether you wish to create a static list or dynamic list (*screenshot below*).

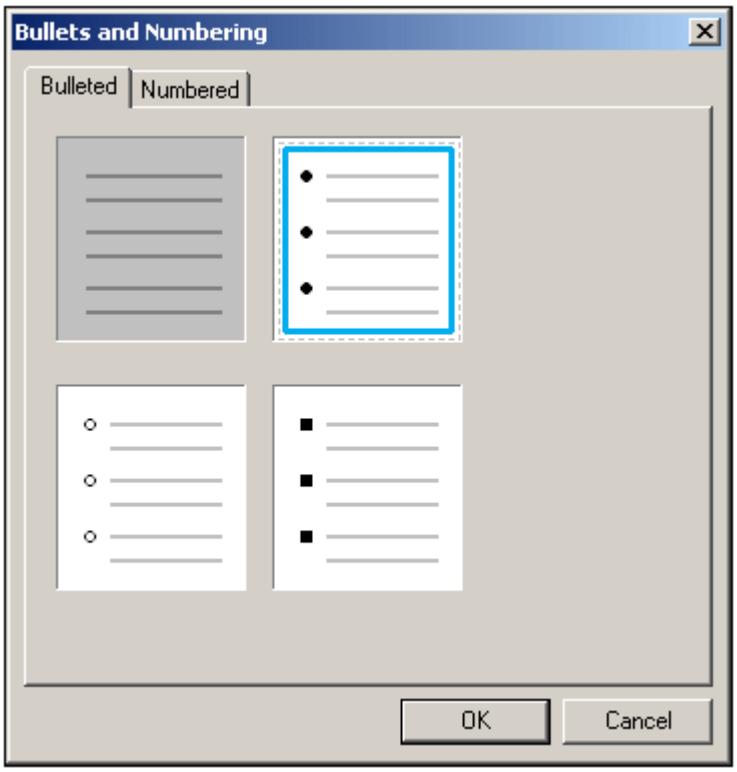


2. Click **Dynamic List**. This pops up the XPath Selector dialog (*screenshot below*).
3. In the XPath Selector dialog, notice that the XPath Context is the context of the insertion location, and that it cannot be changed in the dialog. Select the node that is to be created as the dynamic list. In the screenshot below, the context node is `n1:Department`, and the `n1:Person` node has been selected as the node to be created as a list. This means that the content of each `n1:Person` node will be created as an item in the list.



If you select the User-defined XPath option, then you can enter an XPath expression to select the node to be created as the dynamic table. Clicking **OK** pops up the Bullets and Numbering dialog described in the next step.

4. In the the Bullets and Numbering dialog, select the kind of list you wish to create. You can choose from a bulleted list (with a bullet, circle, or square as the list item marker), or a numbered list. Clicking **OK** creates the list with the type of list item marker you selected.



8.6 Graphics

There are two ways in which graphics are used in an SPS:

- As images in the design document, and
- As Authentic View toolbar icons for applying markup to the XML document (text state icons).

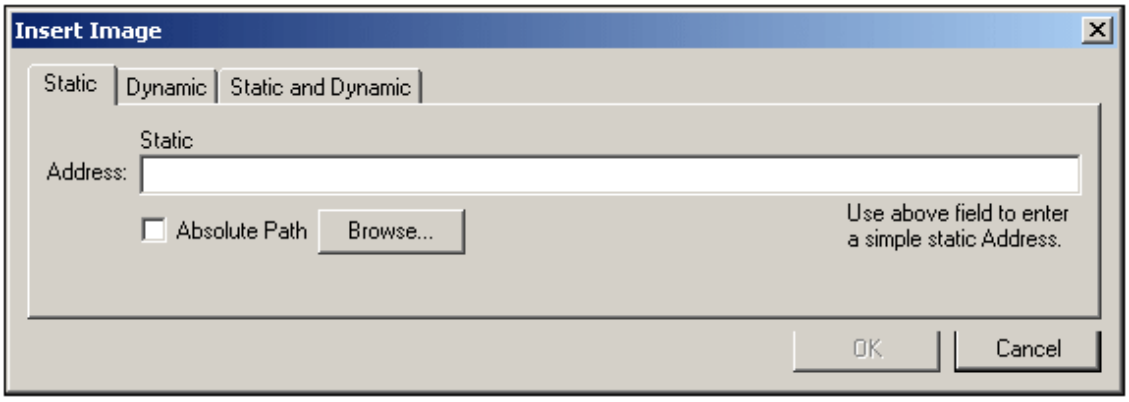
When inserting images in the design document, the location of the image can be specified directly in the SPS (by the SPS designer) or can be taken or derived from a node in the XML document. How to specify the location of the image is described in the section Image URIs. What type of images are supported in the various outputs are listed in the section Image Types and Output. The section Text State Icons describes how toolbar icons for Authentic View can be defined.

Image properties
Images can be set in the Properties window. Do this as follows. Select the image in the design. Then, in the Properties window, (i) select *image* in the Properties for column, (ii) select the required property group, and (iii) within the selected property group, select the the required property. For example, to set the height and width of the image, set the `height` and `width` properties in the *HTML* group of properties.

Image URIs

Images can be inserted at any location in the design document. These images will be displayed in Authentic View and the output documents; in Design View, inserted images are indicated with placeholders.

To insert an image, click the **Insert | Image** menu command, which pops up the Insert Image dialog (*screenshot below*). The URI of the image to be inserted is entered in this dialog.



There are three ways in which the URI of the image can be entered:

- In the Static tab, directly as an absolute or relative URI. For example, `nanonull.gif` (*relative URI; see section below*), and `C:/images/nanonull.gif` (*absolute URI*).
- In the Dynamic tab, as an XPath expression that selects a node containing either (i) a URI (absolute or relative), or (ii) an unparsed entity name. For example, the entry `image/@location` would select the `location` attribute of the `image` element that is the child of the context node (that is, the node within which the image is inserted). The location node in the XML document would contain the image URI. How to use unparsed entities is described in the section Unparsed Entity URIs.
- In the Static and Dynamic tab, an XPath expression in the Dynamic part can be prefixed and/or suffixed with static entries (text). For example, the static prefix could be `C:/XYZCompany/Personnel/Photos/`; the dynamic part could be `concat(First, Last)`; and the static suffix could be `.png`. This would result in an absolute URI something like: `C:/XYZCompany/Personnel/Photos/JohnDoe.png`.

Accessing the image for output
The image is accessed in different ways and at different times in the processes that produce the different output documents. The following points should be noted:

- Note the output formats available for your edition: (i) HTML in Standard Editiion; (ii) HTML and RTF in Professional; (iii) HTML, RTF, PDF, and Word 2007+ in Enterprise Edition).
- For Design View and Authentic View in StyleVision, as well as for Authentic View in Altova products, you can set, in the Properties dialog, whether relative paths to images should be relative to the SPS or to the XML file.
- For HTML output, the URI of the image is passed to the HTML file and the image is accessed by the browser. So, if the path to the image is relative, it must be relative to the location of the HTML file. For the HTML Preview in StyleVision, a temporary HTML file is created in the same folder as the SPS file, so, for rendition in HTML Preview, relative paths must be relative to this location.
- For RTF output, the URI of the image is passed as an object link to the RTF file and is accessed by the RTF application (typically MS Word) when the file is opened. If the URI is relative, it must be relative to the location of the RTF file. For the RTF Preview in StyleVision, a temporary RTF file is created in the same folder as the SPS file, so, for rendition in RTF Preview, relative paths must be relative to this location.
- For PDF output, the URI is passed to the FO document and the image is accessed when the FO document is processed with the FO processor. This means that, if the URI is relative, it must be relative to the FO document at the time the FO document is processed. For the PDF Preview in StyleVision, a temporary FO file is created in the same folder as the SPS file, so, for rendition in PDF Preview, relative paths must be relative to this location.
- Whether the URI is relative or absolute, the image must be physically accessible to the process that renders it.

Editing image properties
To edit an image, right-click the image placeholder in Design View, and select Image Properties from the context menu. This pops up the Edit Image dialog, which is the same as the Insert Image dialog (*screenshot above*) and in which you can make the required modifications. The Edit Image dialog can also be accessed via the `URL` property of the *image* group of properties in the Properties window. The *image* group of properties also includes the `alt` property, which specifies alternative text for the image.

Deleting images
To delete an image, select the image and press the **Delete** key.

Image Types and Output

The table below shows the image types supported by StyleVision in the various output formats supported by StyleVision. Note that different editions of StyleVision support different sets of output formats: *Enterprise Edition*, HTML, Authentic, RTF, PDF, and Word 2007+; *Professional Edition*, HTML, Authentic, RTF; *Standard Edition*, HTML.

Image Type	Authentic	HTML	RTF	PDF
JPEG	Yes	Yes	Yes	Yes
GIF	Yes	Yes	Yes	Yes
PNG	Yes	Yes	Yes	Yes
BMP	Yes	Yes	Yes	Yes
SVG	No	No	No	Yes

Note the following points:

- FOP reports an error if an image file cannot be located and does not generate a PDF.
- If FOP is being used to produce PDF, rendering PNG images requires that the JIMI image library be installed and accessible to FOP.
- For more details about FOP's graphics handling, visit the FOP website.

Image resizing in RTF output
Resizing an image in the RTF output is only supported for JPG and PNG images. The following points should be noted:

- Resizing is supported only in designs that use XSLT 2.0, not XSLT 1.0
- The `height` and `width` attributes of the image must be set in the *Details* group of the Styles sidebar. The `height` and `width` attributes in the *HTML* group of the Properties sidebar are not used.
- Only absolute units (px, cm, in, etc) are supported. Percentage values are not supported.
- JPG and PNG images are embedded in the RTF file. This embedding is implemented using a proprietary Altova XSLT 2.0 extension functionality.

Image embedding in RTF and Word 2007+
In the RTF and Word 2007+ output, images can either be embedded (when XSLT 2.0 is used) or linked. This setting is made for each SPS individually.To embed images, do the following:

1. With the required SPS active, open the Properties dialog (**File | Properties**).
2. Check the Embed Images check box (default setting is checked). Note that images will only be embedded if XSLT 2.0 is set as the XSLT version of the active SPS.
3. Click **OK** and save the SPS. The setting is saved for the active SPS.

To make this setting for another SPS, make this SPS active and repeat the steps listed above.

If the Embed Images check box is not checked, images will be linked according to the image file path specified in the images properties (select the image and select URL in the Properties entry helper). For information about how paths are resolved, see the section Image URIs.

Note: The RTF format supports embedded images only for EMF, JPG, and PNG files.

Text State Icons

A Text State Icon is a toolbar icon in Authentic View which can be used to mark up text that is inside an element of mixed content. The markup that is added is that for descendant elements of the mixed-content element. When the markup is added, the newly marked-up element in Authentic View takes the formatting assigned to the global template of that element.

Prerequisites for creating a text state icon

The following prerequisites apply:

- A text state icon can be created only for an element that is a child of an element of mixed content.
- The element for which a text state icon is to be created must be declared in the XML Schema as a global element. (In a DTD, all elements are global elements.)

Text state icons are most commonly used to mark up bold and italic text in paragraphs. The XML Schema declarations for such a document structure typically would be something like this:

```
<xs:element name="bold" type="TextType"/>
<xs:element name="italic" type="TextType"/>
<xs:complexType name="TextType" mixed="true">
       <xs:choice minOccurs="0" maxOccurs="unbounded">
              <xs:element ref="bold"/>
              <xs:element ref="italic"/>
       </xs:choice>
</xs:complexType>
<xs:element name="para" type="TextType"/>
```

The `para` element is of mixed content and may contain `bold` and `italic` child elements. The `bold` and `italic` elements may themselves contain `bold` and `italic` child elements. In such a structure, text state icons can be created for the `bold` and `italic` elements.

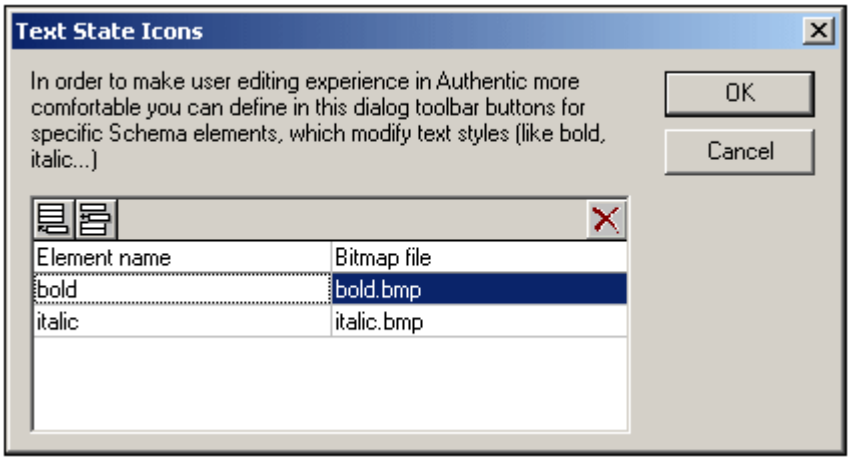
Procedure for creating text state icons

The procedure for creating text state icons can be divided into two broad steps:

- Assign a bitmap image file (the text state icon) to the element to be marked up with the help of the text state icon.
- Define formatting, in a global template, for the element to be marked up.

Assuming the schema structure defined above, text state icons for the `bold` and `italic` elements would be created as follows.

1. Select the menu command **Authentic | Text State Icons**. The Text State Icons dialog (*screenshot below*) appears:



2. Enter `bold` as the element for which the text state icon is being created.
3. Enter `bold.bmp` as the name of the bitmap image file that is to be associated with the element `bold`. The icon file `bold.bmp` must be saved in a folder called `sps\Picts` in your application folder. This image will be used as the toolbar icon in Authentic View.
4. Now append a row in the dialog and add the `italic` element and `italic.bmp` as the bitmap file for the italic icon.
5. Click **OK** to finish and save the SPS.

The steps above assign bitmap image files to the elements to be marked up (`bold` and `italic`). Next, formatting for the two elements must be defined in the global templates of these elements. This would be done as follows:

1. In the All Global Elements list in the Schema Tree window, right-click the `bold` element and select **Make Global / Remove from Global**. This creates a global template in the SPS.
2. In Design View, select the (contents) placeholder and assign it a formatting of bold. (In the Font group of the Styles window, set font-weight to bold.)
3. Repeat the previous two steps for the `italic` element, but set font-style to italic.
4. Save the SPS.

Now formatting has been defined in global templates for the bold and italic elements.

Using text state icons in Authentic View

The text state icons you create are available for use automatically when that SPS (or XML document associated with that SPS) is opened in any Authentic View except that of StyleVision (*screenshot below*). (In the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Images` folder of the StyleVision application folder, the file `Images.xml`, which is associated with the SPS file `Images.sps` demonstrates the use of the `bold` and `italic` text state icons.)

In our example, the text state icons will be grayed out when the cursor is not inside a `para` element. They will be enabled when you place the cursor inside a `para` element (because the `bold` and `italic` elements are child elements of `para`). To apply markup by using text state icons, first highlight some text inside the `para` element in the example file, and then click a text state icon. The relevant markup will be inserted and the corresponding formatting will be applied.

Removing text state icons
To remove a text state icon, in the Text State Icons dialog (**Authentic | Text State Icons**, *screenshot of dialog above*), place the cursor in the row containing tetext state icon to be deleted and click the **Delete** button at the top right of the dialog. Then click **OK** to finish.

Example: A Template for Images

The StyleVision package contains an SPS file that demonstrates the use of images in StyleVision. This file is: `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Images\Images.sps`). The Images document (`Images.xml` and `Images.sps`) consists of three parts:

- The first part shows how text state icons can be used in Authentic View (can be created in Enterprise and Professional editions only). When you open the file `Images.xml` in the Authentic View of XMLSpy, Authentic Desktop, or Authentic Browser, you can try out the use of text state icons. Note that text state icons are not available in the Authentic Preview of StyleVision, so you cannot try out this feature in StyleVision. How to create text state icons is described in the Text State Icons section of this user manual.
- The second part contains a table showing which image formats are supported in the various StyleVision output formats. In Design View, only images with static URIs will be displayed. All the image formats listed in the table are displayed in Part 3 of the Images document.
- In Part 3, all the popular image formats supported by StyleVision are displayed one below the other. After opening the file `Images.sps` in StyleVision, you can switch among the various previews of StyleVision to see how each image is displayed in that preview. Since the location of the image is in an XML node, you can also enter the location of your own images in Authentic View and test their appearances in the preview windows.

8.7 Form Controls

Nodes in the XML document can be created as data-entry devices (such as input fields and combo boxes). Data-entry devices are intended for easier editing in Authentic View. For example, an input field makes it clear to the Authentic View user that input is expected in this location while a combo box lists, as well as restricts, the values a user can enter. When data is entered into a data-entry device, the data is inserted into the XML document as element content or as an attribute's value. In the HTML, RTF, PDF, and Word 2007+ output, the data-entry device is rendered as an object that is the same as that displayed in Authentic View, or a near-equivalent. Note that data-entry devices accept input to the XML document and, therefore, will not work in the HTML output.

General mechanism
Given below is a list of the data-entry devices available in StyleVision, together with an explanation of how data is entered in the XML document 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 is mapped to a value.
Check box	User selection is mapped to a value.
Radio button	User selection is mapped to a value.
Button	User selection is mapped to a value.

The text values entered in the input fields are entered directly into the XML document as XML content. For the other data-entry devices, the Authentic View user's selection is mapped to a value. StyleVision enables you to define the list of options the user will see and the XML value to which each option is mapped. Typically, you will define the options and their corresponding values in a dialog.

General usage
To create a data-entry device, do the following:

1. Drag a node from the Schema Tree window into Design View and drop it at the desired location.
2. From the context menu that appears, select the data-entry device you wish to create the node as.
3. For some data-entry devices, a dialog pops up. In these cases, enter the required information in the dialog, and click OK.

To **reopen and edit** the properties of a data-entry device, select the data-entry device (not the node containing it), and edit its properties in the Properties sidebar.

Note:

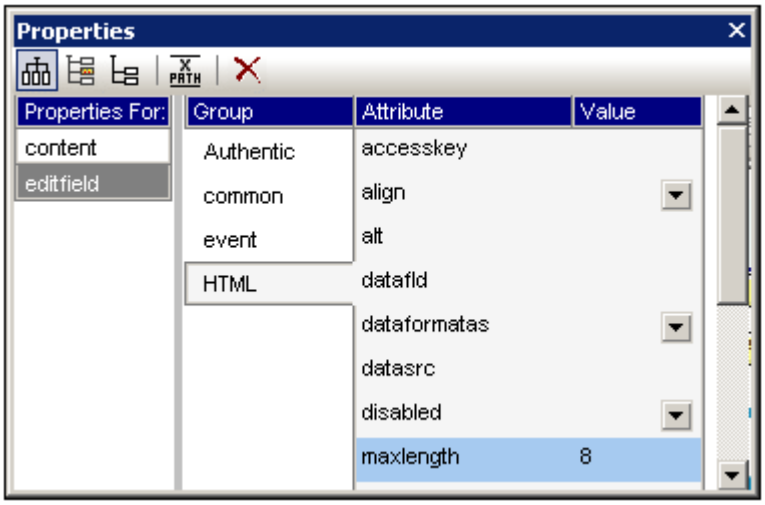
- Data can be entered in data-entry devices only in Authentic View.
- Data-entry devices can also be created by changing the current component type of a node to a data-entry device. To do this right-click the node and select **Change to**.
- In the HTML, RTF, PDF, and Word 2007+ output, the entry selected by the user is displayed in the output. Changing the value of a data-entry device in the HTML document does not change the text value in either the XML document or HTML document.
- In the case of some data-entry devices, such as check boxes, where the device cannot correctly be rendered in print, an alternative rendition is implemented.

Input Fields, Multiline Input Fields

You can insert an Input Field or a Multiline Input Field in your SPS when you drop a node from the Schema Sources window into Design View. The text that the Authentic View user enters into these fields is entered into the XML node for which the field was created. The content of that node is displayed in the input field or multiline input field.

Editing the properties of input fields

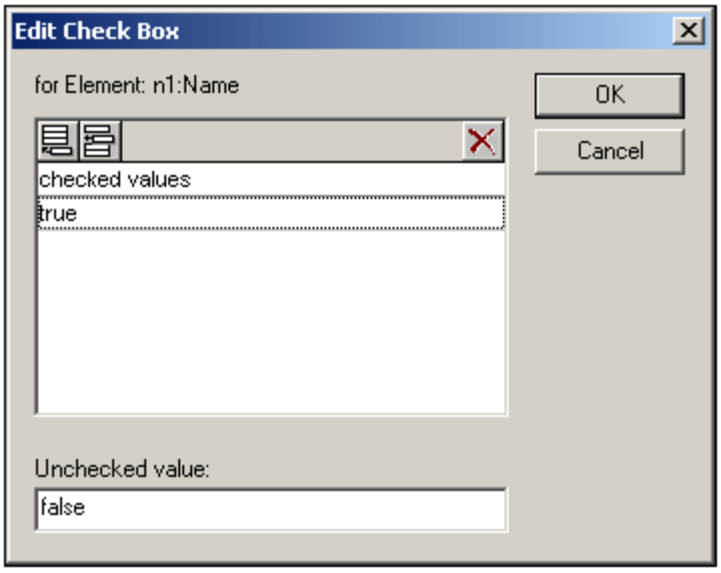
You can modify the HTML properties of input fields by selecting the input field and then modifying its HTML properties in the Properties sidebar (*see screenshot below*).



For example, with the input field selected, in the Properties window select `editfield`, select the `HTML` group of properties and the `maxlength` property. Then double-click in the Value field of `maxlength` and enter a value.

Check Boxes

You can create a check box as a data-entry device. This enables you to constrain user input to one of two choices. In the Edit Check Box dialog (*shown below*), you specify the XML values to map to the checked and unchecked events.



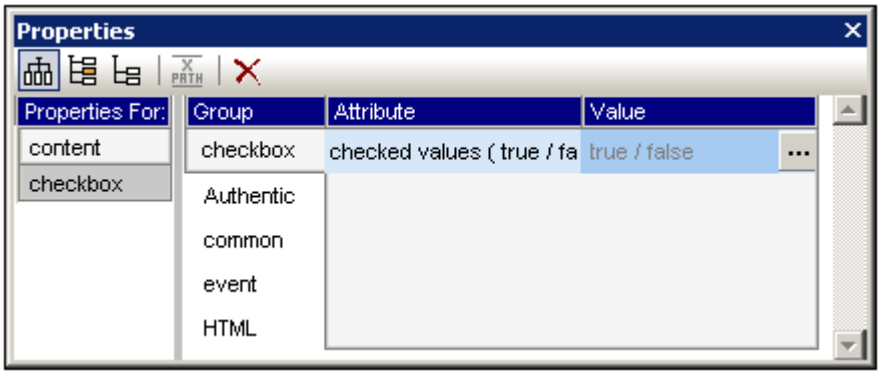
In the above screenshot, an element called `Name` has been created as a check box. If the Authentic View user checks the check box, a value of `true` will be entered as the value of the element `Name`. If the value is unchecked, then the value `false` is entered as the XML value of `Name` (as defined in the dialog).

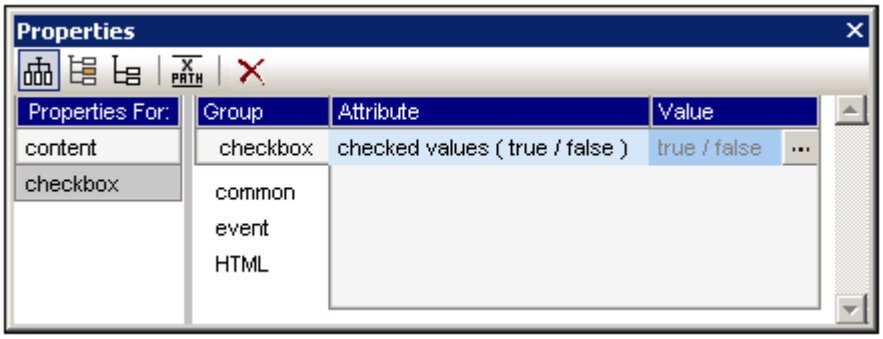
Note: When a new `Name` (or check box) element is created in Authentic View, its XML value is empty (it is not the Unchecked Value). The Unchecked Value is entered only after the check box has first been checked, and then unchecked. To have a default value in a node, create a Template XML file that contains the default value.

Accessing the Edit Check Box dialog

If you are creating a new check box, when you create the node as a check box, the Edit Check Box dialog pops up. To access the Edit Check Box dialog afterwards, do the following:

1. Select the check box in the design.
2. In the Properties sidebar, select the checkbox item and then the *checkbox* group of properties (*see screenshot below*).





3. Click the Edit button ... of the `check values` property. This pops up the Edit Check Box dialog.

Note: You can modify the HTML properties of a check box by selecting it and then modifying its HTML properties in the Properties sidebar.

Combo Boxes

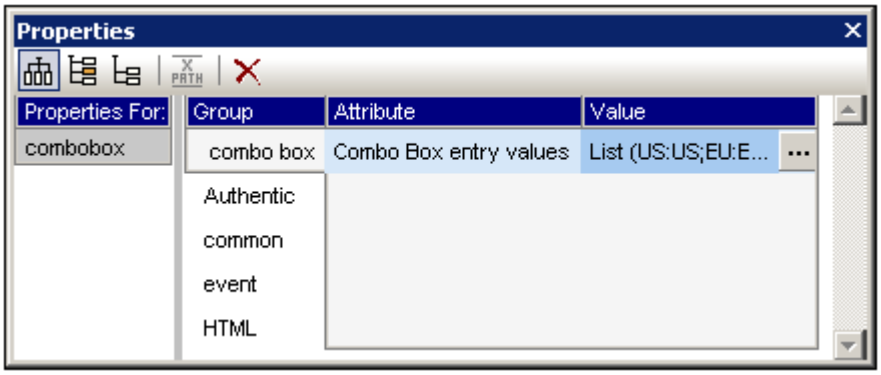
A combo box presents the Authentic View user with a list of options entries in a dropdown list. The selected option is mapped to a value that is entered in the XML document. The mapping of drop-down list entry to XML value is specified in the SPS.

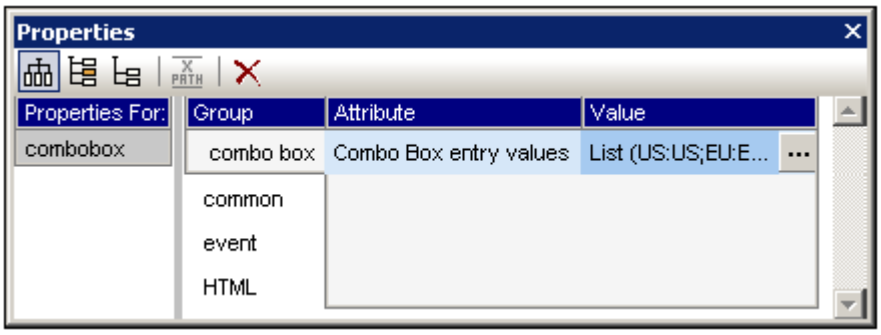
Mappings can be made in the Edit Combo Box dialog in one of three ways:

- From the schema enumerations for the selected node. In this case, the visible entry (in the dropdown list) will be the same as the XML value.
- From a list defined in the Edit Combo Box dialog. You enter the visible entry and the corresponding XML value, which may be different.
- From the result sequence of an XPath expression relative to the current node. The items in the result sequence are displayed as the entries of the drop-down list, and the list entry selected by the Authentic View user is entered as the value of the node. This is a powerful method of using dynamic entries in the combo box. The node that you create as the combo box is important. For example, say you have a `NameList` element that may contain an unlimited number of `Name` elements, which themselves have `First` and `Last` children elements. If you create the `Name` element as a combo box, and select the `Last` child element for the list values, then, in Authentic View, you will get as many combo boxes as there are `Name` elements and each combo box will have the `Last` child as its dropdown menu entry. In order to get a single combo box with all the `Last` elements in the dropdown menu list, you must create the single `NameList` element as the combo box, and select the `Last` element in the XPath expression.

Accessing the Edit Combo Box dialog
If you are creating a new combo box, when you create the node as a combo box, the Edit Combo Box dialog pops up. You can also insert a combo box with the (**Insert | Insert Form Controls | Combo Box**) menu command. To access the Edit Combo Box dialog afterwards, do the following:

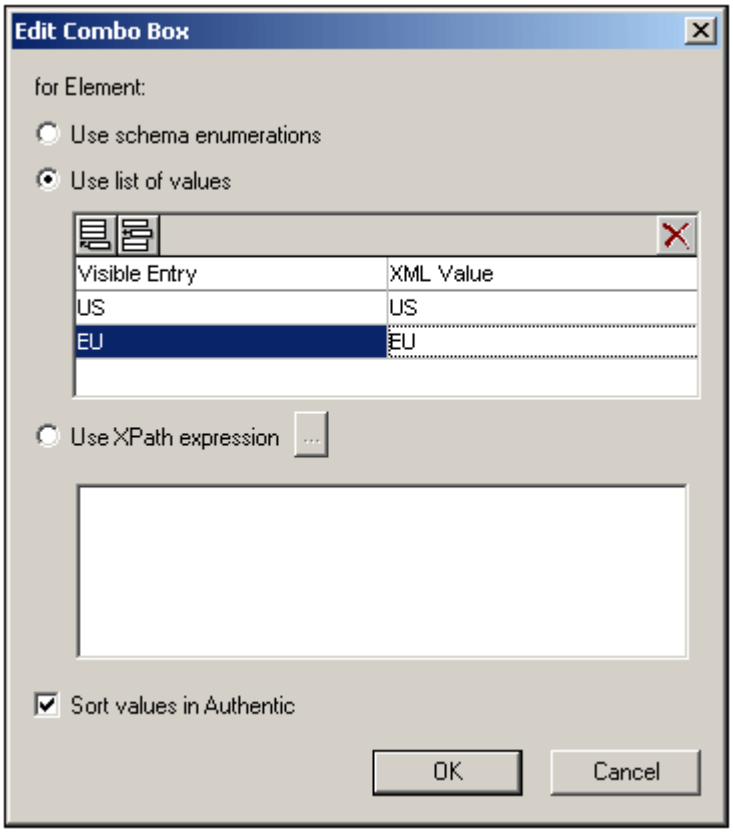
1. Select the combo box in the design.
2. In the Properties sidebar, select the combo box item and then the *combo box* group of properties (*see screenshot below*).





3. Click the Edit button ... of the the `content origin` property. This pops up the Edit Combo Box dialog.

Using the Edit Combo Box dialog
The Edit Combo Box dialog is shown below.



To define the entries and values for the combo box, do the following:

1. Select the method with which you wish to define the entries and values by clicking the appropriate radio button.
2. If you select Schema Enumerations, the enumerations are entered in automatically. If you select Use List of Values, you can insert, append, edit, and delete any number of drop-down list entries with their corresponding XML values. If you wish to use values from the XML file, select Use XPath Expression, and enter or build an XPath expression to generate the desired sequence.
3. If you wish to have the items that appear in the dropdown list of the combo box in Authentic View sorted, check the *Sort Values in Authentic* check box.

4. Click **OK** to finish.

Note

- Using an XPath expression to select the items of the combo box drop-down list enables you to create combo boxes with dynamic entries from the XML file itself.
- If the items in the drop-down list of the combo box are obtained from schema enumerations, they will be sorted alphabetically by default. If the items are obtained from an XML data file, they will appear in document order by default. If the items are obtained from a DB, the DB schema must be set as the main schema. If items are obtained from a DB that is not the main schema, a template for the DB row targeted by the XPath expression must be included in the design, even if the template must be empty. Additionally, in such cases, make sure that all instances of the targeted row are fetched.
- You can modify the HTML properties of a combo box by selecting it and then modifying its HTML properties in the Properties sidebar.

Radio Buttons, Buttons

There are two types of button: radio buttons and buttons. Radio buttons allow the Authentic View user to enter data into the XML file. Buttons **do not allow** data-entry in Authentic View, but are useful for triggering events in the HTML output.

Radio buttons
Inserting radio buttons in the SPS allows you to give the user a choice among multiple alternatives. Each radio button you insert maps to one XML value. The user selects one radio button. The radio buttons for a node are mutually exclusive; only one may be selected at a time, and the associated XML value is entered as the value of the node. The way to use this feature is to create the node for which the data-entry is required multiple times as a radio button. For each radio button enter (i) some static text to indicate its value to the user, and (ii) an XML value for each radio button. To edit the XML value of a radio button, in the Properties sidebar, select the radio button item, then click the Edit button of the *radio button* property. This pops up the Edit Radio Button dialog.

Buttons
The button option allows you to insert a button and specify the text on the button. This is useful if you wish to associate scripts with button events in the generated HTML output. Note, however, that a button does not map to any XML value and does not allow data entry in Authentic View.

Note: You can modify the HTML properties of a radio button or button by selecting it and then modifying its HTML properties in the Properties sidebar.

8.8 Links

Links (or hyperlinks) can be created to bookmarks located in the document as well as to external resources like Web pages. Links can also be created to dynamically generated anchors. StyleVision offers considerable flexibility in the way target URIs for hyperlinks can be built.

The section, Bookmarks and Hyperlinks, describes how to create static and dynamic bookmarks in the document and how to link to bookmarks as well as to external documents.

8.9 Layout Modules

Layout Modules are objects containing a layout. The module as a whole is inserted in the SPS design and occurs as a block within the document flow. Within a Layout Module, multiple Layout Boxes, each containing standard SPS design elements, can be placed according to design requirements. Using Layout Modules, therefore, designers can create a layout just as they would using an artboard-based graphical design application.

The steps for creating a Layout Module are as follows:

1. Insert a Layout Container. The Layout Container can occupy the entire width of a page or can have any other dimensions you want. It can contain a blueprint of the design to serve as design guide and it can be formatted (in the Styles sidebar) using styles for the Layout Container.
2. Insert one or more Layout Boxes in the Layout Container. Layout Boxes can contain multiple design elements (including static text, schema nodes, Auto-Calculations, images, lists, etc), and they can be formatted (in the Styles sidebar) using styles for the Layout Box. Layout Boxes can also be moved relative to each other within the Layout Container and can be positioned in front of or behind each other.
3. Lines can be drawn, formatted, positioned and moved to the front or back of the stack of layout objects (Layout Boxes and other Lines).

Form-based designs
When you create a new SPS you are offered the choice of creating a free-flowing design or a form-based design. A form-based design is essentially an SPS design consisting of a Layout Container.

Note: Layout Modules are supported in Authentic View only in the Enterprise Editions of Altova products.

Layout Containers

A Layout Container has the following properties:

- It can be inserted within the flow of a document, that is, within a template. Or it can be inserted as the container within which the document design is created.
- It can have the same dimensions as the page dimensions defined for that section (the Auto-Fit to Page property of Layout Containers). Or it can have any other dimensions you specify. See the Layout Container size section below for details.
- A layout grid and a zoom feature make the positioning of objects in the Layout Container easier.
- It can have style properties, such as borders, background colors, font-properties for the whole container, etc.
- It can contain Layout Boxes and Lines, but no other design element. (All design elements must be placed within Layout Boxes.)
- It can contain a blueprint, which is an image placed on the artboard to serve as a reference template for the designer. The design can then be built to match the blueprint exactly.

Note: Layout Containers are supported in Authentic View only in the Enterprise Editions of Altova products.

Inserting a Layout Container

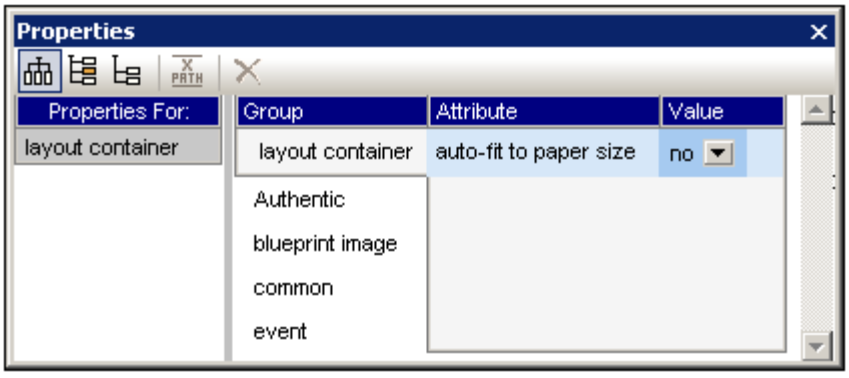
To insert a Layout Container, place the cursor at the location where the Layout Container is to be inserted and click the **Insert Layout Container** icon in the Insert Design Elements toolbar. A dialog appears asking whether you wish to auto-fit the Layout Container to the page. If you click **Yes**, the Layout Container will have the same size as the page dimensions defined in the page layout properties of that particular document section. If you click **No**, then a Layout Container with a default size of 3.5in x 5.0in is created.

Note that a Layout Container can also be created at the time you create an SPS.

Layout Container size

There are two sets of properties that affect the size of the Layout Container:

- The *Auto-Fit Page Size* property (Properties sidebar, *screenshot below*) can be set to `yes` to create a Layout Container having the same dimensions as those specified for pages in that document section. A value of `no` for this property creates a Layout Container with a customizable size.



- The *height* and *width* properties of the Details group of Layout Container styles (in the

Styles sidebar) specify the dimensions of the Layout Container. The dimensions can also be modified directly in the design by dragging the right and bottom margins of the Layout Container. Note that the *height* and *width* properties will take effect only when the *Auto-Fit Page Size* property has a value of `no`.

Layout Container Grid

The Layout Container has a grid to aid in spacing items in the layout. The following settings control usage of the grid:

- *Show/Hide Grid:* A toggle command in the Insert Design Elements toolbar switches the display of the grid on and off.
- *Grid Size:* In the Design tab of the Options dialog (Tools | Options) units for horizontal and vertical lengths can be specified. Note that if very large length units are selected, the grid might not be clearly visible.
- *Snap to Grid:* A toggle command in the Insert Design Elements toolbar enables or disables the Snap to Grid function. When the Snap to Grid feature is enabled, the top and left edges of Layout Boxes and the endpoints of Layout Lines align with grid lines and points, respectively.

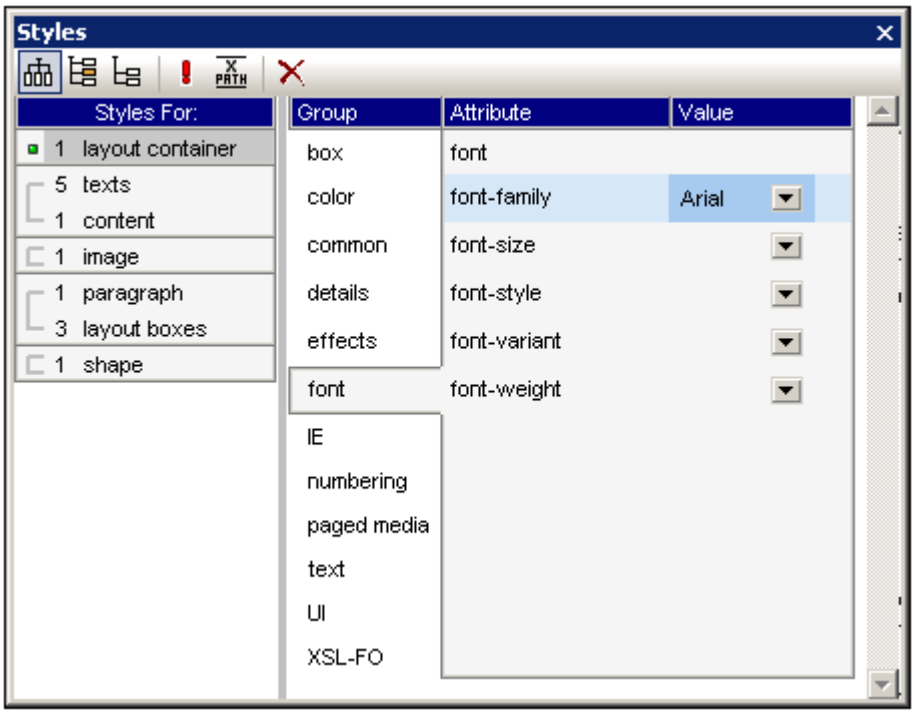
Zooming

To help position objects more accurately, you can magnify the view. Do this by changing the Zoom factor in the Zoom combo box (in the Standard toolbar), or by pressing the **Ctrl** key and scrolling with the mouse.

Layout Container style properties

There are two types of style properties that can be applied to Layout Containers:

- Those applied to the Layout Container alone and which are not inheritable, such as the *border* and *background-color* properties.
- Those that are inheritable by the Layout Boxes in the Layout Container, such as font properties.

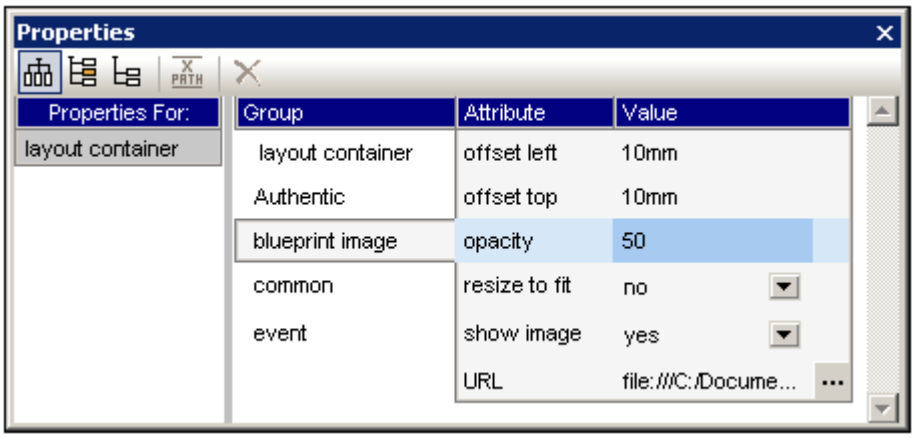


The style properties of a Layout Container are set in the *Layout Container* styles in the Styles sidebar (*screenshot above*).

Layout Container contents
The only design items that can be contained in a Layout Container are Layout Boxes and Lines. Additionally, a blueprint (which is not a design element) can be placed in the Layout Container as a design aid. All design elements must be placed in a Layout Box.

Blueprints
One blueprint can be placed in a Layout Container at a time to aid the designer in creating the SPS. The blueprint is an image file that can be placed to exactly fit the size of the Layout Container. Alternatively, if the blueprint image is smaller than the Layout Container, it can be offset to the desired location in the design (*see* Blueprint image *properties screenshot below*). The designer can use the blueprint by reproducing the SPS design over the blueprint design. In this way the designer will be able to place design elements in the layout exactly as in the blueprint. The blueprint will appear only in Design View, but **not** in any output view: this is because its purpose is only to aid in the design of the SPS.

The blueprint's properties can be controlled via the *Blueprint image* group of properties of the Layout Container properties (in the Properties sidebar, *screenshot below*).



The opacity of the blueprint in the Layout Container can be specified so that the blueprint does not interfere with the viewing of the design. The display of the blueprint image can also be switched off if required.

Note: If design element markup tags—such as template node tags—are inserted in a Layout Box, the spacing in the layout will be affected, because the tags occupy space in the layout. To avoid this source of incongruence and to match the design to the blueprint more closely, use the Hide Design Markups feature to hide tags.

Layout Boxes

Every design element in a layout (such as static text, schema nodes, Auto-Calculations, images, lists, etc) must be placed in a Layout Box. The Layout Boxes containing design elements are laid out as required in the Layout Container. Note that a design element cannot be placed directly in a Layout Container; it must be placed in a Layout Box.

This section describes how Layout Boxes are used and is organized into the following sub-sections:

- Inserting Layout Boxes
- Selecting and moving Layout Boxes
- Modifying the size of the Layout Box
- Defining Layout Box style properties
- Inserting content in the Layout Box
- Stacking order of Layout Boxes

Inserting a Layout Box

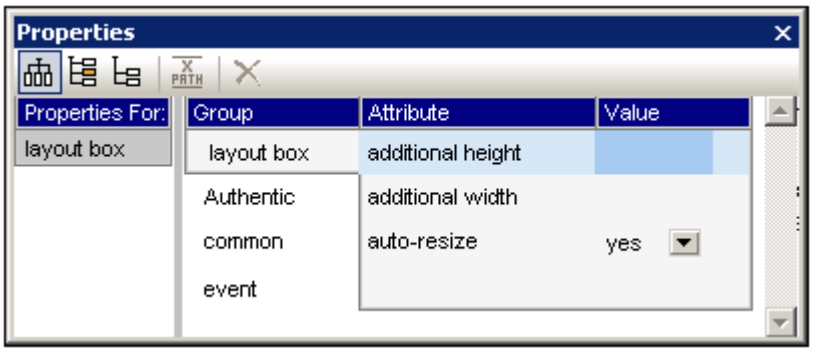
A Layout Box can be inserted only in a Layout Container. To add a Layout Box, first click the Insert Layout Box icon in the Insert Design Elements toolbar, then click on the location inside the Layout Container where you wish to insert the Layout Box. A Layout Box will be inserted, with its top left corner positioned at the point where you clicked. The box will be transparent, will have no borders, and will have default text.

Selecting and moving a Layout Box

To select a Layout Box, place the cursor over the left border or top border of the Layout Box so that the cursor becomes a crossed double arrow. When this happens, click to select the Layout Box. If you keep the mouse button depressed, you can move the Layout Box to another location within its Layout Container. You can also move a Layout Box left, right, up, or down by selecting it, and then pressing the cursor key for the required direction. When the Layout Box is selected, its properties and styles are displayed in the respective sidebars.

Layout Box size

Each Layout Box has a property called *Auto-Resize* (*see screenshot below*). When the value of this property is set to `yes`, the Layout Box automatically resizes to exactly accommodate any content (including markup) that is inserted in it. When the value of Auto-Resize is set to no, the size of the Layout Box does not automatically change when content is inserted in it. To change the size of the Layout Box manually, drag its right border and bottom border. You can also the change the size of a Layout Box by using the cursor keys to move the right and bottom borders of the box. To do this first select the Layout Box. Then do the following: (i) to move the right border, keep the **Shift** key depressed and press the right or left cursor key till the required size is obtained; (ii) to move the bottom border, keep the **Shift** key depressed and press the top or bottom cursor key.

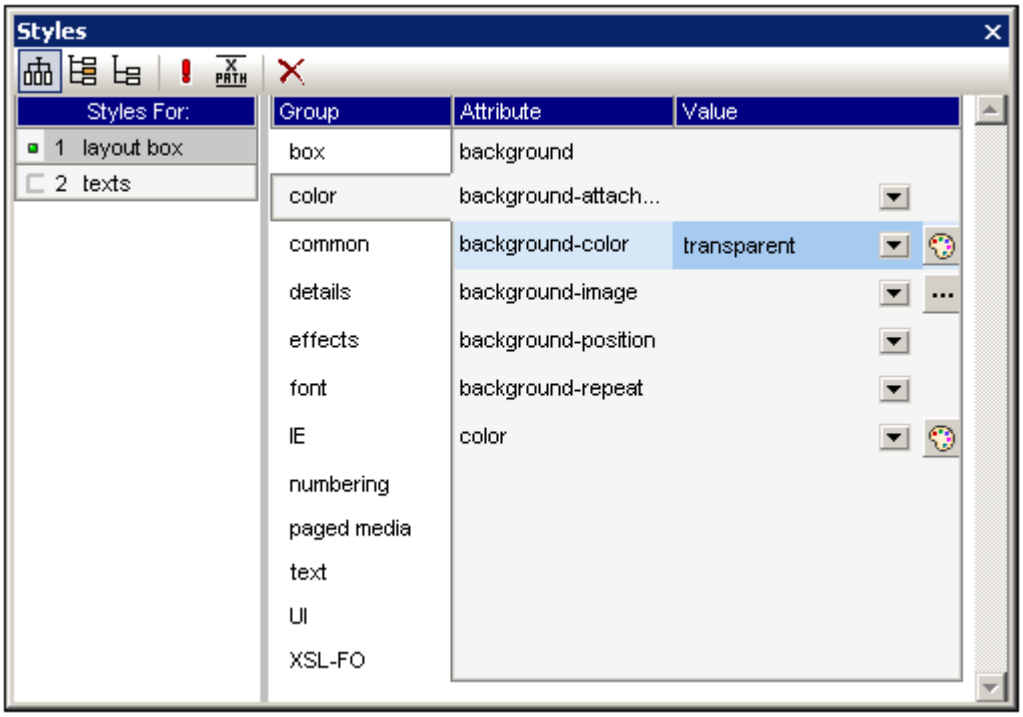


The *Additional Height* and *Additional Width* properties give the lengths that are additional to the optimal dimensions as determined by auto-resizing. The additional lengths are obtained when a Layout Box is manually resized. Conversely, by changing the values of these two properties, the size of the Layout Box can be changed.

Note: In a Layout Box a linefeed is obtained by pressing the **Enter** key. This is significant, because if content is added that does not contain a linefeed, then the length of the current line increases, thus increasing the optimal width of the Layout Box and—incidentally—affecting the *Additional Width* value, which is calculated with reference to the optimal width.

Layout Box style properties

The style properties of a Layout Box are set in the *Layout Box* styles in the Styles sidebar (*screenshot below*). The styles are displayed when the Layout Box is selected, and can then be edited.



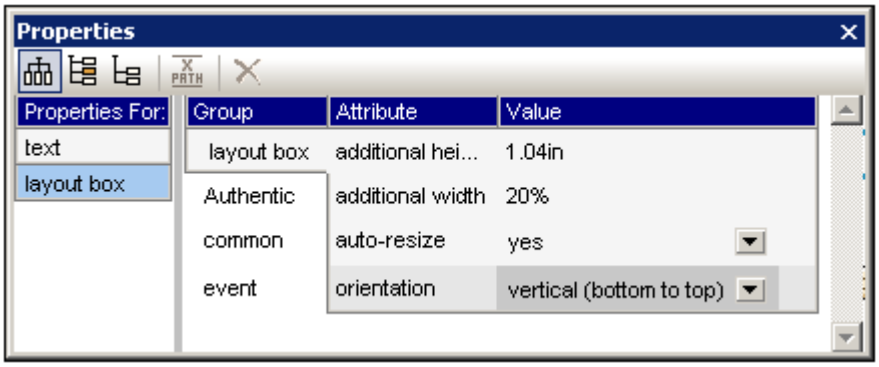
Note: The *background-color* value of `transparent` can be selected in the dropdown list of the

property's combo box (it is not available in the color palette). The significance of this value in a situation where the Layout Box is part of a stack is explained below.

Inserting content in a Layout Box

Any type of design element can be inserted in a Layout Box, and is inserted just as it normally would be in an SPS. Note, however, that neither a Layout Container nor a Layout Line can be inserted in a Layout Box. The following points should be noted:

- When design elements are inserted that require a context node, the current node will be taken as the context node. The current node is the node within which the Layout Module has been created.
- If markup tags are displayed in a Layout Box, they would affect the WYSIWYG nature of the layout. To see how the layout will look in the output, you can use the Hide Markup feature (icon in toolbar) to remove markup tags from the display.
- Text content in a layout box can be rotated 90 degrees clockwise or anti-clockwise, so that the text is vertical, reading from top-to-bottom or bottom-to-top, respectively. To do this, in the design, select the text that is to be rotated and, in the Properties sidebar (*screenshot below*), select `LayoutBox`. In the *Layout Box* group of properties, select the required value for the *Orientation* property.

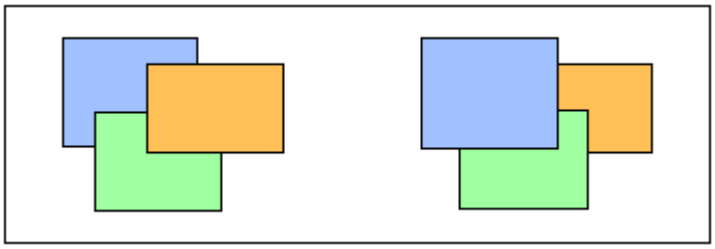


Note the following points:

- The rotation will be applied to the output, but will not be be displayed in the design.
- This property can also be applied to text in table cells.

Stacking order of Layout Boxes

Layout Boxes can be placed one over the other. When one Layout Box is placed on top of another, then, if it is opaque, it hides that part of the Layout Box which it covers. This behaviour can be extended to a stack of several Layout Boxes. In such a stack, only the topmost Layout Box will be fully visible; the others will be partially or fully covered.

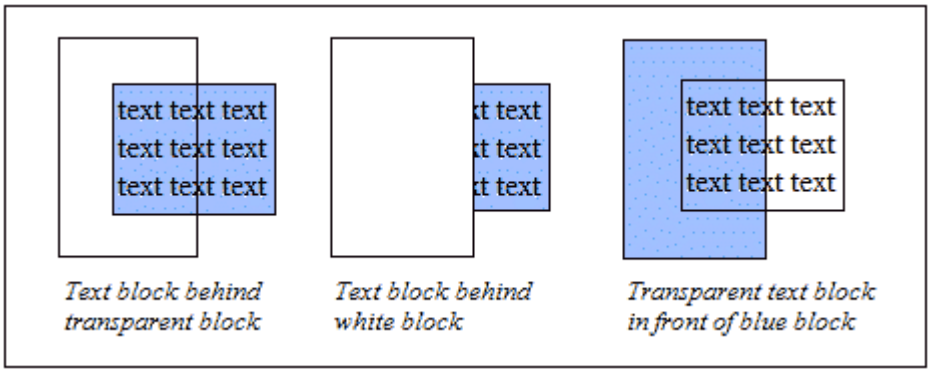


Layout Boxes can be sent backward or brought forward using the **Order** menu commands in

the context menu of the selected Layout Box. Using these commands a Layout Box can be ordered: (i) relative to its nearest neighbor on the stack (the **Bring Forward** and **Send Backward** commands), or (ii) relative to the entire stack (the **Bring to Front** and **Send to Back** commands). In the screenshot above, the stacking order from front to back is as follows:

- *Left stack:* orange, green, blue
- *Right stack:* blue, green, orange

Note that Layout Boxes with transparent backgrounds (the default background of Layout Boxes) might appear to not move relative to each other, especially if more than one box in the stack is transparent and if boxes have no borders. The screenshot below presents some ways in which transparency affects stacking.



Note: Layout Lines can also be added to a stack of Layout Boxes, and each Line can be moved relative to other items in the stack.

Lines

Lines can be inserted in a Layout Container (but not in Layout Boxes), then selected, re-sized and moved around within the Layout Container, assigned properties, and moved backwards and forwards in a stack of layout items consisting of Layout Boxes and other Lines.

Inserting a Line

To add a Line to a Layout Container, do the following:

1. Click the Insert Line icon in the Insert Design Elements toolbar.
2. Click on the location inside the Layout Container where you wish to locate the start point of the line.
3. Without releasing the mouse button, draw the line from the start point to the desired end point. Then release the mouse button.

A black line will be inserted, with a dot at each end indicating the start and end points respectively.

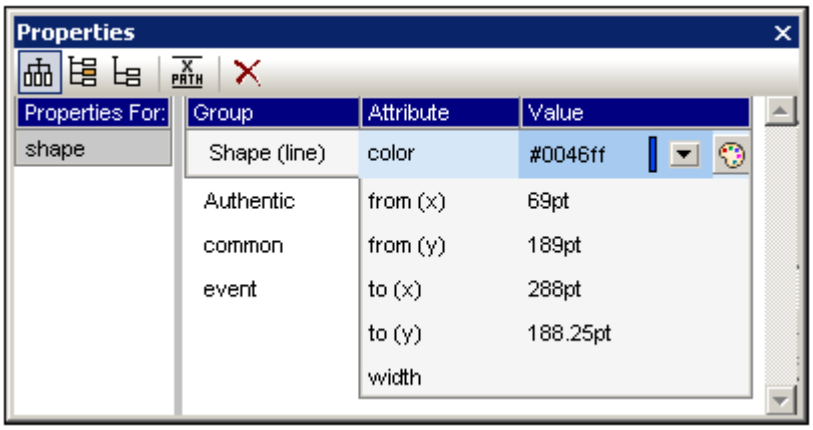
Selecting, moving, and sizing a Line

In the Main Window, you can carry out the following-drag-and-drop functions:

- To select a Line, click any part of the Line (the cursor becomes a crossed double arrow when it is over the Line). Once a Line is selected, its properties are displayed in the Properties sidebar and can be edited there (*see below*).
- To move a Line, select it and drag it to the desired location. You can also move a line left, right, up, or down by selecting it, and then pressing the cursor key for the required direction.
- To graphically re-size or re-orient a Line, select either the start point or end point and re-position it to obtain a new size and/or orientation. You can also the re-size or re-orient a Line by pressing **Shift** and the cursor keys: the right and left cursor keys move the right-hand endpoint right and left, the up and down cursor keys move the right-hand endpoint up and down, respectively.

Line properties

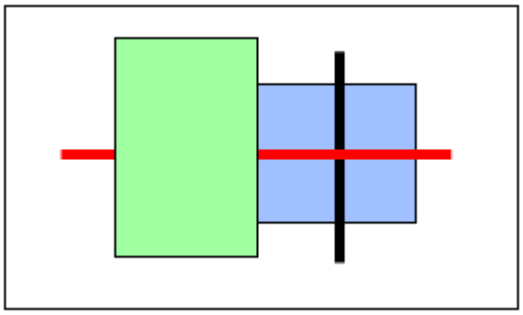
When a Line is selected its properties are displayed in the Properties sidebar (*screenshot below*), and the properties (listed below) can be edited in the sidebar. You can also right-click a Line to pop up the Properties sidebar with the properties of the Line in it.



The following Line properties can be edited in the Properties sidebar:

- *Color:* Specifies a color for the Line. The default is black.
- *Size and position:* The location of the start and end points of the Line can be specified using an x-y (horizontal-vertical) coordinate system. The reference frame is created with the top left corner of the Layout Container having the coordinates `( x=0, y=0)`.
- *Width:* Specifies the thickness of the Line.

Lines and stacking order
When a Line is in a stack consisting of Layout Boxes and other Lines, it can be sent backward or brought forward using the **Order** menu commands in the context menu of the selected Line. Using these commands a Line can be ordered: (i) relative to its nearest neighbor on the stack (the **Bring Forward** and **Send Backward** commands), or (ii) relative to the entire stack (the **Bring to Front** and **Send to Back** commands).



In the screenshot above, the stacking order from front to back is as follows: green box, red line, black line, blue box.

8.10 The Change-To Feature

The **Change-To** feature is available when a template or the contents of a template are selected, and enables you to change: (i) the node for which that template applies, or (ii) how the node is created in the design.

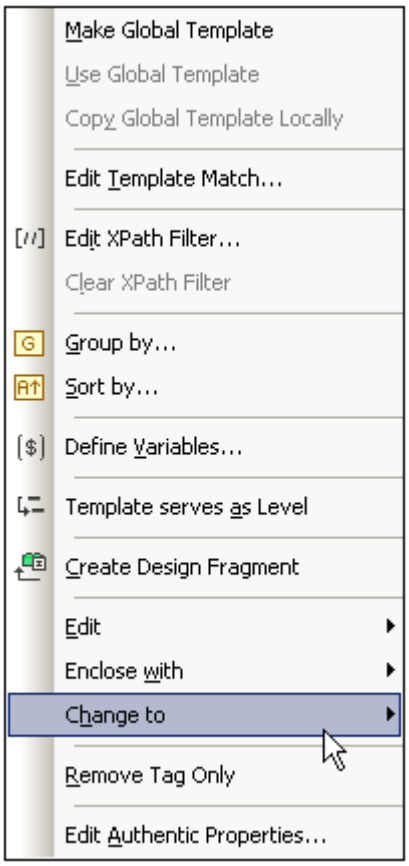
What can be changed with the Change-To feature

Either a node or its contents can be changed. In the image below left, the node is selected. In the image at right, the node's contents are selected.

The `n1:Name` element in the screenshot above has been created as `(contents)`, and so the node's contents are represented by the `(contents)` placeholder. Alternatively, the node could have been created as another type of content, for example, as an input field or combo box. Other types of content can also be selected.

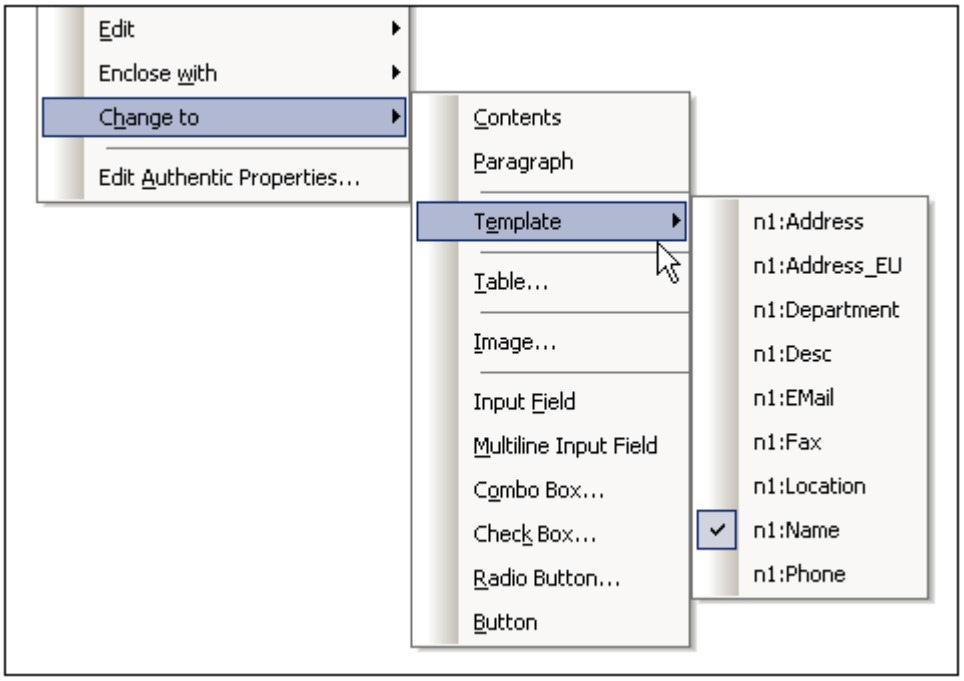
The Change-To command

Access the change to comannd by right-clicking your selection. In the context menu that pops up, select **Change To** (*screenshot below*).



Changing template matches

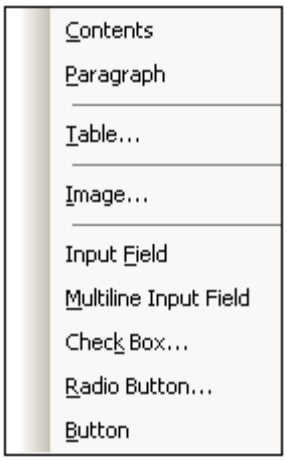
If a template is selected, you can change the node for which that template applies. This is useful if, for instance, the name of an element has been changed in the schema. When you mouse over the Change To command and select Template from the sub-menu that pops up, you are presented with a list off all the nodes that may be inserted as a child of the selected node's parent element. Click one of these nodes to make the template apply to that node.



If the selected node has a content model that does not match that described in the template, there will be structural inconsistencies. Such inconsistencies are errors and are indicated with red strikethroughs in the tags of nodes that are invalid.

Changing the content type of the node

If a template or its contents are selected, then you can change the type of content the node is created as. On hovering over the Change To command in the context menu, the type of content that the selected node can be changed to is displayed as options in the sub-menu that pops up (*screenshot below*).



The screenshot above has been take with a combo box selected.

Chapter 9

SPS File: Structure

9 SPS File: Structure

The structure of an SPS document is both input- as well as output-driven, and it is controlled by:

- Schema sources
- Modular SPSs
- Templates and Design Fragments

Input-driven structure: schemas and modular SPS files
By input-driven, we mean that the source schemas of SPS files specify the structure of the input document/s and that this structure is the structure on which the SPS document is based. For example, if a source schema specifies a structure that is a sequence of `Office` elements, then SPS design could have a template for the `Office` element. At processing time this template will be applied in turn to each `Office` element in the source data document.

Another example of how the source document structure drives the design of the SPS file can be seen in the use of tables. Say that an `Office` element contains multiple `Person` element children, and that each `Person` element contains a set of child elements such as `Name`, `Address`, `Telephone`, etc. Then a template in the form of a table can be created for the `Person` element. Each `Person` element can be presented in a separate row of the table (*screenshot below*), in which the columns are the details of the `Person` (the child elements of the `Person` element).

First	Last	Title (sorted by)
Loby	Matise	Accounting Manager
Frank	Further	Accounts Receivable
Vernon	**Callaby**	Office Manager

Such a template is possible because of the structure of the `Person` element and because the `Person` elements are siblings. In the table template a single row is designed for the `Person` element, and this processing (the row design) is applied in turn to each `Person` element in the source document, creating a new row for each `Person` element, with the child elements forming the columns of the table.

How to use various kinds of schema sources is described in the section, Schema Sources.

Additionally, StyleVision allows SPSs to be re-used as modules within other SPSs. In this way, modules can be included within a structure and can modify it. However, a schema structure contained in a module must fit in with the structure of the underlying schema of the containing SPS. How to work with modular SPSs is described in the section, Modular SPSs.

Output-driven structure: templates and design fragments
While the schema sources provide the structure of the input data document, the actual design of the output document is what is specified in the SPS document. This design is contained in one document template called the main template. The main template typically contains several component templates and can reference global templates. Templates are described in the section, Templates and Design Fragments.

This composability (of multiple templates) is further enhanced by a StyleVision feature called Design Fragments, which enables specific processing to be assigned to a document fragment that can be re-used. A Design Fragment is different than a global template in that: (i) it can be

composed of multiple templates; and (ii) identical content with different processing can be created in separate design fragments, either of which can be used in a template according to the situation. For example, in some processing situations, an `Email` node might be required as a link that opens an empty email; in other cases the `Email` element could be required in bold and in red. Two separate design fragments could provide the respective processing, and both can be re-used as required.

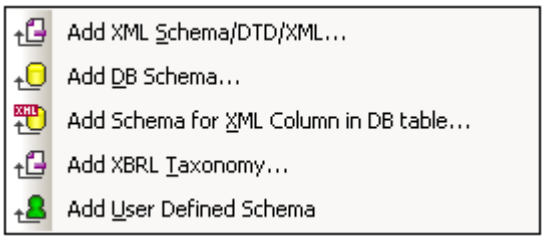
Design fragments are described in detail in the section, Design Fragments.

9.1 Schema Sources

The schema sources are the starting point of the design, and design structure can be influenced by: (i) choices you make during schema selection, and (ii) the root elements you select in the schema.

Schema selection
The selection of the schema for a new SPS file can be done in the following ways:

1. Click **File | New** and directly select a schema source to add via one of the methods (except **New (empty)**) available in the menu that pops up.
2. Click **File | New**, select New (empty) from the menu that pops up. After the new SPS is created and displayed in the GUI, in the Design Overview sidebar, select the **Add New Schema** command. This pops up a a menu listing the methods you can use to add different types of schemas (*screenshot below*). Each command in this menu is described in the sub-sections of this section.



The schema source can be selected from a file, from a DB, or be an XBRL taxonomy or user-defined. An important point to consider is whether you will be using global templates, and whether elements you wish to create as global templates are defined as global elements in the schema. When adding a DTD from file, remember that all elements defined in the DTD are global elements. When adding an XML Schema from file, it is worth checking what elements are defined as global elements and, should you wish to make any change to the schema, whether this is permitted in your XML environment. When a DB is selected, during the import process, you can select what tables from the DB to import. This selection determines the structure of the XML Schema that will be generated from the DB.

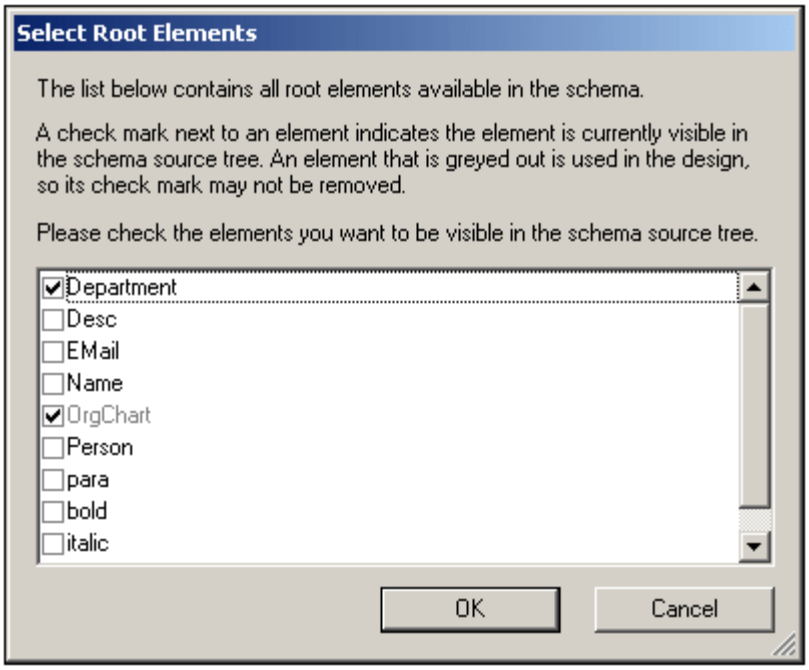
Note: You can select multiple schemas, of which one schema is designated the main schema (right-click the schema in the Design Overview sidebar and select Set As Main Schema). The document node of the main schema is the entry point of the main template. The selection and presence of subsidiary schemas in the schema sources enable nodes from these schemas to be included in the design.

Note: If you wish to add a namespace to an SPS or to an XSLT stylesheet being generated from an SPS, the namespace must be added to the top-level `schema` element of the XML Schema on which the SPS is based.

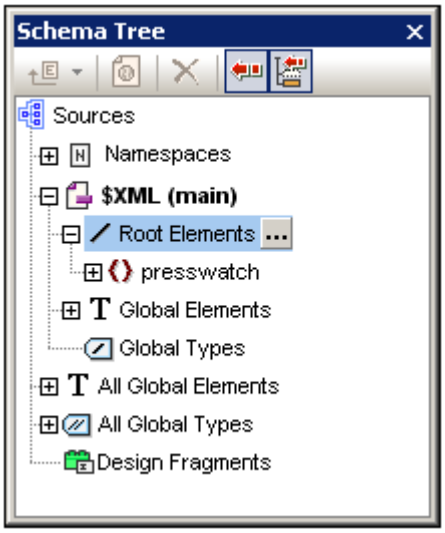
Root elements
If a schema source has multiple global elements, then multiple root elements (document elements) can be selected for use in the design. This enables the SPS design to have templates that match multiple document elements. The advantage of this is that if an SPS, say `UniversalSPS.sps`, based on `UniversalSchema.xsd` has one template each for its two root elements, `Element-A` and `Element-B`, then this one SPS can be used with an XML instance document which has `Element-A` as its document element as well as with another XML instance document which has `Element-B` as its document element. For each XML instance, the relevant template is used, while the other is not used. This is because for the document element of each XML instance document, there is only one template in the SPS which matches that document

element. For example, the document element `/Element-A` will be matched by the template which selects `/Element-A` but not by that which selects `/Element-B`. In this connection, it is important to remember that if multiple global elements are defined in the schema, an XML document with any one of these global elements as its document element is valid (assuming of course that its substructure is valid according to the schema).

To set up the SPS to use multiple root elements (document elements), click the ... button to the right of the `/Root elements` entry of the schema. The following dialog pops up.



The dialog lists all the global elements in the schema. Select the global elements that should be available as root elements (document elements), and click **OK**. The schema tree would then look something like this:



For the SPS represented in the screenshot above, two templates, to match both the document elements, can now be created in the design. The SPS can then be used with different XML

instances that are valid according to `NanonullOrg.xsd`, some with `Department` as document element, others with `OrgChart` as document element. The appropriate template will be used in the case of each instance document.

DTDs and XML Schemas

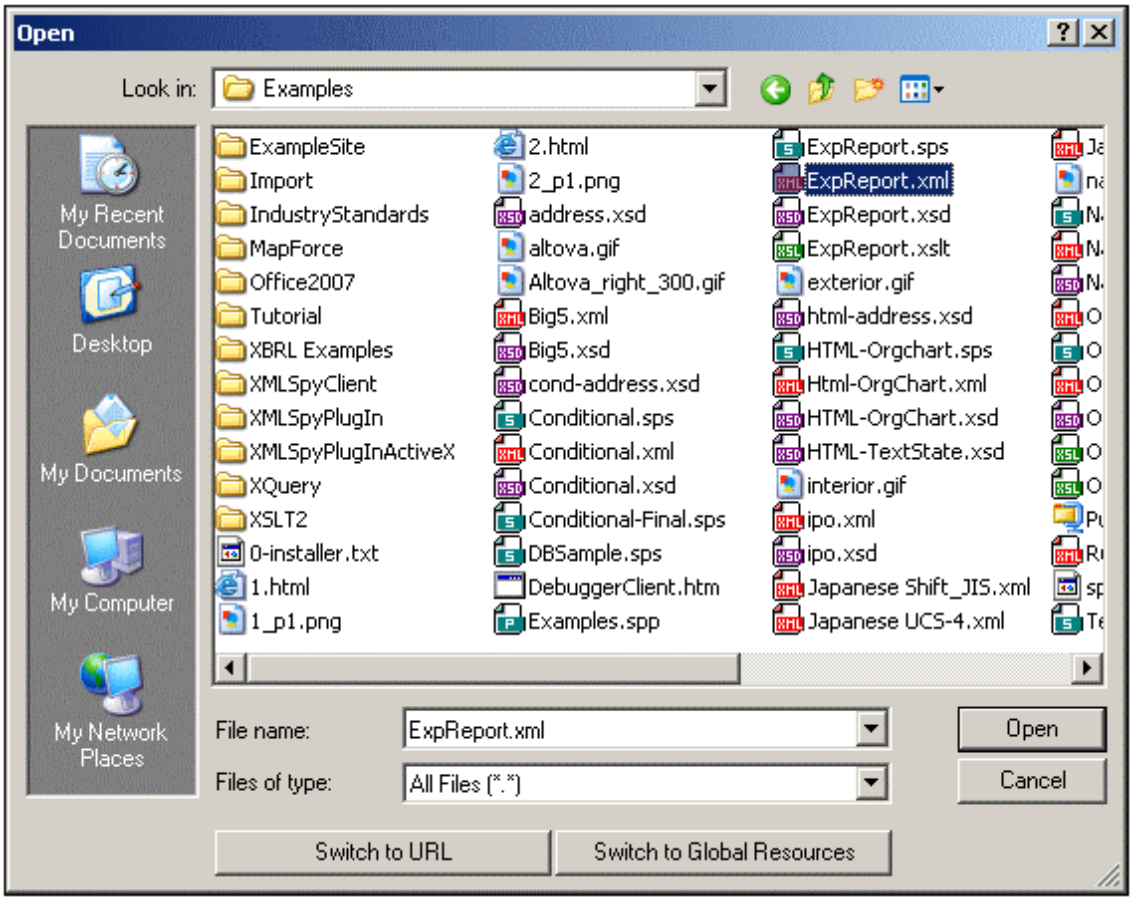
An SPS can be based on an XML Schema or DTD or have one or more XML Schemas or DTDs among its schema sources. An XML Schema or DTD can be created as a schema source in one of the following ways:

- The XML Schema or DTD is is created as a schema source directly when the SPS is created (**File | New | New from XML Schema / DTD / XML**).
- The XML Schema or DTD is added to an empty SPS or to an SPS with existing schema sources (in the Design Overview sidebar).

The respective commands prompt you to browse for the XML Schema or DTD. If the schema is valid, it is created as a schema source in the Schema Sources tree of the Schema Tree sidebar. Alternatively, an XML file can be selected. If an XML Schema (. `xsd`) or DTD file is associated with the XML file, then the XML Schema or DTD file is loaded as the source schema and the XML file is loaded as the Working XML File. If no schema is associated with the XML file, a dialog pops up asking whether you wish to generate an XML Schema based on the structure and contents of the XML file or browse for an existing schema. If you choose to generate a schema, the generated schema will be loaded as the source schema, and the XML file will be loaded as the Working XML File.

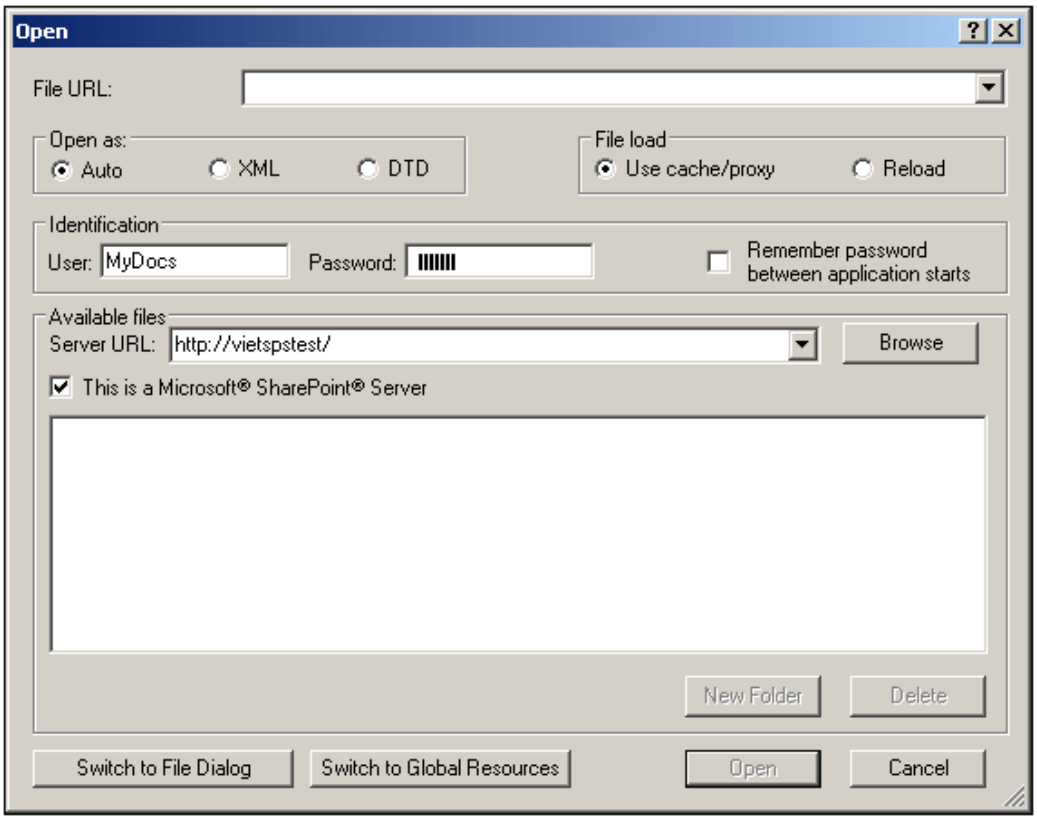
Selecting files via URLs and Global Resources

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.

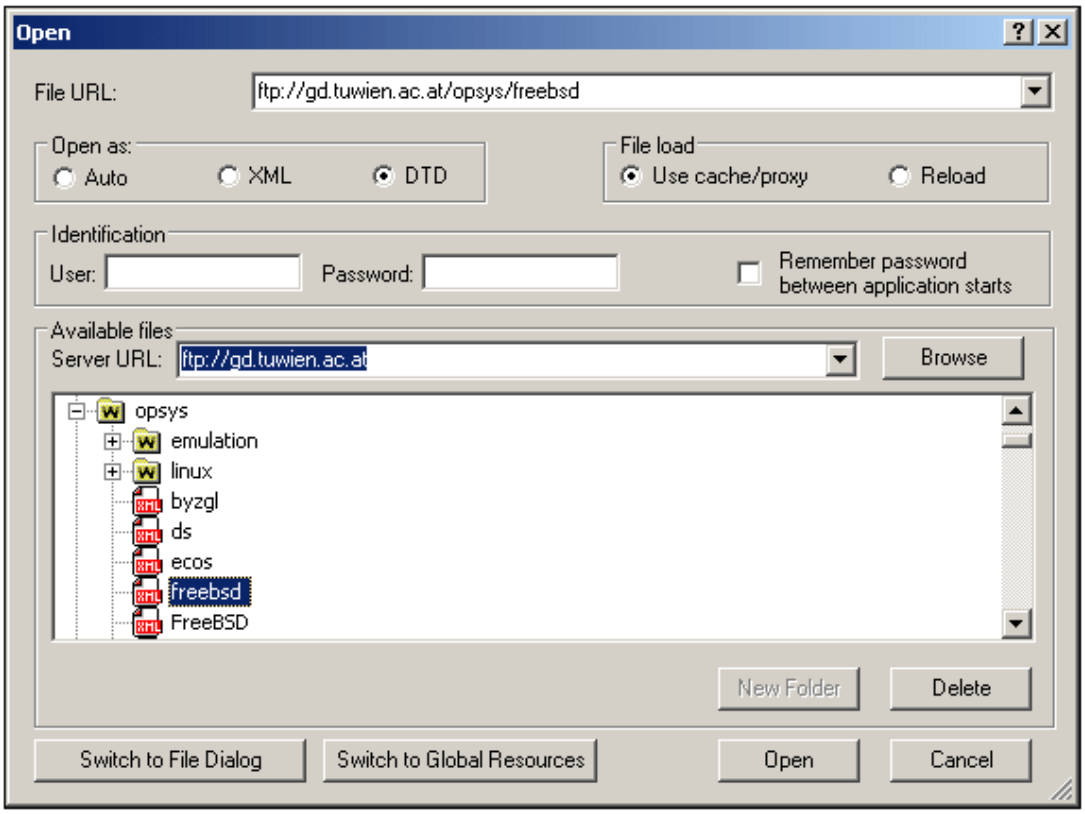


Selecting files via URLs
To select a file via a URL, do the following:

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.

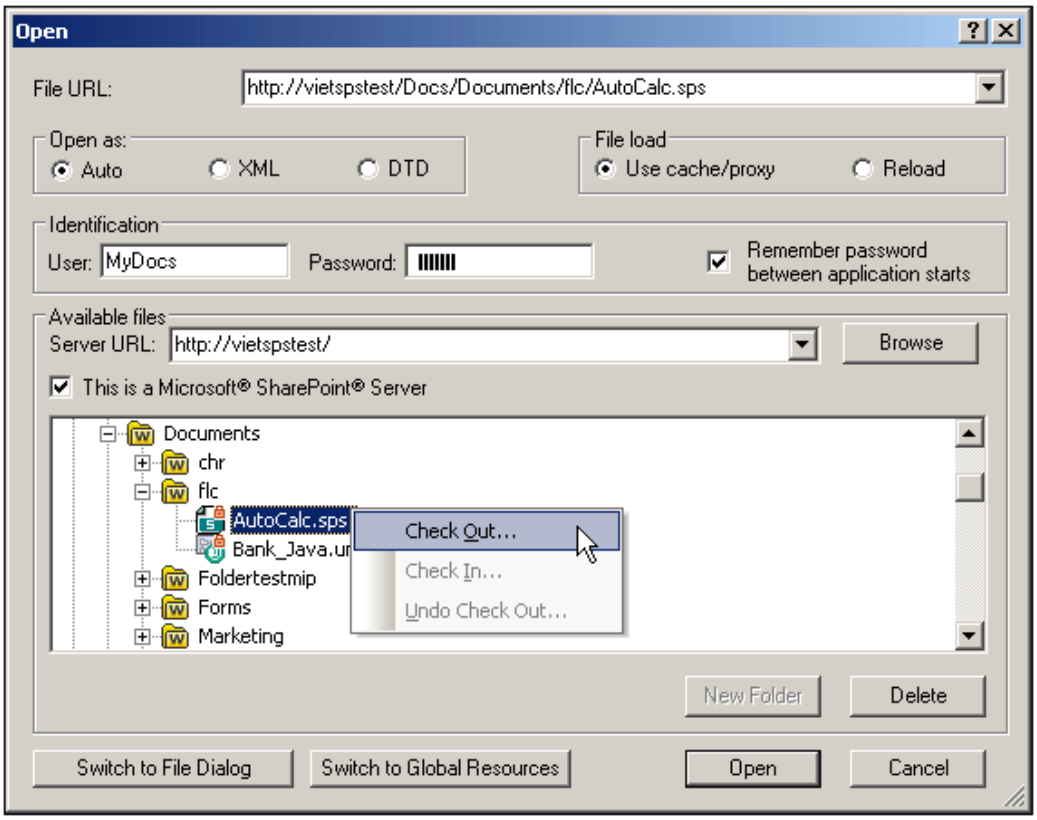
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

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.

The `anyType` datatype of XML Schema

If an element in the XML Schema has been assigned the `anyType` datatype of XML Schema or if it has not been assigned any datatype, then the schema tree in the Schema Tree will show this element as having all the global elements of that schema as possible children. For example, if an element called `email` has not been assigned any datatype, then it will be displayed in the schema tree with all global elements as possible children, such as, for example: `person`, `address`, `city`, `tel`, etc. To avoid this, assign the `email` element a datatype such as `xs:string`.

DB Schemas

An SPS can be based on a schema that is generated from a DB or have a DB-based schema (DB schema) as one of its schema sources. A DB schema can be created as a schema source in one of the following ways:

- The DB schema is generated for a new SPS when the SPS is created directly from a DB (**File | New | New from DB** or **File | New | New from XML Column in IBM DB2**).
- The DB schema is added to a new empty SPS that has no schema sources or to an SPS with existing non-DB schema sources (in the Design Overview sidebar).

The respective DB-schema-generation commands generate a temporary XML Schema from the selected DB and creates the schema as a schema source in the Schema Tree sidebar, or the command loads a DB-based schema (DB schema) from an XML DB. An element extraneous to the DB, called `DB`, is created as the document element, and the DB structure is created within this document element. During the schema creation process, you will be prompted to select which tables or data from the database you wish to import. These database tables will be created in the XML Schema as children of the `DB` element and also as items in the Global Templates list.

Creating the XML Schema from the DB consists of two steps:

- Connecting to a Database. This consists essentially of browsing for the DB file (if it is a MS Access DB), or building a connection string (all other DBs except MS Access).
- DB Data Selection. In this step, the table or data structure from the database is selected. In the case of non-XML DBs, the temporary XML Schema that is generated and the XML file that is created will be based on the selected data tables.

After the schema source appears in the Schema Tree window, you can start designing the SPS. A temporary XML File is created each time an output preview tab is clicked. The XML file is structured according to the generated XML Schema and contains data from the selected DB tables.

XBRL Taxonomy

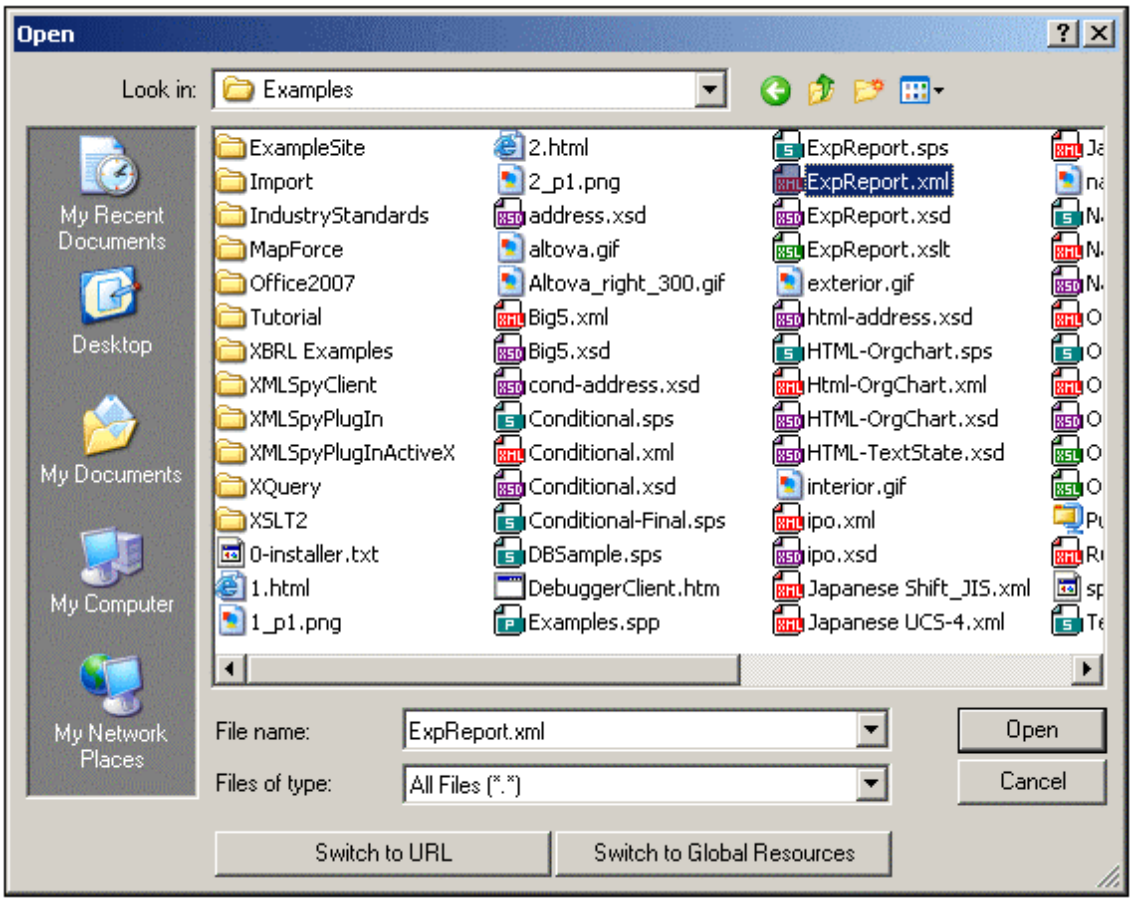
An XBRL taxonomy can be used as a schema source in the following ways:

- A new SPS file can be created with an XBRL taxonomy as its schema source via the **File | New | New from XBRL Taxonomy**.
- In the Design Overview sidebar, clicking the Add Schema Source link pops up a menu in which you select the option **Add XBRL Taxonomy**. The taxonomy can be added to an empty SPS file (that is, one with no schema source) or to one already containing one or more schema sources.

On clicking either of these two commands, a file open dialog pops up, in which you can browse for the XBRL taxonomy. The taxonomy can also be selected via a URL or a global resource; how to do this is described below. Select the taxonomy and click **Open**. A dialog appears asking whether you wish to assign a Working XBRL file to the schema source. Browse for the file or global resource, or select **Skip** to not assign a Working XBRL File. (You will need a Working XBRL File in order to preview your output in the Output Views.)

The XBRL taxonomy will be loaded and will be available in the Schema Tree sidebar for dragging into the design. The Working XBRL file will be loaded and will provide the data for output previews.

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.



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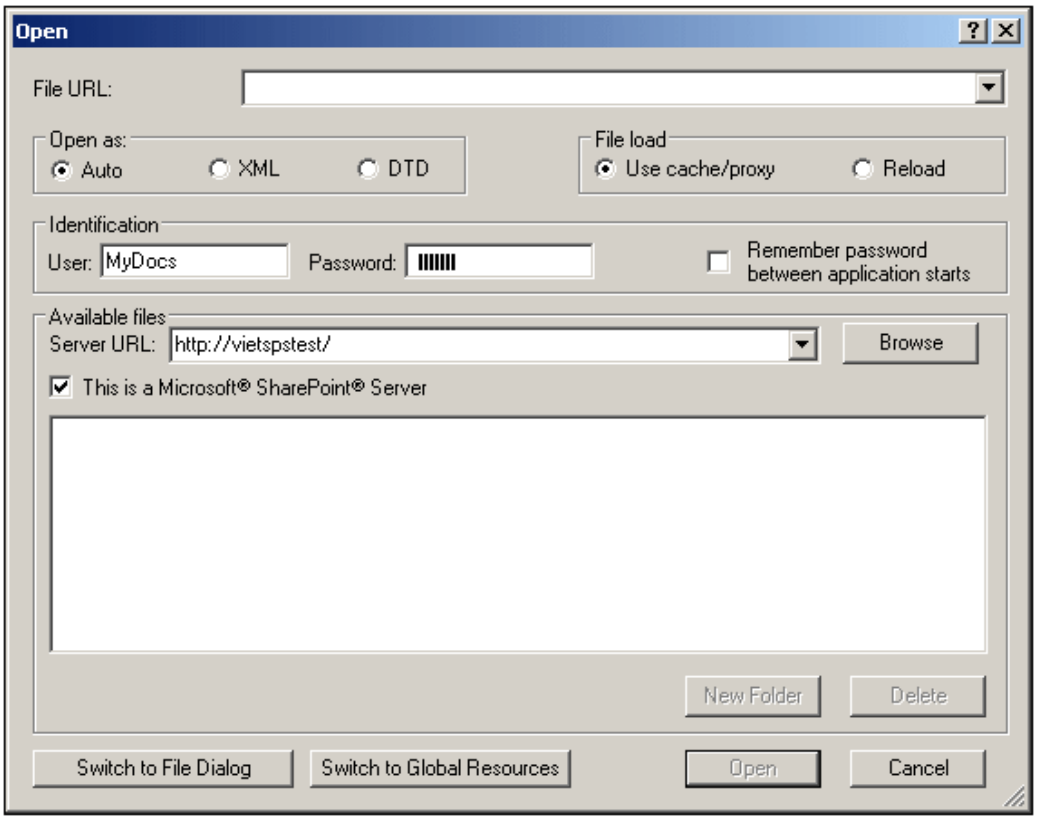
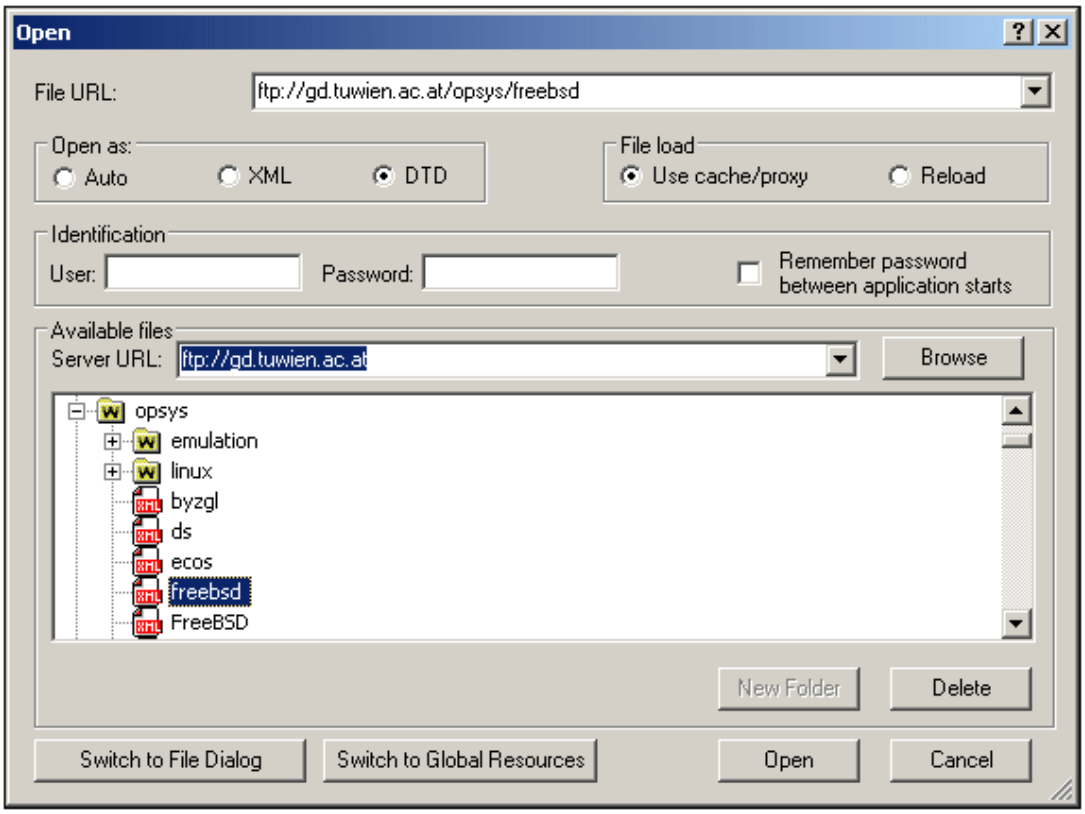


2. Enter the URL you want to access, in the *Server URL* field (*screenshot above*). If the server is a Microsoft® SharePoint® Server, check the *Microsoft® SharePoint® Server* check box. See the Microsoft® SharePoint® Server Notes below for further information about working with files on this type of 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.

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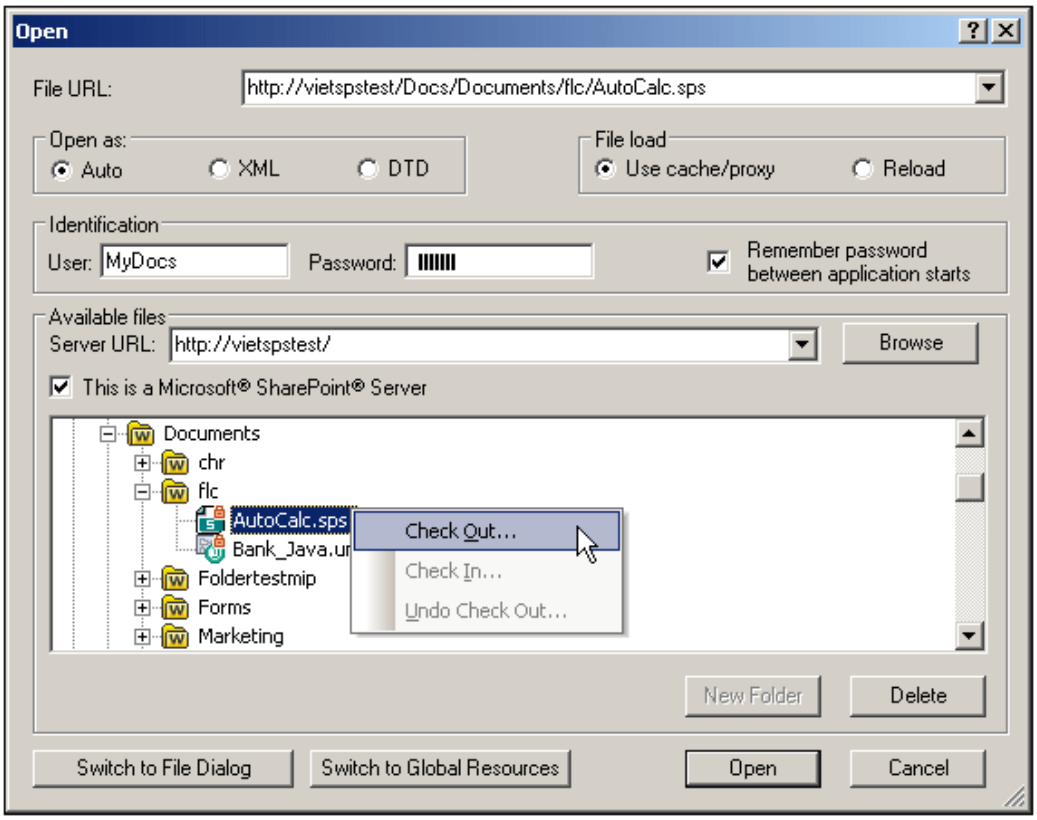

Right-clicking a file pops up a context menu containing commands available for that file (*screenshot above*).

- 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.
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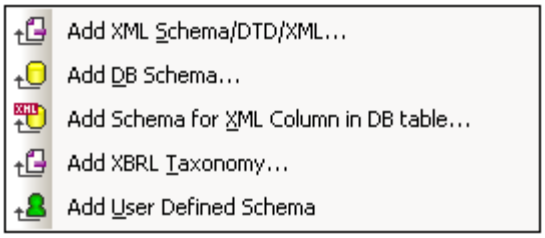
Opening and saving files via Global Resources
To open or save a file via a global resources, click **Switch to Global Resource**. This pops up a dialog in which you can select the global resource. These dialogs are described in the section, Using Global Resources. For a general description of Global Resources, see the Global Resources section in this documentation.

User-Defined Schemas

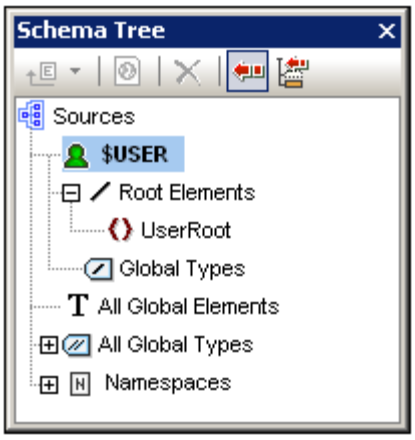
You can quickly create a user-defined schema in the Schema Tree sidebar. This is useful if you have an XML document that is not based on any schema and you wish to create an SPS for this XML document.

To add and create a user-defined schema, in the Schema Tree sidebar, do the following:

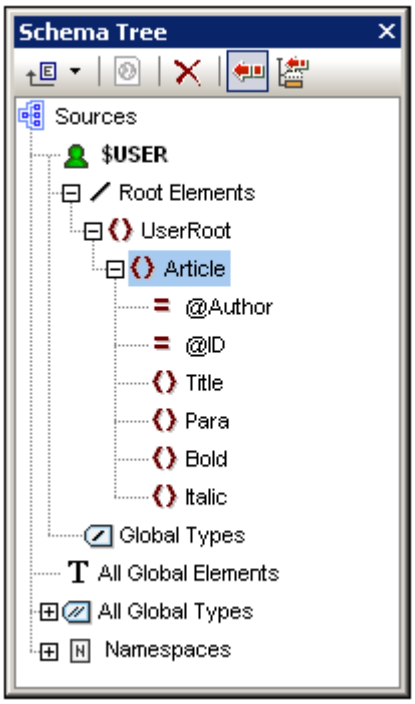
1. In the Design Overview sidebar, click the **Add New Schema** command (under the Sources heading), and select **Add User-Defined Schema** (*screenshot below*).



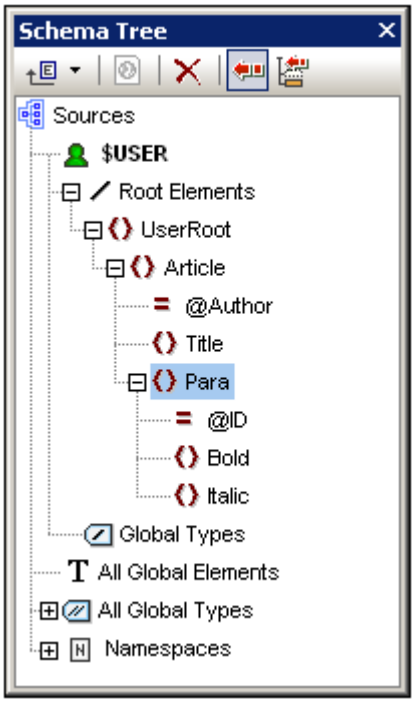
   The new schema is created and is indicated with the parameter `$USER` (*screenshot below*).



2. In the Root Elements tree, there is a single root element (document element) called `UserRoot`.
3. Double-click `UserRoot` and rename it to match the document element of the XML document for which you are building this schema.
4. To assign a child element or an attribute to the document element, select the document element (`UserRoot`), and click, respectively, the Append New Element icon or the Append New Attribute icon in the toolbar of the Schema Tree sidebar. Alternatively, you can right-click and select the required command from the context menu. After the new element or attribute is added to the tree, type in the desired name. Note that the Append New Element icon and append New Attribute icon have dropdown menus that can be accessed by clicking the dropdown arrow in the respective icon. The dropdown menus contain items that enable you to add nodes at alternative levels relative to the selected node. You can also drag nodes to the desired location (described in the next step). In the screenshot below, the `Article` element is the document element. The elements `Title`, `Para`, `Bold`, and `Italic`, and the attributes `ID` and `Author` have been added at the child level of `Article`.



5. To move the elements `Bold` and `Italic`, and the attribute `ID` to the level of children of `Para`, select each individually and drag to the `Para` element. When a bent downward-pointing arrow ↴ appears, drop the dragged node. It will be created as a "child" of `Para` (*screenshot below*).



6. When any element other than the document element is selected, adding a new element or attribute adds the new node at the same level as the selected element. Drag a node (element or attribute) into an element node to create it as a "child" of the element node.

Editing node names and deleting nodes
To edit the name of an element or attribute, double-click in the name and edit the name. To delete a node, select it and click the Remove icon  in the toolbar. Alternatively, select **Remove** from the context menu.

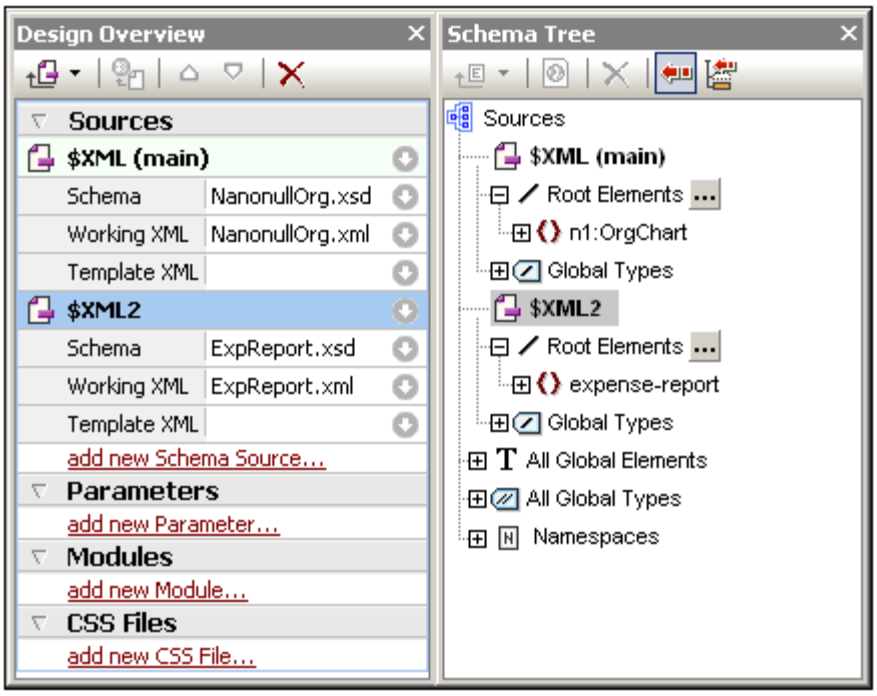
Multiple Schema Sources

You can use multiple schema sources in your SPS. This enables you to combine data from different XML documents in the output. For example, in one XML document you can have the structure of an organization, with its various departments. In another XML document you can have the listing of personnel in the various departments. In the output, the organizational structure data (first XML document) and the personnel data (second XML document) can be combined.

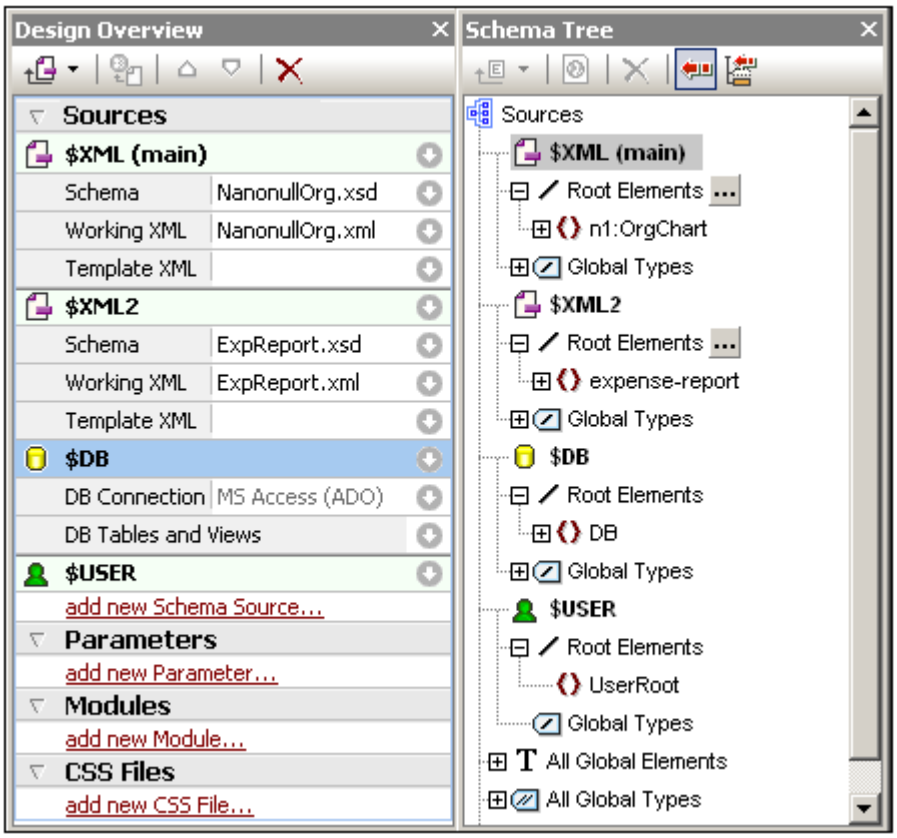
Note: If, across the multiple schemas used, there are two or more global elements that have the same expanded QName, there will be a naming conflict and one or more of the involved schema documents will be rendered invalid. You must therefore ensure that no two global elements across the multiple schemas have the same expanded QName. Local elements across multiple schemas may have the same expanded QName as other local elements, and will not cause any naming conflict.

Adding multiple schemas

In order to combine the dynamic XML data from different documents, you first add to the SPS the different schemas that are involved. You do this in the Design Overview sidebar (*screenshot below*). This creates a tree for each schema in the Schema Tree sidebar (*screenshot below*). You can choose the Working XML File, Template XML File, and Root elements for each added schema (*see screenshot below and* Design Overview sidebar). The global elements in all the added schemas are listed in the All Global Elements tree of the Schema Tree sidebar, and are available for creation as global templates.



Each schema source is identified by a parameter of the form `$XML1` (DTD or XML Schemas) or `$DB1` (DB-based schema) or `$USER1` (user-defined schema). These three kinds of schemas can be combined in a single SPS (*see screenshot below*). Note, however, that, while any number of DTDs and/or XML Schemas can be added to an SPS, only one each of a DB-based schema and a user-defined schema can be added.



Selecting the main schema
Of all the schemas added to the SPS, one can be designated as the main schema, and, in the Schema Tree sidebar, and in both the Design Overview and Schema Tree sidebars, this is indicated with the the word **(main)** next to the main schema. The document node of the XML document corresponding to the main schema will be the starting point of the transformation. To select the main schema, right-click the schema in the Design Overview sidebar, and select **Set as Main Schema**.

Adding nodes from different schemas to the design
Within the main template, nodes from different schemas are added to the design by dragging the nodes from their respective schema trees into the main template. A global template is created in the same way as with a single schema. It can be copied or used by a local template, or used instead of the built-in template when invoked via a rest-of-contents instruction from the main template.

Using schema parameters in external transformations
Each schema added to the SPS is identified by a parameter. For example, `$XML` (for DTDs or XML Schemas) or `$DB` (DB-based schema) or `$USER` (user-defined schema). In StyleVision, the Working XML File that is associated with each schema is known to the application, so the correct document nodes are accessed, thus enabling the display of data from the XML sources in Authentic View and output previews. However, when you generate XSLT stylesheets from the SPS, no XML file associations are contained in the stylesheet. In order to associate an XML file with each schema in the XSLT stylesheet, you must pass the location of each XML file as the value of the corresponding schema parameter. For example, the schema parameter, `$XML`, according to the screenshot above, would have a value of `"[path]NanonullOrg.xml"`. (See

Command Line Interface: StyleVisionBatch for a description of how to generate files using StyleVision via the command line.)

Note: The following points should be noted.

- For DB-based schemas, it is the the XML file generated from the DB (via **File | Save Generated Files**) that should be passed as the value of the `$DB` parameter.
- Any value passed for the main schema parameter will be ignored. The XSLT stylesheet will use as its starting point the document node of the XML document that is being transformed.

9.2 Modular SPSs

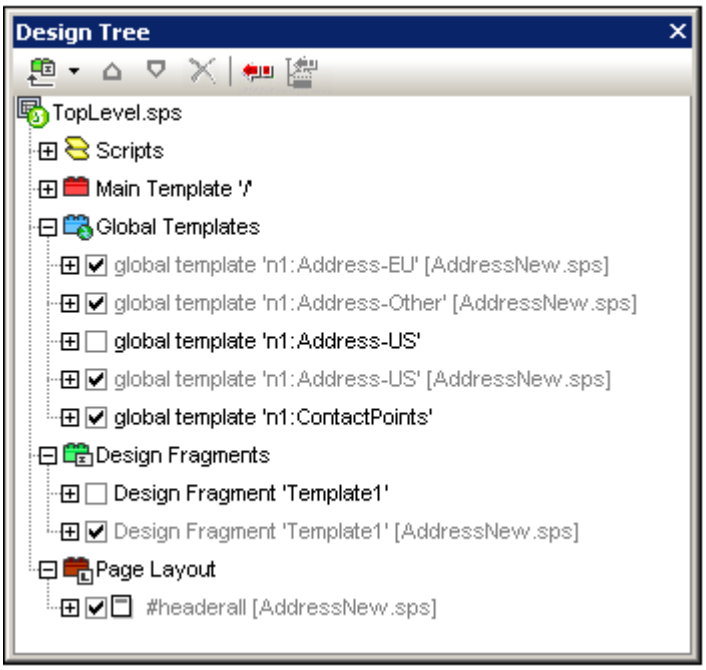
The global templates of an SPS, as well as Design Fragments, JavaScript functions, and page layout items can be used in the design of another SPS. This enables:

1. The re-use of global templates and other components across multiple SPSs, the main advantages of which are single-source editing and consistency of output.
2. SPSs to be modularized, and thus to be more flexibly structured.

In any given SPS, one or more SPSs can be added as modules. Some types of components (or objects) in these modules are then available to the importing (or referring) SPS.

Available module objects
The section, Available Module Objects, not only describes the extent to which, and conditions under which, the various components of an SPS are available to an importing SPS. It also lists those components that are not available to the importing SPS. You should note that if an added module itself contains modules, then these are added recursively to the referring SPS. In this way, modularization can be extended to several levels and across a broad design structure.

Creating a modular SPS
To build a modularized SPS, first add the required SPS to the main SPS as a module. All the global templates, Design Fragments, JavaScript functions, and page layout items in the added module are available to the referring SPS. Each of the available objects is listed in the Design Tree, under its respective heading (*screenshot below*), and can be activated or deactivated, respectively, by checking or unchecking its check box.



These objects can then be re-used in the referring SPS according to their respective inclusion mechanisms. Global templates and page layout items typically would need merely to be activated in order for them to be applied in the referring SPS. Design fragments have to be dragged from the Design Tree to the required location. And JavaScript functions are assigned via the Property window as event handlers for the selected design component.

How to create and work with a modular SPS is described in the section, Creating a Modular

SPS.

Terminology
When an SPS is used within another module it is said to be added to the latter, and we call the process **adding**. The two SPSs are referred to, respectively, as the ***added SPS module*** and the ***referring SPS module***. When an SPS module is added, its **objects** are added to the referring SPS module. These objects are called ***module objects***, and are of the following types: global templates; Design Fragments; JavaScript functions; and page layout items.

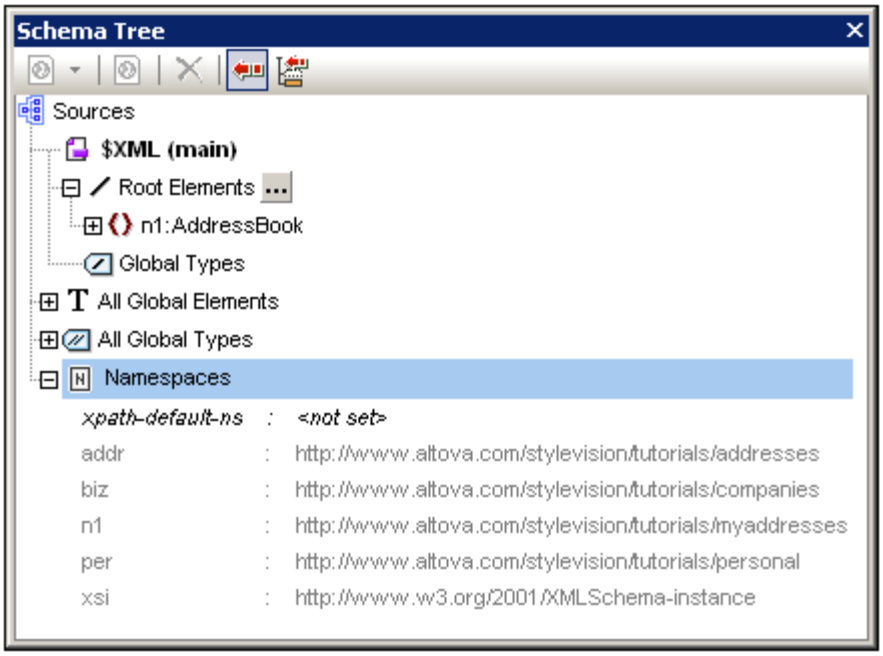
Available Module Objects

This section lists the objects in added SPS modules that are available to the referring SPS module. The listing explains in what way each object is available to the referring SPS module and how it can be used there. For a step-by-step approach to creating modular SPSs, see the next section, Creating a Modular SPS. This section ends with a list of objects in the added SPS that are not available to the referring SPS module, which will help you to better understand how modular SPSs work.

- Namespace declarations
- Global templates
- Design fragments
- Added modules
- Scripts
- CSS styles
- Page layouts
- Unavailable module objects

Namespace declarations

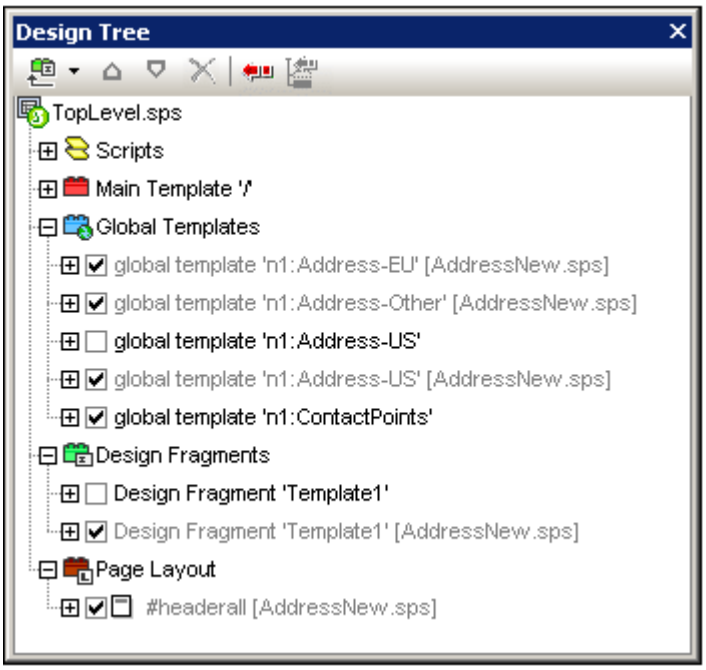
Each SPS stores a list of namespace URIs and their prefixes. When an SPS is added as a module, the namespaces in it are compared to the namespaces in the schema source/s of the referring SPS. If a namespaces URI in the added SPS matches a namespace URI in the schema source/s of the referring SPS, then the prefix used in the schema source of the referring SPS is adopted as the prefix for that namespace in the referring SPS. If a namespace in the added SPS cannot be matched with any in the schema source/s of the referring SPS, then an error message indicating this is displayed.



The screenshot above shows the various namespaces in an SPS, together with their prefixes, in the Schema Tree sidebar. These namespaces come from the source schema/s and cannot be edited.

Global templates

The global templates of the added SPS module are available to the referring SPS module and are displayed in the Design Tree sidebar (*screenshot below*).



Note that the main template of added modules are not available. This means that if you plan to re-use a template via the modular approach, you must create it as a global template. If no global template is defined for a particular element and processing is invoked for that element, then the default processing for that element (XSLT's built-in templates) will be used.

Design fragments
Design fragments in the added SPS module are available to the referring SPS and are displayed in the Design Tree sidebar (*screenshot above*). When inserting a design fragment in the design, care should be taken to place the design fragment within the correct context node in the design.

Added modules
Each added SPS module also makes available to the referring SPS its own added modules, and their added modules, and so on. In this way, adding one module recursively makes available all modules that have been added to it, down multiple levels. Needless to say, these modules must together construct a content model that is valid according to the source schema/s of the referring SPS module. Modules are displayed and can be managed in the Design Overview sidebar.

Scripts
The scripts in all the added SPS modules are available for use in the referring SPS and are displayed in the Design Tree sidebar. In effect, the scripts of all the added modules are collected in a library that is now—in the referring SPS—available for selection in the Properties dialog.

CSS styles
The global styles present in added SPS modules are carried over to the referring SPS as global

styles and the style rules are displayed in the Style Repository sidebar. The CSS files are also listed in the Design Overview sidebar. Similarly, external CSS files that were available to the added SPS module, are available to the referring SPS module.

Page layouts
The page layouts of an added module are available to the referring SPS and are displayed in the Design Tree sidebar.

Module objects that are not available to the referring SPS
The following objects of the added module are not available to the referring SPS:

- ***Parameter definitions:*** are ignored.
- ***Schema sources:*** The schema source on which the added SPS is based is ignored. Bear in mind that the content model of the document element of the added SPS must be contained within the content model of the referring SPS; otherwise it would not be possible to correctly use the added SPS as a module. If you wish, you could always add a secondary schema or a user-defined schema to the referring SPS. The additional schema could accommodate the content model of the added global template/s.
- ***Working XML File and Template XML File:*** References to these files are ignored. The referring SPS uses its own Working XML and Template XML Files.
- ***XPath default namespaces:*** If they have been set on a module that is imported then they are not carried through to the importing SPS.

Creating a Modular SPS

Creating a modular SPS consists of three broad parts:

1. Design and save the SPS module to be added.
2. Add the module to the SPS in which it is to be used (that is, to the referring SPS module).
3. Activate or deactivate the added object/s as required.
4. Apply the required object whereever required.

The SPS module to be added

There are two points to bear in mind when creating an SPS that will be added to another:

1. The templates that can be used in the referring SPS module can only be global templates. This means that the templates you wish to re-use must be created as global templates in the SPS module that is to be added.
2. The document structure defined in the SPS module to be added must be valid within the content model defined by the source schema/s of the referring SPS. If an added template is not contained in the content model defined by the main schema of the SPS, its content model, however, can still be defined in a secondary schema or a user-defined schema.

When creating the SPS module to be added, the schema on which you base the SPS could be one of the following:

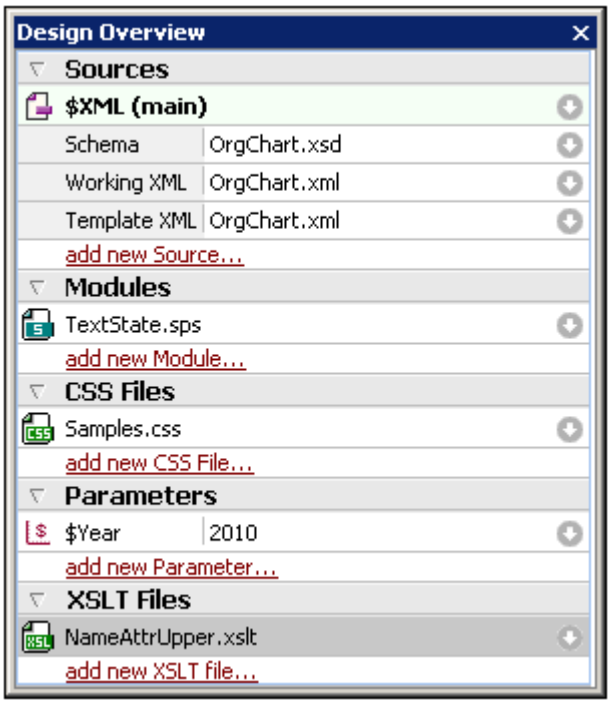
- The main source schema of the referring SPS. In this case, when the SPS is added, the added global templates will be part of the content model of the referring SPS's main schema. The output of these global templates in Authentic View is, therefore, editable.
- A schema which defines a content model that is part of the content model defined by the main schema of the referring SPS. In this case, when the global templates are added, they will fit into the content model of the main schema of the referring SPS. The output of these global templates is editable in Authentic View.
- A schema which defines a content model that is **not** part of the content model defined by the main schema of the referring SPS. When this SPS module is added, its global templates will not be part of the content model of the main schema of the referring SPS. They can, however, be used to produce output if a secondary schema or a user-defined schema is used that defines a content model that contains the content model of the global template/s. In Authentic View, however, the output of these global templates cannot be edited.

When defining the content models in your schemas, you should pay close attention to the namespaces used since these determine the expanded names of nodes.

You could use a Working XML File to test the output of the SPS module to be added. The reference to this Working XML File will be ignored by the referring SPS.

Adding the SPS module

To add a module to an SPS, in the Design Overview (*screenshot below*), click the Add New Module command, browse for the required SPS file in the dialog that appears, select it, and click **Open**.



The module is added to the SPS and is listed under the Modules heading in the Design Overview. In the screenshot above, the `BusinessAddressBook.sps` and `PersonalAddressBook.sps` modules have been added to the `AddressBook.sps` module (the active SPS). All the added module objects are listed in the Design Tree sidebar; added CSS files, though, are also also listed in the Design Overview. If the added modules themselves refer to modules, these latter, indirectly imported modules are listed under the Modules heading, but in gray. Information about which modules import an indirectly imported module is available in a pop-up that appears when you mouseover the indirectly imported module.

To open one of the added modules or indirectly imported modules quickly in StyleVision, right-click that module, and select **Open Defining Module** from the context menu that pops up.

Order of added modules

The order in which modules are added and listed is significant for the prioritizing of CSS styles. In keeping with the CSS cascade order, CSS style rules in a relatively later module (lower down the list) have priority over style rules defined in a relatively earlier module (higher up the list). CSS styles in the referring SPS module have priority over those in any added module. To change the relative position of an added module, select it in the Design Overview and click, as required, the **Move Up** or **Move Down** toolbar icon in the Design Tree toolbar.

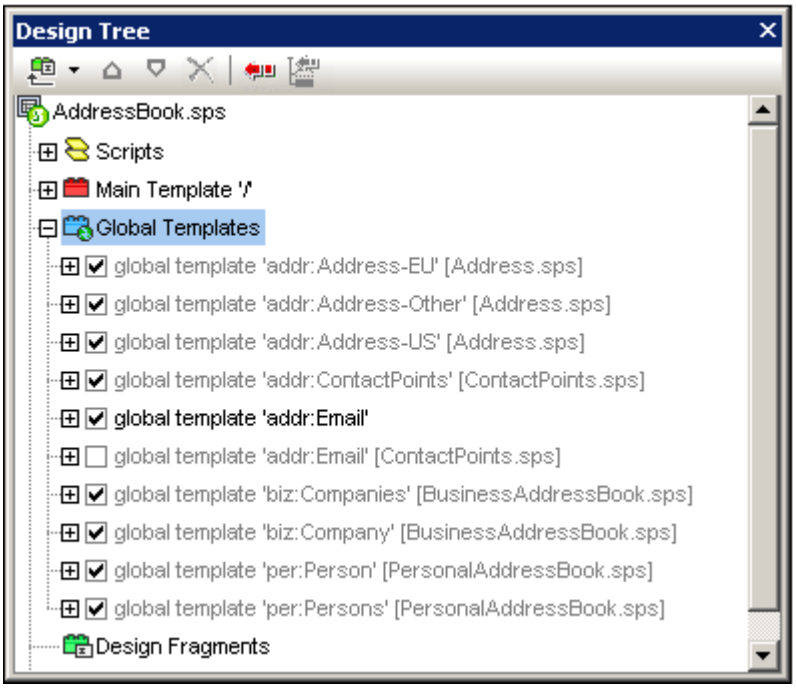
The module order is not significant for resolving conflicts among scripts, global templates, design fragments, and page layout items.

File modification alerts

If any added file (whether an SPS module, schema, or Working XML File) is modified after the referring SPS module has been opened, then a file modification pop-up will alert you to the change and ask whether the referring SPS module should be refreshed with the changes.

Activating/deactivating the added object

All module objects in all added modules (whether added directly or indirectly) are added to the referring SPS and are listed under the corresponding headings in the Design Tree: `Scripts`; `Global Templates`; `Design Fragments`; and `Page Layout`. Next to each of these objects is a check box (*see screenshot below*), which you can check or uncheck to, respectively, activate or deactivate that object. When an object is deactivated, it is effectively removed from the SPS.



In the screenshot above, all the global templates used in the `AddressBook.sps` module are listed under the Global Templates heading. Those that have been added via other modules (whether directly or indirectly) are displayed in gray. Those that have been created directly in `AddressBook.sps` are displayed in black. The screenshot shows that only one global template, `addr:Email`, has been created in `AddressBook.sps` itself. All the other global templates have been added via other modules, and the file in which each of these is defined is listed next to its name.

Notice that there are two global templates for `addr:Email`, one created in the referring SPS (`AddressBook.sps`) itself, and the other created in the added module `ContactPoints.sps`. If more than one global template has the same (namespace-) expanded name, then only one of these will be active at a time. You can select which one by checking its check box. (Alternatively, you activate the global template from its context menu in Design View.) This mechanism is useful if you: (i) wish to override an added global template with one that you create in the referring SPS module, or (ii) wish to resolve a situation where a global template for one element is defined in more than one added module.

A global template that has been defined in the current SPS can be deleted by selecting it and clicking the **Remove** button. However, global templates that have been defined in an added module cannot be removed from the referring SPS. They must be removed by opening the added SPS and removing the global template there.

Individual scripts, Design Fragments, and page layout items can be activated and deactivated in the same way.

Applying or using modular objects
In the referring SPS module, you design your templates as usual. Each different type of added object is used or applied differently. You should, of course, ensure that each module object you wish to apply has been activated.

Global templates
When you wish to use a global template from any of the added SPS modules, you must make sure that this global template is indeed applied. This can be done in one of two ways, according to which one is appropriate for your design:

- In the main template, specify that the element template either uses the global template for that element or copies that global template locally. These two commands are available in the context menu that appears when you right-click the element tag in the design.
- In the main template, the contents or rest-of-contents placeholders cause templates to be applied, leading to the relevant global templates being processed.

Design Fragments
To use a Design Fragment, drag it from the Design Tree to the desired location in the main template or a global template. Make sure that the location where the Design Fragment is dropped is the correct context node for that Design Fragment. For details, see Design Fragments.

Scripts
All JavaScript functions (whether in an added module or created in the referring SPS) are available as event handlers, and can be set for a particular event via the Properties sidebar.

Page layout items
If page layout items have been defined in any of the added modules, these are listed under the Page Layout item of the referring SPS module. If a page layout item is not required, it can be unchecked. Where there is more than one option for the same item, for example, `HeaderOdd`, then you can select which one of the options is to be applied by checking that option's check box.

Example: An Address Book

The folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\ModularSPS` contains examples of modular SPSs. The example files in this folder comprise a project in which an address book containing business and personal contacts is modularized. The example not only demonstrates the mechanisms in which modularization is implemented, but also illustrates the main reasons why one would modularize.

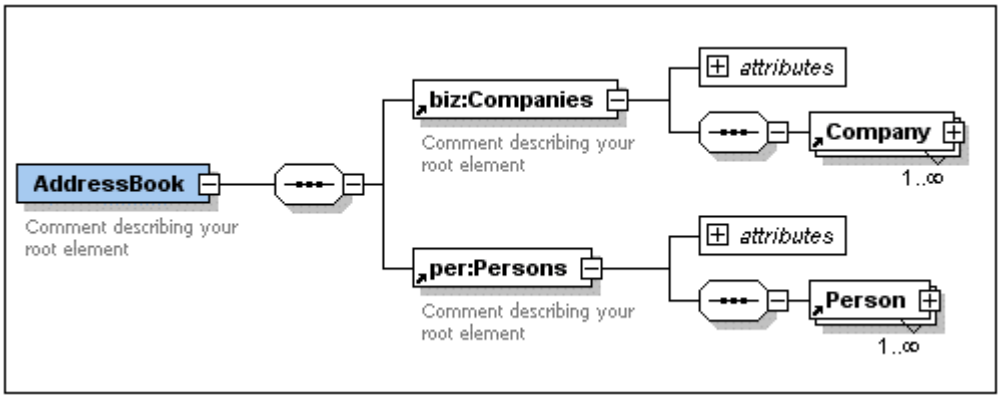
- The complete address book is composed of two modules: (i) a business address book, and (ii) a personal address book, each of which has a separate SPS defining different designs. The two modules together make up the composite address book. Modularization in this case is used to compose: the modules are the components of a larger unit.
- Although the content model of each module (business and personal address books) differs slightly from the other, both have a common module, which is the ContactPoints module, consisting of the core contact details: address, telephone, fax, and email. The ContactPoints module can therefore be shared between the two address books (business and personal). Modularization in this case enables a single module to be used as a common unit within multiple other units.
- Further, the ContactPoints module can be modularized to provide more flexibility. In the example project, we have created a separate Address module to contain the postal address, which may have one of three content models, depending on whether the address is in the EU, US, or elsewhere. The output for all three content models is defined in a single SPS. However, they could have been defined in separate SPSs, which would have provided finer granularity. In this case, modularization would provide more flexibility as modules could be re-used more easily.

The description of this project is organized into the following parts:

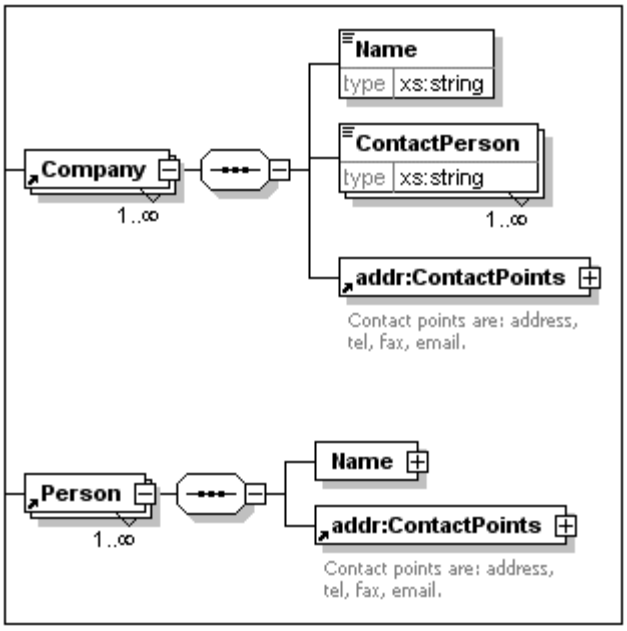
- The schema files
- The XML data sources
- The SPS files

The schema files

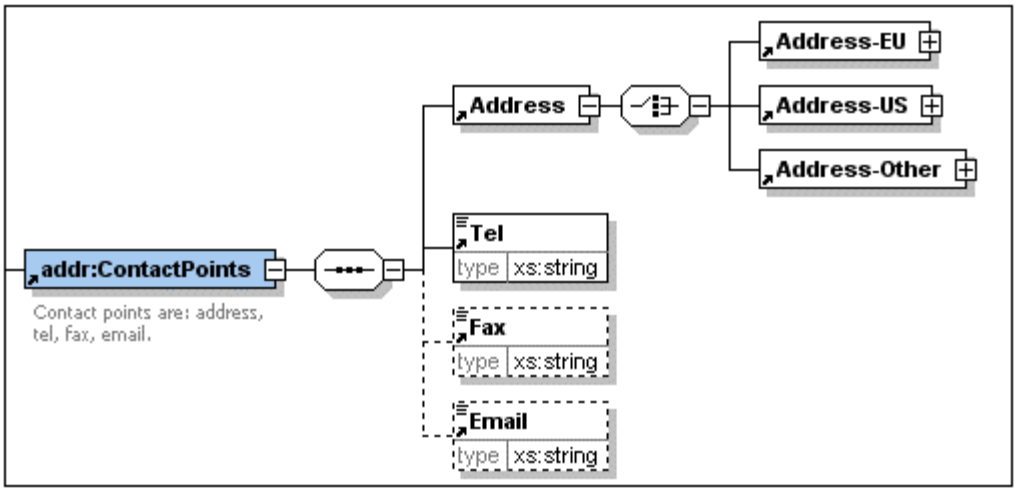
When creating schemas for modular SPSs, the most important thing to bear in mind is to create the elements that you wish to re-use as global elements. The schema for the address book is `AddressBook.xsd`. This schema has been constructed by importing the schemas for the business address book (`BusinessAddressBook.xsd`) and personal address book (`PersonalAddressBook.xsd`). The `BusinessAddressBook.xsd` schema provides a content model for companies, while the `PersonalAddressBook.xsd` schema provides a content model for persons (*see screenshot below*).



Both schemas import the `ContactPoints.xsd` schema (*see screenshot below*), which defines a content model for contact details.



Finally, the `ContactPoints.xsd` schema (*screenshot below*) includes the `Address.xsd` schema, which defines the three address-type content models: for EU, US, and other addresses.



Imports are used when the imported schema belongs to a different namespace than the importing schema. Includes are used when the included schema belongs to the same namespace as the including schema.

Note: The screenshots above are of the schema in the Schema/WSDL View of Altova's XMLSpy.

The XML data sources

The XML data is contained in the file `AddressBook.xml`. This file is structured so that the

AddressBook element contains the companies and persons elements as its children. The content models of these two elements are defined in the schema files, BusinessAddressBook.xsd and PersonalAddressBook.xsd, respectively.

There are two additional XML data files, which correspond to the BusinessAddressBook.xsd and PersonalAddressBook.xsd schemas. These two XML files, BusinessAddressBook.xml and PersonalAddressBook.xml, are used as the Working XML Files of the corresponding SPS files.

The three XML files are the Working XML Files of the following SPS modules:

- AddressBook.xml => AddressBook.sps, ContactPoints.sps, Address.sps
- BusinessAddressBook.xml => BusinessAddressBook.sps
- PersonalAddressBook.xml => PersonalAddressBook.sps

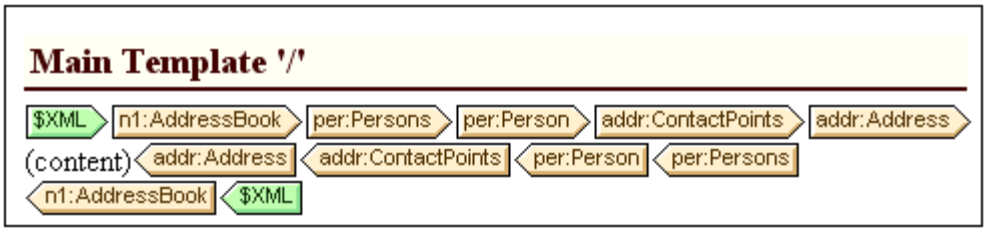
The SPS modules

The description of the SPS modules starts with the most basic module (Address.sps) and progresses in compositionally incremental steps to the complete address book (AddressBook.sps). All the SPS modules use AddressBook.xsd as its schema.

Address.sps

The key points to note are the use of the schema and the Working XML File.

- Address.sps uses AddressBook.xsd as its schema, but the schema could equally well have been Address.xsd, ContactPoints.xsd, BusinessAddressBook.xsd, or PersonalAddressBook.xsd—since the Address element is present in all these schemas and would be available as a global element. When the SPS module is added to another SPS module, the schema of the imported module is ignored, so which one is used is not important when the SPS is added as a module.
- The Working XML File is AddressBook.xml. Note that the main template in Address.sps specifies that only the Address element should be processed, and that global templates for Address-EU, Address-US, and Address-Other have been defined.

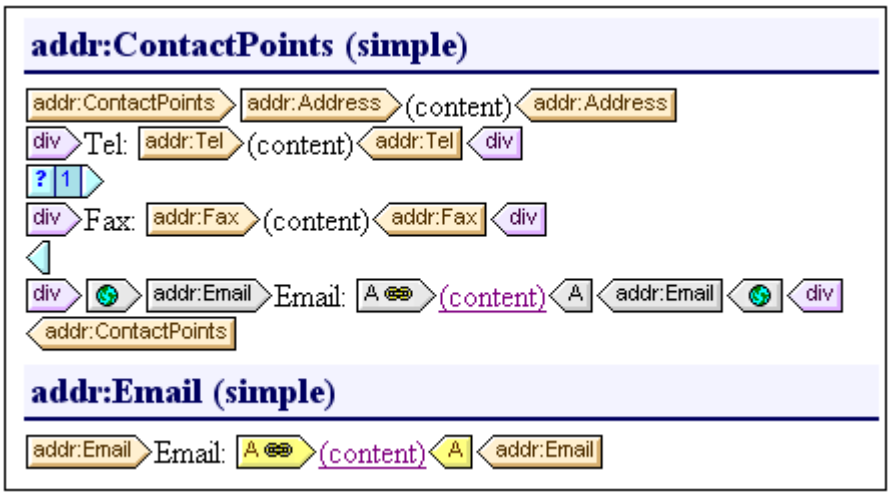


Because only the Address element is processed, the output previews show only the output of Address. When Address.sps is used as a module, the global templates are added and the main template is ignored.

ContactPoints.sps

This SPS imports one module. Note the use of global templates within other global templates and the main template.

- ContactPoints.sps uses AddressBook.xsd as its schema and AddressBook.xml as its Working XML File.
- Address.sps is added as a module, thus making the global templates of the Address-EU, Address-US, and Address-Other elements available.
- Global templates for the ContactPoints and Email elements are defined. Note that the ContactPoints definition uses the global template of Email (*screenshot below*).



- The main template—required for the previews—uses the global template of the `ContactPoints` element, thus enabling previews of the `ContactPoints` output.

BusinessAddressBook.sps* and *PersonalAddressBook.sps

This SPS imports one module, which in turn imports another. Note that the main template simply applies global templates.

- Each of these two modules uses `AddressBook.xsd` as its schema. The Working XML Files are, respectively, `BusinessAddressBook.xml` and `PersonalAddressBook.xml`.
- `ContactPoints.sps` is added as a module. This causes `Address.sps` to be indirectly imported. All the global templates in these two modules are available to the referring SPS module.
- In `BusinessAddressBook.sps`, global templates are defined for the `Companies` and `Company` elements. Note that the `Company` definition uses the global template of `ContactPoints`.
- In `PersonalAddressBook.sps`, global templates are defined for the `Person` and `Persons` elements. The `Person` definition uses the global template of `ContactPoints`.

AddressBook.sps

There are two global templates for the `Email` element; any one can be activated..

- `AddressBook.sps` uses `AddressBook.xsd` as its schema. The Working XML File is `AddressBook.xml`.
- `BusinessAddressBook.sps` and `PersonalAddressBook.sps` are added as modules, and this causes `ContactPoints.sps` and `Address.sps` to be indirectly imported.
- A global template is defined for the `Email` element. This means that there are now two global templates for `Email`, one in `ContactPoints.sps` and the other in `AddressBook.sps` (*see screenshot below*).

- In the Global Templates list in the Design Tree (*screenshot above*), you can select

which of the two global templates should be active. StyleVision allows only one to be active at a time. Whichever is active is used within the `ContactPoints` global template.

- The main template contains some static content for the output header.

9.3 Templates and Design Fragments

The design document is composed of templates, and it is important to recognize the various types of templates that can be used.

- *Main templates and global templates:* The design document consists of one main template and, optionally, one or more global templates. Global templates can be referenced via the main template.
- *Node-templates and variable iterators:* These are the templates that constitute the main template and global templates. A node-template matches a node in a schema source.
- *Design fragments:* These are templates that are designed separately and re-used in various parts of the design (main template or global templates).

In this section, we describe the role that templates and design fragments play in the structure of the design. We are not concerned here with the presentation properties in the design, only the structure. In this section, we also do not consider additional structural items for paged media, such as cover pages, headers and footers. These are described in the section, Designing Print Output.

Note: In Design View, the SPS can have several templates: the main template, global templates, page layout templates, and Design Fragments. You can control which of these template types is displayed in Design View by using Template Display Filters, which are available as toolbar icons. These display filters will help you optimize and switch between different displays of your SPS.

Main Template

The main template determines the structure of the output. That is, the sequence in which the main template is laid out in the design is the sequence in which Authentic View and the output is laid out. In programming jargon, this is procedural processing. Processing starts at the beginning of the template and proceeds in sequence to the end. Along the way, nodes from the XML document are processed. The templates which process these nodes are called local templates. After a local template is processed, the processor moves to the next component in the main template, and so on. Occasionally, a node may reference a global template for its processing. In such cases, after the global template is executed for that node, the processor returns to the position in the main template from which it branched out and continues in sequence from the next component onwards.

The entry point for the main template is the document node of the main schema. The main schema is the schema designated by you as such (right-click the schema in the Design Overview sidebar and select Set As Main Schema Source). StyleVision offers the option of selecting multiple root elements (document elements). This means that within the main template, there can be local templates for each of the active document elements. The one that is executed during processing will be that for the element which is the document element of the XML instance document being processed.

Global Templates

A global template can be defined for any node or type in the schema, or for a node specified in an XPath pattern.

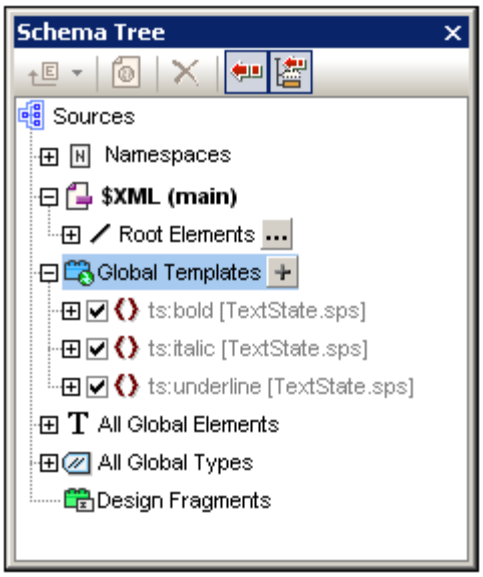
A global template specifies instructions for the selected node or type, and it is invoked by a call from the main template, design fragments, or other global templates. The processing model is similar to that of declarative programming languages, in that a single template is defined and invoked multiple times. In this way a single definition can be re-used multiple times. Global templates are invoked in two situations:

- When a node or type in the main template has been set to reference its global template (done by right-clicking the component in the design and selecting Make Global Template).
- When a `(contents)` or `(rest-of-contents)` is inserted within an element or type in a local template, and the rest of the content of that element or type includes a node or type for which a global template exists.

Global templates are useful if a node (or type) occurs within various elements or in various locations, and a single set of instructions is required for all occurrences. For example, assume that a `para` element must be formatted the same no matter whether it occurs in a `chapter`, `section`, `appendix`, or `blockquote` element. An effective approach would be to define a global template for `para` and then ensure, that in the main template the global template for the `para` element is processed wherever required (for example, by including `//chapter/para` in the main template and specifying that `para` reference its global template; or by including `//chapter/title` and then including `(contents)` or `(rest-of-contents)` so that the rest of the content of the `chapter` element is processed with the available global templates and default templates). Also, a global template can be defined for a complex type (for example, one that defines an address model) or even for a simple type (for example, `xs:decimal`). In such cases, all occurrences of the type (complex or simple) that invoke the global template for that type will be processed according to the rules in the global template.

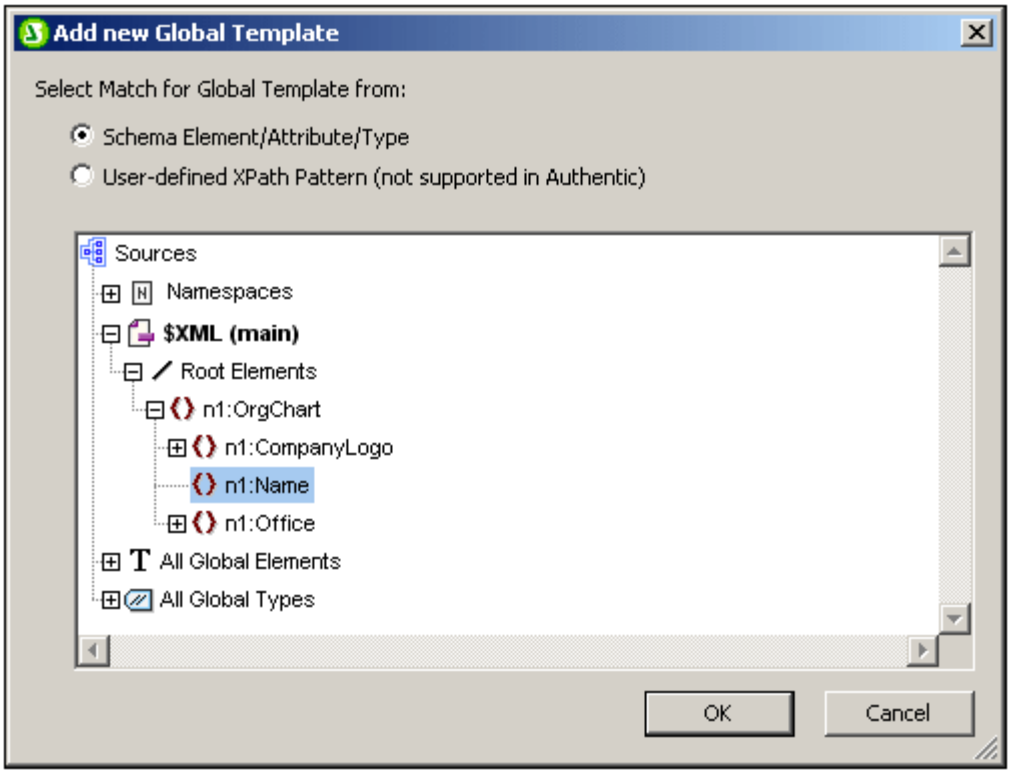
Creating a global template

Global templates can be created for any node or type in the schema, or for a node specified in an XPath pattern., and are created from the Schema Tree sidebar (*screenshot below*).



A global template can be created in any of the following ways:

- Click the **Add New Global Template** button located at the right of the Global Templates item in the Schema Tree (*see screenshot above*). This pops up the Add New Global Template dialog (*screenshot below*). You can select an element, an attribute, or a type from the schema tree shown in the dialog, or you can enter an XPath pattern. (Note that global templates created for nodes selected with an XPath pattern are not supported in Authentic.) This selects the node that must be created as the global template. Click **OK** to finish. The template will be created and appended to the already existing templates in Design View and can then be edited. In the Schema Tree, the schema node or type will be marked with a plus sign icon in front of it.



- Right-click the schema node or type component in the Schema Tree (under Root Elements, All Global Elements, or All Global Types, as appropriate), and select the command **Add New Global Template**. This pops up the Add New Global Template dialog, which is described above.
- Right-click the schema node or type component in the Schema Tree (under Root Elements, All Global Elements, or All Global Types, as appropriate), and select the command **Make/Remove Global Template**. The template will be created and appended to the already existing templates in Design View and can then be edited. In the Schema Tree, the schema node or type will be marked with a plus sign icon in front of it.
- Global templates can also be created from templates in the main template in Design View. Right-click the template (either in Design View or the Schema Tree sidebar) and select the command **Make Global Template**. A global template is created from the selected template (it is appended to the templates in Design View) and the template in the main template is automatically defined to **use** this global template (see below for an explanation of how global templates are *used*).

Using a global template

After a global template has been created, it can be used when a node having the same qualified name is inserted into the document (by dropping . Alternatively, if a local template is present in the design and a global template exists for a node having the same qualified name, then the global template can be used instead of the local template. To use a global template for a local template, right-click the local template in Design View and select the command **Use Global Template**. When a global template is used, its processing instructions are called and used by the local template at runtime.

Wherever a global template is used in the design, an XPath pattern can be created on the global template to filter the nodeset it addresses. To create such a filter, right-click the global template tag in the design, and select **Edit XPath Filter** in the context menu that appears. This pops up the Edit XPath Expression dialog, in which the required expression can be entered.

Copying a global template locally

After a global template has been created, its processing instructions can be copied directly to a template of the same qualified name in the main template. To do this, right-click the local template and select the command **Copy Global Template Locally**. Copying the global template locally is different than using the global template (at runtime) in that the processing instructions are merely copied in a one-time action. The global template has no further influence on the local template. Either, or both, the global template and local template can subsequently be modified independently of each other, without affecting the other. On the other hand, if it is specified that a global template should be *used* (at runtime) by a local template, then any modifications to the global template will be reflected in the local template at runtime.

Activating and deactivating global templates

A global template can be activated by checking its entry in the global templates listing in the Schema Tree sidebar. It can be deactivated by unchecking the entry. If a global template has been activated (the default setting when the global template was created), it is generated in the XSLT stylesheet. If it has been deactivated, it is not generated in the XSLT stylesheet but is still saved in the SPS design.

Any local template that uses a deactivated global template will then—since it is not able to reference the missing global template—fall back on the default templates of XSLT, which have the collective effect of outputting the contents of descendant text nodes.

The advantages of the activation/deactivation feature are: (i) Global templates do not have to be deleted if they are temporarily not required; they can be reactivated later when they are required; (ii) If there are name conflicts with templates from imported stylesheets, then the global template that is not required can be temporarily deactivated.

Removing a global template

To remove a global template, right-click the global template to be removed, either in Design View or the Schema Tree sidebar, and select the command **Make/Remove Global Template**.

Simple global templates and complex global templates

Global templates are of two types: simple and complex. Complex global templates are available for reasons of backward-compatibility. If a global template in an SPS created with a version of StyleVision prior to version 2006 contains a table or list, then that global template will typically be opened in StyleVision 2006 and later versions as a complex global template.

A complex global template is different than a simple global template in the way the node for which the global template was created is processed. When the first instance of the node is encountered in the document, the complex global template processes all subsequent instances

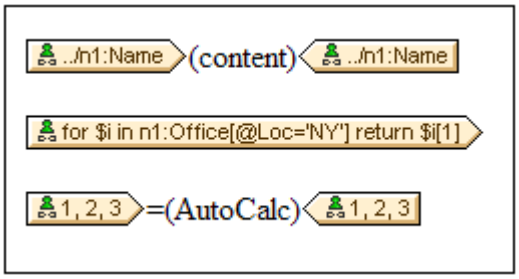
of that node immediately afterwards. A simple global template, on the other hand, processes each node instance only when that node instance is individually encountered.

It is important to note that a simple global template will be automatically converted to a complex global template if a predefined format or newline is created **around** the element node for which the global template was created. This will result in the processing behaviour for complex global templates (described in the previous list item). To revert to the simple global template, the predefined format should be removed (by dragging the node outside the predefined format and then deleting the predefined format), or the newline should be removed (by deleting the item in the Design Tree sidebar), as the case may be. To avoid the automatic conversion from simple global template to complex global template, make sure that the predefined format or newline is added within the node tags of the element for which the simple global template was created.

Global templates in modular SPSs
When an SPS module is added to another SPS module, the global templates in the added module are available for use within the referring SPS. For more information about using modular SPSs, see the section Modular SPSs.

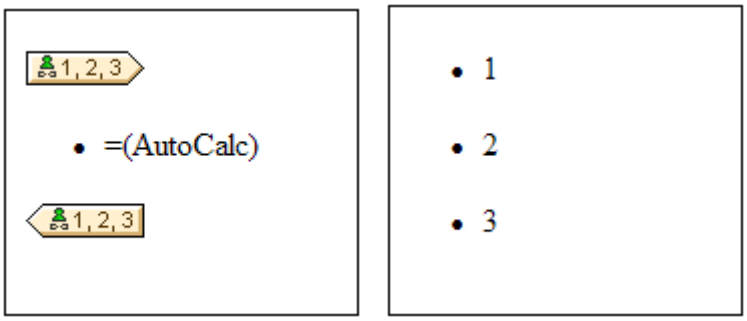
User-Defined Templates

User-Defined Templates are templates for items generated by an XPath expression you specify. These items may be atomic values or nodes. In the screenshot below, which shows three User-Defined Templates, note the User-Defined Template icon on the left-hand side of the tags. User-Defined Templates are very useful because they provide extraordinary flexibility for creating templates. Note, however, that content generated by User-Defined Templates **cannot be edited in Authentic View**.



The XPath expression of each of the three User-Defined templates shown in the screenshot above do the following:

- Selects a node in a source schema. By using an XPath expression, any node in any of the schema sources can be reached from within any context node. If StyleVision can unambiguously target the specified node, the template will be changed automatically from a User-Defined Template to a normal template, enabling Authentic View editing. If it is a User-Defined Template, this will be indicated by the green User-Defined Template icon on the left-hand side of the template tags.
- Selects a node that fulfills a condition specified by the `for` construct of XPath 2.0. Such templates can never resolve to normal templates (but will remain User-Defined Templates) because the `for` construct does not allow StyleVision to unambiguously resolve the target from only the schema information it currently has at its disposal.
- Selects a sequence of atomic values `{1, 2, 3}`. While it is allowed to create a template for an atomic value, you cannot use the `contents` placeholder within such a template. This is because the `xsl:apply-templates` instruction (which is what the `contents` placeholder generates) can only be applied to node items (not atomic values). You could, however, use an Auto-Calculation in combination with some design element such as a list. For example, the User-Defined Template at left would generate the output at right.



Note: If the SPS uses XSLT 1.0, then the XPath expression you enter must return a node-set. Otherwise an error is reported.

Advantage of using XPath to select template node
The advantage of selecting a schema node via an XPath expression (User-Defined Templates)

is that the power of XPath's path selector mechanism can be used to select any node or sequence of items, as well as to filter or set conditions for the node selection. As a result, specific XML document nodes can be targeted for any given template. For instance, the XPath expression `//Office/Department[@Location="NY"]` will select only those `Department` nodes that have `Location` attribute with a value of `NY`. Also see the other examples above.

Note: If an XPath expression contains multiple location path steps, then it is significant—especially for grouping and sorting—whether brackets are placed around the multiple location path steps or not. For example, the XPath expression `/Org/Office/Dept` will be processed differently than `(/Org/Office/Dept)`. For the former expression (without brackets), the processor loops through each location step. For the latter expression (with brackets), all the `Dept` elements of all `Office` elements are returned in one undifferentiated nodeset.

Brackets	Underlying XSLT Mechanism	Effect
No	`<xsl:for-each select="Org"> <xsl:for-each select="Office"> <xsl:for-each select="Dept"> ... </xsl:for-each> </xsl:for-each> </xsl:for-each>`	Each `Office` element has its own `Dept` population. So grouping and sorting can be done within each `Office`.
Yes	`<xsl:for-each select="/Org/Office/Dept"> ... </xsl:for-each>`	The `Dept` population extends over all `Office` elements and across `Org`.

This difference in evaluating XPath expressions can be significant for grouping and sorting.

Inserting a User-Defined Template

To insert a User-Defined Template, do the following:

1. Click the **Insert User-Defined Template** icon in the Insert Design Elements toolbar and then click the design location where you wish to insert the template. Alternatively, right-click the design location where you wish to insert the template and, from the context menu that appears, select the **Insert User-Defined Template** command.
2. In the Edit XPath Expression dialog that pops up, enter the XPath expression you want, and click **OK**. Note that the context node of the XPath expression will be the node within which you have clicked. An empty node template will be created. Sometimes a joined node is created. When a node is joined, the targeted instance nodes are selected as if at a single level, whereas if a node is not joined (that is if it is split into multiple hierarchic levels), then the node selection is done by looping through each instance node at every split level. The nodeset returned in both cases of selection (joined and split) is the same unless a grouping or sorting criterion is specified. For a discussion of the effect joined nodes have on the grouping and sorting mechanisms, see Node-Template Operations.

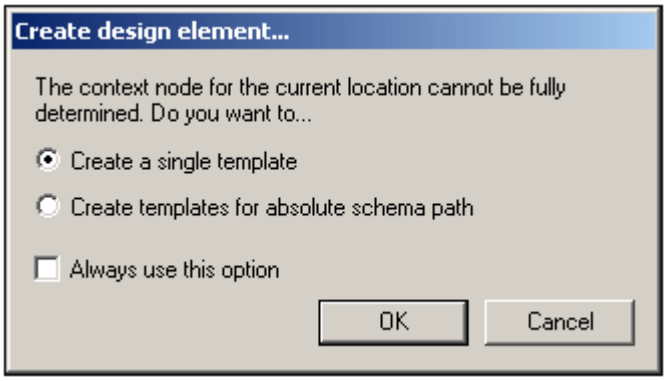
Editing a Template Match

The node selection of any node template (user-defined or normal) can be changed by using an XPath expression to select the new match expression. To edit the template match of a node

template, right-click the node template, then select the **Edit Template Match** command. This pops up the Edit XPath Expression dialog, in which you enter the XPath expression to select the new node. Then click **OK**.

Adding nodes to User-Defined Templates

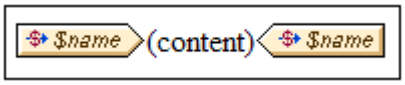
If a node from the schema tree is added to a User-Defined Template, the context for the new node will not be known if the User-Defined Template has been created for a node or sequence that cannot be placed in the context of the schema source of the SPS. You will therefore be prompted (*screenshot below*) about how the new node should be referenced: (i) by its name (essentially, a relative path), or (ii) by a full path from the root of the schema source.



Prompting for advice on how to proceed is the default behavior. This default behavior can be changed in the Design tab of the Tool | Options dialog.

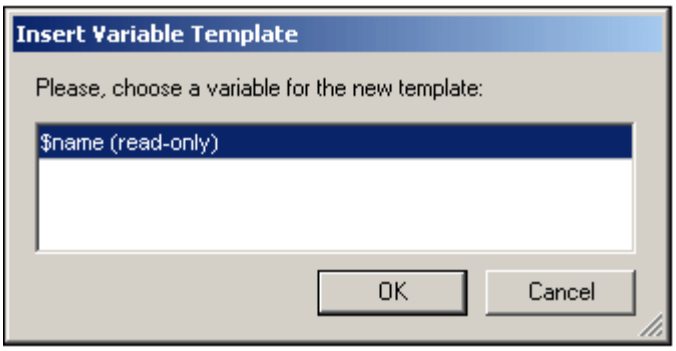
Variable Templates

A **Variable Template** is a template that targets a variable and, by default outputs its content. It is inserted with the **Insert | Variable Template** or **Enclose with | Variable** command, which inserts, at the cursor insertion point, a template for a variable defined in the SPS. The variable template (*screenshot below*) contains a `content` placeholder by default, and this serves to output the contents of the variable. You can insert additional content (static as well as dynamic) in the variable template as required, or modify it as you would any other template.



To insert a variable template, do the following:

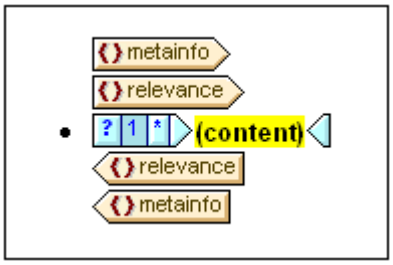
1. Place the cursor in the design at the location where the template is to be inserted.
2. Click the **Insert | Variable Template** command. This pops up the Insert Variable Template dialog (*screenshot below*).



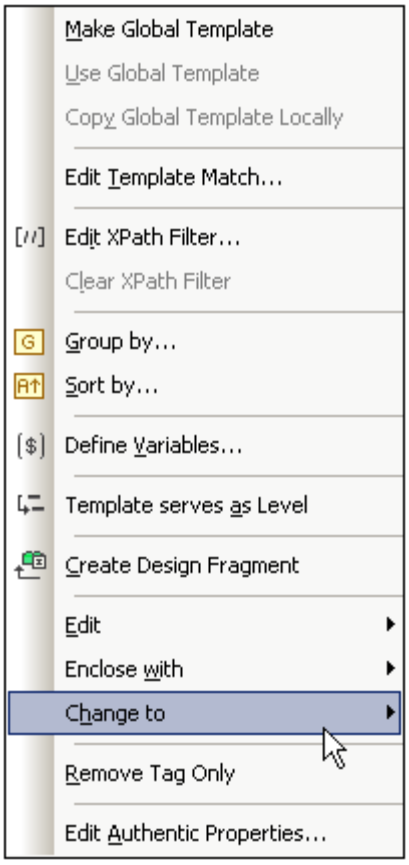
3. The dialog contains a list of all the user-declared parameters and variables defined in the SPS. Select the variable for which you wish to add a variable template.
4. Click **OK** to finish.

Node-Template Operations

A node-template is a template in the design that specifies the processing for a node. In the design, node-templates are displayed with beige start and end tags (*screenshot below*). The screenshot below contains two node-templates: `metainfo` and `relevance`.



The operations that can be carried out on a node-template are accessible via the context menu of that node-template (accessed by right-clicking either the start or end tag of a node-template, *see screenshot below*).



The commands in this context menu are described below:

- Global templates
- Template match
- XPath filters
- Group by, Sort by, Define variables, Template serves as level
- Create Design Fragment
- Remove Tag Only

- Edit, Enclose with, Change to, Authentic properties

These menu commands are described below. Note that for a given node-template, some commands might not be available; these are grayed out in the context menu.

Global templates: make, use, copy locally
A node-template in the main template can be changed to or associated with a global template via the following commands:

- *Make global template:* This option is available if the node-template represents an element that is defined as a global element in the schema. A global template will be created from the node-template. The node-template in the main template will use this global template and its tags will then be displayed in gray (indicating its use of the global template).
- *Use global template:* If a global template of the same qualified name as the node-template has been defined, the node-template will use the processing of the global template. The tags of the node-template will become gray.
- *Copy global template locally:* The processing instructions of a global template of the same qualified name as the node-template are copied physically to the node-template. The node-template is independent of the global template. Subsequently, both it and the global template can be modified independently of each other. Since the node-template does not reference a global template, it retains its beige color.

For more information, see the section Global Templates.

Editing the template match
The node for which a template has been created can be changed by using this command. The Edit Template Match command pops up the Edit XPath Expression dialog, in which you can enter an XPath expression that selects another node in the schema. You can also enter any XPath expression to change the template to a User-Defined Template.

Edit/Clear XPath Filter
An XPath filter enables you to filter the nodeset on which a node-template is applied. XPath filters can also be applied to global templates.

By default, a node-template will be applied to nodes (elements or attributes) corresponding to the node for which the node-template was created (having the same name and occurring at that point in the schema hierarchy). For example, a node-template for the `/Personnel/Office` node will select all the `/Personnel/Office` elements. If an XPath filter with the expression `1` is now created on the `Office` element (by right-clicking the `Office` element and editing its XPath Filter), this has the effect of adding a predicate expression to the `Office` element, so that the entire XPath expression would be: `/Personnel/Office[1]`. This XPath expression selects the first `Office` child of the `Personnel` element, effectively filtering out the other `Office` elements.

A filter can be added to any node-template and to multiple node-templates in the design. This enables you to have selections corresponding to such XPath expressions as: `/Personnel/Office[@country='US']/Person[Title='Manager']` to select all managers in the US offices of the company. In this example, a filter each has been created on the `Office` and on the `Person` node-templates, respectively.

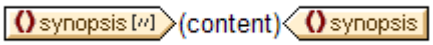
Wherever a global template is used—that is, called—an XPath filter can be applied to it. So, for

every instance of a global template that is used, an XPath filter can be applied to the global template in order to restrict the targeted nodeset.

To add an XPath Filter to a node-template, right-click the node-template and select **Edit XPath Filter**. Enter the XPath filter expression without quotes, square brackets, or delimiters of any kind. Any valid XPath expression can be entered. For example:

- `1`
- `@country='US'`
- `Title='Manager'`

After an XPath Filter has been created for a node-template, this is indicated by a filter symbol in the start tag of the node-template. In the screenshot below, the `synopsis` node-template has a filter.



Note: Each node-template supports one XPath Filter.

Group by, Sort by, Define variables, Template Serves as Level
The mechanisms behind these commands are described in detail in their respective sections:

- The **Group by** command enables instances of the node represented by the selected node-template to be grouped. The grouping mechanism is described in the section, Grouping.
- The **Sort by** command enables instances of the node represented by the selected node-template to be sorted. The sorting mechanism is described in the section, Sorting.
- The **Define Variables** command enables you to define variables that are on scope on the selected node-template. How to work with variables is described in the section, Variables.
- The **Template Serves as Level** command is a toggle command that creates/removes a level on the node-template. Levels can be specified at various levels in order to structure the document into a hierarchy. This structure can then be used to generate a table of contents (TOC), automatic numbering, and text references. These features are described in detail in the section, Table of Contents (TOC) and Referencing.

Create Design Fragment
Creates a Design Fragment template from the selected template. The resulting Design Fragment template is added to the Design Fragment templates at the bottom of the design, and added to the Design Tree and Schema Tree. The Design Fragment is also applied at that point in the design where it was created.

Remove (Template or Formatting) Tag Only
This command removes the selected template or formatting tag only. It does not remove any descendant nodes or formatting tags. This command is useful for removing a formatting tag or a parent element tag without removing all that is contained within the tag (which is what would happen if the **Delete** operation is carried out with a tag selected). Note, however, that removing a parent element might render descendant nodes of the deleted element invalid. In such cases, the invalid nodes are indicated with a red strike-through.

Edit, Enclose with, Change to, Edit Authentic Properties
These commands are described below:

- *Edit:* Pops out a submenu with the familiar Windows commands: cut, copy, paste, and delete.
- *Enclose with:* The node-template can be enclosed within the following design components, each of which is described in a separate section of this documentation: paragraph, special paragraph, Bullets and Numbering, Hyperlink, Condition, TOC Bookmark and Level.
- *Change to:* The Change-To feature enables you to change: (i) the node for which that template applies, or (ii) how the node is created in the design. It is described in detail in the section, The Change-To Feature.
- *Edit Authentic Properties:* The instantiated node in Authentic View can be assigned certain properties, which can be edited in the Properties sidebar that appears on selecting this command. Authentic Properties are described in detail in the section, Authentic Node Properties.

Design Fragments

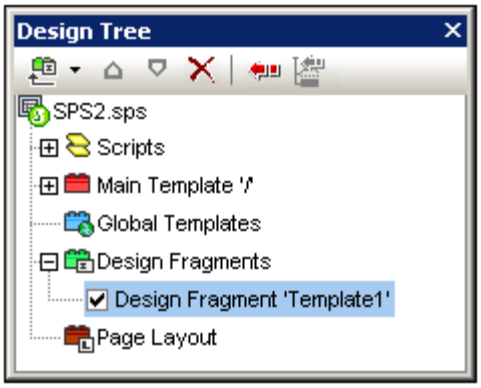
Design Fragments are useful for creating parts that can be re-used at different locations in the document, similar to the way functions are re-used.The usage mechanism is as follows:

1. Create the Design Fragment in the design
2. Fill out the contents of the Design Fragment
3. Insert the Design Fragment at a location in a template.

Creating a Design Fragment

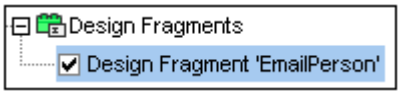
To create a Design Fragment do the following:

1. In the Design Tree, click the Add Design Fragment toolbar icon  . This adds a Design Fragment item in the Design Fragments list of the design tree (*screenshot below*). ***Also see note below.***



Notice that a Design Fragment template is also created in the SPS design. This template is appended to the templates already in the design. (If you wish to see only the Design Fragments that are in the design, hide the main template and global templates by clicking their Show/Hide icons in StyleVision's Template Filter toolbar.) Additionally, the Design Fragment templates are also listed in the schema tree for ready access from there.

2. Double-click the Design Fragment item (either in the design tree or the schema tree) so as to edit its name. Name the Design Fragment as required and press **Enter**. The edited name is entered in the Design Tree (*screenshot below*) and in the template in the design.

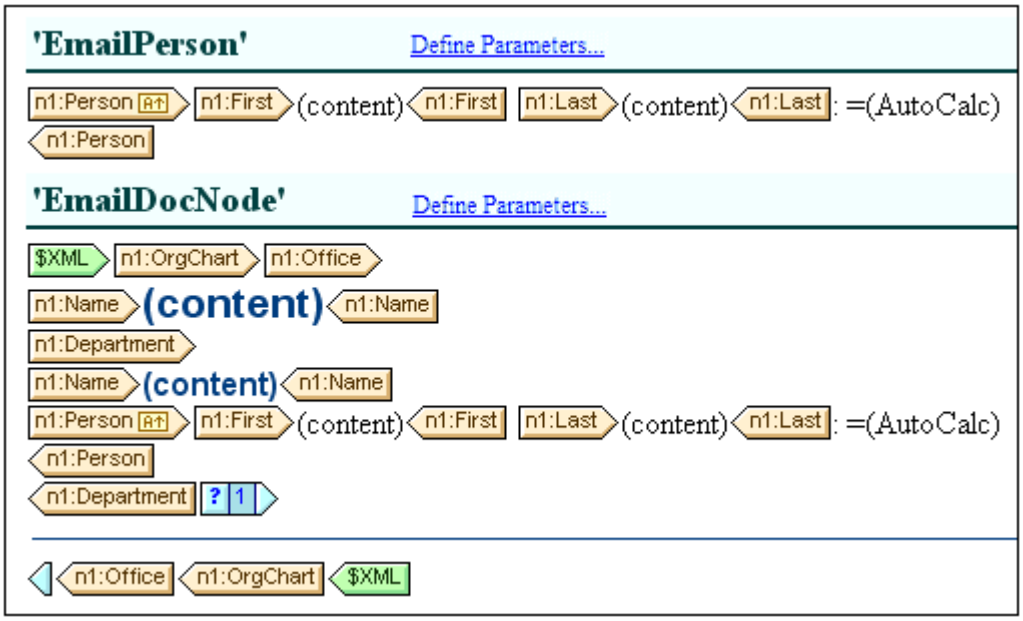


3. In the design, create the contents of the Design Fragment template. How to do this is described in the next section.

Note: If you wish to create a Design Fragment from an already existing template, right-click that template and select the command **Create Design Fragment** from the context menu that pops up. This creates a Design Fragment template from the selected template at that point in the design. The Design Fragment template is also appended to the existing Design Fragment templates at the bottom of the design and added to the Design Tree and Schema Tree. Creating a Design Fragment in this way also applies it directly at the point where it was created, there is no need to insert it from the Design Tree or Schema Tree.

Creating the contents of a Design Fragment
The contents of the Design Fragment template are created as for any other template. To insert static content, place the cursor in the Design Fragment template and insert the required static content. To insert dynamic content, drag the required schema node into the Design Fragment template.

When dragging a node from the schema source you can drag the node either: (i) from the Global Elements tree, or (ii) from the Root Elements tree. The difference is significant. If a node is dragged from the Global Elements tree, it is created without its ancestor elements (in the screenshot below, see the `EmailPerson` Design Fragment) and, therefore, when used in a template, it will have to be used within the context of its parent. On the other hand, if a node is dragged from the Root Elements tree, it is created within a structure starting from the document node (in the screenshot below, see the `EmailDocNode` Design Fragment), and can therefore be used anywhere in a template.



The screenshot above shows two Design Fragment templates that produce identical output for the `Person` element. In the `EmailPerson` Design Fragment template, the `Person` node has been created by dragging the global element `Person` into the `EmailPerson` template. In the `EmailDocNode` Design Fragment template, the `Person` node has been dragged from the Root Elements tree, and is created with an absolute path (from `$XML`, the document node).

When these Design Fragment templates are inserted in the main template, care must be taken that the `EmailPerson` template is called from within a context that is the parent of the `Person` node. You can experiment with these Design Fragments. They are in the example file `Email.sps`, which is in the folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\DesignFragments`.

You can also define a parameter with a default value on the Design Fragment. The parameter can be assigned a different value in every Design Fragment instance. See Parameters for Design Fragments for details.

After you have completed the design, notice that the components of the design are also graphically depicted in the Design Tree.

Inserting a Design Fragment in a template
To insert a Design Fragment, drag the Design Fragment from the Design Tree or Schema Tree to the required location. The location at which the Design Fragment is dropped should be such that it provides a correct context. If the contents of the Design Fragment were created from a global element, then the correct context in the main template would be the parent of the node dragged into the Design Fragment. See Creating the contents of a Design Fragment above.

Alternatively, right-click at the location where the Design Fragment is to be inserted and select **Insert Design Fragment** from the context menu.

Note: If a Design Fragment is referenced in the main template and if the name of the Design Fragment is changed subsequently, then the reference in the main template will no longer be correct and an XSLT error will result. In order to correct this, delete the original reference in the main template and create a fresh reference to the newly named Design Fragment.

Deleting a Design Fragment
To delete a Design Fragment, select it in the Design Tree and click the **Remove** toolbar icon of the Design Tree  .

Design Fragments in modular SPSs
When an SPS module is added to another SPS module, the Design Fragments in the added module are available for use within the referring SPS. For more information about using modular SPSs, see the section Modular SPSs.

Example file
For an example SPS, go to the folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\DesignFragments`.

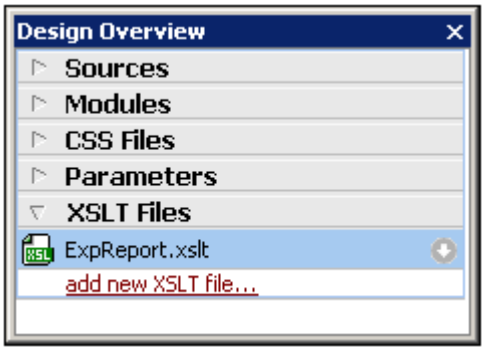
9.4 XSLT Templates

XSLT files can be imported into an SPS, and XSLT templates in them will be available to the stylesheet as global templates. If, during the processing of the XML document, one of the XML nodes is match to an imported XSLT template, then the imported XSLT template is applied to that node. If the imported XSLT file contains named templates, these are available for placement in the design.

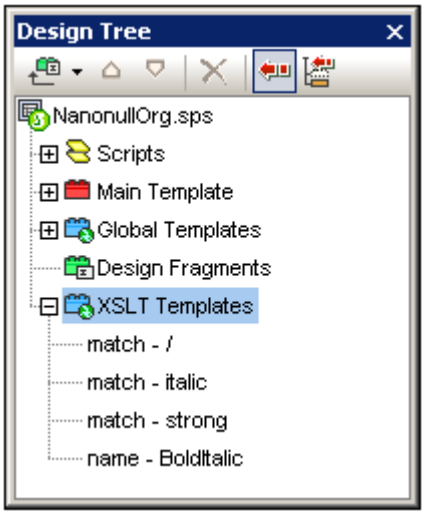
Note: Imported XSLT templates cannot be modified in StyleVision.

Importing the XSLT file
To import an XSLT File, do the following:

1. In the Design Overview sidebar (*screenshot below*), click the **Add New XSLT File** link, and then the **Add XSLT File** command.



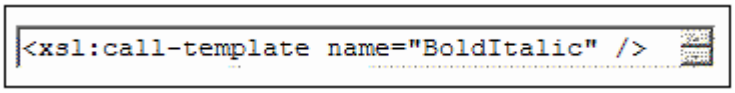
2. In the Open dialog that appears, browse for the required XSLT file, select it, and click **Open**. The XSLT file is imported. An `xsl:import` statement is added to the XSLT stylesheet, and, in the Design Tree sidebar (*screenshot below*), the XSLT Templates contained in the imported XSLT file are displayed under the XSLT Templates heading.



There are two types of imported XSLT templates: (i) match templates (indicated by *Match*), and (ii) named templates (indicated by *Name*). In the Design Tree, these two types are listed with (i) the value of the `select` attribute of match templates, and (ii) by the value of the `name` attribute of named templates, respectively.

Match templates
Match templates will be used when a template, in the course of processing, applies templates to a node in the XML document instance, and the match template is selected to be applied. This will happen when the qualified name of the XML node matches the qualified name of the imported match template. If a global template has been created in the SPS that has the same qualified name, then it has precedence over an imported template and will be used. If there are several imported XSLT files, the file imported first (and listed first in the XSLT code) has the lowest precedence, followed by the second lowest precedence for the file imported second, and so on.

Named templates
A named template can be dragged from the Design Tree to any location in the design. At this location, it will be created as an `xsl:call-template` element (*screenshot below*) that calls the named template.



The effect of this in the output is to implement the named template at that location in the design. This can be useful for inserting content that is independent of both the XML instance document as well as of the XSLT stylesheet.

Chapter 10

SPS File: Advanced Features

10 SPS File: Advanced Features

How to create the basic content and structure of the SPS design is described in the sections, SPS File Content and SPS File Structure. Very often, however, you will also need to modify or manipulate the content and/or structure of source data in particular ways. For example, you might wish to sort a group of nodes, say nodes containing personnel information, on a particular criterion, say the alphabetical order of employee last names. Or you might wish to group all customers in a database by city. Or add up a product's sales turnover in a particular city. Such functionality is provided in StyleVision's advanced features, and these are described in this section.

Given below is a list of StyleVision's SPS file advanced features:

- Auto-Calculations. Auto-Calculations are a powerful XPath-based mechanism to manipulate data and (i) present the manipulated data in the output as well as (ii) update nodes in the XML document with the result of the Auto-Calculation.
- Conditions. Processing of templates and the content of templates can be conditional upon data structures or values in the XML, or upon the result of an XPath expression
- Grouping. Processing can be defined for a group of elements that are selected with an XPath expression.
- Sorting. A set of XML elements can be sorted on multiple sort-keys. .
- Parameters and Variables. Parameters are declared at the global SPS level with a default value. These values can then be overridden at runtime by values passed to the stylesheet from the command line. Variables can be defined in the SPS and these variables can be referenced for use in the SPS.
- Table of Contents (TOC) and Referencing. Tables of Contents (TOCs) can be constructed at various locations in the document output, for all output formats. The TOC mechanism works by first selecting the items to be referenced in the TOC and then referencing these marked items in the TOC. Other features which use referencing are: (i) Auto-Numbering (repeating nodes in the document can be numbered automatically and the numbers formatted; (ii) Text References (text in the document can be marked for referencing and then referenced from elsewhere in the document); and (iii) Bookmarks and Hyperlinks (bookmarks mark key points in the output document, which can then be targeted by hyperlinks. Hyperlinks can also link to external resources using a variety of methods to determine the target URI (static, dynamic, a combination of both, and unparsed entity URIs).) All these referencing mechanisms are described in this section.

10.1 Auto-Calculations

The **Auto-Calculation** feature (i) displays the result of an XPath evaluation at any desired location in the output document, and (ii) optionally updates a node in the main XML document (the XML document being edited in Authentic View) with the result of the XPath evaluation.

The Auto-Calculation feature is a useful mechanism for:

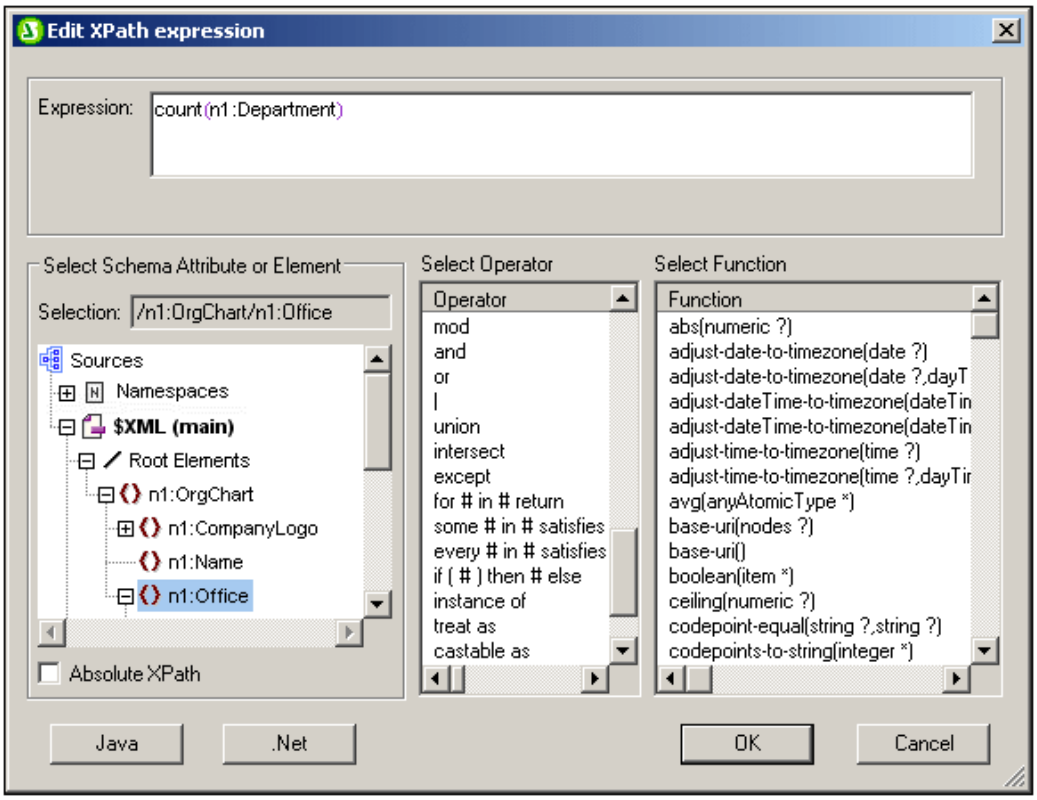
- Inserting calculations involving operations on dynamic data values. For example, you can count the number of `Employee` elements in an `Office` element (with `count( Employee)`), or sum the values of all `Price` elements in each `Invoice` element (with `sum( Price)`), or join the `FirstName` and `LastName` elements of a `Person` element (with `concat( FirstName, ' ', LastName)`). In this way you can generate new data from dynamically changing data in the XML document, and send the generated data to the output.
- Displaying information derived from the structure of the document. For example, you can use the `position()` function of XPath to dynamically insert row numbers in a dynamic table, or to dynamically number the sections of a document. This has the advantage of automatically generating information based on dynamically changing document structures.
- Inserting data from external XML documents. The `doc()` function of XPath 2.0 provides access to the document root of external XML documents, and thus enables node content from the external XML document to be inserted in the output.
- Updating the value of nodes in the main XML document. For example, the node `Addressee` could be updated with an XPath expression like `concat( Title, ' ', FirstName, ' ', LastName)`.
- Presenting the contents of a node at any location in the design.

Editing and Moving Auto-Calculations

Creating Auto-Calculations

To create an Auto-Calculation, do the following:

1. Place the cursor as an **insertion point** at the location where the Auto-Calculation result is to be displayed and click **Insert | Auto-Calculation**. In the submenu that appears, select Value if the result is to appear as plain text, select Input Field if it is to appear within an input field (i.e. a text box), or select Multiline Input Field if it is to appear in a multiline text box. (Note that the output of the Auto-Calculation is displayed as a value, or in an Input Field. It is an output in Authentic View, and cannot be edited there.) The Edit XPath Expression dialog pops up (*screenshot below*).



2. In the Expression pane, enter the XPath expression for the Auto-Calculation via the keyboard. Alternatively, enter the expression by double-clicking nodes, operators, and/or functions in the sidebar panes of the dialog. It is important to be aware of the context node at the insertion point; the context node is highlighted in the schema sources tree when the dialog pops up. (If you have selected XSLT 1.0 as the version of the XSLT language for your SPS, then you must use XPath 1.0 expressions; if you have selected XSLT 2.0, then you must use XPath 2.0 expressions.)
3. Optionally, if you wish to copy the value of the Auto-Calculation to a node in the XML document, you can select that node via an XPath expression. How to update nodes with the result of the Auto-Calculation is described in the section, Updating Nodes with Auto-Calculations.

Click the **OK** button finish. In the Design tab, the Auto-Calculation symbol is displayed. To see the result of the Auto-Calculation, change to Authentic View or an Output View.

Java and .NET functions

Java and .NET functions can be used in the XPath expressions of Auto-Calculations. Here are

examples of XPath expressions containing Java and .NET functions:

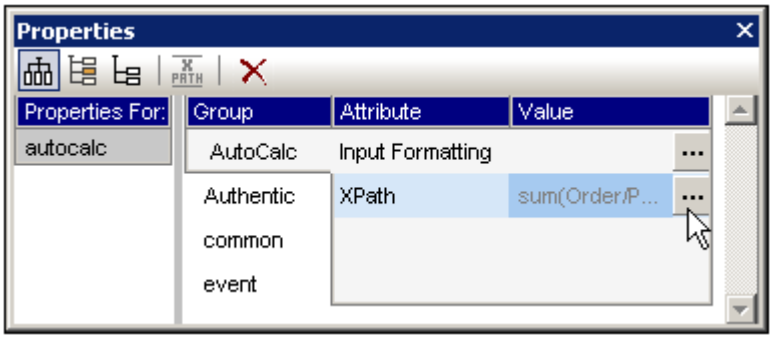
- ***Java:*** `java:java.util.Date.toString(java:java.util.Date.new())`
- ***.NET:*** `clitype:System.Math.PI()`

For more information about extensions, see Appendices | XSLT Engine Information | Extensions.

Note: Java and .NET functions in Auto-Calculations are supported only in the Enterprise editions of Authentic Desktop and Authentic Browser.

Editing Auto-Calculations

To edit the XPath expression of the Auto-Calculation, select the Auto-Calculation and, in the Properties sidebar, click the **Edit** button of the `XPath` property in the *AutoCalc* group of properties (*screenshot below*). This pops up the Edit XPath Expression dialog (*screenshot above*), in which you can edit the XPath expression.



Formatting Auto-Calculations

You can apply predefined formats and CSS styles to Auto-Calculations just as you would to normal text: select the Auto-Calculation and apply the formatting. Additionally, input formatting of an Auto-Calculation that is a numeric or date datatype can be specified via the Input Formatting property in the AutoCalc group of properties in the Properties window.

Note also that you can include carriage returns and/or linefeeds (CR/LFs) in the XPath expression. If the Auto-Calculation is enclosed in the `pre` special paragraph type, the output of a CR/LF will produce a new line in the output (except in the RTF output). An example of such an XPath expression is:

```
translate('a;b;c', ';', codepoints-to-string(13))
```

Moving Auto-Calculations

You can move an Auto-Calculation to another location by clicking the Auto-Calculation (to select it) and dragging it to the new location. You can also use cut/copy-and-paste to move/copy an Auto-Calculation. Note, however, that the XPath expression will need to be changed if the context node in the new location is not the same as that in the previous location.

Summary of important points

Note the following points:

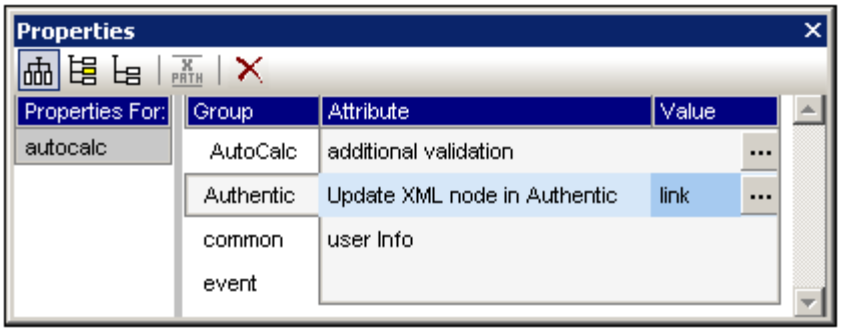
- An Auto-Calculation can be inserted anywhere in the Design Document.
- The point at which you insert the Auto-Calculation determines the context node for the XPath evaluation.

- In Authentic View, an Auto-Calculation is re-evaluated each time any value relevant to the calculation (that is, any node included in the XPath expression) changes.
- An Auto-Calculation result is non-editable in Authentic View or any other output view.
- Any node in the XML document can be updated with the result of the Auto-Calculation.

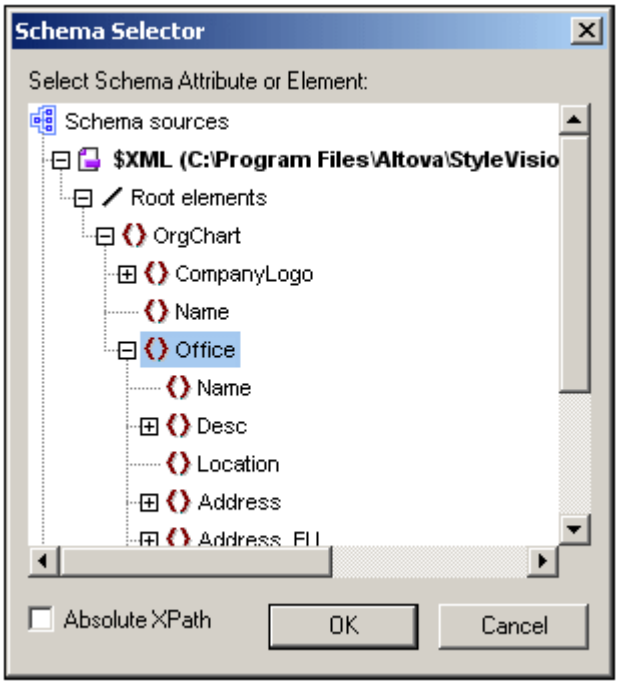
Updating Nodes with Auto-Calculations

You can copy the value (or result) of an Auto-Calculation to a node in the main XML document (the document being edited in Authentic View). You do this as follows:

1. Create the Auto-Calculation as described in Editing and Moving Auto-Calculations.
2. Select the Auto-Calculation and, in the Properties sidebar, click the **Edit** button of the `Update XML node in Authentic` property in the *Authentic* group of properties (*screenshot below*).



3. In the Schema Selector dialog that pops up (*screenshot below*), select the node to update and click **OK** to finish.



The node to update is now specified.

The XPath expression must select **a single node**. If the XPath expression selects multiple nodes, no node will be updated.

IMPORTANT!
Only nodes in the XML file of the main schema source will be updated. Nodes in the XML files of additional schemas will not be updated. For a node in the main XML document to be updated two conditions must be fulfilled:

1. The XPath expression for the Auto-Calculation must include at least one value that is related to an XML node, i.e. a dynamic value. For example, `Price*1.2`. This expression involves the element `Price`, and is therefore dynamic. If the XPath expression contains a static value (for example, `string("Nanonull, Inc.")`), then the Update XML Node feature will not work.
2. Any one of the nodes used in the XPath expression must be modified in Authentic View. So, if the XPath expression is `Price*1.2`, and the Auto-Calculation is set to update the `VATPrice` node, then the `Price` element must be modified in Authentic View in order for the `VATPrice` node to be updated.

Changing the node to update and cancelling the update
To change the node to update, click the **Edit** button of the `Update XML Node` property in the *Authentic* group of properties of the Auto-Calculation (in the Properties window) and then select the required node from the Schema Selector dialog box that pops up. To delete the `Update XML Node` property, click the Remove button in the toolbar of the Properties window.

Should you use the Auto-Calculation or the updated node contents for display?
If there are no conditional templates involved, you can use either the Auto-Calculation or the contents of the updated node for display. It is immaterial which one you choose because the node update happens immediately after the Auto-Calculation is evaluated and there is no factor to complicate the update. You should, however, be aware that there is a different source for the content displayed in each of the two cases.

Hiding the Auto-Calculation
You may find yourself in the situation where you wish to use an Auto-Calculation to make a calculation in order to update a node with the value of the Auto-Calculation. In this case, one of the following scenarios arise:

- You wish to display the result just once. You cannot hide the Auto-Calculation since it would then not be evaluated. If there is no conditional template involved, it is best to display the Auto-Calculation and not display the contents of the updated node.
- You wish not to display the result, merely to update the node. The best way to handle this scenario is to apply text formatting to the Auto-Calculation, so that it is invisible on the output medium (for example, by applying a white color to an Auto-Calculation on a white background).

Auto-Calculations Based on Updated Nodes

If you wish to create an Auto-Calculation (second Auto-Calculation) that uses a node updated by another Auto-Calculation (first Auto-Calculation), there are two possible situations:

- The two Auto-Calculations are in the same template.
- The two Auto-Calculations are in different templates.

Auto-Calculations in the same template

When two Auto-Calculations are in the same template, the SPS applies the following procedure:

1. A node used in the XPath expression of the first Auto-Calculation is modified.
2. All node values in the XML document are read and all Auto-Calculations are executed.
3. Assuming that the first Auto-Calculation is executed correctly, it updates the specified XML node (call it `Node-A`). The second Auto-Calculation, which is based on `Node-A`, will be executed but will use the value of `Node-A` before `Node-A` was updated. This is because the value of `Node-A` was read before it was updated, and has not been read since then.
4. If the document is now edited in any way or if document views are changed (from and to Authentic View), then the values of nodes are read afresh and Auto-Calculations are executed.
5. The second Auto-Calculation is now carried out. (If this Auto-Calculation is intended to update a node, then, as is usual for node updates, a node used in the XPath expression will have to be changed before the update takes place.)

The time lag between the updating of `Node-A` and the evaluation of the second Auto-Calculation with the updated value of `Node-A` could be confusing for the Authentic View user. To ensure that this situation does not occur, it is best that the XPath expression of the second Auto-Calculation contain the XPath expression of the first Auto-Calculation—not the updated node itself. As a result, the second Auto-Calculation will execute with the input to the first Auto-Calculation and perform that Auto-calculation as part of its own Auto-Calculation. This enables it to be evaluated independently of the contents of `Node-A`.

Example

The first Auto-Calculation calculates the VAT amount of a product using the nodes for (i) the net price, and (ii) the VAT rate; it updates the VAT-amount node. The second Auto-Calculation calculates the gross price, which is the sum of net price and VAT amount; it updates the gross price node.

- The Auto-Calculation to calculate the VAT amount is: `NetPrice * VATRate div 100`. When the VAT rate of the product is entered, the Auto-Calculation is executed and updates the `VATAmount` node.
- If the Auto-Calculation to calculate the gross price is: `NetPrice + VATAmount`, then the Auto-Calculation will execute with the value of `VATAmount` that was read in before `VATAmount` was updated.
- If, however, the Auto-Calculation to calculate the gross price is: `NetPrice + ( NetPrice * VATRate div 100)`, then the Auto-Calculation will execute with the value of `VATRate` and will update the `GrossPrice` node. The updated `VatAmount` node has been left out of the second Auto-Calculation.

For a detailed example, see Example: An Invoice.

Auto-Calculations in different templates

When two Auto-Calculations are in different templates, a node updated by the first Auto-Calculation can be used by the second Auto-Calculation. This is because Auto-Calculations are

calculated and nodes updated for each template separately. For an example of how this would work, see Example: An Invoice.

Example: An Invoice

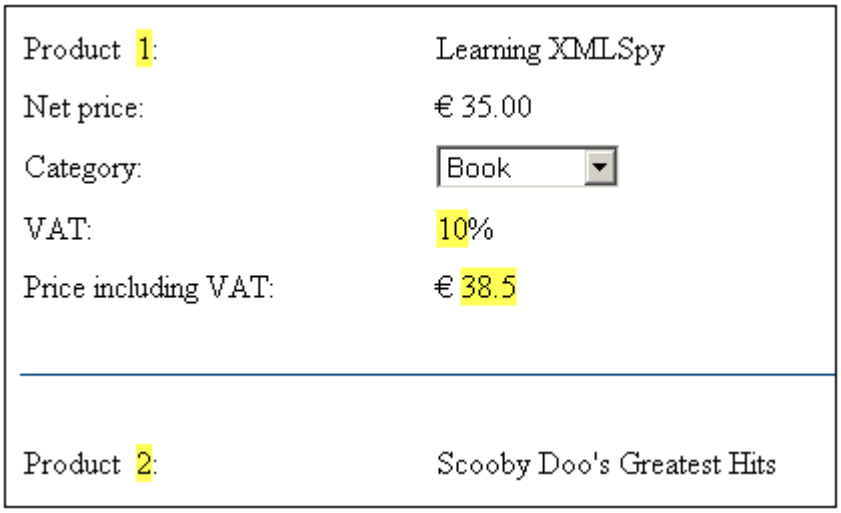
The `Invoice.sps` example in the folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Auto-Calculations\` demonstrates how Auto-Calculations can be used for the following purposes:

- Counting nodes
- Selecting a node based on input from the Authentic View user
- Updating the content of a node with the result of an Auto-Calculation
- Using the result of one Auto-Calculation in another Auto-Calculation

In the example file, the Auto-Calculations have been highlighted with a yellow background color (*see screenshot below*).

Counting nodes

In the Invoice example, each product in the list is numbered according to its position in the list of products that a customer has ordered (`Product 1`, `Product 2`, etc). This numbering is achieved with an Auto-Calculation (*screenshot below*).



In this particular case, the XPath expression `position()` would suffice to obtain the correct numbering. Another useful way to obtain the position of a node is to count the number of preceding siblings and add one. The XPath expression would be: `count(preceding-sibling::Product)+1`. The latter approach could prove useful in contexts where using the `position()` function is difficult to use or cannot be used. You can test this Auto-Calculation in the example file by deleting products, and/or adding and deleting new products.

Selecting a node based on user input

In the Invoice example, the user selects the category of product (`Book`, `CD`, `DVD`, or `Electronics`) via a combo box. This selection is entered in the `//Product/Category` node in the XML document. An Auto-Calculation then uses this value to reference a "lookup table" in the XML document and identify the node holding the VAT percentage for this product category. The XPath expression of this Auto-Calculation is:

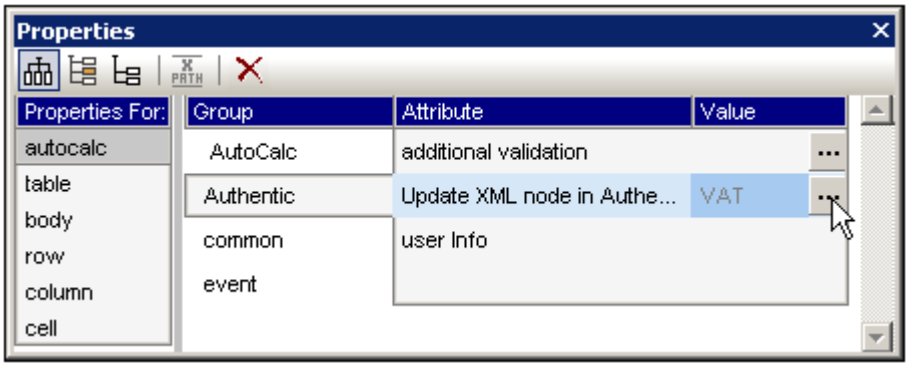
```
for $i in Category return /Invoice/Categories/Category[. = $i]/@rate.
```

The VAT percentage is displayed at the Auto-Calculation location in the output. In the Invoices example, the lookup table is stored in the same XML document as the invoice data. However, such a table can also be stored in a separate document, in which case it would be accessed using the `doc()` function of XPath 2.0. To test this Auto-Calculation, change the product type

selection in any product's Category combo box; the VAT value will change accordingly (`Book=10%; CD=15%; DVD=15%; Electronics=20%`).

Updating content of a node with the result of an Auto-Calculation

The VAT percentage obtained by the Auto-Calculation from the lookup is dynamic and stored temporarily in memory (for use in Authentic View). The result of the Auto-Calculation can, however, be stored in the `VAT` node in the XML document. This has two advantages: (i) the content of the `VAT` node does not have to be entered by the user; it is entered automatically by the Auto-Calculation; (ii) each time the lookup table is modified, the changes will be reflected in the VAT node when `Invoice.xml` is opened in Authentic. To cause an Auto-Calculation to update a node, select the Auto-Calculation in Design View, and in the Properties window (*screenshot below*), click the *Authentic* | *Update XML Node* button. In the dialog that pops up, select the `VAT` node, and then click **OK**.



In Authentic View, when the user selects a different product category in the combo box, the Auto-Calculation obtains the VAT percentage by referencing the lookup table, displays the VAT percentage, and updates the `VAT` node.

Using an Auto-Calculation-updated node in another Auto-Calculation

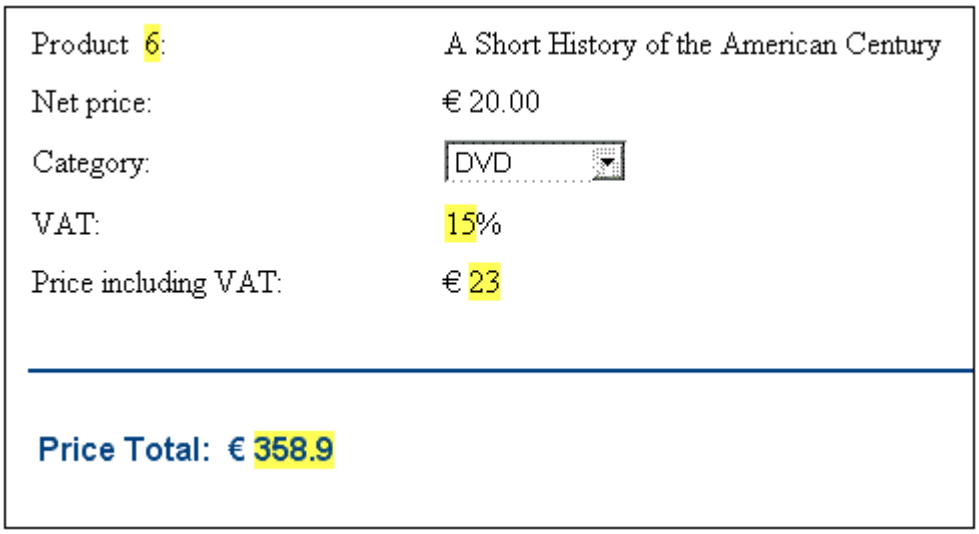
The VAT percentage, obtained by the Auto-Calculation described above, is required to calculate the gross price (net price + VAT amount) of each product. The formula to use would be derived as follows:

```
Gross Price = Net Price + VAT-amount
Since VAT-amount = Net Price * VAT-percentage div 100
Gross Price = Net Price + (Net Price * VAT-percentage div 100)
```

The net price of a product is obtained from the `PriceNet` node. The VAT percentage is calculated by an Auto-Calculation as described above, and this Auto-Calculation updates the `VAT` node. The content of the `VAT` node can now be used in an Auto-Calculation to generate the gross price. The XPath expression to do this would be:

```
PriceNet  + (PriceNet * (VAT div 100))
```

The XPath expression can be viewed and edited in the Properties window. You can test the Auto-Calculation for the gross price by changing either the price or product category of any product. Notice that the gross price (price including VAT) of the product also changes.



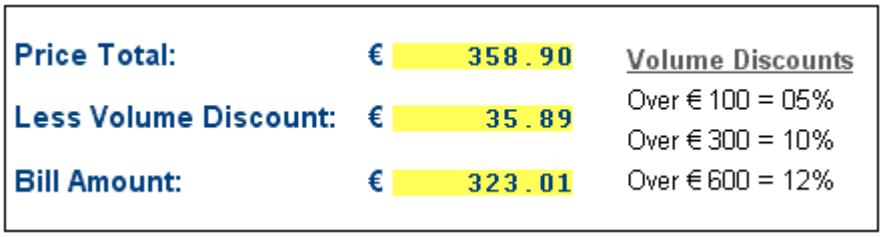
In the Invoice SPS, the gross price Auto-Calculation updates the `PriceGross` node in the XML document.

The updated `PriceGross` nodes can now be used in an Auto-Calculation that sums up the prices of all purchased products. The XPath expression would be: `sum( Order/Product/PriceGross)` . In the Invoice SPS, this Auto-Calculation updates the `PriceTotal` node. You can test this Auto-Calculation by modifying the prices of individual products and seeing the effect on the price total.

An Auto-Calculation Exercise
Now add two Auto-Calculation components to the SPS yourself.

1. Create an Auto-Calculation that calculates a volume discount for the entire invoice. If the order amount (price total) exceeds Euro 100, Euro 300, or Euro 600, discounts of 5%, 10%, and 12% apply, respectively. Display the discount amount (*see screenshot below*) and update the `DiscountAmount` node in the XML document.
2. Create an Auto-Calculation that calculates the discounted bill amount. This amount would be the price total less the discount amount (as calculated in the previous Auto-Calculation). Display the bill amount (*see screenshot below*) and update the `BillAmount` node in the XML document.

Set up these components so that the Authentic View output is as shown in the screenshot below.



You can see these two additional Auto-Calculations in the file `InvoiceWithDiscounts.sps`, which is in the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Auto-Calculations` folder.

10.2 Conditions

You can insert conditions anywhere in the design, in both the main template and global templates. A condition is an SPS component that is made up of one or more branches, with each branch being defined by an XPath expression. For example, consider a condition composed of two branches. The XPath expression of the first branch tests whether the value of the `Location` attribute of the context node is "`US`". The XPath expression of the second branch tests whether the value of the `Location` attribute is "`EU`". Each branch contains a template—a condition template. When a node is processed with a condition, the first branch with a test that evaluates to true is executed, that is, its condition template is processed, and the condition is exited; no further branches of that condition are evaluated. In this way, you can use different templates depending on the value of a node. In the example just cited, different templates could be used for US and EU locations.

This section consists of the following topics:

- Setting Up the Conditions, which describes how to create a condition and its branches.
- Editing Conditions, about how to edit the XPath expressions of condition branches after they have been created.
- Conditions for Specific Outputs, which shows how conditions are used to produce different output for different output formats.
- Conditions and Auto-Calculations, explains usage issues when conditions and Auto-Calculations are used in combination.

Setting Up the Conditions

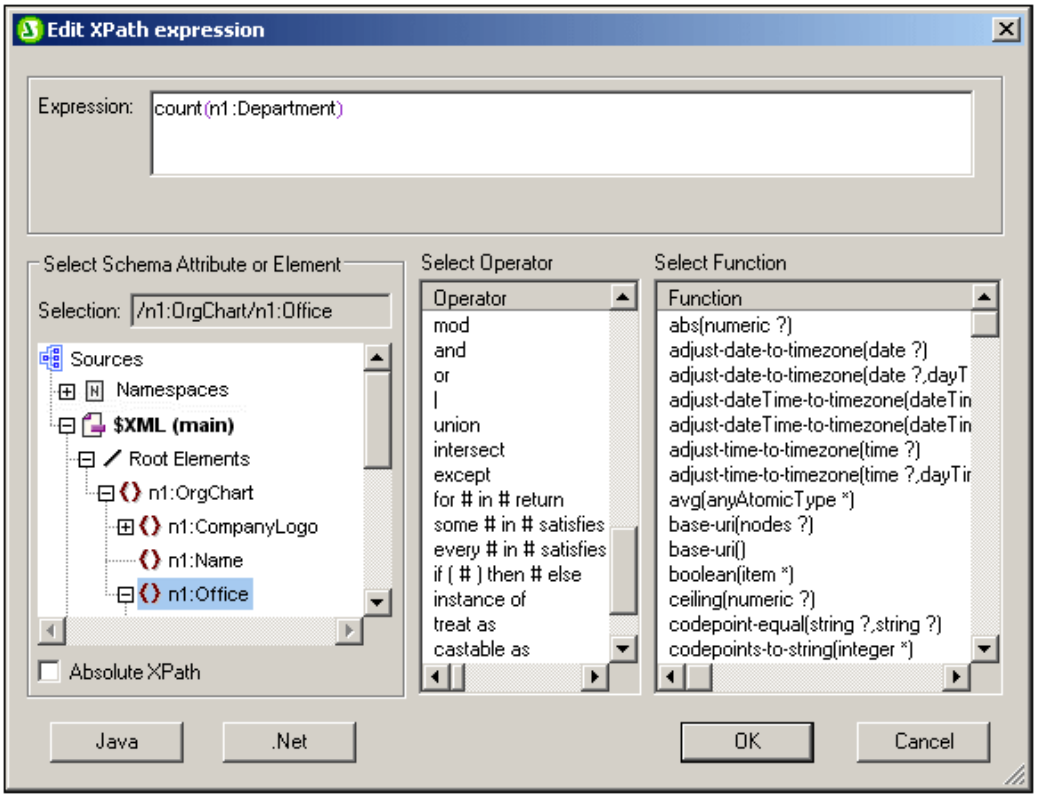
Setting up the condition consists of the following steps:

1. Create the condition with its first branch.
2. Create additional branches for alternative processing.
3. Create and edit the templates within the various branches of the condition.

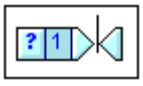
Creating the condition with its first branch

Set up a condition as follows:

1. Place the cursor anywhere in the design or select a component and then select the menu command **Insert | Condition**.The Edit XPath Expression dialog pops up (*screenshot below*).



2. In the Expression pane, enter the XPath expression for the condition branch via the keyboard. Alternatively, enter the expression by double-clicking nodes, operators, and/or functions in the sidebar panes of the dialog. It is important to be aware of the context node at the insertion point; the context node is highlighted in the schema sources tree when the dialog pops up.
3. Click **OK** to finish. The condition is created with its first branch; the XPath expression you entered is the XPath expression of the first branch. If the condition was inserted at a text insertion point, the first branch is empty (there is no template within it; *see screenshot below*). If the condition was inserted with a component selected, the condition is created around the component, and that component becomes the template of the first branch.

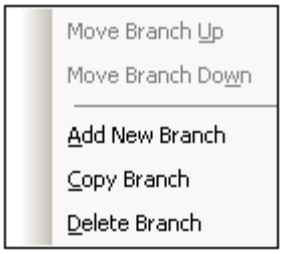


To select the entire condition, click the cell with the question mark. To select the first

branch, click the cell with the number one.

After creating a condition with one branch (which may or may not have a template within it), you can create as many additional branches as required.

Creating additional branches
Additional branches are created one at a time. An additional branch is created via the context menu (*screenshot below*) and can be created in two ways: (i) without any template within it (**Add New Branch**); and (ii) with a copy of an existing template within the new branch (**Copy Branch**).

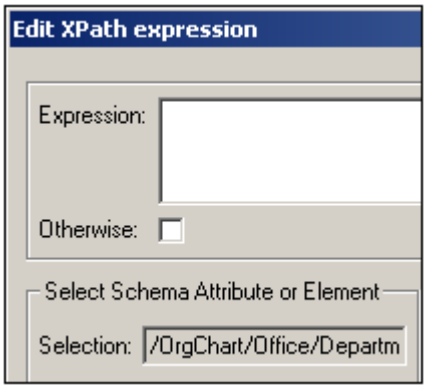


To create a new branch, right-click any branch of the condition and select **Add New Branch** from the context menu. The Edit XPath Expression dialog will pop up. After entering an XPath expression and clicking **OK**, a new empty branch is added to the condition. This is indicated in the design by a new cell being added to the condition; the new cell has a number incremented by one over the last branch prior to the addition.

To create a copy of an existing branch, right-click the branch of the condition you wish to copy and select **Copy Branch**. The Edit XPath Expression dialog will pop up, containing the XPath expression of the branch being copied. After modifying the XPath expression and clicking **OK**, a new branch is added to the condition. The new branch contains a copy of the template of the branch that was copied. The new branch is indicated in the design by a new cell with a number incremented by one over the last branch prior to the addition.

The Otherwise branch
The `Otherwise` branch is an alternative catch-all to specify a certain type of processing (template) in the event that none of the defined branches evaluate to true. Without the `Otherwise` branch, you would either have to create branches for all possible eventualities or be prepared for the possibility that the condition will be exited without any branch being executed.

To insert an `otherwise` branch, use either the **Add New Branch** or **Copy Branch** commands as described above, and in the Edit XPath dialog click the Otherwise check box (*screenshot below*).



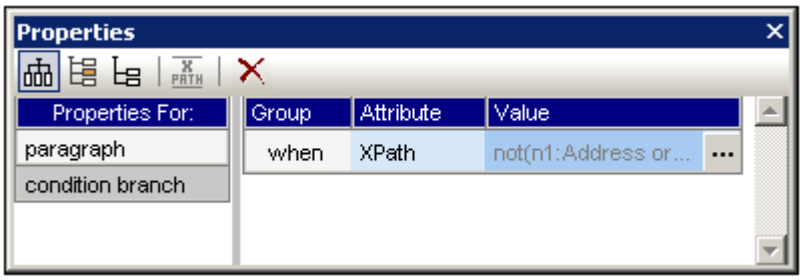
Moving branches up and down
The order of the branches in the condition is important, because the first branch to evaluate to true is executed and the condition is then exited. To move branches up and down relative to each other, select the branch to be moved, then right-click and select **Move Branch Up** or **Move Branch Down**.

Deleting a branch
To delete a branch, select the branch to be deleted, then right-click and select **Delete Branch**.

Editing Conditions

To edit the XPath expression of a condition branch, do the following:

1. Select the condition branch (not the condition).
2. In the Properties sidebar, select `condition branch` in the Properties For column (*screenshot below*).



3. Click the **Edit** button ... of the `XPath` property in the *When* group of properties. This pops up the Edit XPath Expression dialog, in which you can edit the XPath expression for that branch of the condition.

Output-Based Conditions

Individual components in the document design can be processed differently for StyleVision's different output formats (Authentic View, RTF, PDF, Word 2007+ and HTML). For example, consider the case where you wish to create a link, which, in Authentic View should point to a file on a local system, but in the HTML output should point to a Web page. In this case, you can create one condition to process content for Authentic View output and a second condition to process content for HTML output. Or consider the case where you want some text to be included in the Authentic View output but not in the HTML output. A condition could be created with a branch for processing Authentic View output, and no branch for HTML output.

Note: Conditions for specific output can be placed around individual parts or components of the document, thus providing considerable flexibility in the way the different output documents are structured.

Creating conditions for specific output

To create conditions for specific output, do the following:

1. In Design View, select the component (or highlight the document part) which you wish to create differently for different output formats.
2. Right-click, and, from the context menu that pops up, select **Enclose with | Output-Based Condition**. This inserts the output condition with five branches, each having the same content (the selected component). Each branch represents a single output (Authentic View, RTF, PDF, Word 2007+ or HTML). To determine which branch represents which output, mouseover the branch tag or check the XPath expression of the selected branch (in the Properties sidebar, in the Condition Branch entry, click the Edit button).
3. Within each branch, define the required processing. If you wish not to have any processing for a particular output format, then delete the branch for that format (select the branch and press **Delete**, or select the branch and in the (right-click) context menu select **Delete Branch**).

Note: The output-based condition can also be created first and (static and/or dynamic) content for each branch inserted later. First insert the output-based condition at a cursor insertion point in the design. Then within the respective branches, insert the required static and/or dynamic content.

Editing the branches of an Output-Based Condition

The XPath expression of a branch of an output-based condition is `$SV_OutputFormat = 'format'` , where `format` is one of the values: `Authentic`, `RTF`, `PDF`, `Word 2007+` or `HTML`. You can edit the XPath expression of a condition branch (in the Properties sidebar, in the Condition Branch entry, click the Edit button). For example, you could combine the Authentic View and HTML output formats in one condition branch (using the XPath expression: `$SV_OutputFormat = 'Authentic' or $SV_OutputFormat = 'HTML'`).

You can also (i) delete one or more branches; (b) create an `otherwise` branch in a condition; and (c) move the branches up or down relative to each other, thus changing the relative priority of the branches. For information on how to carry out these actions, see Setting Up the Conditions and Editing Conditions.

Using the `$SV_OutputFormat` parameter

In the XSLT file generated for each output, `$SV_OutputFormat` is created as a global parameter and assigned the value appropriate to that output format (that is, `Authentic`, `RTF`, `PDF`, `Word 2007+` or `HTML`). This parameter can be overridden by passing another value for it to the

processor at runtime. This could be useful, if, for example, you wish to create two alternative HTML output options, one of which will be selected at runtime. You could then create condition branches `$SV_OutputFormat = 'HTML-1'` and `$SV_OutputFormat = 'HTML-2'`. At runtime you could pass the required parameter value (`HTML-1` or `HTML-2`) to the processor. For information about how to use StyleVision from the command line, see Command Line Interface: StyleVisionBatch.

Conditions and Auto-Calculations

When using Conditions and Auto-Calculations together, there are a few issues to bear in mind. The two most fundamental points to bear in mind are:

- Only Auto-Calculations **in visible conditions**—that is the branch selected as true—are evaluated.
- Auto-Calculations are evaluated before Conditions.

Here are a few guidelines that summarize these issues.

1. If an Auto-Calculation updates a node, and if that node is involved in a Condition (either by being in the XPath expression of a branch or in the content of a conditional template), then keep the Auto-Calculation outside the condition if possible. This ensures that the Auto-Calculation is always visible—no matter what branch of the condition is visible—and that the node will always be updated when the Auto-Calculation is triggered. If the Auto-Calculation were inside a branch that is not visible, then it would not be triggered and the node not updated.
2. If an Auto-Calculation must be placed inside a condition, ensure (i) that it is placed in every branch of the condition, and (ii) that the various branches of the condition cover all possible conditions. There should be no eventuality that is not covered by a condition in the Conditional Template; otherwise there is a risk (if the Auto-Calculation is not in any visible template) that the Auto-Calculation might not be triggered.
3. If you require different Auto-Calculations for different conditions, ensure that all possible eventualities for every Auto-Calculation are covered.
4. Remember that the order in which conditions are defined in a conditional template is significant. The first condition to evaluate to true is executed. The `otherwise` condition is a convenient catch-all for non-specific eventualities.

10.3 Grouping

The grouping functionality is available in **XSLT 2.0** SPSs and for HTML, RTF, PDF, and Word 2007+ output. **Grouping is not supported for Authentic View output.**

Grouping enables items (typically nodes) to be processed in groups. For example, consider an inventory of cars, in which the details of each car is held under a `car` element. If, for example, the `car` element has a `brand` attribute, then cars can be grouped by brand. This can be useful for a variety of reasons. For example:

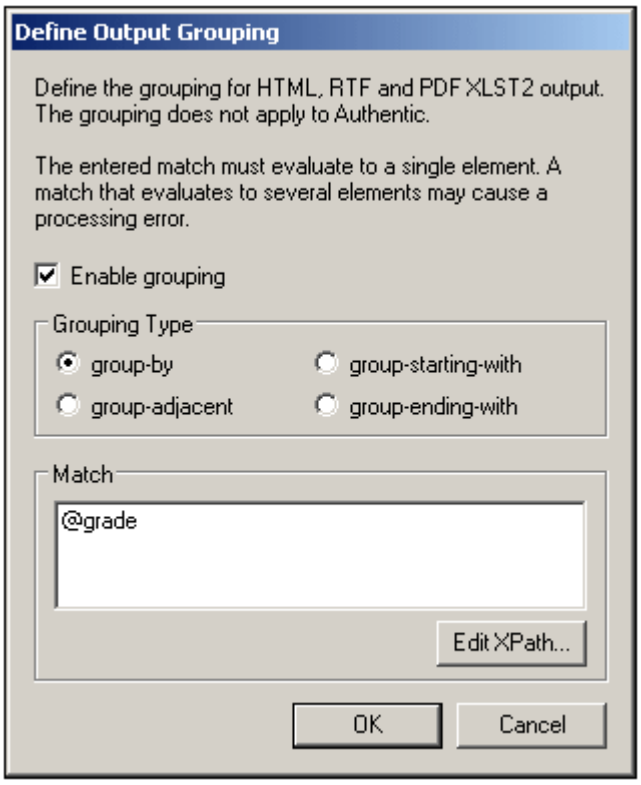
- All cars of a single brand can be presented together in the output, under the heading of its brand name.
- Operations can be carried out within a group and the results of that operation presented separately for each group. For example, the number of models available for each brand can be listed.

Additionally, a group can be further processed in sub-groups. For example, within each brand, cars can be grouped by model and then by year.

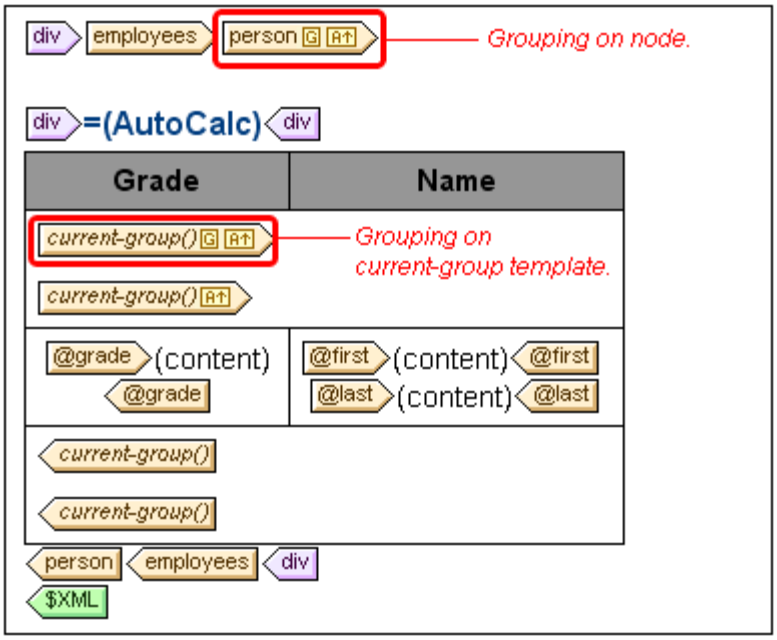
Grouping criteria
Items can be grouped using two general criteria: (i) a grouping key, which typically tests the value of a node, and (ii) the relative position of items. The following specific grouping criteria are available:

- ***group-by***, which groups items on the basis of an XPath-defined key. For example, `car` elements can be grouped on the basis of their `brand` attributes. The grouping is set on the `car` element, and an XPath expression selects the `brand` attribute.
- ***group-adjacent*** uses a combination of grouping-key and position criteria. All adjacent items that have the same value for the grouping key are included in one group. If the grouping-key value of an item is different from that of the previous item, then this item starts a new group.
- ***group-starting-with*** starts a new group when a node matches a defined XPath pattern. If a node does not match the defined XPath pattern, then it is assigned to the current group.
- ***group-ending-with*** ends a group when a node matches a defined XPath pattern; the matching node is the last in that group. The next node starts a new group. If a node subsequent to that which starts a group does not match the defined XPath pattern it is assigned to the current group.

Creating groups
Groups can be created on either a node or a current-group template via the context menu. To create a group, right-click the node or current-group template, and in the context menu that appears, select the **Group by** command. This pops up the Define Output Grouping dialog (*screenshot below*).



In the dialog, check the Enable Grouping check box, then select the required Grouping Type and, in the Match text box, enter the XPath expression that defines the grouping key (for the *group-by* and *group-adjacent* options) or the desired match pattern (for the *group-starting-with* and *group-ending-with* options). When you click **OK**, a dialog pops up asking whether you wish to sort the group-set alphabetically (in ascending order). You can always sort group-sets subsequently or remove such sorting subsequently. The screenshot below shows nodes and current-group templates which have had grouping added to them.



In the screenshot above, the `person` node has been grouped and the resulting groups sorted. For example if the `person` elements have been grouped by department, then the various departments can be sorted in alphabetically ascending order. The groups thus created have been further grouped by creating grouping on the current-group() template. In this way `person` elements can be grouped, say, first by department, and then by employment grade.

Sorting groups

After confirming a grouping definition, a pop-up asks you to confirm whether the groups should be sorted in ascending order or not. You can set sorting subsequently at any time, or modify or delete, at any time, the sorting set at this stage.

To set, modify, or delete sorting subsequently, right-click the required grouping template and select **Sort by**. This pops up the Define Output Sort Order dialog. How to use this dialog is described in the section Sorting. The important point to note is that to sort groups on the basis of their grouping-key, you must select the XPath function `current-grouping-key()` as the sorting key. For examples, see the files described in the following sections.

Viewing and editing grouping and sorting settings

To view and edit the grouping and sorting settings on a template, right-click the template and select Group by or Sort by, respectively. This pops up the respective dialog, in which the settings can be viewed or modified.

Example: Group-By (Persons.sps)

The `Persons.sps` example is based on the `Persons.xsd` schema and uses `Persons.xml` as its Working XML File. It is located in the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Grouping\Persons\` folder. The XML document structure is as follows: an `employees` document element can contain an unlimited number of `person` employees. Each `person` employee is structured according to this example:

```
<person first="Vernon" last="Callaby" department="Administration" grade="C"/>
```

In the design we group persons according to department. Each department is represented by a separate table and the departments are sorted in ascending alphabetical order. Within each department table, persons are grouped according to grade (sorted in ascending alphabetical order) and, within each grade, persons are listed on in ascending alphabetical order of their last names.

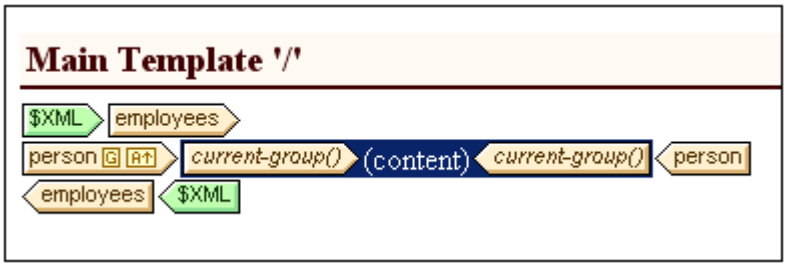
Strategy

The strategy for creating the groups is as follows. The grouping is created on the person element with the department attribute being the grouping-key. This causes the person elements to be ordered in groups based on the value of the department attribute. (If sorting is specified, then the department groups can be organized in alphabetical order, for example, Administration first, and so on.) Since the departments are to be created as separate tables, the current-grouping (which is based on the department grouping-key) is created as a table. Now, within this grouped order of Person elements, we specify that each group must be further ordered with the grade attribute as the grouping-key.

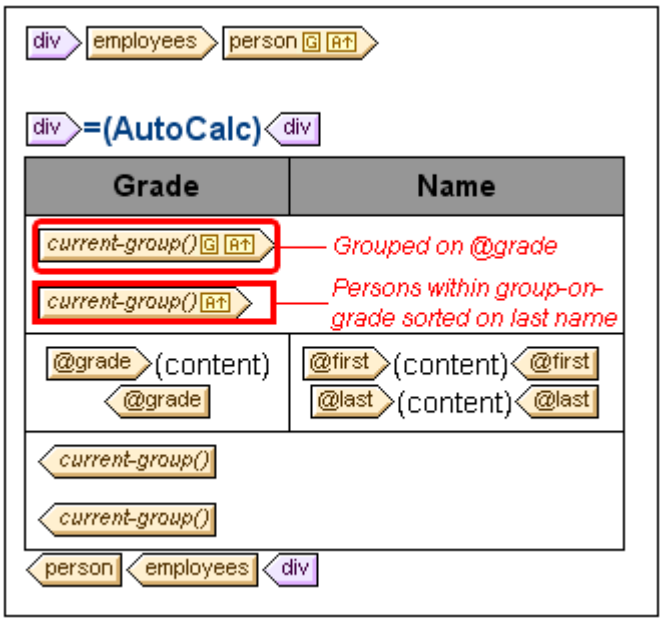
Creating the SPS

The design was created as follows:

1. Drag the `person` element from the schema tree and create it as contents.
2. Right-click the `person` element tag and, in the context menu, select Group by.
3. In the Define Output Grouping dialog, select *group-by*, set the XPath expression in the Match text box to `@department`, and click **OK**.
4. A dialog pops up asking whether the groups should be sorted. Since we wish the groups to be sorted according to the default ascending alphabetical sorting, click **OK**. (Sorting can always be set, modified, or deleted subsequently.)
5. Since each group (which is a department) is to be created in a separate table, create the current group as a table. Do this by right-clicking the `current-group()` tag (*screenshot below*), and selecting **Change to | Table**, selecting the child attributes `@last` and `@grade` as the columns of the table.



6. Re-organize the contents of the columns and cells of the table so that the first column contains `@grade` and the second column contains the `@first` and `@last` nodes (*see screenshot below*).
7. Within the current group, which is grouped by department, to group by grade, create a grouping for the `grade` attribute on the `current-group()` template. Confirm the default sorting.



8. Sort the current group (which is the sub-group of persons sorted by grade), on the `last` attribute.
9. Set formatting for the table.
10. Above the table provide a heading for the table. Since each table represents a department, the name of the department can be dynamically obtained from the current context by using an Auto-Calculation with an XPath expression that calls the `current-grouping-key()` function of XPath 2.0.
11. Repeat the entire process, to create similar output, but this this time grouping persons by grade and then by department.

To view or modify the grouping or sorting of a template, right-click that template and select **Group by** or **Sort by** from the context menu. This pops up the respective dialog, in which the settings can be viewed or modified.

Example: Group-By (Scores.sps)

The `Scores.sps` example is based on the `Scores.xsd` schema and uses `Scores.xml` as its Working XML File. It is located in the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Grouping\Scores\` folder. The XML document structure is as follows: a `results` document element contains one or more `group` elements and one or more `match` elements. A `group` element contains one or more `team` elements, and a `match` element is structured according to this example:

```
<match group="A" date="2007-10-12">
       <team name="Brazil" for="2" points="3"/>
       <team name="Germany" for="1" points="0"/>
</match>
```

The design consists of three parts (*screenshot below*): (i) the match results presented by day (grouped on `//match/@date`); (ii) the match results presented by group (grouped on `//match/@group`); and (iii) group tables providing an overview of the standings by group (a dynamic table of the group element, with Auto-Calculations to calculate the required data).

Match Results: Day-by-Day

2007-10-12

Brazil - Germany	2 - 1
Italy - Holland	2 - 2

2007-10-13

Argentina - France	2 - 0
England - Spain	0 - 0

Match Results: By Group

Group A

Brazil - Germany	2 - 1
Italy - Holland	2 - 2
Brazil - Italy	1 - 2
Germany - Holland	2 - 2
Brazil - Holland	1 - 0
Germany - Italy	1 - 1

Group Tables

Group A

Team	P	W	D	L	F	A	Pts
Brazil	3	2	0	1	4	3	6
Italy	3	1	2	0	5	4	5
Germany	3	0	2	1	4	5	2
Holland	3	0	2	1	4	5	2

Strategy

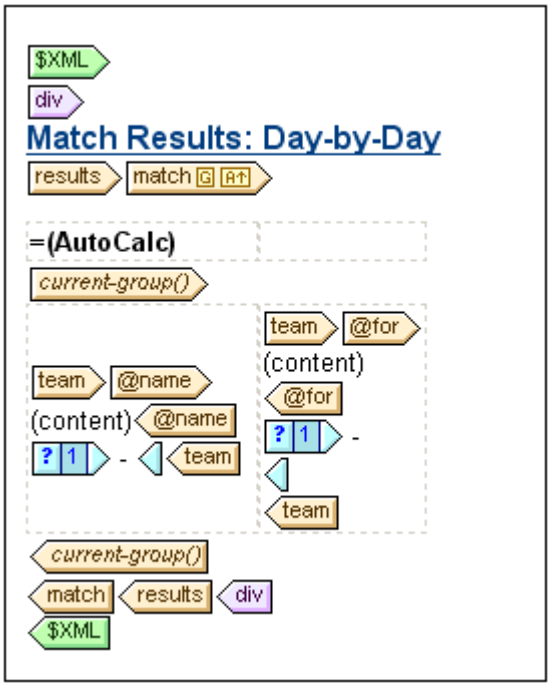
For the two sections containing the match results, we group matches by date and tournament-group. For members of each group (date and tournament group), we create borderless tables (for alignment purposes). So matches played on a single date will be in a separate table, and all the match results of a single tournament group will be in a separate table (for example, Group A matches). For the group-tables section, the `group` element is created as a dynamic table, with

Auto-Calculations providing the value of the required data.

Creating the SPS

The design was created as follows:

1. Drag the `/results/match` element from the schema tree and create it as contents.
2. Right-click the `match` element tag and, in the context menu, select Group by.
3. In the Define Output Grouping dialog, select *group-by*, set the XPath expression in the Match text box to `@date`, and click **OK**.
4. A dialog pops up asking whether the groups should be sorted. Since we wish the groups to be sorted according to the default ascending alphabetical sorting, click **OK**. (Sorting can always be set, modified, or deleted subsequently.)
5. Since each group (which is a date) is to be created in a separate table, create the current group as a table. Do this by right-clicking the `current-group()` tag, selecting **Change to | Table**, and then selecting the descendant nodes `team/@name` and `team/@for` as the columns of the table (*see screenshot below*).



6. Set a hyphen in each cell that will be output if the match is not the last in the current group (using a conditional template with a condition set to `position() != last()`. This provides output such as: `Brazil - Germany` or `2 - 1`.
7. Put an Auto-Calculation in the header that outputs the current grouping key for the respective group (XPath expression: `current-grouping-key()`).
8. Format the table as required.
9. To group the matches by tournament group, repeat the entire process, but group matches this time on the `group` attribute of `match`.
10. For the group tables (in the third section of the design), which contain the standings of each team in the group, create the `/results/group` element as a dynamic table. Add columns as required (using the **Table | Append Column** or **Table | Insert Column** commands). Set up Auto-Calculations in each column to calculate the required output (3 point for a win; 1 point for a draw; 0 points for a loss). And, finally, sort the table in descending order of total points obtained. To see the XPath expressions used to obtain these results, right-click the Auto-Calculation or sorted template, and select, respectively, the **Edit XPath** and **Sort by** commands.

10.4 Sorting

The sorting functionality is available in XSLT 1.0 and XSLT 2.0 SPSs and for HTML, RTF, PDF, and Word 2007+ output. **Sorting is not supported for Authentic View output.**

A set of sibling element nodes of the same qualified name can be sorted on one or more sort-keys you select. For example, all the `Person` elements (within, say, a `Company` element) can be sorted on the `LastName` child element of the `Person` element. The sort-key must be a node in the document, and is typically a descendant node (element or attribute) of the element node being sorted. In the example mentioned, `LastName` is the sort-key.

If there are two elements in the set submitted for sorting that have sort-key nodes with the same value, then an additional sort-key could provide further sorting. In the `Person` example just cited, in addition to a first sort-key of `LastName`, a second sort-key of `FirstName` could be specified. So, for `Person` elements with the same `LastName` value, an additional sort could be done on `FirstName`. In this way, in an SPS, multiple sort instructions (each using one sort-key) can be defined for a single sort action.

The template is applied to the sorted set and the results are sent to the output in the sorted order. Sorting is supported in the HTML, RTF, PDF, and Word 2007+ output.

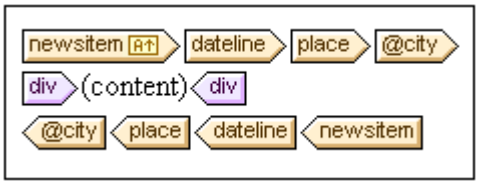
In this section

- The sorting mechanism is described.
- An example demonstrates how sorting is used.

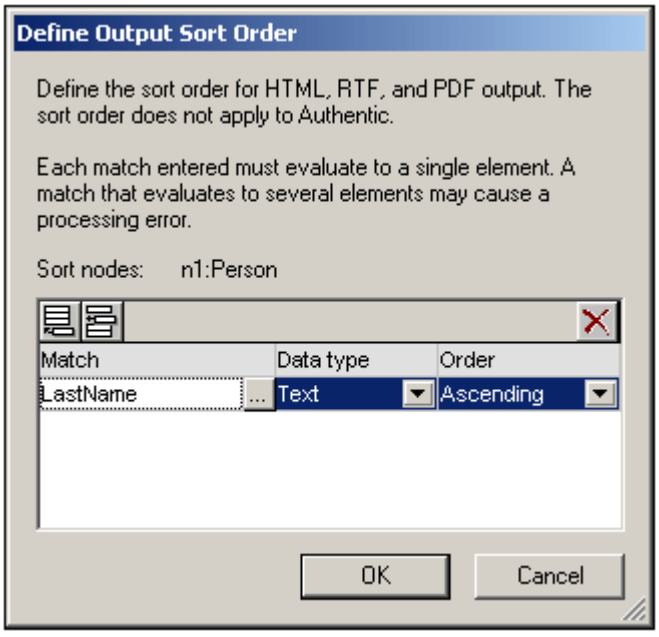
The Sorting Mechanism

Setting up a schema element node for sorting consists of two steps:

1. In Design View, select the schema element node that is to be sorted. Note that it is the instances of **this** element in the XML document that will be sorted. Often it might not immediately be apparent which element is to be sorted. For example, consider the structure shown in the screenshot below.



   Each `newsitem` has a `dateline` containing a `place` element with a `city` attribute. The `@city` nodes of all `newsitem` elements are to be output in alphabetical order. In the design, should the `@city` node be selected for sorting, or the `place`, `dateline`, or `newsitem` elements? With `@city` selected, there will be only the one `city` node that will be sorted. With `place` or `dateline` selected, again there will be just the one respective element to sort, since within their parents they occur singly. With `newsitem` selected, however, there will be multiple `newsitem` elements within the parent `newsitems` element. In this case, it is the `newsitem` element that should be sorted, using a sort-key of `dateline/place/@city`.
2. After selecting the element to sort, in the context menu (obtained by right-clicking the element selection), click the **Sort Output** command. This pops up the Define Output Sort Order dialog (*screenshot below*), in which you insert or append one or more sort instructions.



   Each sort instruction contains: (i) a sort-key (entered in the Match column); (ii) the datatype that the sort-key node should be considered to be (text or number); (iii) and the order of the sorting (ascending or descending). The order in which the sort instructions are listed is significant. Sorting is carried out using each sort instruction in turn, starting with the first, and working down the list when multiple items have the same value. Any number of sort instructions are allowed.

For an example of how sorting is used, see Example: Sorting on Multiple Sort-Keys.

A note about sort-keys
In both XSLT 1.0 and XSLT 2.0 SPSs, the XPath expression you enter for the sort-key must select a **single node** for each element instance—not a nodeset (XPath 1.0) or a sequence of items (XPath 2.0); the key for each element should be resolvable to a string or number value.

In an **XSLT 2.0** SPS, if the sort-key returns a sequence of nodes, an XSLT processing error will be returned. So, in the Person example cited above, with a context node of `Person`, an XPath expression such as: `../Person/LastName` would return an error because this expression returns all the `LastName` elements contained in the parent of `Person` (assuming there is more than one `Person` element). The correct XPath expression, with `Person` as the context node, would be: `LastName` (since there is only one `LastName` node for each `Person` element).

In **XSLT 1.0**, the specification requires that when a nodeset is returned by the sort-key selector, the text value of the first node is used. StyleVision therefore returns no error if the XPath expression selects multiple nodes for the sort-key; the text of the first node is used and the other nodes are ignored. However, the first node selected might not be the desired sort-key. For example, the XPath expression `../Person/LastName` of the example described above would not return an error. But neither would it sort, because it is the same value for each element in the entire sort loop (the text value of the first `LastName` node). An expression of the kind: `location/@*`, however, would sort, using the first attribute of the `location` child element as the sort-key. This kind of expression, however, is to be avoided, and a more precise selection of the sort-key (selecting a single node) is advised.

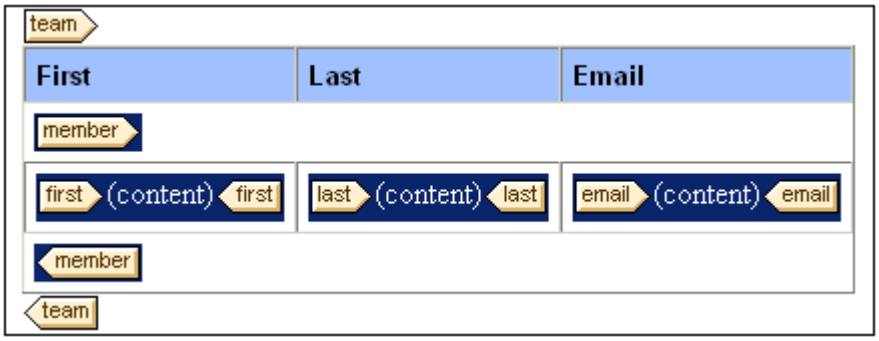
Example: Sorting on Multiple Sort-Keys

In the simple example below (available in the application folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Sorting\SortingOnTwoTextKeys.sps`), team-members are listed in a table. Each member is listed with first name, last name, and email address in a row of the table. Let us say we wish to sort the list of members alphabetically, first on last name and then on first name. This is how one does it.

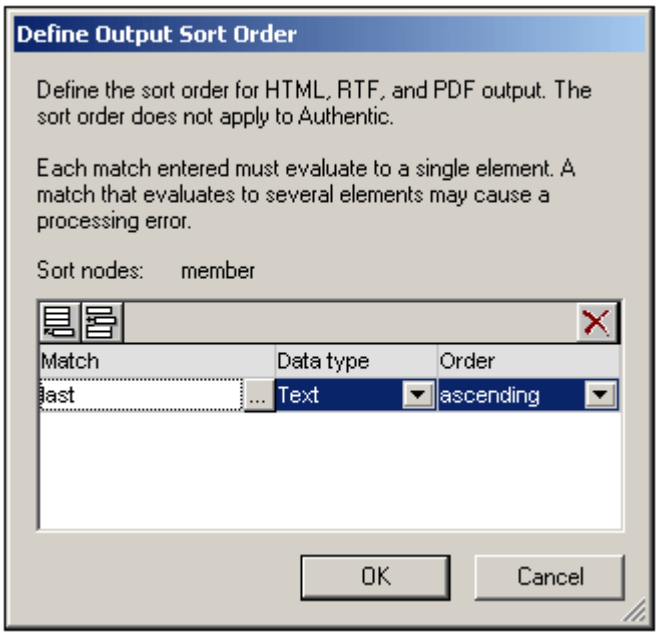
When the list is unsorted, the output order is the order in which the `member` elements are listed in the XML document (*screenshot below, which is the HTML output*).

First	Last	Email
Andrew	Bentinck	a.bentinck@nanonull.com
Nadia	Edwards	n.edwards@nanonull.com
John	Edwards	j.edwards@nanonull.com
Janet	Ashe	j.ashe@nanonull.com

In Design View, right-click the `member` element (*highlighted in screenshot below*), and from the context menu that appears, select the **Sort Output** command.



This pops up the Define Output Sort Order dialog (*screenshot below*). Notice that the element selected for sorting, `members`, is named at the Sort Nodes entry. This node is also the context node for XPath expressions to select the sort-key. Click the Add Row button (at left of pane toolbar) to add the first sort instruction. In the row that is added, enter an XPath expression in the Match column to select the node `last`. Alternatively, click the Build button ... to build the XPath expression. The Datatype column enables you to select how the sort-key content is to be evaluated: as text or as a number. The Order column lists the order of the sort: ascending or descending. Select `Text` and `Ascending`. Click **OK** to finish.

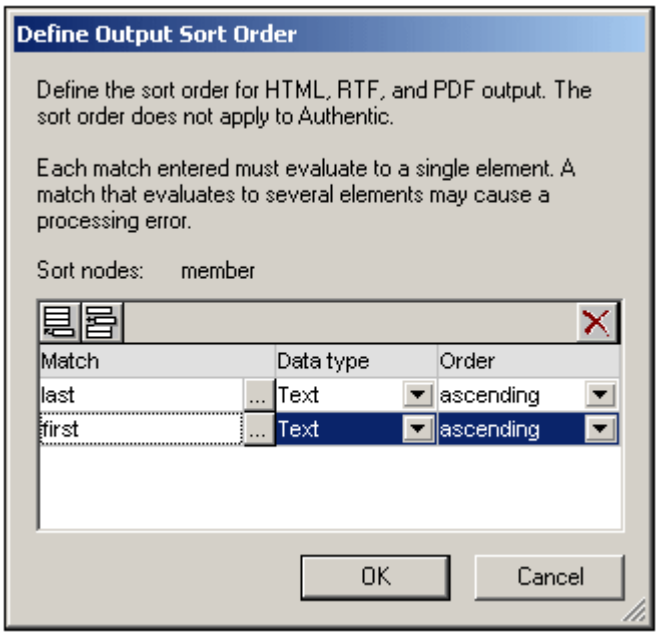


In Design View, the `member` tag displays an icon indicating that it contains a sort filter 

. The HTML output of the team-member list, sorted on last name, is shown below. Notice that the two Edwards are not alphabetically sorted (Nadia is listed before John, which is the order in the XML document). A second sort-key is required to sort on first name.

First	Last	Email
Janet	Ashe	j.ashe@nanonull.com
Andrew	Bentinck	a.bentinck@nanonull.com
Nadia	Edwards	n.edwards@nanonull.com
John	Edwards	j.edwards@nanonull.com

In Design View, right-click the `member` tag and select the **Sort Output** command from the context menu. The Define Output Sort Order dialog pops up with the `last` sort instruction listed. To add another sort instruction, append a new row and enter the `first` element as its sort-key (*screenshot below*). Click **OK** to finish.



In the HTML output, the list is now sorted alphabetically on last name and then first name.

First	Last	Email
Janet	Ashe	j.ashe@nanonull.com
Andrew	Bentinck	a.bentinck@nanonull.com
John	Edwards	j.edwards@nanonull.com
Nadia	Edwards	n.edwards@nanonull.com

10.5 Parameters and Variables

Parameters and variables can be declared and referenced in the SPS. The difference between the two is that while a variable's value is defined when it is declared, a parameter can have a value passed to it (at run-time via the command line) that overrides the optional default value assigned when the parameter was declared.

In this section, we describe the functionality available for parameters and variables:

- User-Declared Parameters explains how user-defined parameters can be used in an SPS.
- Parameters for Design Fragments describes how parameters can be used with design fragments.
- SPS Parameters for Sources are a special type of parameter. They are automatically defined by StyleVision for schema sources (specifically, the Working XML Files of schemas). Since the name and value of such a parameter are known to the user, the parameter can be referenced within the SPS and a value passed to it at run-time from the command line.
- Variables enable you to: (i) declare a variable with a certain scope and define its value, and (ii) to reference the value of declared variables and create a template on a node or nodes selected by the variable.
- Editable Variables in Authentic allow the Authentic View user to edit variables and consequently to control the display of content in Authentic View.

User-Declared Parameters

In an SPS, user-declared parameters are declared globally with a name and a default string value. Once declared, they can be used in XPath expressions anywhere in the SPS. The default value of the parameter can be overridden for individual XSLT transformations by passing the XSLT stylesheet a new global value via the command line.

Use of parameters

User-declared parameters are useful in the following situations:

- If you wish to use one value in multiple locations or as an input for several calculations. In this case, you can save the required value as a parameter value and use the parameter in the required locations and calculations.
- If you wish to pass a value to the stylesheet at processing time. In the SPS (and stylesheet), you use a parameter with a default value. At processing time, you pass the desired value to the parameter via the command line.

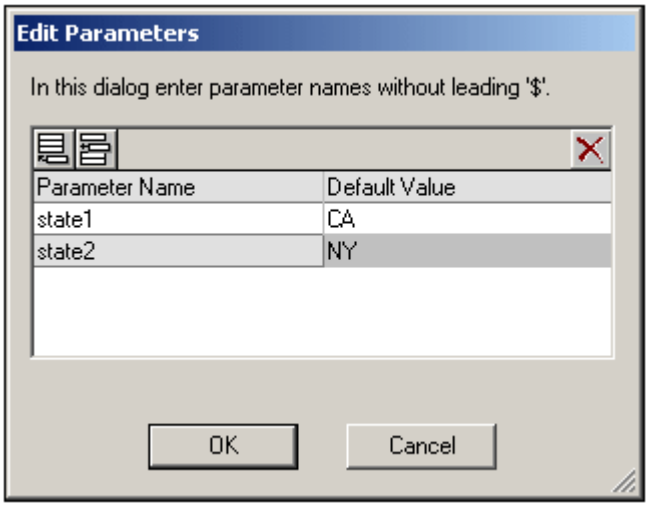
Usage mechanism

Working with user-declared parameters in the SPS consists of two steps:

1. Declaring the required parameters.
2. Referencing the declared parameters.

Declaring parameters

All user-defined parameters are declared and edited in the Edit Parameters dialog (*screenshot below*). The Edit Parameters dialog is accessed via: (i) the **Edit | Stylesheet Parameters** command, (ii) the **Parameters** button in the Edit Database Filters dialog (**Edit | Edit DB Filter**), and (iii) the Edit button ... of the Parameters entry in the Design Overview sidebar.



Declaring a parameter involves giving it a name and a string value—its default value. If no value is specified, the default value is an empty string. The default value will be used each time the parameter is referenced, and it is overridden only if a new value is passed for that parameter on the command line.

To declare a parameter, do the following:

1. In the Edit Parameters dialog, append or insert a new parameter by clicking the Append

or Insert buttons. A new line appears.
2. Enter the name of the parameter. Parameter names must begin with a letter, and can contain the characters A to Z, a to z, 0 to 9, and the underscore.
3. Enter a default value for that parameter. The value you enter is accepted as a text string.

You can insert any number of parameters and modify existing parameters at any time while editing either the SPS or Authentic View.

Note:

- The Edit Parameters dialog contains all the user-defined parameters in an SPS.
- Parameters can also be declared in the Design Overview sidebar.

Referencing declared parameters
Parameters can be referenced in XPath expressions by prefixing a $ character before the parameter name. For example, you could reference a parameter in the XPath expression of an Auto-Calculation (e.g. `concat('www.', $company, '.com')`). If your SPS is DB-based, then you can also use parameters as the values of DB Filter criteria. The DB parameters, however, are declared and edited in the Edit Parameters dialog.

Note: While it is an error to reference an undeclared parameter, it is not an error to declare a parameter and not reference it.

Parameters for Design Fragments

Parameters for Design Fragments enable you to define a parameter on a design fragment you have created and to give this parameter a default value. At each location where this design fragment is used in the design, you can enter a different parameter value, thus enabling you to modify the output of individual design fragments.

For example, a design fragment named `EMailAddresses` can be created with a parameter named `Domain` that has a default value of `altova.com`. Now, say this parameter is used in an Auto-Calculation in the design fragment to generate the email addresses of company employees. For the EU addresses, we could use the design fragment `EmailAddresses` and edit the value of the `Domain` parameter to be `altova.eu`. In the same way, in the template for Japanese employees, we could edit the value of the `Domain` parameter to be `altova.ja`. For the US employees of the company, we could leave the parameter value of `Domain` unchanged, thus generating the default value of `altova.com`.

Using parameters for design fragments consists of two parts:

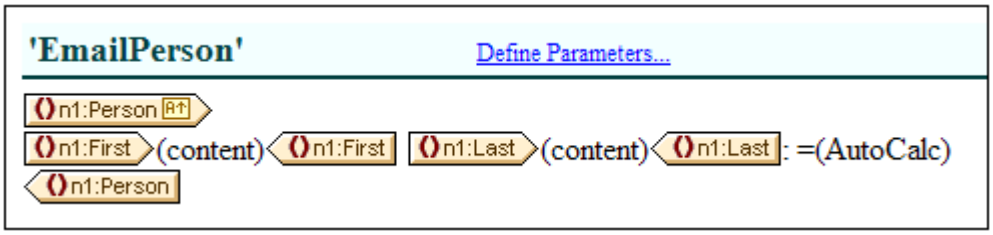
1. Defining the parameter with a default value on the design fragment where it is created.
2. Editing the parameter value where the design fragment is used.

These parts are explained in detail below.

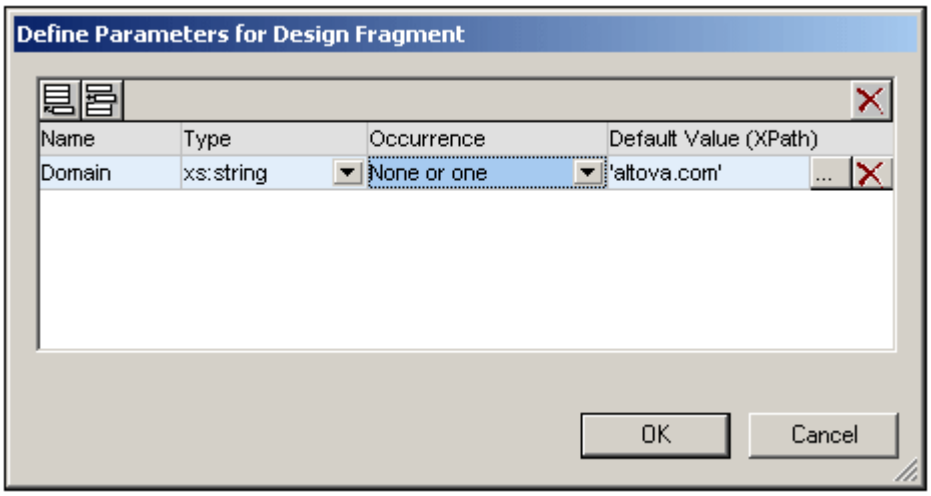
Note: Parameters for Design Fragments are supported in Authentic View only in the Enterprise Editions of Altova products.

Defining the parameter

Each design fragment can be assigned any number of parameters. To do this, click the Define Parameters link in the title bar of the design fragment (*see screenshot below*).



This pops up the Define Parameters for Design Fragments dialog (*screenshot below*). Click the **Append** or **Insert** icon at top left to add a parameter entry line. Enter or select the name, datatype, number of occurrences, and default value of the parameter. The *Occurrence* attribute of the parameter specifies the number of items returned by evaluating the XPath expression specified as the default value of the parameter. The *Occurrence* attribute is optional and is, by default, exactly one. You can add as many parameters as you like.

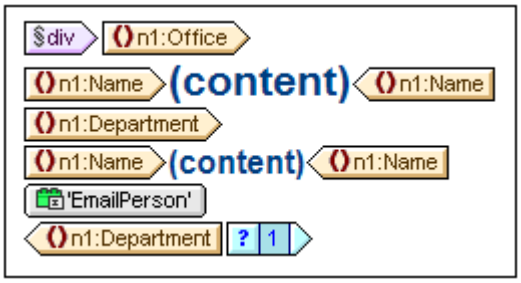


There are two types of **Delete** icon. The Delete icon to the right of each parameter entry deletes the default value of that parameter. The **Delete** icon at the top right of the pane deletes the currently highlighted parameter.

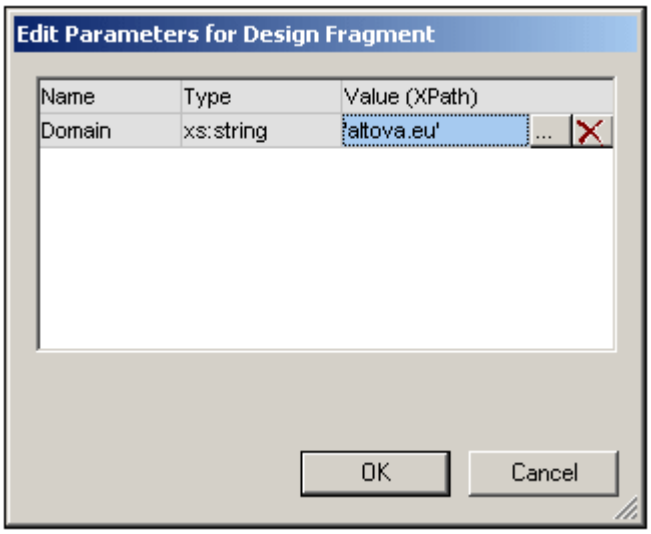
Note: If the SPS uses XSLT 1.0, then the XPath expression you enter must return a node-set. Otherwise an error is reported.

Using the parameter

After a design fragment has been created, it can be inserted at multiple locations in the design (by dragging it from the Design Tree or Schema Tree). The screenshot below shows the design fragment `EmailAddress`, inserted after the `n1:Name` element.



If a parameter has been defined for this design fragment, then its value can be edited for this particular usage instance of the design fragment. Do this by right-clicking the design fragment and selecting the command **Edit Parameters**. This pops up the Edit Parameters for Design Fragments dialog (*screenshot below*).



You can edit the value of the parameter in this dialog. Click **OK** to finish. The new parameter value will be used in this usage instance of the design fragment. If the parameter value is not edited, the original (or default) parameter value will be used.

Note: If XSLT 1.0 is being used, then the XPath expression must return a node-set. Otherwise an error is reported.

SPS Parameters for Sources

An SPS can have multiple schema sources, where a schema could be a DTD or XML Schema on which an XML document is based, or an XML Schema that is generated from a DB and on which the DB is based.

In each SPS, there is one main schema, and, optionally, one or more additional schemas. When you add a new schema source, StyleVision automatically declares a parameter for that schema and assigns the parameter a value that is the URI of the Working XML File you assign to that schema. In the case of DBs, StyleVision generates a temporary XML file from the DB, and sets the parameter to target the document node of this temporary XML file.

Referencing parameters for sources

Each SPS parameter for a schema source addresses the document node of an XML file corresponding to that schema. In StyleVision, the XML file for each schema is the Working XML File or the XML file generated from a DB. SPS parameters for sources can therefore be used in two ways:

1. In XPath expressions within the SPS, to locate nodes in various documents. The parameter is used to identify the document, and subsequent locator steps in the XPath expression locate the required node within that document. For example, the expression: `count( $XML2//Department/Employee)` returns the number of `Employee` elements in all `Department` elements in the XML document that is the Working XML File assigned to the schema source designated `$XML2`.
2. On the command line, the URI of another XML file can be passed as the value of an SPS parameter for sources. Of course, the new XML file would have to be based on the schema represented by that parameter. For example, if `FileA.xml` and `FileB.xml` are both valid according to the same schema, and `FileA.xml` is the Working XML File assigned to a schema `$XML3` used in an SPS, then when an XSLT transformation for that SPS is invoked from the command line, `FileB.xml` can be substituted for `FileA.xml` by using the parameter `$XML3="FileB.xml"`. You should also note that, on the command line, values should be entered for all SPS parameters for sources except the parameter for the main schema. The XML file corresponding to the main schema will be the entry point for the XSLT stylesheet, and will therefore be the XML file on which the transformation is run.

Variables

Using variables consists of two parts: (i) declaring the variable, and (ii) using the variable.

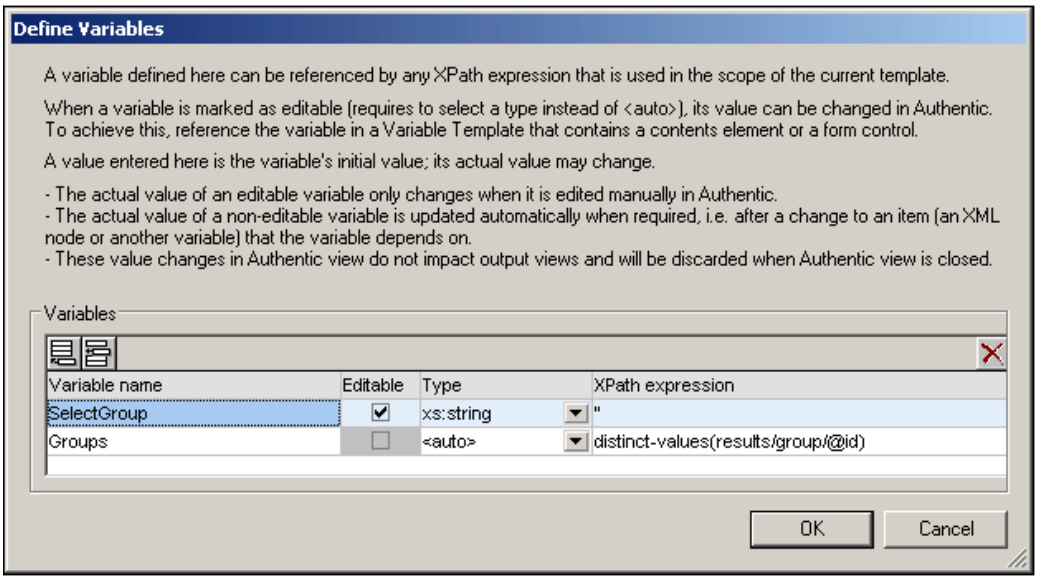
Note: Variables are supported in Authentic View only in the Enterprise Editions of Altova products.

Declaring a variable

A variable can be declared on any template included in the design. It is given a name, a datatype, and a value. Additionally, you can specify whether it is to be editable in the Enterprise editions of Authentic View. The variable will then be in scope on this template and can be used within it. To declare a variable so that it is in scope for the entire document, declare the variable on the root template. A major advantage of declaring a a variable only on the template where it is needed is that XPath expressions to locate a descendant node will be simpler.

Declare a variable as follows:

1. Right-click the node template on which the variable is to be created and select the command **Define Variables**.
2. In the Define Variables dialog that appears (*screenshot below*), click the **Append Variable** icon in the top left of the Variables pane, then enter a variable name. The value of the variable is given via an XPath expression. If you wish to enter a string as the value of the variable (as in the first variable in the screenshot below), then enclose the string in quotation marks. In the screenshot below, the value of the `SelectGroup` variable is the empty string. Otherwise, the text will be read as a node name or a function-call.



3. Setting a variable to Editable (by checking the *Editable* check box) enables the variable to be edited in Authentic View. In this case, you must also set the datatype value to the correct type, such as `xs:string`.
4. You can add as many variables as you like, but the name of a variable must not be the name of an already declared in-scope variable. To delete a variable click the **Delete** icon in the top right of the pane.
5. Click **OK** when done. The template tag will now have a $ icon to indicate that one or more variables have been declared on it.

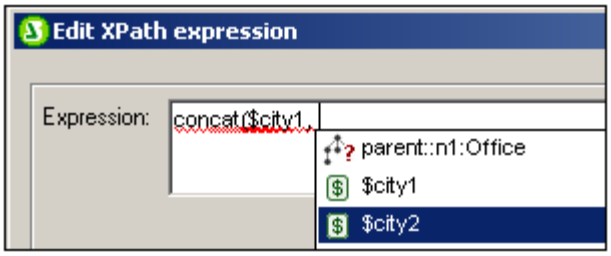
In this way, variables can be created for each node template that is present in the design. Each

of these variables will have a name and a value, and will be in scope within the template on which it was declared. To edit a variable subsequently, right-click the node template on which the variable was created and select the command **Define Variables** to access the Define Variables dialog.

Using a variable

For a variable to be used at any location, it must be in scope at that location. This means that a variable can only be used within the template on which it was defined. Variables can also be edited in Authentic View so that users can control the display. The edited value is discarded when the SPS is closed.

A variable can be used in any XPath expression, and is referenced in the XPath expression by prefixing its name with a `$` symbol. For example, the XPath expression `$VarName/Name` selects the `Name` child element of the node selected by the variable named `VarName`.



When you enter an XPath expression in the Edit XPath Expression dialog, in-scope variables appear in a pop-up (*see screenshot above*). Selecting a variable in the pop-up and pressing **Enter** inserts the variable reference in the expression.

Editable Variables in Authentic

Variables that are in scope can be edited in Authentic View by the Authentic View user to control the display in Authentic View. For example, if a very large XML document containing, say the personnel data of several branches of a company, is being used, the Authentic View user can be given the option of selecting one particular company branch. The Authentic View display of the XML document could in this way be restricted to the branch selected by the Authentic View user.

How it works

Three steps are involved in setting up editable variables in Authentic View (*also see screenshot below*):

1. The required variable is defined on the template within which it will be used. This template delimits the scope of the variable. The variable can only be used within the template on which it is in scope.
2. A User-Defined Template is created with the name of the variable. The dynamic content of this User-Defined Template will contain the value of the variable. If the `( contents)` placeholder or an input field is inserted in the design as the content of the User-Defined Template, then the Authentic View user can enter any content as the value of the variable. The options available to the Authentic View user can however be restricted by inserting a form control, such as a combo box, as the content of the User-Defined Template.
3. The variable can be used in an XPath expression to control the Authentic View display. For example, the variable can be used in a condition. Depending on the value of each branch of the condition, a different display can be specified. Another mechanism where a variable can be well used is in a template match expression or template filter.

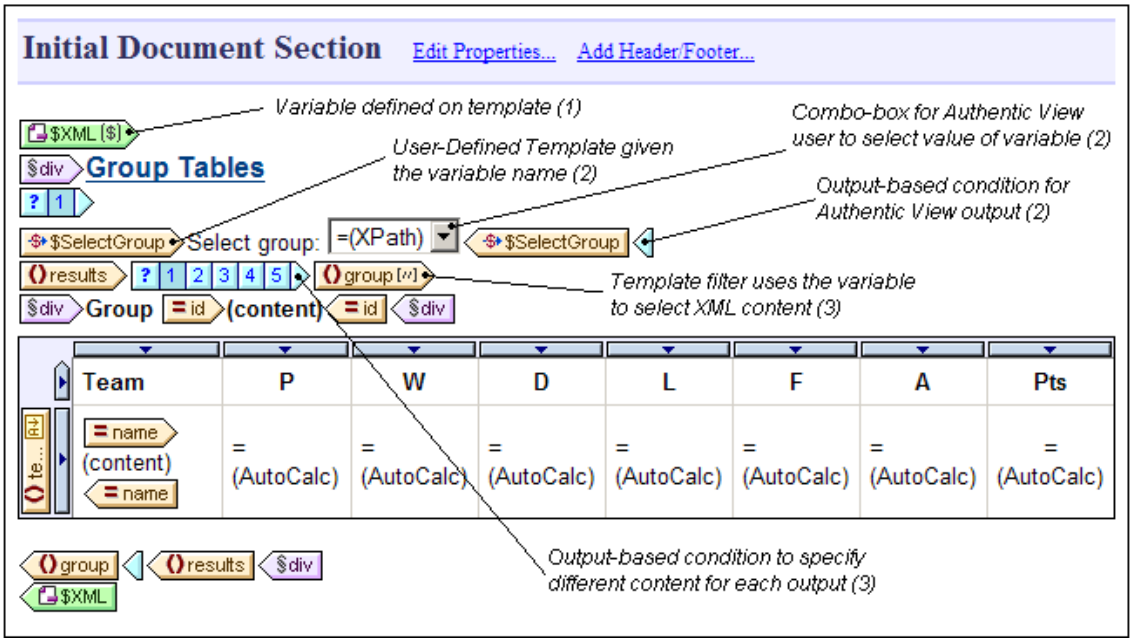
Note: Note the following points:

- Since grouping and sorting are not supported in Authentic View, editable variables in Authentic View cannot be used in an SPS containing any of these features.
- Since the editable variables feature applies only to Authentic View, the design for Authentic View will need to be different than that for the other outputs. This can be designed easily using the Output-Based Conditions feature.

Example file

The file `AuthenticVariables.sps` in the `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Grouping\Scores\` folder shows how editable variables in Authentic View can be used. The XML file contains the results of matches in a tournament. The teams participating in the tournament are divided into two groups. The editable variable enables the Authentic View user to select the group to be viewed and restrict the display to that group.

The screenshot below displays the entire SPS design. One editable variable is created and the different steps required to set it up are labeled in the screenshot below. A description of the actual steps is given below the screenshot.



The key steps in setting up the editable variable were as follows:

- On the `$XML` template (the root template), an editable variable called `SelectGroup` is defined with a type of `xs:string`. This variable will be in scope for the entire template
- On the `$XML` template, a non-editable variable called `Groups` is defined with a type of `<auto>`. Its purpose is to dynamically collect the distinct values of all the `results/group/@id` attributes. These distinct values are planned to be displayed in the dropdown list of the combo box from which the Authentic View user will select the group he or she wishes to have displayed.
- A User-Defined Template is created and given the name `$SelectGroup` (the name of the editable variable). The location of the User-Defined template does not matter as long as it is within the scope of the editable variable.
- Within this User-Defined Template, a combo box is inserted. The combo box uses the XPath expression `$Groups, 'All'` to select the entry values of the dropdown list. This XPath expression returns the sequence of items contained in the variable `$Groups` (which dynamically collects all the available groups), and adds an item `All` to the sequence returned by `$Groups`. The `All` entry item of the combo box will be used to display all groups.
- The User-Defined Template is enclosed in an output-based conditional template with the output set for Authentic View. This is because the editable variable can only be used in Authentic View.
- The next step is to use the value of the editable variable that the Authentic View user selects. This will be used to filter the display down to the group that the Authentic View user selects. It is done by specifying a filter on the `results/group` template. The XPath expression of this filter is:

  ```
  if ($SelectGroup != 'All') then @id=$SelectGroup else @id
  ```

  This filter expression sets up a predicate step on the `group` element. If the `$SelectGroup` variable has a value not equal to `All`, then the predicate step will be `[@id=X]`, where `X` is the value of the `$SelectGroup` variable (that the Authentic View user selected in the combo box). This filter has the effect of selecting the group that has an `id` attribute with the value the Authentic View user selected. If the `$SelectGroup` variable has a value of `All`, then the predicate expression will select groups with any `id` attribute value, that is, all groups.

- The `group` template is enclosed within an output-based condition, each branch of which selects a different output. Only in the Authentic View branch does the `group` template have the filter applied.

The Authentic View output will look like this:

Notice the entries in the combo box, the combo box selection of Group B, and the display limited to Group B.

10.6 Table of Contents, Referencing, Bookmarks

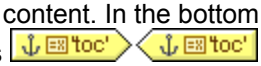
The Table of Contents (TOC) and referencing mechanisms work by creating anchors at the required points in the design document and then referring back to these references from TOCs, text references, auto-numbering sequences, and hyperlinks. Two types of mechansim are used:

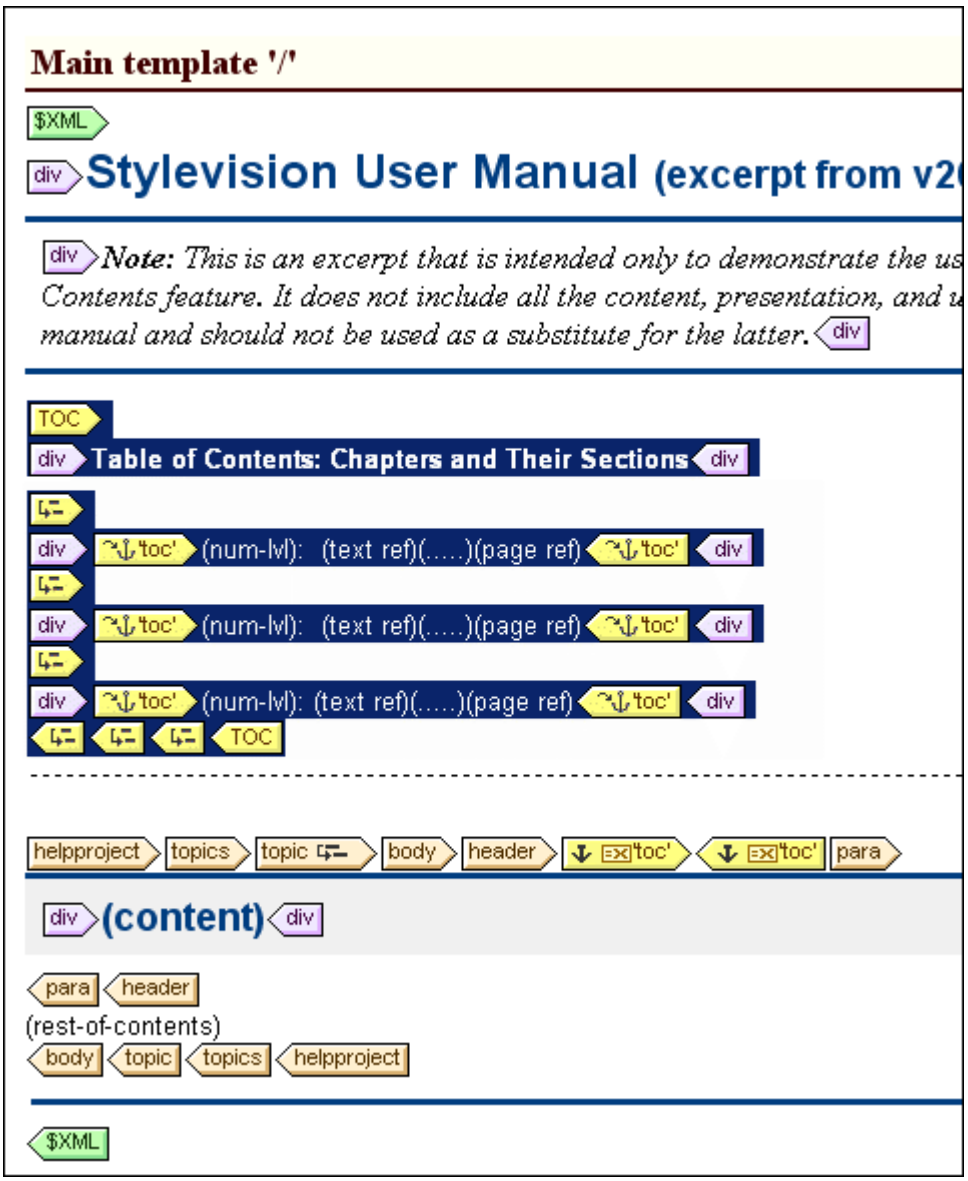
- A simple anchor is created at a point in the design document. The anchor (or bookmark) is given a unique name and this name is used as the target of links that point to this document fragment. This mechanism is used for the Bookmarks and Hyperlinks feature. Links can additionally point to URLs outside the document.
- For more complex referencing, such as for TOCs and the auto-numbering of document sections, building the anchor involves two parts. First, the document is structured into the hierarchy required for the TOC. This is achieved by assigning levels to different points in the document structure. Second, the text that will appear in the referencing component must be defined. After the levels and the reference text have been defined, the referencing component can be designed. This mechanism is broadly described below, under The TOC mechanism.

The various referencing features are explained in detail in the rest of this section.

The TOC mechanism

If you have selected **XSLT 2.0** (not XSLT 1.0) as the XSLT version of your SPS, you can create a table of contents (TOC) at any location in the design. The mechanism for creating the TOC consists of two parts, which are described in the sub-sections of this section:

- The items from the design that are to be included in the TOC are marked in the design. These items can be static content or dynamic content. In the bottom half of the screenshot below, yellow TOC bookmark tags  within the `header` tag marks the `header` item for inclusion in the TOC.
- A template is created for the TOC (*highlighted in screenshot below*). The TOC template contains the design of the TOC; it can be located anywhere in the design. In the example shown in the screenshot below, the TOC template is located near the top of the document.



Either of these two parts can be created first, or both parts can be created concomitantly.

The TOC is displayed in Authentic View and in the HTML, RTF, PDF, and Word 2007+ output. Also note that: (i) TOCs can be created with a flat or a hierarchical structure (with corresponding numbering), and (ii) multiple TOCs can be created within a design. As a result, a stylesheet designer can create a document with, say, one (hierarchical) TOC at the book level and others (also hierarchical) at the chapter level, plus (flat) lists of figures and tables.

Procedure for creating TOCs

Given below is one step-by-step way of creating a TOC, in which items are first marked for inclusion, and the TOC template is constructed subsequently. (Alternatively, you can create the TOC template first, and then mark items for inclusion; or you can create the TOC template and select items for inclusion in parallel.)

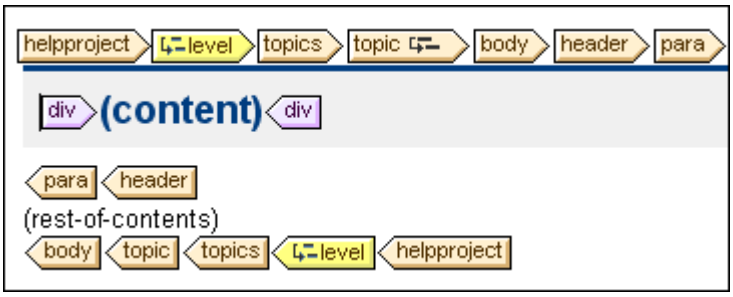
1. Make sure that XSLT 2.0 is the selected XSLT version.

2. *Structure the document in levels*. If the TOC is to have multiple levels, structure the design in a hierarchy of nested levels. If the TOC is to have a flat structure (that is, one level only), then create at least one level that will enclose the TOC bookmarks.
3. *Create one or more TOC bookmarks within each level in the document design.* The TOC bookmarks identify the components within each level that are to appear in the TOC.
4. *Create a TOC template*. The TOC template should have the required number of TOC reference levels (reflevels). In the case of a multi-level TOC, the reflevels in the TOC template should be nested (*see screenshot above*).
5. *Create TOCrefs*. In the TOC template, set up a TOCref for each level. Each TOCref will reference, by name, the required TOC bookmarks within that level in the document; alternatively, the TOCref may additionally reference TOC bookmarks in other levels.
6. *Format the TOC items*. Each TOC item (in the TOC template) can contain item numbering (including hierarchical), the TOC item text, a leader, and, for paged media, a page number. Each TOC item and its parts can be formatted as required. Note that you can include numbering not only in the TOC template, but also within a TOC bookmark in the main body of the document.

Marking Items for TOC Inclusion

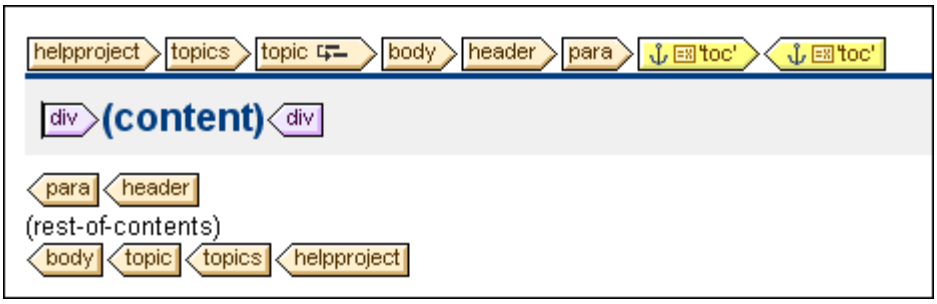
Marking an item in the design for inclusion in a TOC consists of two steps, which can be done in any order:

1. Structuring the design document in a hierarchy of nested levels. A level is created in the design either on a template or around a design component. In the screenshot below, a level has been created on the `topic` template topic.



When a level is created on a template, this is indicated by the level icon inside the start tag of the template. For example, topic. When a level is created around a component it is indicated by level tags level level. In the screenshot above, the `topics` template component is enclosed by a level. The difference between the two ways of marking levels is explained in the section Structuring the Design in Levels. When the TOC template is created, it must be structured in a hierarchy of levels, with the levels in the TOC template corresponding to the levels you have created in the design. Even for TOCs with a flat structure (one level), the design must have a corresponding level.

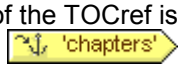
2. Creating a TOC bookmark in the design with a name and TOC-item text. The TOC bookmark can either enclose or not enclose a design component; in the latter case it is empty. In the screenshot below, the TOC bookmark does not enclose a design component.



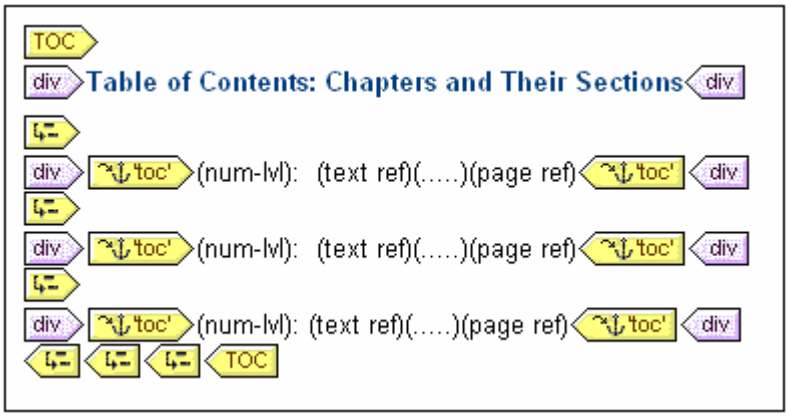
The TOC bookmark serves as an anchor in the document. In the screenshot above, the TOC bookmark (and anchor) is located at the start of `para` element instances. The TOC bookmark has two attributes: (i) a name that will be used to reference the TOC bookmark when creating the TOC item in the TOC template, and (ii) a text string that will be used as the text of the corresponding TOC item. How these two attributes are assigned is described in the section, Creating TOC Bookmarks.

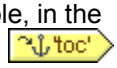
How marked items are referenced in the TOC template

The TOC template is structured in nested levels (called reference levels (reflevels) to differentiate them from the levels created in the main body of the design template). Within each reflevel, a TOC reference (TOCref) 'toc' is inserted (*see screenshot below*). The TOCref within a level references TOC bookmarks using the TOC bookmark's name. Each TOC bookmark with that name and which is within the corresponding level in the XML document will

be created as a TOC item at this level in the TOC (when the scope of the TOCref is specified to be the current level). For example, the TOCref indicated with the tag 

references all TOC bookmarks named `chapters` in the corresponding level in the XML document (when the scope of the TOCref has been set to `current`). The text attribute of the respective instantiated TOC bookmark will be output as the text of the TOC item.



In the screenshot above of a TOC template, there are three nested reflevels, within each of which is a TOCref that contains the template for the TOC item of that level. For example, in the first level, there is a TOCref that references TOC bookmarks that have a name of `toc` 

. As a result, all TOC bookmarks in the first level (as structured in the design) and named `toc` will be accessed for output at this level in the TOC. The TOCref within the second level also references TOC bookmarks having a name of `toc`. As a result, all TOC bookmarks in the second level of the document (as structured in the design) and that are named `toc` will be used for second-level items in the TOC. The third level works in the same way: TOC bookmarks named `toc` that occur within the document's third level are referenced for third-level items in the TOC.

In the sub-sections of this section, we describe: (i) how the design is structured into levels, and (ii) how bookmarks are created. How the TOC template is created is described in the section, Creating the TOC Template.

Structuring the Design in Levels

The hierarchical structure you wish to design for the TOC is specified as a set of **nested levels**. As such it is a hierarchical structure which, although related to the XML document structure, is separate from it. This structure is specified in the SPS document design. The TOC template that you construct will use a structure corresponding to this hierarchical structure. In the case of a TOC with a flat structure (one level only), the design document must have at least one level. If more than one level exists in the document, a flat TOC can then be created for any of these levels or for multiple levels.

Levels can be created in the main template, in global templates, or in a combination of main template and global templates. The important thing to note is that wherever created, these levels must together, in combination, define a hierarchical structure for the output of the SPS.

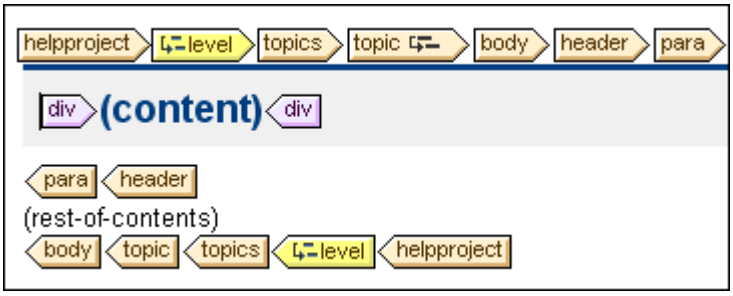
Creating levels

Each level is created separately. In the design document, levels can be created on a template or around a component. In the screenshot below, one level has been created on the `topic` template (indicated by 

) and another around the `topics` element (indicated by 

). The essential difference between these two ways of creating levels is that the enclose-within-a-level option 

enables levels to be created around components other than templates.

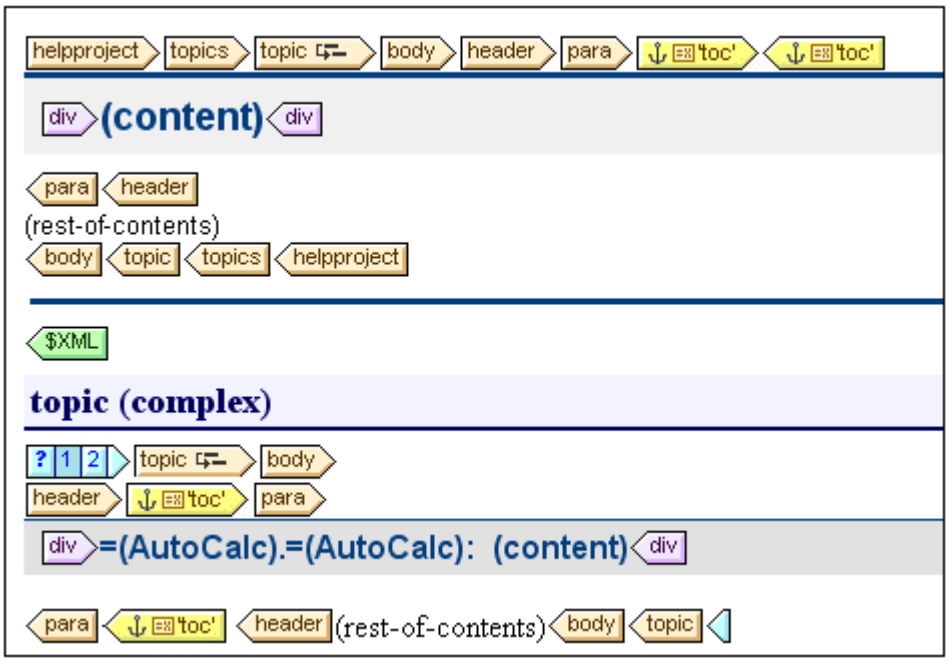


To create a level, do the following:

1. Select the component (template or other).
2. Right-click, and from the context menu select **Template Serves As Level** (enabled when a template is selected) or **Enclose With | Level**. Both these options are also available in the **Insert | Insert Table of Contents** menu: **Level** or **Template Serves as Level**.

Levels in global templates

Levels can also be set in global templates. In these cases, care must be taken to ensure that the levels created in various global templates, as well as those in the main template, **together** define a hierarchical structure when the SPS is executed. The screenshot below shows two levels, one in the main template (on the `topic` template) and one in the global template for `topic` (on the `topic` template).



In the content model represented by the screenshot above, `topic` is a recursive element, that is, a `topic` element can itself contain a descendant `topic` element. In the main template (the end of which is indicated by the $XML tag), a level has been set for the first level of `topic` topic. The `rest-of-contents` instruction in the main template specifies that templates will be applied for all child elements of `topic/body` except `header`. This means that the global template for `topic` children of `topic/body` will be processed. In the global template for `topic`, a level has been set on the `topic` template (indicated by topic). This second level of the TOC hierarchy, which occurs on the second level of `topic` elements, is nested within the first level of the TOC hierarchy. Since this global template also has a `rest-of-contents` instruction, the global template for `topic` will be applied to all recursive `topic` elements, thus creating additional nested levels in the TOC hierarchy.

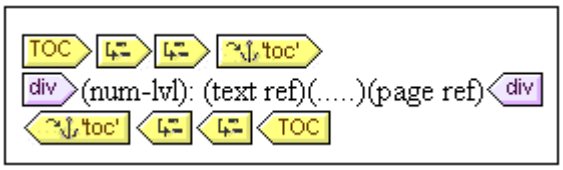
As a designer, you should be aware of the number of levels created in the design, because when the TOC template is constructed, you will need to explicitly specify how TOC items for each level will be selected and formatted.

Levels in a flat TOC hierarchy

In a flat TOC hierarchy, the TOC items will be output at a single level; the outline of the document in the TOC will be a simple list of items. In the TOC template, the items to be listed are referenced in the usual way in the design document: by their name and the level in which they occur. Therefore, the document design must contain at least one level, and this level must contain all the required TOC bookmarks.

If the design contains more than one level, and the flat TOC is required, say, for items in the second level, then the TOC template could have two reflevels with a TOCref within the second level (*screenshot below*).

For example, consider the design document shown in the screenshot above: It has one level on the `topic` template in the main template and sub-levels on the `topic` template in the global template. The TOC template shown in the screenshot below will produce a flat TOC of the second-level topic headers (assuming that the bookmark name is `toc`).



This is because the TOCref in the TOC template references TOC bookmarks named `toc` that are within the second level. Notice that in the TOC template the TOCref item is created within the second reflevel of the TOC template. Since only one level is output (there is no output for the first reflevel), the resulting TOC will be flat.

Note: Alternatively, the scope attribute of TOCrefs can be used to specify what level/s in the design document should be looked up for bookmarks of a given name.

Creating TOC Bookmarks

TOC bookmarks are created within a TOC level in the document design. They can be created in the main template and/or in global templates. A TOC bookmark serves two purposes:

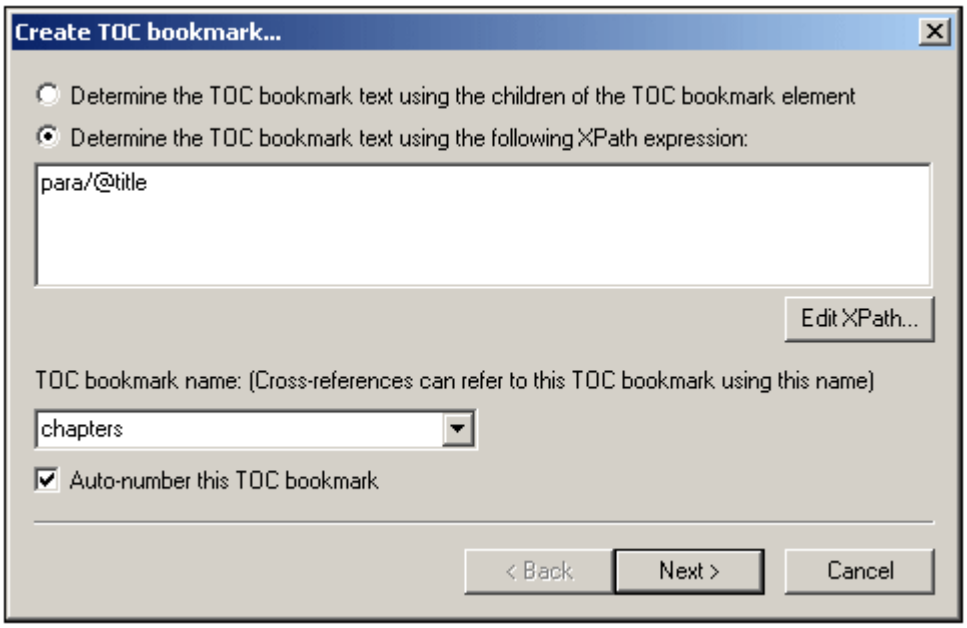
- It marks a (static or dynamic) component in the design with a static name you assign. It can either enclose or not enclose a design component; in the latter case it is empty. In the output, the TOC bookmark is instantiated as an anchor identified by a name.
- It defines the text string that will be used as the text for the TOC item/s. This text string can be the content of child elements of the node where the marker is located, or it can be the output of an XPath expression.

You can create the TOC bookmark in two ways: (i) by using the Create Marker Wizard, which enables you to specify the TOC bookmark's name; its text entry; whether auto-numbering should be used; and the level within which it appears; and (ii) by inserting an empty TOC bookmark, the properties of which will be defined subsequently.

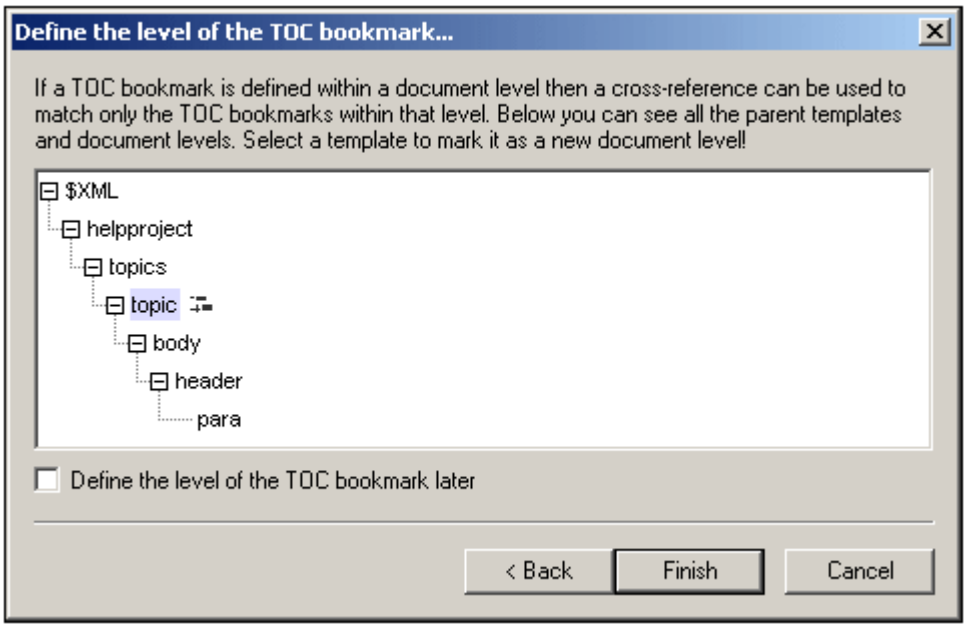
Creating the TOC bookmark with the Create Marker Wizard

To create a TOC bookmark using the TOC Bookmark Wizard, do the following:

1. Place the cursor at the point in the design document where you wish to insert the TOC bookmark, or select the design component around which you wish to insert the TOC bookmark.
2. From the **Insert** menu, select **Insert Table of Contents | TOC Bookmark (Wizard)**. This pops up the Create Marker Wizard (*screenshot below*).



1. In the wizard's first screen (*screenshot above*) you: (i) define the text entry for the TOC item; (ii) set the TOC bookmark (or marker) name; and (iii) specify whether this marker should be numbered in the output. For the text entry you can select whether the text of child elements should be used, or the result of an XPath expression. For the name of the marker, you can enter text directly or select from a dropdown list containing the names of already specified marker names. When you are done, click **Next**.
2. In the wizard's second screen (*screenshot below*), you can select the level within which the TOC bookmark is to be inserted.



Ancestor templates on which levels are assigned are indicated with a level icon (in the screenshot above, the `topic` template has a level). Select a template-level within which the TOC bookmark is to be created. If a level already exists for this template, the TOC bookmark will be created within this level, otherwise a new level will be created on the selected template. Alternatively, you can choose to define the level later by checking the Define Level Later check box. When you are done, click **Finish**.

Creating a TOC bookmark

To create a TOC bookmark without attributes, do the following:

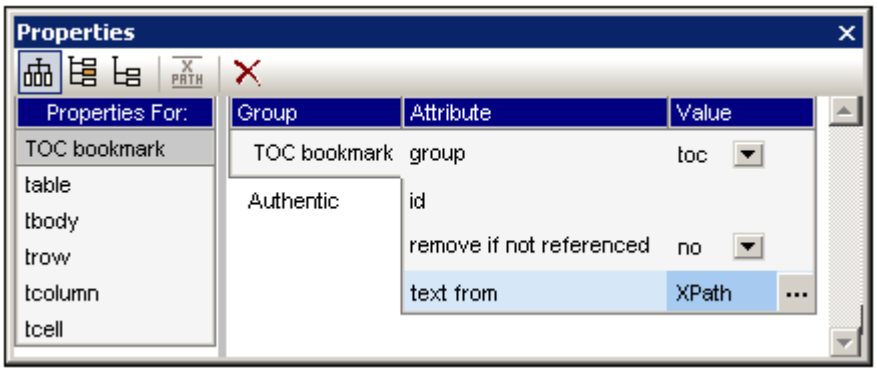
1. Place the cursor at the point in the design document where you wish to insert the TOC bookmark, or select the design component around which you wish to insert the TOC bookmark.
2. From the **Insert** menu, select **Insert Table of Contents | TOC Bookmark**. A TOC bookmark is inserted. This TOC bookmark has neither a name nor a text entry. These can be defined subsequently using the Edit commands.

Inserting hierarchical or sequential numbering for a component

Hierarchical or sequential numbering can be inserted within a TOC bookmark's tags. Right-click at the location where you wish to insert the numbering, then select **Insert Table Of Contents | Hierarchical / Sequential Numbering**. Since numbering can only be inserted at locations within a TOC bookmark, it is better, for numbering purposes, that a TOC bookmark be created around a component rather than be empty. This would allow greater layout flexibility in the placement of the numbering.

Editing the name and text entry of a TOC bookmark

The name and text entry of the TOC bookmark can be edited in the Properties window (*screenshot below*). To edit these properties, select the TOC bookmark, and either directly edit the property in the Property window or right-click the TOC bookmark and select the property you wish to edit.



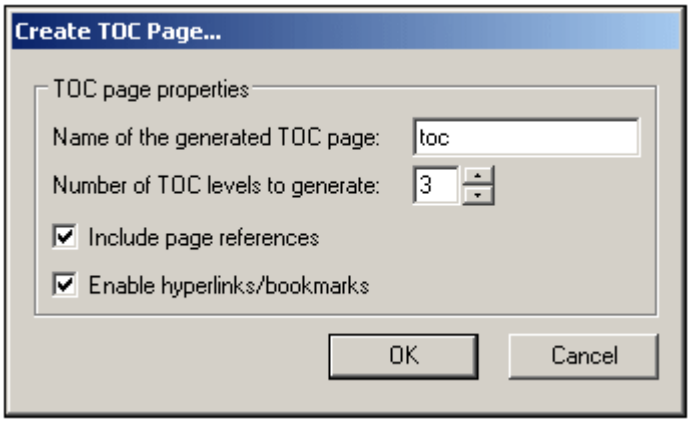
The TOC bookmark has three properties: (i) an option (*Text From*) to specify the text entry, which could come from the bookmark's content or from an XPath expression; (ii) the name of the TOC bookmark group (*Group*); and (iii) an option to remove the bookmark if it is not referenced.

Creating the TOC Template

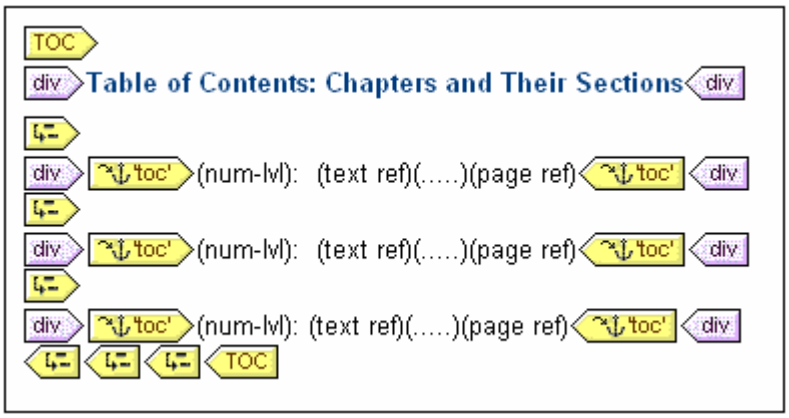
The TOC template is the template that produces the table of contents in the output. It can be created anywhere within the SPS design, and multiple TOC templates can be created in a single SPS design.

The steps to create a TOC template are as follows:

1. Place the cursor at the location where the TOC template is to be inserted.
2. Click the menu command **Insert | Insert Table of Contents | Table of Contents**. This pops up the Create TOC Page dialog (*screenshot below*). (Alternatively, this command can be accessed via the context menu, which appears when you right-click.)



3. Enter the information requested in the dialog: (i) The name of the generated TOC page is the (TOCref) name that will be used to reference the TOC bookmarks in the design document. If you select multiple levels for the TOC (next option), the same TOCref name will be used in all levels (though individual TOCref names can be edited subsequently). (ii) The number of TOC reflevels specifies how many levels the TOC is to have. (iii) For printed media, the option to output page references (i.e. page numbers) is available. (iv) The text entries in the TOC can be used as links to the TOC bookmarks.
4. Click **OK** to finish. The TOC template is created with the specified number of reflevels (*screenshot below; the formatting of the TOC template has been modified from that which is created initially*).



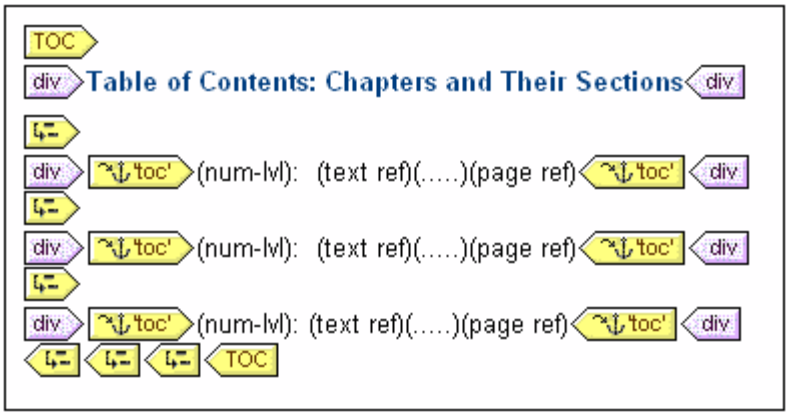
Within each reflevel is a TOCref having a name that identifies TOC bookmarks that are to be the TOC items for that TOC template reflevel. Within each TOCref is a default template for the TOC item, which you can edit at any time.

Editing the TOC template
The following editing options are available:

- The TOC template can be dragged to another location in the SPS. Note, however, that a change of context node could affect XPath expressions within the TOC template.
- Reflevels can be added to or deleted from the structure of the TOC template.
- The properties of individual TOC references (TOCrefs) can be edited. The name and scope of a TOCref can be changed, and you can choose whether the TOC item corresponding to the TOCref is created as a hyperlink or not.
- TOCrefs can be added to or deleted from any reflevel in the TOC template.
- The TOC item within a TOCref can be formatted with CSS properties using the standard StyleVision mechanisms.
- Standard SPS features (such as images, Auto-Calculations, and block-formatting components can be inserted anywhere in the TOC template.

Reflevels in the TOC Template

The TOC template is structured in **level references (or reflevels)**; *see screenshot below*. These levels are initially created when the TOC template is created, and the number of reflevels are the number you specify in the Create TOC Page dialog.



Notice that the reflevels are nested. For the purposes of the TOC design there is a one-to-one correspondence between the reflevels in the TOC template and the levels in the SPS design. Thus, the first reflevel of the TOC template corresponds to the first level in the SPS design, the second reflevel in the TOC template to the second level in the SPS design, and so on. The TOCrefs within a given reflevel of the TOC template identify TOC bookmarks within a specified scope in the SPS design.

Inserting and removing reflevels

Reflevels can be inserted in or deleted from the TOC template after the TOC template has been created.

To insert a reflevel, select the content in the TOC template around which a reflevel is to be created, then select **Insert | Insert Table of Contents | Level Reference**. Alternatively, from the context menu, select **Enclose With | Level Reference**. A reflevel can also be inserted at a cursor insertion point in the TOC template.

To remove a reflevel from the TOC template, select the reflevel to be removed and either press the **Delete** key or select **Remove** from the context menu. Note that only the reflevel will be removed—not its contents.

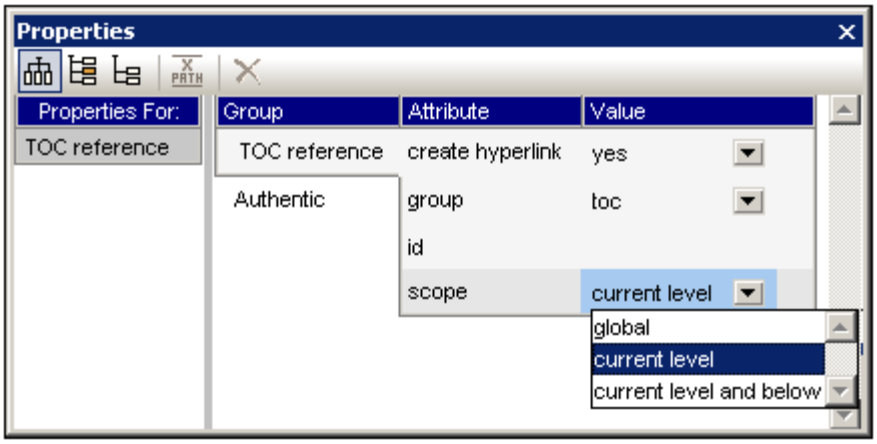
TOC References: Name, Scope, Hyperlink

TOC references (TOCrefs) occur within level references (reflevels) and have three properties:

- A ***name***, which identifies TOC bookmarks of the same name that occur within the specified scope as the items to be included at that level of the TOC.
- A ***scope***, which specifies to which corresponding levels in the SPS design the TOCref applies. Three options are available: global, current level, current level and descendant levels.
- A ***hyperlink*** property which can be toggled between `yes` and `no` to specify whether the corresponding TOC items are created as hyperlinks or not.

To insert a TOCref, place the cursor within a reflevel and, from the **Insert** menu or context menu, select Insert **Table of Contents | TOC Reference**.

To edit a TOCref property, right-click the TOCref tag in the TOC template and select the property you wish to edit (*Create Hyperlink*, *Edit Group*, or *Edit Scope*). This pops up the Properties window with the specified property selected for editing (*screenshot below*).

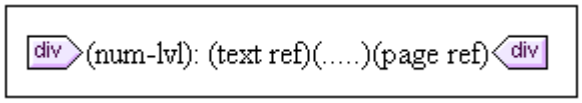


Alternatively, with the TOCref tag selected, go directly to the required property in the Properties window (*TOC reference* group of properties).

Formatting TOC Items

The TOC item can contain up to four standard components, plus optional user-specified content. The four standard components are (*see also screenshot below*):

- the text entry of the TOC item, indicated in the TOC template by `( text ref)`
- the leader between the text entry and the page number (for paged media output), indicated by `( . . . . . )`
- the page reference of the TOC item, indicated by `( page ref)`
- hierarchical or sequential numbering, indicated by `( num-lvl)` and `( num-seq)`, respectively



When the TOC template is initially created, the text entry is automatically inserted within TOCrefs. If the Include Page Reference option was selected, then the leader and page reference components are also included. Subsequently, components can be inserted and deleted from the TOC item. To insert a component, place the cursor at the desired insertion point within the TOC item, and in the context menu, select **Insert Table Of Contents | TOC Reference | Text Entry / Leader / Page Reference** or **Insert Table Of Contents | Hierarchical Numbering / Sequential Numbering** as required. To delete a component, select it and press the **Delete** key.

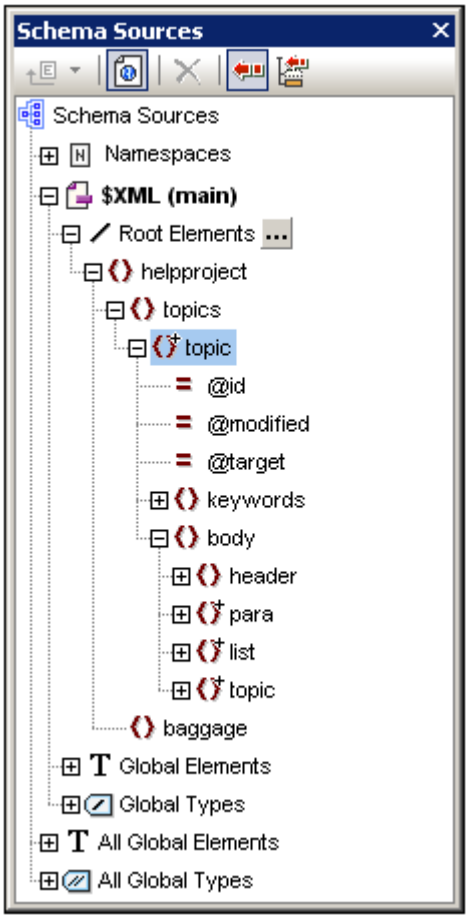
Additionally, you can insert static content (e.g. text) and dynamic content (e.g. Auto-Calculations) within the TOC item.

Formatting the TOC item

The TOC item can be formatted with CSS styles via the Styles sidebar. Individual TOC item components can be separately formatted by selecting the component and assigning it style properties in the Styles sidebar.

Example: Hierarchical and Sequential TOCs

An example SPS file to demonstrate the use of TOCs, called `Chapters.sps`, is in the folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\TOC`. This SPS is based on a schema that defines the content model of a large chapter-based document. The schema structure is shown in the screenshot below and can be viewed in the Schema Tree window of StyleVision when you open `Chapters.sps`.



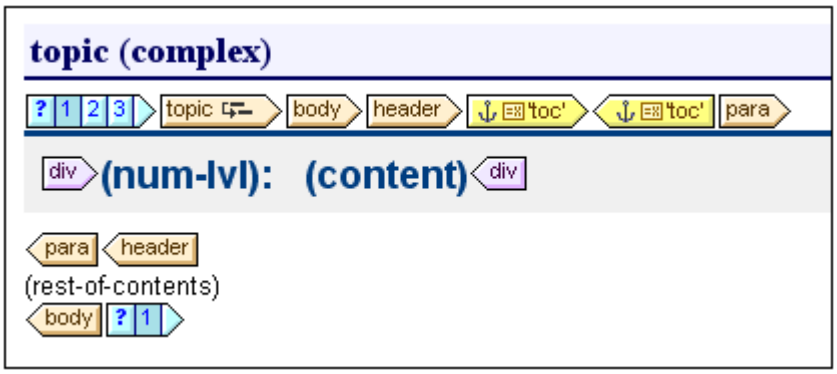
The document element is `helpproject`, which contains a child `topics` element. The `topics` element can contain an unlimited number of `topic` elements, each of which can in turn contain descendant `topic` elements. The first level of `topic` elements can be considered to be the chapters of the document, while descendant `topic` elements are sections, sub-sections, and so on.

The SPS contains three TOCs, located at the top of the document, in the following order:

1. *Chapters at a glance*, which lists the names of each chapter (the first-level topics).
2. *Chapters and their sections*, which lists each chapter with its descendants sections (first-level topics, plus each topic's hierarchy of sub-topics down to the lowest-level topic, which in the accompanying XML document, `chapters.xml`, is the third-level topic)
3. *List of images*, which is a flat list of all images in the document (except the first), listed by file name.

SPS structure
Before considering the TOCs in detail, take a look at the structure of the design. Notice that the main template (with the green `$XML` tags) contains the TOCs. The rest of the main template specifies, through the `rest-of-contents` instruction, that global and default templates are to be applied.

The TOC definitions are in the global templates for `topic` and `image`. In the global template for `topic` (*screenshot below*), a level has been created on the `topic` element, and a bookmark has been created within the `header` child element (but outside the `para` element).

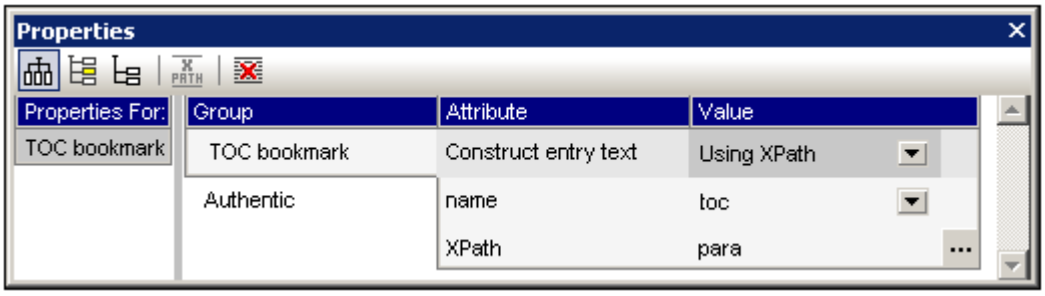


Since the `topic` element is recursive, the levels and the bookmark will also recurse. This means that a new hierarchically subordinate level and and a new bookmark is created for each descendant topic. Since the formatting of the header (the topic title) for each level is to be different, we have enclosed each level within a separate branch of a condition with three branches. Each branch tests for the level at which a topic occurs: first, second, or third level.

Notice that hierarchical numbering `(num-lvl)` has been inserted within the level. This is done by right-clicking at the required location and selecting **Insert Table of Contents | Hierarchical Numbering**. The effect is to insert the correct hierarchical number before each topic title in the **document's text flow**, for example, `3.1` or `4.2.3`.

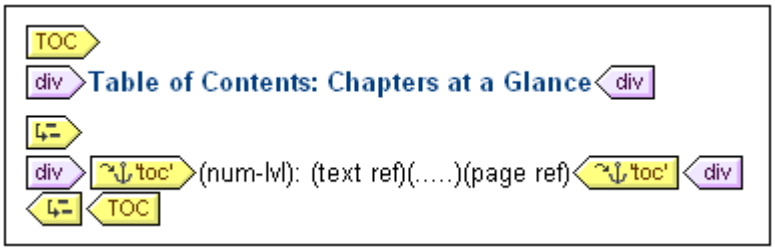
TOC descriptions
Given below is a brief description of each TOC and the points to note about them.

Chapters at a glance: Select the TOC bookmark in the global template for `topic`. In the Properties sidebar (*screenshot below*), notice that the entry text has been set to be constructed using an XPath expression, and that the XPath expression has been defined as: `para`. This means that the contents of the `para` child of `header` (since the bookmark has been inserted within the `header` element) will be used as the text of the TOC item.



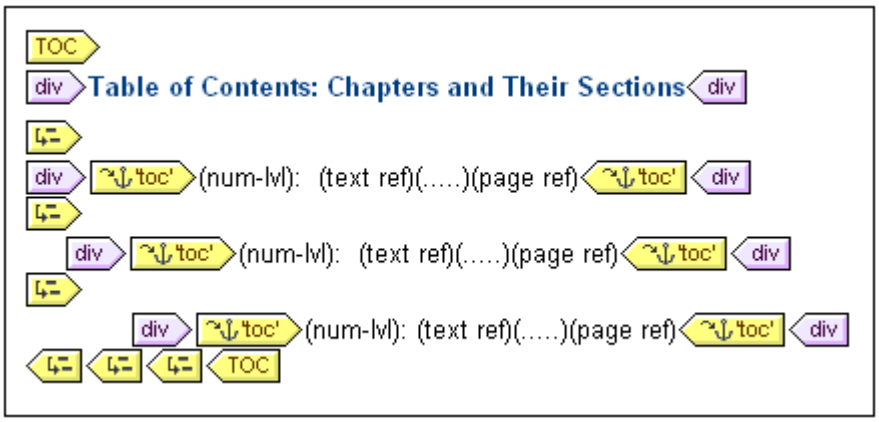
The TOC template itself (*screenshot below*) contains one reflevel  , and the TOCref within

that reflevel 'toc' has been set to select TOC bookmarks named `toc` within the scope of the current level only—which is the first level. As a result, TOC items will be created only for first-level topics.



Notice also that the numbering has been defined as hierarchical numbering.

Chapters and their sections: In this TOC (*screenshot below*), notice that three nested reflevels have been defined, each containing a TOCref for which the scope is the current level.



Since each TOC item is contained in a `div` block, formatting properties (including indentation) can be set for the block.

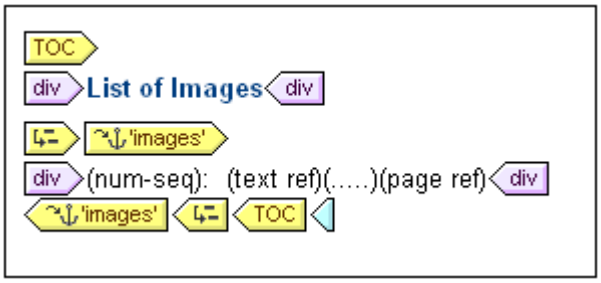
List of images: The list of images is a flat list. First of all, consider within which levels images will occur in the instantiated document. The `image` element is a child of the `para` element. Since levels have been created on `topic` elements, `image` elements will occur within the first, second, and/or third levels of the document. There is therefore no need to create any level for the `image` element.

In the global template for `image`, the condition (*see screenshot below*) enables separate processing for (i) the first image (which is presented in this example), and (ii) the other images (which, for purposes of economy, are not presented in this example).

Notice that the TOC bookmark is placed only within the second branch of the condition; this means that the images selected in the first branch are not bookmarked. Also, the sequential numbering (`num-seq`) of the images, inserted with **Insert Table of Contents | Sequential Numbering**, will start with the second image (because the first image is selected in the first branch of the condition). Another feature to note is that the numbering can be formatted, as has been done in this case. To see the formatting, right-click `( num-seq)` , and select **Edit Format**. In

the dialog box that pops up, you will see that the formatting has been set to `01`, indicating that a `0` will be inserted in front of single-digit numbers.

In the TOC template for images (*screenshot below*), notice that there is a single TOCref identifying bookmarks named `images`, and that this TOCref is within a single reflevel. The scope of the TOCref (editable in the Properties window when the TOCref is selected) has been set to: `current level and below`. The current level, determined by the reflevel, is the first level. The levels below will be the second, third, and so on. In this way, all images from the first level downward are selected as items in the TOC.



Since the selected numbering is sequential, the images are numbered sequentially in a flat list. These numbers can also be formatted.

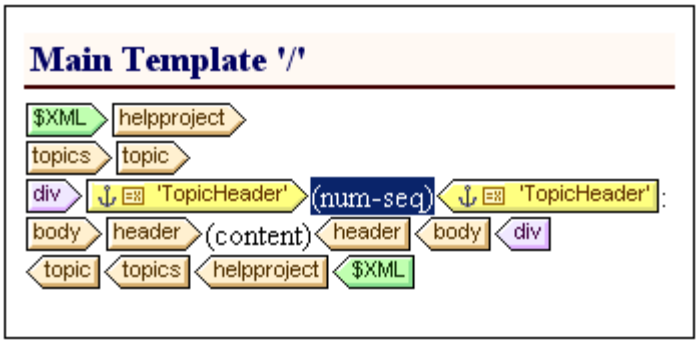
Auto-Numbering

Repeating instances of a node can be numbered automatically using StyleVision's Auto-Numbering feature. For example, in a `Book` element that contains multiple `Chapter` elements, each `Chapter` element can be numbered automatically using the Auto-Numbering feature. This is an easy way to insert numbering based on the structure of the XML document. Auto-Numbering can be either flat or hierarchical, and there is a wide variety of formatting available for the numbers.

Flat (sequential) numbering

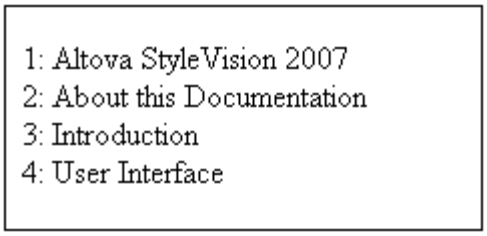
Flat numbering can be inserted within a TOC Reference or within a TOC Bookmark. Within a TOC Reference, flat numbering will point back to a bookmark in the document; it would be a TOC entry and is described in the Table of Contents (TOC) section. In this section, we describe how to create flat numbering within a TOC Bookmark in the document. Such numbering can be independent of a TOC. To create flat numbering in a document, do the following:

1. Place the cursor within the node that has to be numbered and create the TOC Bookmark (right-click, and select **Insert Table of Contents | TOC Bookmark**). The TOC Bookmark will be created.
2. Place the cursor within the tags of the TOC Bookmark, right-click, and select **Insert Table of Contents | Sequential Numbering**. This inserts the Auto-Numbering placeholder for flat (sequential) numbering, `( num-seq)` (*highlighted within the TOC Bookmark 'TopicHeader' in the screenshot below*).



3. Right-click the TOC Bookmark and toggle off the command **Construct Entry Text Using XPath**. This is because: (i) the TOC Bookmark is being used solely for flat numbering and not for TOC entries; no text entry for TOC entries is required; and (ii) to ensure that no faulty XPath expression—that can cause a transformation error—is used.
4. There is no need to name the TOC Bookmark (since it will not be referenced from a TOC template), but you could name it if you wish (right-click the TOC Bookmark and select the **Edit Name** command).

In the example shown in the screenshot above, flat numbering has been set on the `Topic` node. The result is that each `Topic` element receives a sequential number, as shown in the screenshot below.



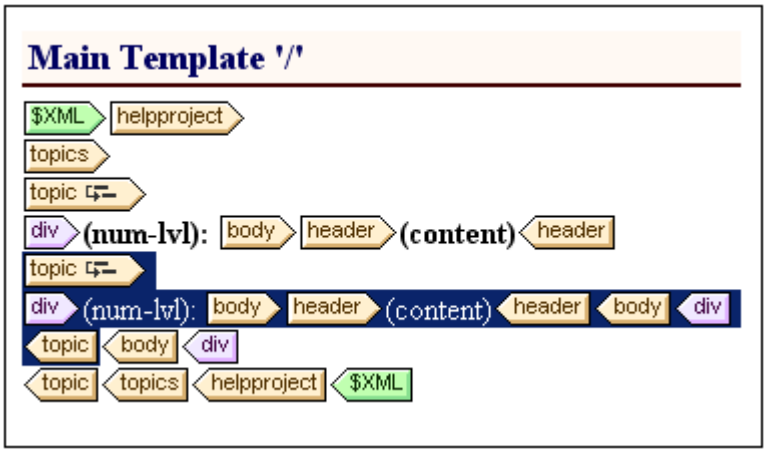
Note: If the flat numbering must be continued on another set of nodes, then use a TOC Bookmark that has the same name as that of the TOC Bookmark from which the numbering is to be continued.

Hierarchical numbering

Hierarchical numbering can be inserted within a Reflevel or within a Level in the design. Within a Reflevel, hierarchical numbering will point back to a TOC bookmark in the document; it would be a TOC entry and is described in the Table of Contents (TOC) section. In this section, we describe how to create hierarchical numbering within levels in the document. Such hierarchical numbering can be independent of a TOC.

To create hierarchical numbering in a document, you must first structure the document in levels and create levels as described in the section Structuring the Design in Levels. The following points should be borne in mind:

- Levels must be created either on the node to be numbered or within it.
- Levels must be nested according to the hierarchy of the numbering required (*see screenshot below*).
- The hierarchical numbering placeholder must be inserted within the corresponding level in teh design (*see screenshot below*).



In the screenshot above, there are two levels. The `topic` element is recursive, and a level has been created on two `topic` elements (by right-clicking the node tag and selecting **Template Serves as Level**). One `topic` element (*highlighted in the screenshot above*) is nested within the other. As a result, the levels are nested. Within each level, a hierarchical numbering placeholder `( num-lvl)` has been inserted (right-click within the level and select **Insert Table of Contents | Sequential Numbering**).

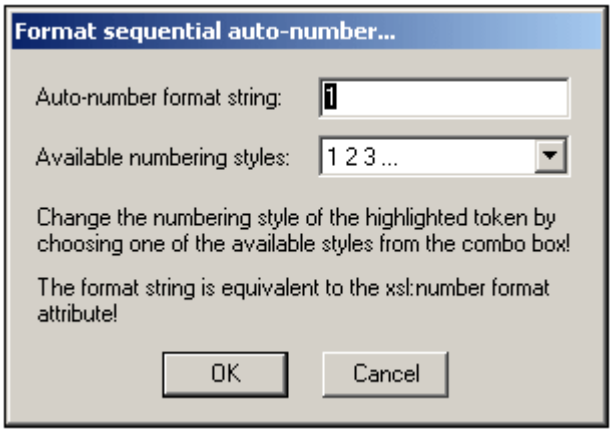
The result of the design shown in the screenshot above will look like this.

The first level is shown in bold, the second in normal.

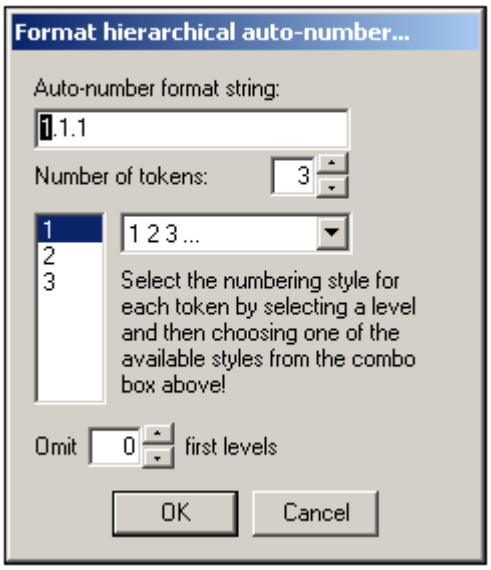
Formatting

To format the Auto-Numbering, right-click the Auto-Numbering placeholder (`( num-seq)` or `( num-lvl)`) and select Edit Format. This pops up the respective dialogs (screenshots below), in which you can select the required formatting from a range of options.

- Sequential numbering: Select a numbering style. The selection is is displayed in the Format String box and can be modified there if required.



- Hierarchical numbering: First select the numbering style and then the number of tokens. The resulting format string is displayed in the Format String box. Levels can be omitted by entering the required number of levels to be omitted in the Omit Levels box.



Click **OK** when done.

Text References

Anchors can be created on nodes in a document and can be given dynamic names. These anchors can then be referenced by their dynamic names. This means, in effect, that text can be marked for referencing and then referenced from elsewhere in the document

In the GUI, these anchors with dynamic names (the text references) are created by means of TOC Bookmarks, which can use XPath expressions to dynamically locate the text to be referenced. The design can then contain TOC References that identify the required TOC Bookmarks by their names. In this way, the TOC Reference identifies the teext reference and links to it.

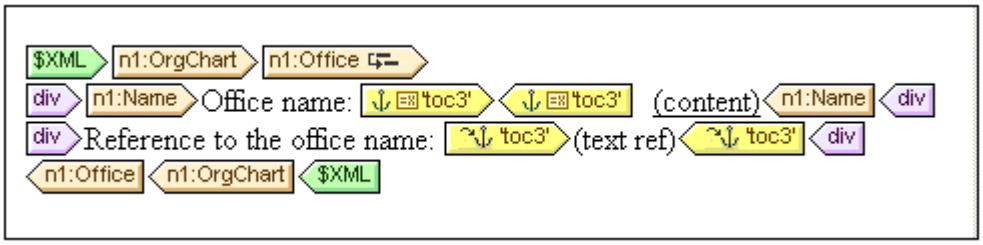
TOC References can be located within Levels and within Reference Levels. The latter case is used in TOCs and is described in the section Table of Contents (TOC). In this section, we describe how references are created within levels in the design document, thus enabling them to be used as cross-references.

Step 1: Levels

The document is structured into levels as described in the section Structuring the Design in Levels. The levels will be used during referencing to specify the scope of the referencing. In teh screenshot below, a level has been created on the `n1:Office` element.

Step 2: Creating TOC Bookmarks

Within a level, a TOC Bookmark is created with a name and an XPath expression that identifies the node in the document, the contents of which is the text reference to be located. In the screenshot below, the TOC Bookmark within the `n1:Name` element 'toc3' 'toc3' has a name of `toc3` and an XPath expression that locates the current node. This means that the text reference will be the contents of the `n1:Name` node.



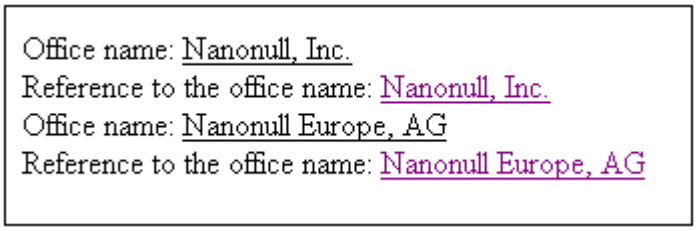
When the XML document is processed, for every `n1:Office/n1:Name` element an anchor is created with a text reference that is the value of the `n1:Office/n1:Name` element.

A TOC Bookmark is inserted in the document by placing the cursor at the required location, right-clicking, and selecting **Insert Table of Contents | TOC Bookmark**.

Step 3: Creating TOC References

A TOC Reference is inserted (context menu, **Insert Table of Contents | TOC Reference**) to create a link to text references generated by a TOC Bookmark. In the screenshot above, the selected location of 'toc3' (text ref) 'toc3' is within the same level as that in which the TOC Bookmark was created (the `Office` level). When defining the TOC Reference, you specify two things. First, the name of the TOC Bookmark to point to; in the case of the screenshot above, the name is `toc3`. Second, the scope of the referencing; in the example shown above, the scope is the current level. This means that TOC Bookmarks within the current level are targeted by this reference.

The output will look something like this:



The purple text is that generated by the `( text ref)` placeholder of the TOC Reference. The content of the text reference is derived from the XPath expression in the TOC Bookmark referenced by the TOC Reference.

In the above example, the scope was set to the current level. There are two other possibilities for the scope: (i) a global scope, (ii) scope for the current level and below. With these options, it is possible to also target TOC Bookmarks in other levels of the design.

Bookmarks and Hyperlinks

In the SPS document, bookmarks can be inserted anywhere within the design. These bookmarks are transformed into anchors in the output, which can be linked to from hyperlinks. Hyperlinks can not only link to bookmarks, but also to external resources like Web pages. StyleVision offers considerable flexibility in the way target URIs for hyperlinks can be built.

In this section, we describe:

- How bookmarks can be inserted in the SPS.
- How hyperlinks can be inserted in the SPS and how they link to the target pages.

Inserting Bookmarks

A bookmark (or anchor) can be inserted anywhere in the SPS, at a cursor insertion point or around an SPS component.

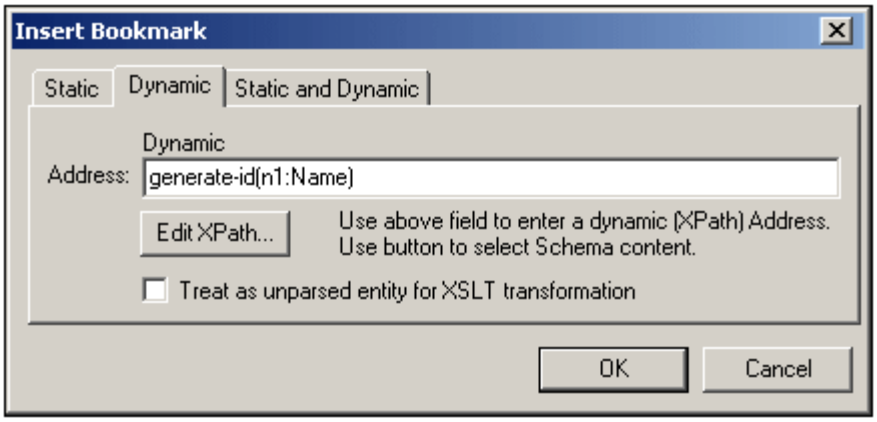
Bookmarks are created in the SPS via the Insert Bookmark dialog (*screenshot below*). In this dialog you define the name of the bookmark. The name can be a static name, or it can be a dynamic name that is (i) derived from XML document content, or (ii) generated arbitrarily with an XPath expression.

Bookmarks are created at the location specified in the design. If that location is within an element that repeats, a bookmark is created within each instance of that repeating element. If a static name is given, then each bookmark will have the same name. Therefore, it is better in such cases (of repeating elements) to give a dynamic name, which can be, for example, the content of a child element of the context node (the element within which the bookmark is created). If the node selected for the dynamic name might have the same content across multiple instances, then the uniqueness of the bookmark name can be ensured by using the `generate-id()` function to generate the name (*see screenshot below*). To reference the bookmark, the same ID can be generated as the `href` value of a hyperlink.

Creating a bookmark

To insert a bookmark, do the following:

1. Place the cursor at the location where you wish to create the bookmark.
2. Select the menu command **Insert | Bookmark**, or right-click and select **Insert | Bookmark**.
3. In the Insert Bookmark dialog (*screenshot below*), select a tab according to whether the name of the bookmark should be static (Static tab), dynamically obtained from the XML document or arbitrarily generated from an XPath expression (Dynamic), or composed of both static and dynamic parts (Static and Dynamic). In the screenshot below a dynamic bookmark is created, which has a name that is a unique ID for each `Name` child of the context node.



4. Click **OK**. The bookmark is defined.

After a bookmark has been created, it can be linked to by a hyperlink.

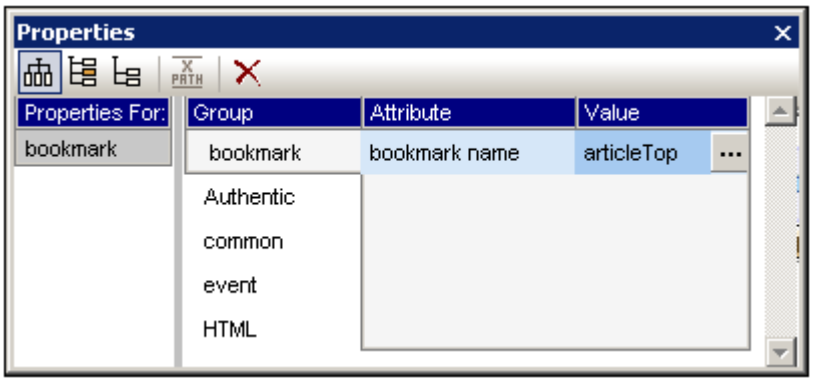
Note: Bookmarks are created at the location specified in the design. If that location is within an element that repeats, a bookmark is created within each instance of that repeating element. If a static name is given, then each bookmark will have the same name. Therefore, it is better in such cases (of repeating elements) to give a dynamic name, which can be, for example, the name of a child element of the context node (the

element within which the bookmark is created). If the node selected for the dynamic name might have the same content across multiple instances, then the uniqueness of the bookmark name can be ensured by using the `generate-id()` function to generate the name (*see screenshot above*). To reference such a bookmark, the same ID can be generated as the `href` value of a hyperlink. In this case make sure you use the fragment-identifier `#` in front of the `generate-id()` function. The XPath expression would be: `concat('#', generate-id(nodeXXX))`.

Modifying a bookmark

After a bookmark has been created, its name can be modified via the Edit Bookmarks dialog. This dialog is accessed as follows:

1. Select the bookmark in the design.
2. In the Properties sidebar, click the **Edit** button of the `Bookmark Name` property (*screenshot below*) in the *Bookmark* group of properties. This pops up the Edit Bookmark dialog, which is identical to the Insert Bookmark dialog described above (*see screenshot above*).



3. In the Edit Bookmark dialog, edit the name of the bookmark in either the Static, Dynamic, or Static and Dynamic tab.

Deleting a bookmark

To delete a bookmark, select it in the design and press the **Delete** key.

Defining Hyperlinks

Hyperlinks can be created around SPS components such as text or images. The targets of hyperlinks can be: (i) bookmarks in the SPS design, or (ii) external resources, such as web pages or email messages. In this section, we first discuss the content of the hyperlink (text, image, etc) and then the target of the hyperlink.

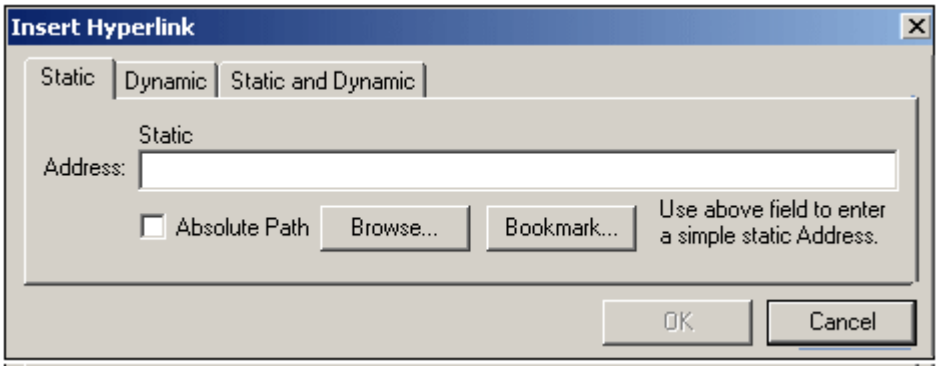
Creating hyperlinks

A hyperlink can be created in the following ways:

- Around text (static or dynamic), nodes, images, conditional templates, Auto-Calculations, and blocks of content or nodes; it cannot be created around a data-entry device such as an input field or combo box—though it can be created around a node or conditional template in which that data-entry device is. This is the content of the link, which, when clicked, jumps to the target of the link. To create a hyperlink around a component in the SPS, select that component and use the **Enclose With | Hyperlink** menu command.
- A new hyperlink can be inserted via the **Insert | Hyperlink** menu command. The content of the link will need to be subsequently added within the tags of the newly created hyperlink.

Defining the target of the hyperlink

The target of the hyperlink is created in the Insert Hyperlink dialog (*screenshot below*), which is accessed via the **Enclose With | Hyperlink** or **Insert | Hyperlink**.



The target of a link can be either:

- A bookmark in the same SPS design (in which case the target URI must be a fragment identifier),
- Dynamically generated to match bookmark anchors (these URIs are also fragment identifiers),
- An external resource; the URI can be static (directly entered), dynamic (taken from a node in an XML document), a combination of static and dynamic parts, or the value of an unparsed entity.

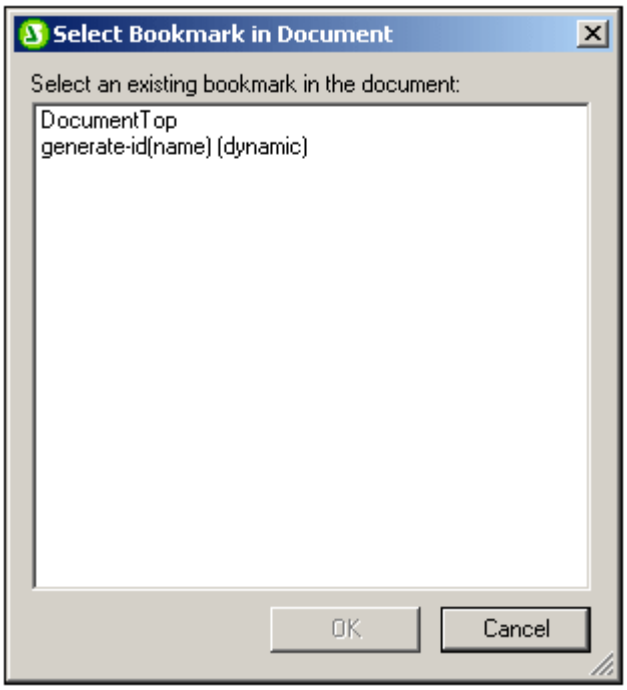
How these targets are defined is explained below. After the URI has been defined in the Insert/Edit Hyperlink dialog, click **OK** to finish.

Linking to bookmarks

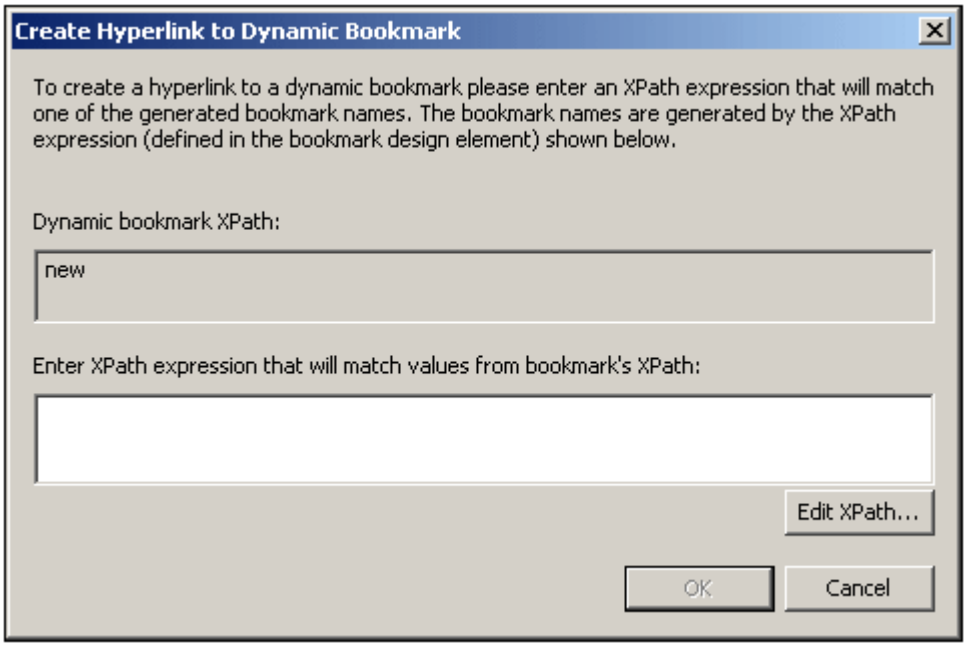
To link to a bookmark, do the following:

1. In the Static tab of the Insert Hyperlink dialog, click the **Bookmark** button. This pops up

the Select Bookmark in Document dialog (*screenshot below*). The screenshot below shows two bookmarks: one static, one dynamic.



2. To select a static bookmark as the target URI, double-click the static bookmark and click **OK**. If you double-click a dynamic bookmark, you will be prompted to enter an XPath expression to match the selected dynamic bookmark (*see screenshot below*).



The dynamic bookmark is actually an XPath expression that generates the name of the bookmark; it is not itself the name of the bookmark. The Create Hyperlink to Dynamic Bookmark dialog, displays the XPath expression of the dynamic bookmark and enables you to construct an XPath expression that will generate a name to match that of the targeted bookmark. Click **OK** when done.

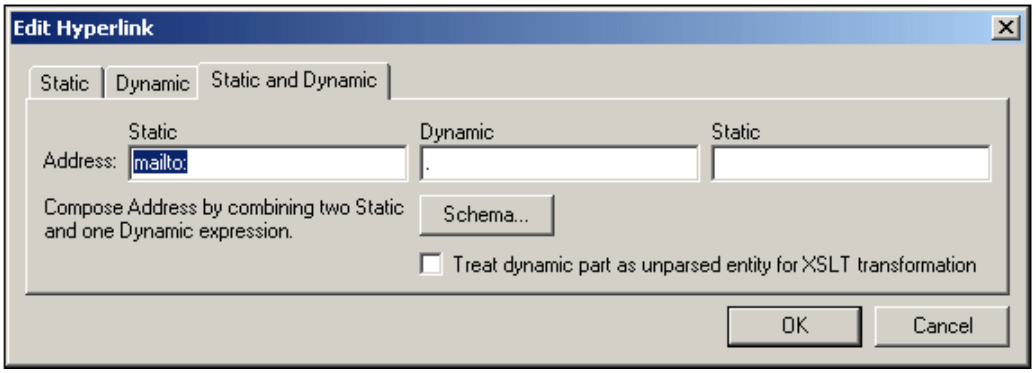
Linking to dynamically generated ID bookmarks
Bookmarks can have dynamically generated ID anchors. If one wishes to link back to such a bookmark, the problem then is this: Since the names of dynamically generated anchors are generated at runtime and therefore unknown at design time, how is one to set the `href` value of a hyperlink that targets such an anchor? The answer is to use the `generate-id()` function once again, this time within the `href` value of the hyperlink. The key to understanding why this works lies in a property of the `generate-id()` function. In a single transformation, each time the `generate-id()` function is evaluated for a specific node, it always generates the same ID. Because of this the IDs generated in the bookmark and the hyperlink will be the same.

Two points should be borne in mind:

- Since the `generate-id()` function must be evaluated as an XPath expression, use the Dynamic tab of the Insert Hyperlink dialog (*see screenshot below*) to set the target of the hyperlink.
- The evaluated value of the `href` attribute must start with `#` (the fragment identifier). Consequently the XPath expression will be: `concat('#', generate-id(nodeXXX))`. Alternatively, in the Static and Dynamic tab, enter `#` in the static part of the address and `generate-id(nodeXXX)` in the dynamic part.

Linking to external resources
URIs that locate external resources can be built in the following ways:

- By entering the URI directly in the Static tab of the Insert Hyperlink dialog. For example, a link to the Altova home page (`http://www.altova.com`) can be entered directly in the Address input field of the Static tab.
- By selecting a node in the XML document source in the Dynamic tab of the Insert Hyperlink dialog. The node in the XML source can provide a text string that is either: (i) the URI to be targeted, or (ii) the name of an unparsed entity which has the required URI as its value. For example, the Altova website address can be contained as a text string in a node.
- By building a URI that has both static and dynamic parts in the Static and Dynamic tab of the Insert Hyperlink dialog. This can be useful for adding static prefixes (e.g. a protocol) or suffixes (e.g. a domain name). For example, email addresses can be created using a static part of `mailto:` and a dynamic part that takes the string content of the `//Contact/@email` node (*screenshot below*).



How to use unparsed entities is described in the section Unparsed Entity URIs.

Editing hyperlink properties

To edit a hyperlink, right-click either the start or end hyperlink (A) tag, and select Hyperlink Properties from the context menu. This pops up the Edit Hyperlink dialog (*screenshot above*). The Edit Hyperlink dialog can also be accessed via the URL property of the *Hyperlink* group of properties in the Properties window.

Removing and deleting hyperlinks

To delete a hyperlink, select the hyperlink (by clicking either the start or end hyperlink (A) tag), and press the **Delete** key. The hyperlink and its contents are deleted.

Chapter 11

SPS File: Presentation

11 SPS File: Presentation

In the SPS design, a single set of styling features is defined for components. These styles are converted to the corresponding style markup in the respective outputs (*Authentic View*, *HTML, RTF, PDF and Word 2007+ in the Enterprise Edition; Authentic View, HTML and RTF in the Professional Edition; HTML in the Standard Edition*). Some presentation effects, notably interactive Web presentation effects (such as combo boxes and JavaScript event handlers), will by their nature not be available in paged media output (RTF, PDF and Word 2007+). In these cases, the paged media will use a suitable print rendition of the effect. For print output, however, StyleVision offers essential page definition options. These paged media options, such as page size, page layout, and headers and footers, are defined additionally to the styling of components, and will be used for RTF, PDF and Word 2007+ output alone.

Styling of SPS components

All styling of SPS components is done using CSS2 principles and syntax. Styles can be defined in external stylesheets, globally for the SPS, and locally on a component. The cascading order of CSS2 applies to the SPS, and provides considerable flexibility in designing styles. How to work with CSS styles is described in detail in the Working with CSS Styles sub-section of this section.

The values of style properties can be entered directly in the Styles or Properties sidebars, or they can be set via XPath expressions. The benefits of using XPath expressions are: (i) that the property value can taken from an XML file, and (ii) that a property value can be assigned conditionally according to a test contained in the XPath expression.

Additionally, in the SPS design, certain HTML elements are available as markup for SPS components. These predefined formats are passed to the HTML output. The formatting inherent in such markup is therefore also used to provide styling to SPS components. When CSS styles are applied to predefined formats, the CSS styles get priority over the inherent style of the predefined format. Predefined formats are described in the Predefined Formats sub-section of this section. Note that the inherent styles of predefined formats are converted to equivalent markup for RTF, PDF and Word 2007+ output.

Note: When defining CSS styles for an SPS component be aware that some styles may not, by their nature, be applicable to paged media output (RTF, PDF and Word 2007+). Also, when HTML selectors are used (in external stylesheets and global style rules), these will not be applicable to paged media output (RTF, PDF and Word 2007+). When such selectors are used, a comment is displayed next to the selector to the effect that the style will not be applied to RTF, PDF and Word 2007+ output.

Designing for paged media output

For StyleVision's paged media support (RTF, PDF and Word 2007+ outputs and XSLT stylesheets for RTF, PDF and Word 2007+), page definition and layout options are available. These options are used additionally to the component styling mechanism, and are described in the Designing Print Output sub-section of this section.

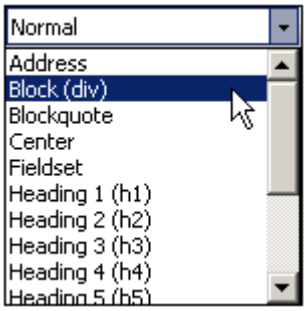
11.1 Predefined Formats

StyleVision provides a number of pre-defined formats, each of which corresponds to an HTML element (*screenshot below*). When you apply a Predefined Format to a component in the Design, that component is marked up as a component having the corresponding HTML semantics. This has two effects:

- Formatting inherent to the selected predefined format is applied.
- The component is contained in the component type, *paragraph*, which makes it available for local styling by component type.

Assigning Predefined Formats

Predefined formats can be assigned by clicking **Insert | Special Paragraph**, and then the required format, or by selecting the required format from the Format drop-down list in the Toolbar (shown below).



Inherent styles

The predefined formats used in StyleVision have either one or both of the following two styling components:

- a text-styling component
- a spacing component.

For example, the predefined `para ( p)` format has a spacing component only; it puts vertical space before and after the selected component, and does not apply any text styling. On the other hand, the predefined `Heading 1 ( h1)` format has both a text-styling component and a spacing component.

The following styling points about predefined formats should be noted:

- The spacing component of a predefined format applies for any type of SPS component, but the text styling only if it can be applied. For example, if you select an image and apply a predefined format of `Heading 1 ( h1)` to it, then the spacing component will take effect, but the text-styling component will not.
- The text-styling component of predefined formats does not apply to data-entry devices.
- Only one predefined format applies to a component at any given time.
- The `Preformatted` predefined format (`pre`) applies formatting equivalent to that applied by the `pre` tab of HTML: linebreaks and spacing in the text are maintained and a monospaced font (such as Courier) is used for the display. In the case of run-on lines with no linebreaks, such as in a paragraph of text, the `Preformatted ( pre)` predefined format will display lines of text without wrapping. If you wish to wrap the text, use the predefined format `Preformatted, wrapping ( pre-wrap)`.

Defining additional styling for a predefined format

Styles additional to the inherent styling can be defined for a predefined format by selecting it and applying a local style via the Styles sidebar.

The Return key and predefined formats

In Authentic View, when the **Return** key is pressed within the contents of an element having a predefined format, the current element instance and its block are terminated, and a new element instance and block are inserted at that point. This property is useful, for example, if you want the Authentic View user to be able to create a new element, say a paragraph-type element, by pressing the **Return** key.

11.2 Output Escaping

A character in a text string is said to be escaped when it is written as a character reference or entity reference. Both types of references (character and entity) are delimited by an ampersand at the start and a semicolon at the end. For example:

- the hexadecimal (or Unicode) character reference of the character `A` is `&#x41;`
- the decimal character reference of the character `A` is `&#65;`
- the HTML (and XML) entity reference of the character `&` is `&`
- the hexadecimal (or Unicode) character reference of the character `&` is `&#x26;`
- the decimal character reference of the character `&` is `&#38;`
- the HTML (and XML) entity reference of the character `<` is `<`

Output escaping
Output escaping refers to the way characters that are **escaped in the input** are represented in the output. A character is said to be output-escaped when it is represented in the output as a character or entity reference. Note that a character can only be output-escaped when it is escaped in the input (*see table below for examples*). In an SPS, output-escaping can be enabled or disabled for:

- Fragments of static text,
- The `contents` placeholder, and
- Auto-Calculations

This is done with the `disable-output-escaping` attribute of the *Text* group of properties. The default value of this property is `no`, which means that output-escaping will not be disabled. So characters that are escaped in the input will be escaped in the output by default (*see table below for examples*).

To disable output escaping, do the following:

1. Select the (i) static text, or (ii) fragment of static text, (iii) `contents` placeholder, or (iv) Auto-Calculation for which you wish to disable output escaping.
2. In the Properties sidebar, select the *Text* group of properties for the *Text* item, and set the `disable-output-escaping` attribute to `yes` for the various outputs individually or for all outputs. The available values are:
   - `For HTML` (to set `disable-output-escaping` to `yes` for HTML output).
   - `For Authentic` (to set `disable-output-escaping` to `yes` for Authentic output). Note that disabling output escaping for Authentic View is enabled **only in Enterprise editions of Authentic View** (that is, in the Enterprise editions of StyleVision, Authentic Desktop, Authentic Browser, and XMLSpy).
   - `For RTF` (to set `disable-output-escaping` to `yes` for RTF output).
   - `For PDF` (to set `disable-output-escaping` to `yes` for PDF output).
   - `For Word 2007+` (to set `disable-output-escaping` to `yes` for Word 2007+ output).
   - `For all` (to set `disable-output-escaping` to `yes` for all outputs).

When output escaping is disabled for a particular output format (for example, HTML output), the selected text will not be escaped in that output format, but will be escaped in the other output formats.

Given below are some examples of text with output escaping disabled and/or enabled.

Static text	disable-output-escaping	Output text

&	no	&
&amp;	yes	&
&	no	&
&	yes	&
<	no	<
<	yes	<
A	no	A
A	yes	A
<	no	<
&lt;	yes	<
<	yes	<
&<	yes	&<

Note: Disable-Output-Escaping is supported in Authentic View only in the Enterprise Editions of Altova products.

Using disabled output-escaping across output formats
If output-escaping is disabled, the text string can have significance in one output but no significance at all in another output. For example, consider the following input text, which has escaped characters (highlighted):

```
&lt;b&gt;This text is bold.&lt;/b&gt;
```

If output-escaping is disabled, this text will be output as:

```
<b>This text is bold.</b>
```

If output-escaping is disabled for HTML output and this output is viewed in a browser (as opposed to a text editor), the markup will be significant for the HTML browser and the text will be displayed in bold, like this:

This text is bold.

However, if viewed in another output format, such as PDF, the markup that was significant in HTML will not necessarily be of significance in this other output format. In the particular case cited above, the unescaped text (output escaping disabled) will be output in PDF format as is, like this:

```
<b>This text is bold.</b>
```

As the example above demonstrates, the output text obtained by disabling output-escaping might be interpretable as code in one output format but not in another. This should be clearly borne in mind when using the Disable-Output-Escaping property.

11.3 Value Formatting (Formatting Numeric Datatypes)

Value Formatting enables the contents of numeric XML Schema datatype nodes (*see list below*) to be displayed in a format other than the lexical representation of that datatype. (For example, the lexical representation of an `xs:date` datatype node is `YYYY-MM-DD`, with an optional timezone component, such as `+02:00`.) The Value Formatting is displayed in Authentic View and, depending on the formatting definition, may also be available for display in the HTML, RTF, PDF and Word 2007+ output. Value Formatting can also be used to format the result of an Auto-Calculation if the result of the Auto-Calculation is in the lexical format of one of the numeric datatypes (*see list below*) for which Value Formatting is available.

In the sub-sections of this section, we describe:

- how the Value Formatting mechanism works, and
- the syntax for defining the Value Formatting.

Note: Value Formatting does not change the format in which the data is stored in the XML document. In the valid XML document, the data is always stored in the lexical format appropriate to the datatype of the node. Value Formatting is applied to the display in Authentic View and, optionally (if available), to the display in the output.

Numeric datatypes for which Value Formatting is available

Value Formatting is available for the following datatypes:

- `xs:decimal`; `xs:integer`; the 12 built-in types derived from `xs:integer`
- `xs:double` and `xs:float` when values are between and including 0.000001 and 1,000,000. Values outside this range are displayed in scientific notation (for example: `1.0E7`), and cannot have Value Formatting applied to them.
- `xs:date`; `xs:dateTime`; `xs:duration`
- `xs:gYear`; `xs:gYearMonth`; `xs:gMonth`; `xs:gMonthDay`; `xs:gDay`

The Value Formatting Mechanism

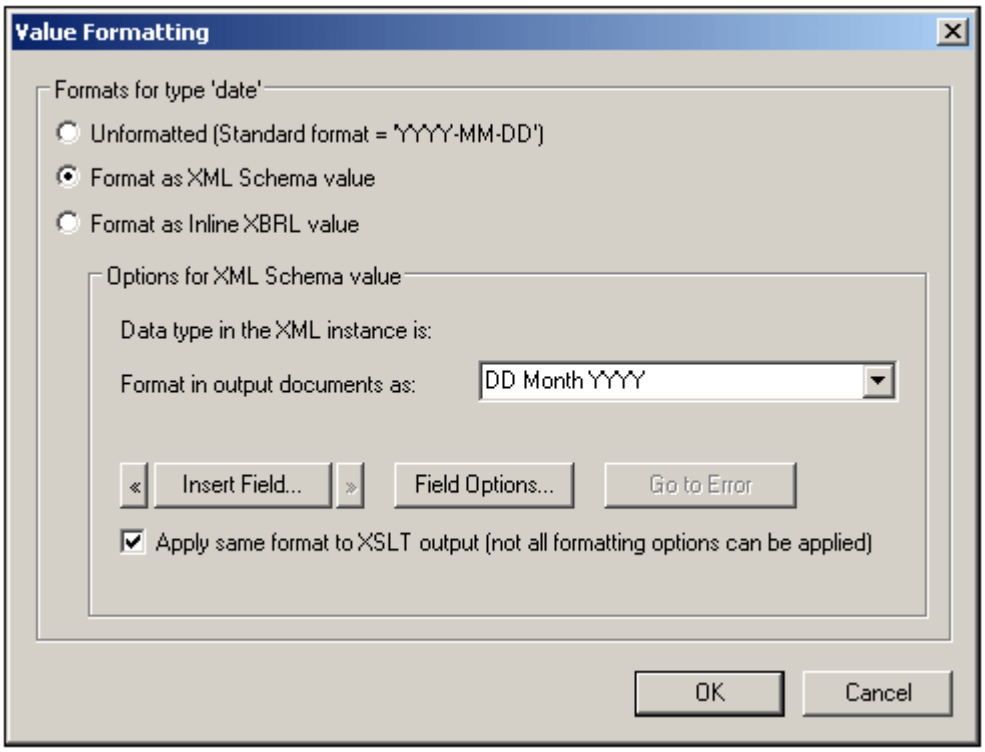
Value Formatting can be applied to:

- A numeric datatype node, such as `xs:decimal` or `xs:date` that is present in the SPS **as contents or an input field**.
- An Auto-Calculation that evaluates to a value which has the lexical format of a numeric datatype.

Defining Value Formatting

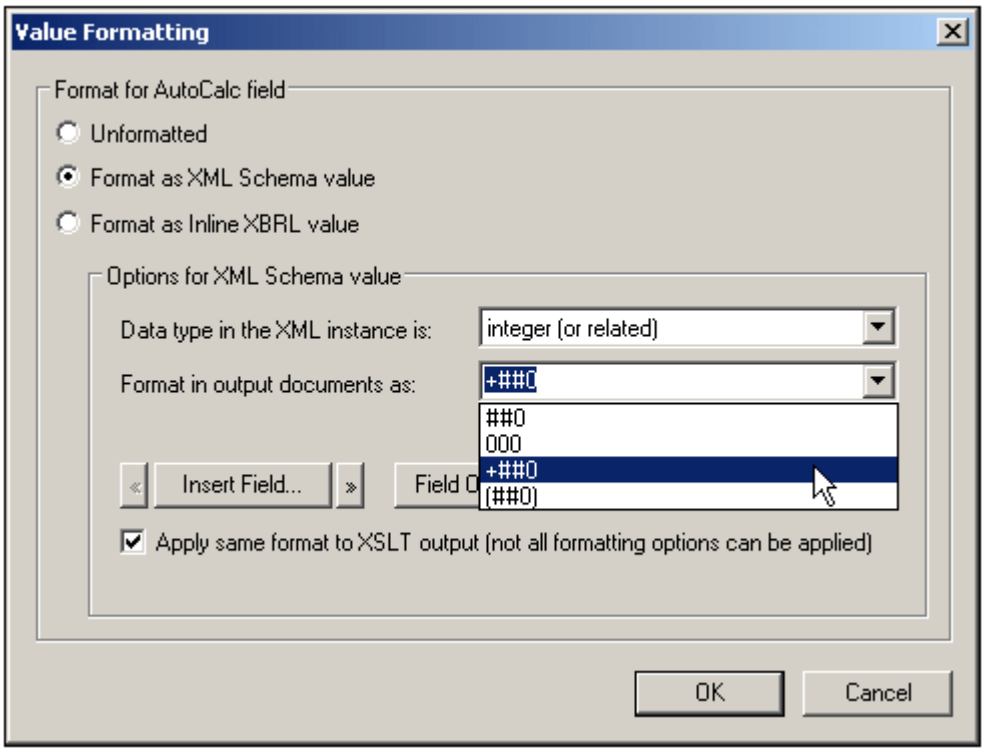
To define Value Formatting for a node or Auto-Calculation in the SPS, do the following:

1. Select the `contents` placeholder or input field of the node, or the Auto-Calculation.
2. In the Properties sidebar, select the item, and then the *Content* group (or *AutoCalc* group) of properties. Now click the Edit button [...] of the `Value Formatting` property. Alternatively, right-click and select **Edit Value Formatting** from the context menu. The Value Formatting dialog appears (*screenshot below*). It is different according to whether the selected component was a node or an Auto-Calculation. If the selected component was a node, then a dialog like the one below appears. The node represented in the screenshot below is of the `xs:date` datatype.



Note that the screenshot above contains the line: *Formats for type 'date'* and that the standard format for the `xs:date` datatype is given alongside the *Unformatted* check box. For a node of some other datatype, this information would be correspondingly different.

If the selected component was an Auto-Calculation, the following dialog appears.



3. You now specify whether the display of the component's value is to be unformatted or formatted. If you wish to leave the output unformatted, select the *Unformatted* radio button. Otherwise select the *Format as XML Schema Value* radio button. (If the value is unformatted, the output has the standard formatting for the datatype of the selected node or the datatype of the Auto-Calculation result. If you specify *Formatting as XML Schema Value* for an Auto-Calculation, you have to additionally select (from a dropdown list) the datatype of the expected Auto-calculation result.
4. Enter the Value Formatting definition. This definition can be entered in three ways: (i) by selecting from a dropdown list of available options for that datatype (*see the 'Format in Output Documents' input field in the screenshots above*); (ii) by entering the definition directly in the input field; and (iii) by using the **Insert Field** and **Field Options** buttons to build the definition correctly. See Value Formatting Syntax for a full description of the various formatting options.

Errors in syntax
If there is an error in syntax, the following happens:

- The definition is displayed in red.
- An error message, also in red, is displayed below the input field.
- The **OK** button in the Value Formatting dialog is disabled.
- The **Go to Error** button in the Value Formatting dialog is enabled. Clicking it causes the cursor to be placed at the point in the format definition where the syntax error is.

Mismatch of data and datatype formats
If the data entered in an XML node does not match the lexical format of that node's datatype, or if the result of an Auto-Calculation does not match the lexical format of the expected datatype, then the formatting will be undefined and will not be displayed correctly in the output.

Applying Value Formatting to the output

The Value Formatting that you define applies to Authentic View, which is supported in the Enterprise and Professional editions.

Some Value Formatting definitions—not all—can also, additionally, be applied to HTML, RTF, and PDF output. To do this, check the Apply Same Format to XSLT Output check box. If this option is not checked, or if it is not available, then only Authentic View will display the Value Formatting, while the output will display the value in the standard format for the datatype of the component (the lexical format).

Value Formatting Syntax

The syntax for Value Formatting is:

```
([prefix character/s]field[suffix
   character/s][{field-option1,field-option2,...}])+
```

where **prefix character/s** and **suffix character/s** are optional specifiers used to control alignment and the display of positive/negative symbols; **field** can be any datatype-specific formatting or text; and **{field-option(s)}** is an optional qualifier, that enables additional formatting options.

Explanation of definition syntax

The Value Formatting definition is constructed as follows:

- The definition is composed of one or more fields. For example, the definition `DD Month YYYY` has three fields.
- Fields can be run together, or they can be separated by the following characters: space, hyphen, comma, colon, period, or by a text string in single or double quotes. For e xample, in the definition: `DD-Month' in the year 'YYYY`, the fields `DD` and `Month` are separated by a hyphen, and the fields `Month` and `YYYY` are separated by a text string enclosed in single quotes.
- A field can have optional prefix and/or suffix character/s. For example: `<+###,##0.00.`
- A field can have one or more optional field-options. The field-option/s for each field must be contained in a single set of curly braces, and must follow the field without any intervening space. Multiple field-options for a single field are separated by ", " (comma). For example, in the definition: `DD Month{uc,ro} YYYY`, the curly-brace-enclosed `uc` and `ro` are field-options for the field `Month`.

Examples

Example of Value Formatting for an `xs:decimal` datatype:

```
"$"(##0.00)
```

Examples of the output would be:

```
$ 25.00
$ 25.42
$267.56
```

Example of Value Formatting for an `xs:date` datatype:

```
DD Month{uc,ro} YYYY
```

where `uc` and `ro` are field-options for making the `Month` field uppercase and read-only, respectively

An example of the output would be:

```
24 SEPTEMBER 2003
```

Field types
A field type represents a component of the data and the way that component is to be formatted. The formatting inherent in the field type can be modified further by prefix and suffix modifiers as well as by field options. The following tables list the available field types. Note that, in the drop-down menu of the Value Formatting dialog, there are type-specific and field-only Value Formatting definitions. You can select one of these and modify them as required by adding prefix modifiers, suffix modifiers, and/or field options.

Field Type	Explanation
#	Space if no digit at position
0	Zero if no digit at position
,	Digit separator
Y	Year
y	year (base = 1930); see Note below
MM	Month, must have length of 2
DD	Day, must have length of 2
W	Week number
d	Weekday number (1 to 7)
i	Day in the year (1 to 366)
hh	Hour (0 to 23), must have length of 2
HH	Hour (1 to 12), must have length of 2
mm	Minute, must have length of 2
ss	Second, must have length of 2
AM	AM or PM
am	am or pm
AD	AD or BC
ad	ad or bc
CE	CE or BCE
ce	ce or bce

Field Type	Explanation
Weekday	Weekday (Sunday, Monday...)
WEEKDAY	Weekday (SUNDAY, MONDAY...)
weekday	Weekday (sunday, monday...)
Wkd	Weekday (Sun, Mon...)
WKD	Weekday (SUN, MON...)
wkd	Weekday (sun, mon...)
Month	Month (January, February...)
MONTH	Month (JANUARY, FEBRUARY...)
month	Month (january, february...)
Mon	Month (Jan, Feb...)
MON	Month (JAN, FEB...)
mon	Month (jan, feb...)

Notes on field length and entry length
The following points relating to the length of data components should be noted:

Length of date fields: When fields such as `MM`, `DD`, `HH`, `hh`, `mm`, and `ss` are used, they must have a length of 2 in the definition. When the `y` or `Y` fields are used, the number of `y` or `Y` characters in the definition determines the length of the output. For example, if you specify `YYY`, then the output for a value of `2006` would be `006`; for a definition of `YYYYYY`, it would be `002006`. See also Base Year below.

Extending field length: The `*` (asterisk) symbol is used to extend the length of a non-semantic numeric field (integers, decimals, etc). In the case of decimals, it can be used on either or both sides of the decimal point. For example, the Value Formatting `*0.00*` ensures that a number will have zeroes as specified in the formatting if these digit locations are empty, as well as any number of digits on both sides of the decimal point.

Entry lengths in Authentic View: The display in Authentic View of the contents of a node is based on the Value Formatting definition for that node. Therefore, the Authentic View user will not be able to insert more characters than are allowed by the Value Formatting definition. This is a useful way to restrict input in Authentic View. Note, however, that if the length of a **pre-existing** value in the XML document exceeds the length specified in the formatting definition, then the entire value is displayed.

Note: If a field does not render any text, this might be because of your region setting in Windows. For example, Windows returns an empty string for the AM/PM field if the regional language setting is German.

Prefix and suffix modifiers
Prefix and suffix modifiers are used to modify the textual alignment and positive/negative representations of fields. The following table lists the available prefix and suffix modifiers.

Prefix	Suffix	Explanation
<		Left aligned; default for text. For numbers, which are aligned right by default, this is significant if there are a fixed number of leading spaces.
>		Right aligned; default for numbers.
?		Minus symbol adjacent to number if negative; nothing otherwise. This is the default for numbers.
<?		Minus symbol left-aligned if negative; nothing otherwise. Number left-aligned, follows minus sign.
<?>		Minus symbol left-aligned if negative; nothing otherwise. Number right-aligned.
-	-	Minus symbol adjacent to number if negative; space otherwise. Located before number (prefix), after number (suffix).
<-	>-	Minus symbol if negative; space otherwise. Number and sign adjacent. Left-aligned (prefix); right-aligned (suffix).
<->		Minus symbol left-aligned if negative; space otherwise. Number right-aligned.
+	+	Plus or minus sign always, located adjacent to number; before number (prefix), after number (suffix).
<+	>+	Plus or minus sign always, located adjacent to number; left-aligned (prefix), right-aligned (suffix).
<+>		Plus or minus sign always, left-aligned; number right-aligned.
(	)	Parentheses if negative; space otherwise. Adjacent to number.
<(		Parentheses if negative; space otherwise. Adjacent to number. Left-aligned.
<(>		Parentheses if negative; space otherwise. Left parentheses left-aligned; number and right parentheses adjacent and right-aligned.
[	]	Parentheses if negative; nothing otherwise. Adjacent to number.
*	*	Extendable number of digits to left (prefix) or to right (suffix)
_	_	Space
^	^	Fill character (defined in options)
	th	Ordinality of number in EN (st, nd, rd, or th)
	TH	Ordinality of number in EN (ST, ND, RD, or TH)

Field options
Field options enable advanced modifications to be made to fields. The following options are available:

Option	Explanation
uc	Make uppercase
lc	Make lowercase
left	Left aligned
right	Right aligned
ro	Read (XML) only; no editing allowed
edit	The field is editable (active by default)
dec=<char>	Specify a character for the decimal point (default is point)
sep=<char>	Specify a character for the place separator (default is comma)
fill=<char>	Specify fill character
base=<year>	Base year for year fields (*see note below*)
pos	Show only positive numbers; input of negative numbers allowed

Field options should be used to generate number formatting for European languages, which interchange the commas and periods of the English language system: for example, `123.456,75`.

The Value Formatting to use to obtain the formatting above would be:
`###,###.##{dec=,,sep=.}`

Notice that the field retains the English formatting, while it is the field options `dec` and `sep` that specify the decimal symbol and place separator.

Note on Base Year
When using **short year formats** (such as `yy` and `YY`), the base year specifies a cut-off for a century. For example, the base year field option could be used in the definition `DD-MM-YY{base=1940}`. If the user enters a value that is equal to or greater than the last two digits of the base year, which are considered together as a two-digit positive integer, then the century is the same as that of the base year. If the value entered by the user is less than the integer value of the last two digits, then the century is the century of the base year plus one. For example if you set `base=1940`, then if the Authentic View user enters `50`, the value entered in the XML document will be `1950`; if the user enters `23`, the value entered in the XML document will be `2023`.

Note the following points:

- Although two digits are commonly used as the short year format, one-digit and three-digit short year formats can also be used with a base year.
- Datatypes for which short year formats can be used are: `xs:date`, `xs:dateTime`, `xs:gYear`, and `xs:gYearMonth`.
- If the Value Formatting is being set for an Auto-Calculation component, make sure that the correct datatype is selected in the Value Formatting dialog. (The selected date

datatype should be that of the result to which the Auto-Calculation evaluates.)

- If the `yy` field type is used, the default base year is 1930. Explicitly setting a base year overrides the default.
- If the `YY` field type is used without any base year being set, then the Authentic View user will be able to modify only the last two digits of the four-digit year value; the first two digits remain unchanged in the XML document.

11.4 Working with CSS Styles

The SPS design document is styled with CSS rules. Style rules can be specified:

- In external CSS stylesheets. External CSS stylesheets can be added via the Design Overview sidebar and via the Style Repository sidebar.
- In global stylesheets for the SPS, which can be considered to be defined within the SPS and at its start. (In the HTML output these global styles are defined within the `style` child element of the `head` element.)
- Locally, on individual components of the document. In the HTML output, such rules are defined in the `style` attribute of individual HTML elements.

Each of the above methods of creating styles is described in detail in the sub-sections of this section (*links above*).

Terminology

A CSS stylesheet consists of one or more style rules. For example:

```
H1 { color: blue }
```

or

```
H1 { color: blue;
     margin-top: 16px; }
```

Each rule has a selector (in the examples above, `H1`) and a declaration (`color: blue`). The declaration is a list of properties (for example, `color`) with values (`blue`). In StyleVision, CSS styles can be defined in the Styles sidebar (local styles) and Style Repository sidebar (global styles).

Cascading order

The cascading order of CSS applies. This means that precedence of rules are evaluated on the basis of:

1. ***Origin.*** External stylesheets have lower precedence than global styles, and global styles have lower precedence than local styles. External stylesheets are considered to be imported, and the import order is significant, with the latter of two imported stylesheets having precedence.
2. ***Specificity.*** If two rules apply to the same element, the rule with the more specific selector has precedence.
3. ***Order.*** If two rules have the same origin and specificity, the rule that occurs later in the stylesheet has precedence. Imported stylesheets are considered to come before the rule set of the importing stylesheet.

CSS styles in modular SPSs

When an SPS module is added to another SPS, then the CSS styles in the referring SPS have priority over those in the added module. When multiple modules are added, then CSS styles in those modules located relatively lower in the module list have priority. For more information about modular SPSs, see the section, Modular SPSs.

CSS support in Internet Explorer

Versions of Internet Explorer (IE) prior to IE 6.0 interpret certain CSS rules differently than IE 6.0 and later. As a designer, it is important to know for which version of IE you will be designing. IE 6.0 and later offers support for both the older and newer interpretations, thus enabling you to use even the older interpretation in the newer versions (IE 6.0 and later). Which interpretation is

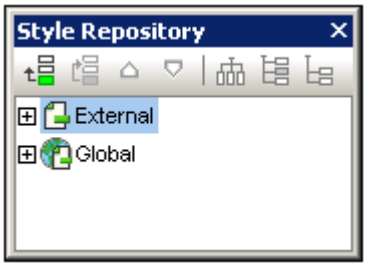
used by IE 6.0 and later is determined by a switch in the HTML document code. In an SPS, you can specify whether the HTML and Authentic View output documents should be styled according to Internet Explorer's older or newer interpretation. You should then set CSS styles according to the selected interpretation. For more details, see Properties: CSS Support.

Note: For more information about the CSS specification, go to http://www.w3.org/TR/REC-CSS2/.

External CSS Stylesheets

To assign an external CSS stylesheet to the SPS, do the following:

1. In Design View, select the External item in the Style Repository window (*screenshot below*).



2. Click the **Add** button at the top left of the Style Repository toolbar (*see screenshot above*).
3. In the Open dialog that pops up, browse for and select the required CSS file, then click **Open**. The CSS file is added to the External item as part of its tree structure (*see tree listing and screenshot below*).
4. To add an additional external CSS stylesheet, repeat steps 1 to 3. The new CSS stylesheet will be added to the External tree, after all previously added external CSS stylesheets.

Note: You can also add an external CSS stylesheet via the Design Overview sidebar.

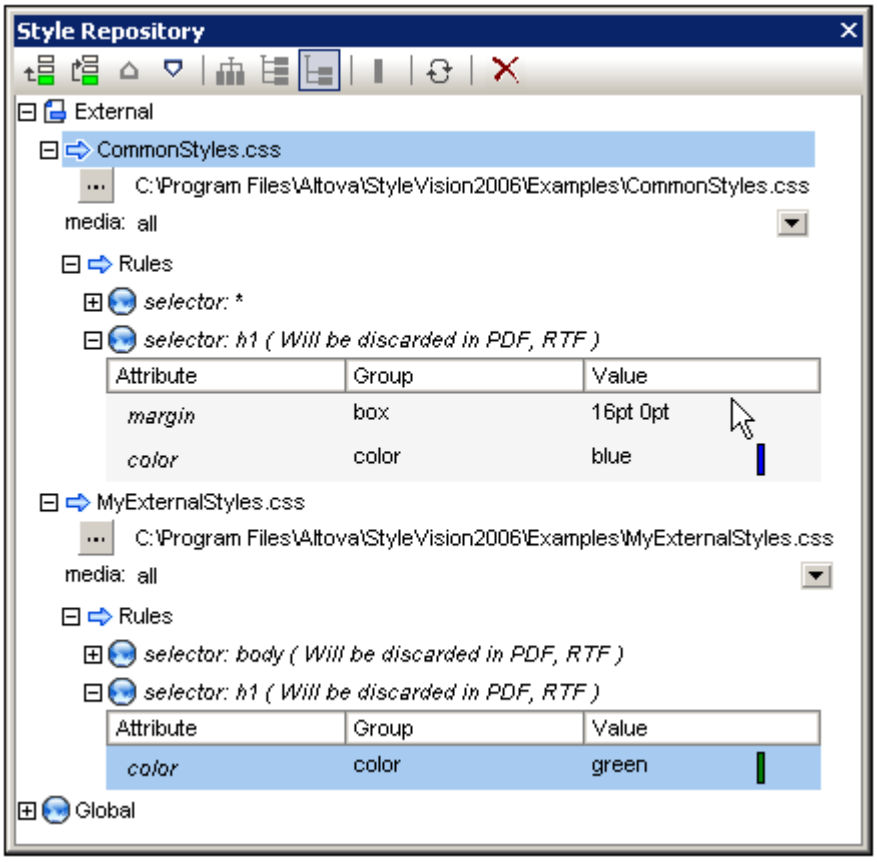
Viewing and modifying the tree of external CSS stylesheets

The tree of external CSS stylesheets is structured as follows (*also see screenshot below*):

```
- CSS-1.css
  - Location of file (editable in Style Repository window)
  - Media (can be defined in Style Repository window)
  - Rules (non-editable; must be edited in CSS file)
    - Selector-1
      - Property-1
      - ...
      - Property-N
    - ...
    - Selector-N
+ ...
+ CSS-N.css
```

Each CSS-file-location item can be edited in the Style Repository window; do this by clicking the Edit button ... and selecting the required CSS file. The media to which that particular stylesheet is applicable can also be edited in the Style Repository window; do this by clicking the down arrow to the right of the item and selecting the required media from the dropdown list). The rules defined in the external CSS stylesheet are displayed in the Style Repository window, but cannot be edited. The Stylesheet, Rules, and individual Selector items in the tree can be expanded and collapsed by clicking the + and – symbols to the left of each item (*see screenshot below*).

To delete an external stylesheet, select the stylesheet and click the **Reset** button in the Style Repository toolbar.



Note: Style rules with certain selectors will not be applied to RTF and PDF output. Such rules are commented: `Will be discarded in PDF, RTF.`

Changing the precedence of the external CSS stylesheets

The external CSS stylesheets that are assigned in the Style Repository window will be imported into the HTML output file using the `@import` instruction. In the HTML file, this would look something like this:

```
<html>
   <head>
      <style>
         <!--
         @import url("ExternalCSS-1.css");
         @import url("ExternalCSS-2.css") screen;
         @import url("ExternalCSS-3.css") print;
         -->
      </style>
   </head>
   <body/>
</html>
```

The order in which the files are listed in the HTML file corresponds to the order in which they are listed in the External tree of the Style Repository. To change the order of the CSS stylesheets in the External tree, select the stylesheet for which the precedence has to be changed. Then use the **Move Up** and **Move Down** buttons in the Style Repository toolbar to reposition that stylesheet relative to the other stylesheets in the tree.

Important: What is important to note is that the lowermost stylesheet has the highest import precedence, and that the import precedence decreases with each previous stylesheet in the listing order. The order of import precedence in the listing shown above is: (i) `ExternalCSS-3.css`; (ii) `ExternalCSS-2.css`; (iii) `ExternalCSS-1.css`. When two CSS rules, each in a different stylesheet, address the same node, the rule in the stylesheet with the higher import precedence applies.

Editing the properties of external CSS stylesheets

An external CSS stylesheet can be quickly replaced by another by clicking the **Edit** button  and browsing for the required stylesheet. The media to which an external CSS stylesheet is to be applied can be selected by pressing the dropdown box of the Media item of an external stylesheet, and there selecting the required media from the list of options.

Defining CSS Styles Globally

Global styles are defined for the entire SPS design in the Style Repository and are listed in the Style Repository under the Global heading. They are passed to Authentic View and the HTML output document as CSS rules. In the HTML document, these CSS rules are written within the `/html/head/style` element.

In the Style Repository, a global style is a single CSS rule consisting of a selector and CSS properties for that selector. Creating a global style, therefore, consists of two parts:

- Adding a new style and declaring the CSS selector for it.
- Defining CSS properties for the style (or selector).

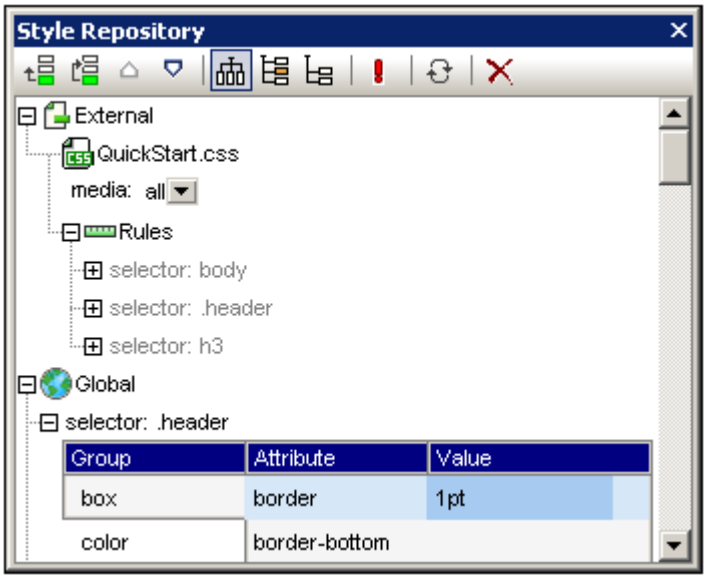
Supported selectors

The following selectors are supported:

- *Universal selector:* written as `*`
- *Type selectors:* element names, such as `h1`
- *Attribute selectors:* for example, `[class=maindoc]`
- *Class selectors:* for example, `.maindoc`
- *ID selectors:* for example, `#header`

Global styles in PDF and RTF output

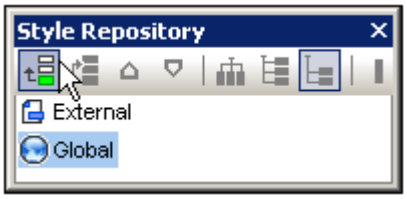
Global styles can also be applied to the PDF and RTF output when the selector is non-hierarchical, that is when it consists of a single part. For example, properties for the selector `h1` can be applied to the PDF and RTF output, but properties for `h1.maindoc` will be discarded. Rules that will not be applied are commented: `Will be discarded in PDF, RTF` (*see screenshot below*).



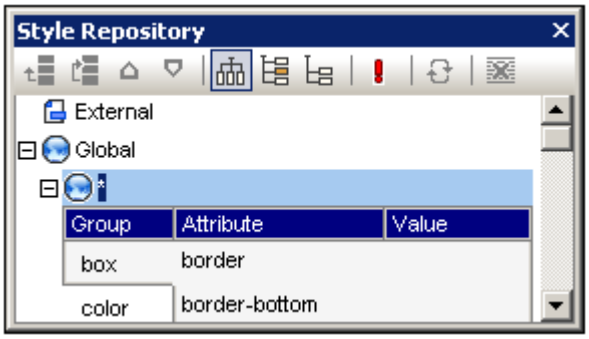
Adding a global style

To add a global style to the SPS design, do the following:

1. In Design View, select the Global item in the Style Repository window (*screenshot below*).



2. Click the **Add** button at the top left of the Style Repository toolbar (*see screenshot above*). A global style is inserted into the Global tree with a * selector (which selects all HTML elements); the universal selector is the default selector for each newly inserted global style.
3. To change the selector from the default universal selector, either: (i) right-click and select an option from the Add Selector submenu, or (ii) click the selector and edit it.



4. Now set the CSS property values for the selector. How to do this is explained in the section Setting CSS Property Values.
5. To add another global style, repeat steps 1 to 4. The new global style will be added to the Global tree, after all previously added global styles.

Note:

- Global styles can also be inserted before a selected global style in the Global tree by clicking the **Insert** button in the Style Repository window. The **Add** and **Insert** buttons are also available via the context menu that appears when you right-click a global style or the Global item in the Style Repository window.
- A global style with a selector that is an HTML element can be inserted by right-clicking an item in the Global tree, then selecting **Add Selector | HTML | *HTMLElementName***.

Editing and deleting global styles

Both, a style's selector as well as its properties can be edited in the Style Repository window.

- To edit a selector, double-click the selector name, then place the cursor into the text field, and edit.
- For information about defining and editing a style's property values, see Setting CSS Property Values. (The style properties can be displayed in three possible views. These views and how to switch between them are described in Views of Property Definitions.

To delete a global style, select the style and click the **Reset** button in the Style Repository toolbar.

Changing the precedence of global styles

Global styles that are assigned in the Style Repository window are placed as CSS rules in the `/html/head/style` element. In the HTML file, they would look something like this:

```
<html>
   <head>
      <style>
         <!--
         h1     {  color: blue;
                   font-size: 16pt;
                }
         h2     {  color: blue;
                   font-size: 14pt;
                }
         .main  {  color: green;}
         -->
      </style>
   </head>
   <body/>
</html>
```

The order in which the global styles are listed in Authentic View and the HTML document corresponds to the order in which they are listed in the Global tree of the Style Repository. The order in Authentic View and the HTML document has significance. If two selectors select the same node, then the selector which occurs lower down the list of global styles has precedence. For example, in the HTML document having the partial listing given above, if there were an element `<h1 class="main">`, then two global styles match this element: that with the `h1` selector and that with the `.main` selector. The color property of `.main` selector will apply because it occurs after the `h1` selector in the style listing. The font-size of the `h1` style will, however, apply to the `<h1>` element because there is no selector with a higher precedence that matches the `<h1>` element and has a font-size property.

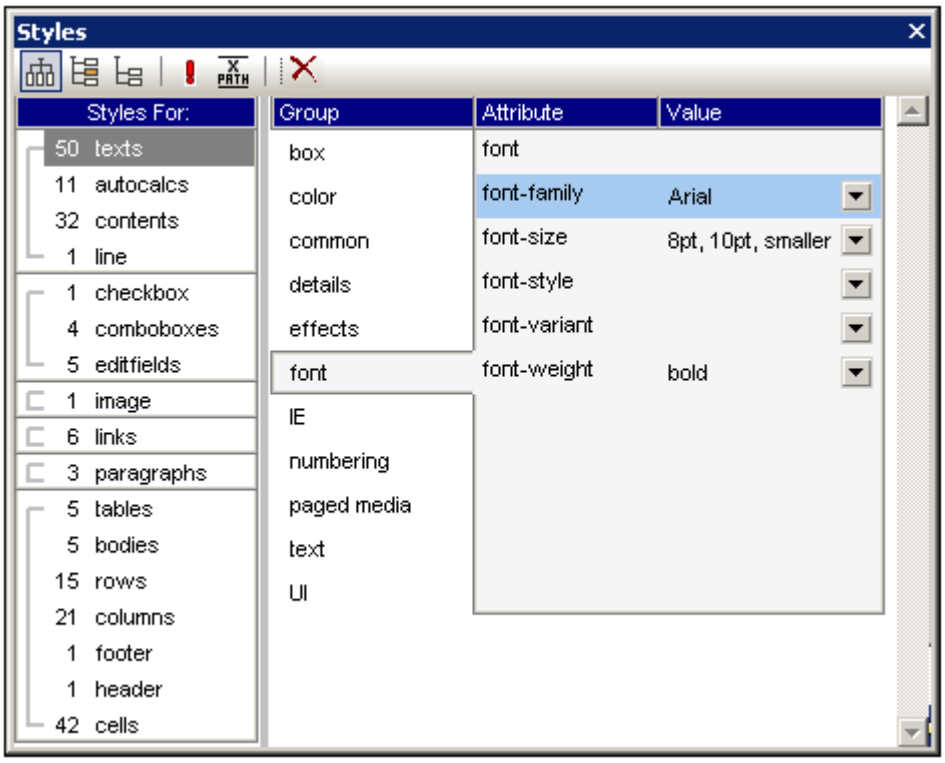
To change the precedence of a global style, select that style and use the **Move Up** and **Move Down** buttons in the Style Repository toolbar to reposition that global style relative to the other global styles in the tree. For example, if the `.main` global style were moved to a position before the `h1` style, then the color property of the `h1` style would have precedence over that of the `.main` style.

Defining CSS Styles Locally

When styles are defined locally, the style rules are defined directly on the component. These local rules have precedence over both global style rules and style rules in external CSS stylesheets that select that component. Locally defined styles are CSS styles and are defined in the Styles sidebar. (This is as opposed to global styles, which are defined in the Style Repository sidebar.)

Defining a style locally consists of two parts:

1. The component or components to be styled are selected in the design (Design View). You can select multiple by keeping the Shift key depressed while selecting components. These components are each of a particular component type. In the selection you make, all components of a single component type are listed together by component type (for example: `50 texts` in the screenshot below).



2. After making the selection in Design View, you select the component type (in the Styles For) column. If there is more than one component for that component type, then styles will be applied to all these components. How to make a selection for local styling is described in Selecting SPS Components to Style.
3. After selecting the components to style in the Styles For column of the Styles window, the styles for that selection are defined in the Property Definitions column. How to do this is described in the section Setting CSS Property Values.

Selecting SPS Components to Style

Any component in the SPS design (except node tags) can be selected for the definition of a style. Components that can be styled are: (i) a static SPS component such as an Auto-Calculation or a text string; or (ii) a predefined format (represented in the Design View by its start and end tags).

Each SPS component may:

- be of a single component type (for example, a horizontal line component is of the *line* component type; a `( contents)` placeholder is of the *content* component type; a combo box is of the *combobox* component type);
- have structurally mandatory component subtypes (for example, a table component will be of the component type *table*, and will have the mandatory component subtypes *body* , *row*, *column*, and *cell*, and optionally, the *header* and *footer* component subtypes.

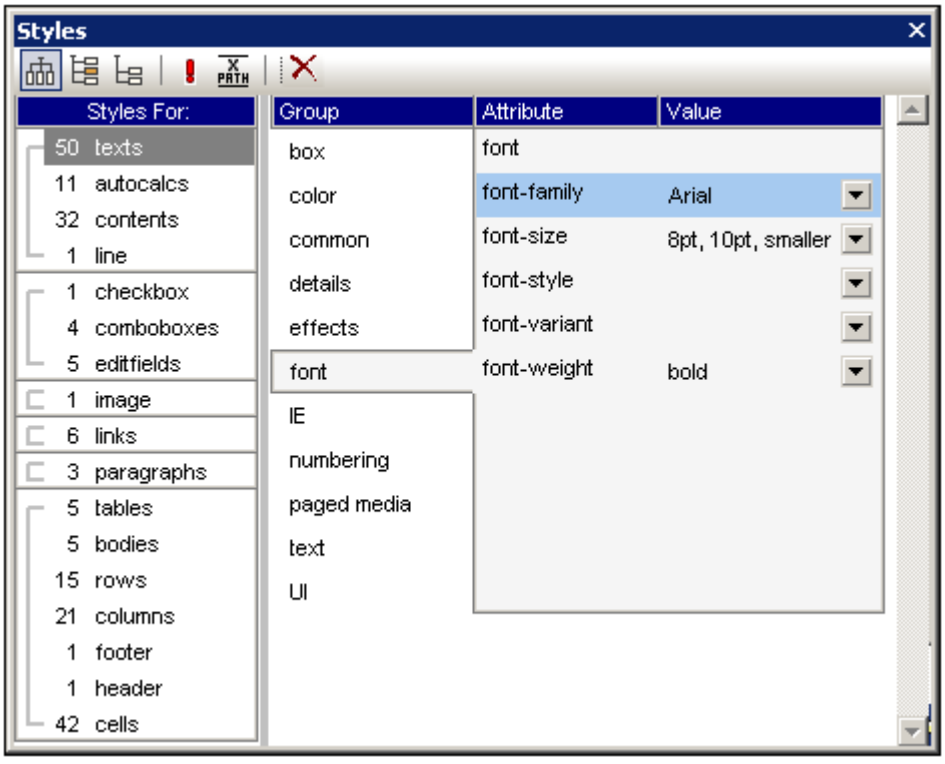
The component or components to style are selected in two steps:

1. Select the SPS component in the design (Design View).
2. Select a component type from the contained component types; this selection is done in the Styles For column of the Styles sidebar.

These two steps are described in detail below.

Selecting the SPS component

When an SPS component is selected in the design (by clicking it), its component type is listed in the Styles For column of the Styles sidebar. If multiple components are selected in the design, all components of one component type are listed together in the Styles For column of the Styles sidebar (*screenshot below*).



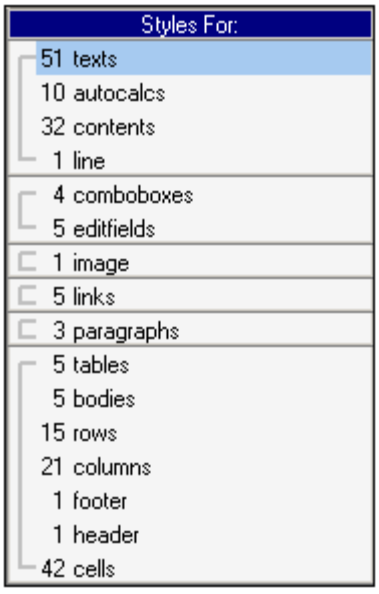
In the Styles For column, the selected component types are organized into the following categories (each category separated from the next by a line):

- ***Textual components.*** These include: static text strings entered directly in the SPS (*texts*); Auto-Calculations (*autocalcs*); dynamic text which is included in the SPS using the `( contents)` placeholder (*contents*); and horizontal lines inserted directly in the SPS (*lines*).
- ***Data-entry devices.*** These include: input fields (*editfields*); multiline input fields (*multiline editfields*);combo-boxes (*comboboxes*); check boxes (*checkboxes*); radio buttons (*radiobuttons*); and buttons (*buttons*). *See Using Data-Entry Devices*.
- ***Images.*** These are images inserted in the SPS via the Insert | Image command.
- ***Bookmarks and links.*** Both bookmarks and hyperlinks are indicated as *links*. *See Bookmarks and Hyperlinks*.
- ***Predefined formats.*** All predefined formats (such as `div`, `p`, `h1`, and `pre`) are indicated as *paragraphs*. *See Predefined Formats*.
- ***Table components.*** These include the structural components of a table from the *table* component type down to the *cell* component type. Each subtype is differentiated and listed separately.

Note: The conditional template and condition components are not listed because they are filters. Not being present in the output, they do not need to be styled.

Selecting the component type for styling

When a component in the SPS design is selected, it is listed by its type in the Styles For column of the Styles sidebar. If multiple components are selected, all instances of a single component type within that selection are listed together and can be styled in one go. In the Styles For column, you can select any one of the listed component types and define styling for all instances of this component type. For example, in the screenshot below, the 51 text components have been selected. You can now define styling in the Styles sidebar for all the selected 51 instances of static text strings. This selection method is useful if a single style definition is required for all instances of a component type within a component.



After selecting the required component type, you can define the required style.

Note: If a component type instance is inserted into the design after a style has been defined for that component type, then this instance must either be styled separately or the style definition for the component type must be redone with the newly inserted instance included in the selection.

Selecting a single component for styling
To define styling for a single component, click the required component to select it. In the case of static text, placing the cursor anywhere within the text string suffices to select it.

How Styles Are Applied to Components

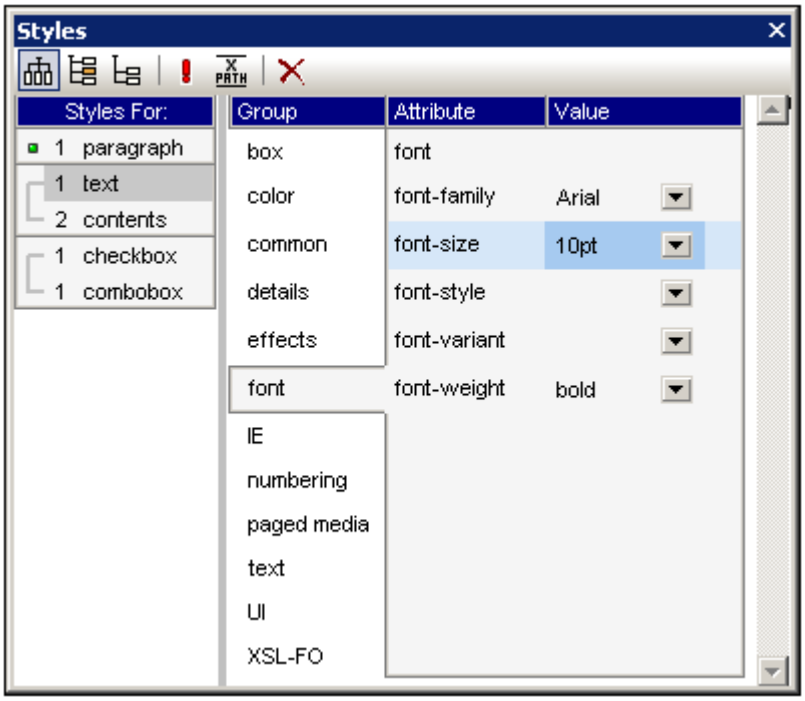
The CSS styles that are applied via the Styles sidebar are applied to certain components on the block level and to other components on the inline level. Knowing at which level styles are applied to a component (block or inline) will help you to define styles efficiently. For example, defining vertical margins (the `margin-top` and `margin-bottom` properties) for inline styles will have no effect on the output.

The table below shows how styles are applied to each SPS component type.

Component type	Style application
Static text	Inline
Auto-Calculations	Inline
XML node content created as `(contents)`	Inline
Links	Inline application to content of link. Link itself has no styling.
Predefined formats	Applied to the predefined format element, which are all block elements.
Horizontal lines	Block
XML nodes created as data-entry device	Block
Images	Block
Tables and table sub-components	Block

Setting CSS Property Values

Style properties are defined in the Styles sidebar (*screenshot below*) for the selected component or components. The selection is made in two steps. First, the component is selected in the SPS. This causes the descendant component types and any associated predefined formats to appear in the Styles For column of the Styles sidebar (*see screenshot below*). Second: In the Styles For column, the descendant component type is selected. In the screenshot below, the *paragraph* component type (the predefined format) is selected. Now style properties can be defined for the predefined format. If, in the screenshot below, the *3 comboboxes* entry had been selected, style properties could have been defined for all three combo boxes in one go.



Style property groups

The available style properties are CSS properties and are defined in 11 groups:

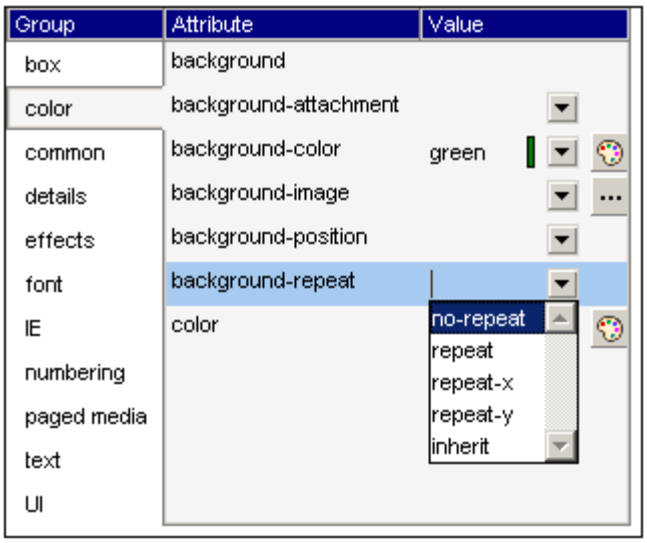
Style Group	Properties
`box`	Border, margin, and padding settings.
`color`	Color of node content; background properties.
`common`	Includes `class`, `display`, `position`, `float`, `z-index` among others.
`details`	Height, width, and vertical alignment properties.
`effects`	The `clip`, `overflow`, and `visibility` properties.
`font`	Font specifications, such as family, size, style, weight.
`IE`	Internet Explorer-specific properties.
`numbering`	List markers, counters, and quotes.
`paged media`	Settings for page-breaks, orphans, and widows.

Style Group	Properties
text	Text properties such as text-align, text-decoration, and text-transform, as well as other text-related properties such as letter-spacing and word-spacing.
UI	Cursor style setting for user interface.

Note: The visibility, display, float, and position properties are not applied in Design View and Authentic View.

Entering property values
Property values can be entered in one, two, or three ways, depending on the property:

- Entered directly in the Value column. To do this, select a property, double-click in its Value column, enter the value using the keyboard, and press **Enter** or click anywhere in the GUI.
- By selecting a value from the dropdown list of the combo box for that property. Click the down arrow of the combo box to drop down the list of property-value options. In the screenshot below, the options for the background-repeat property are displayed. Select the required value from the dropdown list.
- By using the sidebar at the right-hand side of the Value column for that property. Two types of sidebar are available, and these are available only for properties to which they are relevant: (i) a color palette for selecting colors (in the screenshot below, see color and background-color properties), and (ii) a dialog for browsing for files (in the screenshot below, see the background-image property).



Modifying or deleting a property value
If a property value is entered incorrectly or is invalid, both the property and the value are displayed in red. To modify the value, use any of the applicable methods described in the previous section, Entering Property Values.

To delete a property value, double-click in the Value column of the property, delete the value using the **Delete** and/or **Backspace** key, and then press **Enter**.

11.5 Style Properties Via XPath

Styles can be assigned to design components via XPath expressions. This enables property values to be taken from XML data or from the XPath expression itself. Using the `doc()` function of XPath 2.0, nodes in any accessible XML document can be addressed. Not only can style definitions be pulled from XML data; this feature also enables style choices that are conditional upon the structure or content of the XML data. For example, using the `if...else` statement of XPath 2.0, two different background colors can be selected depending on the position of an element in a sequence. Thus, when these elements are presented as rows in a table, the odd-numbered rows can be presented with one background color while the even-numbered rows are presented with another. Also, depending on the content of a node, the presentation can be varied.

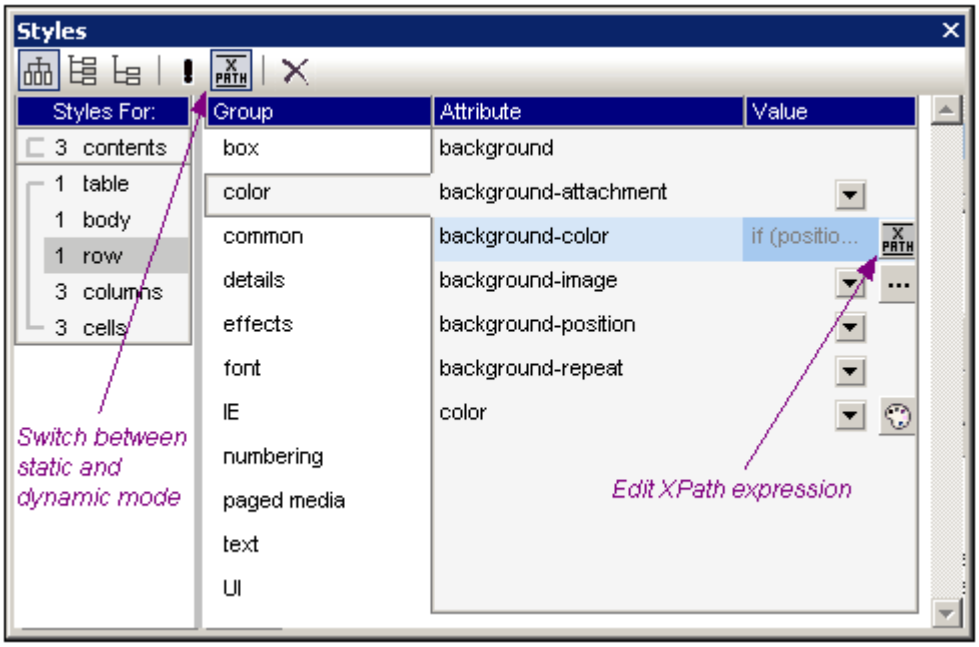
Properties for which XPath expressions are enabled
XPath expressions can be entered for the following styling properties:

- All properties available in the Styles sidebar
- The *Common*, *Event*, and *HTML* groups of properties in the Properties sidebar

Static mode and dynamic (XPath) mode for property values
For those properties where XPath expressions are enabled, two mode are available:

- Static mode, where the value of the property is entered directly in the sidebar. For example, for the background-color of a design component, the value `red` can be entered directly in the sidebar.
- Dynamic, or XPath mode, where an XPath expression is entered. The expression is evaluated at runtime, and the result is entered as the value of the property. For example, for the background color of a design component, the following XPath expression can be entered: `/root/colors/color1`. At runtime, the content of the node `/root/colors/color1` will be retrieved and entered as the value of the background-color property.

Switching between static and dynamic (XPath) modes
For each property for which XPath expressions are enabled, static mode is selected by default. To switch a property to dynamic (XPath) mode, select that property and click the XPath icon in the toolbar of the sidebar (*screenshot below*).



If a static value was present for that property, it is now cleared and the mode is switched to dynamic. The Edit XPath Expression dialog appears. It is in this dialog that you enter the XPath expression for the property. Click **OK** when finished.

After you enter an XPath expression for the property, an Edit XPath expression button appears in the Value column for that property (*screenshot above*). Click this button to subsequently edit the XPath expression. If you wish to switch back to static mode, click the XPath icon in the toolbar. This will clear the XPath expression and switch the property to static mode.

Note: There are two important points to note. First, only one mode (static or dynamic), and the value/expression for that mode, is active at any time. Any value/expression that previously existed for the other mode is cleared; so switching to the other mode will present that mode with an empty entry field. (In order to go back to a previous value/expression, use the Undo command.) Second, if you reselect a property after further editing the SPS, then that property will be opened in the mode it was in previously.

Creating and editing the XPath definition

The XPath definition is created and edited in the Edit XPath Expression dialog. This dialog is accessed in two ways:

- Each time you switch to the dynamic mode of a property from static mode (by clicking the XPath icon in the toolbar of the sidebar), the Edit XPath Expression dialog appears. You can now create the XPath expression. (Note that clicking the toolbar icon when already in dynamic mode switches the mode to static mode; it does not pop up the Edit XPath Expression dialog.)
- The Edit XPath Expression dialog also pops up when you click the Edit XPath Expression button in the Value field of a property that already has an XPath expression defined for it. The dialog will contain the already defined XPath expression for that property, which you can now edit.

After you enter or edit the XPath expression in the entry field, click **OK** to finish.

Values returned by XPath expressions

The most important benefits of using XPath expressions to set a property value are that: (i) the property value can be taken from an XML file (instead of being directly entered); and/or (ii) an XPath expression can test some condition relating to the content or structure of the XML document being processed, and accordingly select a value. XPath expressions return values in the following two categories:

- *XML node content*
  The XPath expression can address nodes in: (i) the XML document being processed by the SPS, or (ii) any accessible XML document. For example the expression `Format/@color` would access the `color` attribute of the `Format` child of the context node. The value of the `color` attribute will be set as the value of the property for which the XPath expression was defined. A node in some other XML document can be accessed using the `doc()` function of XPath 2.0. For example, the expression `doc('Styles.xml')//colors/color-3` would retrieve the value of the element `color-3` in the XML document `Styles.xml` and set this value as the value of the property for which the XPath expression was defined.
- *XPath expression*
  The value of the property can come from the XPath expression itself, not from the XML document. For example, the background color of an element that is being output as a row can be made to alternate depending on whether the position of the row is odd-numbered or even-numbered. This could be achieved using the XPath 2.0 expression: `if (position() mod 2 = 0) then 'red' else 'green'`. Note that the return value of this expression is either the string `red` or the string `green`, and it will be set as the value of the property for which the XPath expression was defined. In the example just cited, the property values were entered as string literals. Alternatively, they could come from an XML document, for example: `if (position() mod 2 = 0) then doc('Styles.xml')//colors/color-1 else doc('Styles.xml')//colors/color-2`. Conversely, the XPath expression could be a straightforward string, for example: `'green'`. However, this is the same as entering the static value `green` for the property.

Limitations

The Style Properties Via XPath feature has the following limitations:

1. For RTF output, **colors** are entered by StyleVision in a table in the RTF document. This table is created at the time the XSLT-for-RTF is generated (including for RTF Preview) and contains, by default, the 140 standard colors supported by most web browsers. If values for color properties are obtained from the XML data or XPath expression, and are not one of the 140 standard colors, the next best standard color will be used. For example, `#FF0001` is not one of the 140 standard colors; so the value `#FF0000` (red) will be used.
2. For RTF and PDF output, values obtained for the **`class` property** from the XML data or a literal in the XPath expression will not be applied. This is because styles are read from the global and external CSS stylesheets at the time of XSLT code-generation. At this stage, the XPath expression has still not been evaluated; as a result, the value of the `class` property is not yet known.

11.6 Designing Print Output

Properties for paged media output (PDF, RTF, and Word 2007+ in the *Enterprise Edition*; and RTF in the *Professional Edition*) can be defined in the *Page Layout* group of properties in the Properties sidebar. The following can be designed for print media:

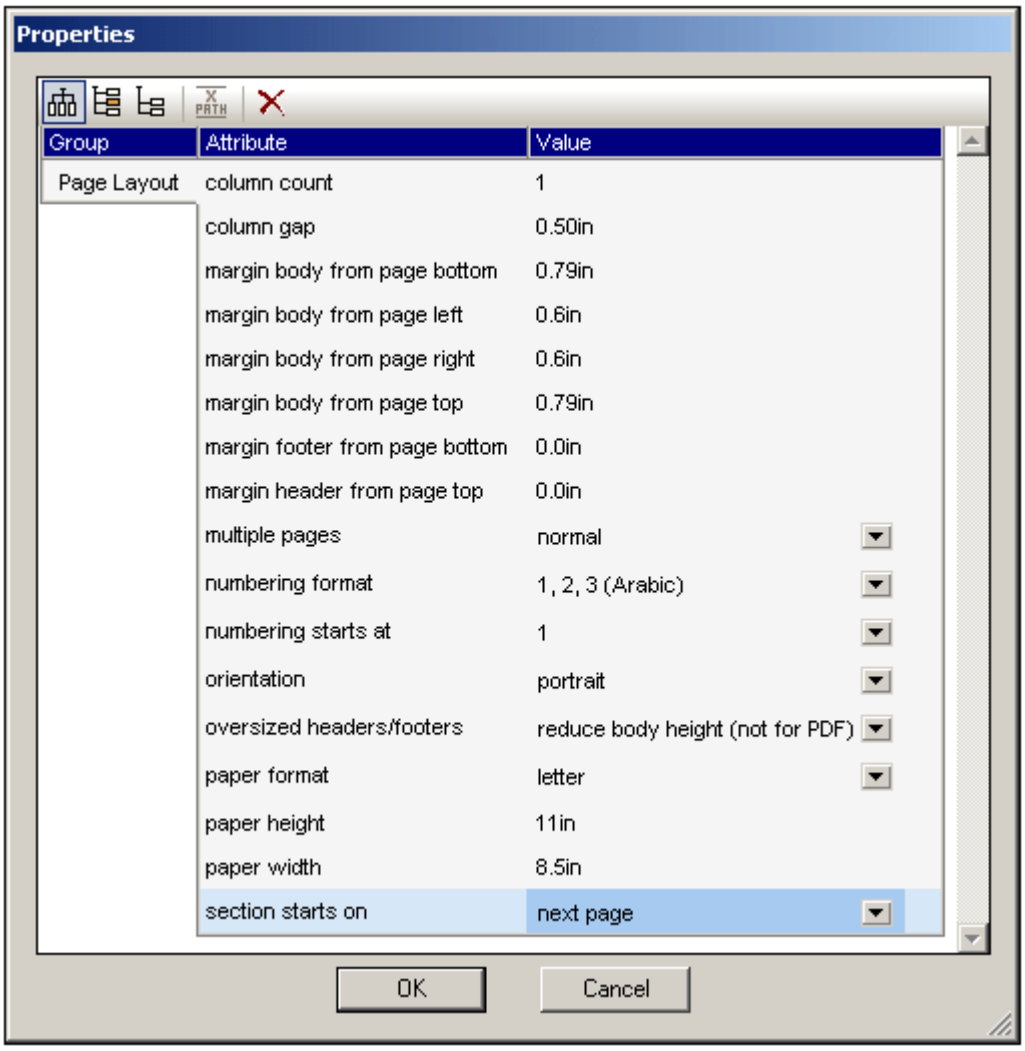
- The document can be divided into sections, each of which can have separate page definitions. The properties that can be defined are listed below.
- Page dimensions (height and width) and and a page orientation (portrait or landscape) can be defined.
- The margins for the body of the page and the available vertical space for headers and footers can be defined. Also, multiple pages can be defined to be facing (that is, with mirror margins) or to have the same let and right margins repeating for each page.
- Headers and footers can be defined for each section.
- Numbering styles and numbering starts can be defined for each section separately, or page numbering can run on from one section to the next.
- For each section, the number and width of columns on a page can be specified.

Note: When a large document is processed by FOP (Apache's FO processor), data in memory is discarded each time a new document section is processed. If you wish to reduce memory use, therefore, it is best to structure your document into multiple document sections.

Properties sidebar

Page properties can be defined individually for each section of the document in the *Page Layout* group of properties in the Properties sidebar (*see screenshot below*). These properties for a given section are accessed via the Edit Section Properties link of the Initial Section and Section Break items (*screenshot below*).

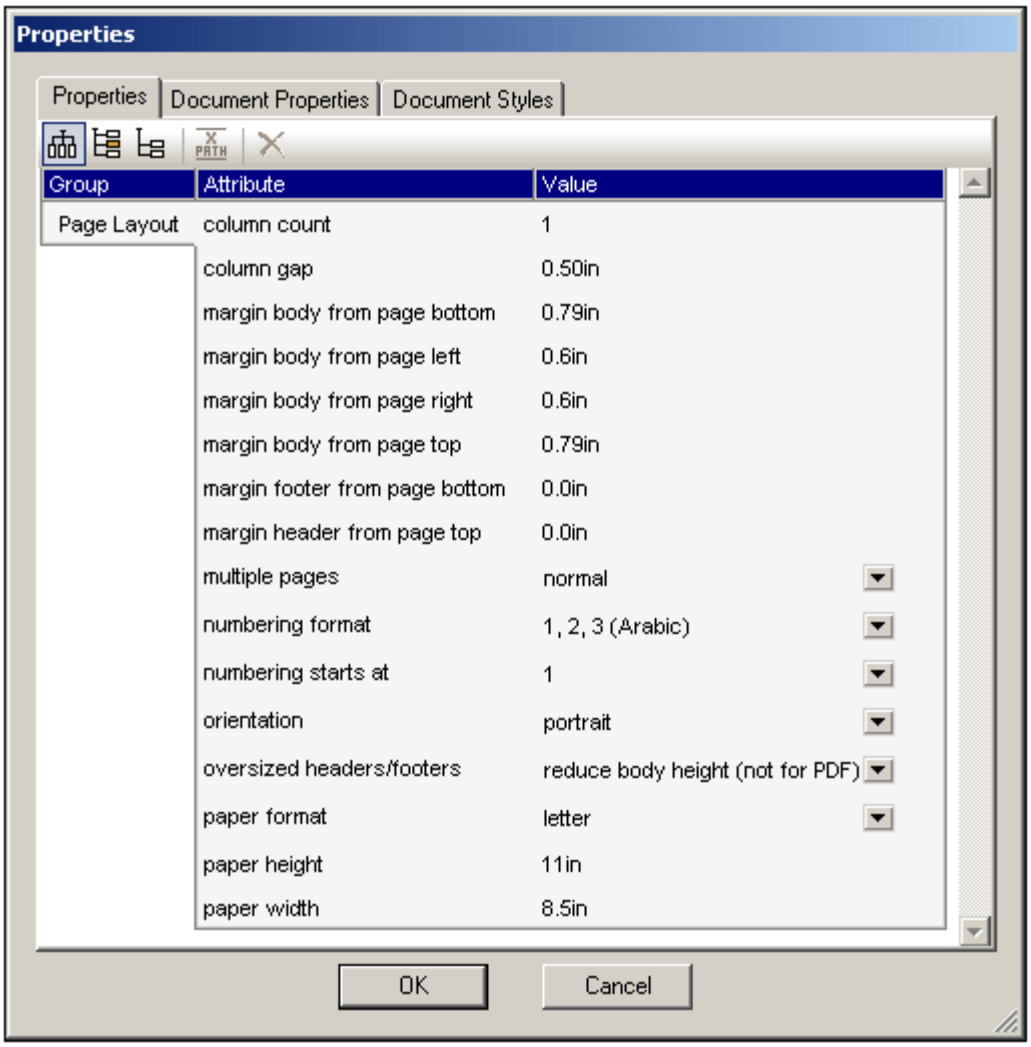
Clicking the Edit Section Properties link pops up the Properties window, with the Page Layout properties active within it (*screenshot below*).



How to set the values of these properties is discussed in the section, Page Properties.

Document Sections

An SPS can be designed to have multiple document sections, with each document section having its own page definition settings. For example, a report which contains tables of data and text that summarizes this data can be divided into two document sections: one document section can contain the descriptive text and have portrait orientation, while the other document section with the tables of data can have landscape orientation. For each document section, the whole range of page properties (*see screenshot below*) can be defined. Additionally, each document section can also have different headers and footers.



When an SPS is created, it is created with one document section, called the Initial Document Section. This document section is the first document section of the document (whether a single-sectioned or multiple-sectioned document) and cannot be deleted. Initial Document Section properties include properties and styles for the entire document; these are described in the subsection, Initial Document Section.

Note: When a large document is processed by FOP (Apache's FO processor), data in memory is discarded each time a new document section is processed. If you wish to reduce memory use, therefore, it is best to structure your document into multiple document sections.

Inserting document sections
To add a new document section, do the following:

1. Place the cursor at the location in the document where you want the new document section to start.
2. In the context menu (right-click), select **Insert Page / Column / Document Section | New Document Section**. Alternatively, select this command from the **Insert** menu. A new document section will be inserted in the design and is indicated by a document section title bar (*see screenshot below; the* Hide/Show Headers/Footers *hyperlink shown in the screenshot below appears after a Header or Footer has been added to a document section*). In the output, a new document section will start on a new page.

3. The new document section will have the page layout properties that were assigned to the Initial Document Section at the time the new document section was created. These page layout properties for the document section can be edited via the *Edit Properties* hyperlink of the Document Section. If required, separate headers and footers can be added for the document section (via the *Add Header/Footer* hyperlink). How to define page layout properties and headers and footers are described in the respective subsections of this section. When a header or footer is added, it is shown in the design within that document section. The display of headers and footers in the design can be toggled on and off with the *Hide/Show Headers/Footers* hyperlink; this hyperlink appears after a Header or Footer has been added to a document section.

Notes
Note the following points:

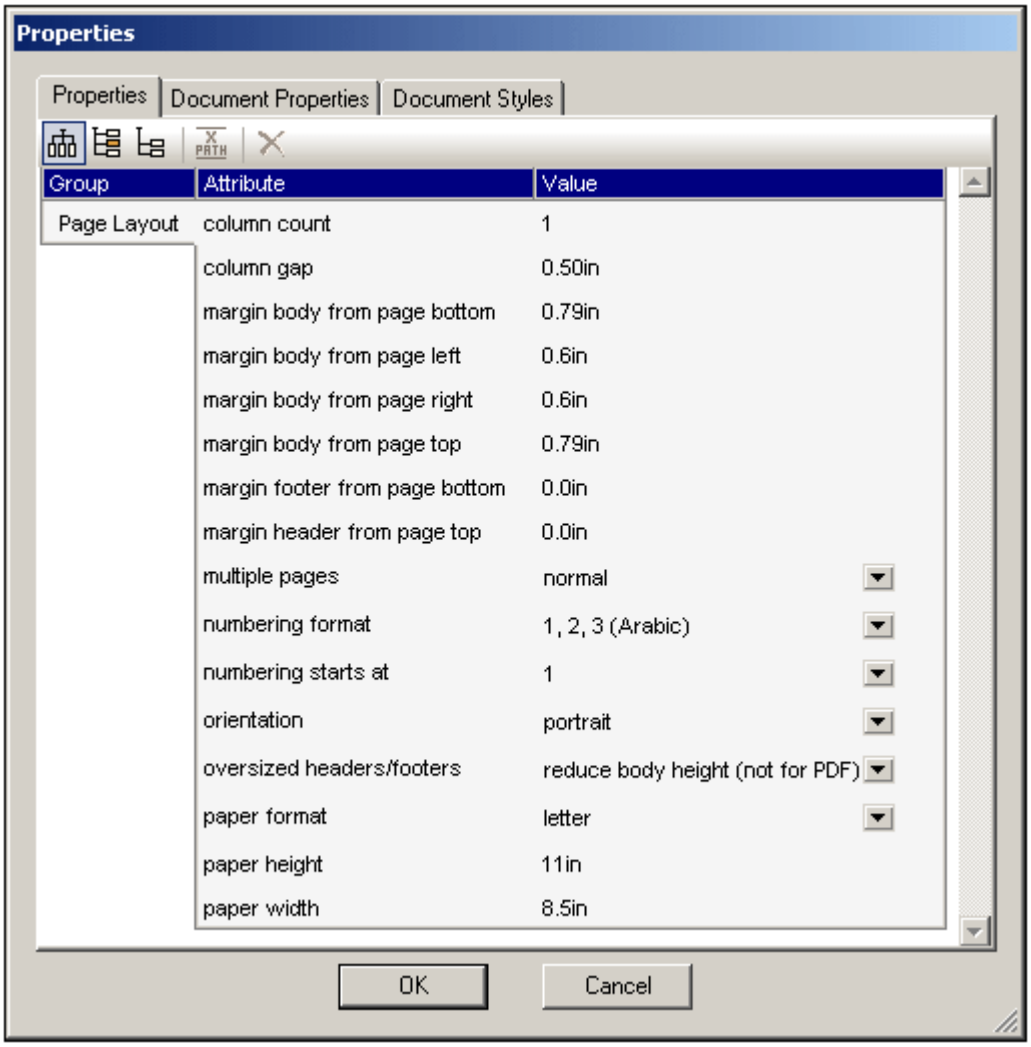
- In the PDF and RTF output generated by XSLT 1.0 SPSs, only document sections that are immediate children of the Main Template are allowed. Document sections created inside conditional templates, other templates, or at any level other than that of child of the Main Template, will create only a page break in the PDF output. This restriction does not apply to PDF and RTF output generated by XSLT 2.0 SPSs.
- In the output document, every document section starts on a new page.
- Page margin properties are also applied to the HTML page.
- When multiple document sections are present in a design, values of the mirror margins property and the associated margin-left and margin-right properties are taken from the initial document section. The values of these properties in subsequent document sections are ignored.

Deleting a document section
To delete a document section, in the title bar of the document section, right-click the words *Document Section*, and in the menu that pops up select the command **Edit | Delete**. The document section will be deleted, and this will be indicated by the deletion of the title bar. By deleting the document section you will be deleting the page layout properties and headers and footers created for the document section. The content of the document section, however, will not be deleted.

Initial Document Section

Whether the document has one document section or more, properties for the document as a whole are defined in those of the Initial Document Section (the first document section of the document, *screenshot of title bar below*). Cover pages are also created in Initial Document Sections.

To edit the properties of the document, click the *Edit Properties* hyperlink in the Initial Document Section title bar. This pops up the Properties dialog of the Initial Document Section (*screenshot below*). This dialog has three tabs, for: (i) basic page layout properties, (ii) (HTML) document properties, and (iii) document styles.



Page layout properties

Page layout properties for the initial document section apply to the first document section of the document; in single-section documents, they apply to the entire document. When a new document section is created, it is created with the page layout properties of the Initial Document Section at that time. The properties of the new document section can be edited subsequently. If a property of the Initial Document Section is changed, this change will not be passed to other

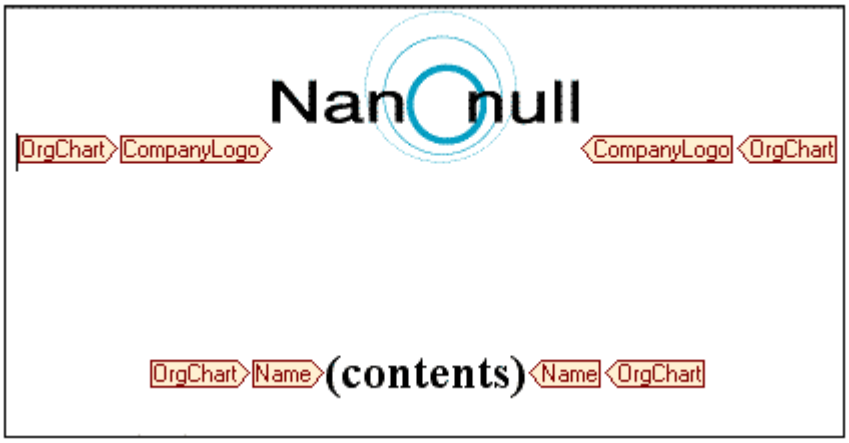
document sections that already exist. New document sections will be created with the latest values of the Initial Document Section. The various page layout properties are described in the section Page Layout Properties.

HTML document properties
Properties of the output HTML document are specified in the Document Properties tab.

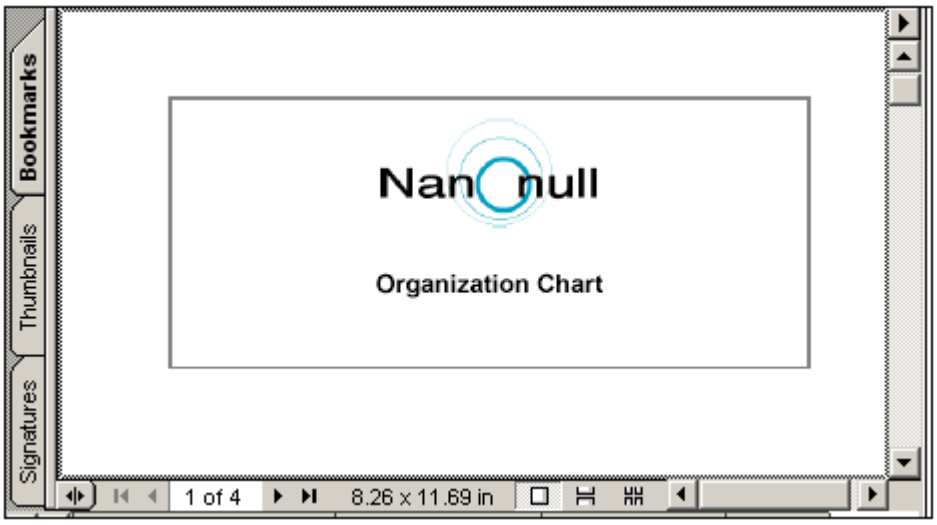
Document styles
The styles that are defined in the Document Styles tab apply to the entire document. If a document has more than one document section, design elements within each document section inherit style properties from the Initial Document Section. To over-ride inherited styles on a given design element, specify the required style values on the individual design elements. To do this click the design element, and, in the Styles sidebar, specify the desired styles.

Cover pages
If a cover page is required, it should be designed at the beginning of the Initial Document Section. To ensure that the rest of the document starts on a new page, insert a page break (**Insert | Insert Page / Column / Document Section | New Page**) below the cover page template. If the page layout properties of the cover page are to be different than those of the following pages, then the entire Initial Document Section should be used for the cover page. The following pages should then start with a new document section.

An example is shown below.



Click the Preview RTF, Preview PDF, or Preview Word 2007+ tab to see the result in the preview window.


Bookmarks
Thumbnails
Signatures
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Organization Chart
1 of 4
8.26 x 11.69 in

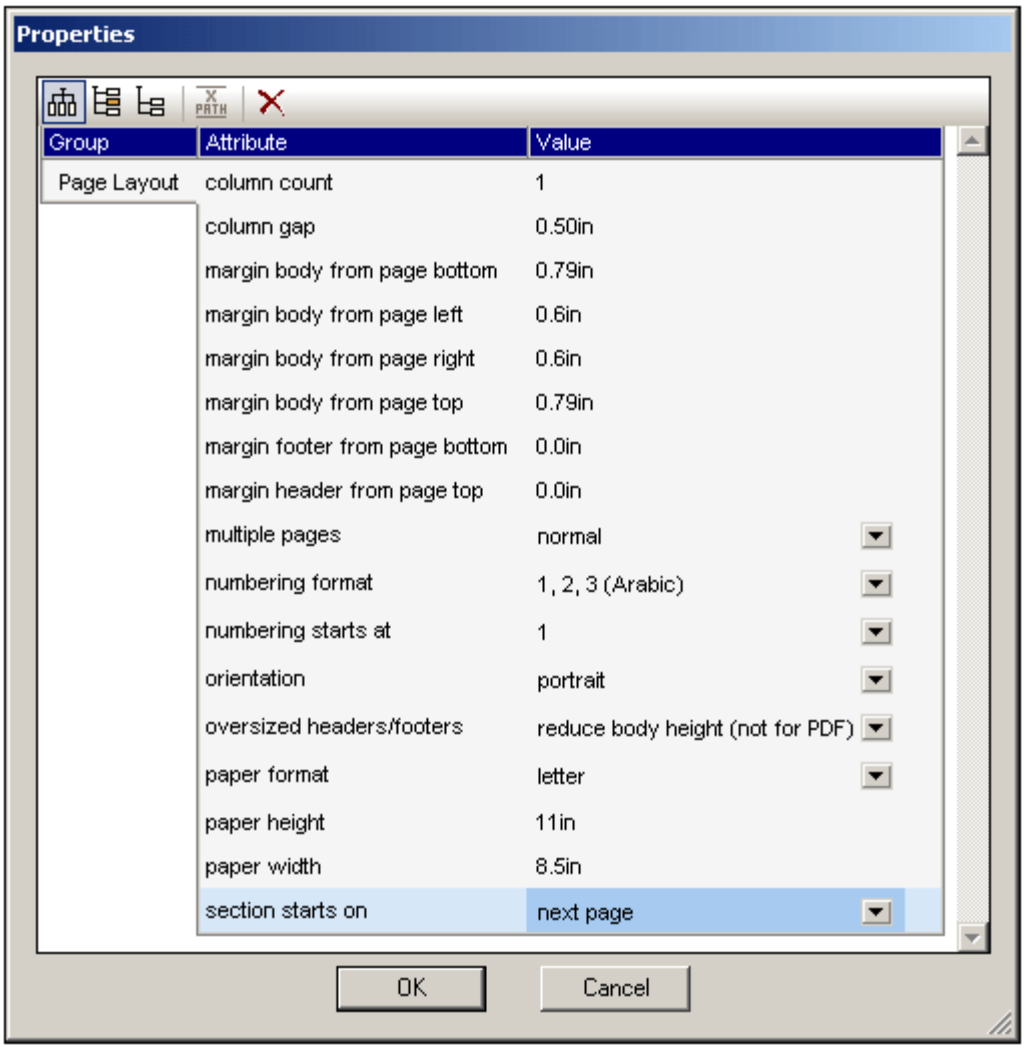
Page Layout Properties

Page properties are assigned individually for each document section of a document design, in the Page Layout group of properties of that document section. If a design has only one document section, then the page properties of that document section are the page properties of the entire document.

Accessing the page properties of a document section

To access the page properties of a document section, click the *Edit Properties* link of the Initial Document Section or Document Section item in the design (*see screenshot below*).

This pops up the Properties window, with the *Page Layout* properties active within it (*screenshot below*).



Alternatively, clicking the Document Section title bar, makes the *Page Layout* group of properties of that document section active in the Properties window.

Page size
Three properties determine the size of pages of a document section: (i) page height, (ii) page width, and (iii) size. Page size can be set in one of two ways:

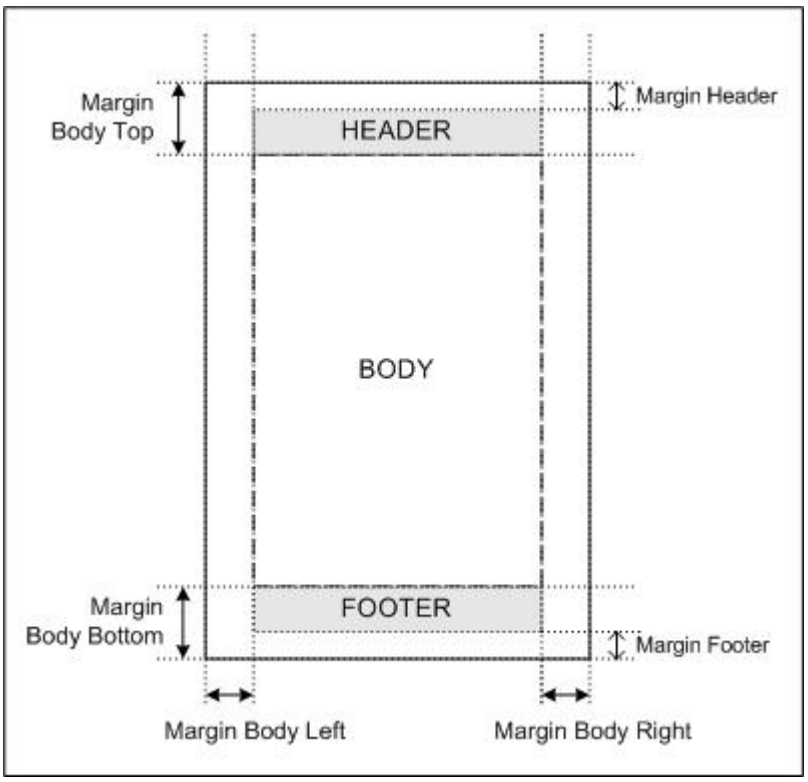
- You can select a predefined size from the combo box in the *Size* property field. In this case, values for the *Page height* and *Page width* fields are automatically filled in depending on what value has been selected in the combo box.
- You can specify your own values for the *Page height* and *Page width* properties. In this case, the *Size* field will contain the value `custom size`.

Valid length dimensions (for the *Page height* and *Page width* properties) are inches (`in`), centimeters (`cm`), millimeters (`mm`), picas (`pc`), points (`pt`), pixels (px), and ems (`em`). Note that (i) a unit is mandatory; (ii) there must be no space between the number and the unit; (iii) there is no default unit. Entering an invalid unit or no unit causes the value and the property to be displayed in red.

Page margins
The top, bottom, left and right margins of a page can be defined with the four margin properties, *Margin body top*, *Margin body bottom*, *Margin body left*, and *Margin body right*, respectively. To specify a margin, enter the required number in the relevant margin property field followed by any of the valid length units: inches (`in`), centimeters (`cm`), millimeters (`mm`), picas (`pc`), points (`pt`), pixels (px), and ems (`em`). Note that (i) a unit is mandatory; (ii) there must not be a space between the number and the unit; (iii) there is no default unit. Entering an invalid unit or no unit causes the value and the property to be displayed in red.

The body area is defined by the page margins you set (*see screenshot below*).

Header and footer margins
The *Margin header* and *Margin footer* properties specify the distance from the top of the page to the top of the header and from the bottom of the page to the bottom of the footer, respectively (*see screenshot below*).

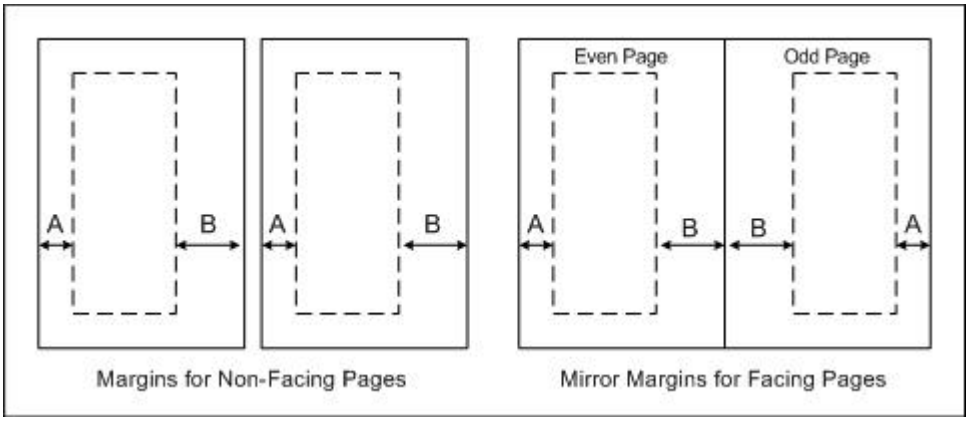


The vertical extents of headers and footers are determined by the actual content of the headers and footers. You should ensure that the vertical extent of a header plus the header margin does not exceed the *Margin body top*. Otherwise, the header will be too large to be contained in the space defined for it. Similarly, ensure that the sum of the vertical extent of the footer and footer margin does not exceed the value of the *Margin body bottom*.

If the actual header or footer is too large for the space assigned for it, then the value of the *Oversized Headers/Footers* property comes into play and can modify the treatment of headers and footers in RTF and Word 2007+ output. If the *Oversized Headers/Footers* property has been set to `Overlap Body Text`, then the oversized header or footer will superimpose, or be superimposed by, body text. If the option `Reduce Body Height` has been set, then the vertical extent of the body text is reduced so as to accommodate the oversized header or footer. In the case of PDF output, the option to reduce body height is not available and oversized headers or footers will always either superimpose, or be superimposed by, body text.

The Multiple Pages setting
The Multiple Pages setting has two options:

- If you set *Multiple Pages* to `Normal`, then all pages in the output will have the same value for all left margins and the same value for all right margins (*see screenshot below*).
- If, on the other hand, you set *Multiple Pages* to `Mirror Margins`, then the document pages are treated as facing pages (*see screenshot below*). This means that for even-numbered pages (left-hand-side pages), the left margin (*Margin body left* property) is the outer margin while the right margin (*Margin body right* property) is the inner margin. For odd-numbered pages (right-hand-side pages), the left margin (*Margin body left* property) is the inner margin while the right margin (*Margin body right* property) is the outer margin.



The settings made for the *Margin body left* and *Margin body right* properties are applied by StyleVision to the odd-numbered pages; these margins will be reversed for even-numbered pages; the inner-margin value of odd-numbered pages becomes the outer-margin value of the even-numbered pages.

Note: If an SPS design has multiple document sections, then the value of the mirror margins setting is taken from the initial document section. The left and right margin values are also taken from the initial document section. The values of these properties in subsequent document sections will be ignored.

Page orientation
Page orientation can be set to `portrait` or `landscape`.

Columns
Columns and their widths are specified with two properties: *Column count* and *Column gap*, which specify, respectively, the number of columns and the space between two columns. The width of a column is thus the width of the page body minus the sum of the column gaps, divided by the number of columns.

Text will fill the columns on a page one by one. Only after all the columns have been filled will a new page be started. A column break can be forced by inserting a new column at the desired point in the design. To do this, right-click at the location where the column break is required and select the menu command **Insert Page / Column/ Document Section | New Column**.

Page numbering
There are two relevant properties: *Numbering format* and *Numbering starts at*. These work as follows:

- The required page number format is set by selecting one of the pre-defined options from the drop-down menu for *Numbering format*. (The *Numbering format* selection also applies to the page total, if this is inserted.)
- The page numbering for a document section can be set to start with any positive integer. This integer is specified in the *Numbering starts at* property. If the numbering is to continue from the previous document section, then this field should be left blank or set to `auto`.

Note: Page numbers can be inserted in a document by inserting a page number placeholder (with the command **Insert Page / Column / Document Section | Page Number**). The total number of pages in the output document is inserted with the command **Insert**

Page / Column / Document Section | Page Total.

Page numbering in the RTF output
In order to display page numbering in the RTF output in MS Word, you must select, in MS Word, the entire contents of the document (with **Edit | Select All** or **Ctrl+A**), and then press **F9**. This will cause the page numbering to be displayed—if you have inserted page numbering.

Page totals
To output the total number of pages at various locations in your document, use the page total feature.

Page starts for document sections
For each document section that is not the Initial Document Section, the *Section Starts On* property specifies whether the document section should start on the next page (irrespective of whether it is odd-numbered or even-numbered), or whether it should specifically start on an odd-numbered or even-numbered page. For example, if the previous document section ends on an odd-numbered page and the current document section is specified to start on an odd-numbered page, then the even.numbered page that occurs directly after the end of the previous document section will be left blank. Note that it is the underlying document page-numbering that determines whether a page is odd-numbered or even-numbered. The page numbering that the user specifies is irrelevant for determining the document section start-page.

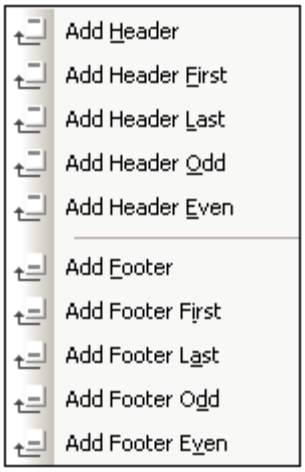
Headers and Footers: Part 1

Headers and footers can be added **for each document section** of the document, including the Initial Document Section.

Adding a header or footer for a document section

To add a header or footer for a document section, click the *Add Header/Footer* link of the Initial Document Section or the Document Section title bar (*see screenshot below*).

From the menu that pops up (*screenshot below*), select the required item. A header or footer can be added separately for odd or even pages, or a single header or footer can be added for all pages. Additionally, a separate header/footer template can be created for the first page (**Add Header First**, **Add Footer First**) and/or for the last page of a document section (**Add Header Last**, **Add Footer Last**, *PDF output only*). This is useful if the first and/or last page of a document section must have a different header/footer: for example, when the first page is a cover page (an empty header/footer template could be created in this case).

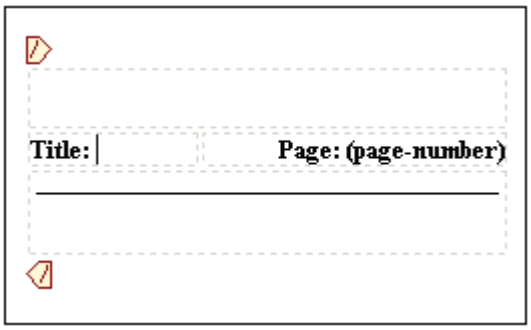


On clicking the required header or footer, a template for the header or footer is created within that document section in Design View. The Design View display of header/s and footer/s in a document section can be toggled on and off by clicking the *Hide Headers/Footers* link in the Initial Document Section or Document Section Break item (*see screenshot above*).

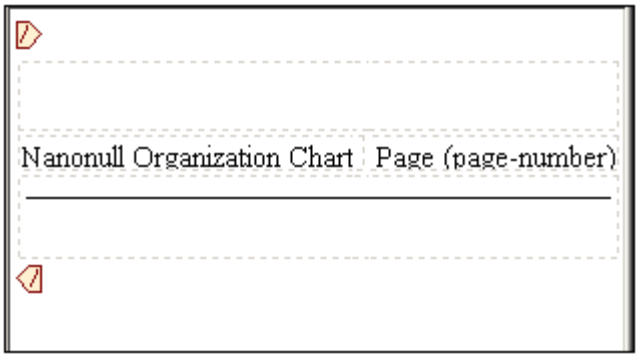
Note: Headers and footers for the last page are supported for PDF output only.

Designing the header/footer in Design View

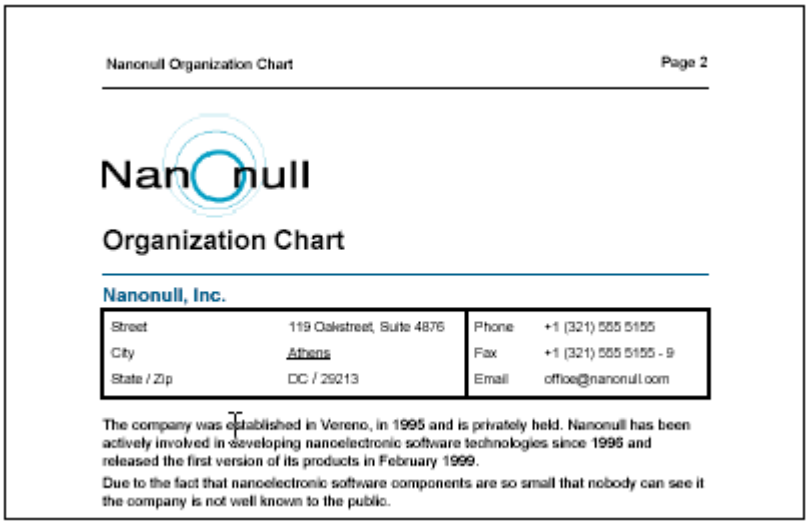
The header/footer template is designed just like any other template. Components can be dragged from the schema tree or entered statically, and then styled. An example is shown below. When a header is added, the template will look something like this:



Change the header as required. Note that you can use both static and dynamic content, and even images.



Click the Preview RTF, Preview PDF, or Preview Word 2007+ tab to see the results in the Preview windows. The illustration below shows Page 2 of the Organization Chart document in the PDF Preview window, with the header as defined above. To display page numbering in the RTF output, you must click **Edit | Select All** (or **Ctrl+A**) in MS Word, and then click **F9**. Also see displaying page-numbering in RTF output.



The following points should be noted:

- The vertical extent of the header and footer should not exceed the respective margin body (top or bottom) less the extent of the margin header or margin footer, respectively

(see Page Layout Properties for details). The vertical extent of the header or footer, consequently, is determined by the top/bottom body margins and margin header/footer.

- You can define a header/footer either (i) for all pages in the document section, or for (ii) for even and odd pages in the document section separately. Additionally, separate first page and last page headers/footers can be inserted. (See Headers and Footers: Part 2 for more information.)
- Page numbering in a document section starts with the number you specify in the Page Layout Properties.

Deleting a header or footer

To delete a header or footer, right-click the header/footer title bar and, from the menu that pops up, click **Remove**.

Headers and Footers: Part 2

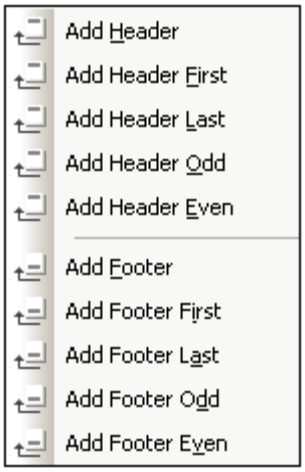
In this section, we describe how to create the following types of headers and footers:

- Different headers/footers for odd-numbered and even-numbered pages
- Different headers/footers for different document sections
- Simulating headers/footers inside a page
- Headers/footers with subtotals

Different headers/footers for odd-numbered and even-numbered pages

For each document section, odd-numbered and even-numbered pages can be assigned different headers/footers.

To create different headers for odd-numbered and even-numbered pages, click the *Add Header/Footer* link in the title bar of the respective document section, and select **Add Header Odd** and **Add Header Even** from the menu that pops up (*screenshot below*). This creates two header templates, one for odd-numbered pages, the other for even-numbered pages. Enter the content of the two headers in the templates.



Separate footers for odd-numbered and even-numbered pages can be created in a similar way to that described above for headers.

Different headers/footers for different document sections

Different headers/footers can be created for each document section of the document. To do this, click the *Add Header/Footer* link of the Initial Document Section or the Document Section title bar. This pops up the Add Header/Footer menu shown in the screenshot above. Note the following points:

- Headers/footers for odd-numbered and even-numbered pages can be added separately, or a common header can be added for all pages in the document section.
- An additional first-page and/or last page header/footer can be added. These headers/footers will be used on the first and/or last page of the document section instead of other headers/footers that might be defined for that document section.
- Page numbering for the document section can either run on from the previous document section or start at a designated number.
- The Page Total is the page count of the entire document not that of the current document section.

Simulating headers/footers inside a page
Headers and footers can be designed manually inside a layout container. The approach would be to design a single page as a layout container. The header and footer are created within static tables located, respectively, at the top and bottom of the page. If more than one page is to be designed, then multiple layout containers can be used, each separated from the next by a page break (**Insert | Page / Column / Document Section | New Page**).

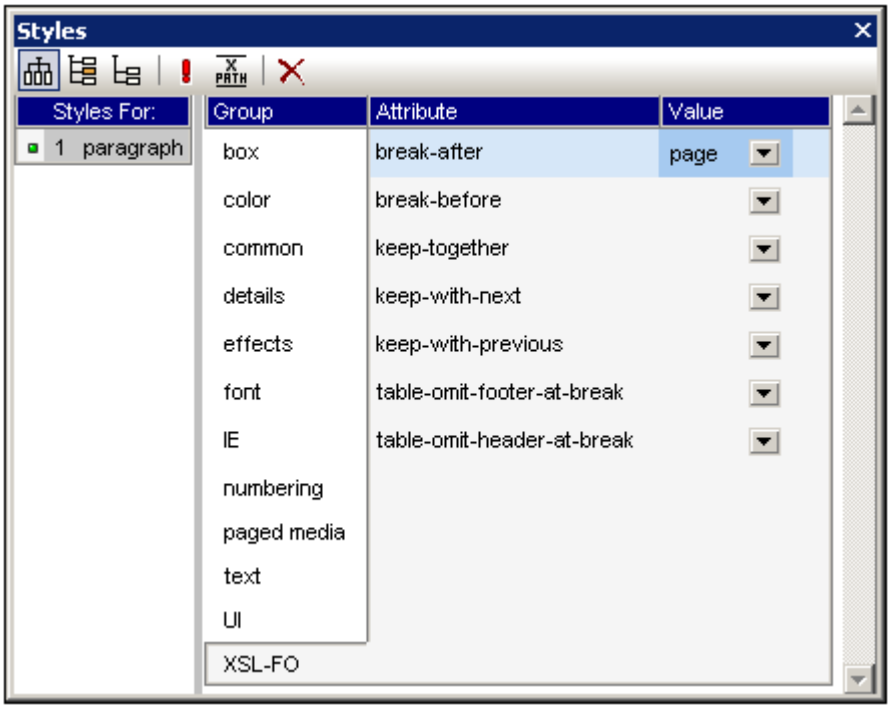
Headers/footers with subtotals and running totals
When a document contains a list of numerical items that must be totalled and the list extends over multiple pages, subtotals of each page and/or running totals might be required to appear in the headers and/or footers of each page. The `Subtotals.sps` example, which is in the folder `C:/Documents and Settings/<username>/My Documents/Altova/StyleVision2010/StyleVisionExamples\Tutorial\Subtotals\`, demonstrates how running totals can be created and included in headers and footers.

The following strategy was used to design this SPS:

- Because the listing is in a table and because a table cannot be made to auto-fit a printed page, the number of rows that must be accommodated on a page must be specified. These numbers are given in two variables that have been defined on the top level template, that for the `$XML` template; they are named `RowsOnFirstPage` and `RowsPerPage`.
- The page count is derived by dividing the total number of list items by the number of rows per page (adjusted to take account of the different number of rows on the first page). The page count is stored in a variable called `CountOfPages` (defined on the `$XML` template).
- A user-defined template is created for the sequence `1 to $CountOfPages`, and a static table is created within this template. Defined on this template are two variables that calculate the which row is to be the first row (`$RowFrom`) and the last row (`$RowTill`) on each page. The rows in the table are generated by a user-defined template, which selects the items in the XML file (`file` elements) on the basis of their position with respect to the `$RowFrom` and `$RowTill` values. If the position of the `file` element is an integer value that lies in the range delimited by values of the `$RowFrom` and `$RowTill` variables of the current page, then a row will be generated for the current `file` element.
- The running totals are generated with Auto-Calculations and inserted into rows at the top and bottom of the tables. Note that the XPath expressions to generate running totals at the top and bottom of pages are different from each other.
- Headers and footers are created in tables, respectively, above and below the main table on the page. The Auto-Calculations to generate the running totals are inserted in the header and footer templates.
- A page break is inserted at the end of each page.

Keeps and Breaks

In PDF documents (*Enterprise edition only*), keeps and breaks for pages and columns can be set in the *XSL-FO* group of styles (Styles sidebar, *screenshot below*). This group of styles enables you to specify whether the current design document block (the block within which the cursor is currently placed) should have a page/column break placed before or after it, or whether it should be kept with adjacent blocks. Whether table headers and footers are omitted (or repeated) at page breaks can also be set using the `table-omit` properties. For more information about these properties, see the XSL-FO specification.



For the printed version of HTML pages, settings for page breaks and widows/orphans (leading/trailing lines on a page) can be made via the relevant properties in the *Paged Media* group of styles (*see screenshot above*).

PDF Fonts

How the formatter and PDF Viewer use fonts
The formatter (for example, FOP) creates the PDF and the PDF Viewer (typically Adobe's Acrobat PDF Reader) reads it.

In order to lay out the PDF, the formatter needs to know details about the fonts used in the document, particularly the widths of all the glyphs used. It needs this information to calculate line lengths, hyphenation, justification, etc. This information is known as the metrics of the font, and it is stored with each font. Some formatters can read the metrics directly from the system's font folder. Others (such as FOP) need the metrics in a special format it can understand. When the metrics of a font are available to the formatter, the formatter can successfully lay out the PDF. You must ensure that the font metrics files of all the fonts you use in your document are available to the formatter you are using.

The formatter can either reference a font or embed it in the PDF file. If the font is referenced, then PDF Reader will look for that font in its own font resource folder (which contains the Base 14 fonts) first, and then in the system's font folder. If the font is available, it will be used when the PDF is displayed. Otherwise the Reader will use an alternative from its resource folder or generate an error. An alternative font may have different metrics and could therefore generate display errors.

If the formatter embeds a font in the PDF file, then the PDF Viewer uses the embedded font. The formatter may embed the entire character set of a font or only a subset that contains the glyphs used in the document. This factor affects the size of the PDF file and, possibly, copyright issues surrounding font use (see note below). You might be able to influence the choice between these two options when you set the options for your formatter.

Fonts supported by StyleVision
By default, a PDF created via StyleVision will contain only the Base 14 fonts, either because (i) no font was specified; in this case, Helvetica/ArialMT (which is a Base 14 font) is used by default; (ii) Base 14 fonts were explicitly specified in the design; or (iii) these fonts are used as fallbacks for an explicitly specified font. You can, however, use other fonts. To do this, you need to do the following:

1. Generate a font metrics file for the required font.
2. Set up the FOP configuration file to use the required font metrics files.

For information about how to generate font metrics files and set up the FOP configuration file, see the FOP documentation.

Using fonts in StyleVision

- The default document font used in the PDF output is Helvetica (Acrobat PDF Reader versions prior to 4.0) or Arial MT (Acrobat PDF Reader version 4.0 or later). So, if no font is specified for any text in the document, Helvetica/ArialMT will be used.
- If you specify Helvetica or Times in the SPS, and if the Acrobat PDF Reader used to view the PDF output from this SPS is version 4 or higher, then the PDF Reader will use Arial MT and Times New Roman PS MT, respectively, from its own font resources folder; Acrobat PDF Reader does this even if Helvetica and Times are active on the system.
- In StyleVision, you can change the default font for the entire document by first selecting all the text in the document. Then, in the Styles sidebar, select the texts item in the *Styles For* column, and with the *Font* group selected, assign the desired font to the `font-family` attribute. This font is assigned to each text node in the document. An alternative font can then be set for individual text nodes as required.

- If in the XSL-FO tab of the Options dialog (**Tools | Options**) you select FOP 0.95 compliant, then only the font-family values Helvetica, Times, Courier, and Symbol (exactly as spelled here) will be passed through to the XSLT-for-FO. Entering any other font-family value on a node will remove the `font-family` attribute from that node in the resulting FO document—leading to the default Helvetica/ArialMT being output for that node.
- If in the XSL-FO tab of the Options dialog (**Tools | Options**) you select Full usage of XSL-FO standard, then any font-family you enter in the Text Style window will be passed to the XSLT-for-FO document. If the selected font is not available to the formatter, an error may result. In order to avoid such errors, add alternative fonts and a generic fallback. For example:

  ```
  font-family="Bodoni, Garamond, serif"
  ```

  In this example, Garamond is a second choice, and the generic serif is the fallback font. If neither Bodoni nor Garamond is available, then the generic serif font is used. The three generic fonts are: serif (Times or Times New Roman PS MT, depending on the Acrobat Reader version), sans-serif (Helvetica or ArialMT), and monospace (Courier).

  Note for HTML use: CSS2 allows alternative choices, as well as a generic font as a fallback (serif, sans-serif, monospace, cursive, and fantasy).

Making fonts available to the formatter

Most formatters already have available to them the Base 14 fonts. It is important to know the names by which the formatter recognizes these fonts so that you correctly indicate them to the formatter. This is the basic font support provided by formatters. You can, however, increase the number of fonts available to the formatter by carrying out a few straightforward steps specific to the formatter you are using. The steps for FOP are given below.

General procedure for setting up additional font support in FOP

To make additional fonts available to FOP, you would need to do the following:

1. Generate a font metrics file for the required font from the PostScript or TrueType font files. FOP provides PFM Reader and TTF Reader utilities to convert PostScript and TrueType fonts, respectively, to XML font metrics file. For details of how to do this, see the FOP: Fonts page.
2. Set up the FOP configuration file to use the required font metrics files. You do this by entering information about the font files in an FOP configuration file. See FOP: Fonts.
3. In the file `fop.bat`, change the last line:

   ```
   "%JAVACMD%" [...] org.apache.fop.cli.Main %FOP_CMD_LINE_ARGS%
   ```

   to include the location of the configuration file:

   ```
   "%JAVACMD%" [...] org.apache.fop.cli.Main %FOP_CMD_LINE_ARGS% -c
   conf\fop.xconf
   ```

After the metrics files are registered with FOP (in a FOP configuration file) and the FOP executable is set to read the configuration file, the additional fonts are available for PDF creation.

Setting up the FOP configuration file

The FOP configuration file is called `fop.xconf` and is located in the `conf` folder in the FOP installation folder. This file, which is an XML document, must be edited so that FOP reads the font metrics files correctly. For each font that you wish to have FOP render, add a `font` element at the location indicated by the `font`-element placeholder in the document:

```
<font metrics-url="arial.xml" kerning="yes" embed-url="arial.ttf">
```



```
          <font-triplet name="Arial" style="normal" weight="normal"/>
          <font-triplet name="ArialMT" style="normal" weight="normal"/>
</font>
```

In the example above,

`arial.xml`	is the URL of the metrics file; it is best to use an absolute path.
`arial.ttf`	is the name of the TTF file (usually located in `%WINDIR%\Fonts`).
`Arial`	specifies that the above metrics and TTF files will be used if the font-family in StyleVision is defined as `Arial`.
`style="normal"`	specifies that the above metrics and TTF files will be used if the font-style in StyleVision is defined as `normal` (not, say, `italic`).
`weight="normal"`	specifies that the above metrics and TTF files will be used if the font-weight in StyleVision is defined as `normal` (not, say, `bold`).

Note on font copyrights: Font usage is subject to copyright laws, and the conditions for use vary. Before embedding a font—especially if you are embedding the entire font—make sure that you are allowed to do so under the license you have purchased for that font.

Character sets
Note that the character sets of fonts differ from each other. The Base 14 fonts cover the ISO-8859-1 characters plus the glyphs in the Symbol and Zapf Dingbats fonts. If your document contains a character that is not covered by the Base 14 fonts, then you will have to use a font that contains this character in its character set. Some fonts, such as Arial Unicode, offer the characters covered by Unicode.

Note: When entering font sizes, do not use an intervening space between the point size and its unit. For example, 12pt is correct, 12 pt is incorrect.

Pixel Resolution

If you use pixels as a unit of length in your SPS, you should be aware that pixel-defined lengths are a function of screen resolution. The corresponding absolute lengths in print could be very different from what you see on screen. In this section, we do the following:

1. Discuss why pixel-defined sizes have two forms: (i) an abstract form, defined in pixels; (ii) an actual size, obtained by resolving the abstract form in terms of a specific screen resolution.
2. Explain StyleVision functionality to deal with this issue.

From pixels to points

A few key points are essential to understanding the factors that affect the abstract and actual dimensions of pixel-defined lengths:

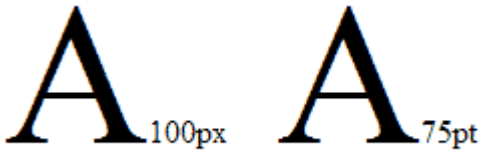
- The pixel is a relative unit: its size depends on screen resolution. The higher the resolution, the smaller the pixel. Screen resolution is given with dpi (dots per inch). A dot in the case of screens is a pixel. So, if screen resolution is 72 dpi, then there are 72 pixels (dots) in one inch of a line of pixels. If screen resolution is 96 dpi, then there are 96 pixels in an inch. How many pixels there are in an inch of screen length depends on the screen resolution. The most commonly available screen resolutions today are 72 dpi, 96 dpi, and 120 dpi. The higher the dpi, the smaller will be the pixels.
- The length unit know as the point is an absolute unit of length, used most commonly in the printing industry: 72 points make up an inch.
- From the above it can be seen that only when screen resolution is 72 dpi will one pixel be equal to one point. For other screen resolutions, the absolute length can be calculated. The table below lists the absolute length (in points) of 100px at various screen resolutions.

Resolution	Pixels	Points	Factor
72 dpi	100	100	1.00
96 dpi	100	75	0.75
120 dpi	100	60	0.60

To convert pixels to points for each screen resolution, we can use a factor given by the ratio of points in one inch (72) to pixels in one inch (dpi), that is, 72 divided by dpi. Multiplying the length in pixels by the appropriate conversion factor gives the absolute length in points. Since 72 points make an inch, you can obtain the length in inches by dividing the length in points by 72. For example, 100 points is equal to 100 div 72 inches = 1.389in.

Screen resolution and absolute length

In the previous section we have seen that only when the screen resolution is 72 dpi will the absolute length in points be the same as the number of pixels used to define that length. Screen resolutions on Windows systems, however, are typically not 72 dpi but 96 dpi. This means that the number of points of a pixel-defined length on such a screen will be 75% the number of pixels. For example, in the StyleVision Design View screenshot below, the two characters measure 100px and 75pt, respectively.



The reason they are the same height is that the screen resolution in which they appear is 96 dpi. At this resolution 100px is equal to 75pt in absolute terms.

The point to note is that when specifying pixels as a unit of length, be aware of your monitor's screen resolution (normally 96 dpi on Windows systems); it determines the absolute length of the pixel-defined length that you see on screen.

Print output resolution

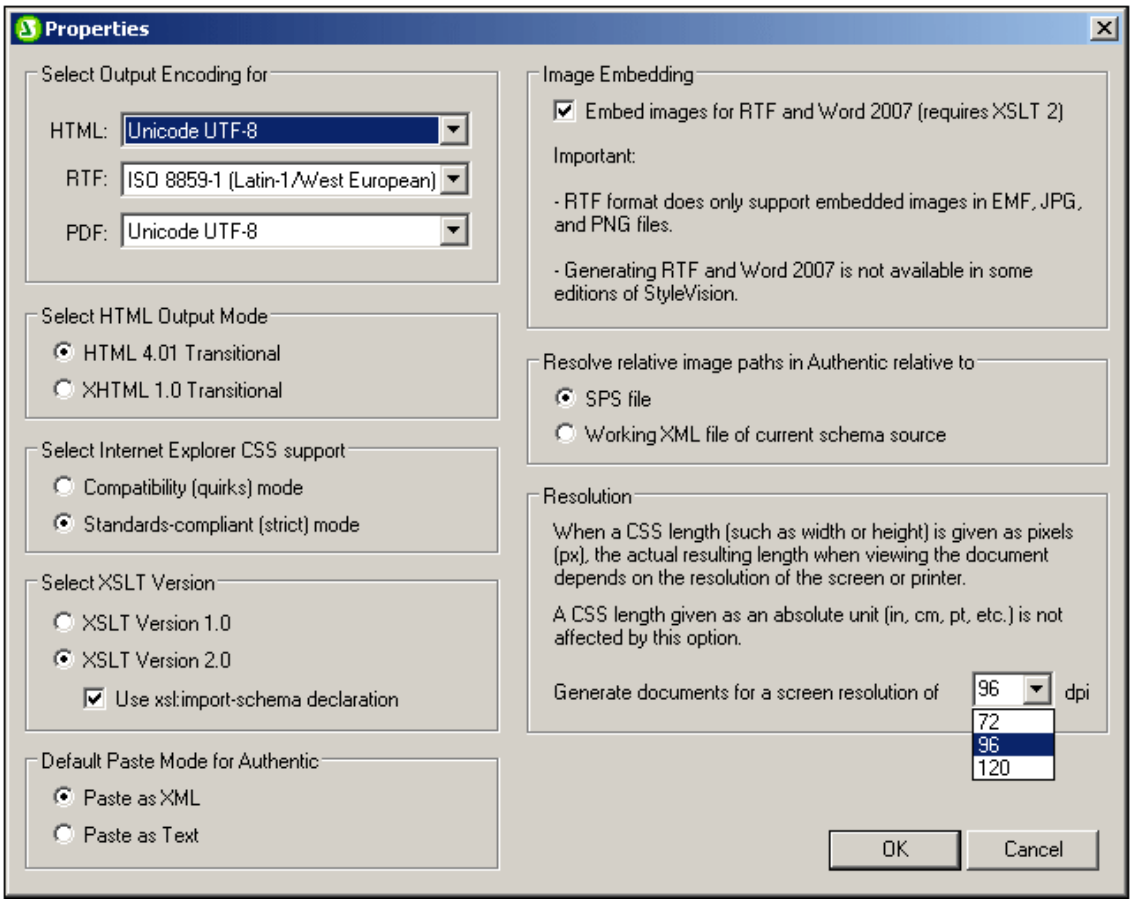
When an SPS is transformed into a print format, such as PDF, RTF, or Word 2007+, non-absolute pixel lengths must be converted to absolute lengths, such as points or inches (because lengths on paper cannot be defined in terms of pixels). The question is: What factor (or screen resolution) should be used to convert from pixels to points?

In StyleVision, you can select the output dpi for each SPS individually. So, for example, if you select 96 dpi, then a 100px character will be rendered in print output as a 75pt character. If you select 72 dpi, then the same character will be rendered in print output as a 100pt character. This system applies to all lengths defined in pixels.

Note: Conversion to an absolute measure is not carried out for HTML output. For HTML, the original pixel units are passed to the HTML file unchanged.

Setting print output resolution of an SPS

To set the print output resolution of an SPS, click **File | Properties**. This pops up the Properties dialog (*screenshot below*).



In the Resolution pane, select the required print resolution. The conversion factor for each listed dpi option is given in the conversion table above (in the section, *From Pixels to Points*). Multiplying the pixel count by the conversion factor gives the absolute length in points. Note that the conversion to absolute units is applied only to print output formats. The HTML output format will retain the original pixel definitions. Note also that this setting does not change the screen resolution of your monitor.

Chapter 12

SPS File: Additional Functionality

12 SPS File: Additional Functionality

Additional to the content editing, structure, advanced, and presentation procedures described in this documentation, StyleVision provides a range of miscellaneous additional features. These are listed below and described in detail in the sub-sections of this section.

- Global Resources. Global resources provide flexibility in selecting resources. For example, multiple resources (such as files and databases), can be assigned to an alias. When an alias is used as a source (XML, XSD, etc) of an SPS, the resource can be switched among the multiple resources assigned to the alias.
- Authentic Node Properties. Individual nodes in the XML document have Authentic View-specific properties. Nodes can be defined to be non-editable, to be displayed with markup tags, to display user information on mouseover, etc.
- Additional Validation. A node can be tested using an XPath expression to return a Boolean value that determines whether user input for that node is valid. This test is in addition to document validation against a schema.
- Working with Dates. In Authentic View, a graphical date-picker ensures that dates are entered in the correct XML Schema format. Furthermore, dates can be manipulated and formatted as required.
- Unparsed Entity URIs. URIs can be stored in unparsed entities in the DTD on which an XML document is based. The Unparsed Entity URI feature enables images and hyperlinks to use these URIs as target URIs.
- Using Scripts. StyleVision contains a JavaScript Editor in which JavaScript functions can be defined. These functions are then available for use as event handlers anywhere within the SPS, and will take effect in the output HTML document.
- HTML Import. An HTML file can be imported into StyleVision and an XML, XSD, and SPS files can be created from it.

12.1 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 XML file can be generated by an Altova MapForce mapping and used in StyleVision as an XML Working File in an SPS.

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 StyleVision.

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.

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 **View | Toolbars | Global Resources** to display the Global Resources Toolbar (*screenshot below*).

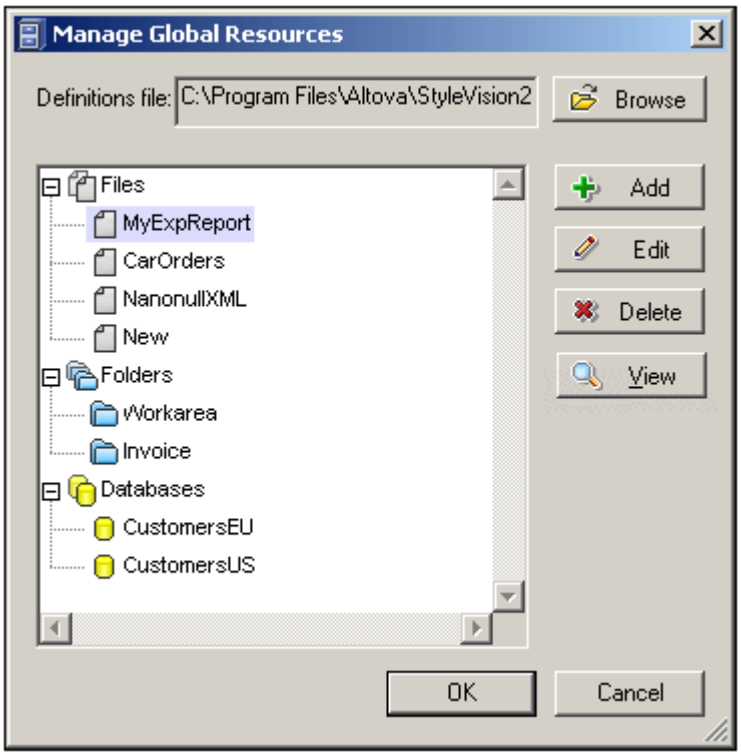
Once the toolbar is displayed, click the Manage Global Resources icon. This pops up the Global Resources dialog.

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 folder `C:\Documents and Settings\<username>\My Documents\Altova\`. 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.

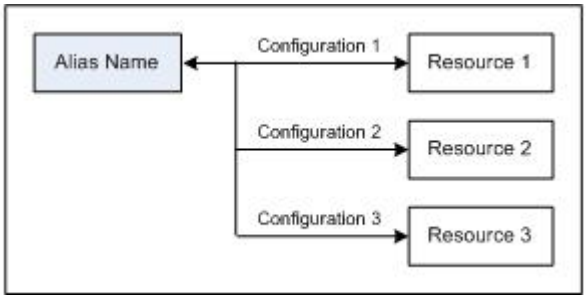


Managing global resources: adding, editing, deleting
In the Manage Global Resources dialog (*screenshot above*), you can add a global resource to the selected Global Resources XML File, or edit or delete a selected global resource. The Global Resources XML File organizes the aliases you add into a list 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.

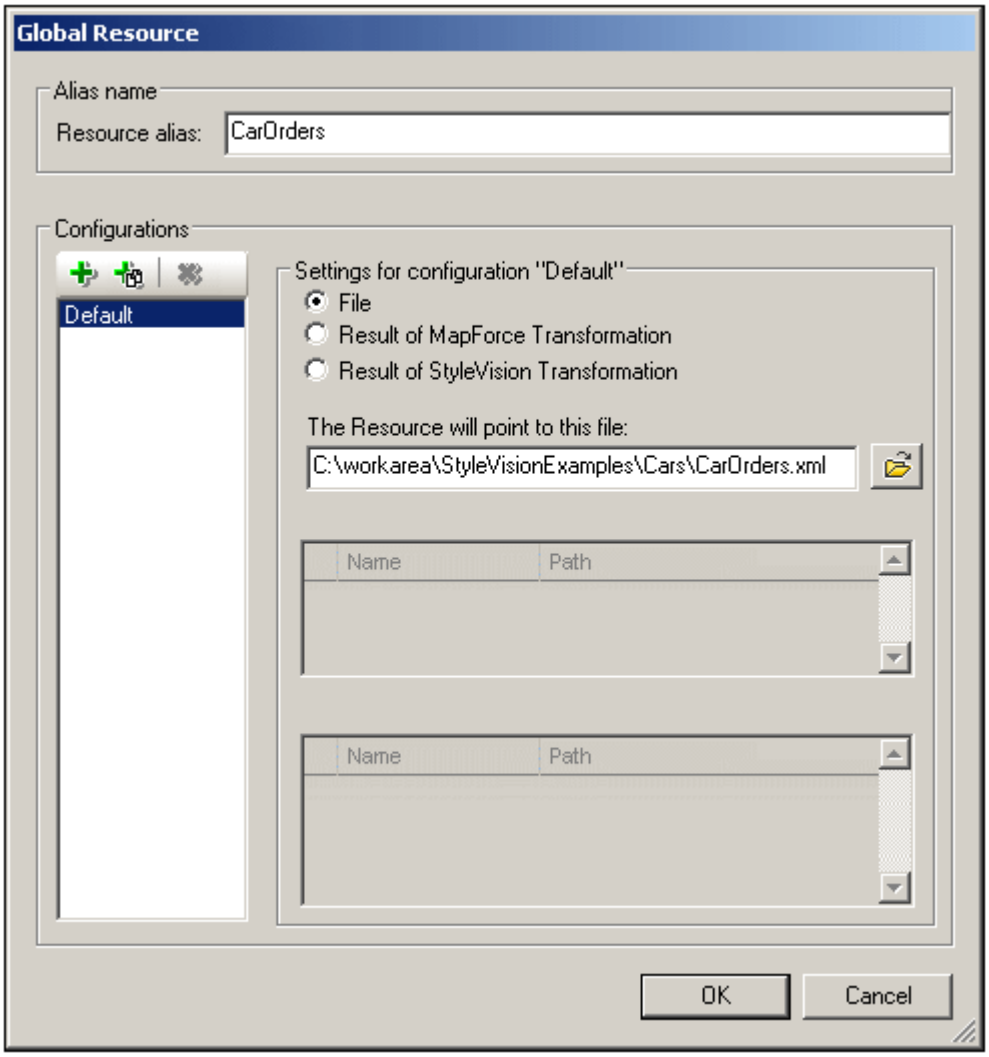
Adding a global resource
Creating a global resource involves mapping one alias name to one or more resources (file, folder, or database). Each mapping is called a configuration. A single alias name can therefore be associated with several resources via different configurations (*screenshot below*).



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.

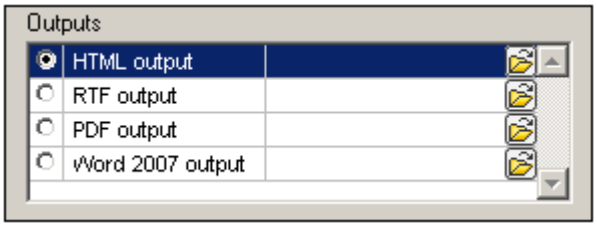
Files

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*).



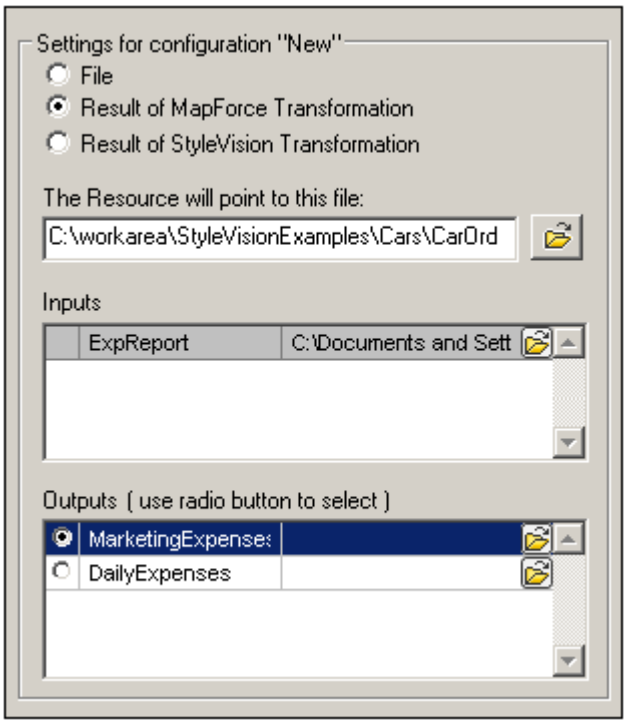
Select the radio button of the desired option (in the screenshot above, 'HTML output' is selected). The result of a transformation can itself be saved as a global resource or as a file path (click the icon and select, respectively, Global Resource or Browse). If neither of these two saving options is 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.

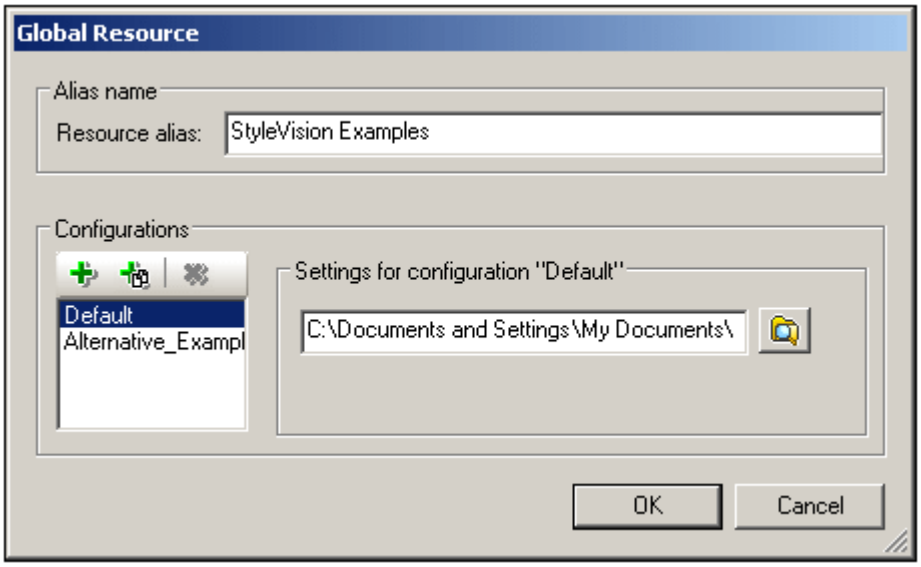
In a MapForce transformation that has multiple output schemas, you can select which one of the output schemas should be used for the global resource by clicking its radio button (*screenshot below*). The XML file that is generated for this schema can be saved as a global resource or as a file path (click 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).

Folders

In the Global Resource dialog for Folders (*screenshot below*), you can add a folder resource as follows:

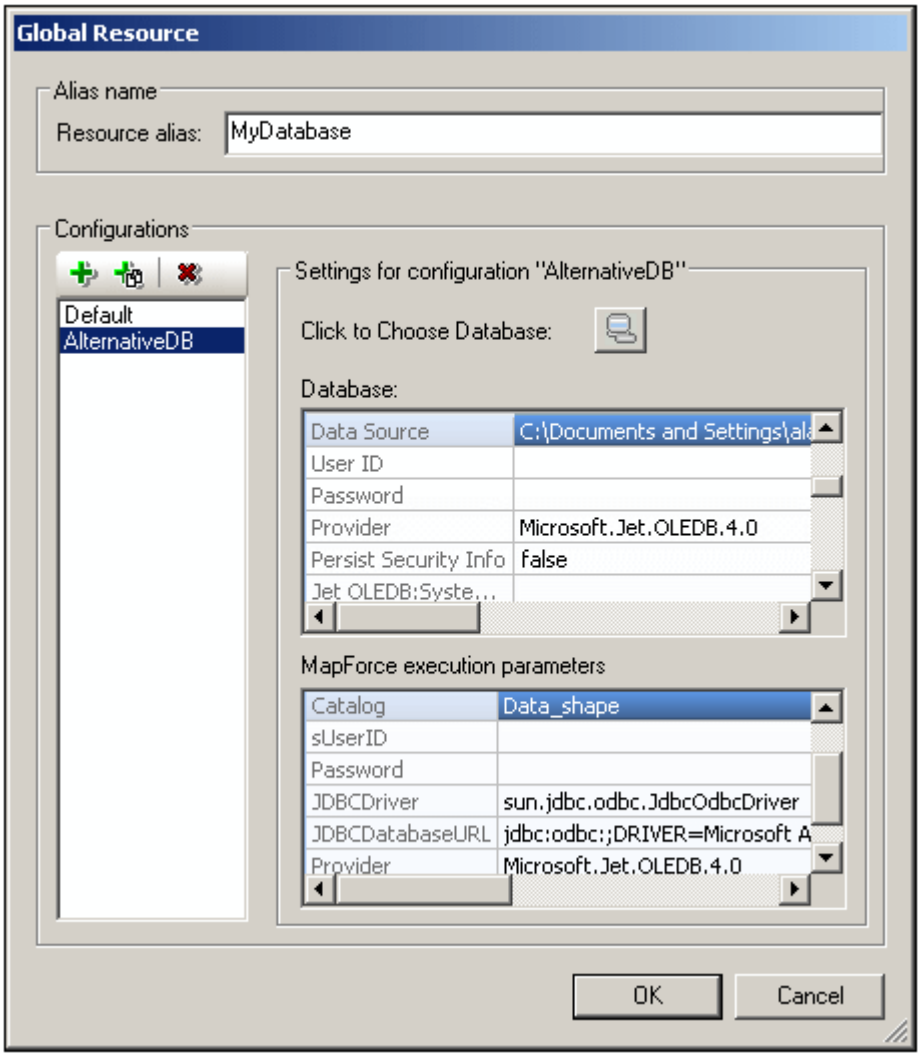


Enter an alias name.

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.

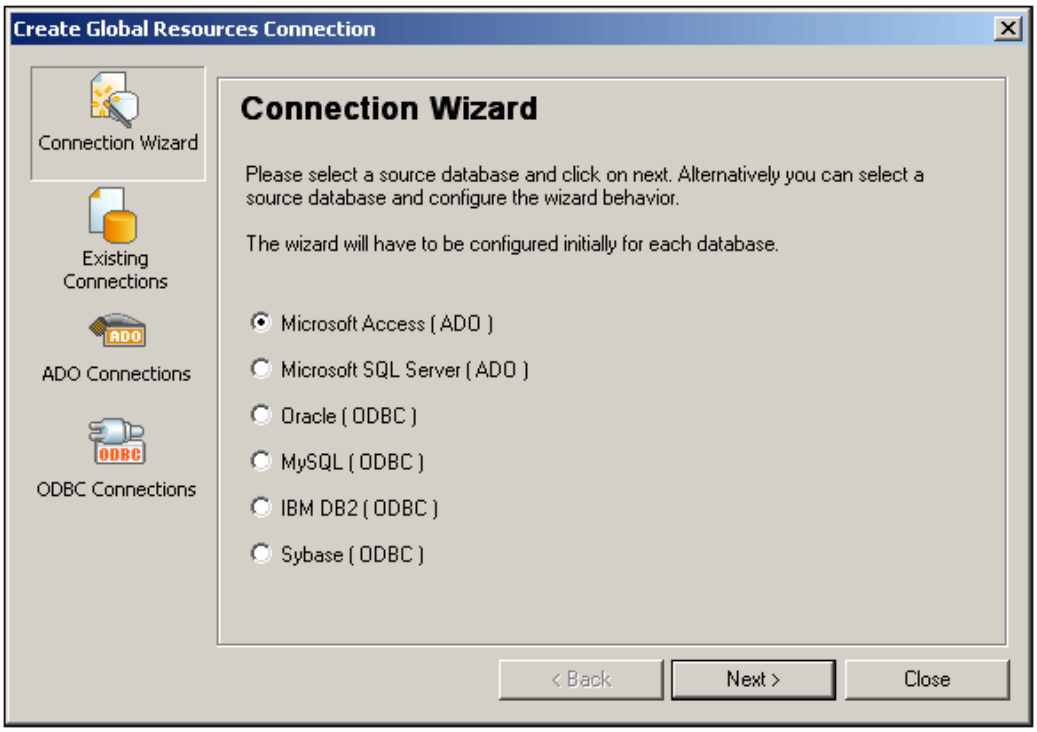
Databases

In the Global Resource dialog for Databases (*screenshot below*), you can add a database 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 click the **Choose Database** icon. This pops up the Create Global Resources Connection dialog (*screenshot below*).



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 StyleVision, you can click the Existing Connections icon and select the DB from the list of connections that is displayed.

3. 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.
4. Specify a database resource for each configuration (that is, repeat Steps 3 and 4 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 databases in the Manage Global resources dialog.

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.

Using Global Resources

There are several types of global resources (file-type, folder-type , and database-type). Particular scenarios in StyleVision 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 StyleVision are listed in this section: Files and Folders and Databases.

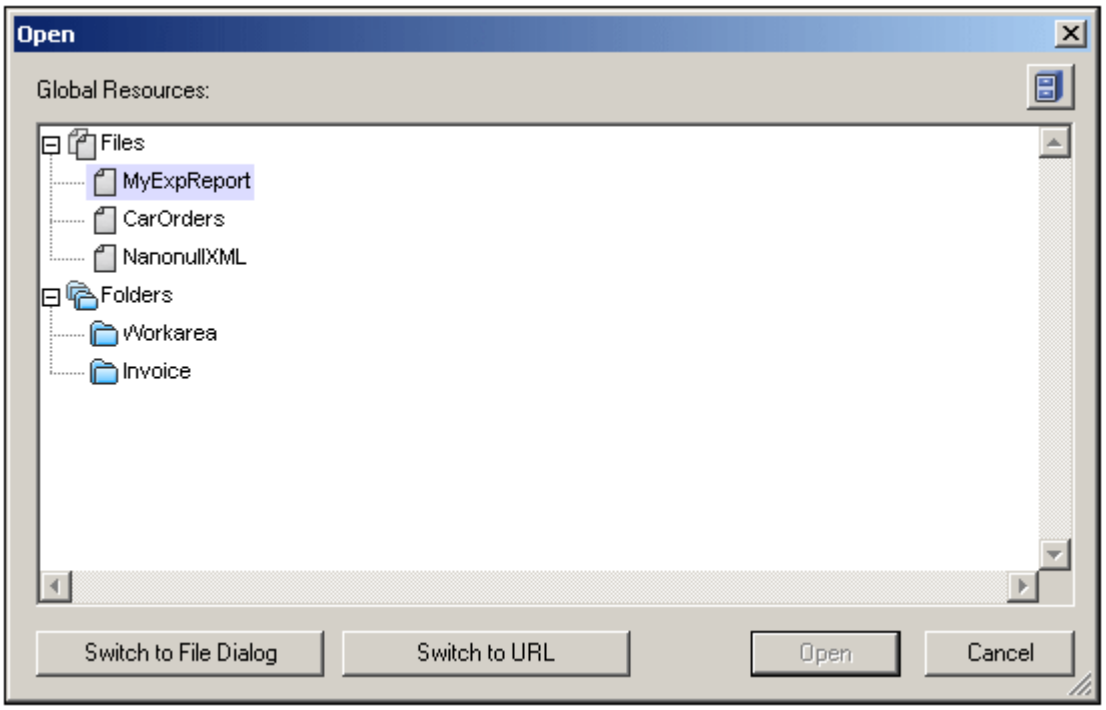
Selections that determine which resource is used

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.

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

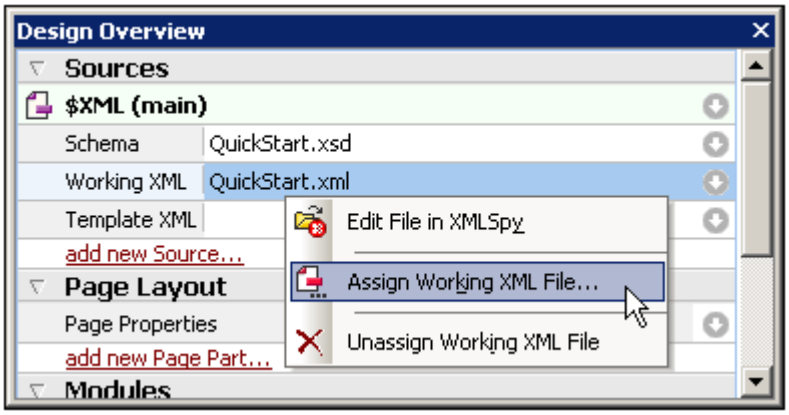
File-type and folder-type global resources can be used in the following scenarios:

- Adding and modifying schema sources and Working XML Files and Template XML Files
- Saving as Global Resource
- Adding modules and CSS files
- Adding global resources to a project

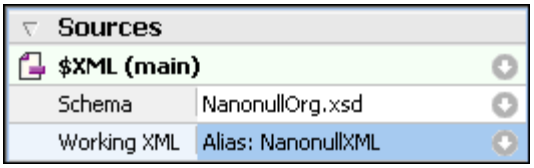
Schema, Working XML File, Template XML File

In the Design Overview sidebar (*screenshot below*), the context menus for the Schema, Working XML File, Template XML File contains an entry that pops up the Open dialog in which

you can assign the schema or Working XML File via a global resource. Clicking the **Switch to Global Resources** button pops up a dialog with a list of all file-type global resources that are defined in the Global Resources XML File currently active in StyleVision. (How to set the currently active Global Resources XML File is described in the section Defining Global Resources.)



If a global resource has been selected as the file source, it is displayed in the relevant entry in the Design Overview sidebar (*screenshot below*).

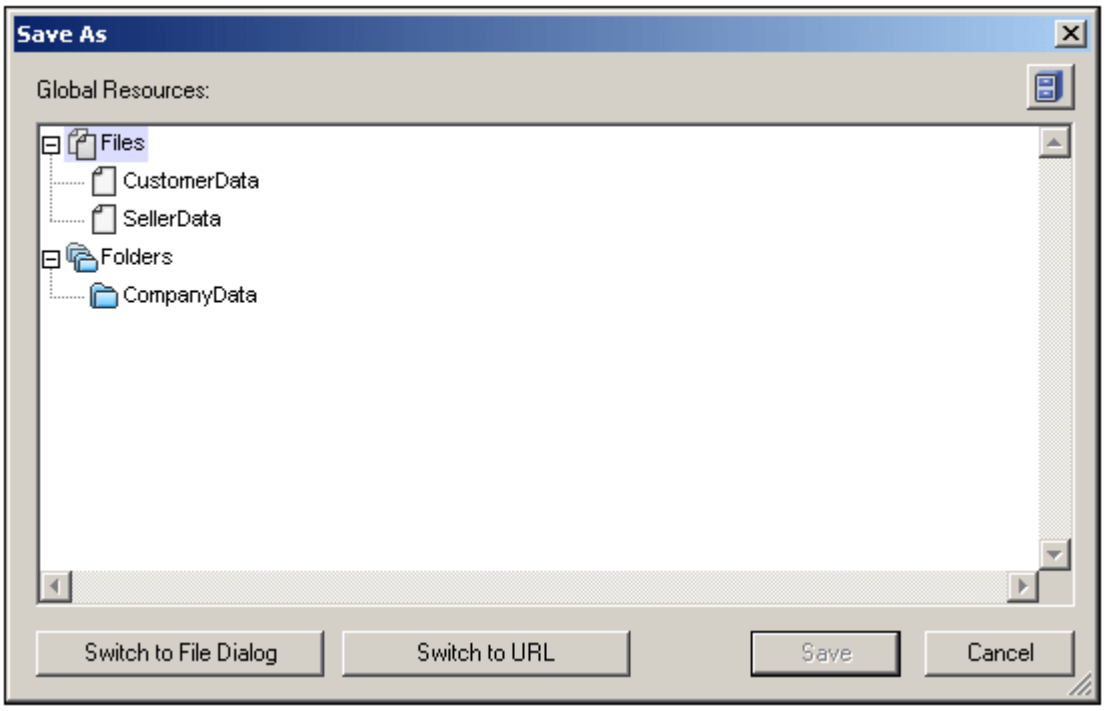


Adding modules and CSS files from a global resource

In the Design Overview sidebar, the **Add New Module** and **Add New CSS File** commands pop up the Open dialog, in which you can click Switch to Global Resources to select a Global Resource to be used. Modules and CSS files can then be changed by 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.

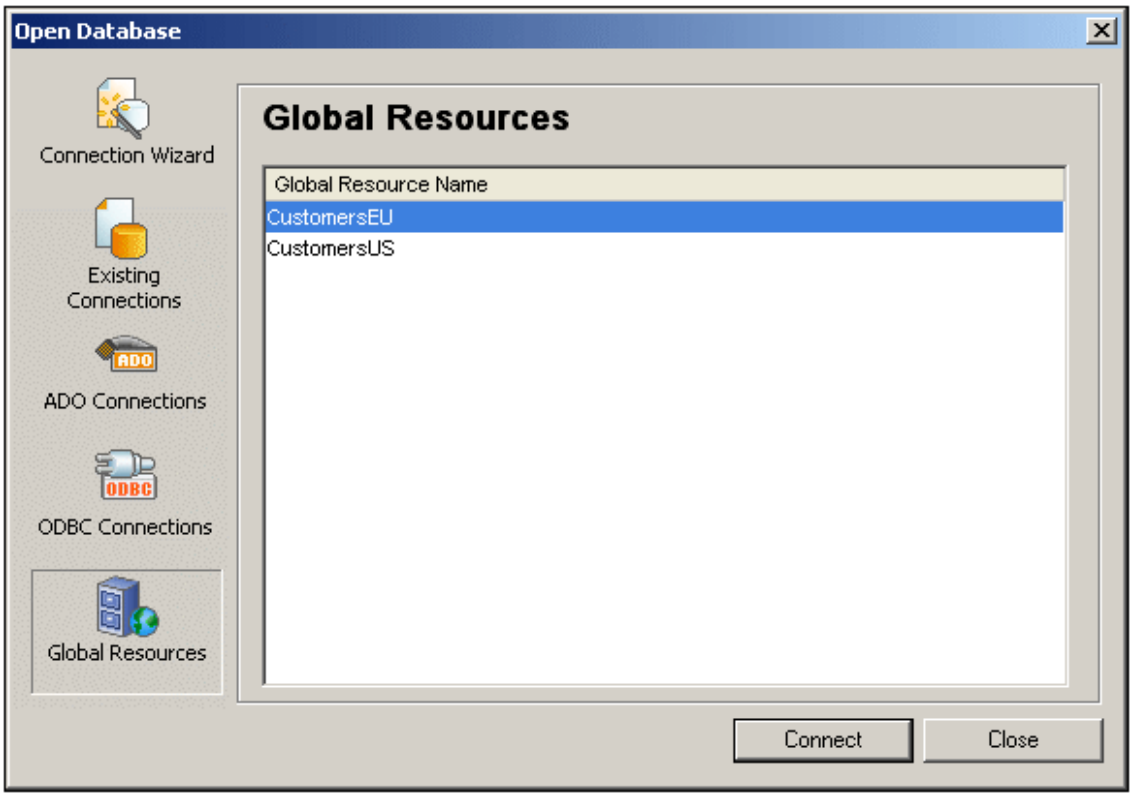
Note: Each configuration points to a specific file location, which is specified in the definition of that configuration. If the file you are saving as a global resource does not have the same filetype extension as the file at the current file location of the configuration, then there might be editing and validation errors when this global resource is opened in StyleVision. This is because StyleVision will open the file assuming the filetype specified in the definition of the configuration.

Global Resources in projects

Global resources can also be added to the currently active project via the **Project | Add Global Resource to Project** command. This pops up a dialog listing the file-type global resources in the currently active Global Resources XML File. Select a global resource and click **OK** to add it to the project. The global resource appears in the Project sidebar and can be used like any other file.

Assigning Databases

When an SPS is created from a database (DB) with the **File | New from DB** command, you can select the option to use a global resource (*screenshot below*).



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 DB Data Selection.

See also:

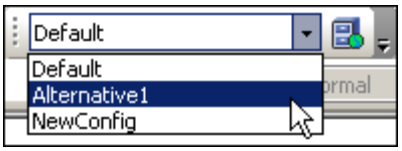
Defining Global Resources, for information about defining Global Resources.
Tools | Global Resources, for the menu command to access the Altova Manage Global Resources dialog.
Tools | Active Configuration, for the menu command to change the active configuration of the application.

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 a Working XML File has been assigned to an SPS via a global resource with multiple configurations. The Working XML 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 **View | Toolbars | Global Resources**.)



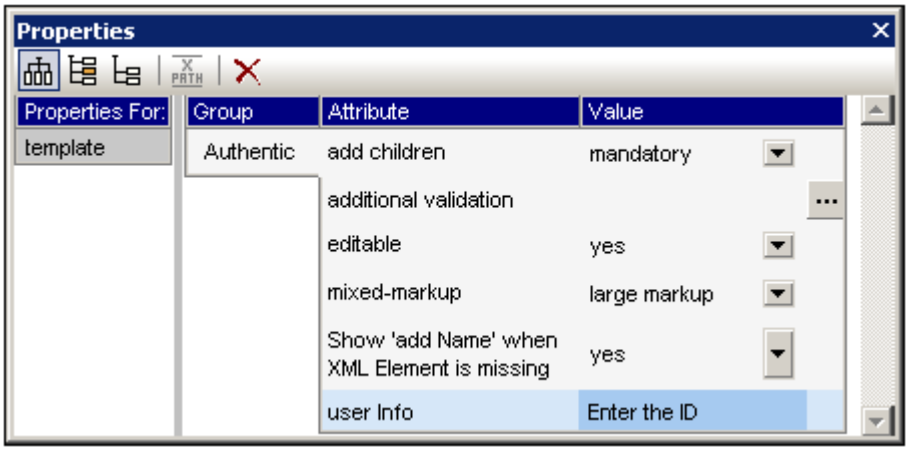
The Working XML File will be changed immediately.

In this way, by changing the active configuration, you can change source files that are assigned via a global resource. Note, however, that the newly selected files must agree schematically with the SPS in order for the SPS to function correctly.

12.2 Authentic Node Properties

Authentic node properties are properties you set for the display of a node **in Authentic View**. For example, a node can be displayed with XML markup tags, be defined to be non-editable, and/or to have user information displayed when the cursor is placed over the node. Authentic node properties can be set on various SPS components. What properties are available for a component depends upon the type of component it is.

To assign Authentic node properties, select the required component in the design. Then, in the *Authentic* group of properties in the Properties sidebar (*screenshot below*), specify the required Authentic node settings. Alternatively, you can right-click the node-template and select **Edit Authentic Properties**.



Defining Authentic Properties
The following node settings can be made to control the behavior of individual nodes in the Authentic View display.

Add children
This setting is available when the selected node is an element. It allows you to define what child elements of the selected element are inserted when the selected element is added. The options are: all child elements, mandatory child elements, and no child element.

Content is editable
Defines whether the node is editable or not. By default the node is editable. This setting is available when the selected node is an element, attribute, or contents. Auto-Calculation results cannot be edited because the value is computed with the XPath expression you enter for the Auto-Calculation; this option is therefore not available for Auto-Calculations.

Mixed markup
This setting is available when the selected node is an element or attribute, and enables you to specify how individual nodes will be marked up in the mixed markup mode of Authentic View. The following options exist: large markup (tags with node names); small markup (tags without node names); and no markup.

Show "add Name" when XML Element is missing
Determines whether a prompt ("Add [element/attribute name]") will appear in Authentic View when the selected element or attribute is missing. By default, the prompt will be displayed. This setting is available when the selected node is an element or an attribute.

User info

Text entered in this text box appears as a tooltip when the mouse pointer is placed over the node. It is available when the selected node is an element, attribute, contents, or an Auto-Calculation. If both the element/attribute node as well as the contents node has User Info, then the User Info for the contents node is displayed as the tooltip when the mouse is placed over the node.

Maximum number of database records to be displayed
This node setting applies to nodes that represent a DB table, i.e. `Row` elements that are children of a top-level table element. The value entered here specifies the number of records in the table that will be displayed.

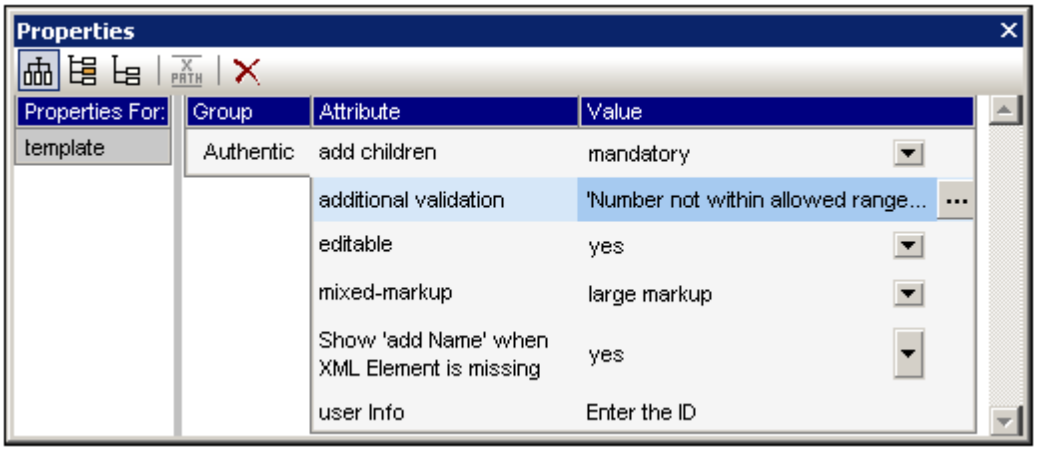
12.3 Additional Validation

The Additional Validation setting is available when the selected component is an element or attribute node, contents (`contents` placeholder), a data-entry device, or an Auto-Calculation. You can set an XPath expression to define the validity of the XML value of the node or Auto-Calculation. An XML value that falls outside this defined range is invalid. If the XML value of the node is invalid, this is made known to the Authentic View user by means of an error message when the XML document is validated (**F8**). The error message that is displayed is the text you enter into the Error message field of the Additional Validation setting.

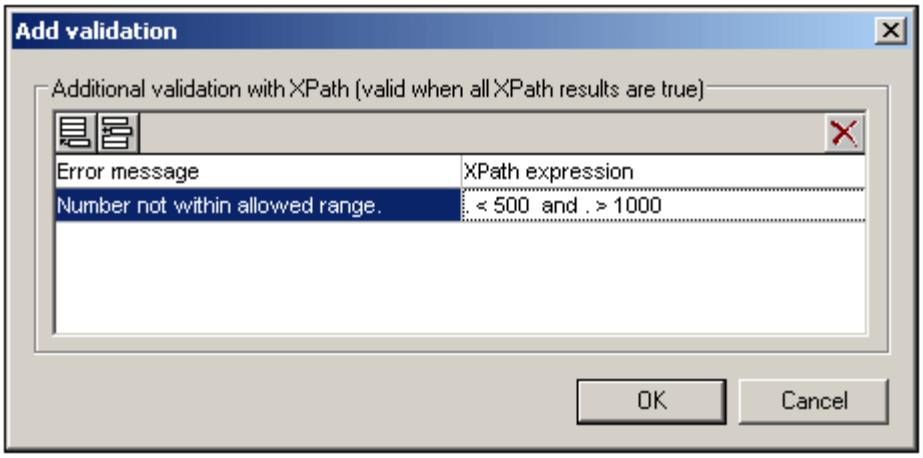
Setting Additional Validation

To set additional validation, do the following:

1. Select the component for which additional validation is required.
2. In the Properties sidebar, select the *Authentic* group of properties, and click the Edit button [...] of the Additional Validation property (screenshot below). This pops up the Additional Validation dialog.



3. In the Additional Validation dialog (*screenshot below*), add a row for an Additional Validation entry by clicking the **Add** button near the top left of the pane.



4. In the XPath expression column, enter an XPath expression to define the validity range of the XML data in that component.

5. Enter an error message to display when the data is invalid.
6. Click **OK** to finish.

12.4 Working with Dates

If the source document contains nodes that take date values, using the `xs:date` or `xs:dateTime` datatypes in the underlying XML Schema makes available the powerful date and time manipulation features of XPath 2.0 (*see examples below*). StyleVision supports the `xs:date` or `xs:dateTime` datatypes by providing:

1. A graphical date picker to help Authentic View users enter dates in the correct lexical format of the datatype for that node.
2. A wide range of date formatting possibilities via the Input Formatting feature.

These StyleVision features are described in the sub-sections of this section: Using the Date-Picker and Formatting Dates. In the rest of the introduction to this section, we show how XPath 2.0 can be used to make calculations that involve dates.

Note: Date and time data cannot be manipulated with XPath 1.0. However, with XPath 1.0 you can still use the Date Picker to maintain data integrity and use Input Formatting to provide date formatting.

Date calculations with XPath 2.0
Data involving dates can be manipulated with XPath 2.0 expressions in Auto-Calculations. Given below are a few examples of what can be achieved with XPath 2.0 expressions.

- The XPath 2.0 functions `current-date()` and `current-dateTime()` can be used to obtain the current date and date-time, respectively.
- Dates can be subtracted. For example: `current-date() - DueDate` would return an `xdt:dayTimeDuration` value; for example, something like `P24D`, which indicates a positive difference of 24 days.
- Time units can be extracted from durations using XPath 2.0 functions. For example: `days-from-duration(xdt:dayTimeDuration('P24D'))` would return the integer `24`.

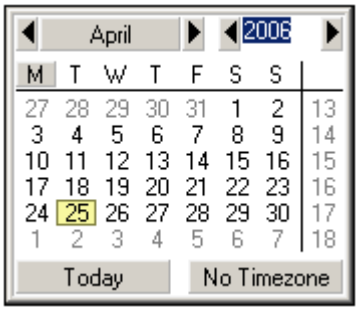
Here is an XPath 2.0 expression in an Auto-Calculation. It calculates a 4% annual interest on an overdue amount on a per-day basis and returns the sum of the principal amount and the accumulated interest:

```
if     (current-date() gt DueDate)
then   (round-half-to-even(InvoiceAmount +
          (InvoiceAmount*0.04 div 365 *
              days-from-duration((current-date() - DueDate))), 2))
else   InvoiceAmount
```

Such a calculation would be possible with XPath 2.0 only if the `DueDate` element were defined to be of a date type such as `xs:date` and the content of the element is entered in its lexically correct form, that is, `YYYY-MM-DD[±HH:MM]`, where the timezone component (prefixed by ±) is optional. Using the Date Picker ensures that the date is entered in the correct lexical form.

Using the Date-Picker

The Date Picker (*screenshot below*) is a graphical calendar in Authentic View for entering dates in the correct lexical format for nodes of `xs:date` and `xs:dateTime` datatype.



The lexical format is entered appropriately according to the datatype.

- For `xs:date`, the format of the entry is `YYYY-MM-DD[ ±HH:MM]`, where the timezone component (prefixed by ±) is optional according to the XML Schema specification. A value for the timezone component can be selected in the Date Picker.
- For `xs:dateTime`, the format of the entry is `YYYY-MM-DDTHH:MM:SS[ ±HH:MM]`. The timezone component (prefixed by ±) is optional according to the XML Schema specification. A value for the timezone component can be selected by the user.

Inserting and deleting a Date Picker in the design

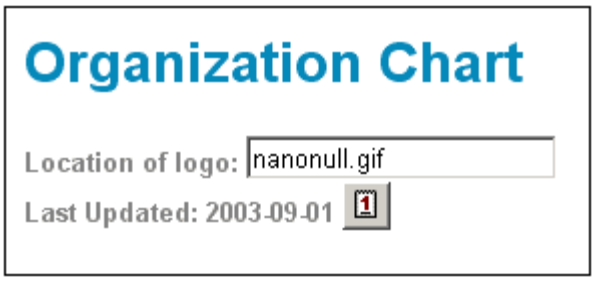
A Date Picker can be inserted in the SPS design: (i) for any node that is of datatype `xs:date` or `xs:dateTime`, and (ii) when that node is created either as contents or as an input field. A Date Picker can be inserted in one of two ways:

- By default when a node of datatype `xs:date` or `xs:dateTime` is created in the SPS. To set this default, toggle the Auto-Add Date Picker feature ON. Do this by selecting/de-selecting the command **Authentic | Auto-add Date Picker**. When the Auto-Addition of the Date Picker is switched on, the Date Picker is inserted when any element of datatype `xs:date` or `xs:dateTime` is created as either contents or an input field, or changed to either of these two components.
- By clicking the context menu command **Insert | Date Picker** when the cursor is at the desired location within the `xs:date` or `xs:dateTime` node in the SPS.

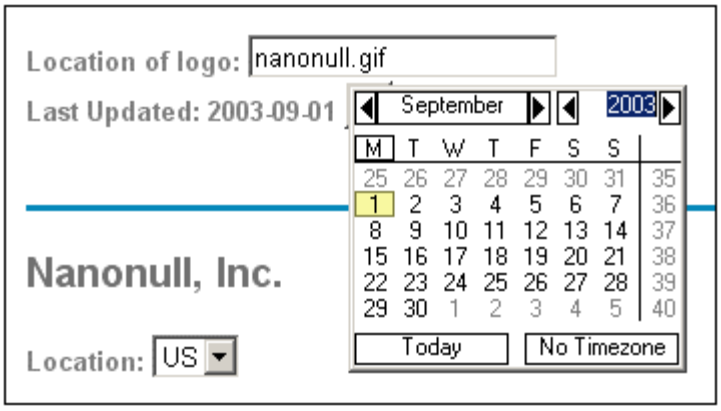
When the Date Picker is inserted, the Date Picker icon  appears at that location. To delete a Date Picker, use the **Delete** or **Backspace** buttons.

Using the Date Picker in Authentic View

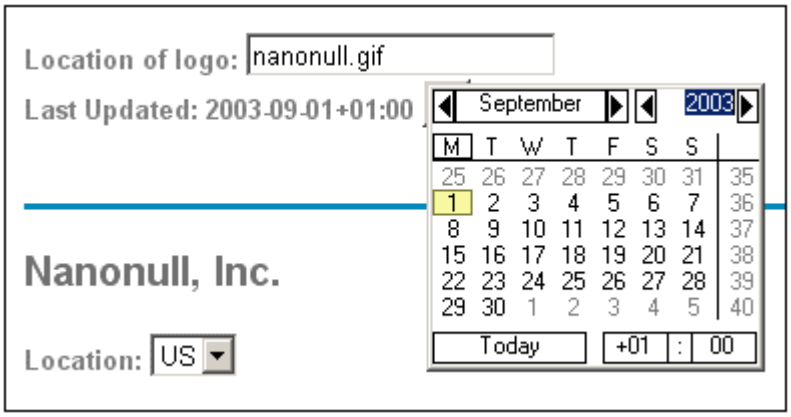
In Authentic View, the Date Picker appears as an icon (*screenshot below*).



To modify the date, click the icon. This pops up the Date Picker (*screenshot below*). To enter a new date, select the required date in the Date Picker. The date will be entered in the correct lexical format according to that node's datatype.



To enter a timezone, click the Timezone button, which is set to a default of No Timezone. The timezone will be entered in the lexical format appropriate to the node's datatype (*screenshot below*).



Formatting Dates

A date in an XML document is saved in the format specific to the datatype of its node. For example, the value of an `xs:date` node will have the format `YYYY-MM-DD[±HH:MM]`, while the value of an `xs:dateTime` node will have the format `YYYY-MM-DDTHH:MM:SS[±HH:MM]`. These formats are said to be the lexical representations of that data. By default, it is the lexical representation of the data that is displayed in Authentic View and the output. However, in the SPS, the Value Formatting feature can be used to display dates in alternative formats in Authentic View and, in some cases, optionally in the output.

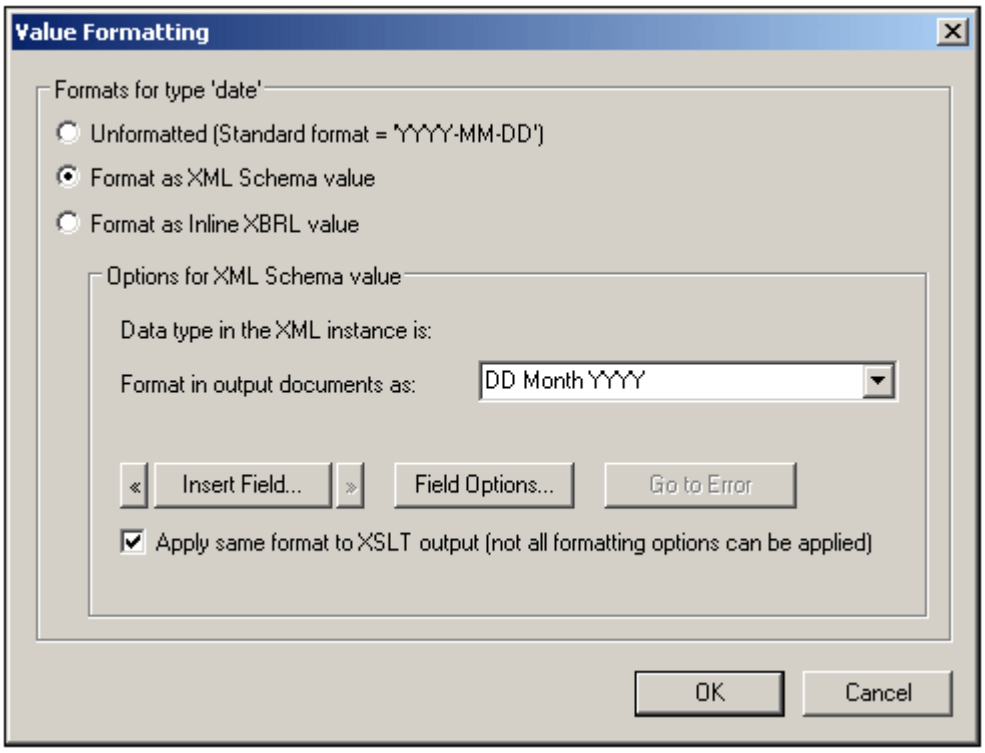
Value Formatting for dates can be used to define custom formats for nodes and Auto-Calculations of the following datatypes:

- `xs:date`
- `xs:dateTime`
- `xs:duration`
- `xs:gYear`
- `xs:gYearMonth`
- `xs:gMonth`
- `xs:gMonthDay`
- `xs:gDay`

Using Value Formatting to format date nodes

To format dates alternatively to the lexical format of the date node, do the following:

1. Select the `contents` placeholder or input field of the node. Note that value formatting can only be applied to nodes created **as contents or an input field**.
2. In the Properties sidebar, select the `content` item, and then the *Content* group of properties. Now click the Edit button  of the *Value Formatting* property. This pops up the Value Formatting dialog (*screenshot below*).



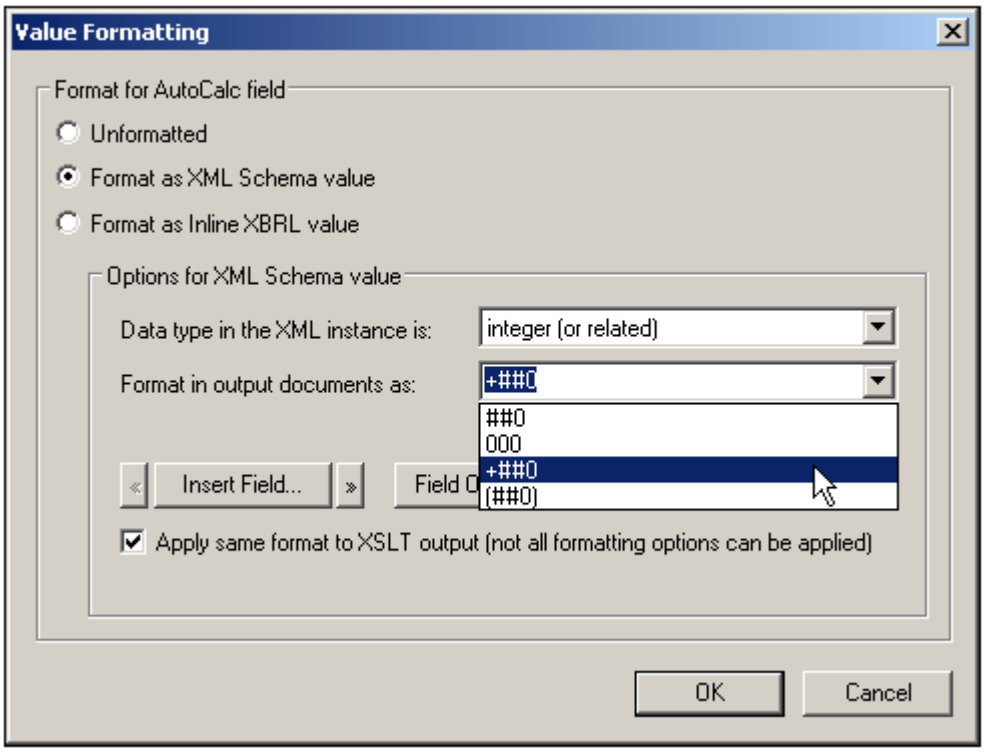
By default, the *Unformatted* radio button (the standard lexical format for the node's datatype) is selected.

3. To define an alternative format, select the *Format* radio button.
4. You can now select a predefined date format from the drop-down list of the combo box (*screenshot below*), or define your own format in the input field of the combo box. See Value Formatting Syntax for details about the syntax to use when defining your own format.

Using Value Formatting to format Auto-Calculations

When Auto-Calculations evaluate to a value that is a lexical date format, Value Formatting can be used to format the display of the result. Do this as follows:

1. Select the Auto-Calculation in the design.
2. In the Properties sidebar, select the `content` item, and then the *AutoCalc* group of properties. Now click the Edit button ... of the *Value Formatting* property. This pops up the Value Formatting dialog (*screenshot below*).



By default, the *Unformatted* radio button is selected.

3. To define an alternative format, select the *Format* radio button.
4. In the Options for XML Schema value pane, in the *Datatype* combo box, select the `date` datatype to which the Auto-Calculation will evaluate. In the *Format* combo box, you can then select a predefined date format from the drop-down list (available options depend on the selected datatype), or define your own format in the input field of the combo box. See Value Formatting Syntax for details about the syntax to use when defining your own format.

Applying Value Formatting to the output

The Value Formatting that you define applies to Authentic View. Additionally, some Value Formatting definitions—not all—can also be applied to HTML, RTF, PDF, and Word 2007+ output. To do this, check the Apply Same Format to XSLT Output check box. If this option is not checked or if it is not available, then only Authentic View will display the Value Formatting; the output will display the value in its lexical format (for nodes) or, in the case of Auto-Calculations, in the format to which the Auto-Calculation evaluates.

12.5 Unparsed Entity URIs

If you are using a DTD and have declared an unparsed entity in it, you can use the URI associated with that entity for image and hyperlink targets in the SPS. This is useful if you wish to use the same URI multiple times in the SPS. This feature makes use of the XSLT function `unparsed-entity-uri` to pass the URI of the unparsed entity from the DTD to the output, and is therefore only available in the outputs (HTML, RTF, PDF, Word 2007+); not in Authentic View.

Using this feature requires that the DTD, XML document, and SPS documents be appropriately edited, as follows:

1. In the DTD, the unparsed entities must be declared, with (i) the URI, and (ii) the notation (which indicates to StyleVision the resource type of the entity).
2. In the XML document, the unparsed entity must be referenced. This is done by giving the names of the required unparsed entities.
3. In the SPS, unparsed entities can be used to target images and hyperlinks by correctly accessing the relevant dynamic node values as unparsed entities.

Declaring and referencing unparsed entities

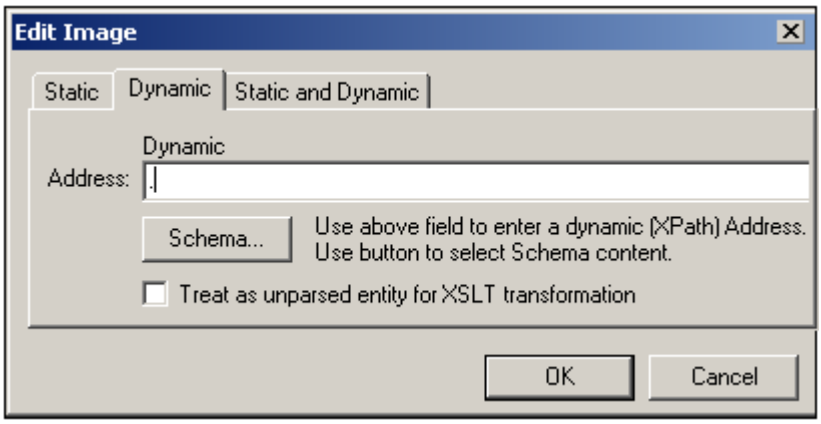
Given below is a cut-down listing of an XML document. It has an internal DTD subset which declares two unparsed entities, one with a `GIF` notation (indicating a GIF image) and the other with an `LNK` notation (indicating a hyperlink). The `img/@src` and `link/@href` nodes in the XML code reference the unparsed entities by giving their names.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE document SYSTEM "UEURIDoc.dtd" [
<!ENTITY Picture SYSTEM "nanonull.gif" NDATA GIF>
<!ENTITY AltovaURI SYSTEM "http://www.altova.com" NDATA LNK>
]>
<document>
   <header>Example of How to Use Unparsed Entity URIs</header>
   <para>...</para>
   <img src="Picture"/>
   <link href="AltovaURI">Link to the Altova Website.</link>
</document>
```

SPS images and hyperlinks that use unparsed entities

Images and hyperlinks in the SPS that reference unparsed entity URIs are used as follows:

1. Insert the image or hyperlink via the **Insert** menu.
2. In the Edit dialog of each, select the Dynamic tab properties (*screenshot below*), and enter an XPath expression that selects the node containing the name of the unparsed entity. In the XML document example given above, these nodes would be, respectively, the `//img/@src` and `//link/@href` nodes.



3. Then check the Treat as Unparsed Entity check box at the bottom of the dialog. This causes the content of the selected node to be read as an unparsed entity. If an unparsed entity of that name is declared, the URI associated with that unparsed entity is used to locate the resource (image or hyperlink).

When the stylesheet is processed, the URI associated with the entity name is substituted for the entity name.

Note: Note that if the URI is a relative URI, the XSLT processor expands it to an absolute URI applying the base URI of the DTD. So if the unparsed entity is associated with the relative URI "`nanonull.gif`", then this URI will be expanded to `file:///c:/someFolder/nanonull.gif`, where the DTD is in the folder `someFolder`.

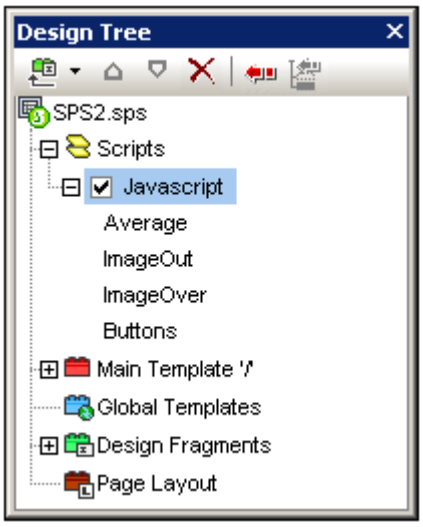
12.6 Using Scripts

In StyleVision, you can define JavaScript functions for each SPS in a JavaScript editor (available as a tab in the Design View). The function definitions created in this way are stored in the header of the HTML document and can be called from within the body of the HTML document. Such functions are useful when:

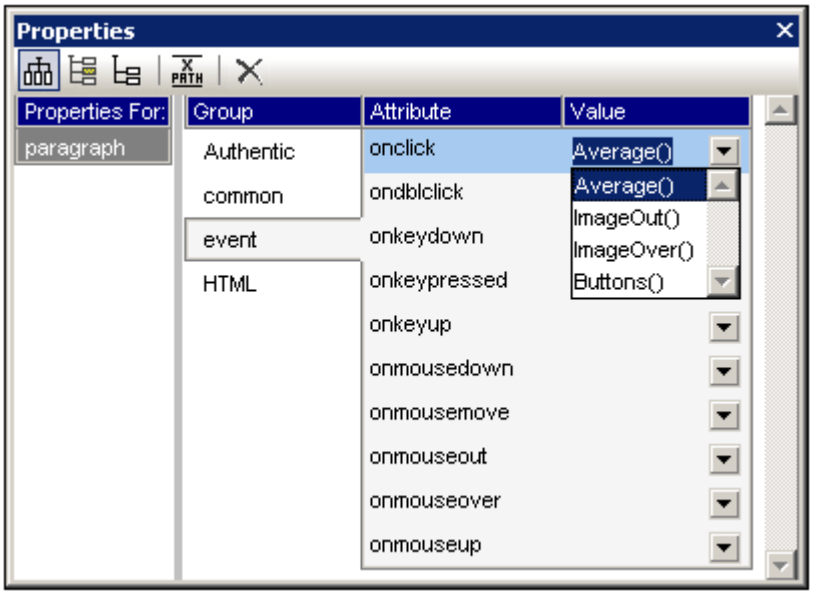
- You wish to achieve a complex result using multiple script statements. In this case it is convenient to write all the required scripts, as separate functions, in one location (the header) and refer to the functions subsequently in the design document.
- You wish to use a particular script at multiple locations in the design document.

How to define functions in the JavaScript Editor is described in the sub-section Defining JavaScript Functions.

In the GUI, all JavaScript functions which are defined for a given SPS in the JavaScript Editor are listed in the Design Tree window under the Scripts entry (*screenshot below*). The screenshot below indicates that four JavaScript functions, `Average`, `ImageOut`, `ImageOver`, and `Buttons`, are currently defined in the active SPS.



The functions defined in the JavaScript Editor are available as event handler calls within the GUI. When a component in the design document is selected, any of the defined functions can be assigned to an event handler property in the Event property group in the Properties sidebar (*screenshot below*). How to assign a JavaScript function to an event handler is described in the section Assigning Function to Event Handlers.



Note: Scripts are applicable in the HTML output only. They are not applicable in Authentic View.

Scripts in modular SPSs

When an SPS module is added to another SPS module, the scripts in the added module are available within the referring SPS, and can be used as event handlers via the Properties sidebar for components in the referring SPS. For more information about using modular SPSs, see the section Modular SPSs.

Defining JavaScript Functions

To define JavaScript functions, do the following:

1. In Design View, switch to the JavaScript Editor by clicking the Design View tab and selecting JavaScript (*screenshot below*).

2. In the JavaScript Editor, type in the function definitions (*see screenshot below*).

```
1   function DisplayTime()
2   {
3   now = new Date();
4   hours = now.getHours();
5   mins = now.getMinutes();
6   secs = now.getSeconds();
7   result = hours + ":" + mins + ":" + secs;
8   alert(result);
9   }
10
11  function ClearStatus()
12  {
13  window.status="";
14  }
```

The screenshot above shows the definitions of two JavaScript functions: `DisplayTime` and `ClearStatus`. These have been described for the active SPS. They will be entered in the header of the HTML file as follows:

```
<script language="javascript">

<!-- function DisplayTime()
{
    now = new Date();
    hours = now.getHours();
    mins = now.getMinutes();
    secs = now.getSeconds();
    result = hours + "." + mins + "." + secs;
    alert(result)
}

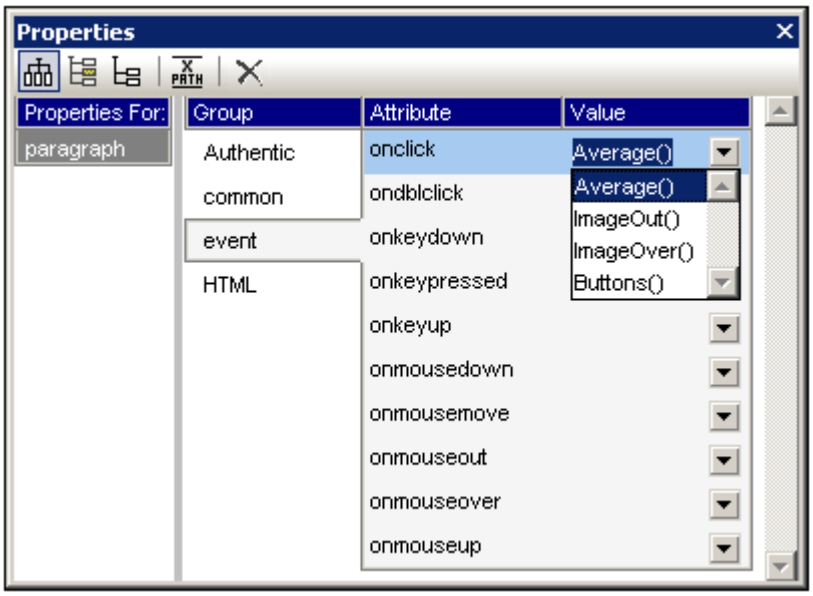
function ClearStatus()
{
    window.status="";
}
-->

</script>
```

These functions can now be called from anywhere in the HTML document. In StyleVision, all the defined functions are available as options that can be assigned to an event handler property in the *Event* property group in the Properties sidebar. See Assigning Function to Event Handlers for details.

Assigning Functions as Event Handlers

In the StyleVision GUI, you can assign JavaScript functions as event handlers for events that occur on the HTML renditions of SPS components. These event handlers will be used in the HTML output. The event handler for an available event—such as `onclick`—is set by assigning a global function as the event handler. In the Properties sidebar, global functions defined in the JavaScript Editor are available as event handlers in the dropdown boxes of each event in the *Events* property group for the selected component (*screenshot below*).



To assign a function to an event handler, do the following:

1. Select the component in the SPS for which the event handler is to be defined. The component can be a node or content of any kind, dynamic or static.
2. In the Properties sidebar select the *Event* group. This results in the available events being displayed in the Attribute column (*screenshot above*).
3. In the Value column of the required event, click the down arrow of the combo box. This drops down a list of all the functions defined in the JavaScript Editor.
4. From the dropdown list, select the required function as the event handler for that event.

External JavaScript Files

An SPS can access external JavaScript files in two ways:

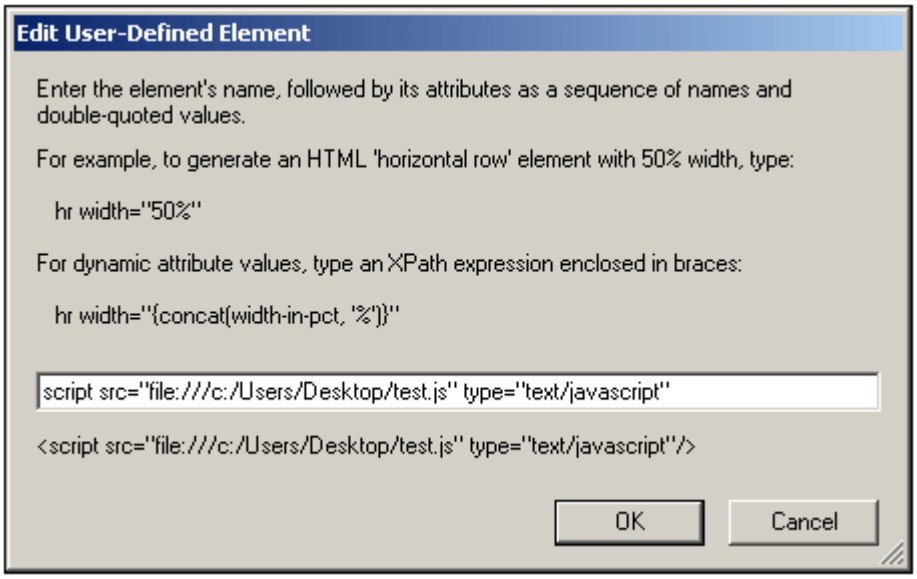
1. By creating a User-Defined Element or User-Defined XML Block. These design objects can contain a SCRIPT element that accesses the external JavaScript file. Note that location of the User-Defined Element or User-Defined XML Block is within the BODY element of the design (and therefore within the BODY element of the HTML output, not within the HEAD element).
2. By adding a script in the Javascript Editor that accesses the external file. A script that is added in this way will be located in the HEAD element of the HTML output.

User-Defined Elements and User-Defined XML Blocks

External JavaScript files can be accessed by means of User-Defined Elements and User-Defined XML Blocks. Using these mechanisms, a SCRIPT element that accesses the external JavaScript file can be inserted at any location within the BODY element of the output HTML document.

A User-Defined Element could be inserted as follows:

1. Place the cursor at the location in the design where the SCRIPT element that accesses the JavaScript file is to be inserted.
2. From the **Insert** menu or context menu, select the command for inserting a User-Defined Element.



3. In the dialog that pops up (*see screenshot above*), enter the SCRIPT element as shown above, giving the URL of the JavaScript file as the value of the src attribute of the SCRIPT element: for example, `script type="text/javascript" src="file:///c:/Users/mam/Desktop/test.js"`
4. Click **OK** to finish.

You can also use a User-Defined XML Block to achieve the same result. To do this use the same procedure as described above for User-Defined Elements, with the only differences being (i) that a User-Defined XML Block is inserted instead of a User-Defined Element, and (ii) that the SCRIPT element is inserted as a complete XML block, that is, with start and end tags.

JavaScript Editor

The JavaScript Editor enables you to insert an external script in the HEAD element of the HTML output. Do this by entering, in the JavaScript Editor, the following script fragment, outside any other function definitions that you create.

```
var script = document.createElement('script');
script.type = 'text/javascript';
script.src = 'file:///c:/Users/Desktop/test.js';
var head = document.getElementsByTagName('head')[0];
head.appendChild(script)
```

The external JavaScript file that is located by the URL in `script.src` is accessed from within the HEAD element of the output HTML document.

12.7 HTML Import

In StyleVision you can import an HTML file and create the following documents based on it:

- An SPS document based on the design and structure of the imported HTML file.
- An XML Schema, in which HTML document components are created as schema elements or attributes. Optionally, additional elements and attributes that are not related to the HTML document can be created in the user-defined schema.
- An XML document with: (i) a structure based on the XML Schema you have created, and (ii) content from the HTML file.
- XSLT stylesheets based on the design in Design View.

HTML-to-XML: step-by-step

The HTML Import mechanism, which enables the creation of XML files based on the imported HTML file, consists of the following steps:

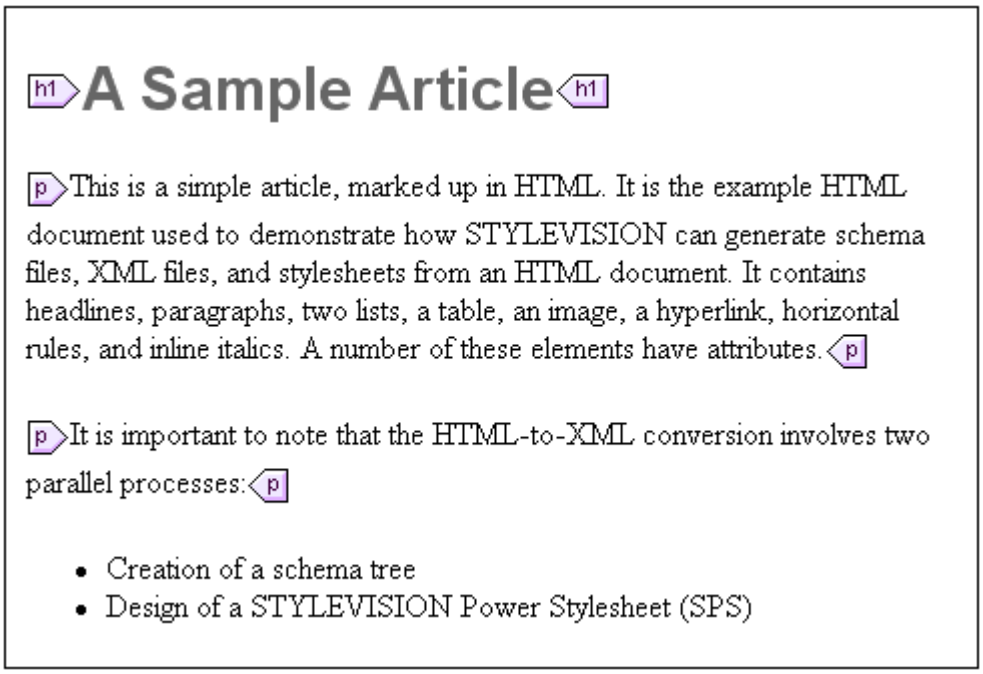
1. Creating New SPS via HTML Import. When an HTML file is imported into StyleVision, a new SPS document is created. The HTML document is displayed in Design View with HTML markup tags. A user-defined XML Schema with a document element called `Root` is created in the Schema Tree window. This is the schema on which the SPS is based. The HTML document content and markup that is displayed in Design View at this point is included in the SPS as static content.
2. Creating the Schema and SPS Design. Create the schema by (i) dragging components from the HTML document to the required location in the schema tree (in the Schema Tree window); and, optionally, (ii) adding your own nodes to the schema tree. In the Design Window, HTML content that has been used to build nodes in the schema tree will now be displayed with schema node tags around the content. HTML content that has no corresponding schema node will continue to be displayed without schema node tags.
3. In the Design Document, assign formatting to nodes, refine processing rules, or add static content as required. These modifications will have an effect only on the SPS and the generated XSLT. It will not have an effect on either the generated schema or XML file.
4. After you have completed the schema tree and the design of the SPS, you can generate and save the following:
   - an XML Schema corresponding to the schema tree you have created;
   - an XML data file with a structure based on the schema and content for schema nodes that are created with the `(content)` placeholder in the SPS design;
   - a SPS (`.sps` file) and/or XSLT stylesheet based on your design.

Creating New SPS via HTML Import

To create a new SPS file from an HTML document, do the following:

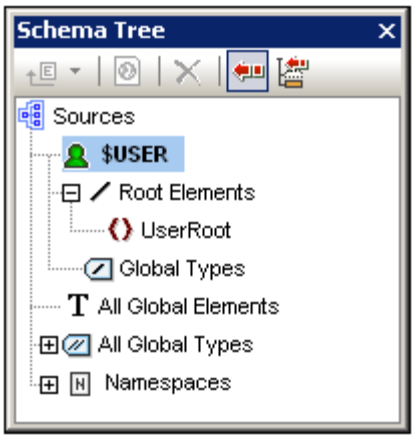
1. Select the menu command **File | New | New from HTML File**.
2. In the Open dialog that pops up, browse for the HTML file you wish to import. Select it and click **Open**.
3. You will be asked whether relative paths should be converted to absolute paths. Make your choice and click **OK**.

A new SPS document is created. The document is displayed in Design View and is marked up with the predefined HTML formats available in StyleVision (*screenshot below*).



Note that the HTML document is displayed within the main template. There is no global template.

In the Schema Tree sidebar, a user-defined schema is created (*screenshot below*) with a root element (document element) called `Root`.



Note that there is no global element in the All Global Elements list.

SPS structure and design
The SPS contains a single template—the main template—which is applied to the document node of a temporary internal XML document. This XML document has the structure of the user-defined schema which was created in the Schema Tree window. In Design View, **at this point**, the HTML document components within the main template are included in the SPS as static components. The representation of these HTML components in Authentic View will be as non-editable, non-XML content. The XSLT stylesheets will contain these HTML components as literal result elements. The schema, at this point, has only the document element `Root`; consequently, the temporary internal XML document contains only the document element `Root` with no child node.

When you create HTML selections as elements and attributes in the user-defined schema, you can do this in either of two ways:

1. By **converting** the selection to an element or attribute. In the design, the node tags are inserted with a `( content)` placeholder within the tag. In the schema, an element or attribute is created. In the XML document, the selection is converted to the text content of the schema node which is created in the XML document. The contents of the node created in the XML document will be inserted dynamically into the output obtained via the SPS.
2. By **surrounding** the selection with an element or attribute. In the design, the selection is surrounded by the node tags; no `( content)` placeholder is inserted. This means that the selection is present in the SPS design as static content. In the schema, an element or attribute is created. In the XML document, the node is created, but is empty. The static text which is within the schema node tags in the design will be output; no dynamic content will be output for this node unless a `( content)` placeholder for this node is explicitly inserted in the design.

The significance of the `( content)` placeholder is that it indicates locations in the design where data from the XML document will be displayed (in the output) and can be edited (in Authentic View).

Creating the Schema and SPS Design

The schema is created by dragging selections from Design View into the user-defined schema. You do this one selection at a time. The selection is dropped on a node in the schema tree (relative to which the new node will be created, either as a child or sibling). You select the type of the node to be created (element or attribute) and whether the selection is to be converted to the new node or surrounded by it.

The selection

The selection in Design View can be any of the following:

- A node in the HTML document.
- A text string within a node.
- Adjacent text strings across nodes.
- An image.
- A link.
- A table.
- A list.
- A combination of any of the above.

In this section we explain the process in general for any selection. The special cases of tables and lists are discussed in more detail in the section Creating Tables and Lists as Elements/ Attributes.

To make a selection, click an HTML document component or highlight the required text string. If multiple components are to be selected, click and drag over the desired components to highlight the selection. Note that StyleVision extends the selection at the beginning and end of the selection to select higher-level elements till the first and last selected elements belong to the same parent.

The location in the schema tree

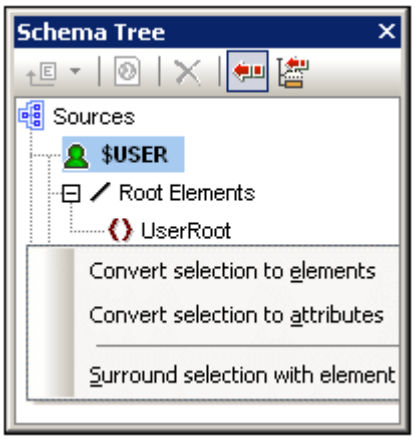
On dragging the selection over the desired schema tree node, one of the following symbols will appear together with the popup message: `Create new schema item`.

- Dropping the node when the Create as Sibling symbol appears, creates the selection as a sibling node of the node on which the selection is dropped.
- Dropping the node when the Create as Child symbol appears, creates the selection as a child node of the node on which the selection is dropped.

You should select the node on which the selection is to be dropped according to whether the selection is to be created as a sibling or child of that node.

Selecting how the node is created

When you drop the selection (*see previous section*), a context menu pops up (*screenshot below*) in which you make two choices: (i) whether the node is to be created as an element or attribute; (ii) whether the selection is to be converted to the node or whether the node is to simply surround the selection.



The following points should be noted:

- When a selection is converted to a node (element or attribute), the node tags, together with a contained `( content)` placeholder, replace the selection in the design. In the design and the output the text content of the selection is removed from the static content. In the output, the text of the selection appears as dynamic content of the node in the XML document.
- If an HTML node is converted to an XML node, the XML node tags are inserted within the HTML node tags.
- When a selection (including HTML node selections) is surrounded by an XML node, the XML node tags are inserted before and after the selection. In the design and the output, the text content of the selection is retained as static text. In the schema tree (in the Schema Tree sidebar), such an XML node is indicated by parentheses containing an ellipsis.
- The inserted node tags are inserted with the necessary path (that is, with ancestor node tags that establish a path relative to the containing node). The path will be absolute or relative depending on the context of the node in the design.
- How to create nodes from table and list selections are described in Creating Tables and Lists as Elements/Attributes.

Adding and deleting nodes in the schema
You can add additional nodes (which are not based on an HTML selection) to the user-defined schema. Do this by right-clicking on a node and selecting the required command from the context menu. Alternatively, you can use the toolbar icons of the Schema Tree sidebar.

To delete a node, select the node and then use either the context menu or the toolbar icon. Note, however, that when a node is deleted, some paths in the design could be invalidated.

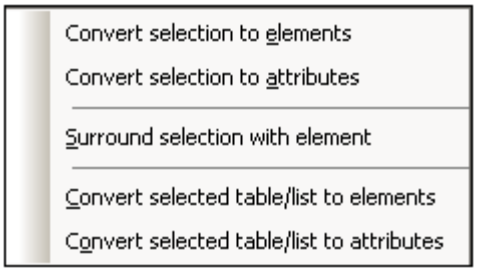
Modifying the design
You can modify the structure of the design by dragging components around and by inserting static and dynamic components. Styles can also be modified using the various styling capabilities of StyleVision.

Creating Tables and Lists as Elements/Attributes

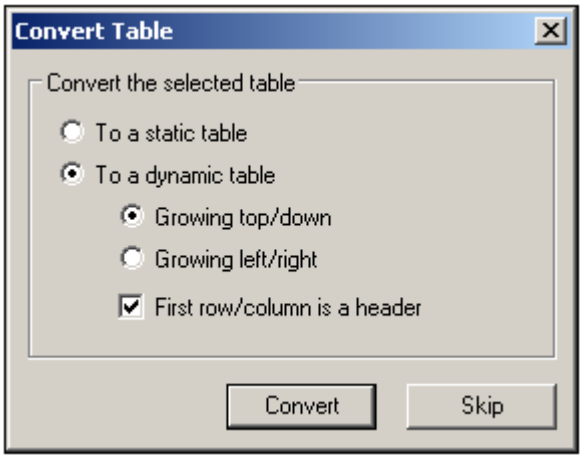
Tables and lists in the HTML document can be converted to element or attribute nodes in the XML Schema so that they retain the table or list structure in the schema.

Converting a table to elements/attributes
To convert a table to schema nodes, do the following:

1. Select the HTML table by highlighting some text in it.
2. Drag it to the node in the schema tree as a sibling or child of which you want to create it.
3. Drop the node when the Create as Sibling symbol or Create as Child symbol appears.
4. In the context menu that now pops up (*screenshot below*), select the command **Convert selected table/list to elements** or **Convert selected table/list to attributes** according to whether you wish to create the contents of table cells as elements or attributes, respectively.



5. In the Convert Table dialog that pops up (*screenshot below*), select whether the table created in the SPS should be a static table or dynamic table.



If the **static table** option is selected, then for each cell in the table, a schema node is created. In the design, each node is inserted with the `( content)` placeholder. The data in the table cells is copied to the temporary internal XML document (and to the generated XML document). The **dynamic table** option is available when the structure of all rows in the table are identical. When created in the SPS, the rows of the dynamic table are represented by a single row in the design (because each row has the same structure). The table data will be copied to the XML file. The dynamic table can grow top/down (rows are arranged vertically relative to each other) or left/right (rows become columns and extend from left to right). If you indicate that the first row/column is a header, then (i) a header row containing the column headers as static text is included in the design; and (ii) the schema element/attribute nodes take the header texts as their

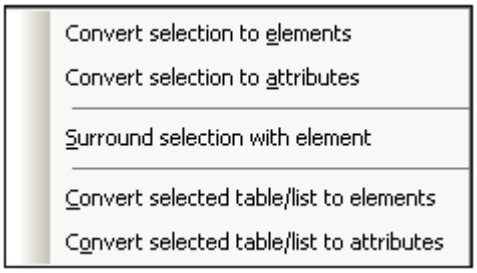
names. If the first row/column is not indicated as a header, then no header row is included in the design.

6. After you have selected the required option/s, click **Convert** to finish.

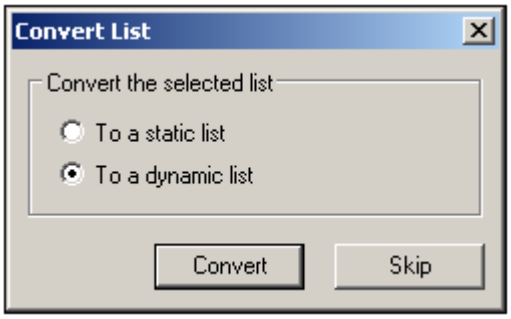
Converting a list to elements/attributes

To convert a list to schema nodes, do the following:

1. Select the HTML list by highlighting some text in it.
2. Drag it to the node in the schema tree as a sibling or child of which you want to create it.
3. Drop the node when the Create as Sibling symbol or Create as Child symbol appears.
4. In the context menu that now pops up (*screenshot below*), select the command **Convert selected table/list to elements** or **Convert selected table/list to attributes** according to whether you wish to create the contents of table cells as elements or attributes, respectively.



5. In the Convert List dialog that pops up (*screenshot below*), select whether the table created in the SPS should be a static table or dynamic table.



If the **static list** option is selected, then for each list item, a schema node is created. In the design, each node is inserted with the text of the HTML list item included as static content of the list item. If the **dynamic list** option is selected, then each list item is represented by a single list item node in the design. In the design, the list item element is inserted with the `( content)` placeholder.

6. After you have selected the required option, click **Convert** to finish.

Generating Output

After completing the SPS, you can generate the following output using the **File | Save Generated Files** command:

- Generated user-defined schema, which is the schema you have created in the Schema Tree sidebar.
- Generated user-defined XML data, which is an XML document based on the schema you have created and containing data imported from the HTML file.
- XSLT stylesheets for HTML, RTF, PDF, and Word 2007+ output.
- HTML, RTF, FO, PDF, and Word 2007+ output.

Chapter 13

SPS File and Databases

13 SPS File and Databases

Altova website: Database Reporting

When a DB is used as the basis of an SPS—that is, as the main schema of an SPS—the SPS can be used in the following ways:

- To edit the DB in Authentic View.
- To generate an XML Schema having a structure based on the DB (if the DB does not contain a schema; only XML DBs, such as IBM DB2 version 9 upwards, contain schemas).
- To generate an XML file with data from the DB (if the required DB data is not already in XML format).
- To design and generate XSLT stylesheets for HTML, RTF, PDF, and Word 2007+ output.
- To generate DB reports (based on the SPS design) in HTML, RTF, PDF, and Word 2007+ format. These reports can be previewed in StyleVision

When a DB is the source of a subsidiary schema in an SPS, then data from the DB can be included in the design document, but the DB itself cannot be edited in Authentic View. It is the XML document or DB associated with the main schema that can be edited.

General procedure
This section describes the procedure for working with DBs in StyleVision. After an introductory sub-section, which provides an overview of how DBs work in StyleVision, the sub-sections of this section describe the various steps in the work procedure. Note that we distinguish between two broad types of DBs: non-XML DBs and XML DBs. The term DB is used in two senses: generically, it refers to all DBs; specifically, to non-XML DBs. XML DBs are always referred to as XML DBs. The distinction should be borne in mind because the method of selecting the DB data that provides the schema and XML data for the SPS is different for these two types of DB.

- Connecting to a DB: Describes how to connect to non-XML DBs, including IBM DB2 versions below 9..
- DB Data Selection: Describes how the schema and XML data for the SPS is selected from the DB's table structure, for non-XML and XML DBs separately.
- The DB Schema and DB XML file: When DB tables (from non-XML DBs) are loaded, StyleVision generates and works with temporary XML Schema and XML data files based, respectively, on the DB structure and data. For XML DBs, the schema and XML files are not generated by StyleVision but referenced directly from the DB or, in the case of schemas, from another file location.
- DB Filters: Filtering DB Data: DB data that is loaded into the temporary XML file can be filtered.
- SPS Design Features for DB: In the SPS, special DB functionality, such as DB controls and DB Queries, are available.
- Generating Output Files: A wide range of DB report-related files can be generated by StyleVision.

Supported databases
Altova StyleVision 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
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 StyleVision, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

13.1 DBs and StyleVision

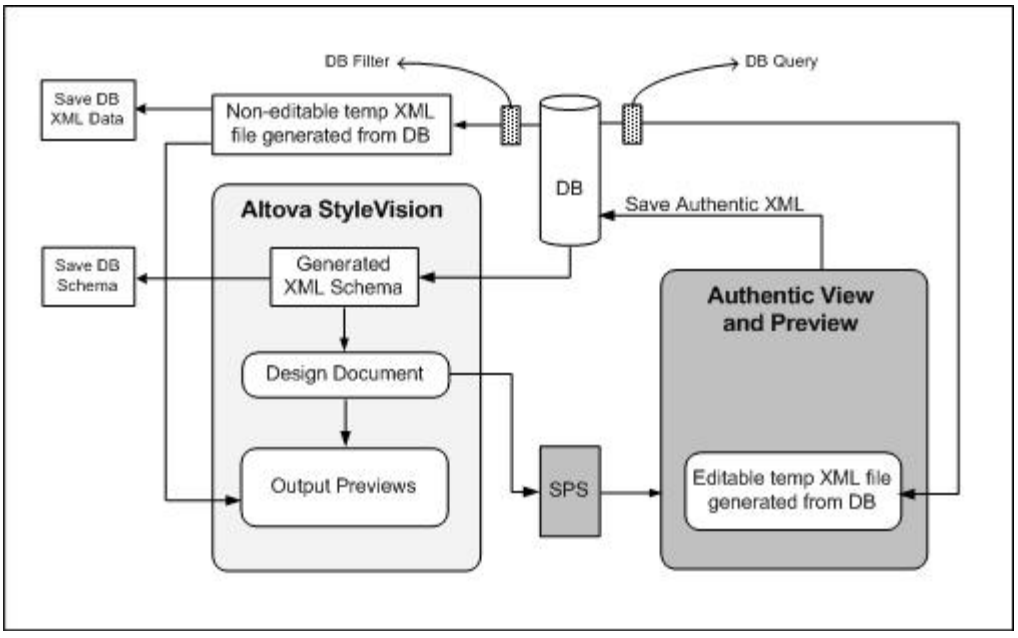
In StyleVision, you can create DB-based SPSs. These stylesheets enable you to do two things:

- Edit DBs in Authentic View, and
- Generate reports from DBs.

After you have created the SPS, you can view reports in StyleVision and generate report files in HTML, RTF, PDF, and Word 2007+ format. You can also save the following DB-related XML files that StyleVision generates:

- XML Schema based on DB structure (not applicable for XML DBs, where a schema is already available)
- XML file having structure defined in the generated schema and content from the DB (not applicable for XML DBs, where the data is already available in XML format)
- SPS that you design, and which is based on the generated schema
- XSLT stylesheet for HTML output (based on design of SPS)
- XSLT stylesheet for RTF output (based on design of SPS)
- XSLT stylesheet for XSL-FO output (based on design of SPS)
- XSLT stylesheet for Word 2007+ output (based on design of SPS)
- HTML output
- RTF output
- PDF output
- Word 2007+ output

The saved XML file can then be processed with the required XSLT stylesheet/s. This provides more flexible report-generating capabilities.



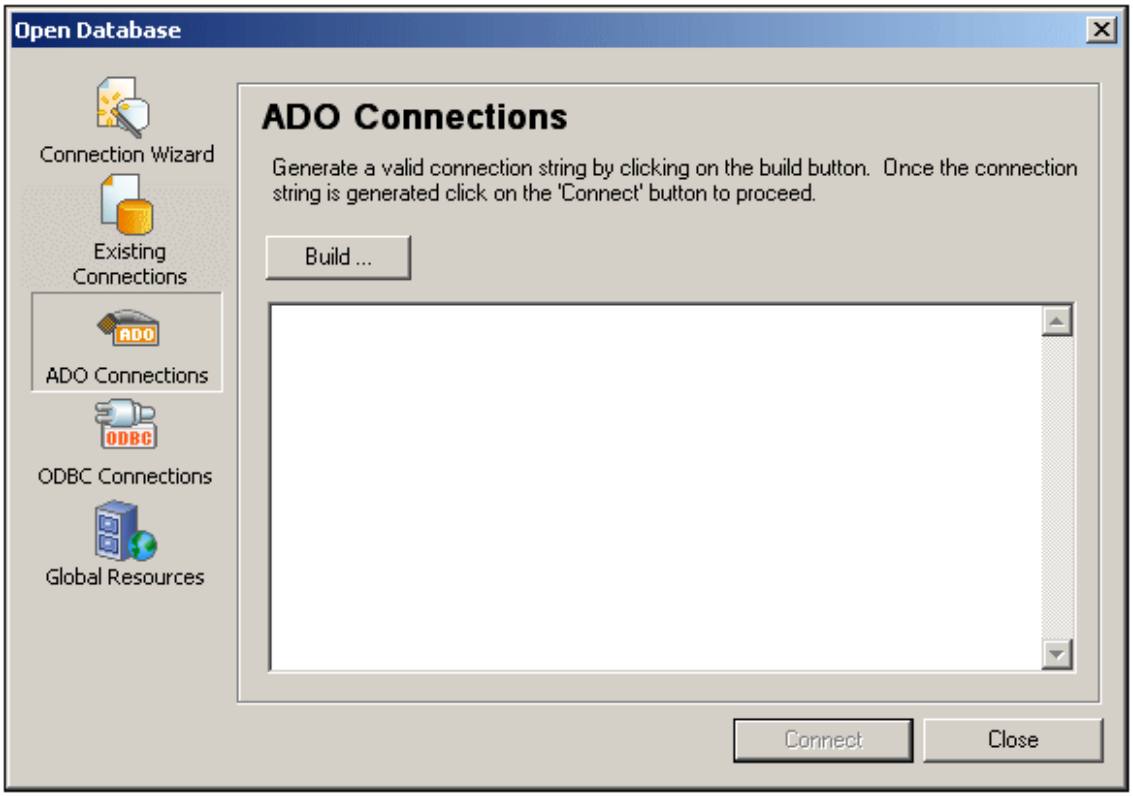
Note: The XML Schema and XML files are generated from non-XML DBs by StyleVision, and you cannot alter their structure or content for use in Authentic View. This is because the structure of these files is related to the structure of the non-XML DB. Editing the DB and creating reports from the DB depend on the unique XML structure generated by StyleVision from the DB.

Broad mechanism for working with DB-based SPSs
Given below are the steps involved in creating and using DB-based SPSs. These steps cover the two uses of DB-based StyleVision Power Stylesheets: editing the DB and creating HTML, RTF, PDF, and Word 2007+ reports from the DB.

- Connect to the database with StyleVision. During the connection process you can specify what data tables in the DB should be filtered out from the XML Schema..
- When the connection is made, a temporary XML Schema is generated based on the structure of the DB and that schema is displayed in the Schema Window of StyleVision in tree form. In the case of XML DBs, a pre-existing schema (either in the DB or at a file location) is referenced.
- Temporary StyleVision-internal XML files are also created. One is non-editable (*see screenshot above*) and is used for the previews and as the source of the generated XML data file. The other is an editable XML file, which is displayed in Authentic View (*see screenshot above*). When changes made to this file in Authentic View are saved (with the **File | Save Authentic XML Data** command), the modifications are written back to the DB. The non-editable XML file is updated if necessary each time an output view is newly accessed or when the XML data is saved.
- In StyleVision, you can define top-level filters to restrict the data imported into the non-editable XML File, i.e. for the output views and the reports.
- A DB Query is used within Authentic View to restrict the list of records displayed in Authentic View. It is used only during editing.
- If editing changes have been saved to the DB, then the next time an output view window is accessed, the non-editable XML file is updated with the modified contents of the DB and the refreshed file is displayed in the preview.
- A DB-based SPS is created in the same way as the standard schema-based SPS: by dragging-and-dropping nodes into the Design Window, inserting static stylesheet components, assigning display properties, etc. These mechanisms are described in this documentation.

13.2 Connecting to a Database

When you select either the **File | New | New from DB** or **File | New | New from XML Column in IBM DB2** command, the Open Database dialog (*screenshot below*) pops up. (Note that the **New from DB** and **New from XML Column in IBM DB2** commands are also available in the Design Overview sidebar.)



The connection to the database is made using one of the options given below:

- Using a Connection Wizard that guides you through the connection process.
- Using an ADO connection.
- Using an ODBC connection.
- Using a Global Resource.

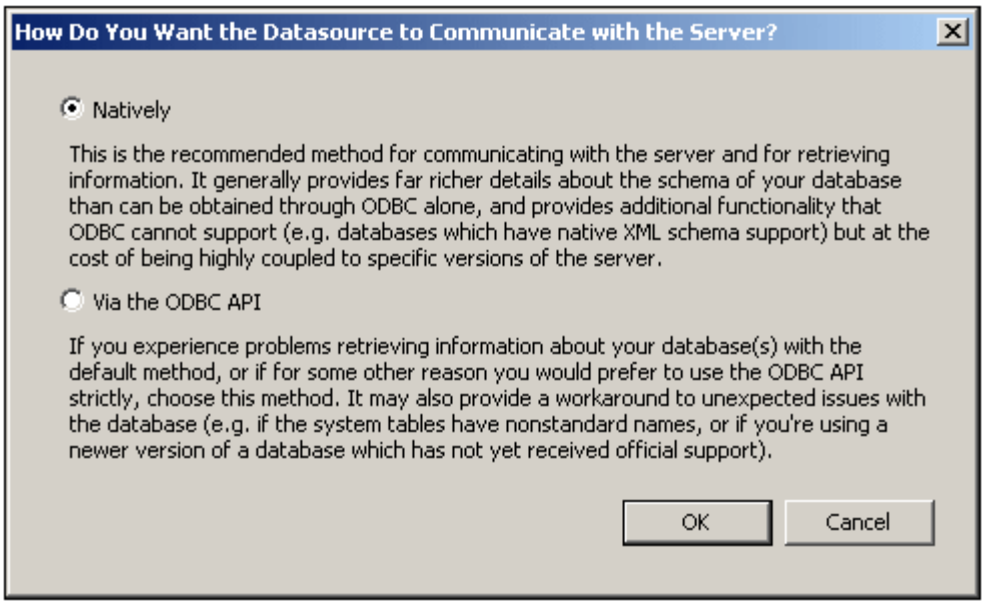
Each of these options is explained in a separate sub-section of this section.

Note: When adding an ODBC Data Source for the IBM iSeries (formerly AS/400), a default flag is set which enables query timeouts. This setting must be **disabled** for StyleVision to correctly load the SPS. When adding an ODBC data source (User/System DSN) for iSeries Access ODBC driver, the "iSeries Access for Windows ODBC Setup" dialog box is opened. Select the Performance tab, click the **Advanced** button and **uncheck** the *Allow Query Timeout* check box option.

Note: If you are using the 64-bit version of StyleVision, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

Native or ODBC?
When making the connection, you will be prompted to select between making a connection natively or making it via ODBC (*see screenshot below*). An ODBC connection might have

limitations, so it is recommended to use the *Natively* option, which is the default option. If you experience difficulties with teh native connection, use the ODBC option.



Selecting the XML data and schema for the SPS

After the connection to the database has been made, the schema and XML data for the SPS must be generated. This is done on the basis of the database structure and data. There are two possible situations:

- In the case of non-XML databases, you select the table/s for which the SPS is being created. StyleVision automatically generates: (i) a schema based on the structure of the table/s, and (ii) temporary XML files based on this schema and containing the data in the selected table/s. How to select the tables is described in the section DB Data Selection | Non-XML Databases.
- In the case of XML databases, you must do two things. First, select the XML cell of the DB in which the required XML data is stored. This XML data is loaded as the Working XML File of the SPS. Second, select the schema on which the SPS will be based. How to select the XML data and schema is explained in the section, DB Data Selection | XML Databases.

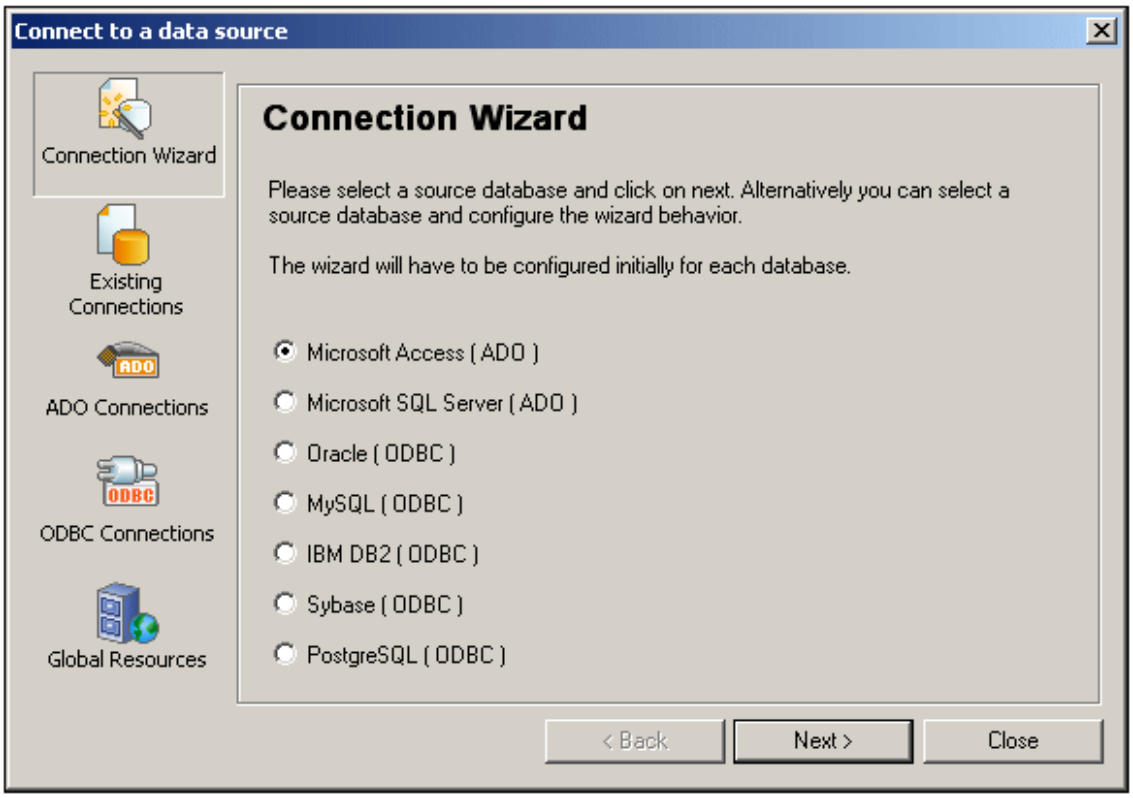
Connection Wizard

When the **Connection Wizard** button in the Open Database dialog 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 steps for connecting to:

- A Microsoft Access database (a non-XML DB). Also included with this description is information about connecting to other non-XML DBs.
- An IBM DB2 database (an XML DB; currently, IBM DB2 databases are the only XML DBs that are supported).

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 selecting tables in the MS Access DB, see DB Data Selection.

Note: The following points about non-XML DBs should be noted:

- The following providers (drivers) are recommended: (i) For Microsoft SQL DBs: *Microsoft OLE DB Provider for SQL Server*; (ii) For Oracle, MySQL, Sybase, and IBM DB2 DBs (versions prior to version 9 are non-XML), *Microsoft OLE DB Provider for ODBC Drivers*.
- If a password is required to access the DB, it must be saved in the connection string.
- All the connection information is stored in the SPS in the form of a connection string. It is therefore important that all clients that use this SPS must have the same driver installed so that they will correctly use the connection string.

- If an ADO connection is used, hierarchical relationships in Oracle and Sybase DBs are ignored and only flat schemas are generated from these DBs.

A note on network shares and UNC paths
Any folder on your computer's hard drive can be marked as a 'share'. When this has been done, any other computer on the network can access it and even write to it depending on how the share has been set up. A share can therefore be used on a remote machine exactly as if it were a local folder.

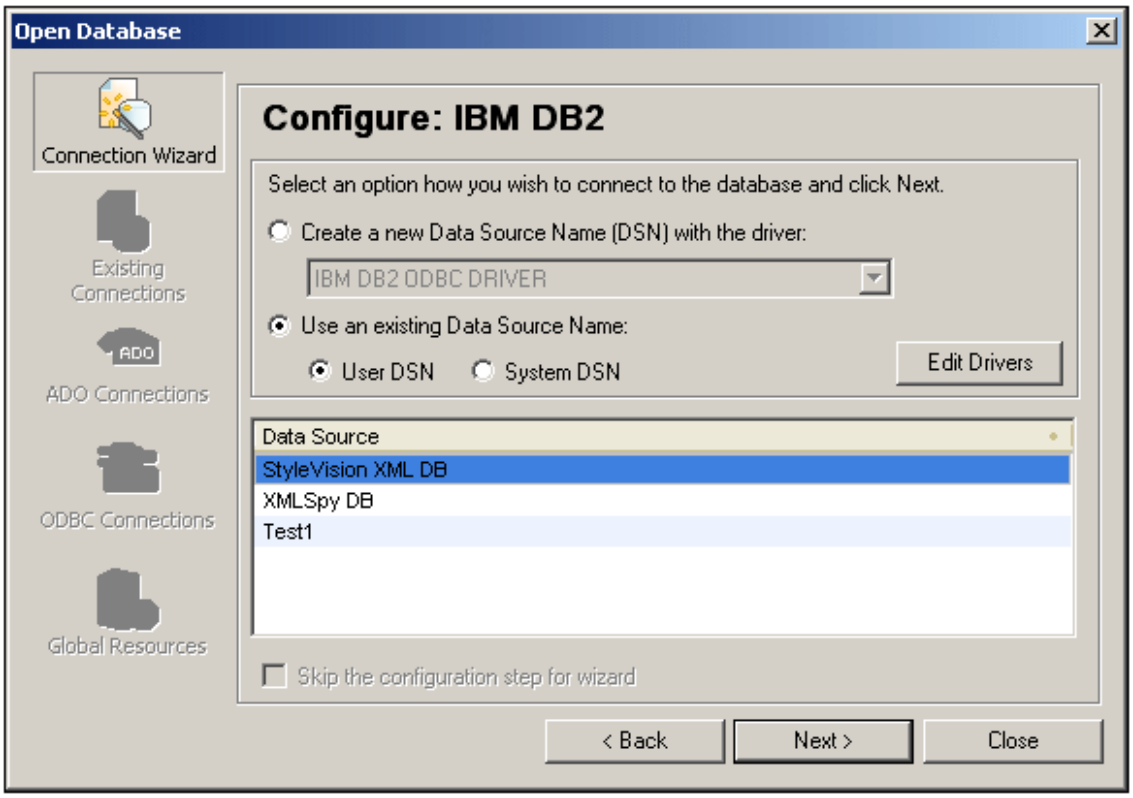
When working with an SPS based on a DB which is on a hard drive (such as an MS Access DB), the folder in which the DB is located must be marked as a share. A UNC path is then used in the connection string to point to the DB. This enables the SPS to connect correctly to the DB when used by clients (such as Authentic Browser) on other machines.

There are two parts to setting up the network share mechanism for a DB-based SPS.

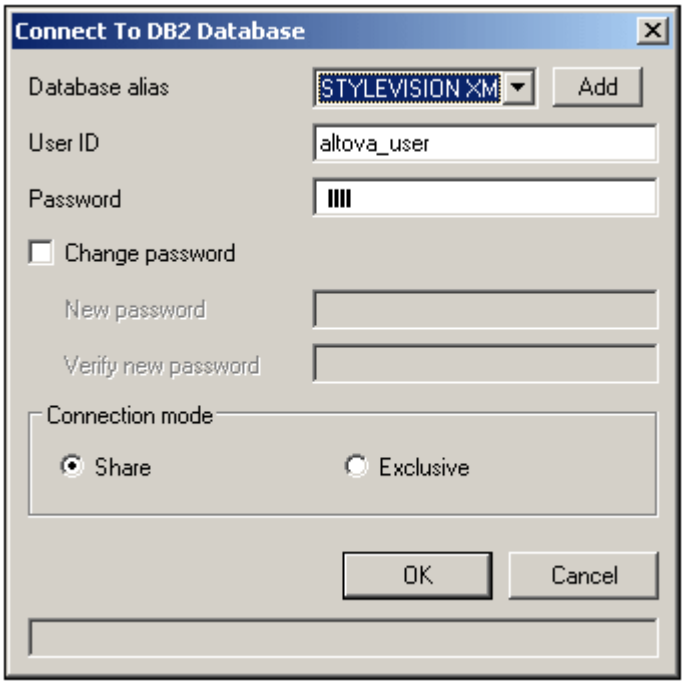
- The folder in which the DB is located must be set up for sharing. (In Windows XP, the sharing settings are accessed by right-clicking the folder and selecting **Sharing and Security...**.) You must also enable Advanced File Sharing (**My Computer | Tools | Folder Options**, then uncheck Simple File Sharing).
- Accessing the share and the DB from the remote location. To do this in a DB-based SPS, you have to set up the connection string with a UNC path. The format of a UNC path is: `\\servername\sharename\path\file.mdb`, where `servername` is the name of the server, `sharename` is the name of the share, `path` is the path to the DB, and `file.mdb` is the name of an MS Access DB in the shared folder or a descendant folder of the shared folder.

Note: Network shares and UNC paths are to be used for DBs, such as MS Access, which do not require any driver and are located on a server on a network.

IBM DB2
In the first screen of the Connection Wizard (*see first screenshot in this section*), select IBM DB2 (ODBC) and click **Next**. The Configuration dialog (*screenshot below*) pops up. This dialog lists the DSNs of the available IBM DB2 data sources. Select the required DSN from the list. (You can also create a new DSN, which will then be added to the list of existing DSNs and be available for selection.)



On clicking **Next**, the Connect to DB2 Database dialog (*screenshot below*) pops up, in which you are prompted for user information (ID and password).



Clicking **OK** will establish the connection with the database. Also see ODBC Connections for more details. How to select the required DB information is described in the section, DB Data Selection.

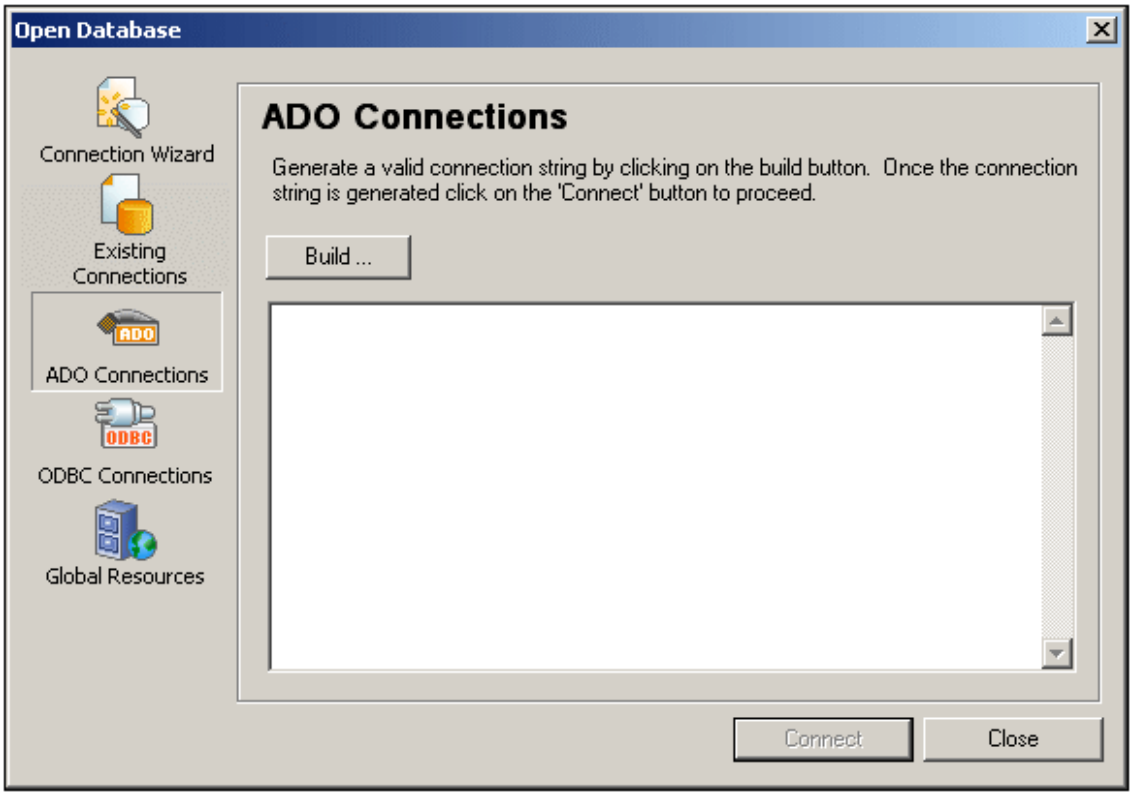
ADO Connections

The ADO Connections option enables you to connect to a DB via ADO. In this section, the connection via ADO is described for two cases:

- A Microsoft SQL Server database (as an example of non-XML DBs).
- An IBM DB2 database (an XML DB; currently, IBM DB2 databases are the only XML DBs that are supported).

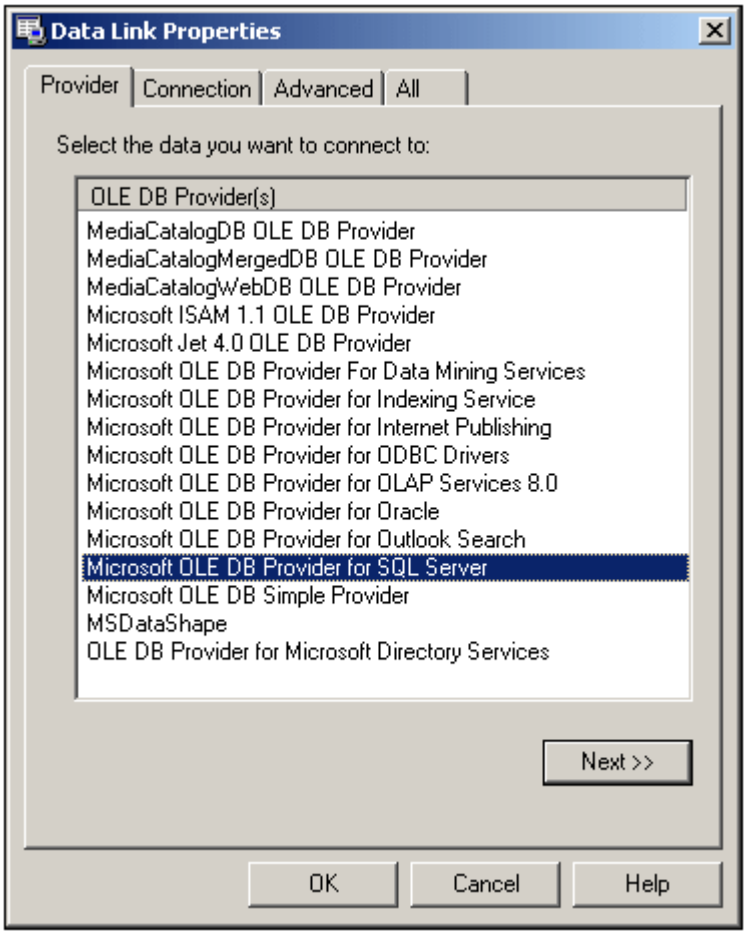
Microsoft SQL Server

To connect via ADO to any DB other than an MS Access DB (whether non-XML or XML), you build a connection string to that DB. In the Open Database dialog (*screenshot below*), click the **ADO Connections** button.

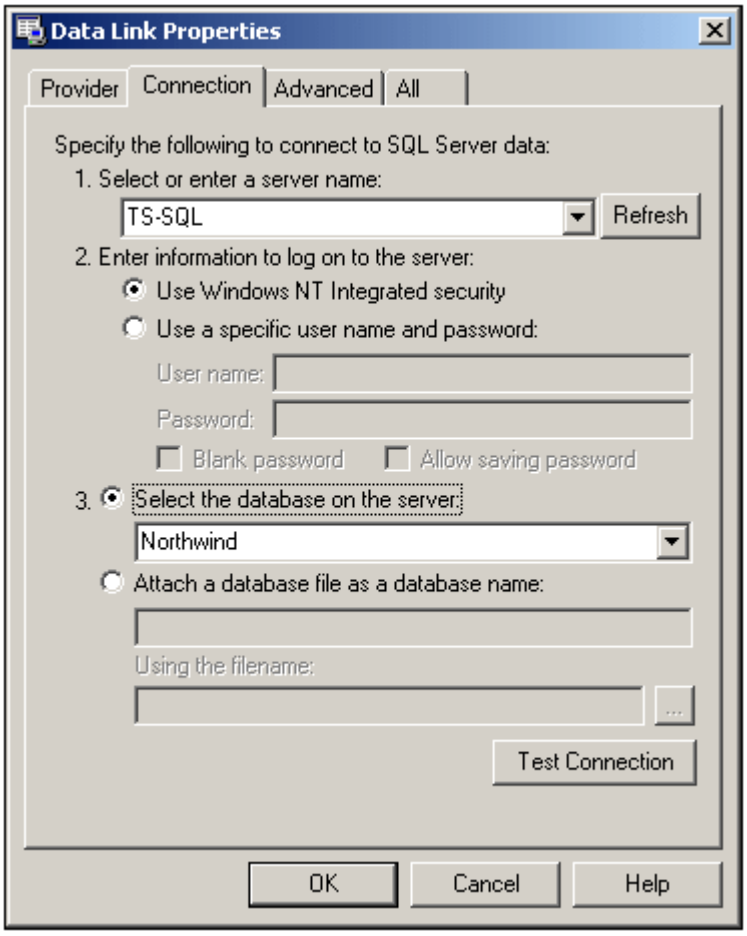


Build the ADO connection string as follows:

1. In the ADO Connection screen, click **Build**. This pops up the Data Link Properties dialog.



2. Select the provider (driver) to connect to the DB. (For 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*.) Then click **Next**. This takes you to the Connection tab.



3. Enter the name of the server, server log-on information, and the DB name, all of which are user-specific. If, for the log-on information, you enter a required password, note that **you must check "Allow saving password"** to save the password in the connection string. Otherwise the connection will fail.
4. Click **Test Connection** to test whether a connection can be successfully made with the connection string you have built. If a password has been entered, it will be used for testing the connection. However, the password will be saved in the connection string only if the "Allow saving password" option has been checked (*see Step 3*).
5. If the connection test fails, rebuild the connection string correctly. If the connection test is successful, click **OK** to complete. The connection string you build is entered in the ADO Connections screen. A password will be entered in the connection string only if the "Allow saving password" option is checked.
6. Click **Next**. The connection is made and a dialog appears in which you select the required DB tables. How to select the required DB tables is described in the section DB Data Selection.

Note: The following points about non-XML DBs should be noted:

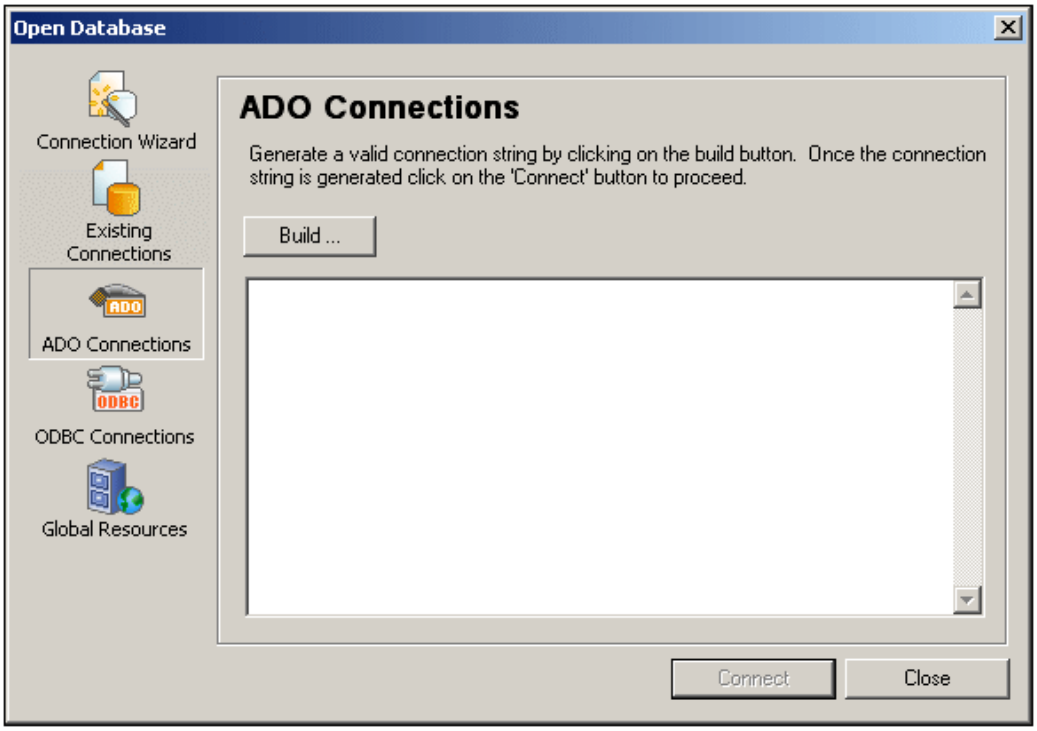
- The following providers (drivers) are recommended: (i) For Microsoft SQL DBs: *Microsoft OLE DB Provider for SQL Server*; (ii) For Oracle, MySQL, Sybase, and IBM DB2 DBs (versions prior to version 9 are non-XML), *Microsoft OLE DB Provider for ODBC Drivers*.
- If a password is required to access the DB, it must be saved in the connection string.
- All the connection information is stored in the SPS in the form of a connection string. It is therefore important that all clients that use this SPS must have the same driver

installed so that they will correctly use the connection string.
- If an ADO connection is used, hierarchical relationships in Oracle and Sybase DBs are ignored and only flat schemas are generated from these DBs.

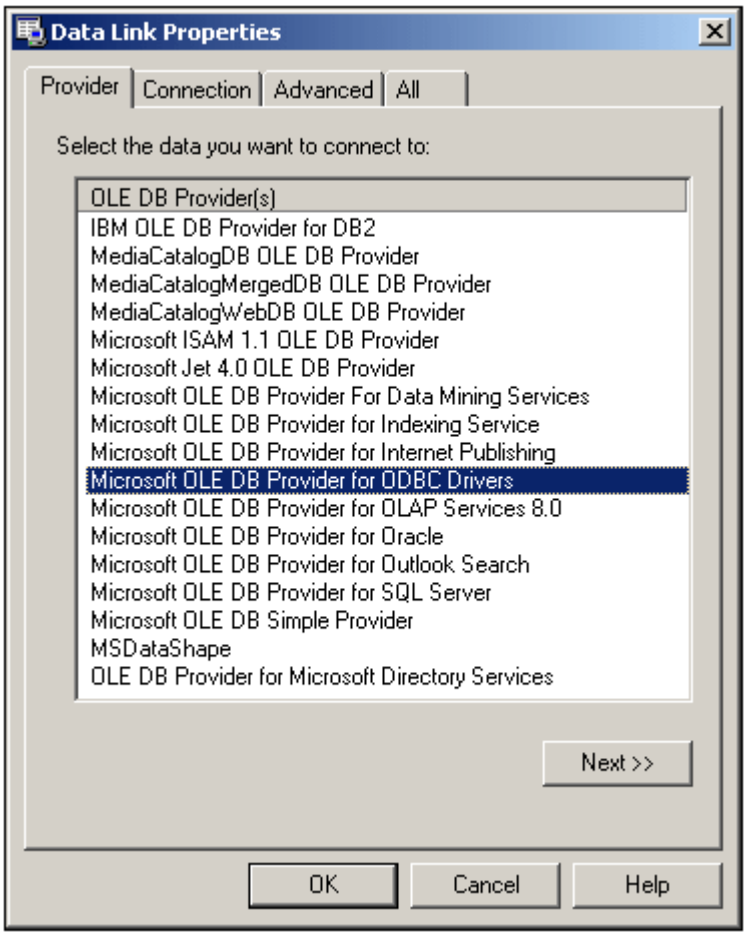
IBM DB2

To connect to an IBM DB2 database via ADO, do the following:

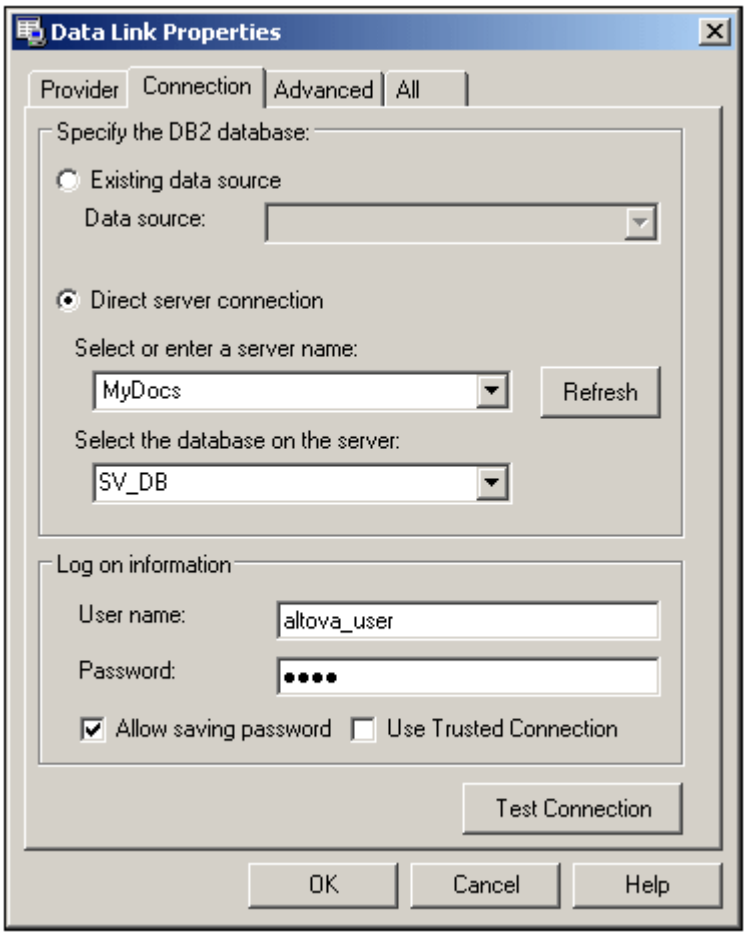
1. In the Open Database dialog, select **ADO Connections** (*screenshot below*).



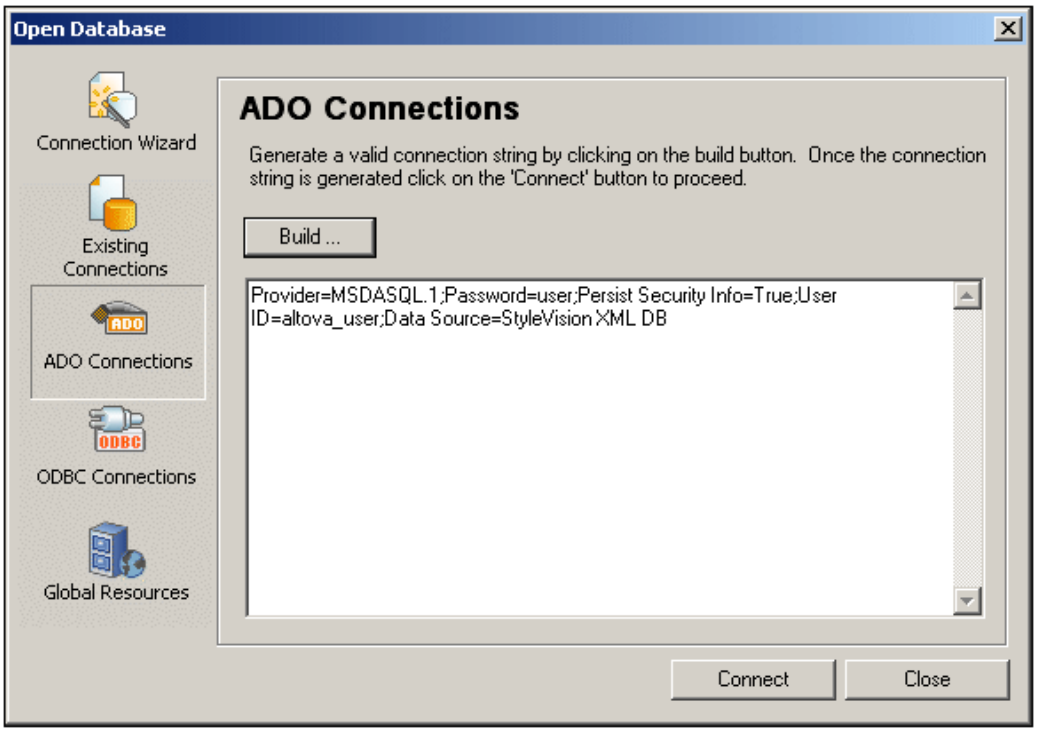
2. Click the **Build** button. The Data Link Properties dialog pops up.
3. In the Provider tab of the Data Link Properties dialog, select Microsoft OLE DB Provider for ODBC Drivers (*screenshot below*), and click **Next**.



4. In the Connection tab (*screenshot below*), select Direct Server Connection, and in the combo box for the server, select the server on which the DB is located. Then select the DB on that server.



5. Enter your user name and password.
6. Test the connection to the DB by clicking the **Test Connection** button. If the test fails, you will have to correct the connection data.
7. After the connection has been successfully tested, check the Allow Saving Password check box. This step is necessary to save the password information in the connection string. The Connection tab of the Data Link Properties should look something like the screenshot above when you are done.
8. Click **OK**. The connection string you have built in the Data Link Properties dialog is entered in the Open Database dialog.

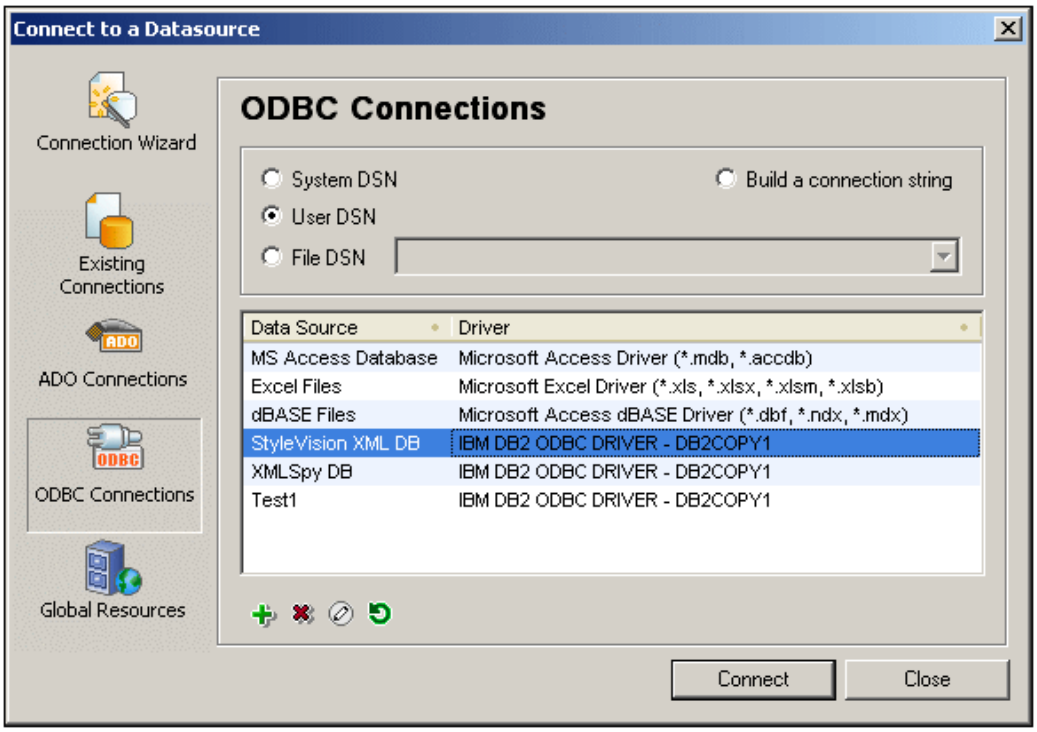


9. Click **Connect** to make the connection to the database. The connection is made and a dialog appears in which you select the required DB information. How to do this is described in the section DB Data Selection.

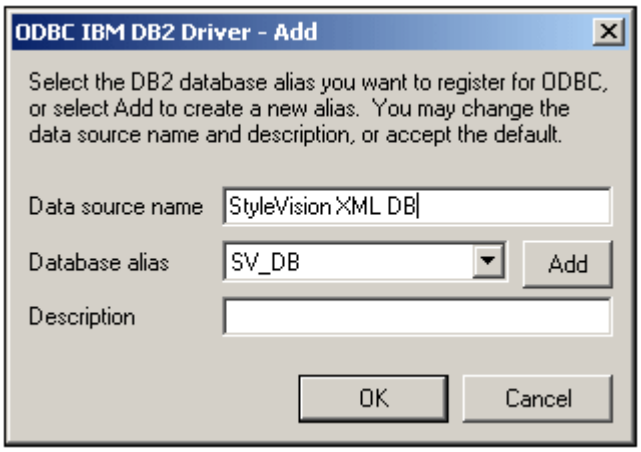
ODBC Connections

This section describes how to connect to a DB via ODBC. The steps listed below describe a connection to an IBM DB2 database, but they apply also to other types of databases that can be connected via ODBC. To connect using an ODBC connection, do the following:

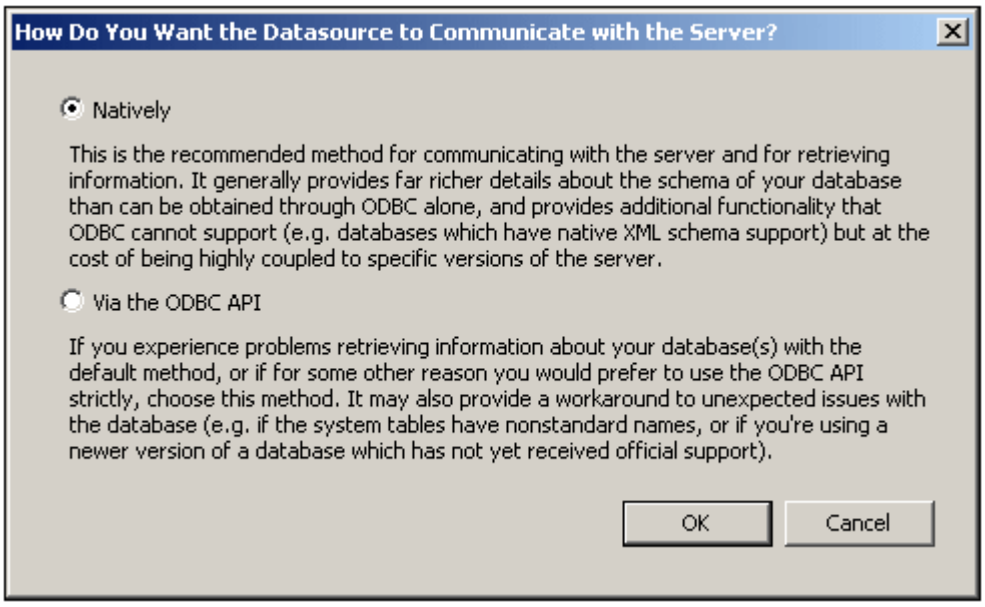
1. In the Open Database dialog, select **ODBC Connections**.



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 made and a dialog appears in which you select the required DB information. How to do this is described in the section DB Data Selection.

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.

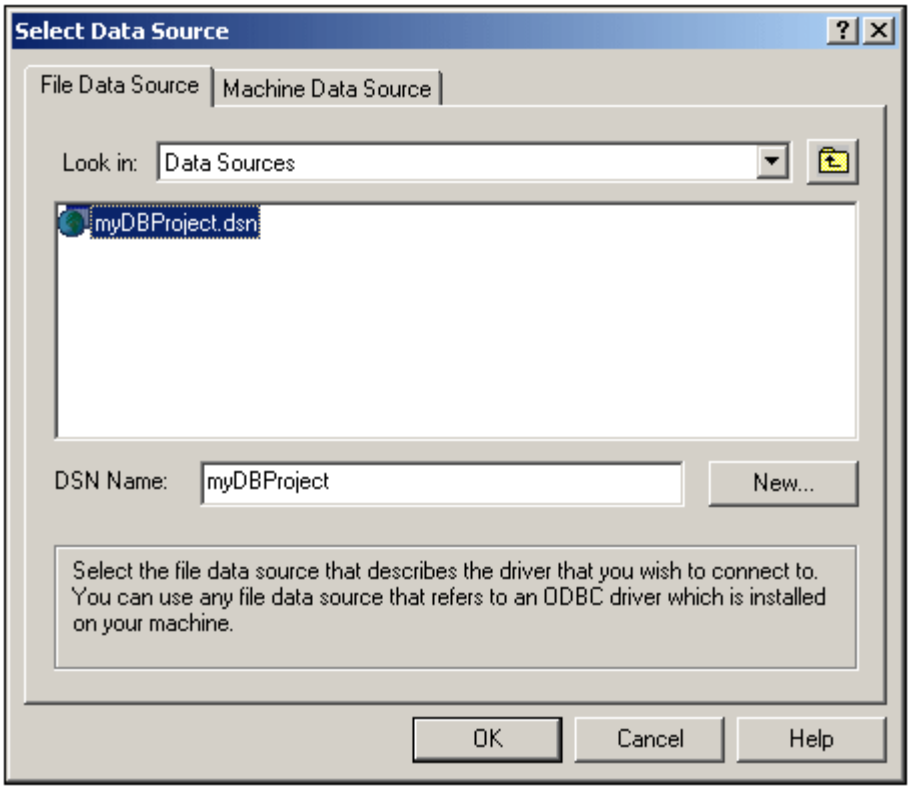
Edit selected DSN.

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, 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).

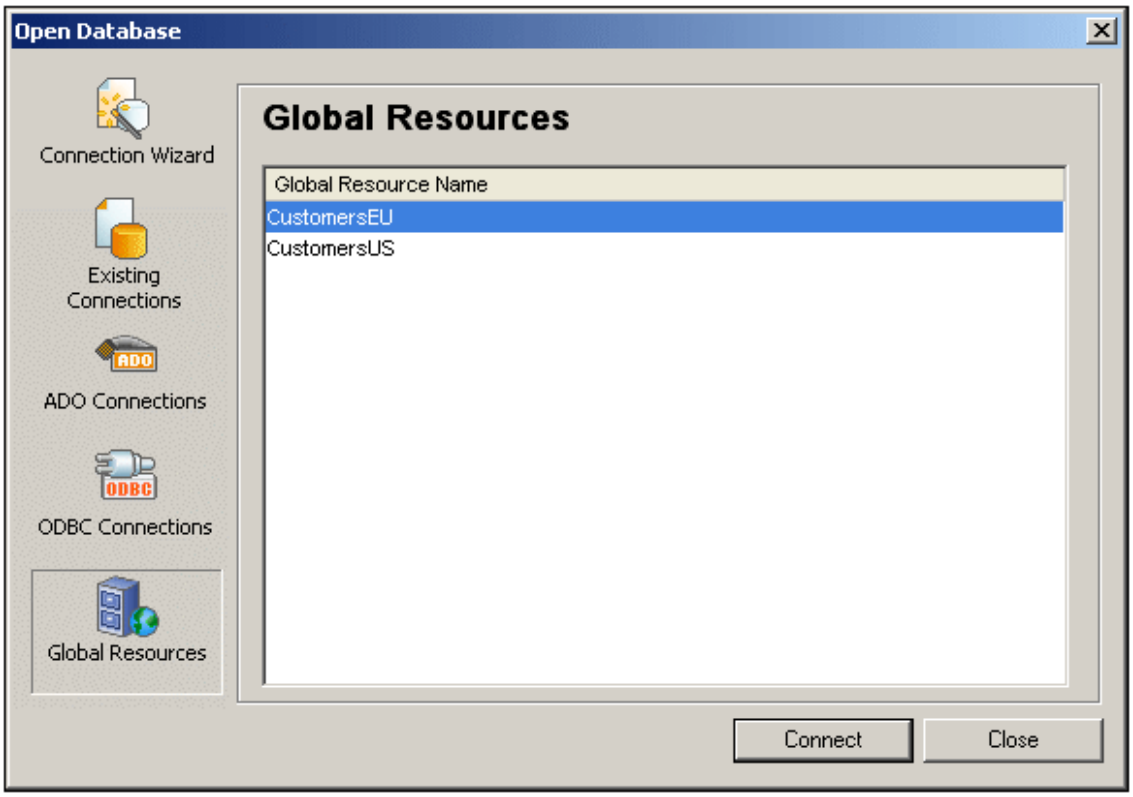


Clicking **OK** pops up a dialog that prompts for user information, including the User ID and password. When you click **OK** in this dialog, the connection string is entered in the ODBC Connections screen.

Note: When an ODBC connection is used to connect to an MS Access DB, data in the DB cannot be edited.

Global Resources

The Global Resources option enables you to connect to a database that has been defined as a global resource. The advantage of using a global resource is that you can quickly and easily change the database source for your SPS by changing the active configuration. Before you attempt to connect to a DB via a global resource, ensure that a global resource has been created for the database to which you wish to connect.



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 DB Data Selection.

13.3 DB Data Selection

Selecting the schema and XML data that will be used in the SPS involves selecting one or more tables, or a cell. or a specific schema, depending on whether the database (DB) being used is a non-XML DB (such as MS Access) or an XML DB (IBM DB2 version 9.0, etc). We refer to the selection of the schema and XML data as DB data selection, and it is carried out immediately after connecting to the DB

How the DB data is selected depends upon the type of DB to which the connection is being made:

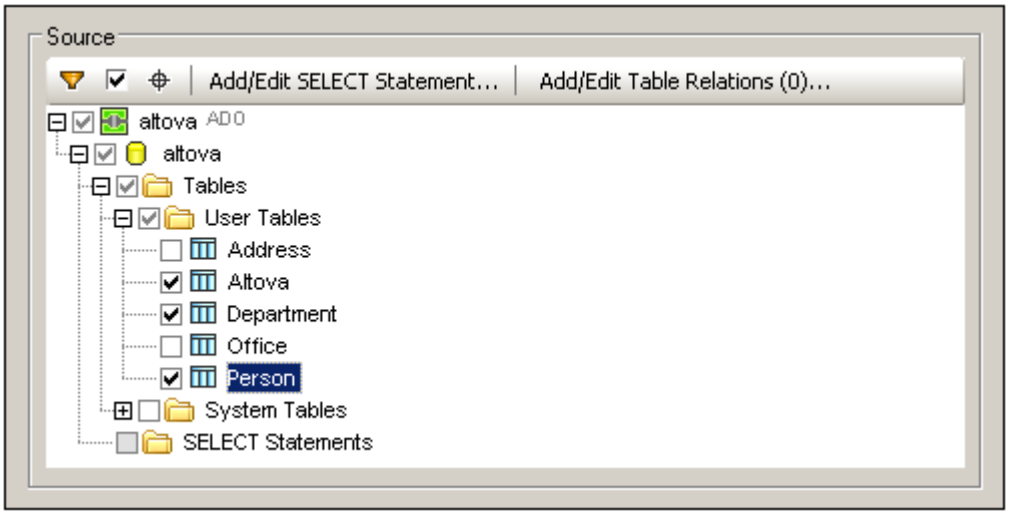
- In the case of non-XML databases, you select the table/s for which the SPS is being created. StyleVision automatically generates: (i) a schema based on the structure of the table/s, and (ii) temporary XML files based on this schema and containing the data in the selected table/s. How to select the tables is described in the section DB Data Selection | Non-XML Databases.
- In the case of XML databases, you must do two things. First, select the XML cell of the DB in which the required XML data is stored. This XML data is loaded as the Working XML File of the SPS. Second, select the schema on which the SPS will be based. How to select the XML data and schema is explained in the section, DB Data Selection | XML Databases.

Non-XML Databases

After a connection has been made to a non-XML database, the Insert Database Objects dialog appears. This dialog consists of two parts. In the upper Source pane, which contains a graphical representation of the tables in the DB, you select the tables required for the SPS. An XML Schema and XML data files will be generated by StyleVision on the basis of the tables selected. In the lower Preview pane of the Insert Database Objects dialog, you can preview the contents of the selected table.

The Source pane

In the Source pane, the DB tables are displayed graphically (*see screenshot below*). Select the tables required for the SPS by checking the respective check boxes.

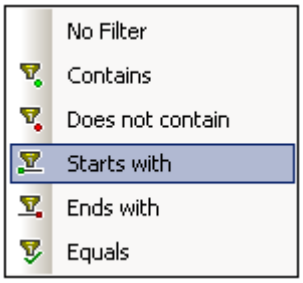


The toolbar of the Source pane (*screenshot below*) contains three icons, respectively, from left to right: **Filter Folder Contents**, **Checked Objects Only**, and **Object Locator**. The **Checked Objects Only** icon toggles the display between all tables and checked tables.

Filtering folder contents

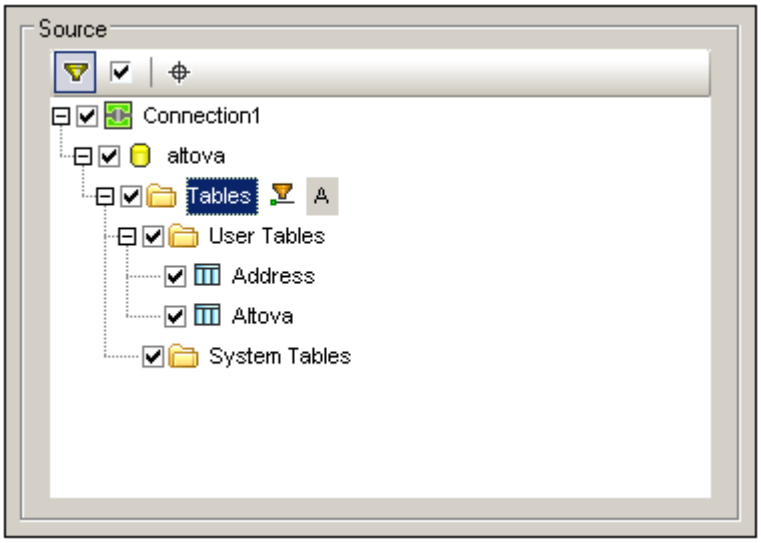
To filter objects in the Source pane, do the following:

1. Click the **Filter Folder Contents** icon in the toolbar of the Source pane. The Filter icon appears next to the Tables folder.
2. Click the Filter icon next to the Tables folder, and select the filtering option from the popup menu (*screenshot below*), for example, `Starts with`.



3. In the entry field that appears, enter the filter string (in the screenshot below, the filter

string on the `Tables` folder is `A`). The filter is applied as you type.



The object locator
To find a specific database item by its name, you can use the Source pane's Object Locator. This works as follows:

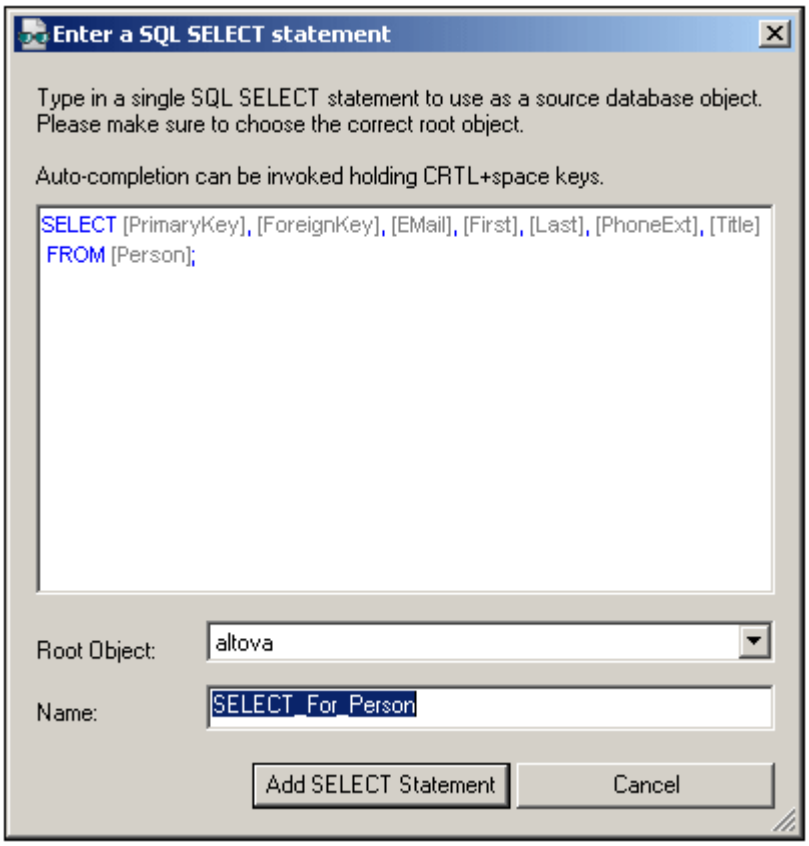
1. In the toolbar of the Source pane, click the Object Locator icon. A combo box appears at the bottom of the Source pane.
2. Enter the search string in the entry field of this list, for example `Altova` (*screenshot below*). Clicking the drop-down arrow displays all objects that contain the search string.

3. Click the object in the list to see it in the Source pane.

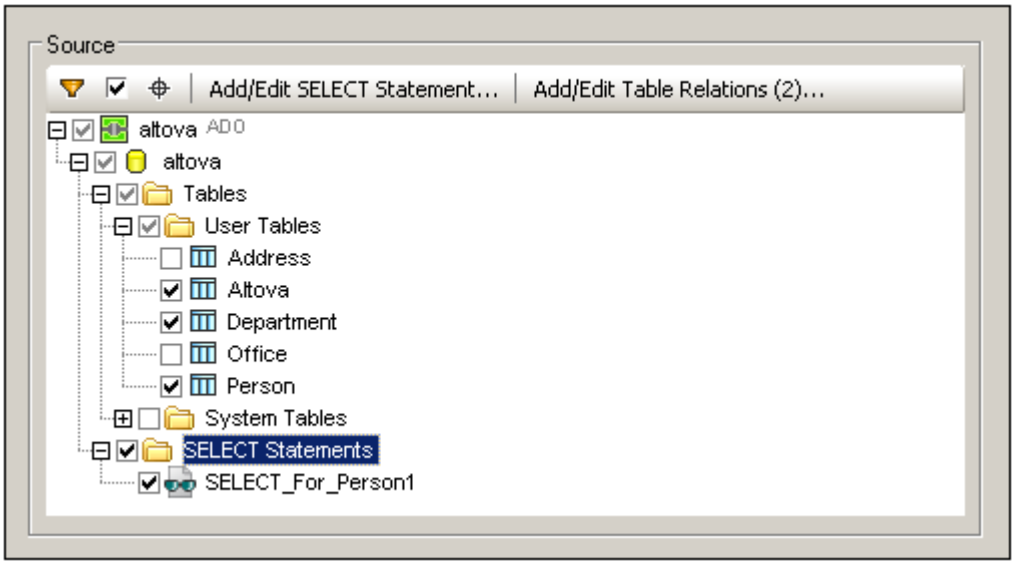
Adding and editing SELECT statements for local views
You can create `SELECT` statements in SQL to create local views. When the schema is generated from a DB connection which has local views (or `SELECT` statements) defined for it, the schema that is generated for the DB will contain a table for each `SELECT` statement.

To create a `SELECT` statement, do the following:

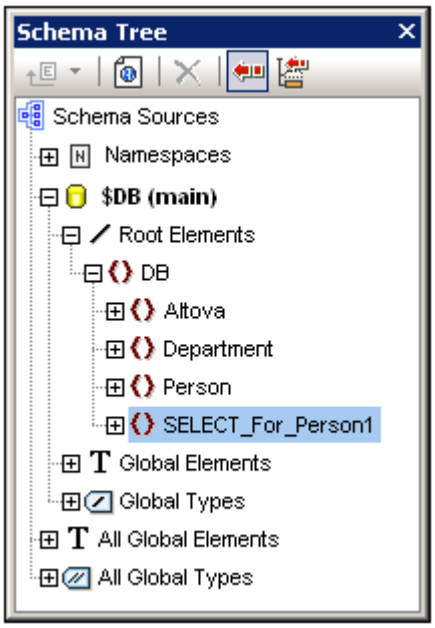
1. Click the **Add/Edit SELECT Statement** tab. This pops up the Enter a SQL Select Statement dialog (*screenshot below*).



2. Enter the `SELECT` statement. If you wish to create a `SELECT` statement for an entire table, right-click the table in the Insert Database Objects dialog and select the menu command **Generate and Add a `SELECT` Statement**.
3. Click **Add Select Statement**. The `SELECT` statement is added to the list of `SELECT` statements in the Insert Database Objects dialog (*screenshot below*).



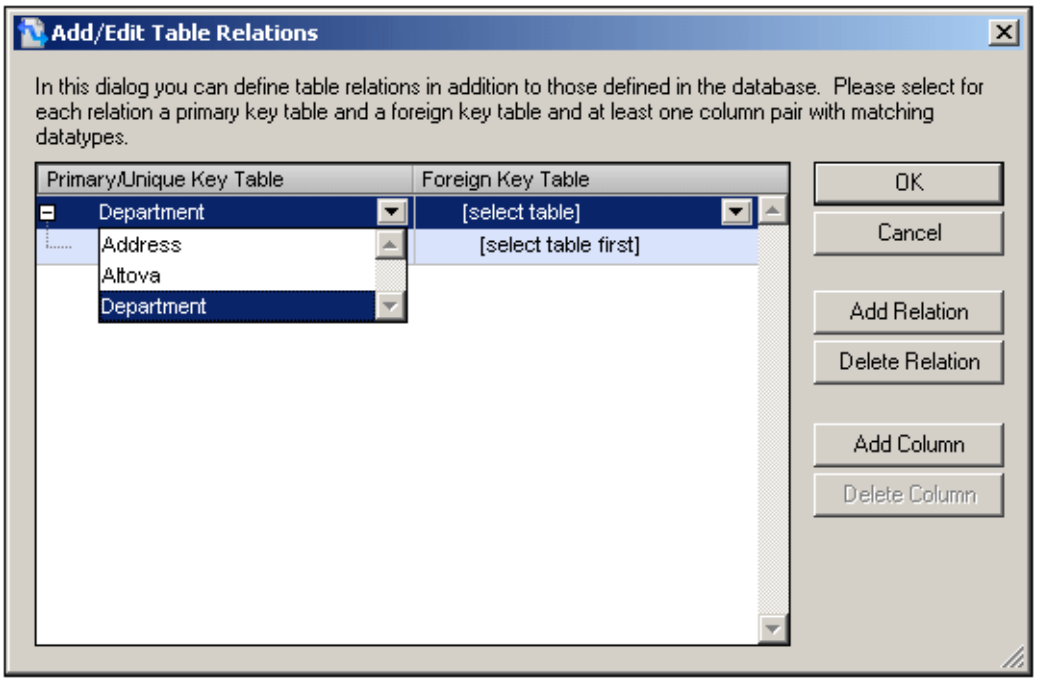
When you click **Finish** in the Insert Database Objects dialog, a table is created for each `SELECT` statement (*screenshot below*).



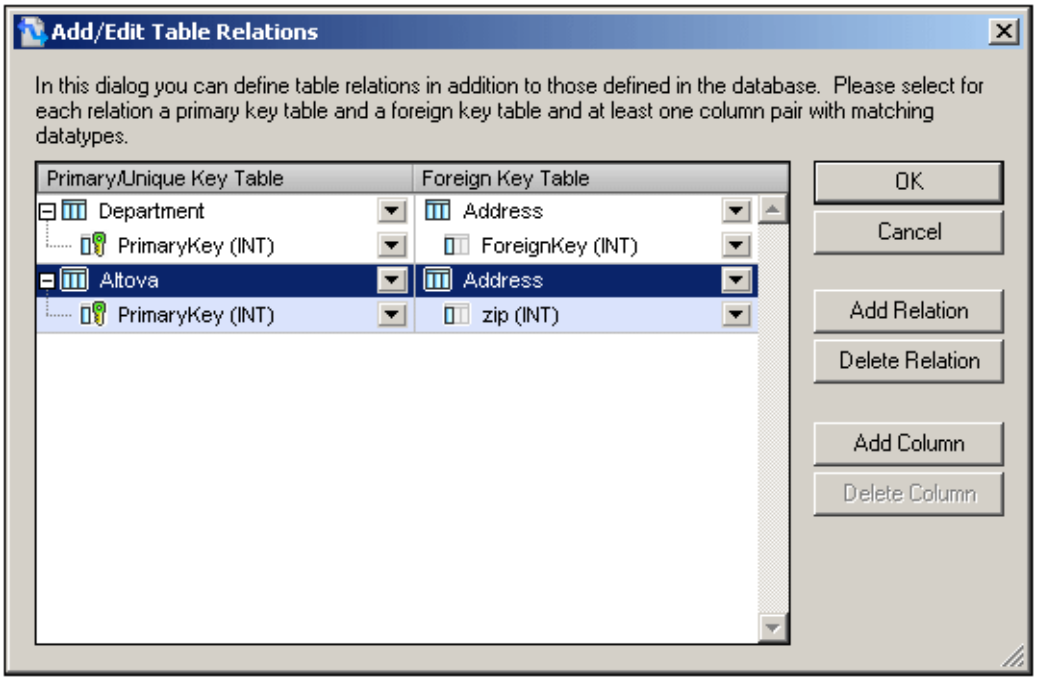
Local relations between tables
You can create local relations between two tables, similar to the primary-key/foreign-key kind of relationship. The relation is local, in StyleVision, which means that the database itself does not have to be modified. The local relationship will be represented in the generated schema.

To create a local relation, do the following:

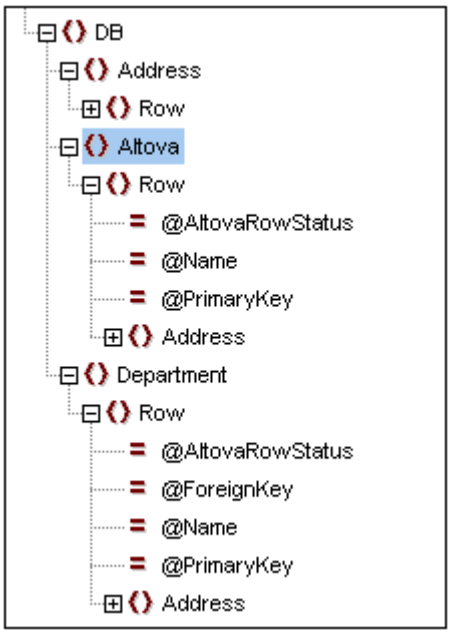
1. In the Insert Database Objects dialog, click the **Table Relations** tab. This pops up the Add/Edit Table Relations dialog (*see screenshot below*).
2. Click the **Add Relation** button, and in the Primary/Unique Key column, click the dropdown button of the Select Table combo box (*screenshot below*). Select a table for the Foreign Key column also. The relationship that will be generated eventually will select rows in which the selected Primary/Unique Key column matches the selected Foreign Key column.



3. Select the Primary/Unique Key table column that must match the Foreign Key table column, and then select the Foreign Key column. Once again, use the combo boxes in the respective columns (*see screenshot below*). Notice that if there is a type mismatch, an error sign will be displayed.
4. Add more local relations, if required, by repeating steps 2 and 3 above.



5. Click **OK** to complete the relation. When the schema is generated, it will reflect the newly created relations.

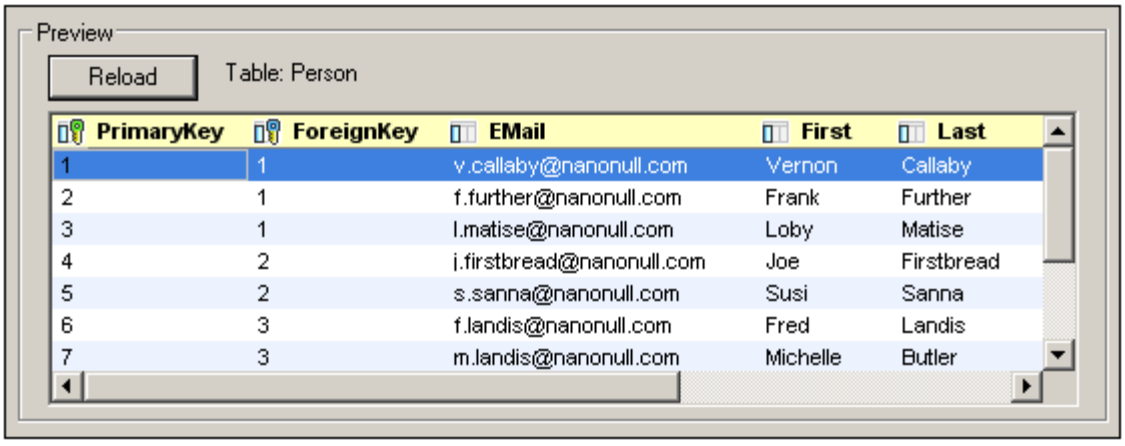


Look at the two screenshots above and see how, in the generated schema, `Altova` and `Department` each contain `Address`. Those `Department` rows with `PrimaryKey` values equal to the `ForeignKey` value of the `Address` row will be output. And those `Altova` rows with `PrimaryKey` values equal to the `zip` value of the `Address` row will be output.

Note: Local relations between SQL `SELECT` statements are not supported.

Previews and the Preview pane

To preview the structure and contents of a table, select the table in the Source pane and then click the **Reload** button in the Preview pane (*screenshot below*). The contents of the table are displayed in a table format in the Preview pane (*screenshot below*).

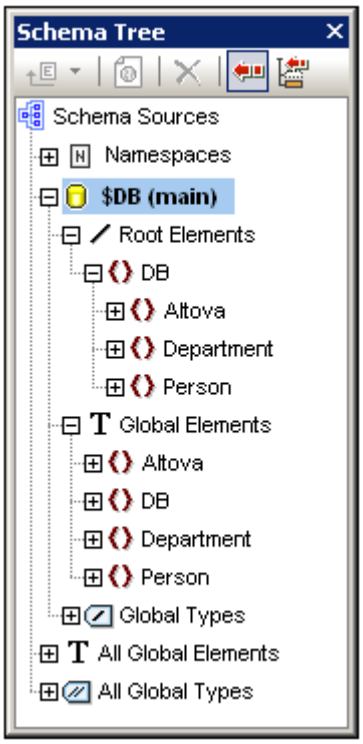


PrimaryKey	ForeignKey	EMail	First	Last
1	1	v.callaby@nanonull.com	Vernon	Callaby
2	1	f.further@nanonull.com	Frank	Further
3	1	l.matise@nanonull.com	Loby	Matise
4	2	j.firstbread@nanonull.com	Joe	Firstbread
5	2	s.sanna@nanonull.com	Susi	Sanna
6	3	f.landis@nanonull.com	Fred	Landis
7	3	m.landis@nanonull.com	Michelle	Butler

Generating the XML Schema and Working XML File from the DB

After you have selected the tables for which you wish to use in the SPS, click **Finish** to generate and load the XML Schema. An XML Schema with a structure corresponding to that of the DB with the selected tables is displayed in the Schema Window. A Working XML File having

a structure corresponding to that defined in the generated schema and containing data from the selected tables is also generated and is used for the output previews.



Note that all the selected DB tables are created in the XML Schema as children of the `DB` document element and as items in the Global Elements list. For a complete description of the structure of the generated XML schema, see The DB Schema and DB XML files. Note that the XML Schema generated from the DB will not be altered by any DB Filter that may be built subsequently.

After you have connected to the DB and generated the XML Schema, you can use the full range of StyleVision features to design an SPS for the DB.

XML Databases

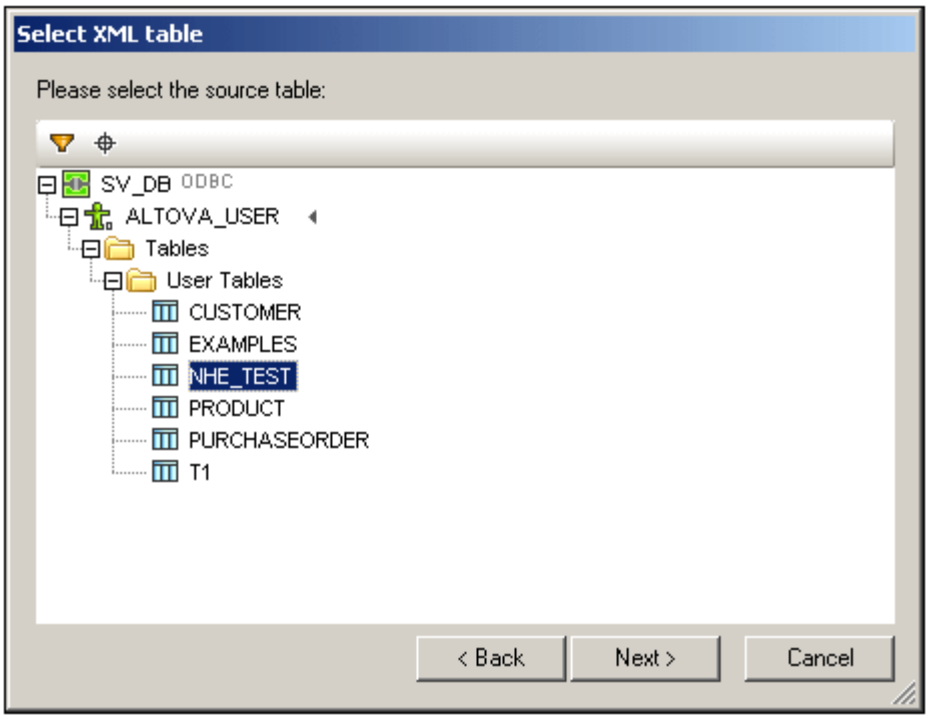
After having made the connection to the XML database (currently only IBM DB2 XML databases are supported) via the Open Database dialog (see previous sections), you will need to do two things:

- Select the cell in the DB that contains the required XML document. The XML document will be loaded automatically as the Working XML File.
- Select the XML Schema for the SPS.

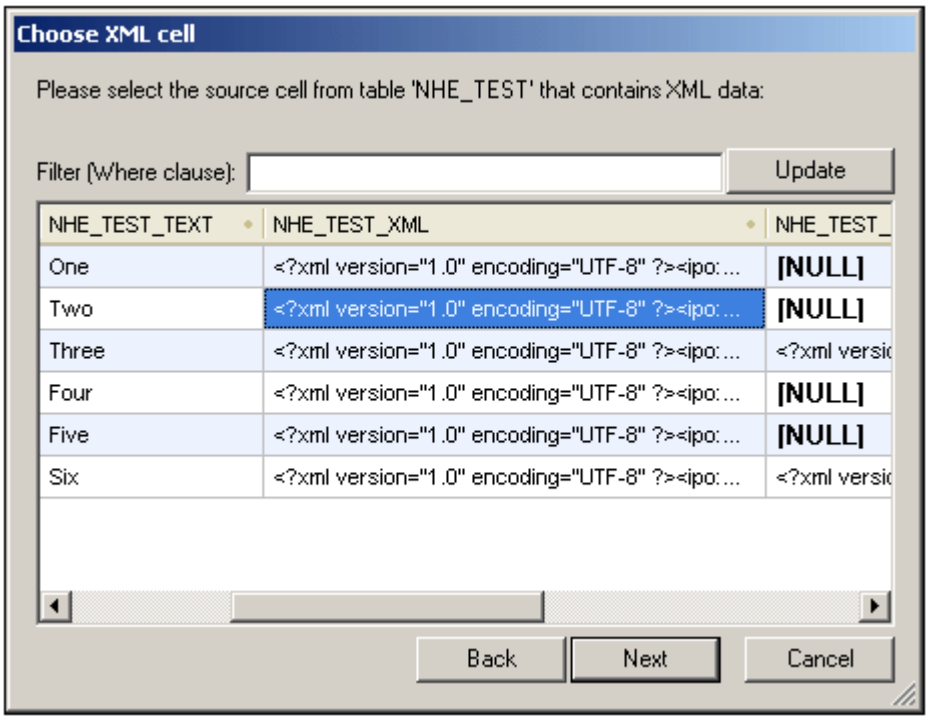
Selecting the XML Cell and Working XML File

After making the connection to the IBM DB2 database, the Select XML Table dialog (*screenshot below*) appears.

1. In the Select XML Table dialog, select the table that contains the XML data you wish to create as the Working XML File. In the screenshot below, the table `NHE_TEST` has been selected.



2. Click **Next**. This pops up the Choose XML Cell dialog (*screenshot below*). If you wish to filter the selection displayed in the pane, enter an SQL `WHERE` clause and click **Update**. Note that the `WHERE` clause should be just the condition (without the `WHERE` keyword, for example: `NHE_TEST_TEXT= 'Two'`)

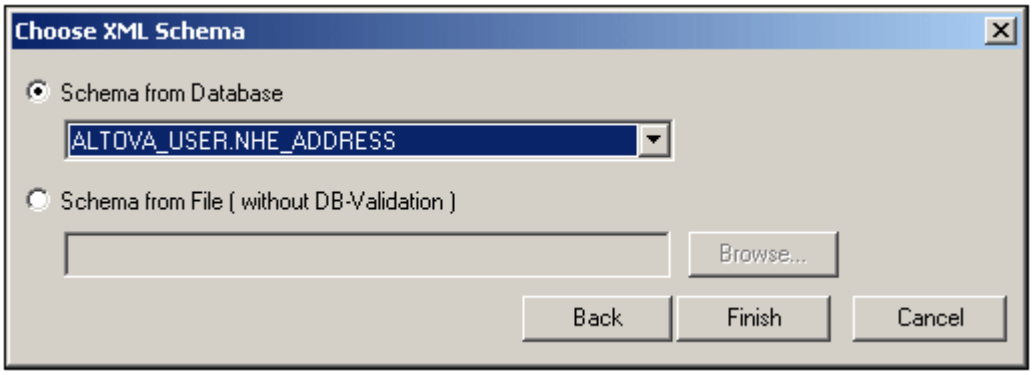


3. Select the cell containing the XML data you wish to create as the Working XML File. In the screenshot above, the selected cell is highlighted in blue.
4. Click **Next**. This pops up the Choose XML Schema dialog, in which you select the schema to be used for the SPS. *See next section*.

Selecting the XML Schema for the SPS

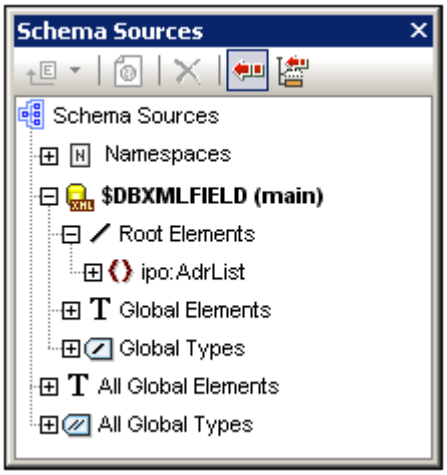
The schema that will be used for the SPS can be either an XML Schema contained in the DB or a schema at a file location that can be accessed by StyleVision. To select the schema, do the following:

1. In the Choose XML Schema dialog (*screenshot below*), select the appropriate radio button according to whether you wish to select the schema from among those stored in the DB or from a file location. Note that if a non-DB schema is selected—that is, a schema from an external file—then no DB validation will be carried out.



2. Select the schema. Schemas stored in the DB are listed in the dropdown list of the Schemas from Database combo box, and can be selected from there. An external schema can be selected by browsing for it.
3. Click **Finish** to complete.

The schema tree
After completing the process to select the XML data and the schema, the selected XML data is created as the Working XML File and the schema is loaded into the SPS. Both are displayed in the Schema Tree window (*screenshot below*).



The SPS can now be built using the usual StyleVision mechanisms. Note that the data in the Working XML File can be edited in Authentic View and saved to the DB.

Note: The Working XML File should be valid against the schema selected for the SPS. Also ensure that the schema's root element (document element) corresponds to the root element of the XML document.

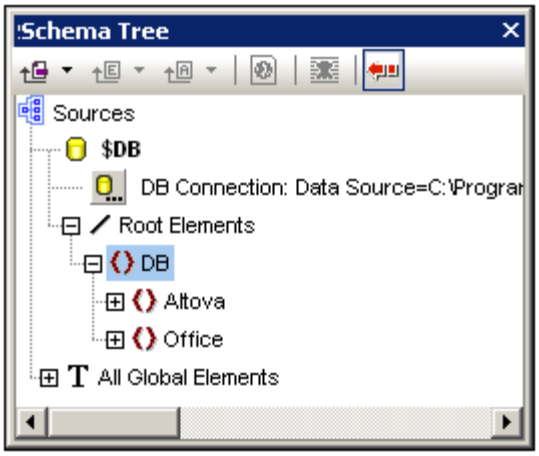
•

13.4 The DB Schema and DB XML files

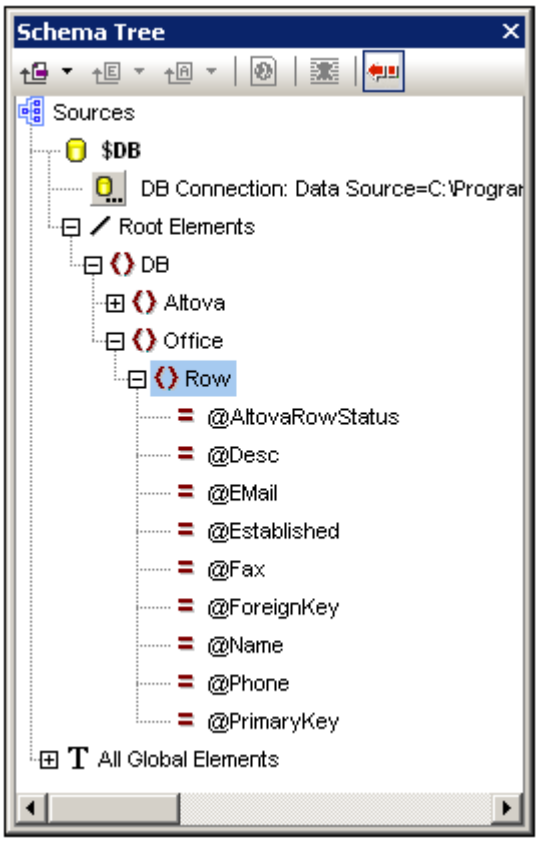
The DB XML Schema

When you load a non-XML database (non-XML DB) into StyleVision, an XML Schema with a structure based on that of the DB is generated by StyleVision and displayed in the Schema Tree window. (In the case of XML DBs, an existing schema (either stored in the DB or at a file location) is specified as the schema to be used in the SPS.) This section on schemas, therefore, refers only to non-XML DBs.

The XML Schema is created with a document element called `DB`. The `DB` element contains child elements which correspond to the top-level tables in the DB. These top-level table elements are also created as entries in the Global Templates list in the Schema Window. The top-level elements in the screenshot below are: `Addresses`, `Articles`, and `Customers`; they correspond to tables in the DB.



Each top-level table element may have an unlimited number of rows (*see screenshot below*). Each row corresponds to a record in the DB. In the schema tree the rows are represented by a single `Row` element. Each `Row` element has attributes which correspond to the fields of the table. One of these attributes is generated by StyleVision for every row of every table: `AltovaRowStatus`, which holds the current status of the row: added, updated, and/or deleted. The remaining attributes are the fields of the respective DB table.



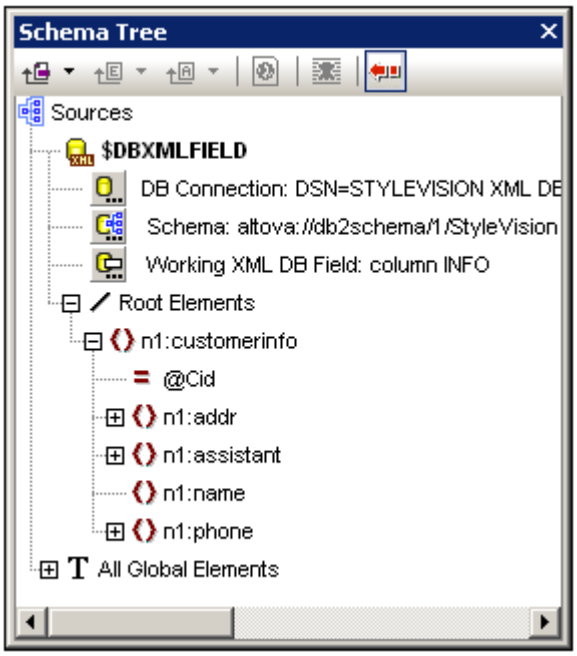
Note: The structure of the generated XML Schema is as outlined above. Whatever tables are selected during the connection step are included in the structure. The construction of a DB Filter does not affect the structure of the XML Schema.

New DB Schema Structure

The structure of the XML Schema generated from DBs starting with the 2005 version of StyleVision is different than the structure generated in previous versions of StyleVision. The new structure enables the editing of databases in the Authentic View of Altova products—a feature which was not available with earlier versions. As a result, any SPS generated with earlier versions of StyleVision will generate an error when opened in versions of StyleVision starting from the 2005 version. To be able to use the DB editing and reporting features of StyleVision, you should recreate the SPS in the current version of StyleVision.

DB XML data files

After a connection to the XML DB has been made, the XML schema and column with XML data selected, the Schema Tree window (*screenshot below*) will list the selected schema and the column that will be used for the Working XML File.



Two **temporary** XML files are generated from the DB (see DBs and StyleVision for an illustration):

- A temporary editable XML file, which can be edited in Authentic View
- A temporary non-editable XML File, which is used as the Working XML File (for previews and output generation)

The temporary **editable XML file** is generated when the DB is loaded into StyleVision. It can be edited in Authentic View after the SPS has been created. The display in Authentic View can be filtered by using the Query mechanism available in Authentic View. Any modification made in Authentic View to the editable data is written to this temporary XML File. Clicking **File | Save Authentic XML Data** saves the information in the temporary editable XML file to the DB.

The temporary **non-editable XML file** is generated when the DB is loaded into StyleVision. It is used as the Working XML File and for generating HTML, RTF, PDF, and Word 2007+ output. The editable XML file must be saved before changes made in Authentic View can be viewed in a preview.

Note:

- In the Authentic View of other Authentic View products only one temporary (editable) XML file is created when a DB-based SPS is opened. Modifications made in Authentic View are written to this file. When the file is saved, the information in the XML file is written to the DB.
- You can filter the data that goes into the non-editable temporary XML File for report-generation. (See Edit DB Filter for details.)
- You do not have to specifically assign a Working XML File in order to see HTML, RTF, PDF, and Word 2007+ previews. The automatically generated (non-editable) temporary XML file is used for this purpose.

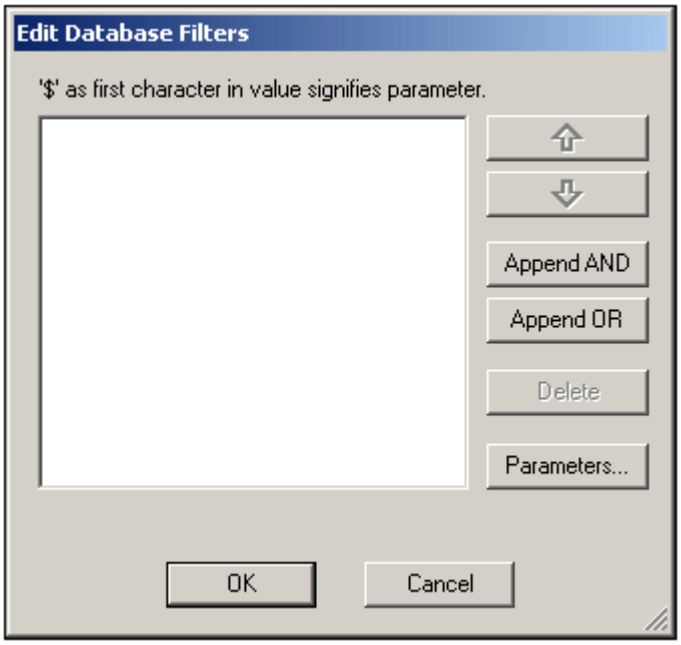
13.5 DB Filters: Filtering DB Data

The data that is imported into the temporary **non-editable** XML file from the database (DB) can be filtered. (Note that the non-editable XML file is used for report generation, and the effect of a DB filter will therefore be seen only in the HTML, RTF, PDF, and Word 2007+ preview; not in Authentic Preview, which displays the temporary **editable** XML file, and not in Authentic View.) The DB filter (DB Filter) can be created either within the DB itself (if this is supported in your DB application), or it can be created within the SPS (SPS file). In the SPS, one DB Filter can be created for each top-level data table in the XML Schema (i.e. for the data tables that are the children of the `DB` element). Each time a DB Filter is created or modified, the data from the DB is re-loaded into the temporary non-editable XML file that is generated for the DB. In this way, DB Filters help you to keep the XML file down to an optimal size and to thus make processing for report generation more efficient.

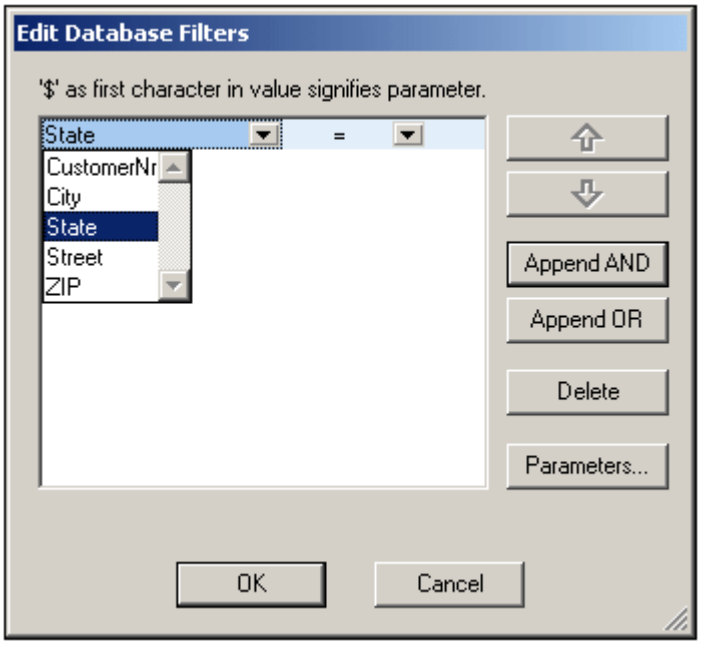
Note: Using a DB Filter modifies the data that is imported into the temporary non-editable XML File. If you save an SPS with a DB Filter and then generate an XML File from the SPS, the generated XML File will be filtered according to the criteria in the DB Filter.

Creating a DB Filter

1. In the Design Document or Schema Tree, select the data table element for which you wish to create a DB Filter (either by clicking the start or end tag of the element, or by selecting the element in the schema tree).
2. Select **Database | Edit DB Filters** or click the  icon in the toolbar. The following dialog is displayed:



3. Click the **Append AND** or **Append OR** button. This appends an empty criterion for the filter (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 below.
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 Filters.

Expressions in criteria

Expressions in DB Filter 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 criteria 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 Filters

You can also enter the name of a parameter as the value of an expression. This causes the parameter to be called and its value to be used as the value of that expression. The parameter you enter here can be a parameter that has already been declared for the stylesheet, or it can be a parameter that you declare subsequently.

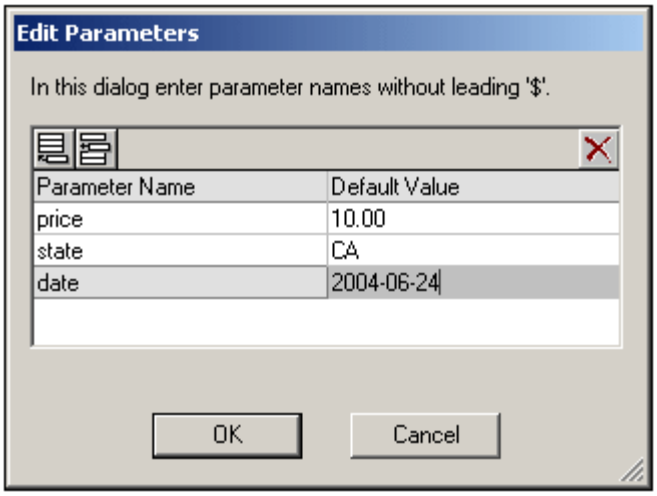
Parameters are useful if you wish to use a single value in multiple expressions, or if you wish to pass a value to a parameter from the command line (see StyleVision from the command line for details).

To enter the name of a parameter as the value of an expression, type `$` into the value input field followed (without any intervening space) by the name of the parameter. If the parameter has already been declared (see Parameters), then the entry will be colored green. If the parameter has not been declared, the entry will be red, and you must declare it.

Declaring parameters from the Edit DB Filter dialog

To access the Edit Parameters dialog (in order to declare parameters), do the following:

1. Click the **Parameters...** button in the Edit DB Filters dialog. This pops up the Edit Parameters dialog shown below.



2. Type in the name and value of the parameter in the appropriate fields.

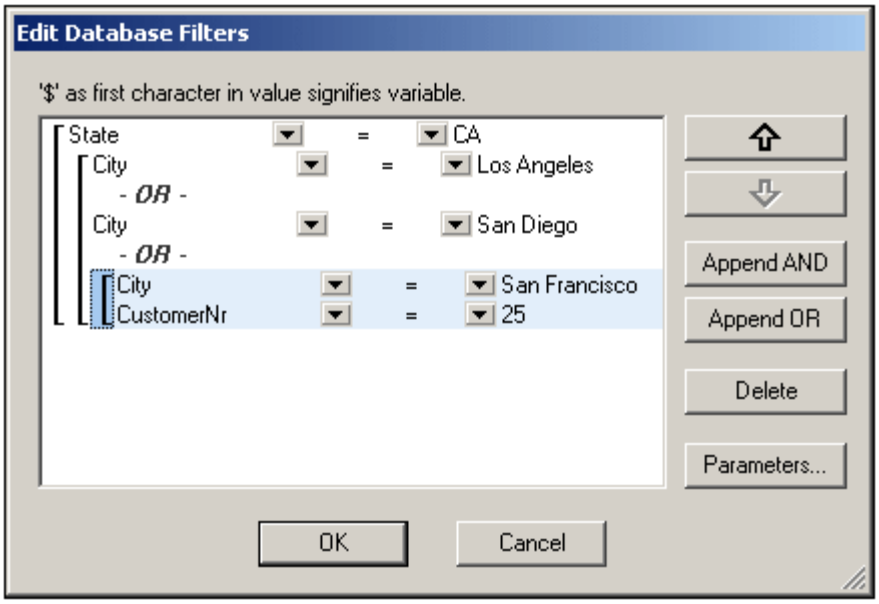
Alternatively, you can access the Edit Parameters dialog and declare or edit a DB Parameter by selecting **Edit | Edit Stylesheet Parameters**.

Note: The Edit Parameters dialog contains **all** the parameters that have been defined for the stylesheet. While it is an error to use an undeclared parameter in the SPS, it is not an error to declare a parameter and not use it.

After a DB Filter is created for a data table element, that element in the Schema Tree is displayed with the filter symbol, as shown for the `Addresses` element in the screenshot below.

Re-ordering criteria in DB Filters

The logical structure of the DB Filter 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 Filter.



The DB Filter 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 Filter by moving a criterion or set of criteria up or down relative to the other criteria in the DB Filter. To move a criterion or set of criteria, do the following:

- Select the criterion by clicking on it, or select an entire level by clicking on the bracket that represents that level.
- 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 Filter, select the criterion and click **Delete**.

Modifying a DB Filter

To modify a DB Filter, click **Database | Edit DB Filters**. This pops up the Edit DB Filters dialog box. You can now edit the expressions in any of the listed criteria, add new criteria, re-order criteria, or delete criteria in the DB Filter. After you have completed the modifications, click OK. The data from the DB is automatically re-loaded into StyleVision so as to reflect the modifications to the DB Filter.

Clearing (deleting) a DB Filter

To clear (or delete) a DB Filter, select the element for which the DB Filter has to be cleared either in the Design Window or the Schema Tree. (There is one DB Filter for each (top-level) data table element.) Then click **Database | Clear DB Filter**. The filter will be cleared, and the filter symbol will no longer appear alongside the name of the element in the Schema Tree.

13.6 SPS Design Features for DB

You can design a DB-based SPS just as you would design any other schema-based SPS, that is by dragging-and-dropping schema nodes from the schema window into the design document; by inserting static content directly in the design document; and by applying suitable formatting to the various design components. The following points, however, are specific to DB-based SPSs.

Creating a dynamic table for a DB table
To create a dynamic table for a DB table, do the following:

1. In the schema tree, select the top-level DB table to be created as a dynamic table, drag it into the design.
2. When you drop it, create is as `contents` and delete the `contents` placeholder. If the Auto-Add DB Controls feature is on, your design will look something like this:

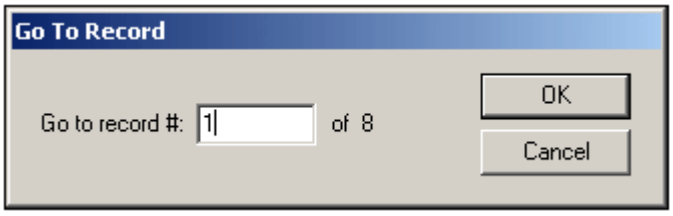
3. In the schema tree, select the `Row` element of the DB table you wish to create as a dynamic table.
4. Drag it to a location inside the `Addresses` element.
5. When you release the element, select Create Table from the menu that pops up, and select the DB fields you wish to create as columns of the dynamic table. The DB table is created as a dynamic table.

Note: You can also create a DB table in any other format, such as `(contents)`.

Auto-add DB Controls

The **Authentic | Auto-add DB Controls** menu command or the toolbar icon  toggles the auto-insertion of navigation controls for DB tables on and off. When the toggle is switched on this toolbar icon has a black border; when the toggle is off, the toolbar icon has no border. If the Auto-insert toggle is on, DB Controls (*see screenshot below*) are automatically inserted when a DB table is dropped into the Design document. It is dropped, by default, immediately before the `Row` start tag.

These controls enable the Authentic View user to navigate the records of the DB table in Authentic View. The first (leftmost) button navigates to the first record; the second button navigates to the previous record; the third button is the Goto Record button, which pops up the Goto Record dialog (*screenshot below*); it pops up a dialog that prompts you for the number of the record to which you wish to go; the fourth button navigates to the next record; and the fifth button navigates to the last record.



To manually insert the navigation controls in the Design document—which is useful if you wish to insert the controls at some other location than the default location—then do the following:

1. Turn the Auto-insert DB Controls toggle off.
2. Place the cursor at the location where you wish the navigation controls to appear (but within the DB table element's start and end tags).
3. Right-click, and from the popup menu, select **Insert | DB Control | Navigation** or **Insert | DB Control | Navigation+Goto**

Inserting a DB Query button for Authentic View

The DB Query button  enables the Authentic View user to submit a DB query. This helps the user to build conditions for the records to be displayed in Authentic View. Query buttons can be inserted for individual DB tables anywhere between:

- The start tag of the DB table element and the start tag of the DB table element's (child) Row element.
- The end tag of the DB table element and the end tag of that table element's (child) Row element.

To insert a DB Query button in your Design document, do the following:

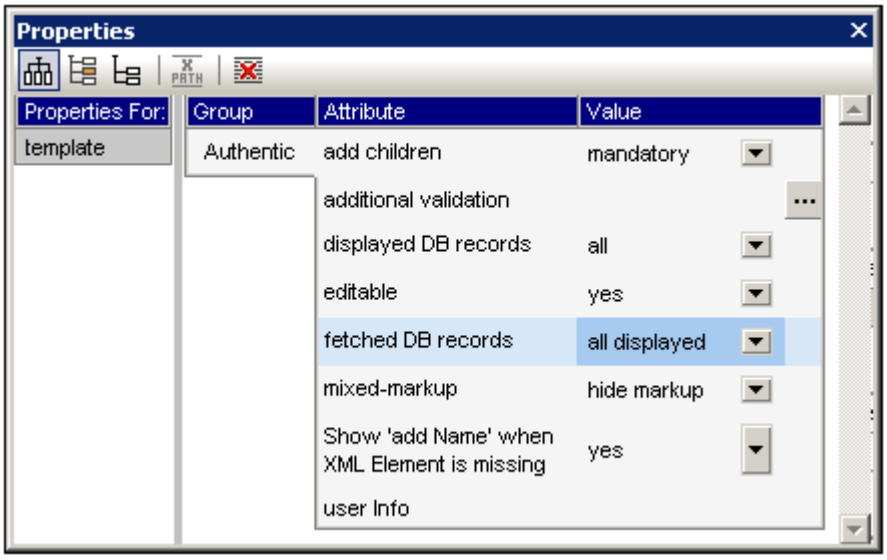
1. Place the cursor at the allowed location (*see above*) where you wish the Query button to appear. (in the screenshot below, the cursor is placed between the end `Row` tag and the end `Customer` tag.
2. Right-click, and from the context menu (or **Insert** menu), select **Insert | DB Control | Query Button**. The Query Button is inserted at that point in the Design document.

When it is clicked in Authentic View, the Query button will pop up the Edit Database Query dialog. This dialog is described in the Authentic View documentation.

Records displayed and records fetched

You can control the number of records displayed in Authentic View and the number of records fetched when the file is loaded. To make these settings, do the following:

1. In Design View, select the `Row` element that corresponds to the records to be displayed/fetched.
2. In the Properties sidebar, select `template` in the Properties For column, and the Authentic group of properties.



3. For the property `displayed DB Records`, select `all` from the dropdown list or enter the number of records to be displayed.
4. For the property `fetched DB Records`, select `all` or `all displayed` from the dropdown list, or enter the number of records to be fetched. The value `all displayed` is the default. This property determines how many records are fetched when the DB data is loaded. If the value is less than that of the `displayed DB Records` property, then the value of the `displayed DB Records` is used as the value of `fetched DB Records`. The `fetched DB Records` property enables you to reduce the number of records initially loaded thus speeding up the loading and display time. Additional records are loaded and displayed when the row (record) navigation buttons in Authentic View are used.

Note:

- The number of records displayed is applied to Authentic View.
- If a large number of tables is open in Authentic View, then the user will get an error message saying that too many tables are open. On the design side, you can reduce the number of tables that are open by reducing the number of records displayed (because a record can contain tables). On the user side, the user can use queries to reduce the number of tables loaded into Authentic View.

AltovaRowStatus

In the XML Schema that is created from a DB, each table has an **`AltovaRowStatus`** attribute. The value of this attribute is automatically determined by StyleVision and consists of three characters, which are initialized to `---`. If a row is modified, or a new row is added, the value is changed using the following characters.

`A`	The row has been added (but not yet saved to the DB).
`U, u`	The row has been updated (but not yet saved to the DB).
`D, d, X`	The row has been deleted (but not yet saved to the DB).

These values can be used to provide users with information about rows being edited. The status information exists up to the time when the file is saved. After the file is saved, the status information is initialized (indicated by `---`).

Formatting design document components

When records are added, modified, or deleted, StyleVision formats the added/modified/deleted records in a certain way to enable users to distinguish them from other records. Datatype errors are also flagged by being displayed in red. If you wish to maintain this differentiation, make sure that the formatting you assign to rows in a table do not have the same properties as those assigned by StyleVision. The formatting assigned by StyleVision is as follows:

Added	`A`	Bold, underlined
Modified (Updated)	`U, u`	Underlined
Deleted	`D, d, X`	Strikethrough
Datatype error		Red text

13.7 Generating Output Files

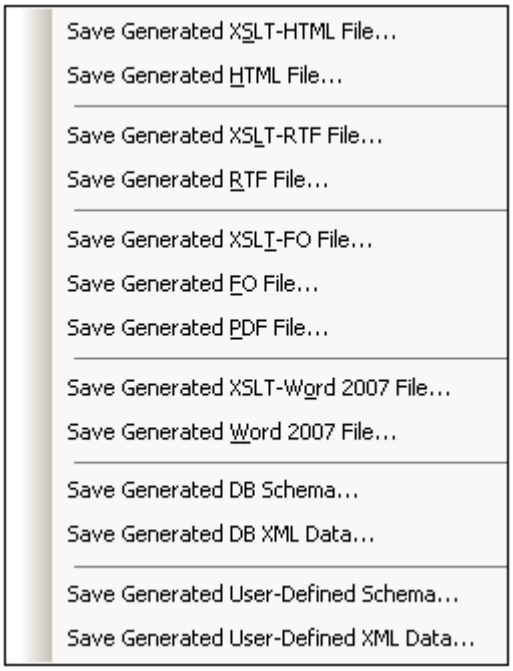
After you have created a DB-based SPS, you can generate files related to it and save them. The following files can be generated and saved:

- The XML Schema based on the DB structure
- The XML file having the structure of the generated XML Schema and content from the DB
- The XSLT file for HTML output
- The HTML output file
- The XSLT file for RTF output
- The RTF output file
- The XSLT file for FO output (XSL-FO)
- The FO output file
- The PDF output file
- The XSLT file for Word 2007+ output
- The Word 2007+ output file

The files can be generated and saved from within the GUI or from the command line.

From within the StyleVision GUI

1. In the **File** menu, select the **Save Generated Files** item. This pops up the following submenu.

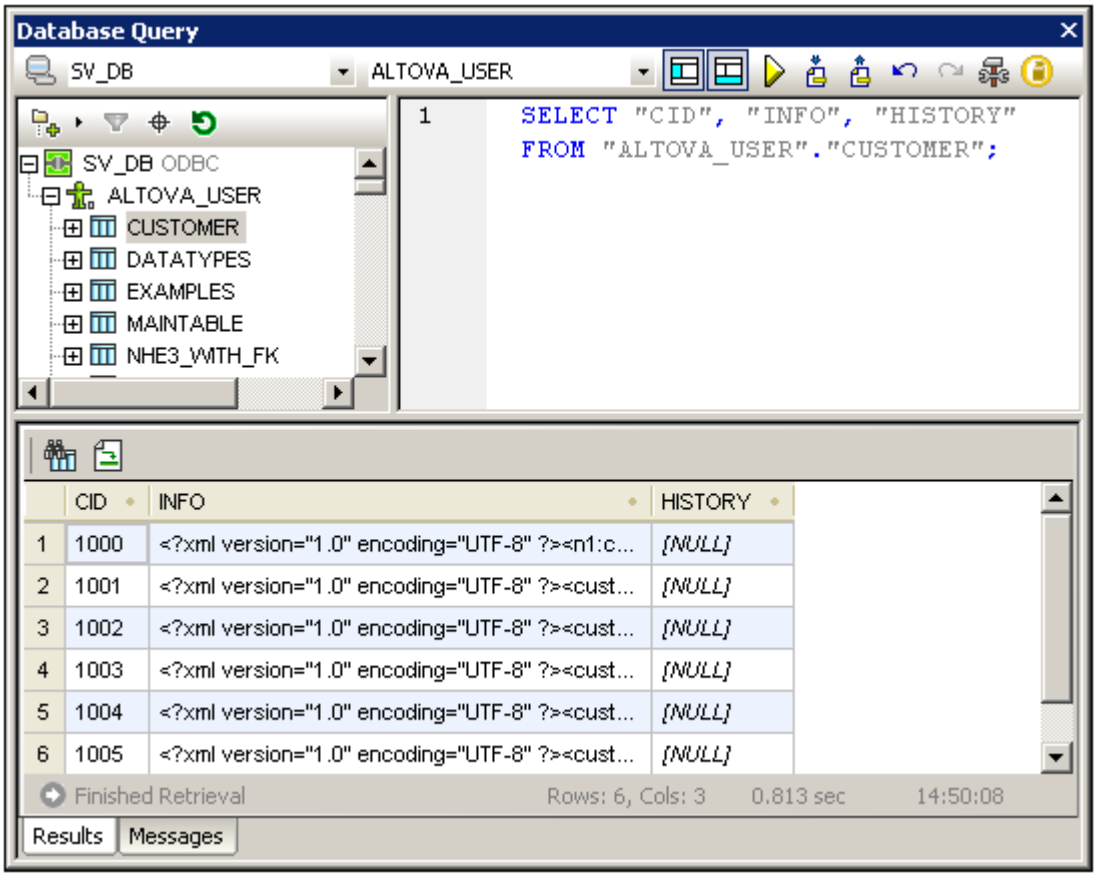


2. Select the file you wish to generate. This pops up the Save As dialog.
3. Browse for the desired folder, enter the desired filename, and click **OK**.

From the command line
From the command line, you can call StyleVision so that it generates and saves files associated with a DB-based SPS. You can save not only the XML Schema and XSLT files, but also an XML file with data from the DB, and HTML, RTF, PDF, and Word 2007+ output files based on the design in the SPS. For a description of how to use the command line, see StyleVision from the command line.

13.8 Query Database

The **Query Database** command in the **Database** menu 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 **Database | 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

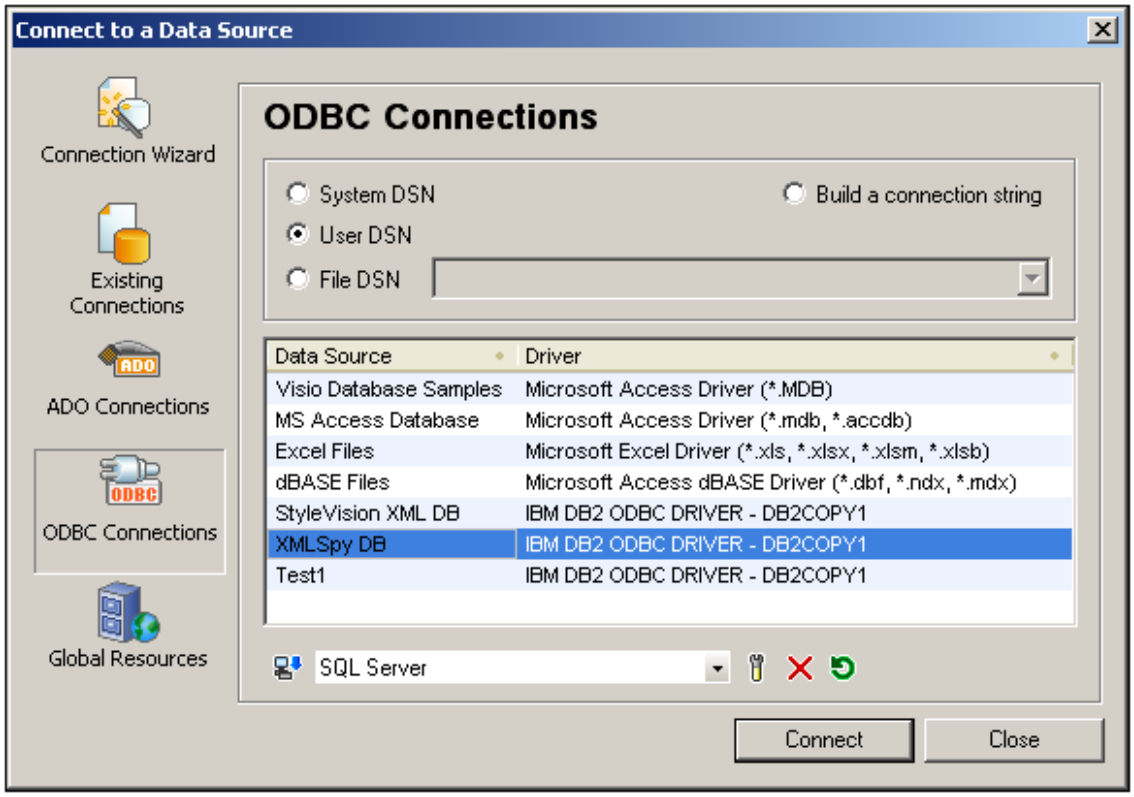
1. A connection to the database is established via the Database Query window.
2. The connected database or parts of it are displayed in the Browser pane, which can be configured to suit viewing requirements.
3. A query written in a syntax appropriate to the database to be queried is entered in the Query pane, and the query is executed.
4. The results of the query can be viewed through various filters.

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 in the **View** menu for the first time in a session (and 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. If connections already exist, you can select the required connection from among these.



How to connect to a database via the Quick Connect dialog is described in the section Connecting to a Data Source.

Altova StyleVision 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.

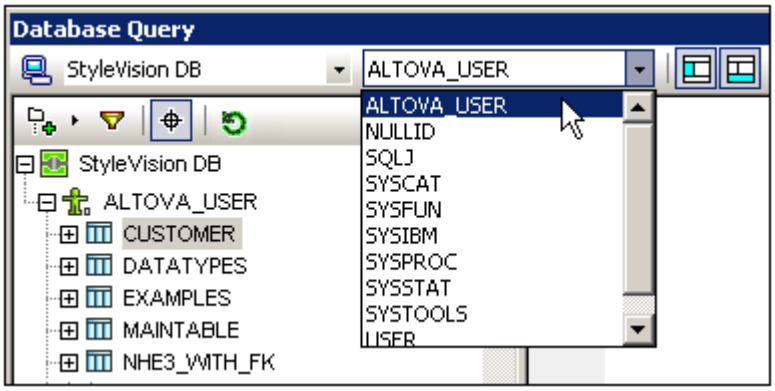
The available root object for each of the supported databases is also listed.

Database (natively supported)	Root Object

MS SQL Server 2000, 2005, and 2008	database
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 StyleVision, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

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*). After selecting the required data source in the left-hand combo box, you can select the required root object from the right-hand combo box.



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

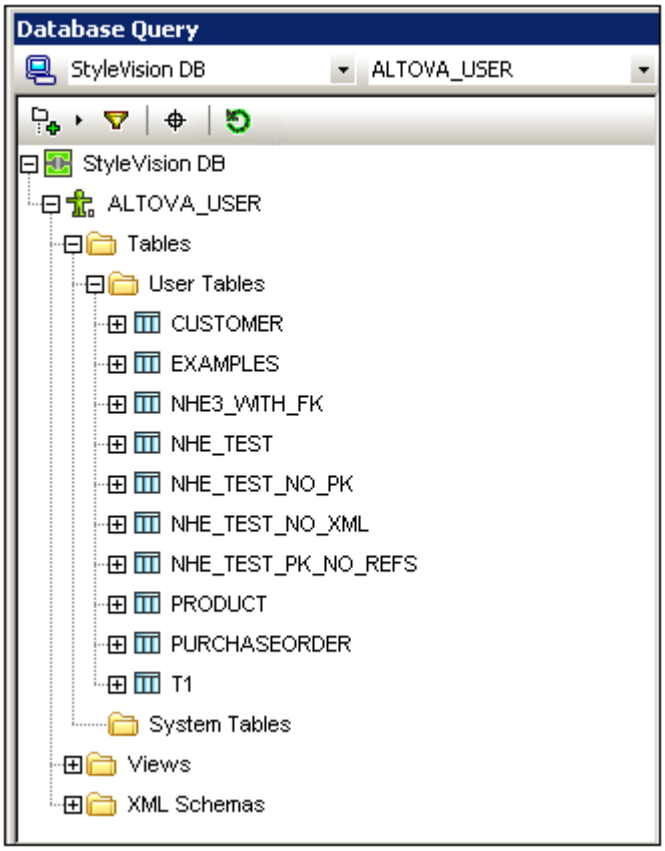
The Browser pane provides an overview of objects in the selected database. This overview includes database constraint information, such as whether a column is a primary or foreign key. In IBM DB2 version 9 databases, the Browser additionally shows registered XML schemas in a separate folder (*see screenshot below*).

This section describes the following:

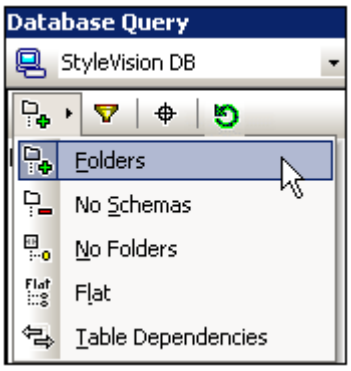
- The layouts available in the Browser pane.
- How to filter database objects.
- How to find database objects.
- How to refresh the root object of the active data source.

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 (*screenshot below*) and select the layout from the drop-down list. Note that the icon changes with the selected layout.



The available layouts are:

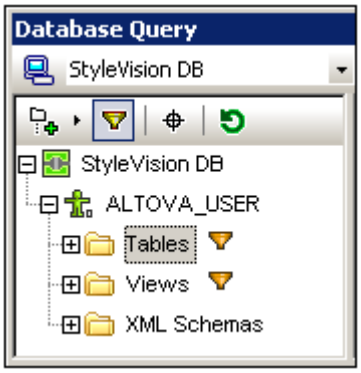
- *Folders:* Organizes database objects into folders based on object type in a hierarchical tree, this is the default setting.
- *No Schemas:* Similar to the Folders layout, except that there are no database schema folders; tables are therefore not categorized by database schema.
- *No Folders:* Displays 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.

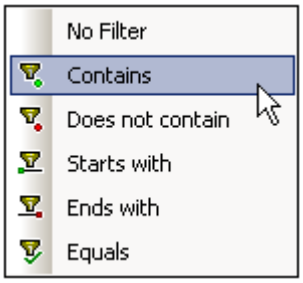
To filter objects in the Browser, do the following:

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*).

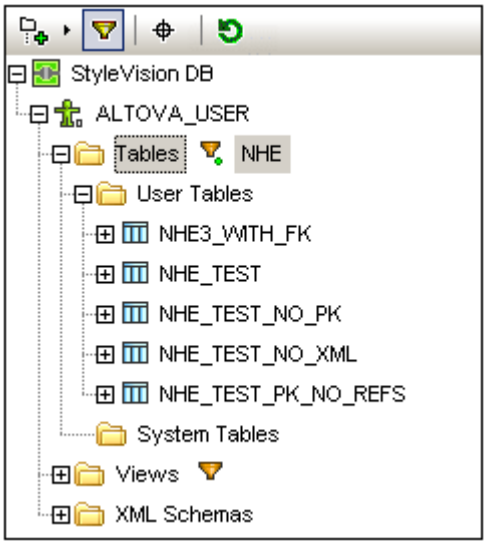


2. Click the filter icon next to the folder you want to filter, and select the filtering option

from the popup menu, for example, `Contains`.



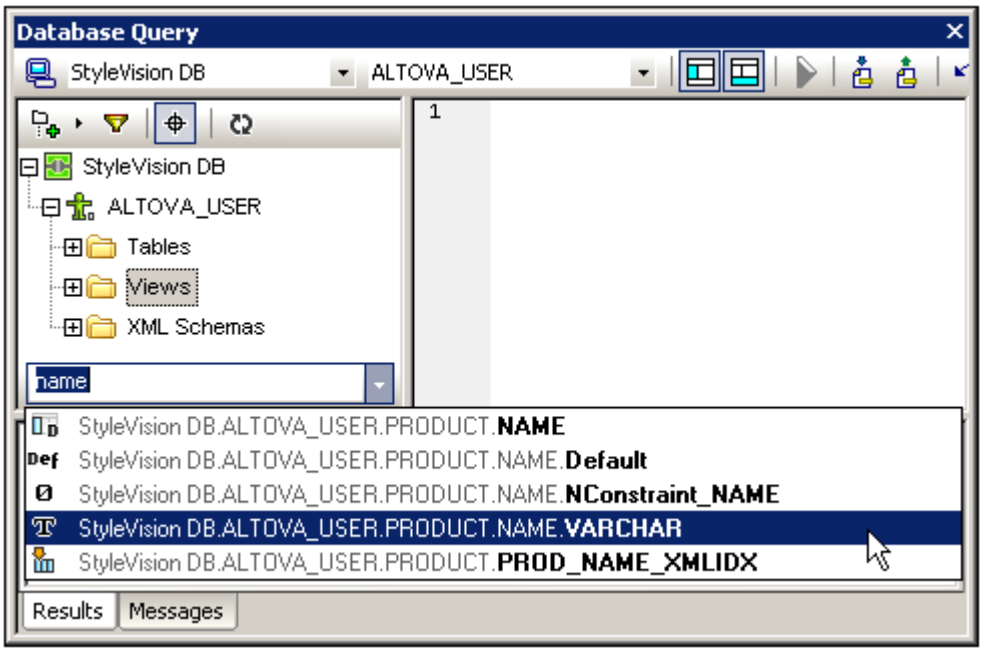
3. In the entry field that appears, enter the filter string (in the screenshot below, the filter string on the `Tables` folder is `NHE`). The filter is applied as you type.



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.

Refreshing the root object
The root object of the active data source can be refreshed by pressing the Refresh button of the Browser pane's toolbar.

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

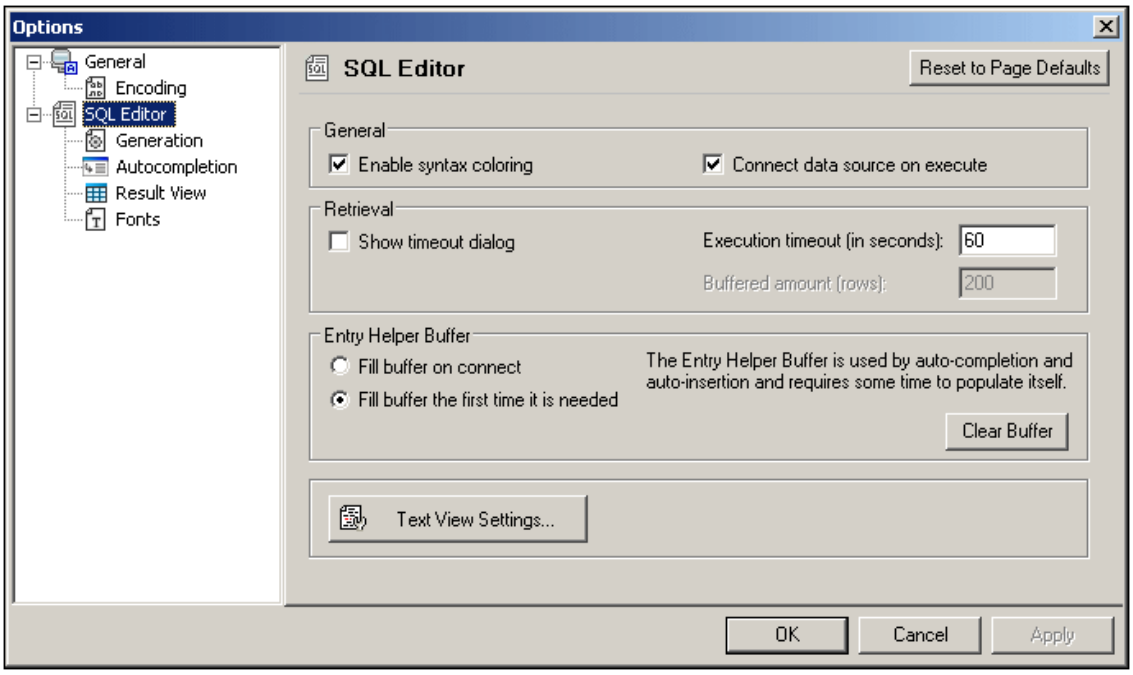
SQL Editor icons in the Database Query toolbar

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.
	**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.
	**Options**	Open the Options dialog of SQL Editor.
	**Open SQL Script in DatabaseSpy**	Opens the SQL script in Altova's DatabaseSpy product.

SQL Editor options

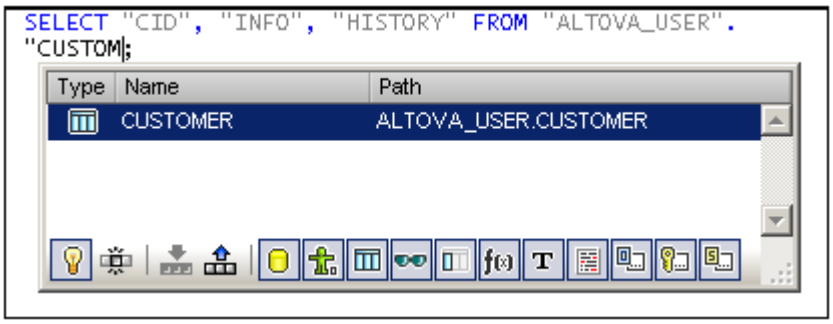
Clicking the **Options** icon in the Database Query toolbar pops up the Options dialog (*screenshot below*). A page of settings can be selected in the left-hand pane, and the options on that page can be selected. Click the **Reset to Page Defaults** button to reset the options on that page to their original settings.



The key settings are as follows:

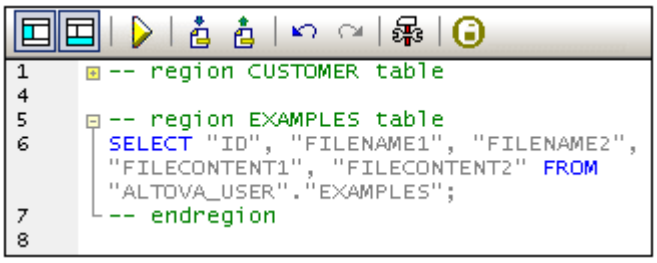
- ***General | Encoding:*** Options for setting the encoding of new SQL files, of existing SQL files for which the encoding cannot be detected, and for setting the Byte Order Mark (BOM). (If the encoding of existing SQL files can be detected, the files are opened and saved without changing the encoding.)
- ***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 wither on connection to the data source or the first time it is needed.
- ***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.
- ***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: 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 deselects 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.
	**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 the **Execute** 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. Messages about the execution are displayed in the Messages tab.

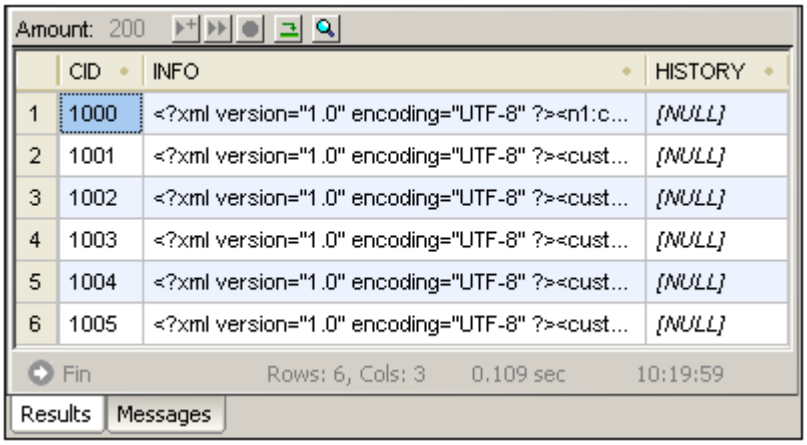
Results and Messages

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*).



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:

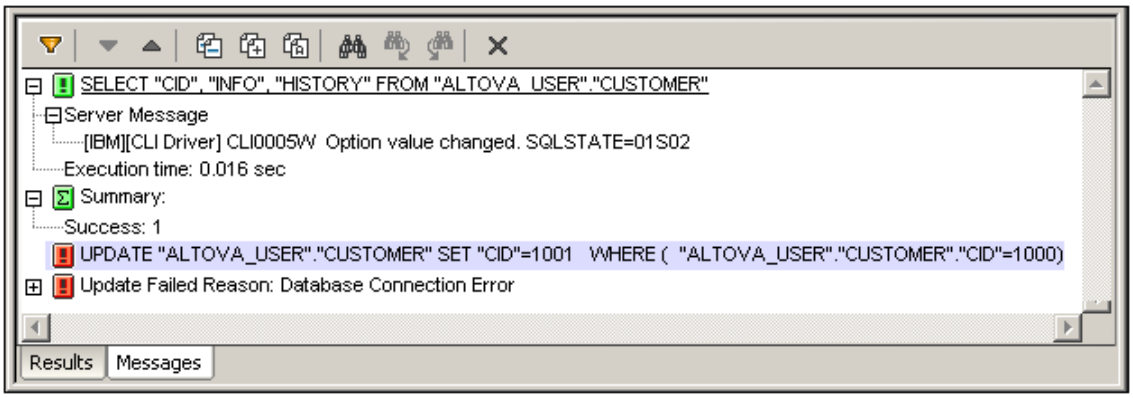
- *Sorting on a column:* Right-click anywhere in the column on which the records are to be sorted, then select **Sorting | Ascending/Descending/Restore Default**.
- *Copying to the clipboard:* This consists of two steps: (i) selecting the data range; and (ii) copying the selection. Data can be selected 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.

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.

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 Report pane.

Note: These toolbar icon commands are also available as context menu commands.

Chapter 14

SPS File and XBRL

14 SPS File and XBRL

Altova website: XBRL Rendering

In StyleVision, users can create an SPS based on an XBRL taxonomy. The taxonomy is displayed in a tree structure derived from the relationships in the presentation linkbase of the taxonomy. Users can then visually design the report to be created in the same way like he or she would design any other SPS: by dragging taxonomy components from the schema tree into the design. The XBRL Table Wizard enables the quick creation of a report in table format. The structure and contents of the table can be customized, and the table can subsequently be edited in the design to add new table elements and specify formatting properties. Furthermore, if a taxonomy is extended from the US-GAAP taxonomy, tables can be automatically generated in line with best practices recommended for US-GAAP taxonomies.

This section is organized into the following sub-sections:

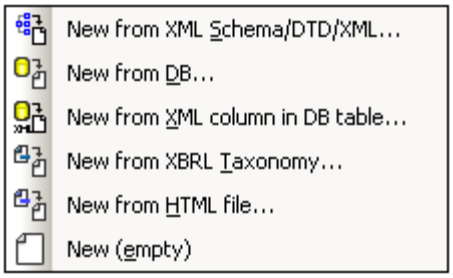
- Creating an XBRL SPS File describes how to start creating an XBRL SPS using the XBRL taxonomy as the starting point.
- Taxonomy Structure explains the structure of the schema tree, which is the source of the taxonomy components that will be used for the SPS design.
- The XBRL Table Wizard shows how to use the XBRL Table Wizard.
- XBRL Templates describes the various XBRL templates that can be inserted in the design.
- Properties and Formatting explains how CSS styles are used for formatting XBRL tables and how you can use these styles.

Useful inks
The XBRL International website is a good reference point for XBRL. The XBRL recommendations can also be accessed via the XBRL International website.

14.1 Creating an XBRL SPS File

To create a new SPS file based on an XBRL taxonomy, do the following:

1. Click the menu **File**, mouse over the **New** command and, in the submenu that rolls out (*screenshot below*), click the command **New from XBRL Taxonomy**.

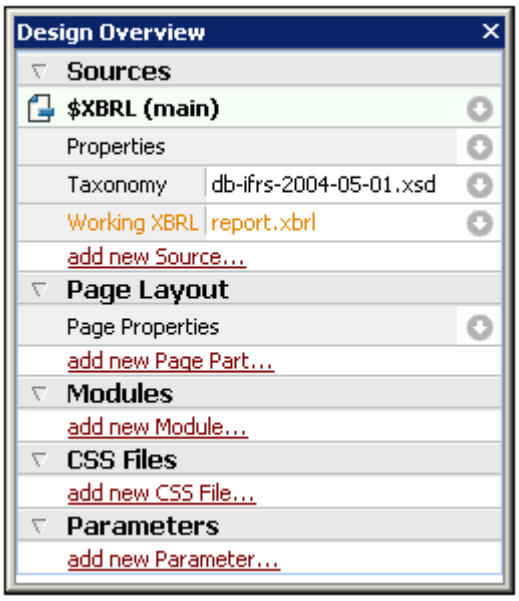


2. In the dialog that pops up, browse for and select the required XBRL taxonomy, then click **Open**.
3. You will be prompted to assign a Working XBRL File. If you wish to assign one, click **Browse** and select the XBRL instance file you wish to use as the Working XBRL File. The data from the Working XBRL File will be used for the previews. Alternatively, you can choose to not assign a Working XBRL File by clicking the **Skip** button. A Working XBRL File can be assigned at any later time with the **File | Assign Working XML File** command.

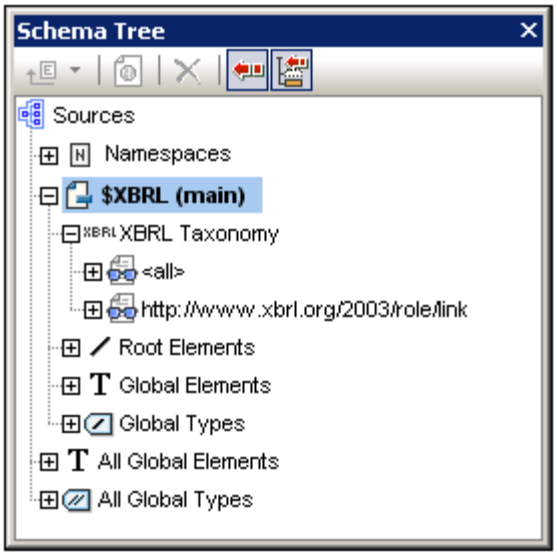
A new SPS based on the XBRL taxonomy will be created. The main aspects of the new SPS to note are the following:

- Design View displays a root XBRL template with a `contents` placeholder (*screenshot below*).

- The Design Overview sidebar (*screenshot below*) lists the taxonomy file and Working XBRL File. This window can be used to add other SPS elements as described in the Design Overview section. To set properties of the source taxonomy, right-click the Properties item or click its Context Menu icon and select the command **Edit XBRL Source Taxonomy Properties**. The dialog that appears is described in the section, Taxonomy Source Properties.



- The Schema Tree sidebar displays the XBRL taxonomy in a tree form. This tree structure is derived from the taxonomy's presentation linkbase (the links specifying presentation relationships between concepts; typically, the presentation linkbase is in a separate XML file).

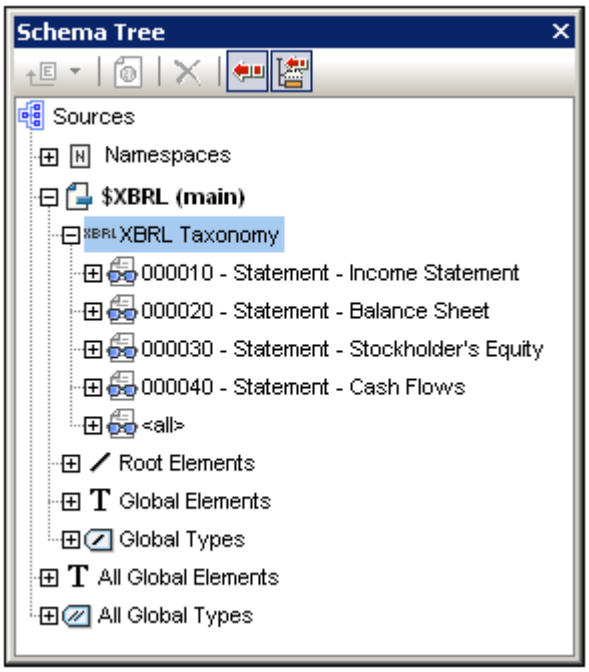


The structure of the schema tree is described in the next section, Taxonomy Structure.

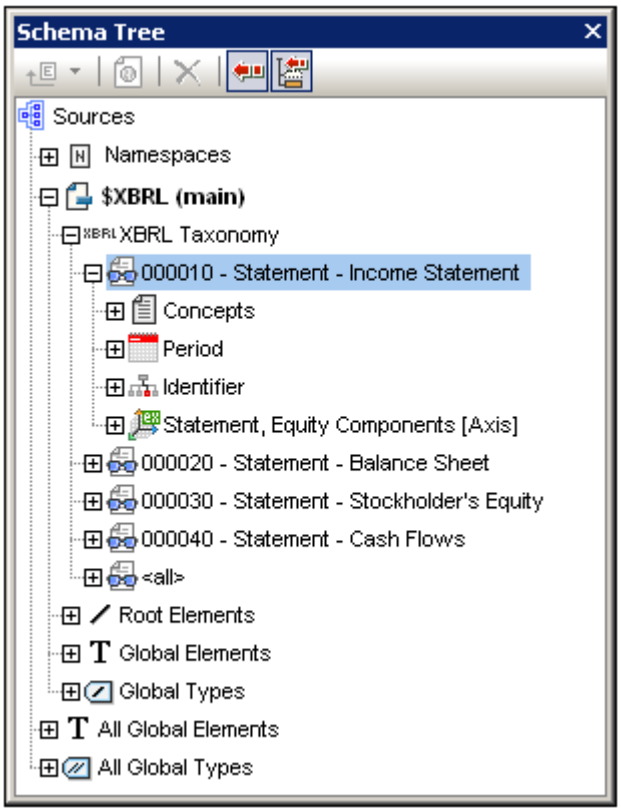
14.2 Taxonomy Structure

The structure of the taxonomy in the schema tree (*see screenshot below*) is derived from the taxonomy's presentation linkbase (the links specifying presentation relationships between concepts; typically, the presentation linkbase is in a separate XML file).

First level: presentation links
The taxonomy's tree structure organizes the taxonomy's concepts according to information in the presentation linkbase. In a presentation linkbase, a set of related concepts are grouped within a `presentationLink` element. The first level of the tree structure (*screenshot below*), therefore, represents the presentation links in the presentation linkbase. The screenshot below shows a taxonomy with four items representing the four presentation links in the taxonomy. Additionally on this first level, an item named `<all>` displays all the taxonomy concepts in a flat list. The `<all>` item contains all taxonomy concepts, including those that are not included in the presentation linkbase.

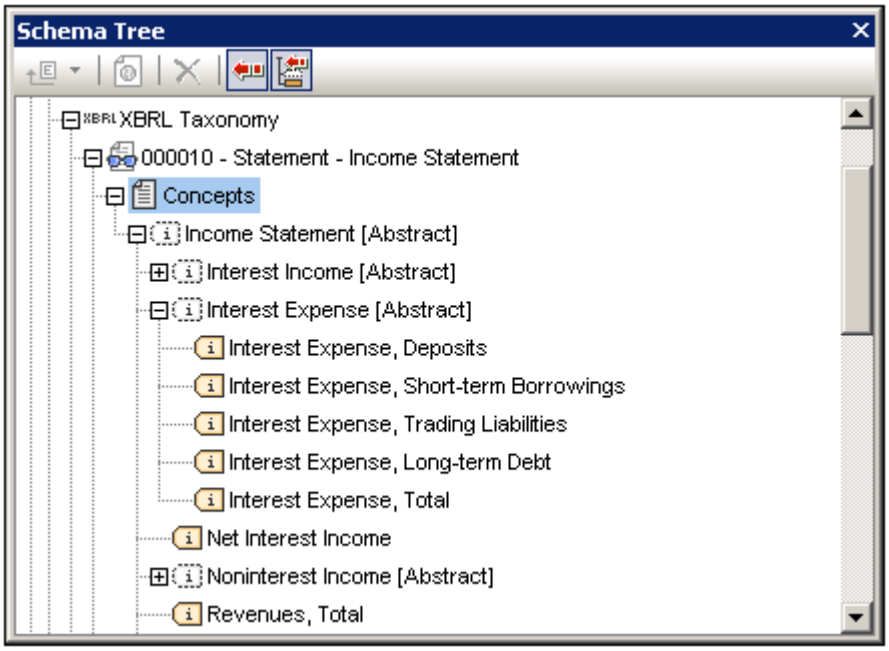


Second level: concepts, periods, identifiers, dimensions
The second level, within a single presentation link, shows the concepts, periods, and identifiers within that presentation link. Additionally, if concepts contained in a presentation link have dimension definitions, then that dimension is listed in the relevant presentation link.

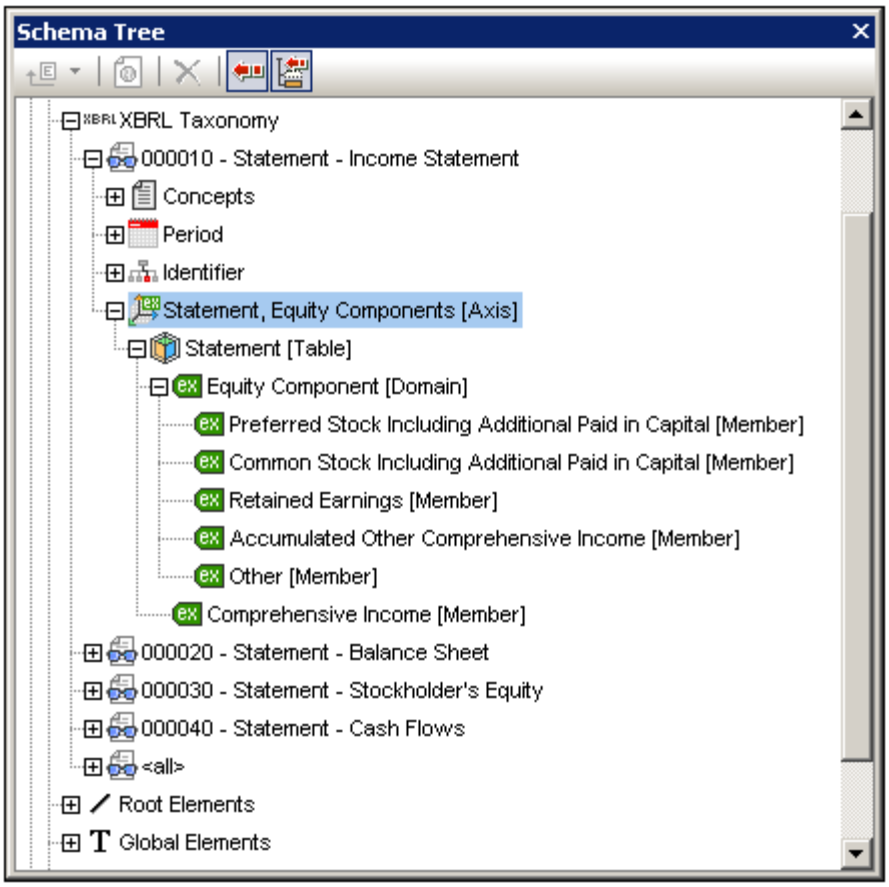


At the second level of the XBRL taxonomy, therefore, the following items appear:

- ***Concepts:*** A tree structure is created based on the presentation arcs within the presentation link. Each presentation arc is evaluated and the resultant relationships produced by the network of presentation arcs is represented in a tree. The white icons in the tree are abstract items; these cannot occur in the instance file but are used in the presentation linkbase to group XBRL items.



- ***Periods:*** Lists the various period types that a fact in an instance document can have (`xbrli:startDate`, `xbrli:endDate`, `xbrli:instant`, and `xbrli:forever`). In the schema tree the `xbrli:period` element and its allowed children (the four period types listed above) are listed and can be inserted individually in the design.
- ***Identifiers:*** Lists the `scheme` attribute of the `xbrli:identifier` element. The `xbrli:identifier` element and its `scheme` attribute can be inserted in the design.
- ***Dimensions:*** If a concept in a presentation link has a dimension (dimensions are defined in the definitions linkbase), then that dimension is listed for that presentation link (*screenshot below*). Dimensions are indicated in the tree with `[Axis]`, hypercubes with `[Table]`, domains with `[Domain]`, and domain members with `[Member]`.

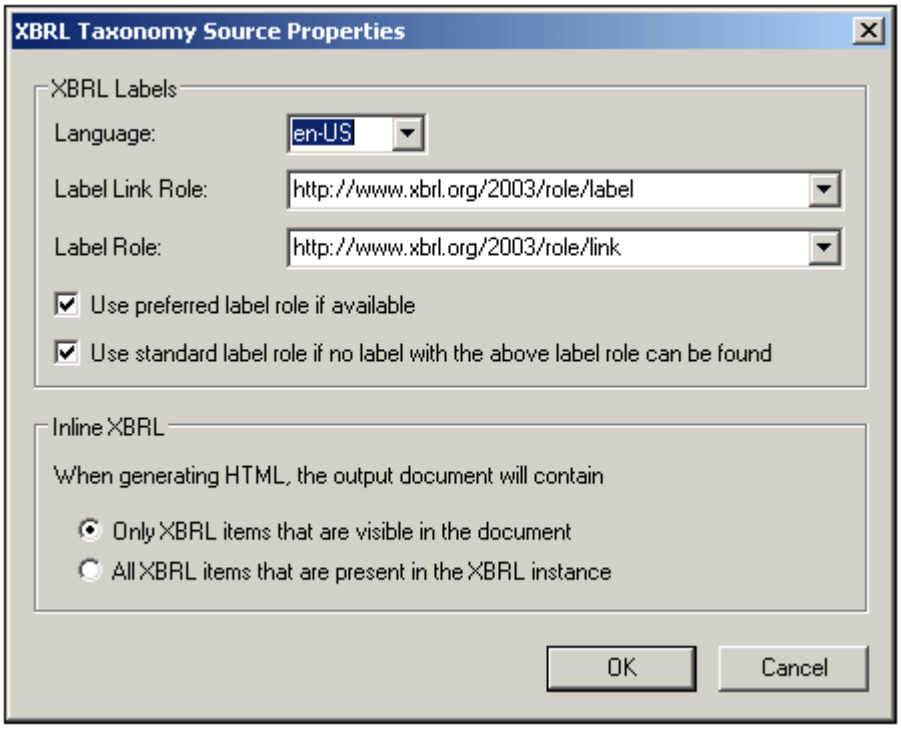


The `<all>` item in the schema tree

The `<all>` item in the schema tree contains a flat list of all concepts in the taxonomy, irrespective of whether they are included in the presentation linkbase or not. This enables access to concepts that are not present in the presentation linkbase. Such scenarios are possible, for example, when a taxonomy is extended to include a small number of new concepts that are not added to the presentation linkbase, or when no presentation linkbase is associated with the taxonomy.The `<all>` item additionally lists the period and identifier items, and optionally any dimensions that have been defined.

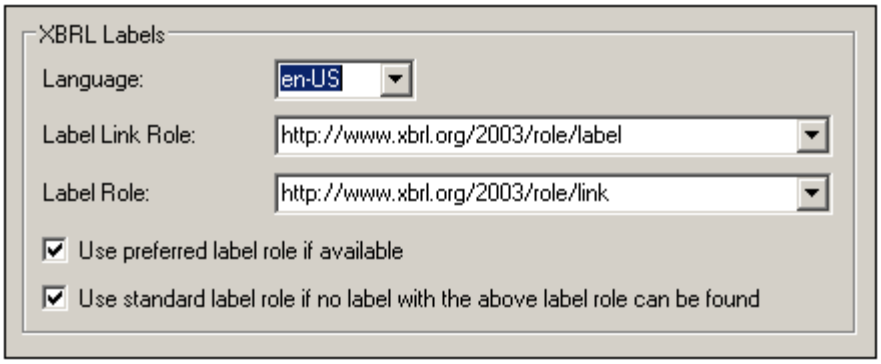
14.3 Taxonomy Source Properties

The Taxonomy Source Properties dialog (*screenshot below*) enables XBRL Label options and Inline XBRL options to be set. The dialog has two panes: (i) XBRL Labels, and (ii) Inline XBRL.



XBRL Labels

Items in a taxonomy can have multiple labels, but only one label of each set can be used in the design. Which one is used is specified in the XBRL Taxonomy Source Properties dialog (accessed via the Properties item in the Design Overview window). Using a combination of the options in this dialog (*screenshot below*), the desired label properties can be selected for the document as a whole.



The XBRL Taxonomy Source Properties dialog enables you to select the required label properties using the following options:

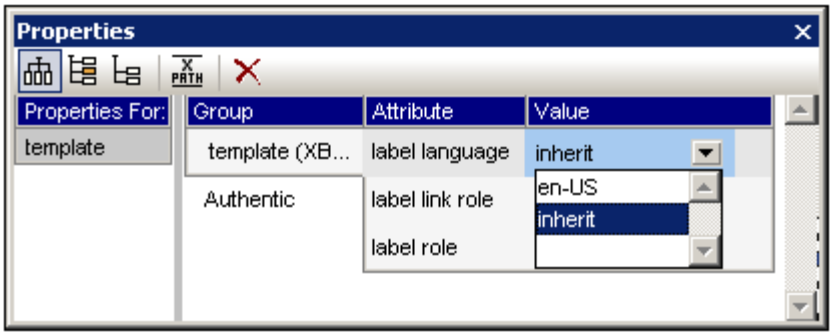
- Each of the three combo boxes (*Language; Label Link Role; Label Role*) lists all options in that category that are used in the taxonomy. For example, the combo box for the

Language option lists every language that has been specified in the taxonomy. Select the language in which you require labels to appear. In the same way, select the desired label link role and label role.

- On presentation arcs, there is an optional attribute that specifies the preferred label role. If this is available on a presentation arc, it will be used if the *Preferred Label Role* check box is checked (the default setting).
- The standard label role is that named `http://www.xbrl.org/2003/role/label` and will be used if: (i) the label role specified in the dialog cannot be found, and (ii) the *Standard Label Role* option is checked. The *Standard Label Role* option is checked by default.

Overriding the document's label properties

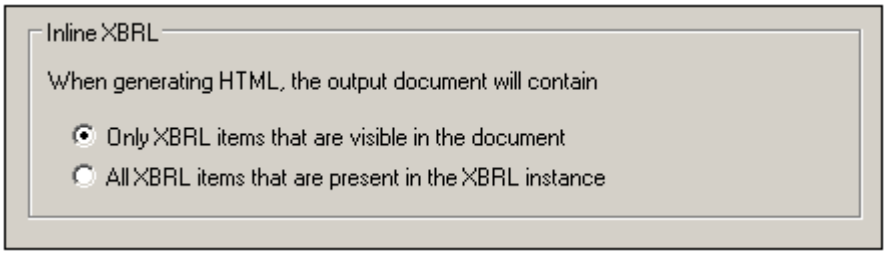
The label properties for the document (made in the XBRL Taxonomy Source Properties dialog as described above) can be overridden for specific taxonomy items by: (i) selecting the relevant item in the design, and (ii) setting properties for that item's label in the Properties sidebar (*screenshot below*).



Inline XBRL

XBRL items (facts) from the source XBRL instance document may or may not be displayed in the SPS design. The Inline XBRL options in the XBRL Taxonomy Source Properties pane enables you to select whether:

1. Even source XBRL items that are not included in the SPS design are generated in the (X)HTML output, or
2. Only the XBRL items that are included in the SPS design are generated in the (X)HTML output. Items that are not displayed in the design will be output as hidden data inside the `<HEAD>` element of the (X)HTML document. (Note that fractions in hidden data do not include numerators and denominators.)

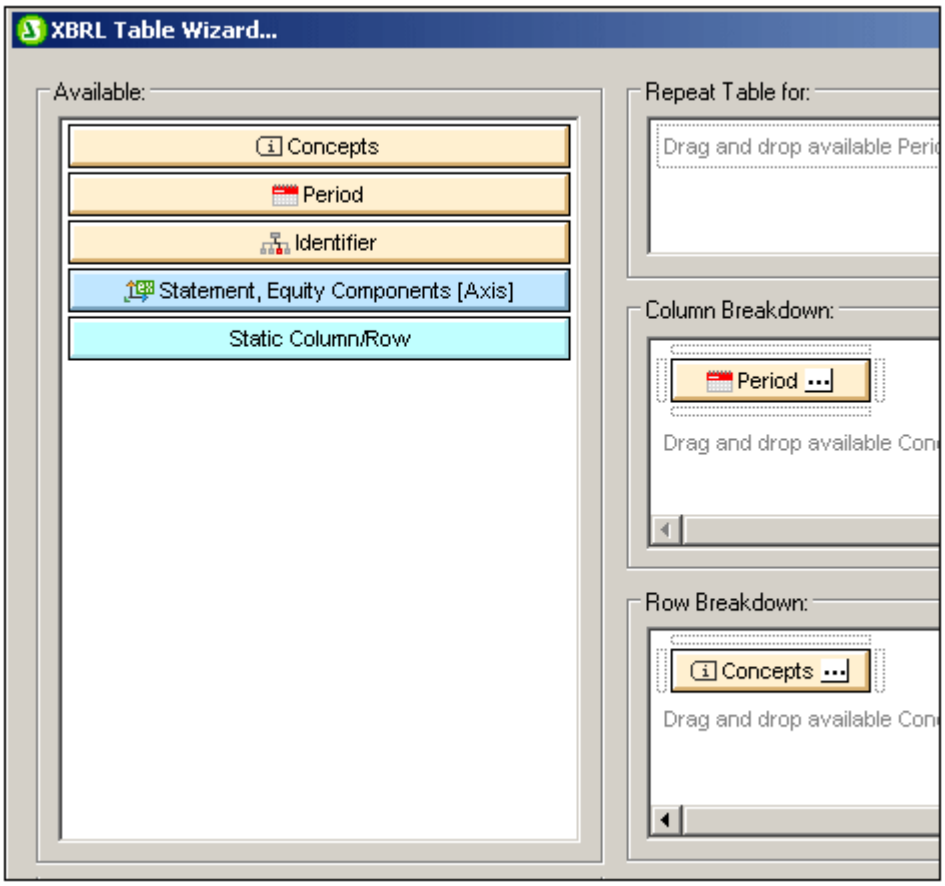


To specify what source XBRL items should be included in the output, select the appropriate radio button (*All XBRL items in the XBRL instance* or *Only XBRL items in the design document*).

14.4 The XBRL Table Wizard

When a concept is dragged from the source tree and dropped into the design, the XBRL Table Wizard pops up. The wizard helps you to quickly and easily create an XBRL report in the form of a table. The window of the XBRL Table Wizard consists of three parts:

1. An *Available* pane containing schema tree items that can be created as columns or rows of the table (*see screenshot below*);
2. Panes for defining the table structure (*screenshot below, see XBRL Table Structure for details*);
3. A pane for defining table options (*see XBRL Table Options for details*).



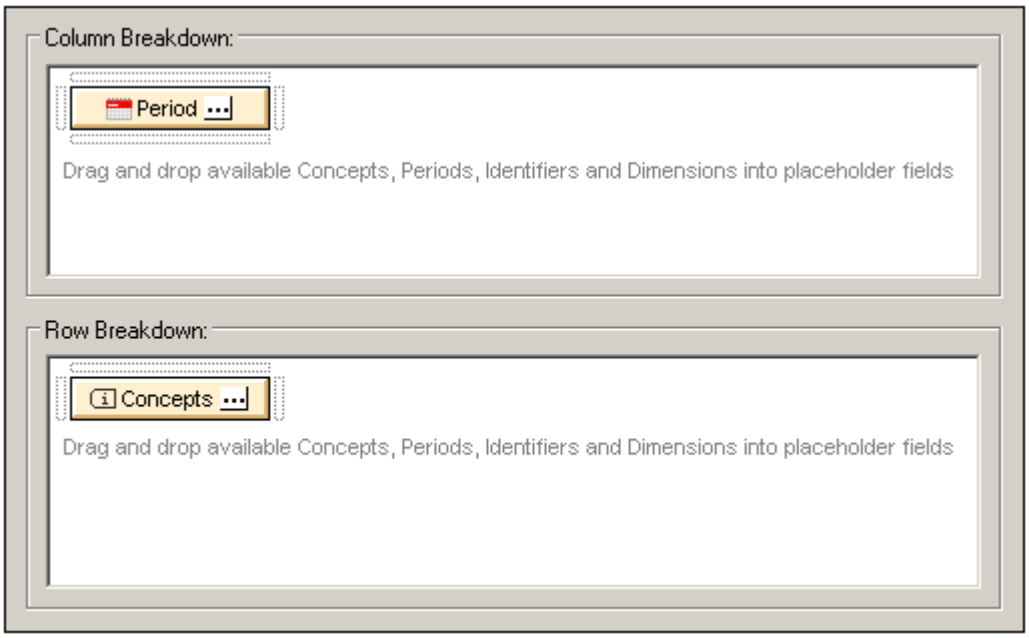
This section is organized into two parts:

- XBRL Table Structure describes how you create the XBRL table structure with the XBRL Table Wizard.
- XBRL Table Options explains the various options that can be specified for the XBRL table.

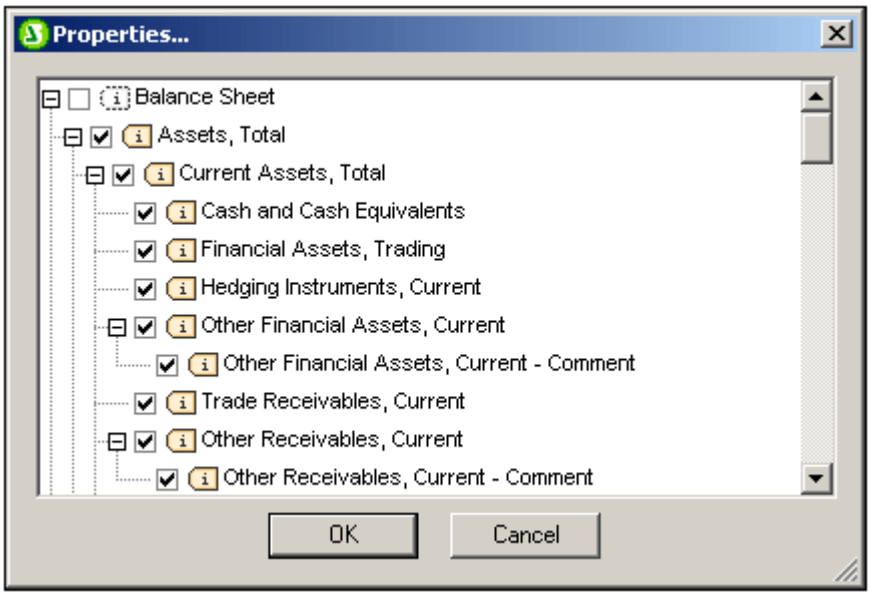
After specifying the design of the table, click the **OK** button to insert the table in the design. If you wish to change any of the table design settings after the table has been inserted in the design, delete the table and recreate it. When you drop the concept into the design and open the XBRL Table Wizard, the Wizard will have the settings that were made for the previous table. You can then modify these settings as required and press **OK** to insert the modified table in the design.

XBRL Table Structure

When a concept from the schema tree is created as an XBRL table, its descendant concepts, periods, and identifiers become available (in the *Available* pane) for creation as rows and columns of the XBRL table. To create one of these items from the *Available* pane as columns or rows, drag it into the *Column Breakdown* pane or *Row Breakdown* pane (*screenshot below*) and drop it into a placeholder field. In the screenshot below, the *Concepts* item has been created as rows while the *Period* item has been created as columns. To delete an item that has been dropped into a placeholder field of the table structure, select it and press the **Delete** key.



Concepts
When the Concepts item is dragged into, say the Row Breakdown pane, the descendant concepts (of the concept that is being created as the XBRL table) will be created as the rows of the table. By default all descendant concepts will be created as rows of the table. To deselect individual concepts or to modify the selection, click the Ellipsis icon ... in the Concepts item. This pops up the Properties dialog (*screenshot below*), in which you can select/deselect the descendant concepts to be created as rows. Then click **OK**.



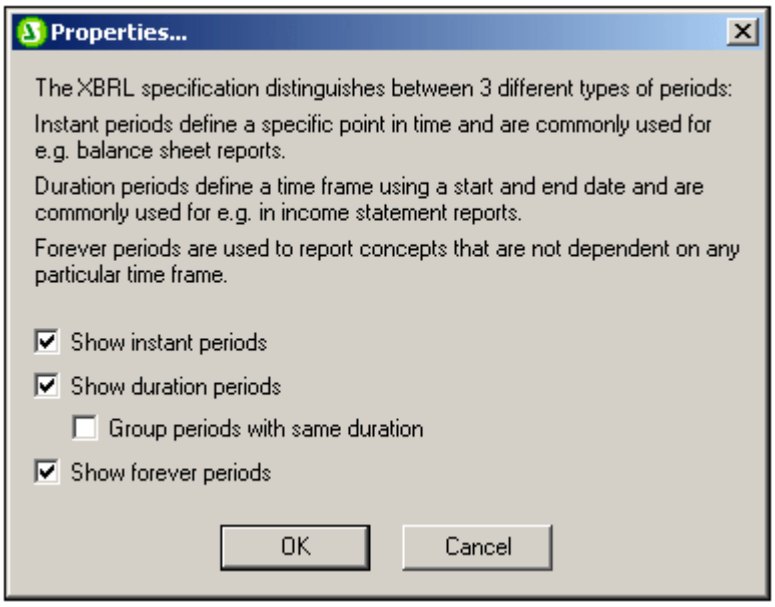
Notice that the display of the descendant concepts in the Properties dialog is hierarchically structured. In the design, rows will be indented so as to reflect this structure (*screenshot below; compare with structure in Properties dialog*).

Additional options for the presentation of concepts in the design are available in the Table Options pane and in the Table group of properties in the Properties entry helper.

Periods

There are three types of periods that can be defined for a concept: *instants*, *durations*, and

forever. What periods are displayed in the table can be specified in the Periods Properties dialog (*screenshot below*). To access the Periods Properties dialog, click the Ellipsis icon ... in the Periods item.



The following options are available:

- Instant periods, duration periods, and forever periods can be created in the design individually by checking or unchecking the respective check boxes.
- Instant periods are displayed first (left to right, top to botttom), then duration periods, then forever periods.
- Duration periods of the same length can be grouped by checking the *Group periods with same duration* check box. This causes durations of the same length to be grouped together, progressing from smaller durations to longer durations. For example, all three-month durations would be grouped together, be followed by all six-month periods, and then by all nine-month periods.

Note: If a date range is specified in the XBRL Table Options dialog, this range will be applied to periods; so only periods in this range will be processed.

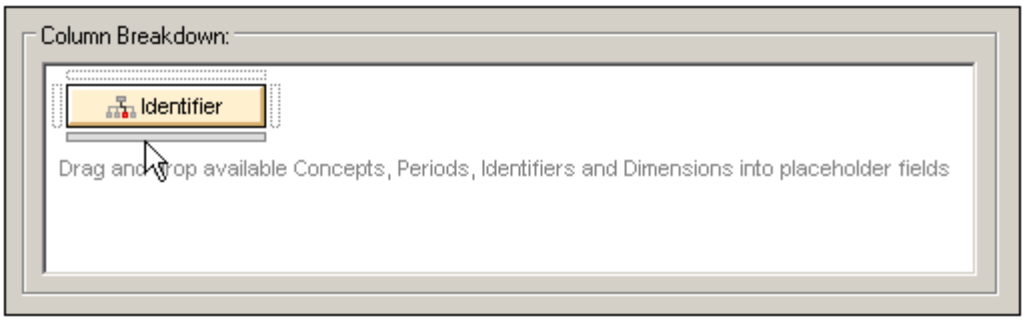
Identifiers
Inserting an Identifier item in a column or row causes each unique identifier value to receive a column or row, respectively. The contents of facts with a particular `identifier` value will be listed in the column/row for that identifier value. The screenshot below shows the HTML output of an XBRL instance file in which there is only one identifier value: `Nanonull Inc.`

Balance Sheet (in Millions)	Nanonull Inc
⊟ Assets, Total	€21.49€24.02
⊟ Current Assets, Total	€10.65€12.32
Cash and Cash Equivalents	€1.51€2.72
Trade Receivables, Current	€4.62€5.34
Tax Receivables, Current	€0.24€0.25
Inventories	€3.48€3.59
Other Assets, Current	€0.79€0.42
⊟ Non Current Assets, Total	€10.85€11.7
Property, Plant and Equipment	€1.21€1.42
Intangible Assets	€0.82€1.11
Goodwill	€6.27€6.65
Other Financial Assets, Non Current	€0.34€0.34
Deferred Tax Assets	€2.21€2.18

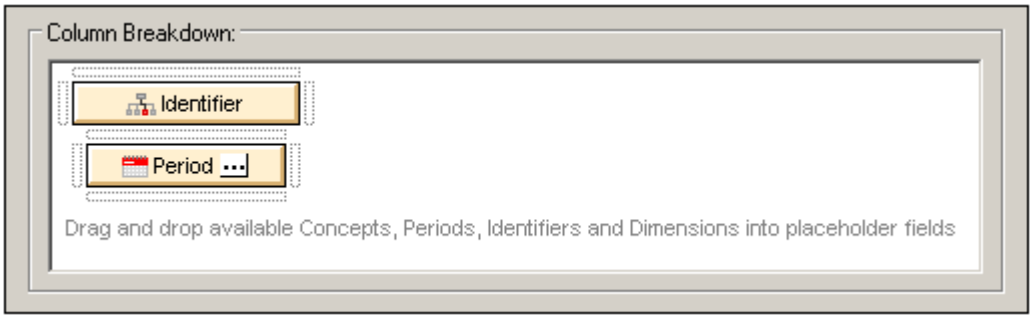
In the screenshot above, notice that entries in the *Nanonull Inc* column are a concatenation of two values. This is because, in the instance file, each fact (such as `Assets, Total`) occurs twice, each occurrence specified for the same identifier (`Nanonull, Inc`) but for different periods. See the next section, Periods and Identifiers, for a description of how to create separate columns for each unique identifier-period value.

Periods and identifiers

To create separate columns for each identifier's unique periods, do the following. In the XBRL Table Wizard, first drag the Identifier item into the *Column Breakdown* pane. Then drag the Periods item to the *Column Breakdown* pane, to the placeholder field below the Identifier item. The placeholder field becomes highlighted (*see screenshot below*).



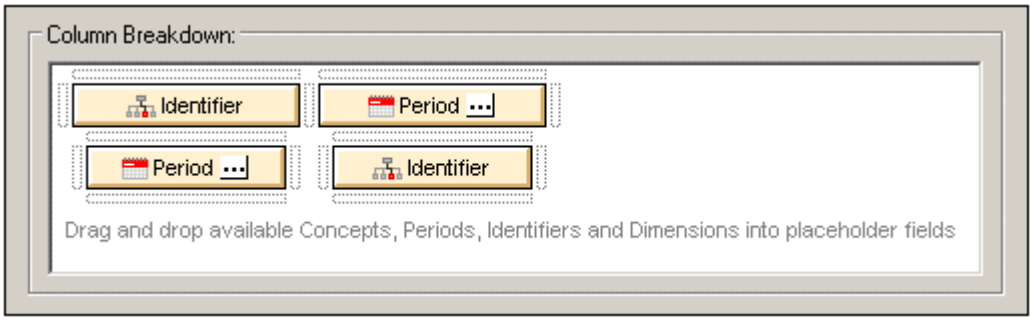
When the placeholder field becomes highlighted, drop the Periods item on it. The *Column Breakdown* pane will look something like this:



The effect of this is to create separate columns for each period of each identifier. The screenshot below shows a table with columns for two periods of the `Nanonull, Inc` identifier.

Balance Sheet (in Millions)	Nanonull Inc 2004-09-30	Nanonull Inc 2003-12-31
Assets, Total	€21.49	€24.02
Current Assets, Total	€10.65	€12.32
Cash and Cash Equivalents	€1.51	€2.72
Trade Receivables, Current	€4.62	€5.34
Tax Receivables, Current	€0.24	€0.25
Inventories	€3.48	€3.59
Other Assets, Current	€0.79	€0.42
Non Current Assets, Total	€10.85	€11.7
Property, Plant and Equipment	€1.21	€1.42
Intangible Assets	€0.82	€1.11
Goodwill	€6.27	€6.65
Other Financial Assets, Non Current	€0.34	€0.34
Deferred Tax Assets	€2.21	€2.18

In the *Column Breakdown* pane, available items can be dropped repeatedly in the placeholder fields. The screenshot below, for example, shows how the Identifier and Period items have been dropped into adjacent placeholder fields.

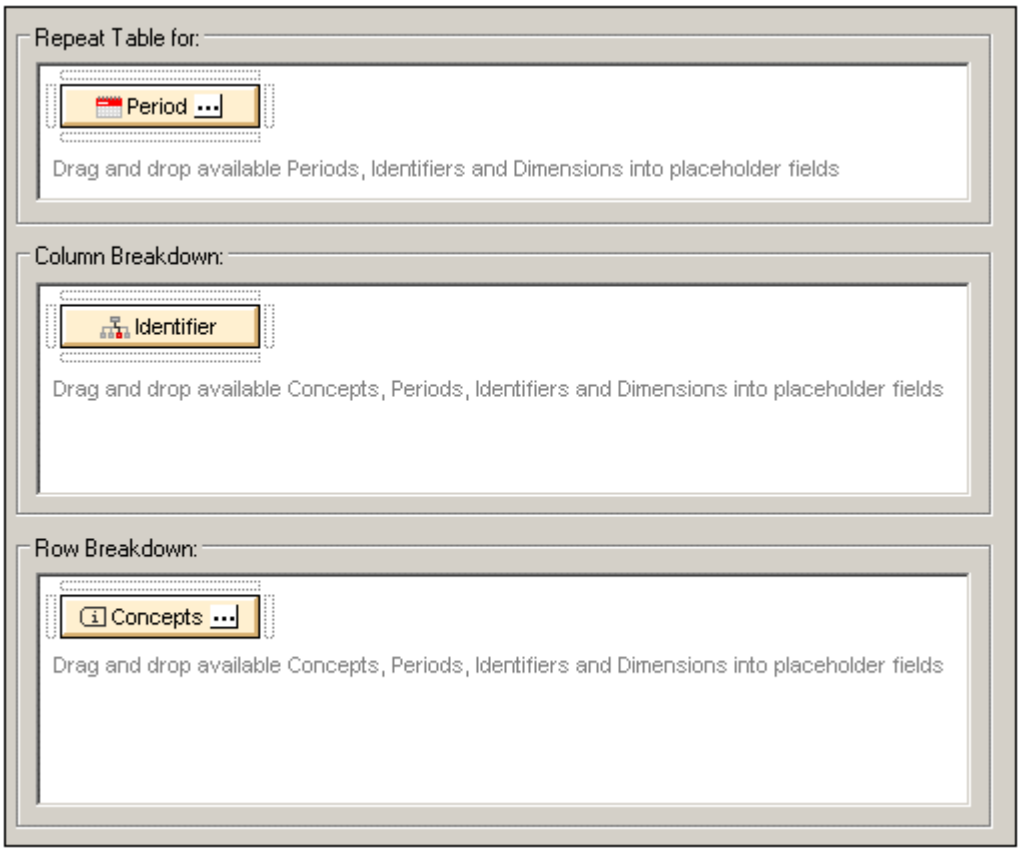


This results in output (*screenshot below*) where the Identifier-Period columns are displayed first (that is, on the left), and these columns are followed (on the right) by Period-Identifier columns.

Balance Sheet (in Millions)	Nanonull Inc 2004-09-30	Nanonull Inc 2003-12-31	2004-09-30 Nanonull Inc	2003-12-31 Nanonull Inc
Assets, Total	€21.49	€24.02	€21.49	€24.02
Current Assets, Total	€10.65	€12.32	€10.65	€12.32
Cash and Cash Equivalents	€1.51	€2.72	€1.51	€2.72
Trade Receivables, Current	€4.62	€5.34	€4.62	€5.34
Tax Receivables, Current	€0.24	€0.25	€0.24	€0.25
Inventories	€3.48	€3.59	€3.48	€3.59
Other Assets, Current	€0.79	€0.42	€0.79	€0.42

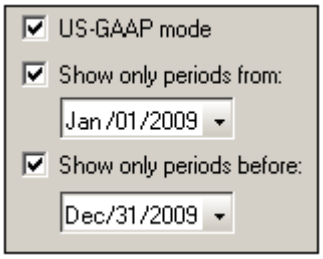
Repeating tables

The XBRL Table Wizard enables you to create a set of tables that repeat on a specific criterion. In the screenshot below, for example, a table is created with a structure in which concepts are rows and identifiers are columns. This table structure is repeated for each period (the Period item has been dropped into the *Repeat Table For* pane).

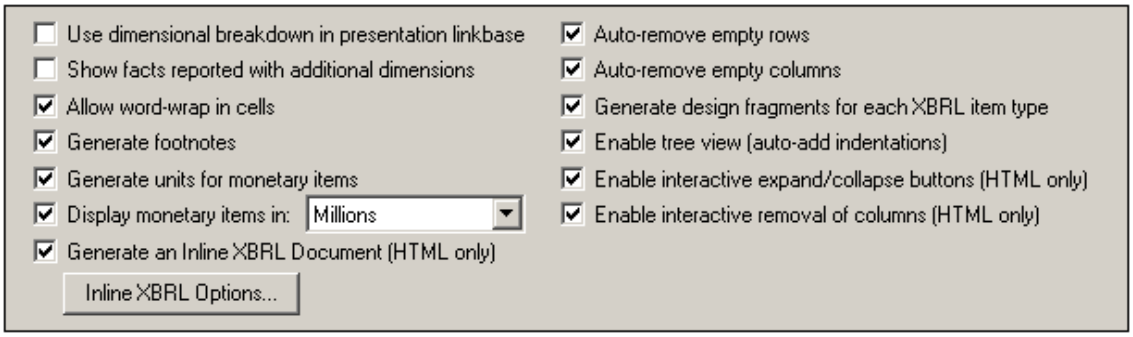


XBRL Table Options

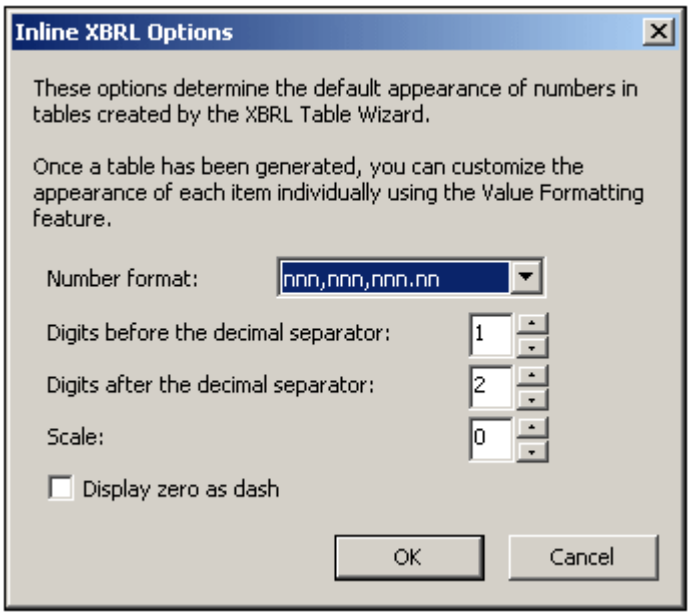
At the bottom of the XBRL Table Wizard is a list of options for the table being created (*screenshots below*). Here, you can also switch to US-GAAP mode if your taxonomy is based on US-GAAP and draw on US-GAAP-specific information for use in creating the table. The range for which periods should be considered can also be set (*see screenshot below*).



Other XBRL table options that may be set are as follows:



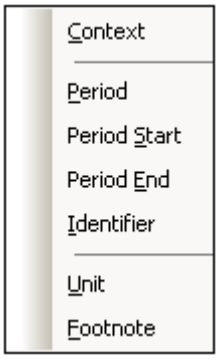
- *Use dimensional breakdown in presentational linkbase:* The dimensional structure specified in the presentation linkbase will be used to locate concepts in the table design.
- *Show facts reported with additional dimensions:* When facts have additional dimensions, these are reported.
- *Allow word-wrap in cells:* Word-wrapping in table cells can be switched on.
- *Generate footnotes:* Footnote templates will automatically be generated. There are two parts to footnotes: (i) footnote references are inserted for elements, and (ii) the actual footnotes are created at the bottom of the table.
- *Generate units for monetary items:* A Unit template is automatically inserted for monetary items in the design. This template applies the global template `xbrli:measure` . If this option is unchecked, the Unit template will not be inserted. However, it can be inserted at individual locations in the design at any time via the context menu. See XBRL Templates for details.
- *Display monetary items in:* You can select number units between *Tens* and *Billions* for monetary values. The selected unit will apply to the entire table. Monetary values in the table will be reported in these units, for example, in millions.
- *Generate an Inline XBRL Document (HTML only):* The HTML output document will contain the Inline XBRL namespace and all other requisites for containing Inline XBRL elements. Clicking the **Inline XBRL Options** button pops up the Inline XBRL Options dialog (*screenshot below*), which enables you to specify the default number-formatting of the output document. These options are explained in the Inline XBRL section, they are the same as the options for *Non-fraction (regular numbers)*.



- *Auto-remove empty rows:* Empty rows in the output are removed.
- *Auto-remove empty columns:* Empty columns in the output are removed.
- *Generate design fragments for each XBRL item:* Default design fragments are generated for XBRL items (such as `xbrli:monetaryItemType1`). For the same XBRL item type used multiple times in the taxonomy, a new design fragment is generated for each instance of the XBRL item. Notice that the names of such generated design fragments has a counter appended to it. The counter is incremented by one each time a new design fragment is generated for the same XBRL item. Inline XBRL design fragmets are given a prefix of `ix_`.
- *Enable tree view (auto-add indentation):* In the output, concept rows will be set up in a hierarchy as specified in the presentation linkbase and indented accordingly.
- *Enable interactive expand/collapse buttons (HTML only):* Since the concepts constitute a hierarchy, concepts with descendants can be expanded or collapsed in HTML output. Expand/collapse buttons are created automatically in the HTML output, and the viewer can use these to customize the HTML display.
- *Enable interactive removal of columns (HTML only):* If checked, this option creates a remove button at the top of each column in the HTML output. By clicking this button, a viewer can remove a column in the HTML display.
- A time range can be specified for the report. Only facts within this time range will be displayed. Dates for the time range can be selected using the arrow keys. The **Left Arrow** and **Right Arrow** keys can be used to select a date component, the **Up Arrow** and **Down Arrow** keys can be used to change the value of the selected date component up and down, respectively.

14.5 XBRL Templates

XBRL templates for various XBRL components can be inserted in the design via the **Insert XBRL Element** command (in the **Insert** menu or context menu, *screenshot below*). XBRL templates are useful because they enable XBRL components to be created at desired locations in the design. When these templates are created via the **Insert XBRL Element** command, they are created as empty templates, and content will have to be designed for them. XBRL templates can be edited just as any other template. For example, conditions or Design Fragments can be inserted within the template.



Template location
When inserting an XBRL template, make sure that you understand the hierarchical context within which the node is being inserted. The following points should be noted.

- If the template is applied to more than one element, then the output will be a concatenation of the contents of these elements.
- If the template is within a dimension template, then it returns a concatenation of the selected elements in that dimension.
- If the template is not within a dimension, and within, say, a period element or identifier element, it will return all context elements that have the value of that particular period or identifier.
- To filter the contents of a template, insert a suitable condition around the contents of the template.

Context
The Context template represents the XBRL `context` element in the instance file.

```
<xbrli:context id="FY06">
  <xbrli:entity>
    <xbrli:identifier scheme="http://www.altova.com/XBRL/DocEx1/Ex1.htm">00058
</xbrli:identifier>
  </xbrli:entity>
  <xbrli:period>
    <xbrli:startDate>2006-01-01</xbrli:startDate>
    <xbrli:endDate>2006-12-31</xbrli:endDate>
  </xbrli:period>
</xbrli:context>
```

When the Context template is inserted in the design, it is created as an empty template. You must therefore insert a `contents` placeholder in the design if you wish to output the contents of the element. Note the following points:

- The location where the context template is inserted is significant. So you must ensure

that you understand the hierarchical context within which the XBRL context node is inserted.
- Within a Context template a particular `context` element in the instance file can be selected by creating a condition around the `contents` placeholder. This could be done, for instance by specifying the value of the `id` attribute of a `context` element.

Period, Period Start, Period End
The Period, Period Start, Period End and Identifier templates represent, respectively, the XBRL elements `period`, `period/startDate`, and `period/endDate`. These elements occur within an `xbrli:context` element, in a structure as show in the code listing above.

When you insert the template in the design, it is created as an empty template. You must therefore insert a `contents` placeholder in the design if you wish to output the contents of the element. Note the following points:

- Each of these templates returns a sequence of unique values for the set of all elements selected for application of the template.
- A Period Start or Period End template does not need to be inserted within a Period template. These templates select the `xbrli:startDate` and `xbrli:endDate` elements.
- To restrict the items in the sequence that is output, the `contents` placeholder can be enclosed within a condition.

Identifier
Creates an empty template that matches the `entity/identifier` in the instance file. The `identifier` element occurs within an `xbrli:context` element, in a structure as show in the code listing above.

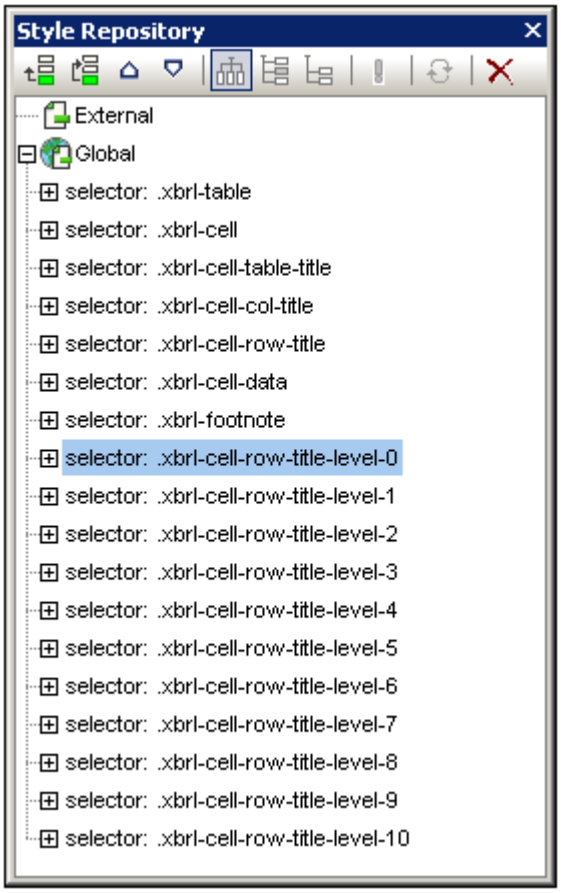
Unit
The Unit template is created empty, typically within an individual concept element. It is used to output the associated monetary unit (for example `USD` or `Euro`) of a monetary amount fact. You can insert the required monetary unit within the template in any way that you like (for example, by hard-coding it in the design or usining conditions to select the correct monetary unit. The XBRL Table Wizard generates an `xbrli:measure` global template to output a monetary symbol corresponding to the monetary unit specified in the instance file. You can use this global template locally within the Unit template.

Footnote
There are two parts to footnotes: (i) a footnote reference, and (ii) the actual footnote. The XBRL Footnote mechanism uses the TOC bookmarking and referencing system to create the footnotes. The Footnote template matches the XBRL `footnote` element and is created as an empty template. You can then design contents for the footnote and its footnote reference. Note that the XBRL Table Wizard automatically creates footnotes if the generate footnotes option is checked.

14.6 Properties and Formatting

When an XBRL table is created with the XBRL Table Wizard, it is created so that table properties and formatting can be applied via CSS. The mechanism works as follows:

- Table elements (for example, column headers, row headers, and cell contents) are assigned to distinct classes.
- Class selectors are created for these classes with certain default properties assigned to theses selectors. As a result, the table is displayed with the default CSS properties assigned to the various table element classes. The auto-generated class selectors and their properties can be viewed under the *Global* heading of the Style Repository sidebar (*screenshot below*).

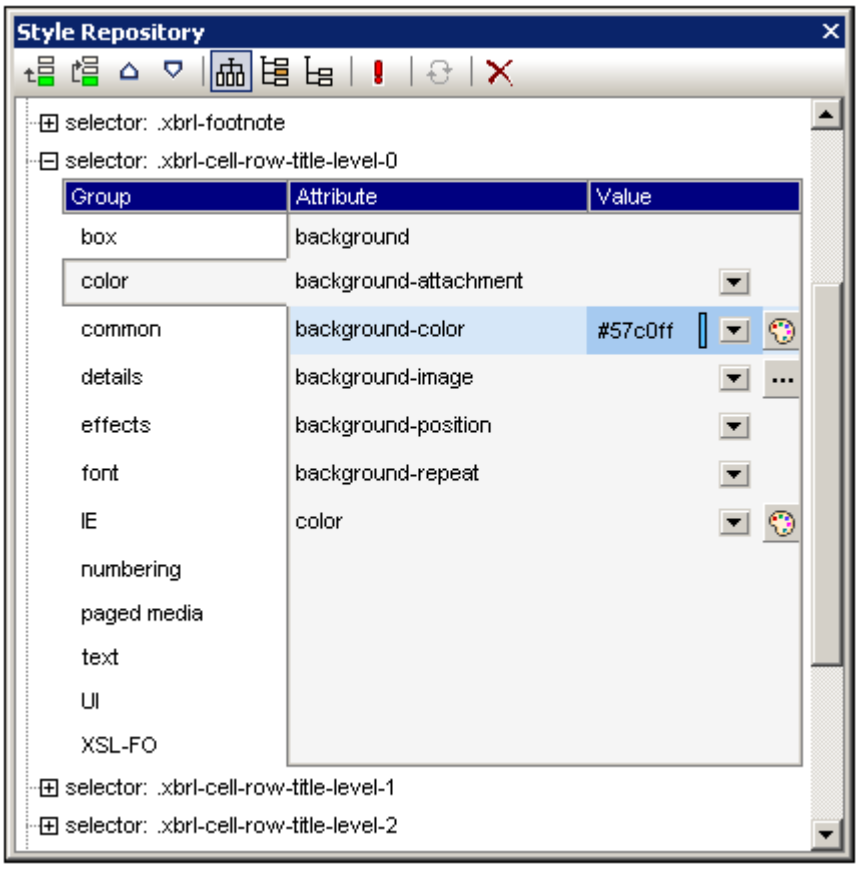


You can customize the formatting of the table by (i) modifying the default CSS properties of the StyleVision-generated class selectors; (ii) assigning your own classes and defining properties for these classes; (iii) setting additional styles in the Styles sidebar and Properties sidebar. How to do this in each of the three cases is described below.

Modifying properties of generated CSS class selectors

To modify properties of a CSS class selector that has been automatically generated, do the following:

1. In the Style Repository sidebar, expand that selector for which properties are to be modified (*see screenshot below*).



2. Select the required property group and then modify the value of the property you wish to change.

For more information about modifying CSS styles via the Style Repository sidebar, see the section, Working with CSS Styles. If you are not sure to what table element a particular selector applies, modify a property such as background-color and then check what element in the table design is affected.

Creating new classes and defining their properties
To insert a new class selector in the style repository, do the following:

1. Click the **Add** or **Insert** icon in the Style Repository toolbar.
2. Type in a name for the newly created selector item and press **Enter**.
3. In the expanded item box, define the required properties.

For more information about using CSS styles, see the section, Working with CSS Styles.

Properties via the Styles sidebar and Properties sidebar
Additional, styles can be set directly on table components via the Styles sidebar and Properties sidebar, that is without using class or id selectors . For a description of table-specific formatting see the sections, Formatting Static and Dynamic SPS Tables and Row and Column Display.

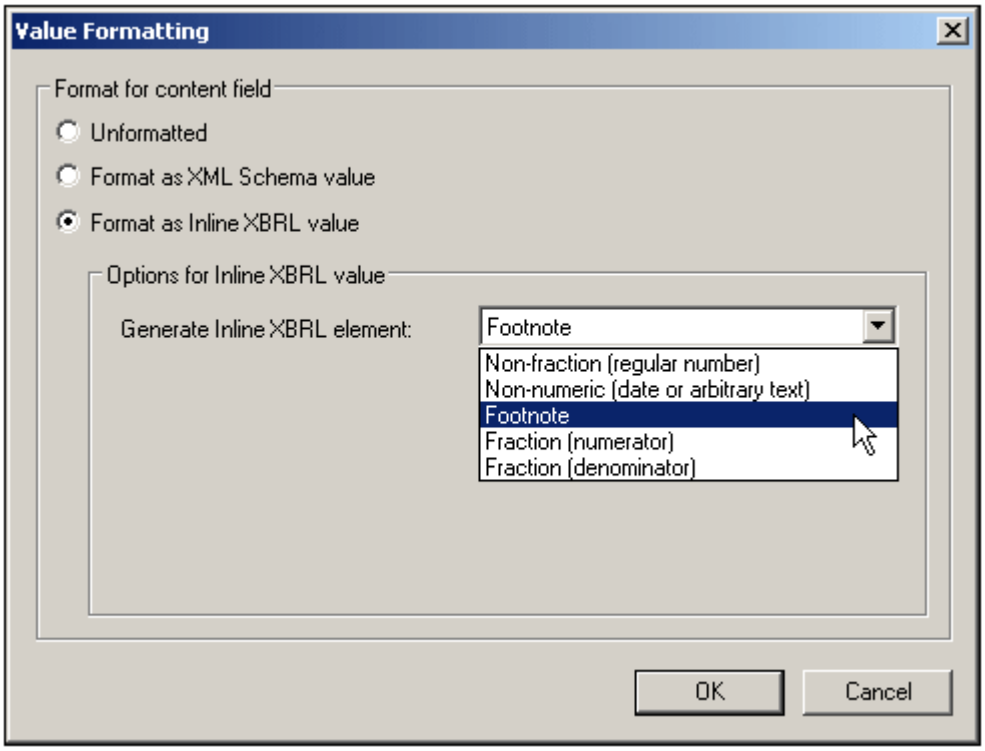
14.7 Inline XBRL

In an SPS design that **uses XSLT 2.0** (not XSLT 1.0), you can specify that content from an XBRL instance file be output to an (X)HTML file as an Inline XBRL element.

Inline XBRL elements are defined in the Inline XBRL specification and enable XBRL fragments to be embedded in an (X)HTML file. Internet browser applications typically render such elements as inline elements, and styling can be applied with CSS styles as required. The main advantage of having Inline XBRL elements in an (X)HTML file is that when the (X)HTML document is processed by an XBRL-generating application, the Inline XBRL markup in the (X) HTML document indicates the semantics of the XBRL fact, thus enabling the XBRL-generating application to extract the XBRL fact correctly and generate valid XBRL.

Formatting content as Inline XBRL
In an SPS that is based on an XBRL taxonomy, create Inline XBRL elements as follows:

1. Right-click the design component (`content` placeholder or Auto-Calculation) and select **Edit Value Formatting** from the context menu. This pops up the Value Formatting dialog (*see screenshot below*).
2. Select the *Format as Inline XBRL Value* radio button.



3. In the *Generate Inline XBRL Element* combo box (*see screenshot above*), select the required Inline XBRL element. The options for each Inline XBRL element are described below.

Note: Inline XBRL is not supported for single-line or multi-line input field components in the SPS design. For multi-line input fields, although the Inline XBRL element is generated, Internet browsers will display the Inline XBRL element tags.

Specifying the XBRL facts to include

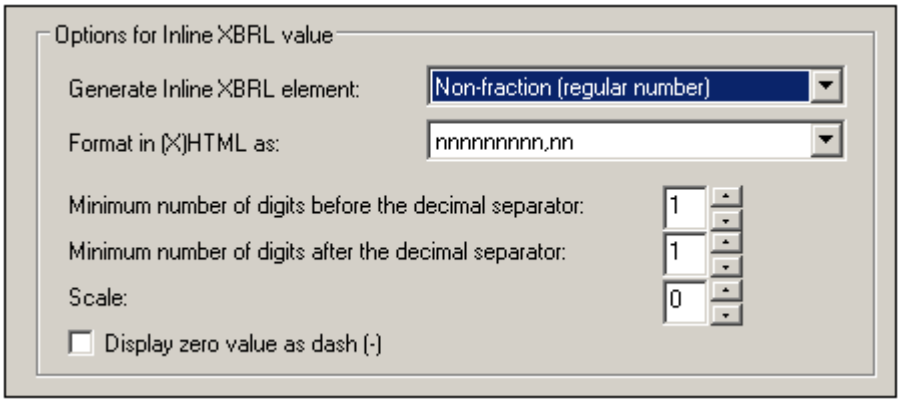
The XBRL instance document that will be used as the source document for the (X)HTML output document might contain more facts than you wish to present in the (X)HTML report. These additional facts can also be included as hidden data in the (X)HTML document. Such data can then be used by applications that generate valid XBRL from the (X)HTML document.

How additional document data from the XBRL instance is to be handled is specified in the Taxonomy Source Properties dialog (accessed via the Properties item in the Design Overview window). In this dialog, you can choose to include (i) only XBRL items that are displayed in the design, or (ii) all XBRL items in the source XBRL instance document. In the latter case, items that are not displayed in the design will be output as hidden data inside the `<HEAD>` element of the (X)HTML document.

Options for Inline XBRL values

The following Inline XBRL elements can be generated. The various options for each element and important points to note about each element are listed below. You should note that the *Format in (X)HTML* option applies formatting only to the (X)HTML output.

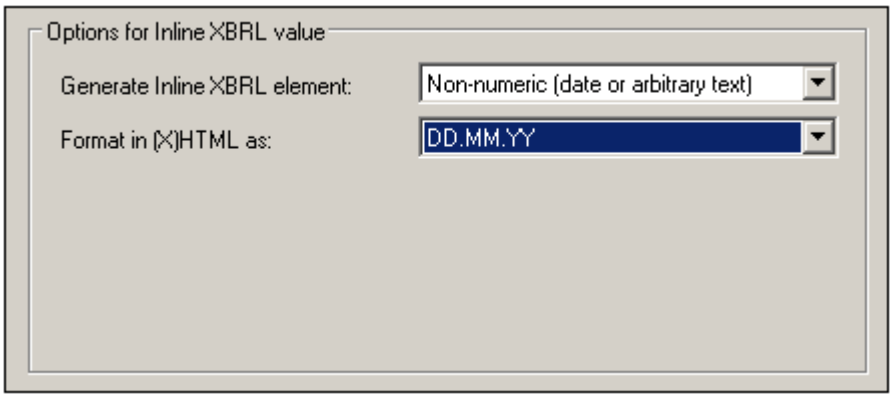
- ***Non-fraction (regular number):*** The format in the (X)HTML output can be selected from the combo box of the *Format* item. The minimum number of digits before and after the decimal separator can be specified. The *Scale* option is the power of 10 by which the output value is multiplied. (10 to the power of 0 is 1; 10 to the power of 1 is 10; 10 to the power of 2 is 100, etc.) The *Scale* value is included in the Inline XBRL element. It will be used by the (X)HTML-to-XBRL generator application to multiply with the content of the Inline XBRL element and so obtain the XBRL item. You must note that, when generating the Inline XBRL element for (X)HTML from the source XBRL instance, the XBRL fact is not automatically modified by the value of the *Scale* element. You will need to modify the value of the XBRL fact according to the *Scale* value in an Auto-Calculation.



  To display XBRL facts that have a value of zero as a dash, check the *Display Zero Value as Dash* check box.

- ***Fraction (numerator, denominator):*** The numerator and denominator of a fraction are formatted separately as regular numbers, and the formatting options for each are the same as for *Non-fraction (regular number)* described above.

- ***Non-numeric (date or arbitrary text):*** This option enables date values and text values to be formatted. In the *Format in (X)HTML* combo box, you can select the *Arbitrary Text* option (*screenshot below*) or from a variety of date formats.



When the *Arbitrary Text* option is selected, you can additionally specify whether HTML elements inside the arbitrary text should be escaped in the generated XBRL instance. Check the *Escape Child Elements* check box to do this.

- ***Footnote:*** No options are required. A standard Inline XBRL element for footnotes is created.

Chapter 15

Authentic View

15 Authentic View

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.

Authentic Preview
In StyleVision, while editing an SPS, you are able to preview the Authentic View of the assigned Working XML File. If you click the Authentic View tab when no Working XML File has been assigned to the SPS, you are prompted to assign a Working XML File. In Authentic Preview, you can edit the XML document, similarly to standard Authentic View, and the editing changes can be saved to the Working XML File. This section describes Authentic View and how to edit documents in Authentic View.

15.1 Authentic View

Authentic Preview is enabled by clicking the Authentic tab of the active document. If no Working XML File has been assigned to the SPS, you are prompted to assign one.

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 Preview window
- 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.

Overview of the GUI

The Authentic Preview provides you with menu commands, toolbar icons, and context menus with which to edit the XML document that is displayed in the Main Window.

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.

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

Status Bar
The Status Bar displays the XPath to the currently selected node. In the Authentic Preview of StyleVision, the XPath to the currently selected node is indicated in the Schema Tree, where the currently selected node is highlighted in gray. The XPath in Authentic Preview is not displayed in a status bar.

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.

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
Markup tags can be turned on or off in Authentic Preview.

 Hide markup.

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

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.

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.

XML File commands
The following icons, from left to right, correspond to the commands listed below:

- *Save Authentic XML Data:* Saves the XML data file.
- *Save Authentic XML Data As...:* Saves the XML data file as another file.
- *Reload Authentic View:* Reloads the saved XML data file. Any unsaved changes will be lost.
- *Validate:* Validates the XML data file.

Authentic View Main Window

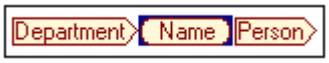
There are four viewing modes in Authentic View: Large Markup; Small Markup; Mixed Markup; and Hide All Markup. These modes enable you to view the document with varying levels of markup information. In Authentic Preview of StyleVision only two markup modes are available: Hide Markup and Show Large (Full) Markup.

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:

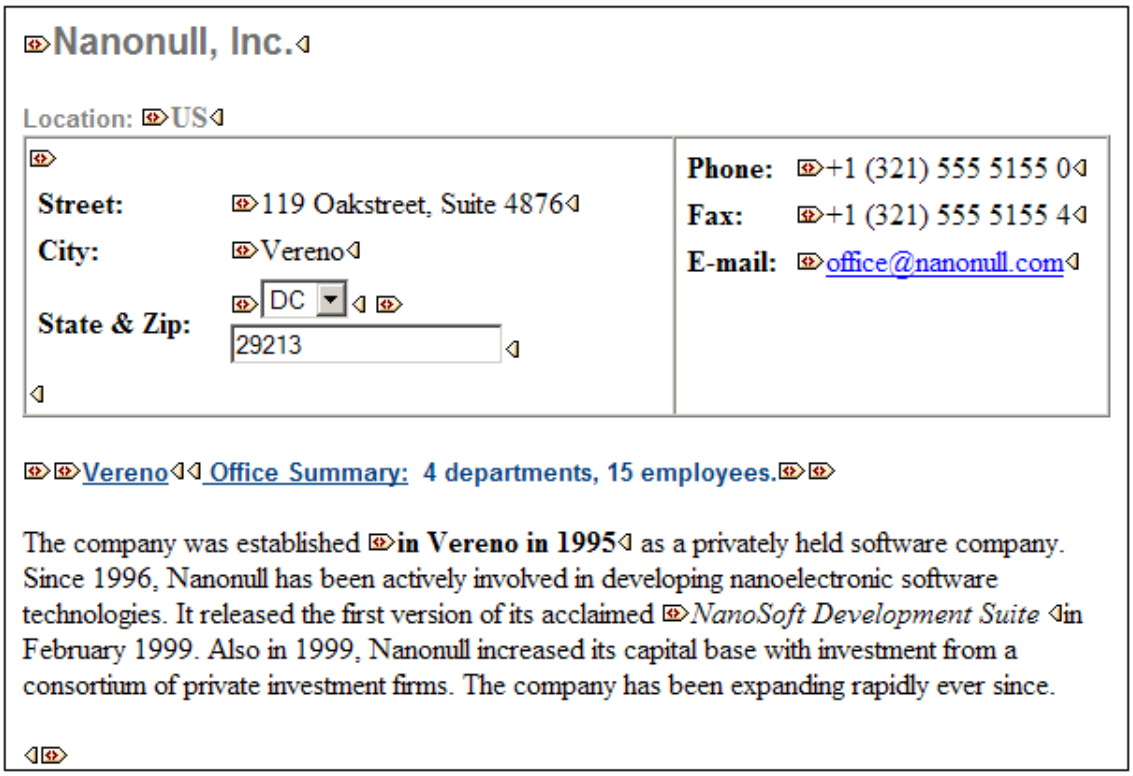
The element `Name` in the figure above is **expanded**, i.e. the start and end tags, as well as the content of the element, are shown. An element/attribute can be **contracted** by double-clicking either its start or end tag. To expand the contracted element/attribute, double-click the contracted tag.



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 start 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 the selection "approved" in the display example below could map to an XML value of "1", or to "approved", or anything else; while "not approved" in the display could map to "0", or "not approved", or anything else.

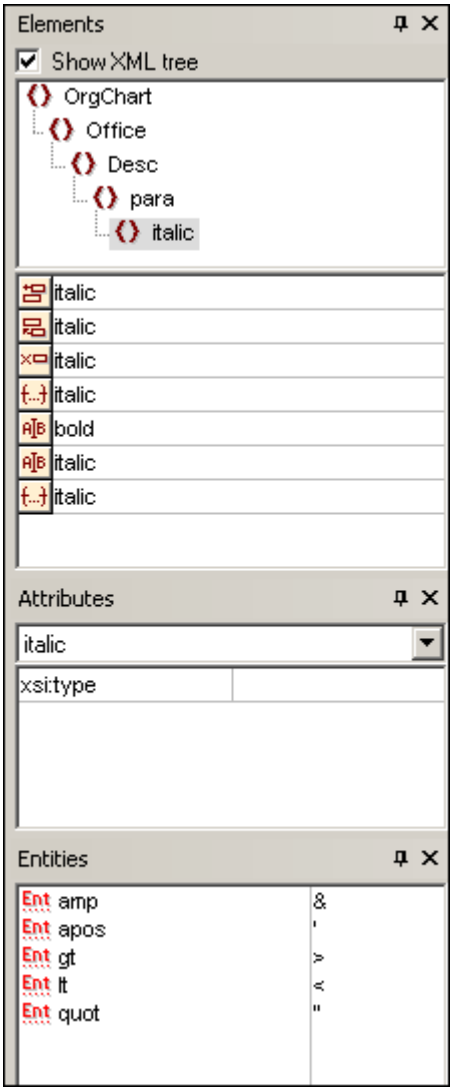
Optional nodes

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.

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.

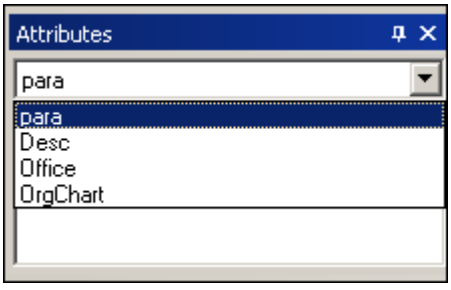
If a text range is selected rather than an element, applying an element to the selection will create the applied element at that location with the selected text range as its content. Applying an element when the cursor is an insertion point is not allowed.

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.

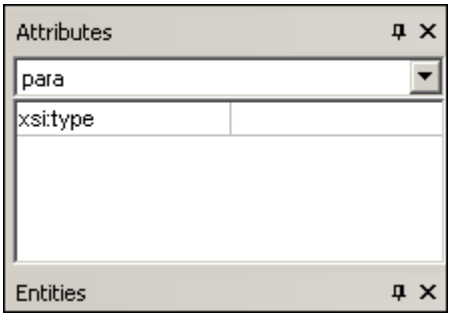
Clear Element (when insertion point selected)
This icon appears when the cursor is placed within an element that is a child of a mixed-content element. Clicking the icon clears the inline element.

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.)

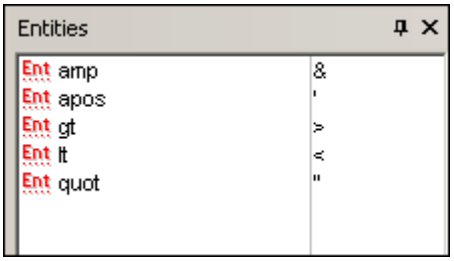


To enter a value for an attribute, click in the value field of the attribute and enter the value. This creates the attribute and its value in the XML document.

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.

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.

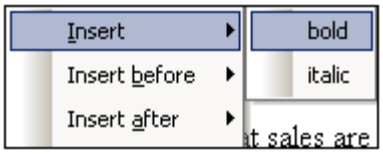
You can also **define your own entities** in Authentic View and these will also be displayed in the entry helper: see Define Entities in the Editing in Authentic View section.

Authentic View Context Menus

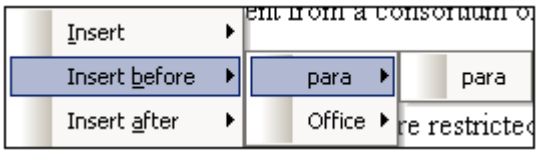
Right-clicking on some selected document content or node pops up a context menu with commands relevant to the selection or cursor location.

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.

15.2 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.

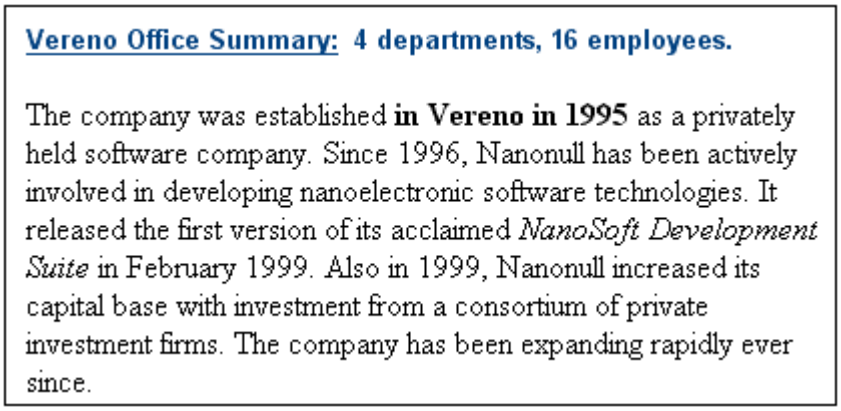
The section explains the following:

- 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.
- What image formats can be displayed in Authentic View.

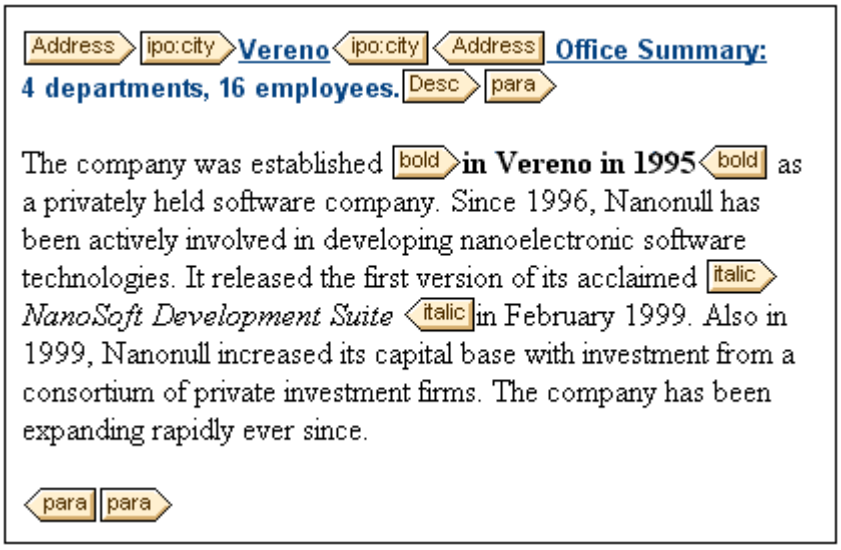
To learn how to use all the features of Authentic View, please do the Authentic View Tutorial using either XMLSpy or Authentic Desktop. The Authentic View Tutorial is available with these products.

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.

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 **Return** key. Since the Authentic View document is pre-formatted, you do not—and cannot—add extra lines or space between items. The **Return** 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.

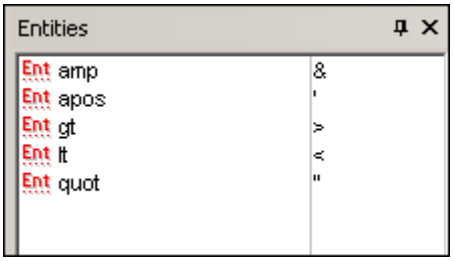
To paste as XML or text, first copy the text (**Ctrl+C**), right-click at the location where the text is to be pasted, and select the context menu command **Paste As | XML** or **Paste As | Text**. If the shortcut **Ctrl+V** is used, the text will be pasted in the default Paste Mode of the SPS. The default 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
One of the most fundamental principles 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.

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 (`&gt;`). 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.

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.)

Tables in Authentic View

The three table types fall into two categories: SPS tables (static and dynamic) and XML 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.

XML 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 XML tables and the XML 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.

XML Tables

XML tables can be inserted by you, the user of Authentic View. They enable you to insert tables anywhere in the XML document where they are allowed, which is useful if you need to insert tabular information in your document. These tables will be printed out as tables when you print out directly from Authentic View. If you are also generating output with XSLT stylesheets, discuss the required output with the designer of the StyleVision Power Stylesheet.

Note that you can insert XML tables only at allowed locations. These locations are specified in the schema (DTD or XML Schema). If you wish to insert a table at additional locations, discuss this with the person designing the StyleVision Power Stylesheet.

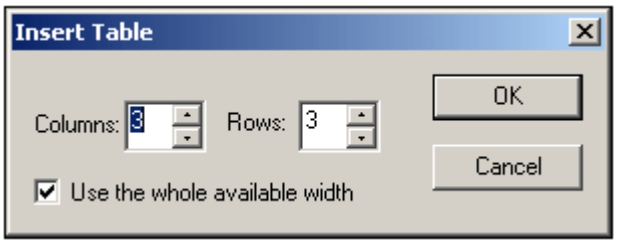
Working with XML tables

There are three steps involved when working with XML tables: inserting the table; formatting it; and entering data. The commands for working with XML tables are available as icons in the toolbar (see XML table editing icons). Currently, XML tables cannot be inserted in the Authentic Preview of StyleVision.

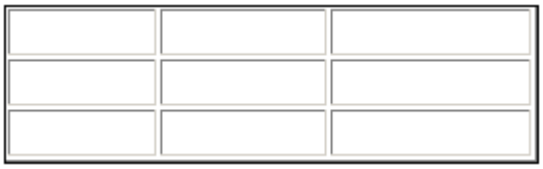
Inserting tables

To insert an XML table:

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.) This opens the Insert Table dialog (shown below).



2. Select the number of columns and rows, and specify whether you wish the table to extend the entire available width. For the specifications given in the dialog box shown above, the following table is created.



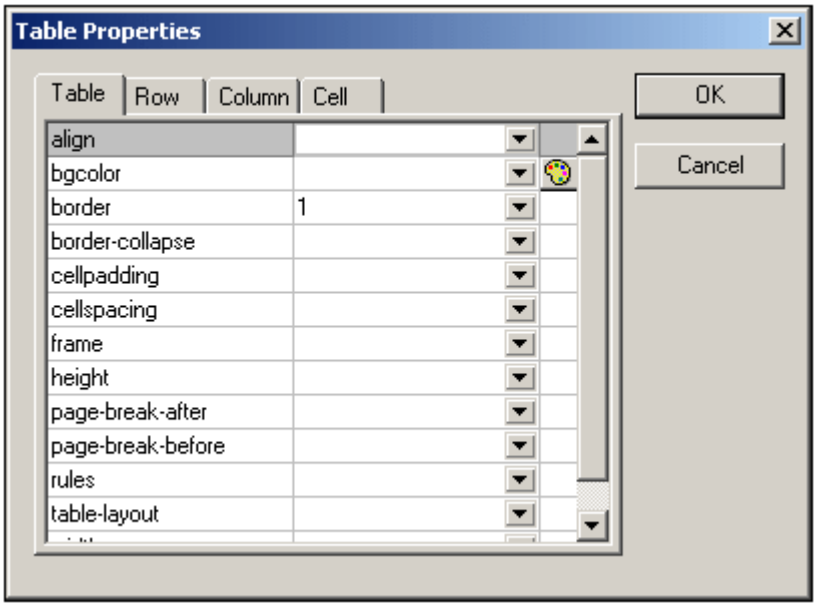
You can add and delete columns, create row and column joins later. Create the broad structure first.

Please note: All modifications to table structure must be made by using the **Table** menu commands. They cannot be made by changing attribute values in the Attribute Entry Helper.

Formatting tables and entering data

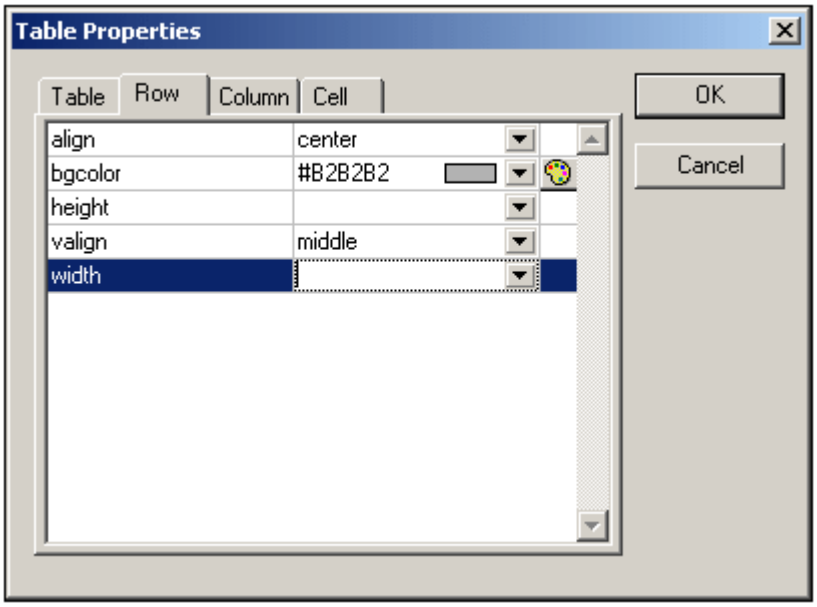
To format your table:

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 join cells. 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 vertically split 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 XML table editing icons are described in the User Reference, in the section titled "XML Table Icons".

Moving among cells in the table
To move among cells in the XML 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 an XML 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.

XML Table Editing Icons

The commands required to edit XML 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 XML tables are to be used, see XML 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.

Join cell right

The "Join cell right" command joins the current cell (current cursor position) with the cell to the right. The tags of both cells remain in the new cell, the column headers remain unchanged.

Join cell below

The "Join cell below" command joins the current cell (current cursor position) with the cell below. The tags of both cells remain in the new cell, the column headers remain unchanged.

Join cell above

The "Join cell above" command joins the current cell (current cursor position) with the cell above. The tags of both cells remain in the new cell, the column headers remain unchanged.

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

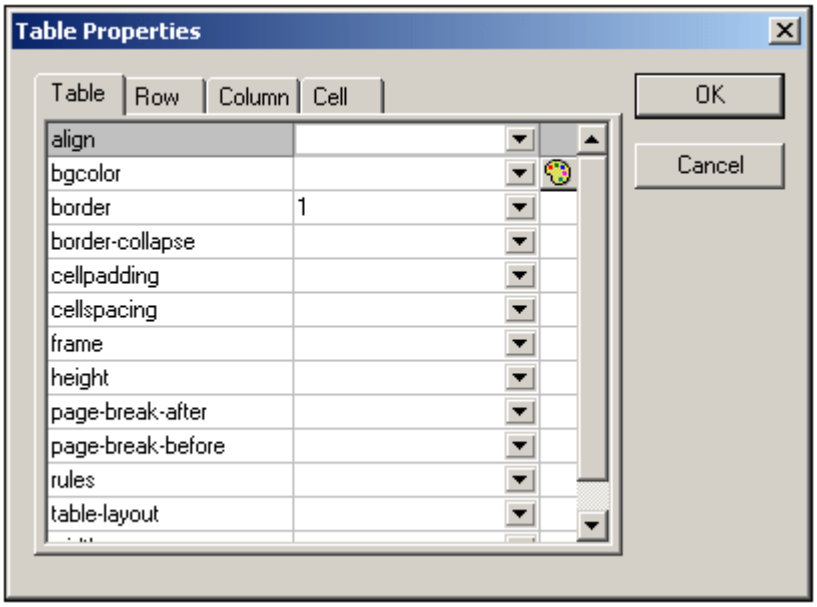
This command centers the cell contents.

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.



Editing a DB

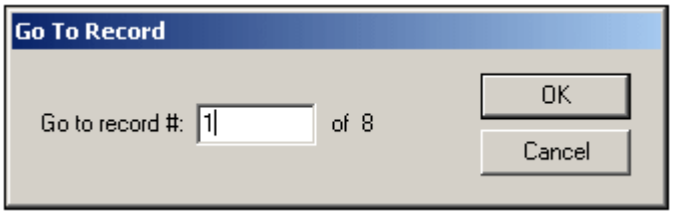
In Authentic View, you can edit database (DB) tables and save data back to a DB. This section contains a full description of interface features available to you when editing a DB table. The following general points need to be noted:

- 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.

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; 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.

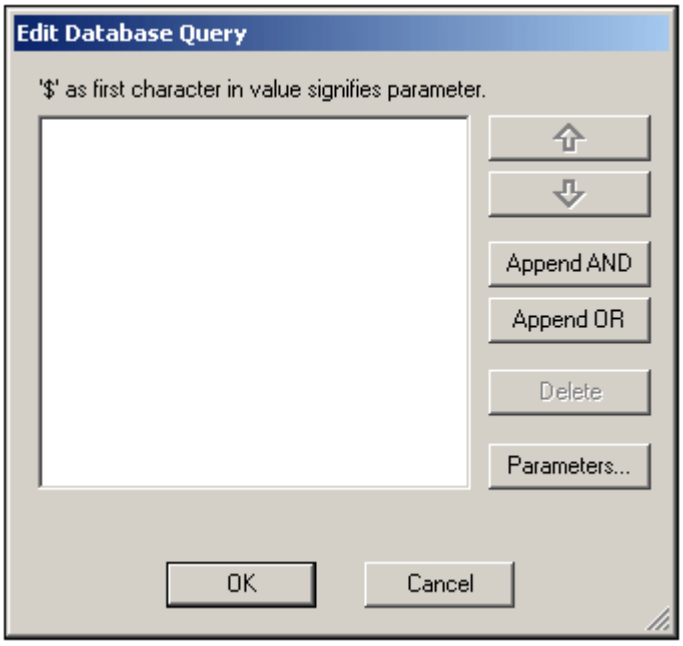
DB Queries

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.

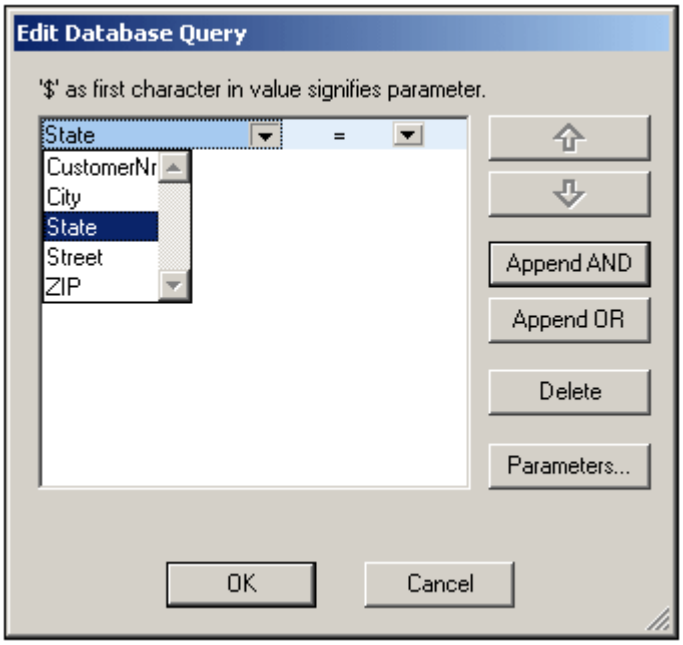
Please note: If you get a message saying that too many tables are open, then you can reduce the number of tables that are open by using a query to filter out some tables.

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`.

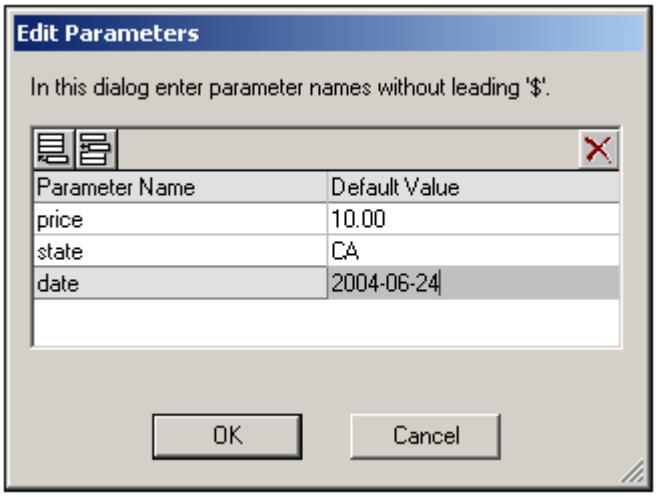
Using parameters with DB Queries

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. You first declare the parameter and its value, and then use the parameter in expressions. This causes the value of the parameter to be used as the value of that expression. The parameters that you add in the Edit Parameters dialog can be parameters that have already been declared for the stylesheet. In this case, the new value overrides the value in the stylesheet.

Parameters are useful if you wish to use a single value in multiple expressions.

Declaring parameters from the Edit DB Query dialog
To declare parameters:

1. Click the **Parameters...** button in the Edit Database Query dialog. This opens the **Edit Parameters** dialog (*see screenshot*).



2. Click Append  or Insert  .
3. Type in the name and value of the parameter in the appropriate fields.

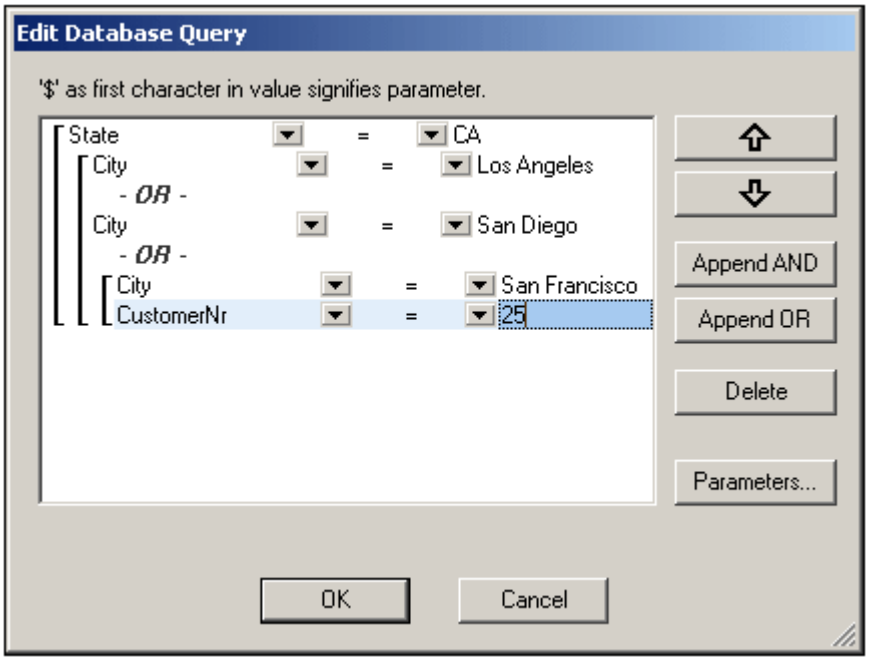
Please note: The Edit Parameters dialog contains **all** the parameters that have been defined for the stylesheet. While it is an error to use an undeclared parameter in the StyleVision Power Stylesheet, it is not an error to declare a parameter and not use it.

Using parameters in queries
To enter the name of a parameter as the value of an expression:

- Type `$` into the value input field followed (without any intervening space) by the name of the parameter in the Edit Database Query dialog.

Please note: If the parameter has already been declared, then the entry will be colored green. If the parameter has not been declared, the entry will be red, and you must declare it.

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 StyleVision 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 Authentic XML Data...** 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 Authentic XML Data...**. 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 (using the navigation icons described above).

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 Authentic XML Data...**. 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 Authentic XML Data...** 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.

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.

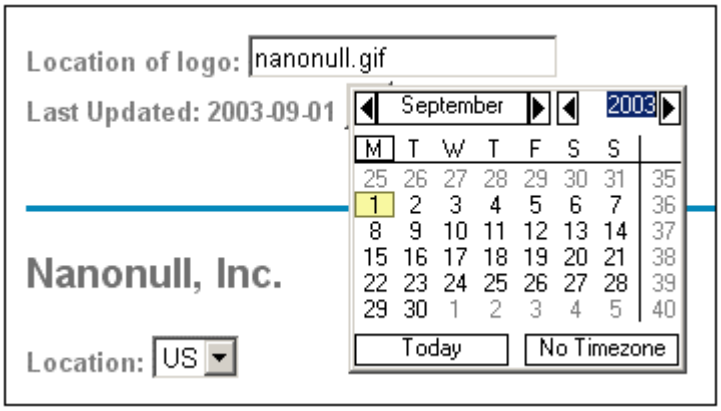
Note on date formats
In the XML document, dates can be stored in one of several date datatypes. Each of these datatypes requires that the date be stored in a particular lexical format in order for the XML document to be valid. For example, the `xs:date` datatype requires a lexical format of `YYYY-MM-DD`. 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.

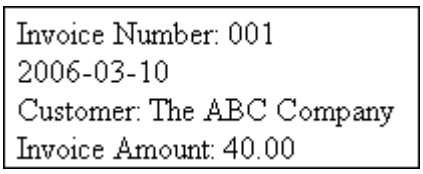


To select a date, click on the desired date, month, or year. The date is entered in the XML document, and the date in the display is modified accordingly. You can also enter a time zone if this is required.

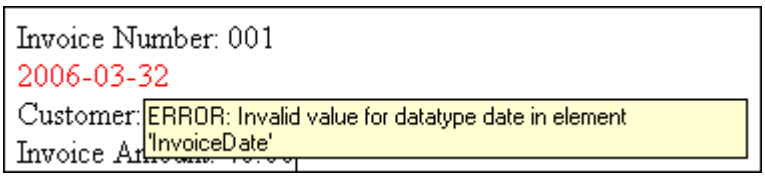
Text Entry

For date fields that do not have a Date Picker (*see screenshot*), you can edit the date directly by typing in the new value.

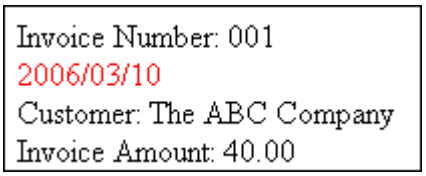
Please note: When editing a date, you must not change its format.



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*).



Defining Entities

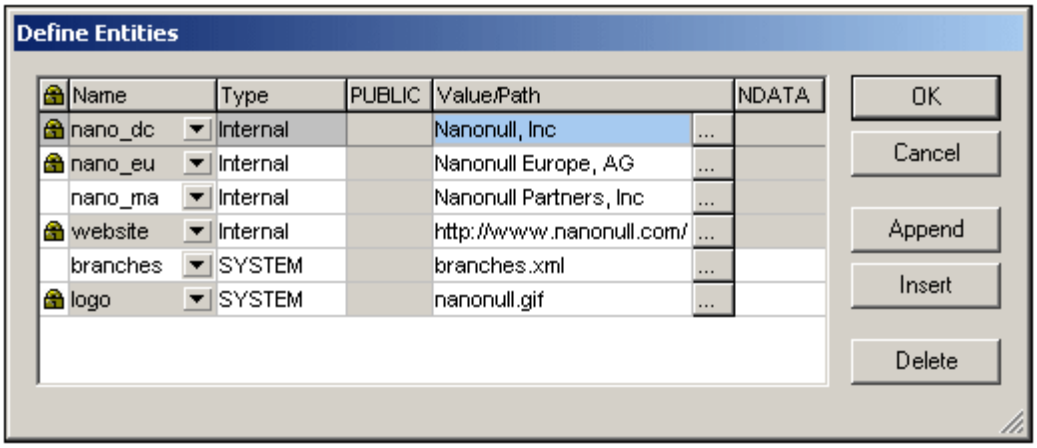
You can define entities for use in Authentic View, whether your document is based on a DTD or an XML Schema. Once defined, these entities are displayed in the Entities Entry Helper and in the **Insert Entity** submenu of the context menu. When you double-click on an entity in the Entities Entry Helper, 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 should therefore be used with unparsed entities only.

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 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 of type `ENTITY` or `ENTITIES`. Such entities are resolved when the document is processed with an XSLT generated from the SPS.

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.

Keystrokes in Authentic View

Enter (Carriage Return) Key
In Authentic View the **Return** 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 **Return** 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 chapters, 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 **Return** key does **not** insert a carriage return/line feed, i.e. it does not jump to 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.

Chapter 16

Automated Processing

16 Automated Processing

The functionality of StyleVision together with the various XSLT and output files generated by StyleVision provide powerful automation possibilities. This section describes these capabilities.

StyleVision's file-generation functionality
After you have created an SPS design with StyleVision, you can generate several kinds of XSLT and output files from within the GUI, depending on which edition of StyleVision you are using (Enterprise, Professional, or Standard). The following files can be generated with the **File | Save Generated Files** command:

- XSLT files for HTML, RTF, FO, and Word 2007+ output.
- FO files, which can be passed to an FO processor (such as Apache's FOP) for creation of PDF output.
- HTML, RTF, PDF, and Word 2007+ output.

As you will notice from the list above, the files that can be saved with StyleVision are of two types:

1. The XSLT files generated by the SPS design, and
2. The final output files (such as HTML).

Note: Additionally, if database sources are used, XML Schema and XML data files can be generated based on the database structure and content.

The processes to generate the final HTML, RTF, and Word 2007+ output files are all one-step processes in which the XML document is transformed by an XSLT stylesheet to the output format. The PDF-generation process, however, requires two steps:

1. Transformation of XML to FO by using an XSLT stylesheet. StyleVision can generate both the XSLT file and the FO file.
2. Processing of the FO file with an FO processor (such as Apache's FOP) to produce PDF output. If an FO processor is set up to be used with StyleVision, then StyleVision can generate PDF output by first transforming the XML to FO using the built-in Altova XSLT Engines, and then processing the FO to PDF with the FO processor you have set up.

FOP and XSLT 2.0
One FOP option enables you to specify an input XML file, an input XSLT file, and an output PDF file:

```
fop -xml input.xml -xslt input.xslt -pdf output.pdf
```

In this situation, FOP uses its built-in XSLT engine to carry out the first-step XML-to-FO transformation. It then passes the result FO document to FOP for the second-step FO-to-PDF processing.

You should be aware, however, that FOP's built-in engine does not support XSLT 2.0 at the time of this writing (March 2009). Consequently, there will be errors if an XSLT 2.0 stylesheet is specified for the XML transformation. In such cases, use the Altova XSLT 2.0 Engine in AltovaXML (or StyleVisionBatch) to transform to FO, and then supply the FO file to FOP for processing to PDF.

StyleVisionBatch and AltovaXML: generating files from outside the GUI
Additionally to generating XSLT stylesheets and the required output formats via the StyleVision GUI (**File | Save Generated Files** command), you can generate output files using two other methods:

1. With the StyleVisionBatch utility, which calls StyleVision's file generation functionality without opening the GUI, You can use various input parameters to produce various kinds of output. One parameter you can specify is the SPS file itself, from which all XSLT stylesheets can be generated, and hence all end output formats. (The Enterprise and Professional Editions offer multiple output formats.) StyleVisionBatch is used from the command line and thus enables the automation of StyleVision's file-generation functionality. How to use StyleVisionBatch is explained in the sub-section, Command Line Interface: StyleVisionBatch.
2. With AltovaXML, a free, standalone Altova application that contains the Altova XML Validator, Altova XSLT Engines (1.0 and 2.0), and Altova XQuery 1.0 Engine. The XSLT Engines in AltovaXML can be used for transformations of XML to an output format by processing XML documents with XSLT stylesheets. As a result, the XSLT file will have to be created in advance so that it can be provided as an input parameter to AltovaXML. (AltovaXML does not take an SPS as an input parameter.) The advantages of using AltovaXML are: (i) the savings on time and memory overheads compared to using StyleVisionBatch; and (ii) in addition to a command line interface, AltovaXML provides interfaces for COM, Java, and .NET, and can therefore be easily called from within these environments. How to use AltovaXML for transformations is explained in the sub-section AltovaXML.

Automation with scheduled tasks
Since both StyleVisionBatch and AltovaXML can be called from the command line, their functionality can be automated and scheduled. How to do this is explained in the section, How to Automate Processing.

16.1 Command Line Interface: StyleVisionBatch

StyleVision's file-generation functionality can be called via the StyleVisionBatch utility, which is included in your StyleVision installation. The utility is named `StyleVisionBatch.exe` and is located in the StyleVision application folder. The syntax for invoking StyleVision commands via StyleVisionBatch is explained in the StyleVisionBatch Syntax sub-section. When a command is executed StyleVision runs silently (i.e. without the GUI being opened), generates the required output files, and closes.

Output files
Using StyleVisionBatch, you can generate one or more of the following files:

- XSLT-for-HTML (.`xslt`) file from the specified SPS
- HTML (.`html`) file using the XML and XSLT files in the specified SPS or using alternative XML and/or XSLT files
- XSLT-for-RTF (.`xslt`) file from the specified SPS
- RTF file using the XML and XSLT-for-RTF files specified in the SPS or using alternative XML and/or XSLT-for-RTF files
- XSLT-for-FO (.`xslt`) file from the specified SPS
- FO file using the XML and XSLT-for-FO files specified in the SPS or using alternative XML and/or XSLT-for-FO files
- PDF file using XML and XSLT-for-FO specified in the SPS or using alternative XML and/or XSLT-for-FO files
- XSLT-for-Word 2007+ (.`xslt`) file from the specified SPS
- Word 2007+ file using the XML and XSLT-for-Word 2007+ files specified in the SPS or using alternative XML and/or XSLT-for-Word 2007+ files
- XML Schema file of a database-based SPS
- XML data file of a database-based SPS

How to use the command line
There are two ways you can use the command line:

- Commands can be entered singly on the command line and be executed immediately. For example, in a DOS window you can go to the directory in which the StyleVisionBatch utility is, then enter a command such as: `StyleVisionBatch -v Test.sps -OutXSLT=Test.xslt.`, and press **Enter** to execute the command.
- A series of commands can be entered in a **batch file** for batch processing. For example:

```
@ECHO OFF
CLS
StyleVisionBatch -v Test.sps -inpXSLT=EN.xslt -OutHTML=TestEN.html
StyleVisionBatch -v Test.sps -inpXSLT=DE.xslt -OutHTML=TestDE.html
StyleVisionBatch -v Test.sps -inpXSLT=FR.xslt -OutHTML=TestFR.html
```

When the batch file is processed, the commands are executed and the files generated.

StyleVision functionality in scheduled tasks
Using the Scheduled Tasks tool of Windows, StyleVisionBatch commands can be set to execute according to a predefined schedule. Either a single command or a batch file can be specified as the task to be executed. How to create such StyleVisionBatch commands as a scheduled task is described in How to Automate Processing.

StyleVisionBatch Syntax

The syntax for the command line interface utility StyleVisionBatch is:

```
StyleVisionBatch [<Stylevision exe>] [<options>]
```

where

`StyleVisionBatch`	is the CLI utility, which is located in the StyleVision application folder
`<Stylevision exe>`	is the StyleVision executable file; it needs to be specified only if the StyleVision executable is **not** named `stylevision.exe` **or** is not located in the same folder as `StyleVisionBatch.exe`. If specified, the name must end in `.exe`.
`<options>`	One or more of the options listed below.

StyleVisionBatch options
StyleVisionBatch options may be entered in any order. In the listing below they are organized into groups so as to provide a better overview.

- ***Utility***

`-help` or `-?`	Displays syntax at the command line
`-verbose` or `-v`	Displays processing information at runtime
`-FOPBatFile=<file>`	Sets FOP processor batch file

- ***SPS and Parameters***

`<stylesheet>`	Sets SPS (`.sps`) stylesheet
`$<paramname>=<value>`	Assigns a value to a stylesheet parameter. If the value contains a space, enclose the value in double quotes. For example: `$paramname="A value"`. Multiple parameters are separated by spaces.

- ***XSLT file output***

`-OutXSLT=<file>`	Writes XSLT-for-HTML to the specified file
`-OutXSLRTF=<file>`	Writes XSLT-for-RTF to the specified file
`-OutXSLFO=<file>`	Writes XSLT-for-FO to the specified file
`-OutXSLWord2007=<file>`	Writes XSLT-for-Word 2007+ to the specified file

- ***Input files***

`-InpXML=<file>`	Sets input XML file
`-InpXSLT=<file>`	Sets input XSLT-for-HTML file
`-InpXSLRTF=<file>`	Sets input XSLT-for-RTF file
`-InpXSLFO=<file>`	Sets input XSLT-for-FO file

`-InpXSLWord2007=<file>`	Sets input XSLT-for-Word 2007+ file

- ***Output files***

`-OutHTML=<file>`	Writes HTML output to the specified file
`-OutRTF=<file>`	Writes RTF output to the specified file
`-OutFO=<file>`	Writes FO output to the specified file
`-OutPDF=<file>`	Writes PDF output to the specified file
`-OutWord2007=<file>`	Writes Word 2007+ output to the specified file

- ***DB data output***

`-OutDBXML=<file>`	Writes XML generated from DB to the specified file. For DB XML databases, the schema source may optionally be specified with the `-DBWhere` flag.
`-OutDBSchema=<file>`	Writes XML Schema generated from DB to the specified file. For DB XML databases, the schema source may optionally be specified with the `-DBWhere` flag.

- ***Additional flag for XML DBs***

`-DBWhere: <param>=<cond>`	Specifies the cell in the XML DB to output. The optional parameter `<param>` identifies the DB cell schema source, and `<cond>` is a simple SQL `WHERE` clause that identifies the particular cell/s to be output. If no parameter is specified, the schema source of the SPS is used. *Also see note below and the Examples section*.

Explanatory points
The following points provide supplementary information about StyleVisionBatch syntax and the command line process.

- When `StyleVisionBatch` is called, it looks in the current directory for `StyleVision.exe`. If your StyleVision executable is named otherwise or located in another folder, use the `<Stylevision exe>` argument to specify the executable.
- Paths may be absolute or relative and should use backslashes.
- Options are prefixed either with a minus sign (for example: `-OutHTML`) or a forward slash (for example: `/OutHTML`).
- If the filename or the path to it contains a space, then the entire path should be enclosed in quotes. For example: `"c:\My Files\MyXML.xml"` or `"c:\MyFiles\My XML.xml"`.
- Commands, paths, and folder and file names are case-insensitive.
- If the SPS file is specified, the Working XML File associated with it and the XSLT stylesheet generated from it will be used to generate output; therefore no input XML or

XSLT file is required. If, however, the SPS file is not specified, an input XML file and input XSLT file must be specified as options. An input XML File must also be specified if the SPS file does not have a Working XML File assigned to it. For output from a DB, the SPS must be specified.

- Parameter declarations refer to parameters in the XSLT stylesheet. Parameter names and values are case-sensitive. If the SPS is DB-based and has a DB Filter which uses parameters, the XML generated from the DB will be appropriately filtered, using parameter values you specify at the command line. Each parameter declaration on the command line must be prefixed with a `$`, and, if multiple parameters are used, they must be separated from each other with a space. If the value of the parameter contains a space, then the value must be enclosed in double quotes.
- No default output is specified, so you must specify the required output. For example: `OutHTML=Test.html`.
- If you specify only the output file (no XML file or XSLT file), the Working XML File or DB specified in the SPS is used for the source XML, and the required XSLT is generated from the SPS.
- Any temporary files that are created are deleted at the end of the processing.
- For transformations to PDF using FOP, the `-FOPBatFile` option must be specified.
- To generate PDF from an FO (`.fo`) file, call the FO processor directly from the command line; there is no need to use StyleVision for this.
- The `-verbose` option provides a detailed report of all steps carried out during the processing of the command.
- When specifying HTML and RTF output, make sure that the generated file is placed in a location in which relative paths to images, etc, will point correctly to their targets. The same applies to hyperlinks.
- When the `-DBWhere` flag is used (`-DBWhere:[<param>]=<cond>`), the parameter `<param>` identifies the schema source of the DB cell. For example, if the parameter is `$DBXMLFIELD`, then the schema source will be known to the SPS because the parameter, in the SPS, would be keyed to a particular schema. The value of `<cond>` is an SQL `WHERE` clause which determines the cell/s to be used. It is typically of the form "`COLNAME = ROWNUM`", where `COLNAME` is the name of the column containing the XML data cell and `ROWNUM` specifies the row/s in the column, and, by extension, the cell/s in the column. *See examples in the next section*. If no parameter is specified, then, in the case of single-schema-source SPSs, the schema source of the SPS is used.
- When the `-DBWhere` flag is used and more than one row (or cell) is specified, then if the DB cell schema is the main schema in the SPS and the specified command (`-OutHTML`, `-OutRTF`, `-OutFO`, or `-OutPDF`) requires input from the DBCell, then the command is executed once for each cell and each cell is output in a separate file. However, if the DB cell schema is a secondary schema in the SPS, the command is applied to only the first row (cell). *See examples in the next section*.

StyleVisionBatch Examples

The examples below are organized according to output.

XSLT stylesheets

XSLT stylesheets can be generated from the SPS files. The only input required is the SPS file.

- The XSLT-for-HTML file is generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutXSLT=Test.xslt
```
- The XSLT-for-RTF file is generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutXSLRTF=Test.xslt
```
- The XSLT-for-FO file is generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutXSLFO=Test.xslt
```
- The XSLT-for-Word 2007+ file is generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutXSLWord2007=Test.xslt
```

HTML output

HTML output is obtained by transforming an XML file with an XSLT stylesheet. The XML file may be the Working XML File assigned in the SPS or may be specified on the command line. The XSLT file may be that generated from the SPS or may be specified on the command line.

- Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -OutHTML=Test.html
```
- Specified XML file transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -InpXML=External.xml -OutHTML=Test.html
```
- Working XML file in SPS transformed with specified XSLT stylesheet.
```
StyleVisionBatch -v Test.sps -InpXSLT=External.xslt -OutHTML=Test.html
```
- Specified XML file transformed with specified XSLT stylesheet.
```
StyleVisionBatch -v -InpXML=External.xml  -InpXSLT=External.xslt
-OutHTML=Test.html
StyleVisionBatch -v Test.sps -InpXML=External.xml
-InpXSLT=External.xslt -OutHTML=Test.html
```

RTF output

RTF output is obtained by transforming an XML file with an XSLT stylesheet. The XML file may be the Working XML File assigned in the SPS or may be specified on the command line. The XSLT file may be that generated from the SPS or may be specified on the command line.

- Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -OutRTF=Test.rtf
```
- Specified XML file transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -InpXML=External.xml -OutRTF=Test.rtf
```
- Working XML file in SPS transformed with specified XSLT stylesheet.
```
StyleVisionBatch -v Test.sps -InpXSLRTF=External.xslt -OutRTF=Test.rtf
```
- Specified XML file transformed with specified XSLT stylesheet.


```
StyleVisionBatch -v -InpXML=External.xml  -InpXSLT=External.xslt
-OutRTF=Test.rtf
StyleVisionBatch -v Test.sps -InpXML=External.xml
-InpXSLT=External.xslt -OutRTF=Test.rtf
```

FO and PDF output (single source document)
FO and PDF output are obtained as follows: An XML file is transformed with an XSLT stylesheet to produce an FO document. The FO document is processed with an FO processor to to generate the PDF. The XML file may be the Working XML File assigned in the SPS or may be specified on the command line. The XSLT file may be that generated from the SPS or may be specified on the command line.

- FO from: Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
  ```
  StyleVisionBatch -v Test.sps -OutFO=Test.fo
  ```
- FO from: specified XML file transformed with XSLT stylesheet generated from SPS.
  ```
  StyleVisionBatch -v Test.sps -InpXML=External.xml -OutFO=Test.fo
  ```
- FO from: Working XML file in SPS transformed with specified XSLT stylesheet.
  ```
  StyleVisionBatch -v Test.sps -InpXSLFO=External.xslt -OutFO=Test.fo
  ```
- FO from: specified XML file transformed with specified XSLT stylesheet.
  ```
  StyleVisionBatch -v -InpXML=External.xml  -InpXSLFO=External.xslt
  -OutFO=Test.fo
  StyleVisionBatch -v Test.sps -InpXML=External.xml
  -InpXSLFO=External.xslt -OutFO=Test.fo
  ```
- PDF from: Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
  ```
  StyleVisionBatch -v Test.sps -OutPDF=Test.pdf -FOPBatFile="c:\Program
  Files\Altova\FOP\fop.bat"
  ```
- PDF from: specified XML file transformed with XSLT stylesheet generated from SPS.
  ```
  StyleVisionBatch -v Test.sps -InpXML=External.xml -OutPDF=Test.pdf
  -FOPBatFile="c:\Program Files\Altova\FOP\fop.bat"
  ```
- PDF from: Working XML file in SPS transformed with specified XSLT stylesheet.
  ```
  StyleVisionBatch -v Test.sps -InpXSLFO=External.xslt -OutPDF=Test.pdf
  -FOPBatFile="c:\Program Files\Altova\FOP\fop.bat"
  ```
- PDF from: specified XML file transformed with specified XSLT stylesheet.
  ```
  StyleVisionBatch -v -InpXML=External.xml  -InpXSLFO=External.xslt
  -OutPDF=Test.pdf -FOPBatFile="c:\Program Files\Altova\FOP\fop.bat"
  StyleVisionBatch -v Test.sps -InpXML=External.xml
  -InpXSLFO=External.xslt -OutPDF=Test.pdf -FOPBatFile="c:\Program
  Files\Altova\FOP\fop.bat"
  ```
- FO and PDF from: Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
  ```
  StyleVisionBatch -v Test.sps -OutFO=Test.fo -OutPDF=Test.pdf
  -FOPBatFile="c:\Program Files\Altova\FOP\fop.bat"
  ```

Note: To process an FO file with an FO processor to produce PDF, use the command line of the FO processor.

Word 2007+ output
Word 2007+ output is obtained by transforming an XML file with an XSLT stylesheet. The XML file may be the Working XML File assigned in the SPS or may be specified on the command line. The XSLT file may be that generated from the SPS or may be specified on the command line.

- Working XML file in SPS transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -OutWord2007=Test.docx
```

- Specified XML file transformed with XSLT stylesheet generated from SPS.
```
StyleVisionBatch -v Test.sps -InpXML=External.xml
-OutWord2007=Test.docx
```

- Working XML file in SPS transformed with specified XSLT stylesheet.
```
StyleVisionBatch -v Test.sps -InpXSLWord2007=External.xslt
-OutWord2007=Test.docx
```

- Specified XML file transformed with specified XSLT stylesheet.
```
StyleVisionBatch -v -InpXML=External.xml  -InpXSLT=External.xslt
-OutWord2007=Test.docx
StyleVisionBatch -v Test.sps -InpXML=External.xml
-InpXSLT=External.xslt -OutWord2007=Test.docx
```

DB data
XML, XML Schema, XSLT, and output files can be generated from a DB-based SPS. The appropriate switches must be set for the respective outputs.

- XML Schema file from DB-based SPS.
```
StyleVisionBatch -v DB.sps -OutDBSchema=DB.xsd
```

- XML data file from DB-based SPS.
```
StyleVisionBatch -v DB.sps -OutDBXML=DB.xml
```

- XSLT-for-HTML file from DB-based SPS.
```
StyleVisionBatch -v DB.sps -OutXSLT=DB.xslt
```

- HTML file from DB-based SPS.
```
StyleVisionBatch -v DB.sps -OutHTML=DB.html
```

- Combinations of DB data output on a single command line.
```
StyleVisionBatch -v DB.sps -OutDBSchema=DB.xsd -OutXSLT=DB.xslt
StyleVisionBatch -v DB.sps -OutDBXML=DB.xml -OutXSLT=DB.xslt
-OutHTML=DB.html
```

In the case of XML DBs, two situations should be distinguished: when the schema source of the DB cell is: (i) the main schema of the SPS, or (ii) a secondary schema of the SPS. Consider the following example command:

```
StyleVisionBatch DBCellTest.sps -OutHTML=Out.html
-DBWhere:$DBXMLFIELD="NHE_TEST_PK < 4"
```

- The parameter `$DBXMLFIELD` identifies the source schema and also the table and column containing the XML data cell since this information is implicit in the DB cell schema.
- The SQL `WHERE` clause `"NHE_TEST_PK < 4"` specifies the first three rows of the column `NHE_TEST_PK`.

- If the schema identified by `$DBXMLFIELD` is the main schema of `DBCellTest.sps`, then the `-outHTML` command is processed thrice, once for each of the first three rows (cells), and three output files are created, named, respectively, `Out.html`, `Out(2).html`, and `Out(3).html`. If on the other hand the schema identified by `$DBXMLFIELD` is a secondary schema of `DBCellTest.sps`, then only the first row (cell) is output to the file `Out.html`.

Parameter Usage
For the XSLT transformation, parameters can be passed to the XSLT stylesheet from the command line.

- Parameters passed to XSLT stylesheet generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutHTML=Test.html $myparam=MyText
StyleVisionBatch -v Test.sps -inpXML=External.xml -OutHTML=Test.html
$myparam="My Text"
StyleVisionBatch -v Test.sps -OutHTML=Test.html -OutFO=Test.fo
$myparam="MyText"
StyleVisionBatch -v Test.sps -OutHTML=Test.html $myparam=2006
StyleVisionBatch -v Test.sps -OutHTML=Test.html $myparam="2006"
```

- Parameters passed to specified XSLT stylesheet.
```
StyleVisionBatch -v Test.sps -inpXSLT=External.xslt -OutHTML=Test.html
$myparam=MyText
StyleVisionBatch -v Test.sps -inpXSLT=External.xslt -OutHTML=Test.html
$myparam="My Text"
```

Multiple outputs
If multiple outputs are required from the same source/s, the outputs can be generated with a single command. Note that PDF- and Word 2007+-relatede outputs are available only in the Enterprise edition.

- XSLT stylesheets from HTML, RTF, and FO generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutXSLT=Test.xslt -OutXSLRTF=Test.xslt
-OutXSLFO=Test.xslt
```

- HTML, RTF, FO, and PDF output generated from the SPS.
```
StyleVisionBatch -v Test.sps -OutHTML=Test.html -OutRTF=Test.rtf
-OutFO=Test.fo -OutPDF=Test.pdf -FOPBatFile="FOP\fop.bat"
StyleVisionBatch -v Test.sps -OutHTML=Test.html -OutRTF=Test.rtf
-OutFO=Test.fo -OutPDF=Test.pdf -FOPBatFile="FOP\fop.bat" $myparam="My
Text"
```

- HTML, RTF, and FO output from specified XML file and XSLT generated from the SPS .
```
StyleVisionBatch -v Test.sps -inpXML=External.xml -OutHTML=Test.html
-OutRTF=Test.rtf -OutFO=Test.fo
```

- HTML, RTF, and FO output with Working XML File in SPS and specified XSLT file.
```
StyleVisionBatch -v Test.sps -inpXSLT=ExtHTML.xslt -OutHTML=Test.html
-inpXSLRTF=ExtRTF.xslt -OutRTF=Test.rtf -inpXSLFO=ExtFO.xslt
-OutFO=Test.fo
```

16.2 Using AltovaXML

AltovaXML is a free product that contains the Altova XML Validator, XSLT 1.0 and 2.0 Engines, and XQuery 1.0 Engine. It is downloadable from the Altova website. AltovaXML can be run from the command line and has interfaces for COM, Java, and .NET. You can therefore easily use AltovaXML from within these environments to validate XML documents, perform XSLT transformations, and execute XQuery documents.

The functionality of AltovaXML that would be most relevant to StyleVision users is the XSLT 1.0 and 2.0 transformation functionality. Typically, this functionality would be used as follows:

1. An XSLT stylesheet is generated from an SPS with the **File | Save Generated Files** command or by using StyleVisionBatch. Note that AltovaXML cannot be used to generate XSLT stylesheets from an SPS file in the way that StyleVisionBatch does.
2. The generated XSLT stylesheet is used to transform XML documents with AltovaXML.

With AltovaXML you can generate HTML, RTF, FO, and Word 2007+ output.

Advantages of AltovaXML
The advantages of using AltovaXML are as follows:

- AltovaXML is a leaner package than StyleVisionBatch and therefore provides faster validation and XSLT transformation. This is because StyleVisionBatch uses the Altova Validator and XSLT Engines in StyleVision, and requires more memory and time overhead as a result.
- Easy use with command line, COM, Java, and .NET interfaces.
- Automation and scheduling with the use of batch files and the scheduling processes such as the Scheduled Tasks process of Windows.

In this section
This section is organized into the following sub-sections:

- XSLT 1.0 CLI Transformations describes the syntax for calls to the Altova XSLT 1.0 Engine of AltovaXML and provides examples of use.
- XSLT 2.0 CLI Transformations describes the syntax for calls to the Altova XSLT 2.0 Engine of AltovaXML and provides examples of use.
- PDF Output explains the issues related to PDF generation when AltovaXML is used for transforming XML to FO.

For a description of how AltovaXML can be used to automate the production of output documents (such as HTML) from XML source documents, see the section How to Automate Processing.

For additional and more detailed information about using AltovaXML, including how to use AltovaXML's COM, Java, and .NET interfaces, see the AltovaXML user documentation.

XSLT 1.0 CLI Transformations

Syntax
The syntax to invoke XSLT 1.0 transformations is:

```
AltovaXML -xslt1 xsltfile -in xmlfile [-out outputfile] [options]
```

where

`AltovaXML`	Calls the application.
`-xslt1`	Specifies that the Altova XSLT 1.0 Engine is to be used for an XSLT transformation; the engine uses the XSLT 1.0 file *`xsltfile`* for the transformation.
`-in`	Specifies the XML file `xmlfile` to be transformed and its location.
`-out`	Specifies the output file `outputfile` and its location. If this option is omitted, the output is written to standard output.

The following options are available:

`-param`	Takes the instruction `paramname=XPath expression`. The `-param` switch is used before each global parameter. Double quotes must be used if a space is included in an XPath expression—whether in a path expression itself or in a string literal in the expression. See examples.
`-xslstack`	The stack size is the maximum depth of executed instructions, and can be changed with the `-xslstack` value. The minimum allowed value is 100. The default stack size is 1000. If the stack size is exceeded during a transformation, an error is reported.
`-namedTemplate` (or `-n`)	Sets the initial named template. A space separates the argument from its value. Example: `-namedTemplate MyTemplate`
`-mode` (or `-m`)	Sets the initial template mode. A space separates the argument from its value. Example: `-mode MyMode`

Note:

- The XSLT file must be specified in the command line instruction; an XSLT file referenced in an `<?xml-stylesheet?>` processing instruction in the XML document is not automatically used.
- If the `-out` parameter is omitted, output is written to the standard output.

Examples

- `AltovaXML -xslt1 test.xslt -in test.xml -out testout.xml`
- `AltovaXML -xslt1 test.xslt -in test.xml -out testout.xml -param date=//node/@att1`
- `AltovaXML -xslt1 test.xslt -in test.xml -out testout.xml -param date="//node/@att1 | //node/@att2"`
- `AltovaXML -xslt1 test.xslt -in test.xml -out testout.xml -param date=node/@att1 -param title='stringwithoutspace'`
- `AltovaXML -xslt1 test.xslt -in test.xml -out testout.xml -param date=node/@att1 -param title="'string with spaces'"`

XSLT 2.0 CLI Transformations

Syntax
The syntax to invoke XSLT 2.0 transformations is:

```
AltovaXML -xslt2 xsltfile -in xmlfile [-out outputfile] [options]
```

where

`AltovaXML`	Calls the application.
`-xslt2`	Specifies that the Altova XSLT 2.0 Engine is to be used for an XSLT transformation; the engine uses the XSLT 2.0 file *`xsltfile`* for the transformation.
`-in`	Specifies the XML file `xmlfile` to be transformed and its location.
`-out`	Specifies the output file `outputfile` and its location. If this option is omitted, the output is written to standard output.

The following options are available:

`-param`	Takes the instruction `paramname=XPath expression`. The `-param` switch is used before each global parameter. Double quotes must be used if a space is included in an XPath expression—whether in a path expression itself or in a string literal in the expression. See examples.
`-xslstack`	The stack size is the maximum depth of executed instructions, and can be changed with the `-xslstack` value. The minimum allowed value is 100. The default stack size is 1000. If the stack size is exceeded during a transformation, an error is reported.
`-namedTemplate` (or `-n`)	Sets the initial named template. A space separates the argument from its value. Example: `-namedTemplate MyTemplate`
`-mode` (or `-m`)	Sets the initial template mode. A space separates the argument from its value. Example: `-mode MyMode`

Note:

- The XSLT file must be specified in the command line instruction; an XSLT file referenced in an `<?xml-stylesheet?>` processing instruction in the XML document is not automatically used.
- If the `-out` parameter is omitted, output is written to the standard output.
- The XSLT 2.0 Engine can be used in its backward compatibility mode to process an XSLT 1.0 stylesheet. The output, however, could be different than that produced by the XSLT 1.0 Engine processing the same XSLT 1.0 stylesheet.

Examples

- `AltovaXML -xslt2 test.xslt -in test.xml -out testout.xml`
- `AltovaXML -xslt2 test.xslt -in test.xml -out testout.xml -param date=//node/@att1`
- `AltovaXML -xslt2 test.xslt -in test.xml -out testout.xml -param date="//node/@att1 | //node/@att2"`
- `AltovaXML -xslt2 test.xslt -in test.xml -out testout.xml -param date=node/@att1 -param title='stringwithoutspace'`
- `AltovaXML -xslt2 test.xslt -in test.xml -out testout.xml -param date=node/@att1 -param title="'string with spaces'"`

PDF Output

To generate PDF output from an XML document requires two steps:

1. The XML document is transformed by an XSLT stylesheet. An XSLT transformation engine (such as the Altova XSLT Engine) is used for this transformation. The result is an FO document.
2. The FO document is processed by an FO processor (such as Apache's FOP) to generate the PDF output. StyleVision can be set up to pass the FO result of an XSLT transformation to an FO processor. In StyleVision, the result of PDF generation is displayed in the PDF Preview window or can be saved as a file (via the **File | Save Generated Files** command).

AltovaXML and PDF

Since AltovaXML would be used for XSLT transformation and does not provide parameters to direct the FO output to an FO processor, you will be left with an FO document as the result of the XSLT transformation step (the first step of the two-step PDF-generation process).

The FO document must now be passed to an FO processor for second-step processing from FO to PDF. The instructions for carrying out this step varies according to the processor being used. For example, in the case of the Apache FOP processor, the following simple command can be used to identify the input FO document and specify the name and location of the output PDF document:

```
fop -fo input.fo -pdf output.pdf
```

FOP offers other parameters, and these are listed in the FOP user reference.

FOP and XSLT 2.0

One FOP option enables you to specify an input XML file, an input XSLT file, and an output PDF file:

```
fop -xml input.xml -xslt input.xslt -pdf output.pdf
```

In this situation, FOP uses its built-in XSLT engine to carry out the first-step XML-to-FO transformation. It then passes the result FO document to FOP for the second-step FO-to-PDF processing.

You should be aware, however, that FOP's built-in engine does not support XSLT 2.0 at the time of this writing (March 2009). Consequently, there will be errors if an XSLT 2.0 stylesheet is specified for the XML transformation. In such cases, use the Altova XSLT 2.0 Engine in AltovaXML (or StyleVisionBatch) to transform to FO, and then supply the FO file to FOP for processing to PDF.

Batch processing to PDF

A quick and simple way to generate PDF by using AltovaXML for the first-step XSLT transformation and FOP for the second-step FO processing would be to write a batch file that combines the two commands. For example:

```
AltovaXML -xslt2 test.xslt -in test.xml -out test.fo
fop -fo test.fo -pdf test.pdf
```

The first command calls AltovaXML and produces `test.fo` as output. The second command passes `test.fo` to the FOP processor, which generates the PDF file `test.pdf`. For more information about batch processing and how batch files can be used to automate processes,

see the following section: How to Automate Processing.

16.3 How to Automate Processing

Processing can be automated in two ways:

- Commands can be specified to execute one after another. This automates the execution of a sequence of commands. Such automation is easily achieved by means of batch files, and is described in the sub-section, Creating Batch Files.
- A command or a set of commands can be specified to execute at a given time. This is achieved through the Scheduled Tasks tool of Windows, described in the sub-section Automating with Scheduled Tasks.

Creating Batch Files

A batch file (a text file saved with the file extension `.bat`) contains a sequence of commands that will be executed from the command line. When the batch file is executed, each command in the batch file will be executed in turn, starting with the first and progressing through the sequence. A batch file is therefore useful in the following situations:

- Executing a series of commands automatically (*see below*).
- Creating a chain of processing commands, where a command requires input produced by a preceding command. (For example, an XML file produced as output of one transformation is used as the input of a subsequent transformation.) *See below*.
- Scheduling a sequence of tasks to be executed at a particular time. See Automating with Scheduled Tasks.

Batch file with sequence of commands

A sequence of commands to be executed is entered as follows:

```
@ECHO OFF
CLS
StyleVisionBatch -v Test.sps -inpXSLT=EN.xslt -OutHTML=TestEN.html
StyleVisionBatch -v Test.sps -inpXSLT=DE.xslt -OutHTML=TestDE.html
StyleVisionBatch -v Test.sps -inpXSLT=FR.xslt -OutHTML=TestFR.html
```

When the batch file is processed, the commands are executed and the files generated. The batch file above uses StyleVisionBatch to generate three HTML outputs, each being generated with a different XSLT stylesheet. The input file is the Working XML File of the SPS file.

Batch file that uses output from preceding command

This batch file calls AltovaXML to generate an XML file and then uses this XML file as input for an XSLT transformation with StyleVisionBatch. (For the sake of simplicity, assume that the calls to AltovaXML and StyleVisionBatch correctly locate the executables.)

```
@ECHO OFF
CLS
AltovaXML -xslt2 Test.xslt -in Test.xml -out TestOut.xml
StyleVisionBatch -v Test.sps -inpXML=TestOut.xml -OutHTML=TestOut.html
```

When the batch file is processed, `TestOut.xml` is generated by the first command. The second command takes `TestOut.xml` as its input XML file and processes it with the XSLT-for-HTML stylesheet generated on the fly by the SPS file `Test.sps`. The output is the HTML file `TestOut.html`.

Batch processing to PDF

A quick and simple way to generate PDF by using AltovaXML for the first-step XSLT transformation and FOP for the second-step FO processing would be to write a batch file that combines the two commands. (For the sake of simplicity, assume that the calls to AltovaXML and FOP correctly locate the executables.)

```
AltovaXML -xslt2 test.xslt -in test.xml -out test.fo
fop -fo test.fo -pdf test.pdf
```

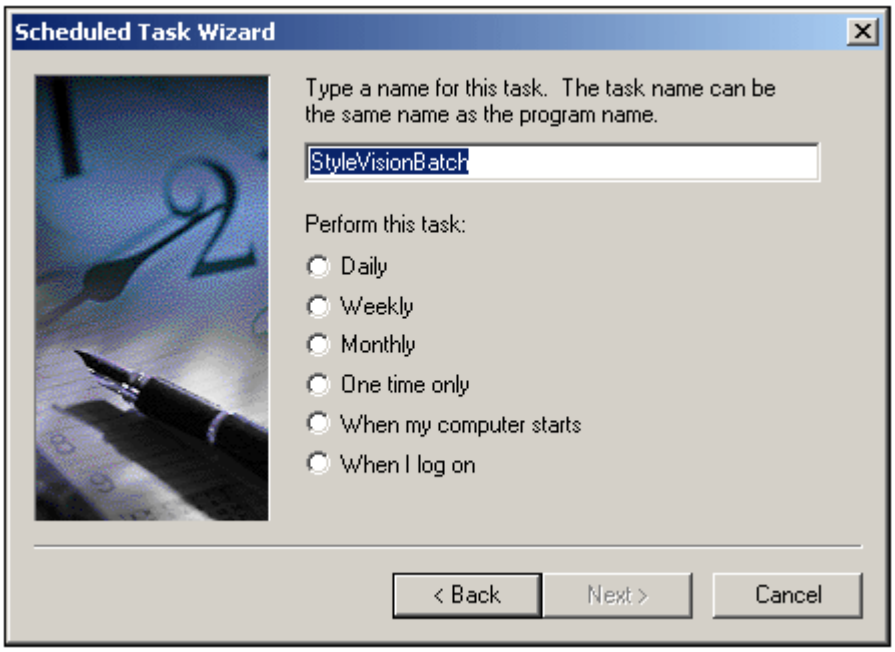
The first command calls AltovaXML and produces `test.fo` as output. The second command passes `test.fo` to the FOP processor, which generates the PDF file `test.pdf`. For more information about AltovaXML, see Using AltovaXML.

Automating with Scheduled Tasks (Windows XP)

A command or set of commands (that call StyleVisionBatch or AltovaXML, for example) can be set up to run to a pre-determined schedule. This scheduling is done with the Scheduled Tasks tool of Windows. The Scheduled Task tool opens the utility or application called and executes the command specified in the task.

To create a scheduled task, do the following. The example below uses StyleVisionBatch as the program to call; to use AltovaXML, simply substitute AltovaXML for StyleVisionBatch.

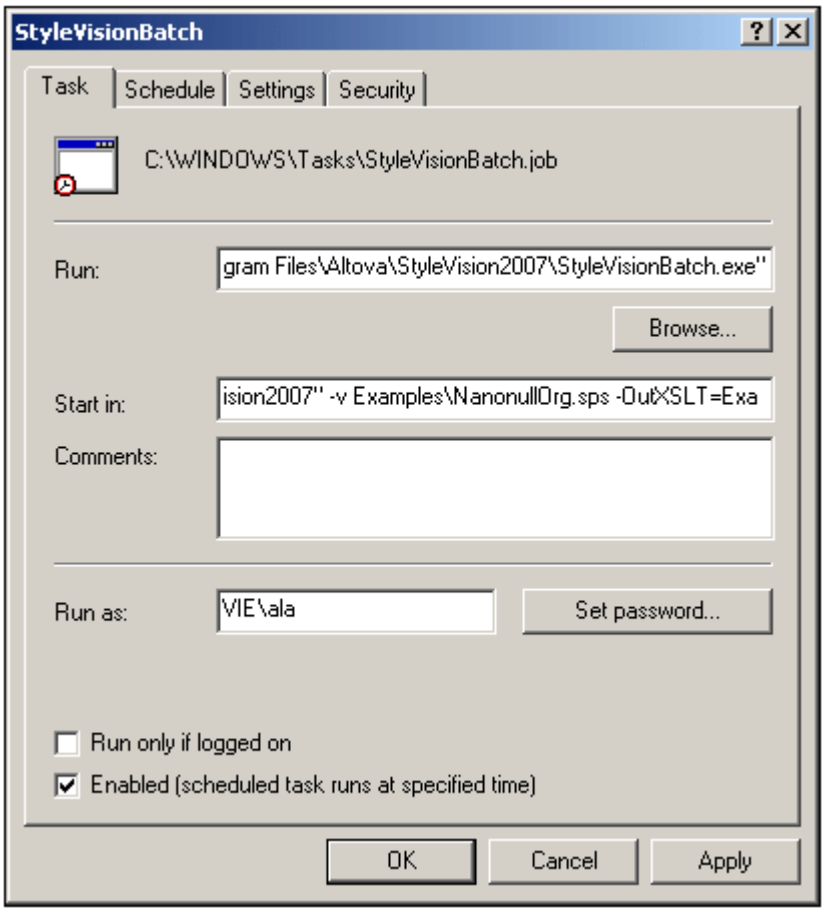
1. If you plan to run a *set* of StyleVisionBatch commands as a scheduled task—as opposed to a single command—these commands should be created in a batch file (*see* *Creating Batch Files*) and the batch file should be specified as the command to execute. If a single StyleVisionBatch command is to be scheduled, skip Step 1 (this step) and go to Step 2.
2. Open the Scheduled Task Wizard of Windows (**Start | Control Panel | Scheduled Tasks | Add Scheduled Task**).
3. Click **Next** to start setting up the task.
4. In the window to select the program to run, you select either `StyleVisionBatch.exe` (for a single StyleVisionBatch command) or a batch file (containing multiple StyleVisionBatch commands). Browse for the required file and select it. The next screen (*screenshot below*) appears.



5. Assign a name for the task, and set a frequency for it. Then click **Next**.
6. Select the starting day and time for the schedule. Then click **Next**.
7. Enter the appropriate user name and password. Then click **Next**.
8. In the finishing screen (*screenshot below*), if you are scheduling a single StyleVisionBatch command and have therefore selected `SVBATCH%>.exe` as the program to run, check the Open Advanced Properties... check box. (It is in the Advanced Properties dialog that the StyleVisionBatch command is specified.) Then click **Finish**.

If you have specified a batch file as the program to run for the task, there is no need to set any advanced properties and you can leave the Open Advanced Properties check box unchecked. In this case, the scheduling of the task is now complete.

9. This step is required only if you are scheduling a single StyleVisionBatch command as your task. On clicking **Finish** with the Open Advanced Properties... check box checked, a dialog showing the properties of the task pops up (*screenshot below*).



In the Start In text field (*screenshot above*) enter the required StyleVisionBatch command, for example: `"C:\Program Files\Altova\StyleVision2007" -v Examples\NanonullOrg.sps -OutXSLT=Examples\Nano1.xslt`. Use quotes if there are spaces in your file or folder names, and, in your paths, use backslashes. If desired, enter a comment describing the task. Click **OK** to finish.

Deleting a scheduled task

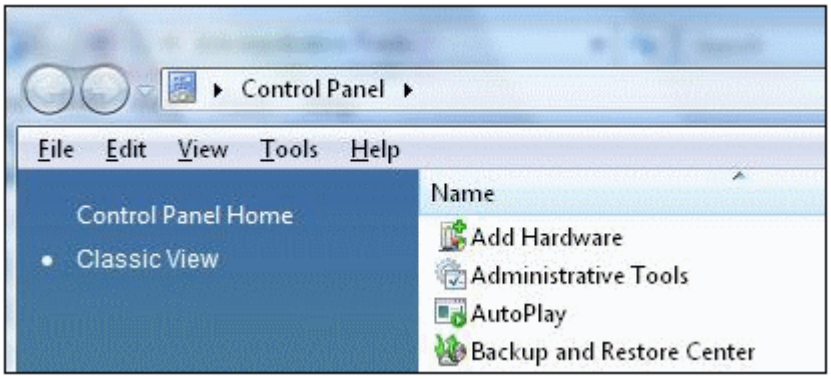
To delete a scheduled task, open the Scheduled Tasks window (**Start | Control Panel | Scheduled Tasks**), select the task and either click the **Delete** icon or press the **Delete** key.

Automating with Scheduled Tasks (Windows Vista)

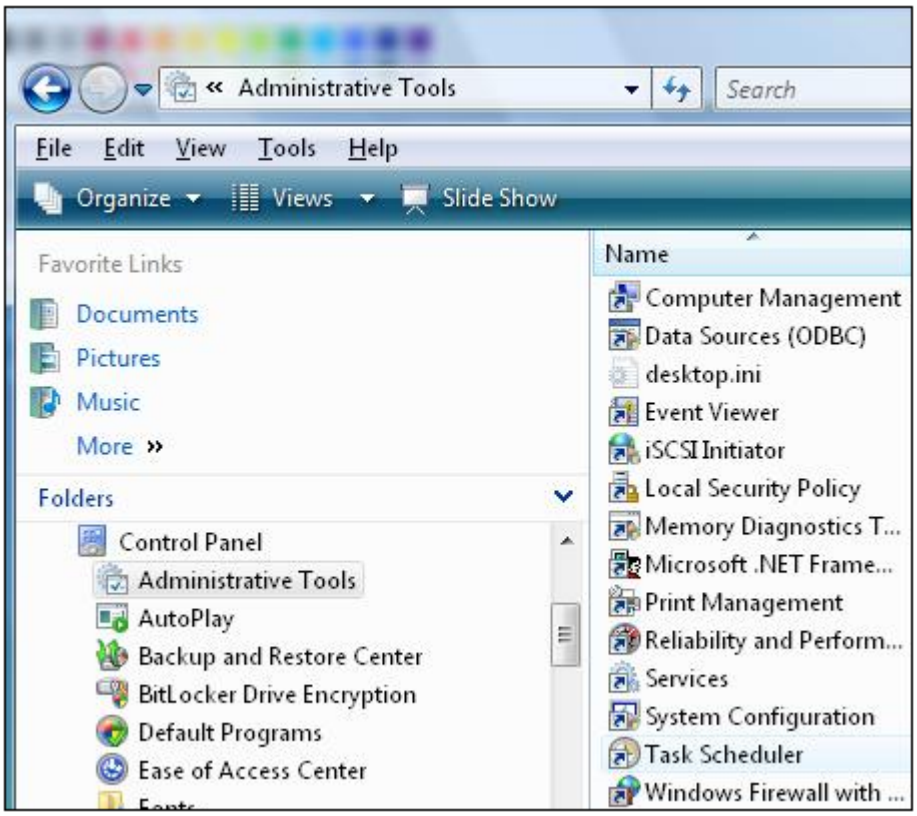
A command or set of commands (that call StyleVisionBatch or AltovaXML, for example) can be set up to run to a pre-determined schedule. This scheduling is done with the Scheduled Tasks tool of Windows. The Scheduled Task tool opens the utility or application called and executes the command specified in the task.

To create a scheduled task on a Windows Vista machine, do the following. The example below uses StyleVisionBatch as the program to call; to use AltovaXML, simply substitute AltovaXML for StyleVisionBatch.

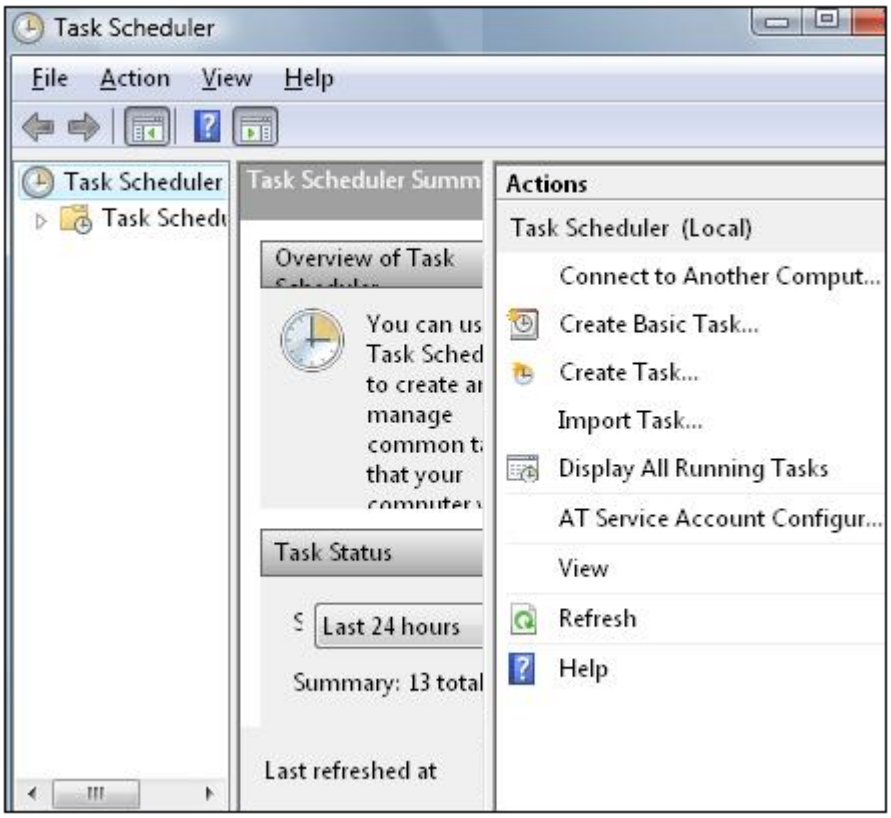
1. If you plan to run a *set* of StyleVisionBatch commands as a scheduled task—as opposed to a single command—these commands should be created in a batch file (*see* *Creating Batch Files*) and the batch file should be specified as the command to execute. If a single StyleVisionBatch command is to be scheduled, skip Step 1 (this step) and go to Step 2.
2. Select **Start | Settings | Control Panel**).
3. Double-click **Administrative Tools** (*see screenshot below*).



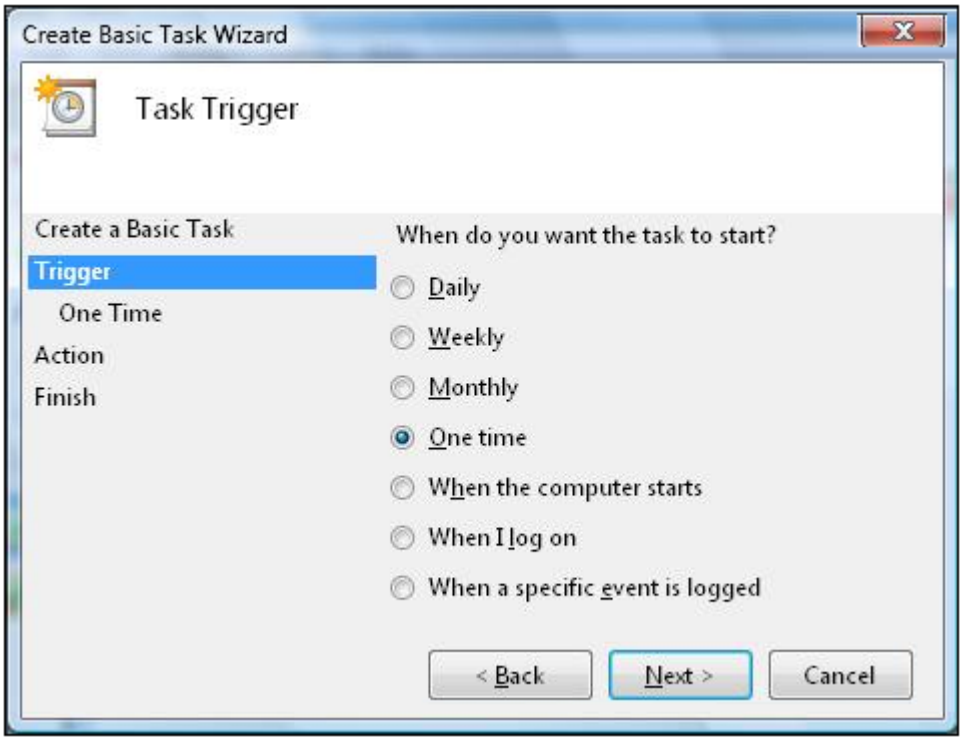
4. In the Administrative Tools window, double-click **Task Scheduler** (*screenshot below*).



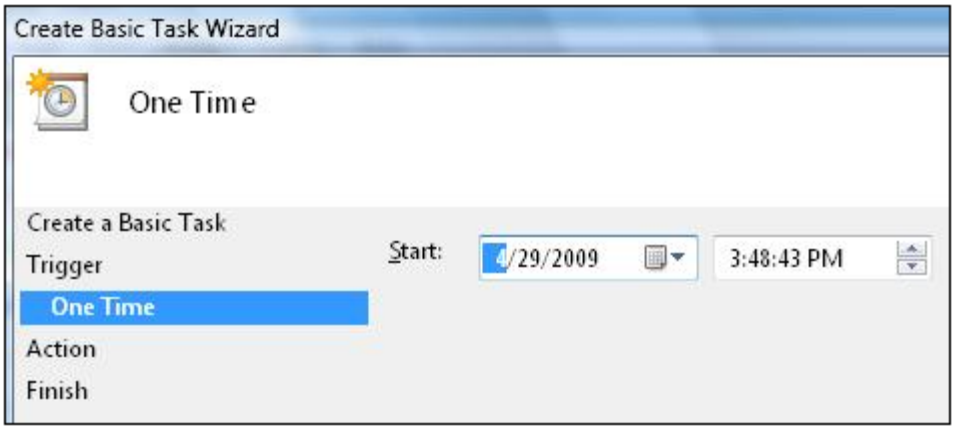
5. The Task Scheduler window appears (*screenshot below*). Double-click **Create Basic Task**.



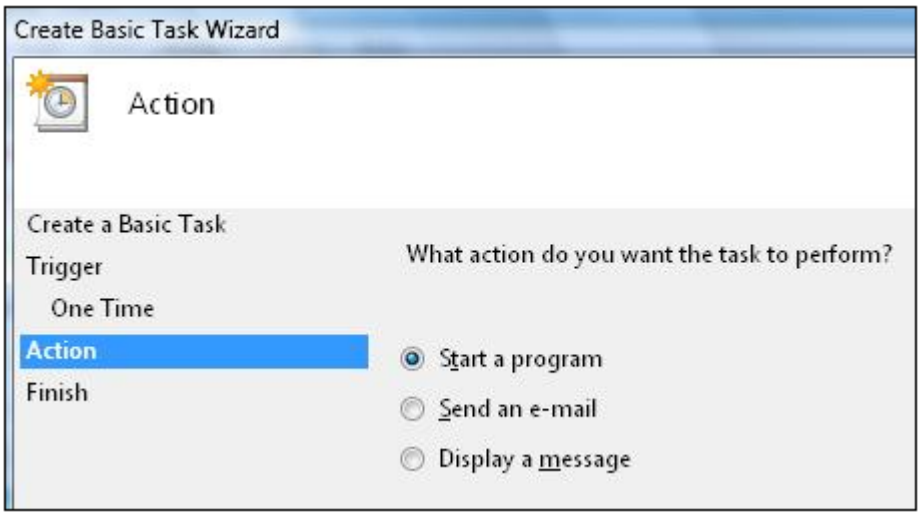
6. In the Create Basic Task window (*screenshot below*), select **Trigger** and set the trigger as required. In the screenshot below, the trigger has been set to *One time*. Then click **Next**.



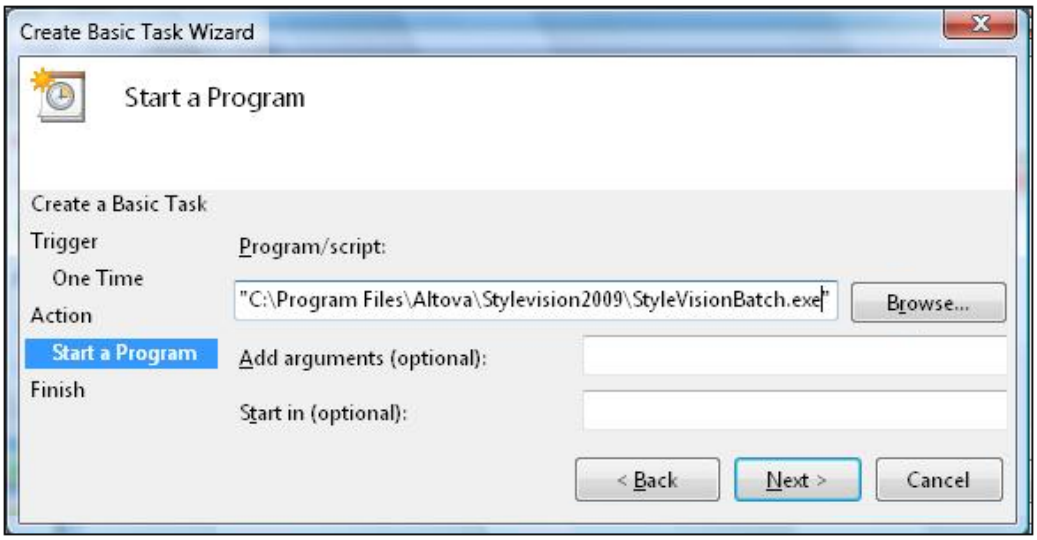
7. Select One Time in the menu bar (*screenshot below*) and set the time. Then click **Next**.



8. Select Action in the menu bar (*screenshot below*) and click *Start a program*. Then click **Next**.

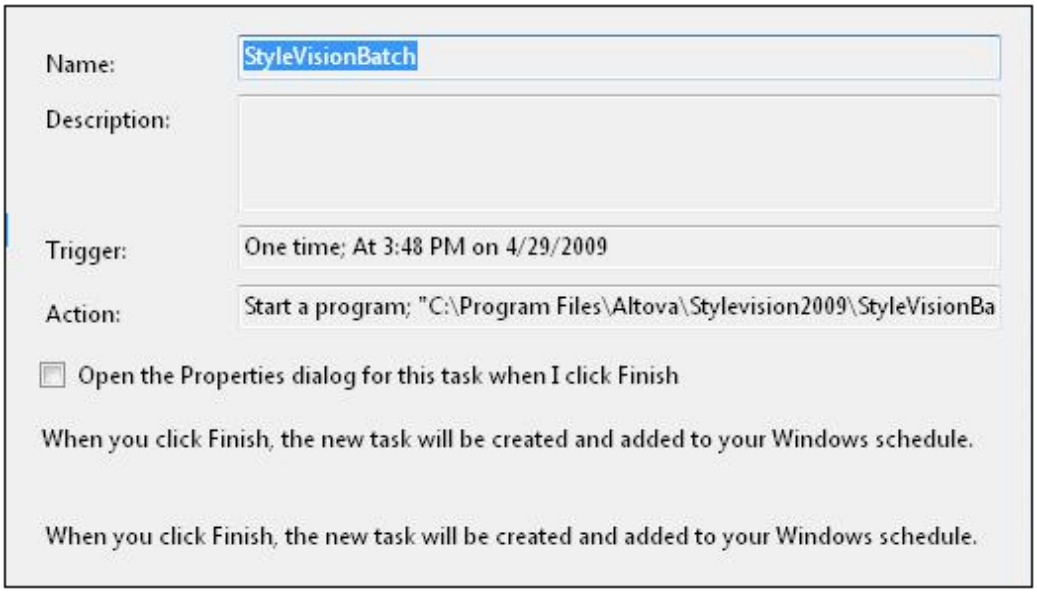


9. Select *Start a program* in the menu bar (*screenshot below*) and select either `StyleVisionBatch.exe` (for a single StyleVisionBatch command) or a batch file (containing multiple StyleVisionBatch commands). Browse for the required file and select it.



If you are using StyleVisionBatch (and not a batch file), then, in the *Start In* text field (*screenshot above*), enter the required StyleVisionBatch command, for example: `"C:\Program Files\Altova\StyleVision2007" -v Examples\NanonullOrg.sps -OutXSLT=Examples\Nano1.xslt`. Use quotes if there are spaces in your file or folder names, and, in your paths, use backslashes. If you are using a batch file, the *Start In* text field should be left empty. Then click **Next**.

10. In the Finish window (*screenshot below*), assign a name for the task and create a description of it. If you are scheduling a single StyleVisionBatch command and have therefore selected `SVBATCH%>.exe` as the program to run, check the *Open the Properties dialog...* check box. Then click **Finish**.



If you have specified a batch file as the program to run for the task, you can leave the *Open the Properties* check box unchecked. In this case, the scheduling of the task is now complete.

11. This step is required only if you are scheduling a single StyleVisionBatch command as your task. On clicking **Finish** with the Open Properties check box checked, a dialog showing the properties of the task pops up. Check that the command you have specified for StyleVisionBatch to execute is correct.

Chapter 17

StyleVision in Visual Studio

17 StyleVision in Visual Studio

StyleVision can be integrated into the Microsoft Visual Studio IDE versions 2005, 2008, and 2010. This unifies the best of both worlds, integrating advanced SPS file creation capabilities with the advanced development environment of Visual Studio.

In this section, we describe:

- The broad installation process and the integration of the StyleVision plugin in Visual Studio.
- Differences between the Visual Studio version and the standalone version.

17.1 Installing the StyleVision Plugin

To install the StyleVision Plugin for Visual Studio, you need to do the following:

- Install Microsoft Visual Studio
- Install StyleVision (Enterprise or Professional Edition)
- Download and run the StyleVision integration package for Microsoft Visual Studio. This package is available on the StyleVision (Enterprise and Professional Editions) download page at www.altova.com. (**Please note:** You must use the integration package corresponding to your StyleVision version (current version is 2010).)

Once the integration package has been installed, you will be able to use StyleVision 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.

17.2 Differences with StyleVision Standalone

This section lists the ways in which the Visual Studio versions differ from the standalone versions of StyleVision.

Entry helpers (Tool windows in Visual Studio)
The entry helpers of StyleVision are available as Tool windows in Visual Studio. The following points about them should be noted. (For a description of entry helpers and the StyleVision GUI, see the section, User Interface.)

- 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.

StyleVision commands as Visual Studio commands
Some StyleVision 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:*** StyleVision projects are handled as Visual Studio projects.
- ***Customize Toolbars, Customize Commands:*** The Toolbars and Commands tabs in the Customize dialog (**Tools | Customize**) contain both visual Studio commands as well as StyleVision commands.
- ***Views:*** In the **View** menu, the command **StyleVision** contains options to toggle on entry helper windows and other sidebars, and to switch between the editing views, and toggle certain editing guides on and off.
- ***StyleVision Help:*** This StyleVision menu appears as a submenu in Visual Studio's **Help** menu.

Chapter 18

StyleVision in Eclipse

18 StyleVision in Eclipse

Eclipse 3.x is an open source framework that integrates different types of applications delivered in the form of plugins.

The StyleVision Plugin for Eclipse enables you to access the functionality of StyleVision from within the Eclipse 3.3 / 3.4 / 3.5 Platform. It is available on Windows platforms. In this section, we describe how to install the StyleVision Plugin for Eclipse and how to set up the StyleVision perspective. After you have done this, components of the StyleVision GUI and StyleVision menu commands will be available within the Eclipse GUI.

18.1 Installing the StyleVision Plugin for Eclipse

Before installing the StyleVision Plugin for Eclipse, ensure that the following are already installed:

- StyleVision 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 3.3, 3.4, or 3.5.

After these have been installed, you can install the StyleVision Plugin for Eclipse, which is contained in the StyleVision Integration Package (*see below*).

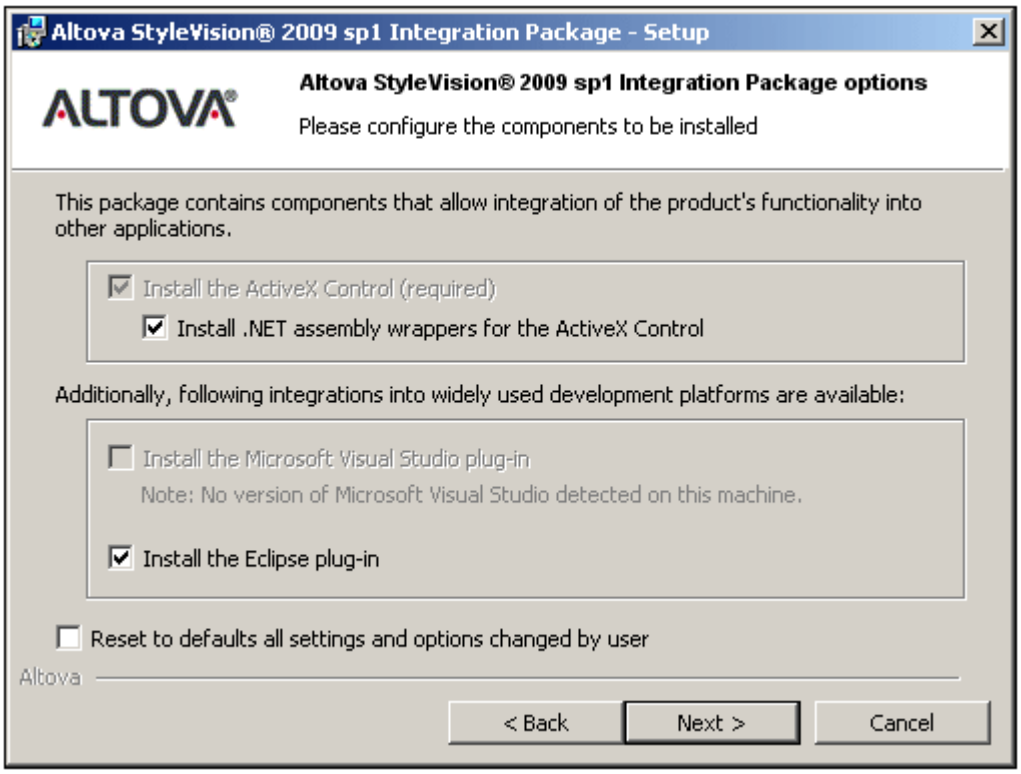
Note on JRE
If, on opening a document in Eclipse, you receive the following error message:

```
java.lang.UnsupportedClassVersionError: com/altova/....
(Unsupported major.minor version 49.0)
```

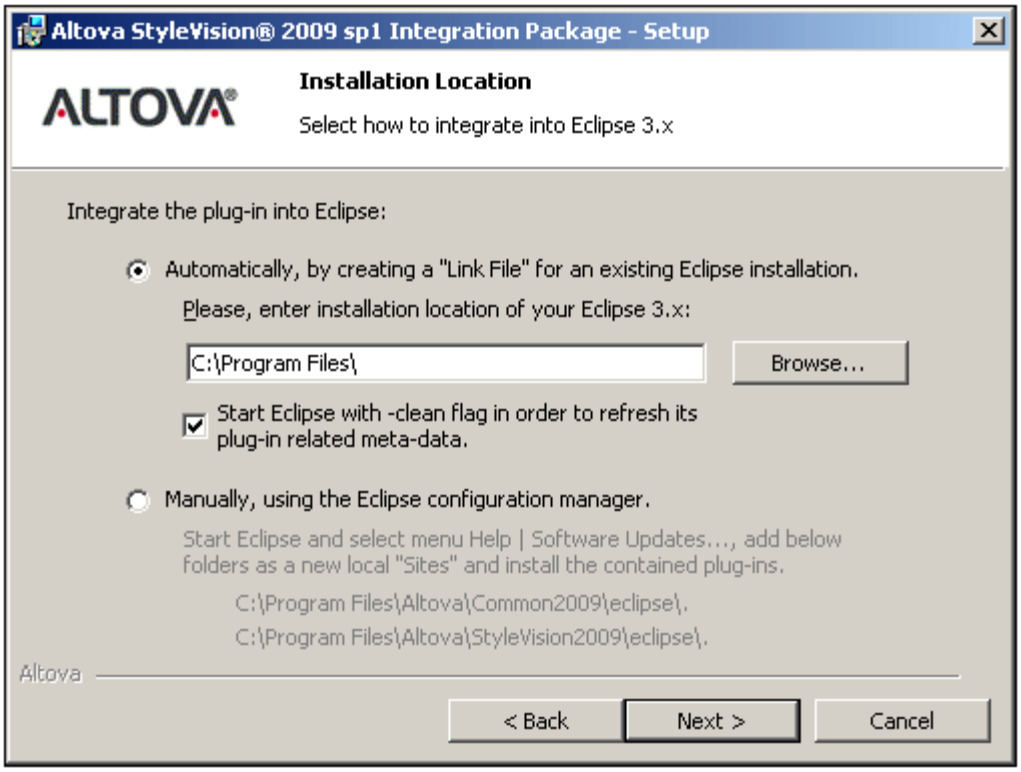
it indicates that Eclipse is using an older JRE. Since Eclipse uses the `PATH` environment variable to find a `javaw.exe`, the problem can be solved by fixing the `PATH` environment variable so that a newer version is found first. Alternatively, start Eclipse with the command line parameter `-vm`, supplying the path to a `javaw.exe` of version 1.5 or higher.

StyleVision Integration Package
The StyleVision Plugin for Eclipse is contained in the StyleVision Integration Package and is installed during the installation of the StyleVision Integration Package. Install as follows:

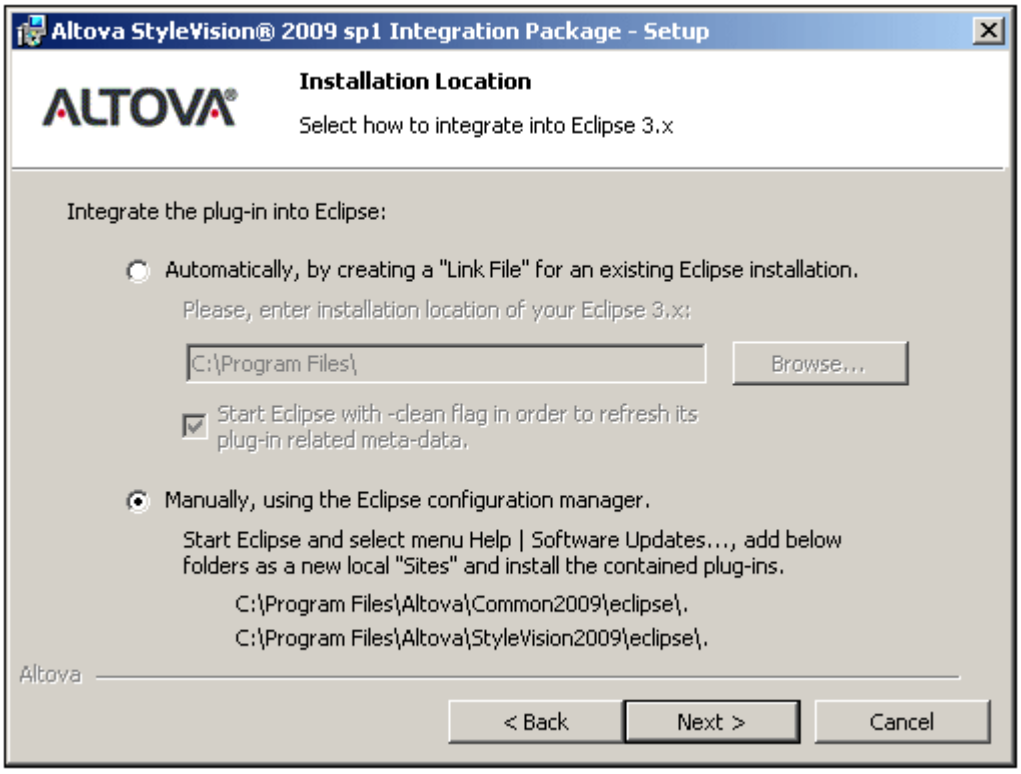
1. Ensure that StyleVision, JRE, and Eclipse are already installed (*see above*).
2. From the Components Download page of the Altova website, download and install the StyleVision Integration Package. There are two important steps during the installation; these are described in Steps 3 and 4 below.
3. During installation of the StyleVision Integration Package, a dialog will appear asking whether you wish to install the StyleVision 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 StyleVision Plugin into Eclipse during the installation (the "Automatic" option) or whether you will integrate the StyleVision 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 StyleVision 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.

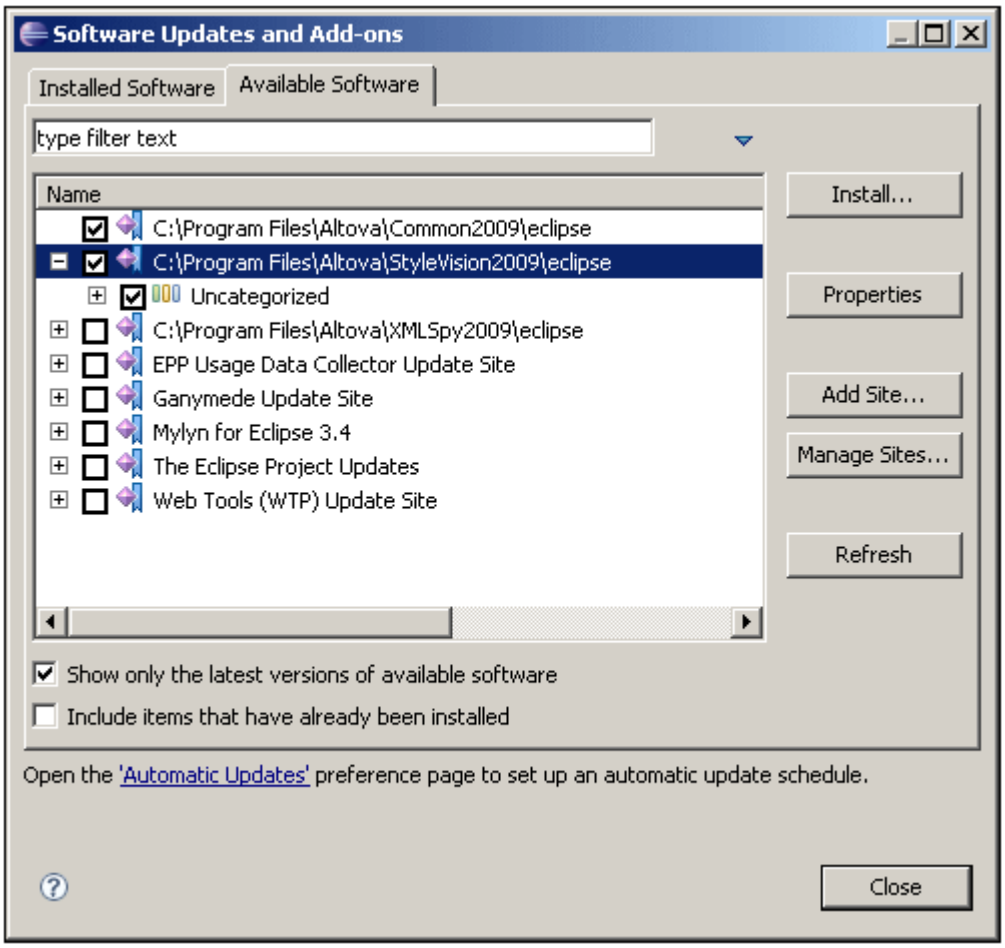


5. Complete the installation. If you set up automatic integration, the StyleVision Plugin for Eclipse will be integrated in Eclipse and will be available when you start Eclipse the next time.

Manually integrating the StyleVision plugin in Eclipse

To manually integrate the StyleVision Plugin for Eclipse, do the following:

1. In Eclipse, click the menu command **Help | Software Updates**.
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\Common2010\eclipse`, select it, and click **OK**.
6. Repeat Steps 3 to 5, this time selecting the folder `c:\Program Files\Altova\StyleVision2010\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 StyleVision Plugin for Eclipse, select the Eclipse menu option **Help | About Eclipse Platform**. Then select the StyleVision icon.

18.2 Stylevision Entry Points in Eclipse

The following entry points in Eclipse can be used to access XMLSpy functionality:

- StyleVision Perspective, which provides StyleVision's GUI features within the Eclipse GUI.
- StyleVision toolbar buttons, which provides access to StyleVision Help and the Create New Document functionality.

StyleVision Perspective

In Eclipse, a perspective is a configured GUI view with functionality from various applications. When the StyleVision Plugin for Eclipse is integrated in Eclipse, a default StyleVision perspective is automatically created. This perspective is a GUI that includes StyleVision's GUI elements: its editing views, menus, entry helpers, and other sidebars.

When a file having a filetype associated with StyleVision is opened (. `sps`), this file can be edited in the StyleVision 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:

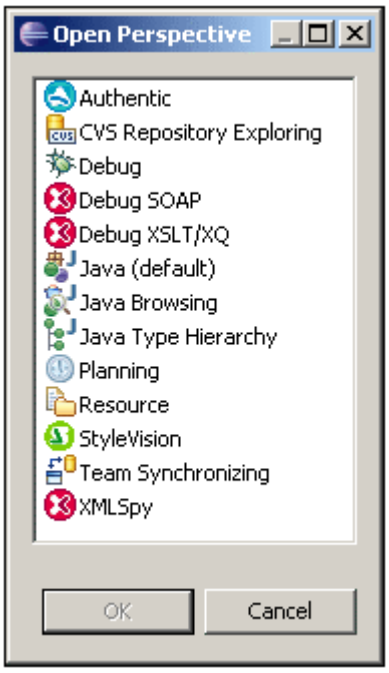
1. Being able to quickly change the working environment of the active file, and
2. Being able to switch between files without having to open a new development environment (the associated environment is available in a perspective)

Working with the StyleVision perspective involves the following:

- Switching to the StyleVision perspective.
- Setting preferences for the StyleVision perspective.
- Customizing the StyleVision perspective.

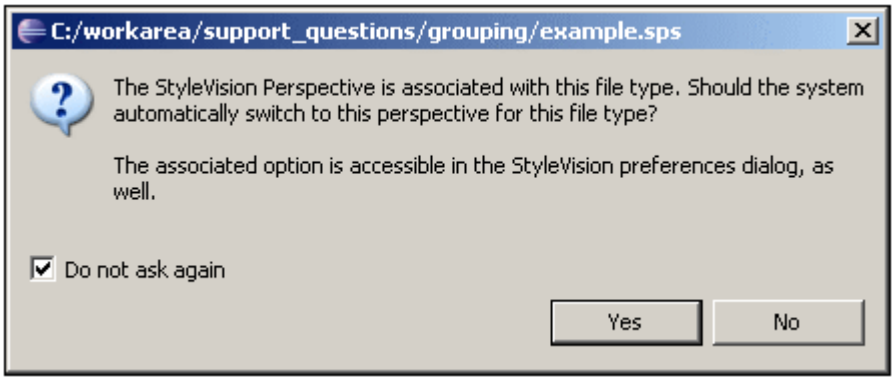
Switching to the StyleVision perspective

In Eclipse, select the command **Window | Open Perspective | Other**. In the dialog that pops up (*screenshot below*), select **StyleVision**, and click **OK**.



The empty window or the active document will now have the StyleVision 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 (*see further below*).

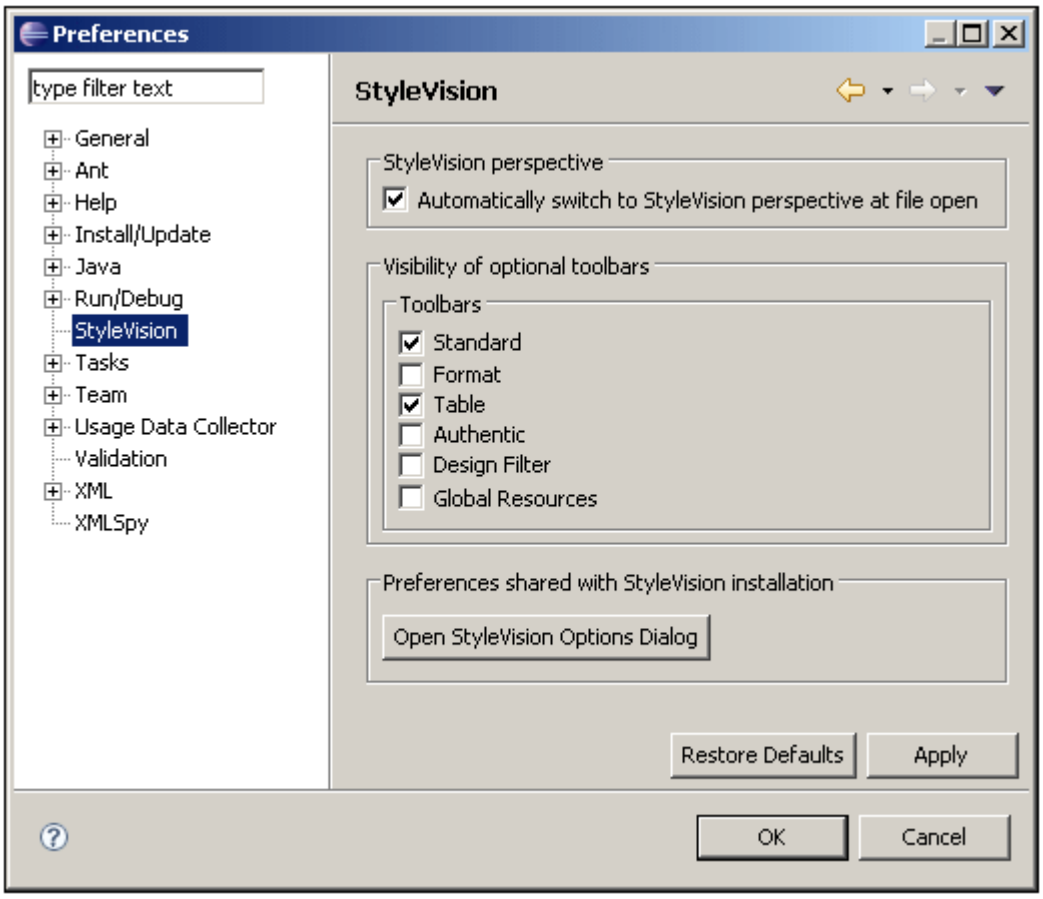
Perspectives can also be switched when a file is opened or made active. The perspective of the application associated with a file's filetype will be automatically opened when that file is opened for the first time. Before the perspective is switched, a dialog appears asking whether you wish to have the default perspective automatically associated with this filetype (*screenshot below*).



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 StyleVision perspective

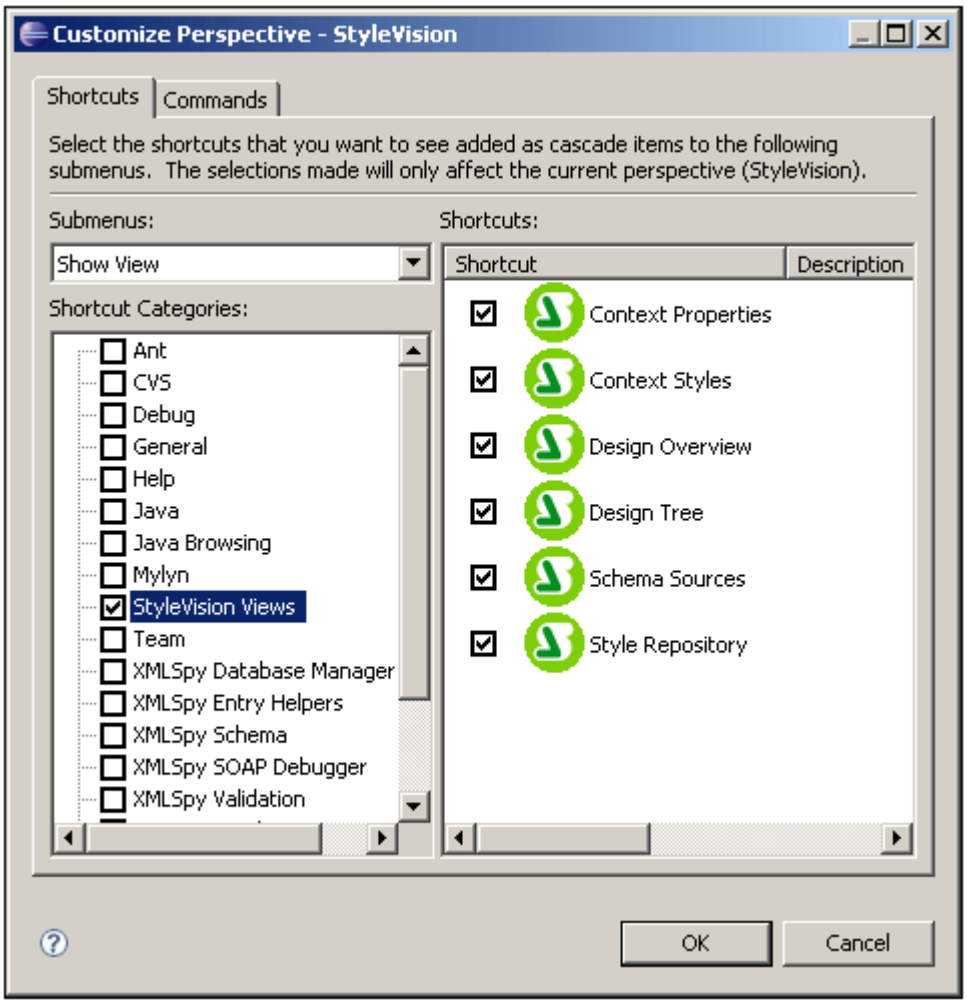
The preferences of a perspective include: (i) a setting to automatically change the perspective when a file of an associated filetype is opened (*see above*), and (ii) options for including or excluding individual StyleVision toolbars. To access the Preferences dialog (*screenshot below*), select the command **Window | Preferences**.



In the list of perspectives in the left pane, select StyleVision, then select the required preferences. Finish by clicking **OK**.

Customizing the StyleVision 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 StyleVision perspective*), make the perspective active (in this case the StyleVision 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.

StyleVision toolbar buttons
Two StyleVision-related buttons are created automatically in the toolbar (*screenshot below*).

Thes are for: (i) opening the StyleVision Help, and (ii) creating new StyleVision documents (corresponding to commands in StyleVision's **File** menu).

Chapter 19

Reference

19 Reference

This section contains a complete description of StyleVision toolbars, Design View symbols, and menu commands. It is divided into the following broad parts:

- A description of all the toolbars with their icons, as well as a description of how to customize the views of the toolbars.
- Descriptions of symbols used in Design View and of the Edit XPath Expression dialog.
- All menu commands.

While the User Reference section contains a description of individual commands, the mechanisms behind various StyleVision features are explained in detail in the relevant sections. The mechanisms have been organized into the following groups::

- SPS File Content
- SPS File Structure
- SPS File Advanced Features
- SPS File Presentation
- SPS File Additional Functionality
- SPS File and Databases
- SPS File and XBRL

For command line usage, see Command Line Interface: StyleVisionBatch.

19.1 Toolbars

A number of StyleVision commands are available as toolbar shortcuts, organized in the following toolbars:

- Formatting
- Table
- Authentic
- Design Filter
- Global Resources
- Standard

The icons in each toolbar are listed in the sub-sections of this section, each with a brief description of the corresponding command.

Positioning the toolbars

A toolbar can float freely on the screen or can be placed in a toolbar area along any edge of the GUI. Toolbars are most commonly placed along the top edge of the GUI, just below the Menu bar. However, they can also be placed along the side or bottom edges of the GUI.

To position a toolbar in a toolbar area, do the following:

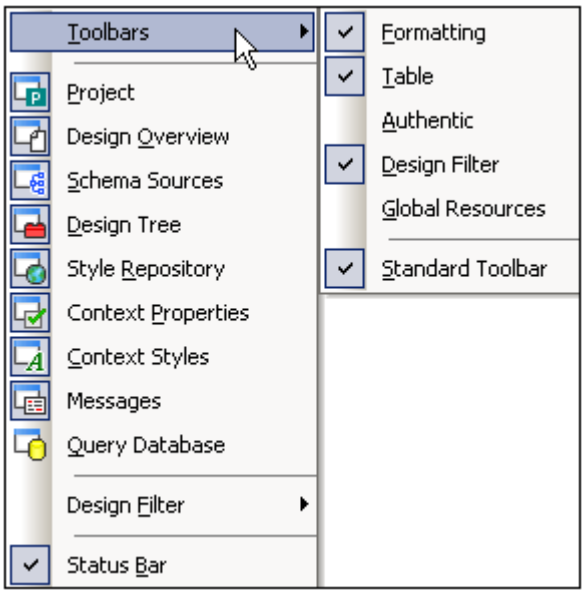
1. Grab the toolbar by its handle (if the toolbar is already in a toolbar area) or by its title bar (if the toolbar is floating).
2. Drag the toolbar to the desired toolbar area, if it exists, and drop it at the desired location in that toolbar area. If no toolbar area exists at the edge along which you wish to place the toolbar, dragging the toolbar to that edge will automatically create a toolbar area there when the toolbar is dropped.

To make a toolbar float freely grab it by its handle, drag it away from the toolbar area, and drop it anywhere on the screen except at an edge or in an existing toolbar area.

Switching the display of toolbars on and off

The display of individual toolbars can be switched on and off using any of the following three methods:

- In the **View | Toolbars** menu (*screenshot below*), select or deselect a toolbar to, respectively, show or hide that toolbar.



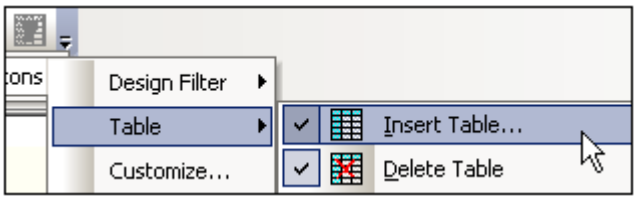
- Right-click any toolbar area to display a context menu (*screenshot below*) that allows you to toggle the display of individual toolbars on and off.

- In the Toolbars tab of the Customize dialog (**Tools | Customize**), toggle the display of individual toolbars on or off by clicking a toolbar's check-box. When done, click the **Close** button to close the dialog.

Adding and removing toolbar buttons

Individual toolbar buttons can be added to or removed from a toolbar, that is, they can be made visible or be hidden. To add or remove a button from a toolbar, do the following:

1. In the toolbar where the button to be added or removed is, click the **More Buttons** button (if the toolbar is in a toolbar area) or the **Toolbar Options** button (if the toolbar is a floating toolbar). The **More Buttons** button is an arrowhead located at the right-hand side of the toolbar (in horizontal toolbar areas) or at the bottom of the toolbar (in vertical toolbar areas). The Toolbar Options button is an arrowhead located at the right-hand side of the floating toolbar.
2. In the **Add or Remove Buttons** menu that pops up, place the cursor over the **Add or Remove Buttons** menu item (*screenshot below*). This rolls out a menu which contains the names of the toolbars in that toolbar area plus the **Customize** menu item (*screenshot below*).



3. Place the cursor over the toolbar that contains the toolbar button to be added or removed (*screenshot above*).
4. In the menu that rolls out (*screenshot above*), click on the name of the toolbar button to add or remove that button from the toolbar.
5. Clicking the Customize item pops up the Customize dialog.

The **Reset Toolbar** item below the list of buttons in each toolbar menu resets the toolbar to the state it was in when you downloaded StyleVision. In this state, all buttons for that toolbar are displayed.

Note: The buttons that a toolbar contains are preset and cannot be disassociated from that toolbar. The process described above displays or hides the button in the toolbar that is displayed in the GUI.

Formatting

The **Formatting toolbar** (*screenshot below*) contains commands that assign commonly used inline and block formatting properties to the item/s selected in the SPS.

Predefined HTML formats
The HTML format selected from the dropdown list is applied to the selection in Design View. For example, a selection of `div` applies HTML's `<div>` element around the current selection in Design View. The HTML format is converted to the corresponding RTF, PDF and Word 2007+ properties for the RTF, PDF and Word 2007+ outputs, respectively.

Text properties
The bold, italic, and underline inline text properties can be directly applied to the current selection in Design View by clicking on the appropriate button.

Alignment
Alignment properties (left-aligned, centered, right-aligned, and justified) can be directly applied to the selection in Design View.

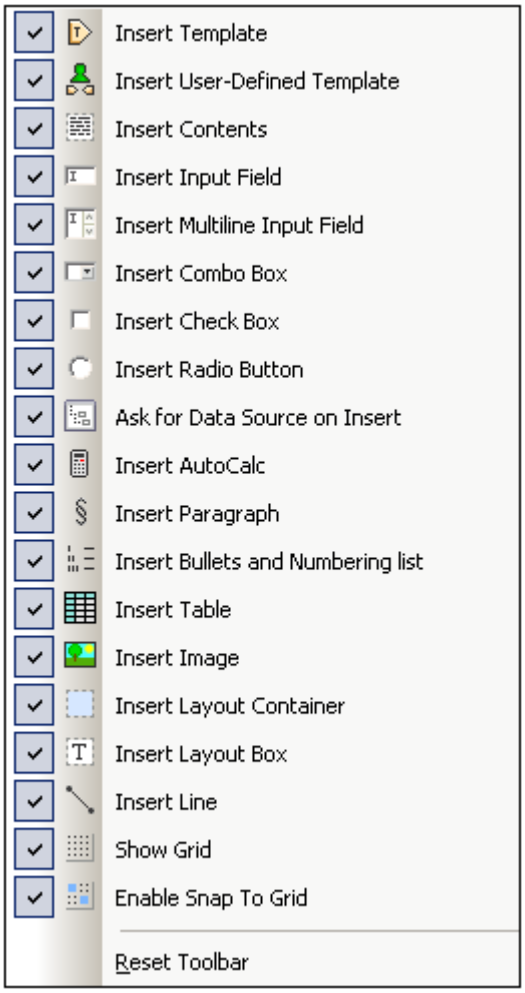
Lists
Lists can be inserted at the cursor insertion point, or the selection in the SPS can be converted to a list.

Hyperlinks
Inserts a hyperlink at the cursor insertion point. See Hyperlink for a description of how to use this command.

Insert Design Elements

The **Insert Design Elements toolbar** contains icons for commands to insert design elements in the SPS design, and for related commands. The various design elements that can be inserted via these toolbar icons are shown in the screenshot below. There are three types of items in the toolbar:

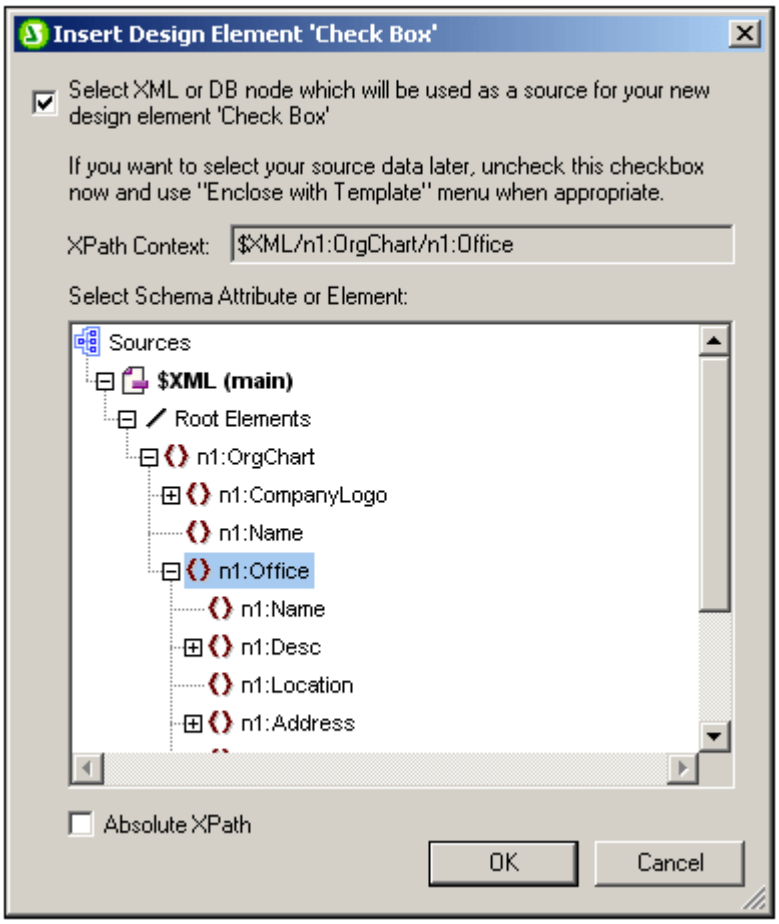
1. Design elements, which are context-node-sensitive (the majority of elements in the toolbar),
2. Layout elements, which are independent of node context, and
3. Grid-related toggles to aid design.



Design elements

The design elements are the context-node-sensitive elements that are available in the **Insert** menu. To insert a design element using its toolbar icon, do the following:

1. Select the toolbar icon for the element you wish to insert.
2. Click the location in the design where the element is to be inserted. A Insert Design Element for the selected design element (*screenshot below*) pops up. This displays the schema tree with the context node highlighted. The context node is the node within which the cursor has been placed for the insertion of the design element.



3. If you wish to insert the design element within the currently selected context node, click **OK**. If you wish to select another context node, do so in the schema tree and then click **OK**.
4. In the case of some design elements, such as Auto-Calculations, a further step is required, such as the definition of an Auto-Calculation. In other cases, such as the insertion of a user-defined template, the Insert Design Element dialog is skipped. In such cases, another dialog, such as the Edit XPath Expression dialog will pop up. Carry out the required step and press the dialog's **OK** button.

The design element will be inserted at the end of Step 3 or Step 4, depending on the kind of design element being inserted.

Layout elements

There are three layout element commands in the Insert Design Elements toolbar: to insert (i) a layout container; (ii) a layout box; and (iii) a line. Note that layout boxes and lines can only be inserted within a layout container.

To insert a layout container, select the **Insert Layout Container** icon and then click at the location in the design where you wish to insert the layout container. You will be prompted about the size of the layout container, on selecting which the layout container will be inserted. To insert a layout box, click the **Insert Layout Box** icon, then move the cursor to the location within the layout container at which you wish to insert the layout box and click. The layout box is inserted. Click inside the layout box to start typing. To insert a line, click the **Insert Line** icon,

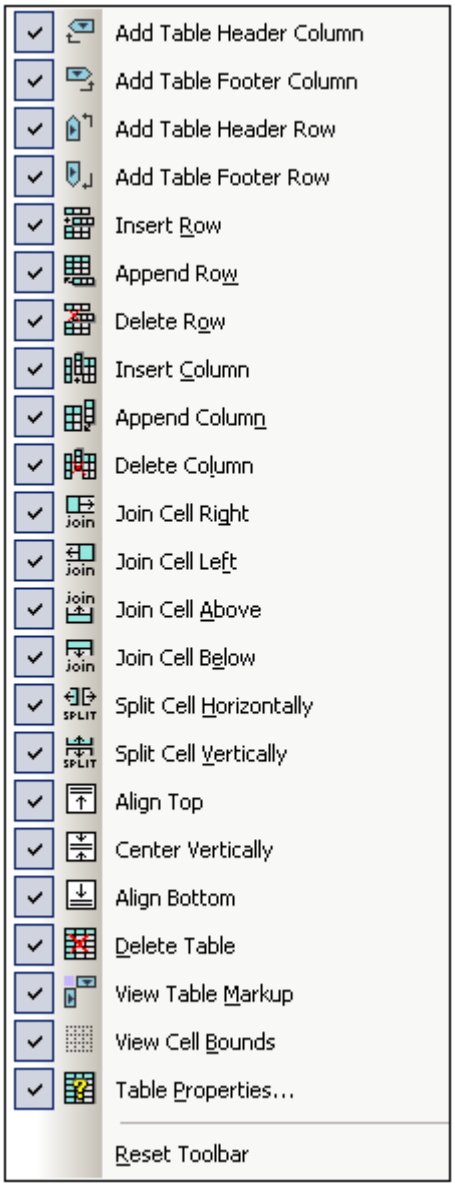
then move the cursor to the location within the layout container at which you wish to start drawing the line. Click to define the start point of the line and then drag the cursor to the desired endpoint. Release the cursor at the end point. The line is inserted and extends from the indicated start point to the indicated end point.

To re-size layout containers and layout boxes, place the cursor over the right or bottom border of the layout container or layout box and drag the border so as to obtain the desired size. To move a layout box, place the cursor over the top or left border of the layout box and, when the cursor turns to a cross, drag the layout box to the new location.

Grid-related toggles
The **Show Grid** command toggles the display of the drawing grid on and off. When the **Snap to Grid** command is toggled on, elements created within the layout container, such as layout boxes and lines, snap to grid lines and grid line intersections. The properties of the grid can be set in the Design tab of teh Options dialog (**Tools | Options**).

Table

The **Table toolbar** contains commands to structure and format static and dynamic tables in Design View. These commands are shown in the screenshot below (which is that of the Table toolbar).



Row and Column operations
Rows and columns in any SPS table (static or dynamic) can be inserted, appended, or deleted with reference to the cursor location. Rows and columns are inserted before the current cursor location or appended after all rows/columns. The row/column in which the cursor is can also be deleted. These operations are achieved with the **Insert Row/Column**, **Append Row/Column**, or **Delete Row/Column** buttons. You can also add table headers and footers as either columns or rows **Add Table Header/Footer Column/Row**.

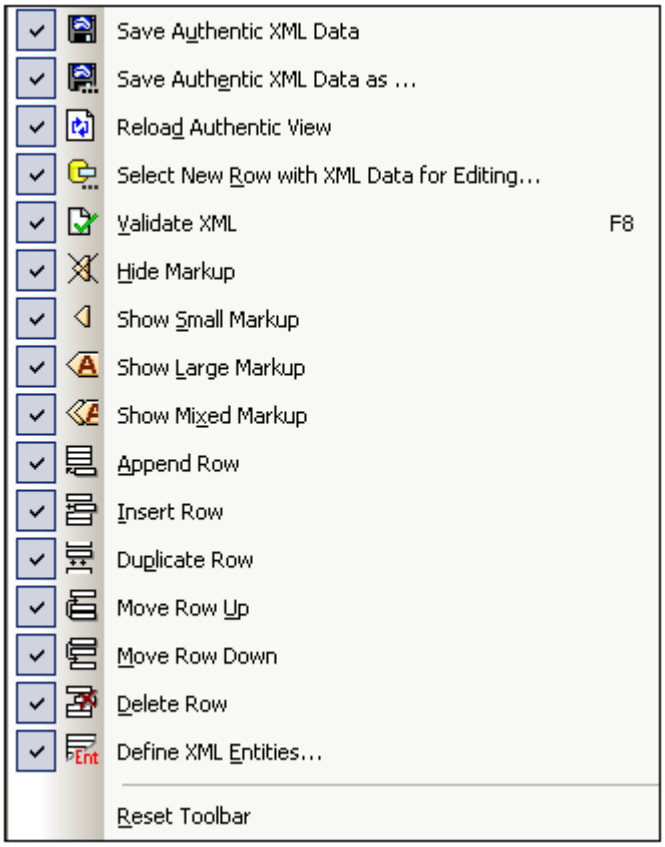
Cell operations
An SPS table cell in which the cursor is located can be joined to any one of the four cells around it. The joining operation is similar to that of spanning table cells in HTML. The buttons to be used for these operations are **Join Cell Right/Left/Above/Below**. Also, an SPS table cell in which the cursor is located can be split, either horizontally or vertically, using the **Split Cell Horizontally** and **Split Cell Vertically** buttons, respectively. SPS table cell content can be aligned vertically at the top, in the middle, and at the bottom. The display of cell borders can be switched on and off with the **View Cell Bounds** toggle.

Table operations, properties, display
Placing the cursor in a static or dynamic table and clicking **Delete Table** deletes that table. Table markup can be toggled on and off with the View Table Markup command. The Table Properties command pops up the Table Properties dialog, in which properties of the table can be defined.

Authentic

The **Authentic toolbar** contains commands for customizing Authentic View and editing XML documents in Authentic View. These commands are shown in the screenshot below (the menu for adding and removing Authentic toolbar buttons).

All these features are available to the Authentic View user. They enable you, as the SPS designer, to test the SPS using features at the Authentic View users's disposal.



Validating, saving, and reloading XML documents
While editing an XML document in Authentic View, you can check the validity of the Working XML File by using the **Validate XML** button. Editing changes can be saved to the Working XML File with the **Save Authentic XML Data** button. The XML document can also be reloaded at any time from the last saved version.

Select new row with XML data for editing
This command is enabled only in SPSs that are based on an XML DB. The command enables a new row from the XML column to be loaded into Authentic View for editing. See the description of the command for details.

Markup tags in Authentic View
In Authentic View, the display of markup tags can be customized. Markup tags can be hidden (**Hide Markup**), can be shown with node names (**Show Large Markup**), without node names (**Show Small Markup**), or with any of these three options for individual nodes (**Show Mixed Markup**).

Editing of dynamic tables in Authentic View
In Authentic View, row operations can be performed on dynamic tables. Rows can be inserted, appended, and duplicated, as well as be moved up and down, using the appropriate toolbar buttons (**Insert Row**, **Append Row**, **Duplicate Row**, **Move Row Up**, **Move Row Down**, and **Delete Row**).

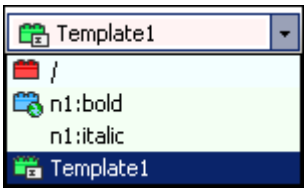
Defining DTD Entities
Entities can be defined at any time while editing the Working XML File in Authentic View. Clicking the **Define DTD Entities** button pops up the Define DTD Entities dialog. (*See Authentic | Define Entities for details of usage.*)

Design Filter

The **Design Filter toolbar** (*screenshot below*) contains commands that enable you to filter which templates are displayed in the design. Each icon in the toolbar is explained below.

Icon	Command	Description
	Show only one template	Shows the selected template only. Place the cursor in a template and click to show that template only.
	Show all template types	Shows all templates in the SPS (main, global, named, and layout) .
	Show imported templates	Toggles the display of imported templates on and off.
	Show/Hide main template	Toggles the display of the main template on and off.
	Show/Hide global templates	Toggles the display of global templates on and off.
	Show/Hide Design Fragments	Toggles the display of Design Fragments on and off.

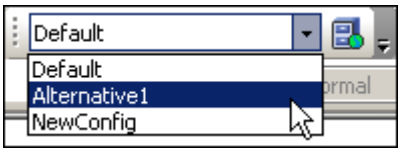
The Design Filter combo box (*screenshot below*) displays a list of all the templates in the SPS.



Selecting a template in the combo box causes the template to be selected in the design. The combo box, therefore, enables you to quickly navigate to the desired template in the design, which is useful if the design has several templates, some of which might be currently hidden.

Global Resources

The **Global Resources toolbar** (*screenshot below*) enables you: (i) to select the active configuration for the application, and (ii) to access the Altova Global Resources dialog.



Select the active configuration from among the options in the dropdown list of the combo box. Click the Manage Global Resources icon to access the Altova Global Resources dialog.

Standard

The **Standard toolbar** contains buttons for commands that provide important file-related and editing functionality. These icons are listed below with a brief description. For a fuller description of a command, click the command to go to its description in the Reference section.

Icon	Command	Shortcut	Description
	New from XML Schema / DTD	Ctrl+N	Creates a new SPS document based on a schema. Clicking the dropdown arrow enables you to create the SPS from a DB or an HTML document, or an empty SPS.
	Open	Ctrl+O	Opens an existing SPS document.
	Reload		Reloads the SPS from the last saved version.
	Save Design	Ctrl+S	Saves the active SPS document.
	Save All	Ctrl+Shift+S	Saves all open SPS documents.
	Print	Ctrl+P	Prints the Authentic View of the Working XML file.
	Print Preview		Displays a print preview of the Authentic View of the Working XML File.
	Cut	Shift+Del	Cuts the selection and places it in the clipboard.
	Copy	Ctrl+C	Copies the selection to the clipboard.
	Paste	Ctrl+P	Pastes the clipboard item to the cursor location.
	Delete	Del	Deletes the selection.
	Undo	Alt+ Backspace	Undoes an editing change. An unlimited number of Undo actions can be performed at a time.
	Redo	Ctrl+Y	Redoes an undo.
	Paragraph		Encloses the selection with a paragraph.
	Find	Ctrl+F	Finds text in Authentic View and Output Views.
	Find Next	F3	Finds the next occurrence of the searched text.
	Zoom		Sets the Zoom Factor of Design View.
	Show Small Design Markup		Switches markup tags to small markup format.

Icon	Command	Shortcut	Description
	**Show Large Design Markup**		Switches markup tags to large markup format.
	**XSLT 1.0**		Sets XSLT 1.0 as the stylesheet language.
	**XSLT 2.0**		Sets XSLT 2.0 as the stylesheet language.
	**Spelling**		Runs a spelling check on the SPS document.

19.2 Design View

The Design View is where the SPS is structured and where presentation properties are assigned. It provides you with a graphical representation of your design. The symbols that are used to denote the various components of the SPS are important for understanding the structure and layout of the SPS. These symbols are explained in the Symbols sub-section of this section. A key mechanism used to access nodes in XML documents is XPath, and a number of StyleVision features use XPath. A dialog used in common by all these features is the Edit XPath Expression dialog, in which you can build XPath expressions. The Edit XPath Expressions dialog is explained in detail in the XPath Dialog sub-section of this section.

Symbols

An SPS design will typically contain several types of component. Each component is represented in the design by a specific symbol. These symbols are listed below and are organized into the following groups:

- Nodes in the XML document
- XML document content
- Data-entry devices
- Predefined formats
- XPath objects
- URI objects

Each of these component types can:

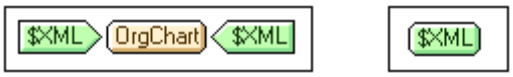
- be moved using drag and drop;
- be cut, copied, pasted, and deleted using (i) the commands in the View menu, or (ii) the standard Windows shortcuts for these commands;
- have formatting applied to it;
- have a context menu pop up when right-clicked.

Nodes in the XML document

Element and attribute nodes in the XML document are represented in the SPS design document by tags. Each node has a start tag and end tag. Double-clicking either the start or end tag collapses that node. When a node is collapsed all its contents are hidden. Double-clicking a collapsed node expands it and displays its content.

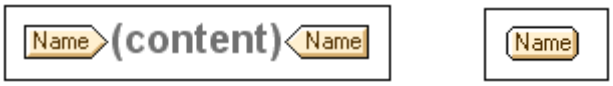
The following types of node are represented:

- ***Document node***



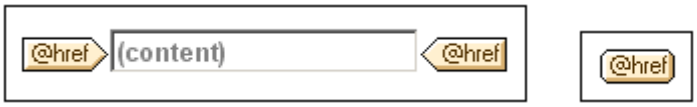
The **document node** (indicated with `$XML`) represents the XML document as a whole. It is indicated with a green `$XML` tag when the schema source is associated with an XML document, and with `$DB` when the schema source is associated with a DB. The document node in the screenshot at left is expanded and contains the `OrgChart` element, which is collapsed. The document node in the screenshot at right is collapsed; its contents are hidden.

- ***Element node***



An **element node** is inserted together with all its ancestor elements if the ancestors are not present at the insertion point. In the screenshot above, the `Name` element node is shown expanded *(left)* and collapsed *(right)*.

- ***Attribute node***



An **attribute node** is inserted together with all its ancestor elements if the ancestors are not present at the insertion point. Attribute names contain the prefix `@`. In the screenshot above, the `href` attribute node is shown expanded *(left)* and collapsed *(right)*.

XML document content

XML document content is represented by two placeholders:

- `(contents)`
- `(rest-of-contents)`

The **`contents`** placeholder represents the contents of a single node. All the text content of the node is output. If the node is an attribute node or a text-only element node, the value of the node is output. If the node is an element node that contains mixed content or element-only content, the text content of all descendants is output. In XSLT terms, the `contents` placeholder is equivalent to the `xsl:apply-templates` element with its `select` attribute set for that node..

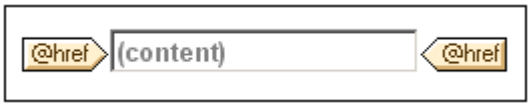
Note: When applied to an element node, the `contents` placeholder does not output the values of attributes of that element. To output attribute nodes, you must explicitly include the attribute in the template (main or global).

The **`rest-of-contents`** placeholder applies templates to the rest of the child elements of the current node. The template that is applied for each child element in this case will be either a global template (if one is defined for that element) or the default template for elements (which simply outputs text of text-only elements, and applies templates to child elements). For example, consider an element `book`, which contains the child elements: `title`, `author`, `isbn`, and `pubdate`. If the definition of `book` specifies that only the `title` child element be output, then none of the other child elements (`author`, `isbn`, and `pubdate`) will be output when this definition is processed. If, however, the definition of `book` includes the `rest-of-contents` placeholder after the definition for the `title` element, then for each of the other child elements (`author`, `isbn`, and `pubdate`), a global template (if one exists for that element), or the default template for elements, will be applied.

Data-entry devices

In order to aid the Authentic View user edit the XML document correctly and enter valid data, data-entry devices can be used in the design. You can assign any of the following data-entry devices to a node:

- ***Input fields (single line or multi-line)***



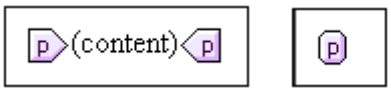
- ***Combo boxes***

- ***Check boxes***

- ***Radio buttons***

These tags can be collapsed and expanded by double-clicking an expanded and the collapsed tag, respectively. For a detailed description of how each of these data-entry devices is used, see Data-Entry Devices.

Predefined formats
Predefined formats are shown in mauve tags, which can be expanded/collapsed by double-clicking.



The screenshot above shows tags for the predefined format `p ( para)` , expanded *(at left)* and collapsed *(at right)*. To apply a predefined format, highlight the items around which the predefined format is to appear (by clicking a component and/or marking text), and insert the predefined format.

XPath objects
StyleVision features two mechanisms that use XPath expressions:

- ***Conditional templates***

Condition tags are blue. The start tag contains cells. The leftmost cell contains a question mark. Other cells each contain either (i) a number, starting with one, for each `when` condition; and/or (ii) an asterisk for the optional `otherwise` condition. A condition branch can be selected by clicking it. The number of the selected condition branch is highlighted in the start tag, and the template for that branch is displayed (within the start and end tags of the condition). The XPath expression for the selected condition branch is also highlighted in the Design Tree. Note that tags for conditions cannot be expanded/collapsed.

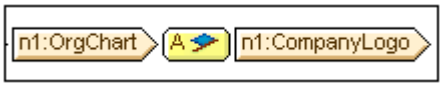
- ***Auto-Calculations***

Auto-Calculations are represented in Design View by the `=( AutoCalc)` object (*see screenshot above*). The XPath expression for the selected Auto-Calculation is highlighted in the Design Tree. The dialog to edit the Auto-Calculation is accessed via the Properties sidebar.

URI objects
There are three URI-based objects that can be inserted in a design:

- ***Images***
  If an image is inserted in the SPS design and can be accessed by StyleVision, it becomes visible in Design View. If it cannot be accessed, its place in the SPS is marked by an image placeholder.

- ***Bookmarks (Anchors)***



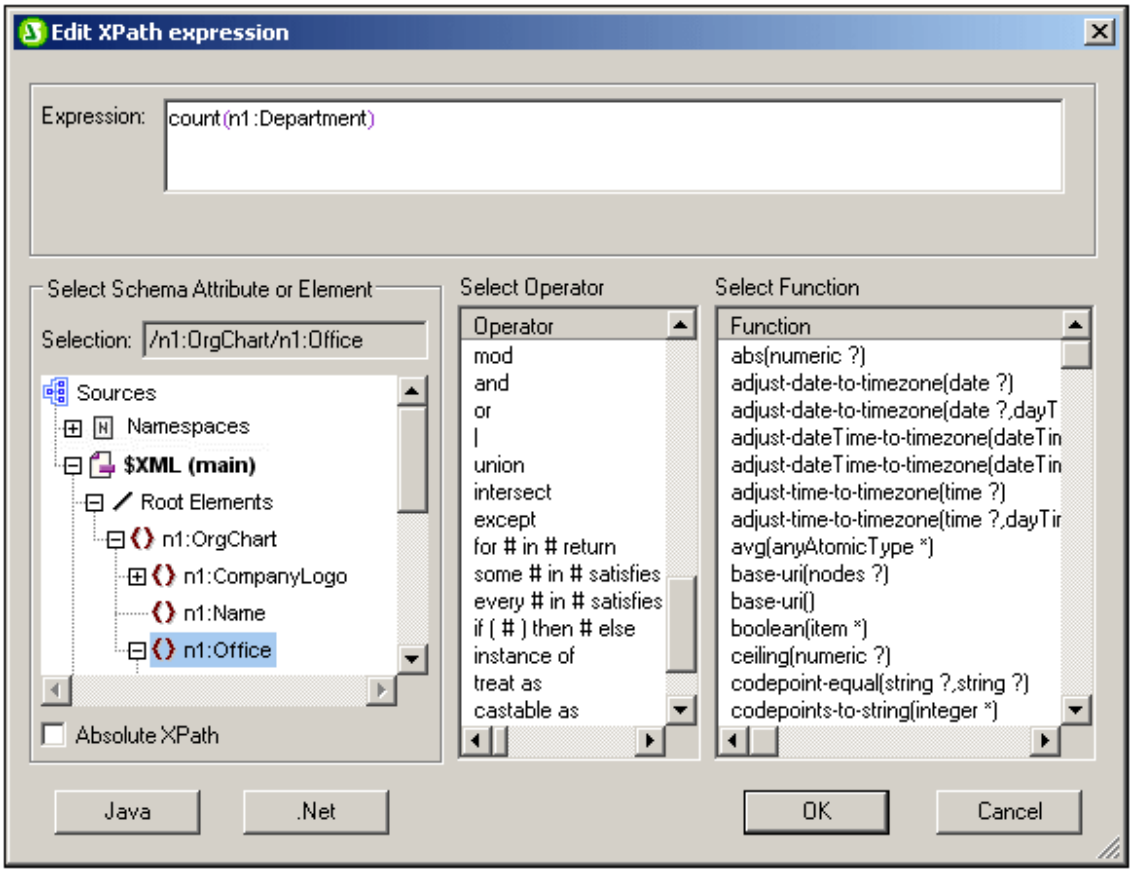
  Bookmark tags are yellow and indicated with the character A (*screenshots above*). A bookmark is created with the command **Insert | Bookmark**, and can be empty or contain content. Content must always be inserted after the anchor is created. Anchor tags can be expanded (*screenshot above left*) or collapsed (*screenshot above right*).

- ***Links***

  Link tags are yellow and indicated with the character A (*screenshots above*). A link is created with the command **Insert | Hyperlink**. The link item can be created before or after the link is created. If an item is to be created as a link, it should be selected and the link created around it. Link tags can be expanded (*screenshot above left*) or collapsed (*screenshot above right*).

Edit XPath Expression

The **Edit XPath Expression** dialog (*screenshot below*) is used to edit and assign XPath expressions for a range of features.



In the Edit XPath Expression dialog, you can (i) enter an expression in the Expression text box via the keyboard, or (ii) you can insert nodes, operators, and functions by double-clicking them from their respective lists. XPath axes are listed under operators, and XML Schema constructor functions under functions. The lists for operators and functions automatically displays XPath 1.0 operators and functions or XPath 2.0 operators and functions according to the XSLT version selected for the SPS (XPath 1.0 for XSLT 1.0, and XPath 2.0 for XSLT 2.0). If you enter a part of the expression incorrectly, this will be displayed with a red underline, and in the case of spelling errors, correct alternatives will appear in a popup.

The Edit XPath Expression dialog helps you to build XPath expressions in the following ways.

- **Context node**
  The context node for the XPath expression is shown in the Selection text box in the Select Schema Attribute or Element pane. The Condition, Auto-Calculation, etc, for which the expression is being created, will be inserted at a location within this context, and the XPath expression will be evaluated with this node as its context.

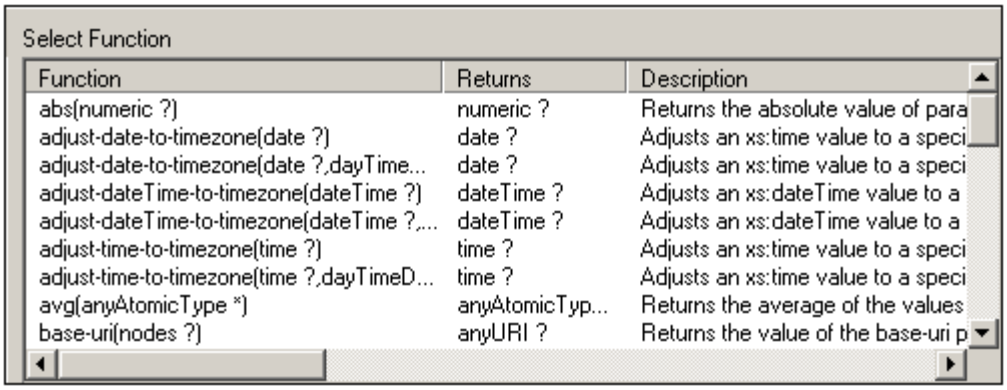
- **Inserting a node from the schema in the expression**
  In the Select Schema Attribute or Element pane, the entire schema is displayed. You can insert a node from the schema into the XPath expression by double-clicking the required node. If the Absolute XPath check box is not checked, the selected node will be inserted with a location path expression that is relative to the context node. For

example, in the screenshot above, the `Location` element, which is a child of the `Office` element (the context node), has been inserted with a location path that is relative to the context node (that is, as `Location`). If the Absolute XPath check box were checked, the `Location` node would have been inserted as `/OrgChart/Office/Location`.

- **Inserting XPath operators**
  The Select Operator pane automatically lists XPath 1.0 or XPath 2.0 operators according to whether XSLT 1.0 or XSLT 2.0 has been selected as the XSLT version for the SPS. To insert an operator in the XPath expression, double-click the required operator.

- **Namespace information**
  The schema tree in the Select Schema Node pane contains a Namespace item. Expanding this item displays all the namespaces declared in the stylesheet. This information can be useful for checking the prefixes of a namespace you might want to use in an XPath expression.

- **Inserting XPath functions**
  The Select Function pane (*screenshot below*) is at the right of the Edit XPath Expression dialog and automatically lists XPath 1.0 or XPath 2.0 functions according to whether XSLT 1.0 or XSLT 2.0 has been selected as the XSLT version for the SPS. Each function is listed with its signature. If a function has more than one signature, that function is listed as many times as the number of signatures (see `adjust-date-to-timezone` in screenshot below). Arguments in a signature are separated by commas, and arguments can have an occurrence indicators (**?** indicates a sequence of zero or one items of the specified type; ***** indicates a sequence of zero or more items of the specified type). The functions list also includes the return type of that function and a brief description of the function.



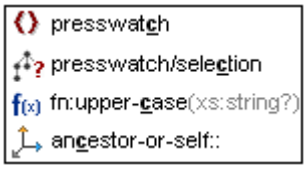
To insert a function in the XPath expression, double-click the required function.

- Java and .NET extension functions can be used in XPath expressions, enabling you to access the functions of these programming languages. The **Java** and **.NET** buttons at the bottom of the dialog, pop up info boxes with explanations about how to use Java and .NET extension functions in XPath expressions. For more information about this, see the Extension Functions section of this **documentation**.

Note: **Java and .NET extension functions** are not supported in the Community Edition of Altova's Authentic View products. They are supported in the Enterprise Editions of these products.

XPath expression entry options

As an expression is being entered into the Expression text box, the available options are displayed in a popup (*screenshot below*).



These include elements (such as `presswatch` in the screenshot above), descendant nodes (`presswatch/selection` in the screenshot above), XPath functions (`fn:upper-case` above) and XPath axes (`ancestor-or-self` above). The list of available options becomes more restricted as the expression is entered in the Expression text box.

The Otherwise check box

The Otherwise check box below the input field for the XPath expression appears when a second or subsequent condition is being added to a conditional template. Checking the Otherwise check box inserts the optional Otherwise condition of a conditional template. For details of how to use the Otherwise condition, see Conditional Templates.

XPath expressions containing carriage returns / linefeeds

You can include carriage returns and/or linefeeds (CR/LFs) in the XPath expression in order to set part of the output on separate lines. However, in order for the CR/LF to be visible in the output (all outputs except RTF output), the component containing the XPath expression must be enclosed in the `pre` special paragraph type. An example of such an XPath expression is:

```
translate('a;b;c', ';', codepoints-to-string(13))
```

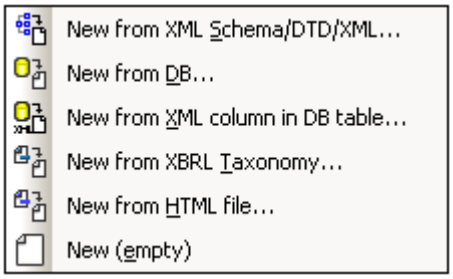
19.3 File Menu

The **File** menu contains commands for working with SPSs and related files. The following commands are available:

- New, to create a new SPS from a variety of sources.
- Open, Reload, Close, Close All, to open and close the active file, and to reload the active file.
- Save Design, Design As, All, which are commands to save the active SPS and all open SPS files.
- Save Authentic XML Data, Save As, enabled in Authentic View, it saves changes to the Working XML File.
- Save Generated Files, to save output files that can be generated using the SPS.
- Assign/Unassign Working XML File, to assign/unassign the Working XML File that will be used to generate the previews in StyleVision.
- Assign/Unassign Template XML File, to save output files that can be generated using the SPS.
- Properties, to set the encoding of the output documents, the CSS compatibility mode of the browser, how relative image paths in Authentic View should be resolved, and whether images should be embedded or linked in the RTF (*Enterprise and Professional editions*) and Word 2007+ (*Enterprise edition only*) outputs.
- Print Preview, Print, enabled in Authentic View and output views, these commands print what is displayed in the previews.
- Most Recently Used Files, Exit, respectively, to select a recently used file to open, and to exit the program.

New

Placing the cursor over the **New** command pops out a submenu (*screenshot below*) that enables you to create a new SPS document of one of five types:



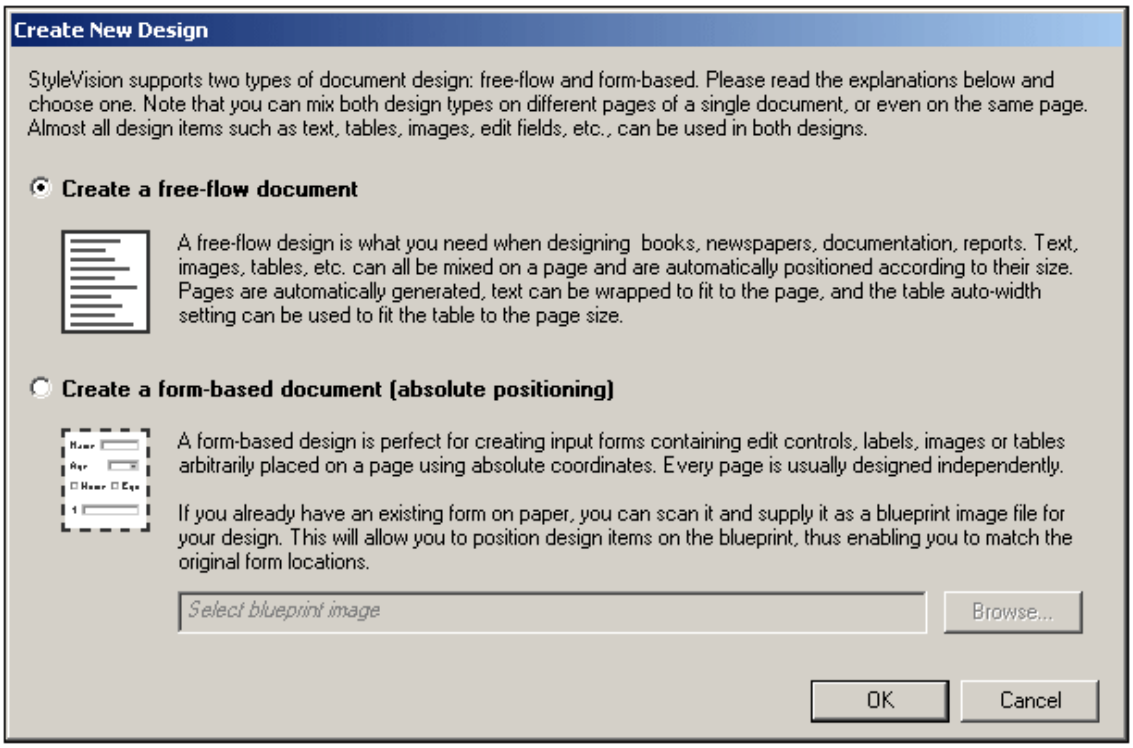
- A new SPS file based on an XML Schema or DTD or XML Schema generated from an XML file (**New from XML Schema / DTD / XML**). The selected schema is added to the Design Overview sidebar and a graphical tree representation is added to the schema tree (in the Schema Tree sidebar). In Design View, the SPS is created with an empty main template. A new SPS can also be created from a file (schema or XML) via a URL or global resource (*see below*).
- A new SPS file based on an XML Schema generated from a DB you select (**New from DB** or **New from XML Column in IBM DB2**). The connection process is described in the section Connecting to a DB and Setting up the SPS. The SPS is created in Design View with an empty main template.
- A new SPS file based on an XBRL taxonomy.
- A new SPS based on a user-defined schema you create node-by-node from an HTML file (**New from HTML File**). The user-defined schema is added to the Design Overview sidebar and Schema Tree sidebar. In the schema tree, it will have a single document element (root element), and the HTML file is loaded in Design View.
- A new empty SPS (**New (empty)**). No schema is added to either the Design Overview sidebar or the schema tree. An empty main template will be created in Design View.

Note: A global resource can be used to locate a file or DB resource.

Selecting the type of design

After you have selected (XSD and XML) sources files, if required, the Create New Design dialog appears.

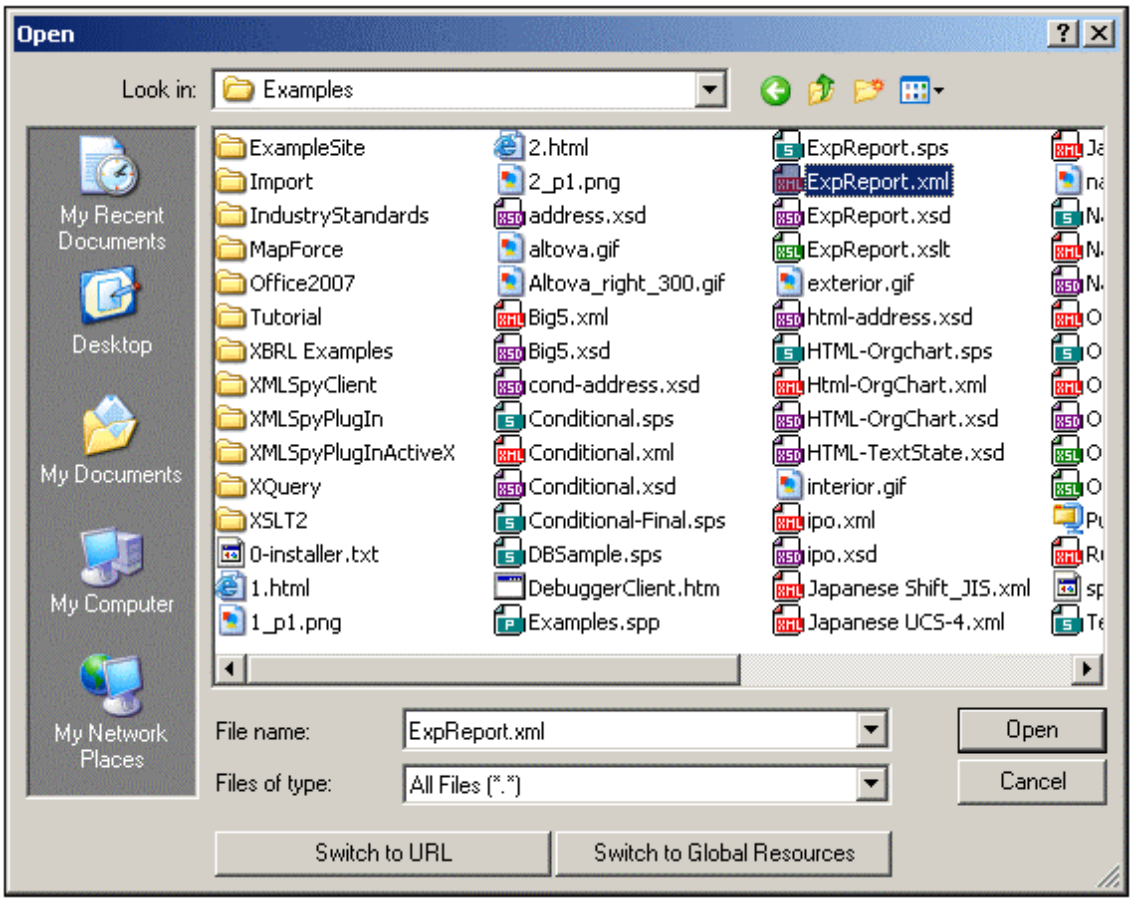
The Create New Design dialog (*screenshot below*) prompts you to select either: (i) a free-flowing document design, or (ii) a form-based document design (in which components are positioned absolutely, as in a layout program).



In a free-flowing document design, document content is laid out to fit the output media object or viewer (paper or screen). Items in the document content can only be placed relative to each other, and not absolutely. This kind of design is suited for documents such as reports, articles, and books.

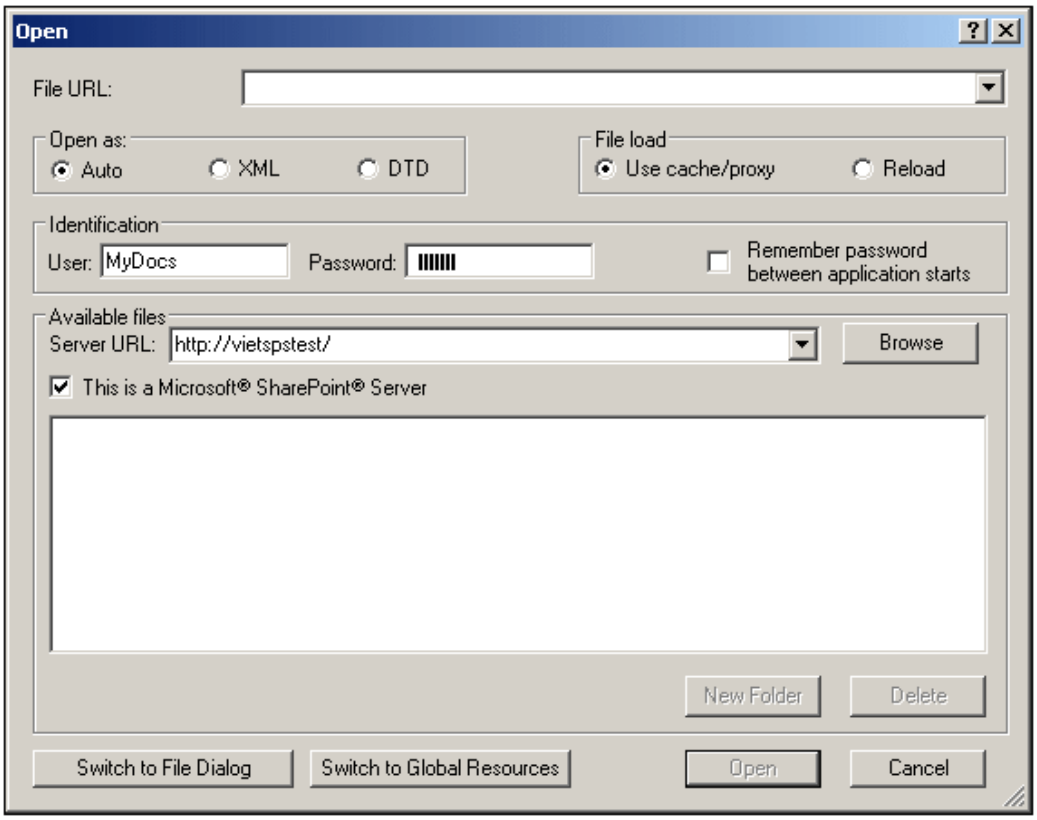
In a form-based document, a single Layout Container is created, in which design components can be positioned absolutely. The dimensions of the Layout Container are user-defined, and Layout Boxes can be positioned absolutely within the Layout Container and document content can be placed within individual Layout Boxes. If you wish the design of your SPS to replicate a specific form-based design, you can use an image of the original form as a blueprint image. The blueprint image can then be included as the background image of the Layout Container. The blueprint image is used to help you design your form; it will not be included in the output.

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.

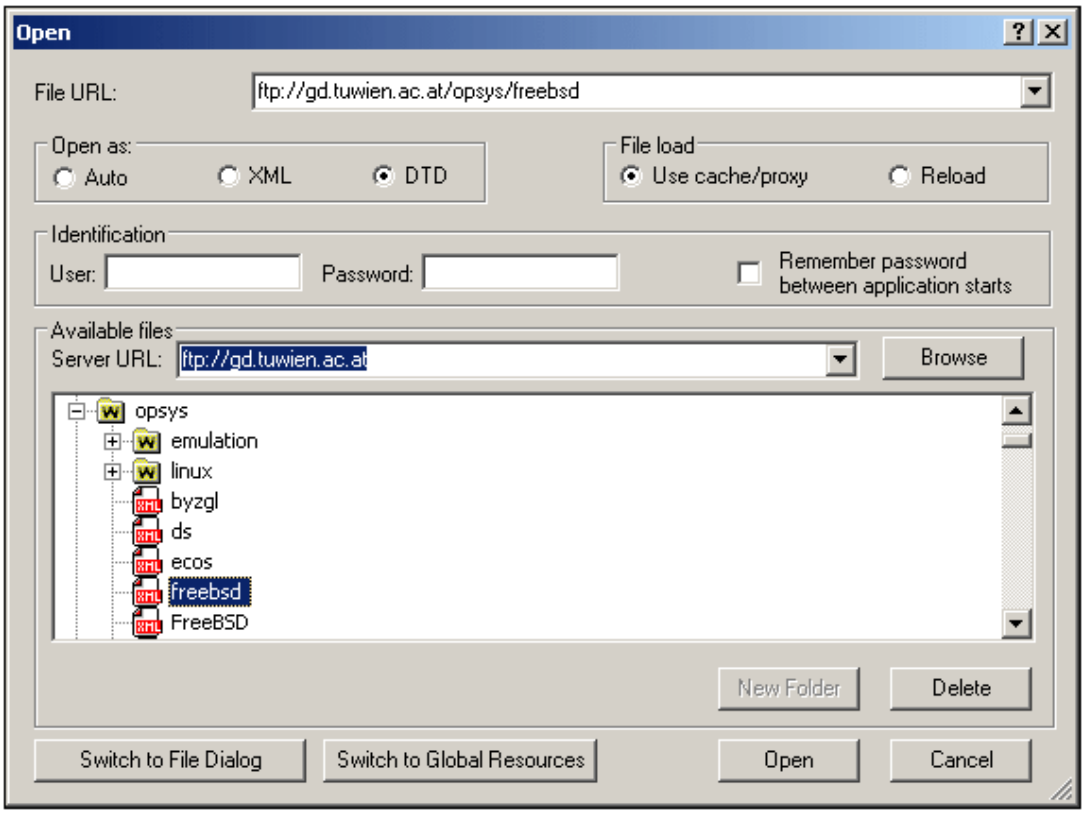


Selecting files via URLs
To select a file via a URL, do the following:

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.

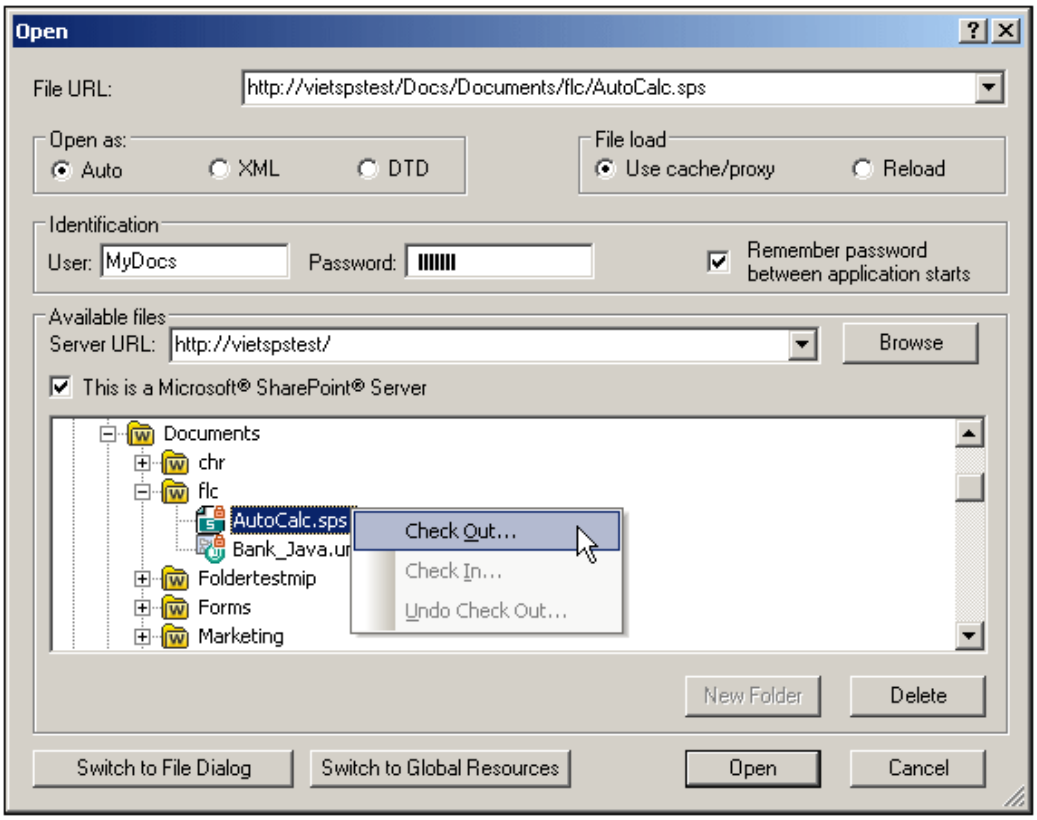
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

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.

Open, Reload, Close, Close All

The **Open** (**Ctrl+O**) command allows you to open an existing SPS file. The familiar Open dialog of Windows systems is opened and allows you to select a file with an extension of `.sps`.

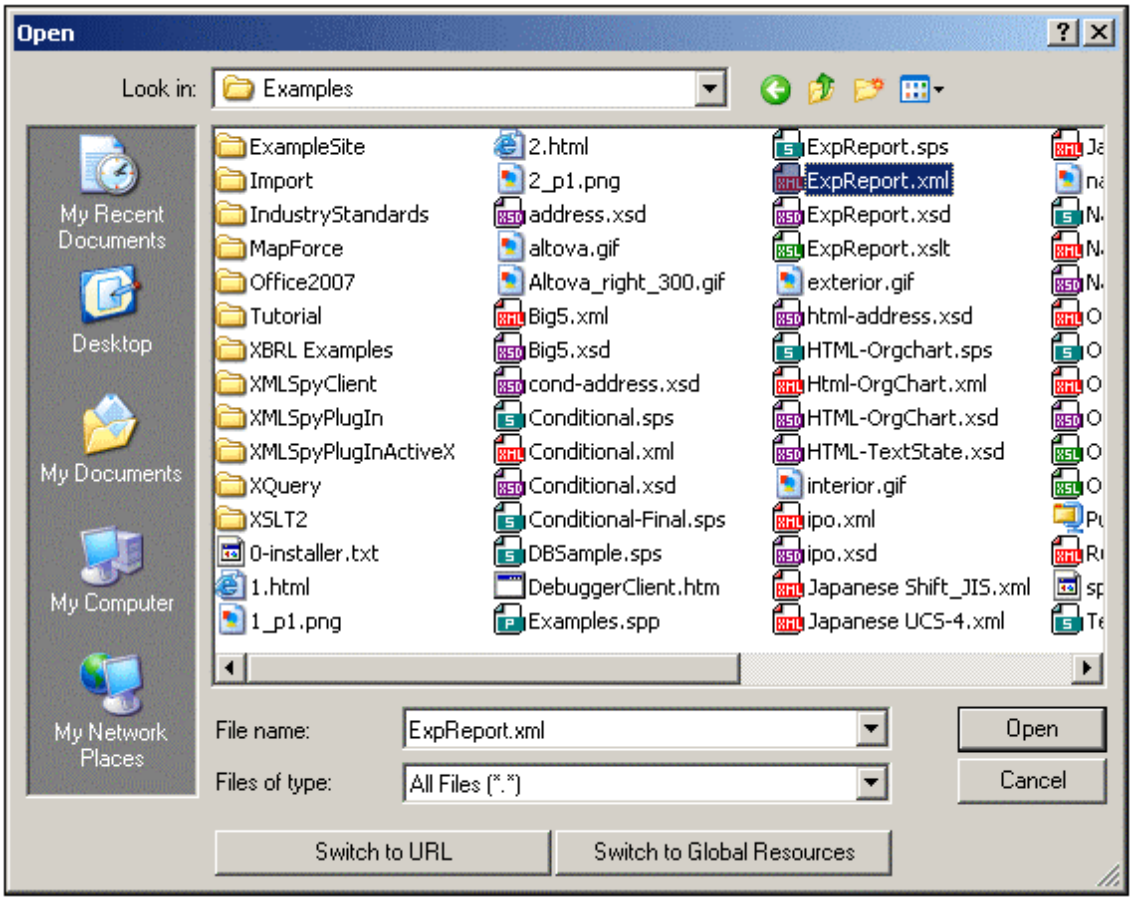
The **Reload** command reloads the SPS file from the file saved to disk. Any changes made since the file was last saved will be lost. The Working XML file will also be reloaded, enabling you to update the Working XML File it it has been changed externally.

The **Close** command closes the currently active SPS document. Note that while several files can be open, only one is active. The active document can also be closed by clicking the **Close** button at the top right of the Main Window. If you have unsaved changes in the document, you will be prompted to save these changes.

The **Close All** command closes all the open SPS documents. If you have unsaved changes in an open document, you will be prompted to save these changes.

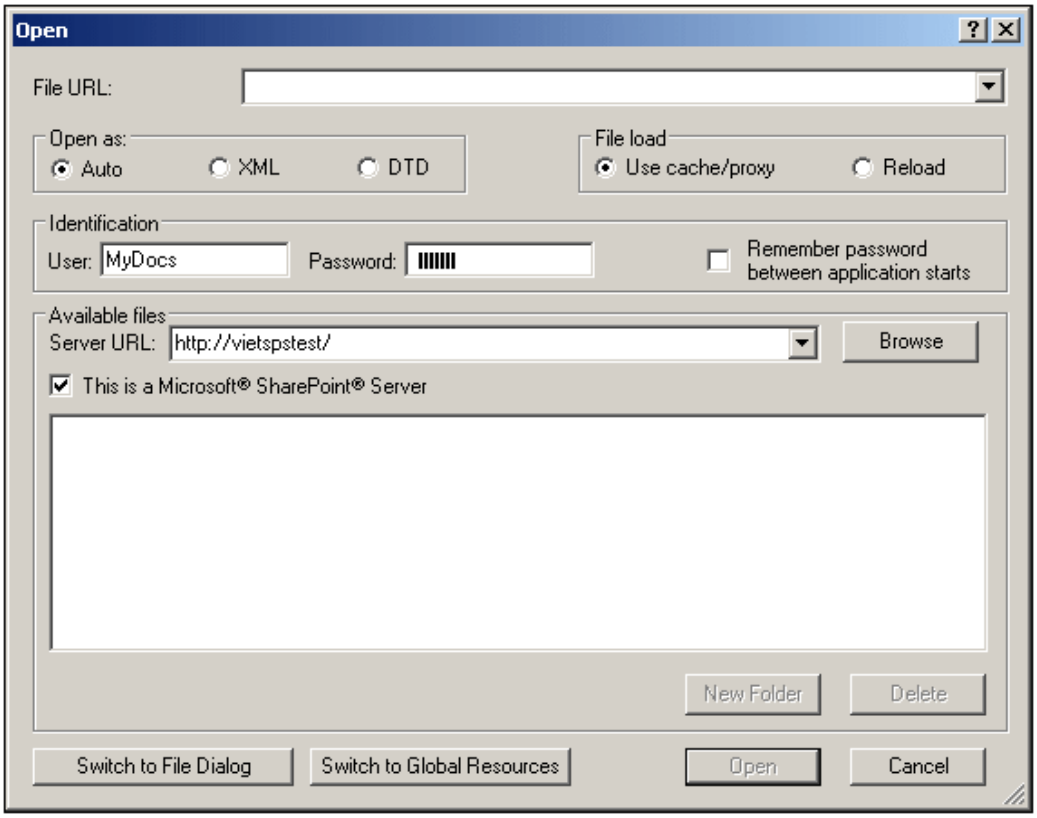
Selecting files via URLs and Global Resources

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.

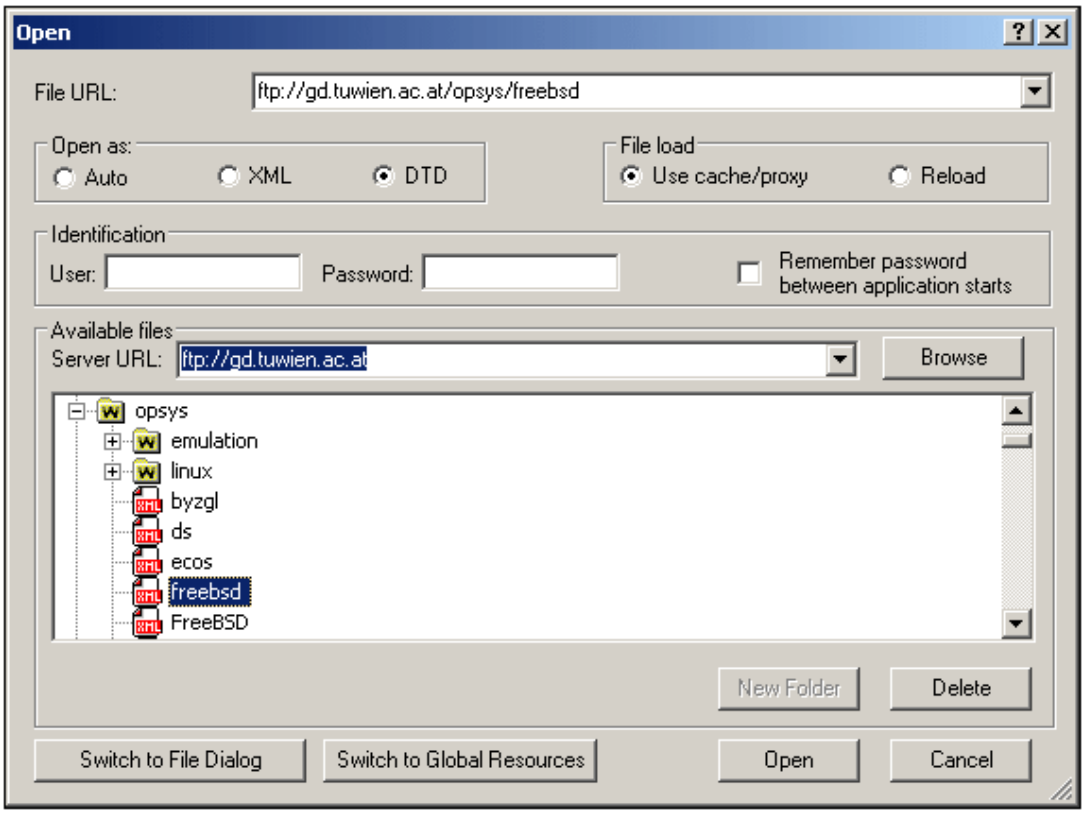


Selecting files via URLs
To select a file via a URL, do the following:

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.

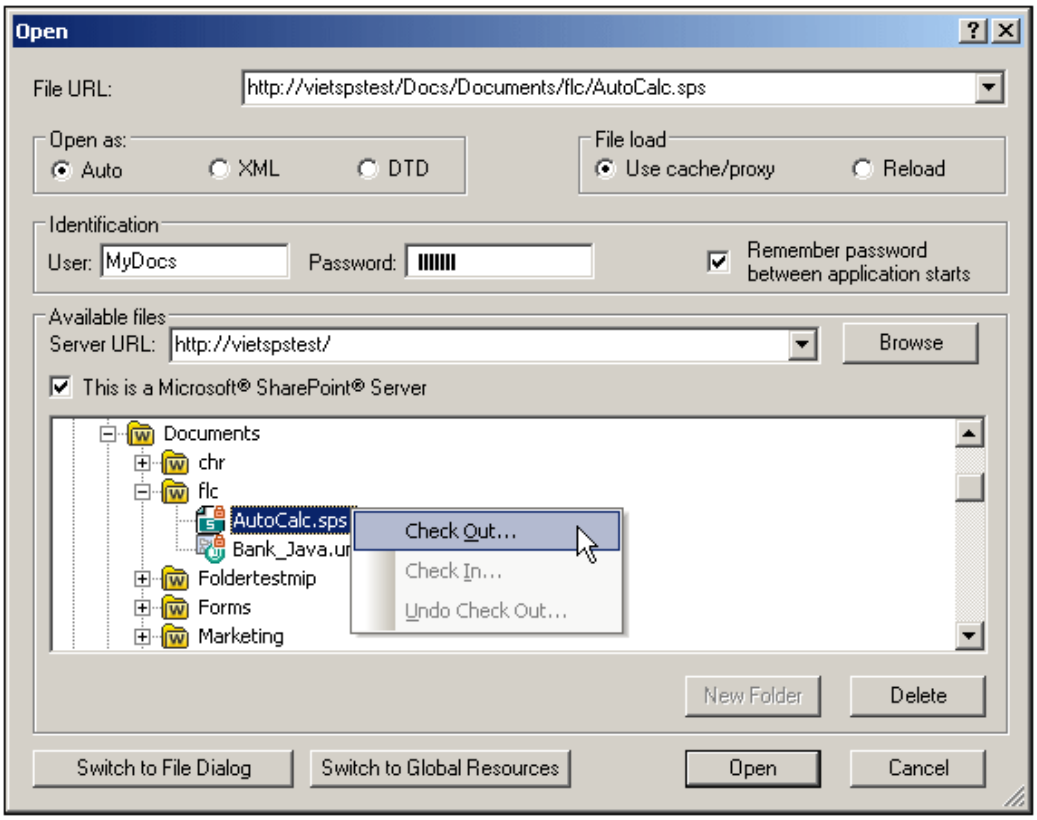
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

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.

Save Design, Design As, All

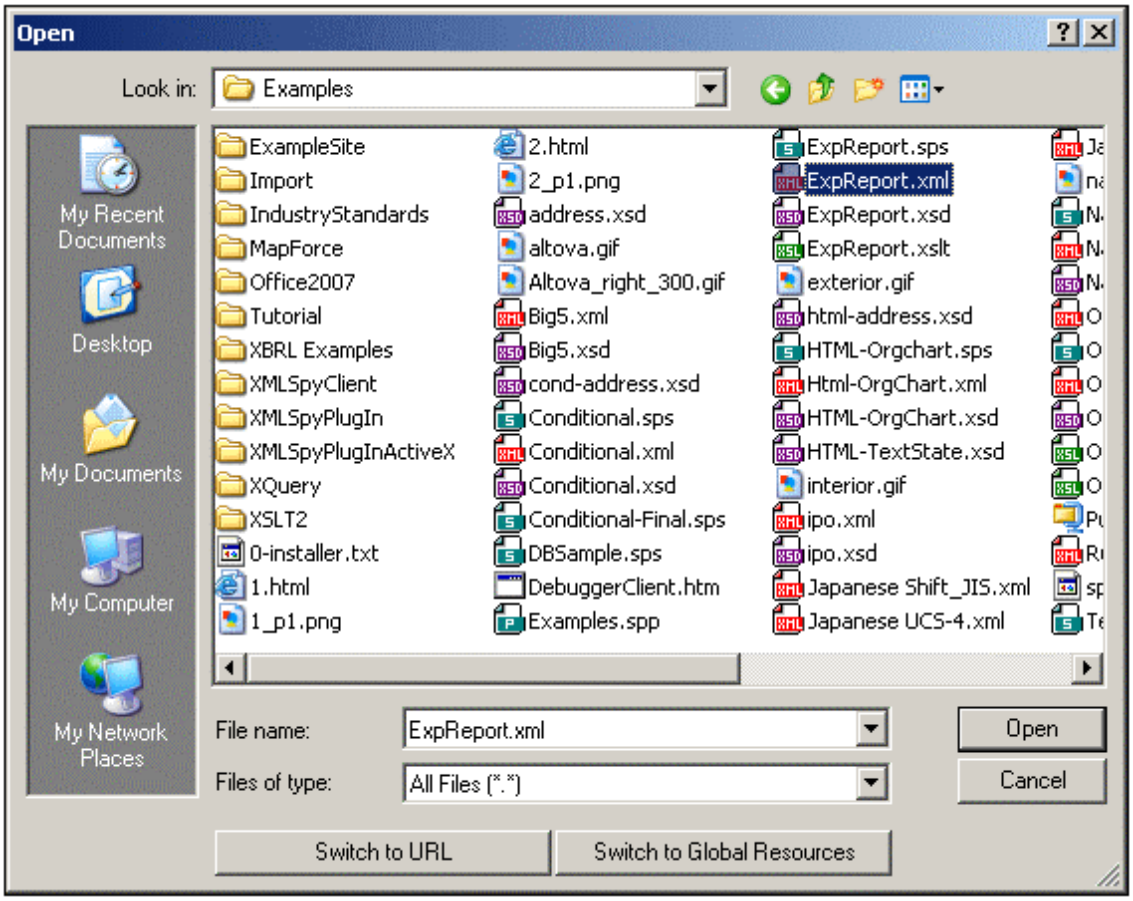
The **Save Design (Ctrl+S)** command saves the currently open document as an SPS file (with the file extension .sps).

The **Save Design As** command shows the familiar Save As dialog of Windows systems. You can enter the name with which the active SPS file should be saved and the location where you want it saved. The newly saved file becomes the current file in StyleVision.

The **Save All (Ctrl+Shift+S)** command saves all the open SPS documents.

Selecting files via URLs and Global Resources

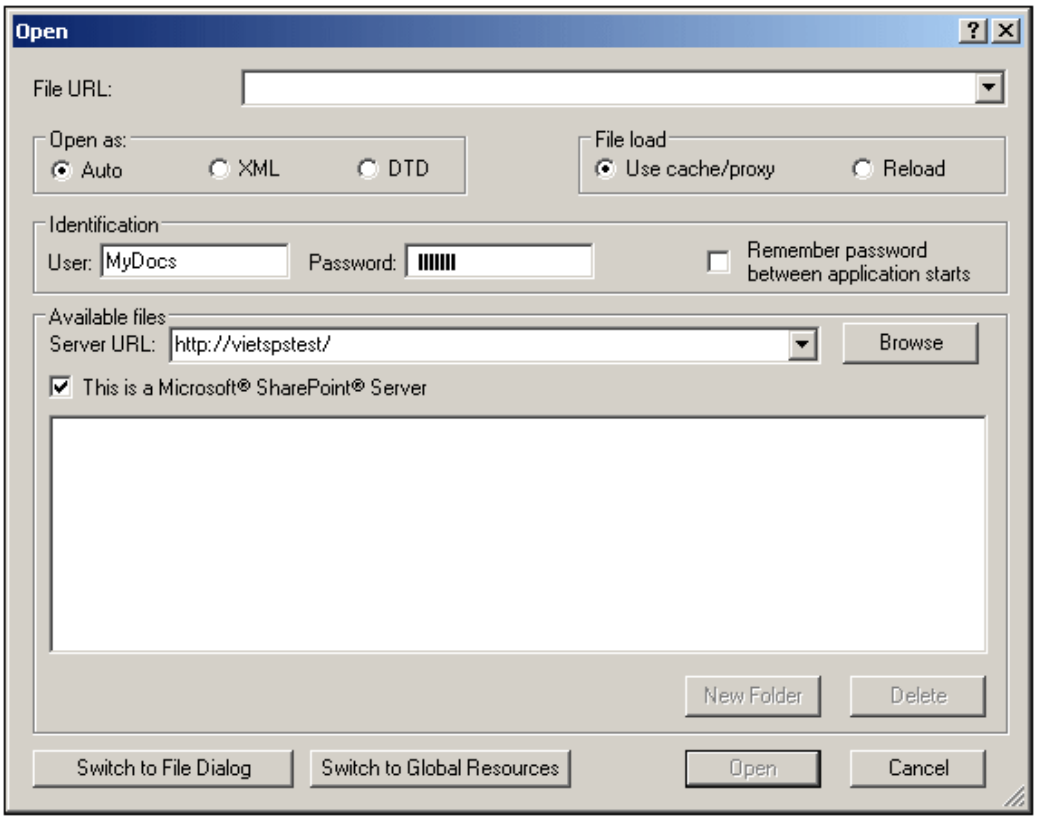
In several File Open and File Save dialogs, you can choose to select the required file or save a file via a URL or a global resource (*see screenshot below*). Select the **Switch to URL** or **Switch to Global Resource** to go to one of these selection processes.



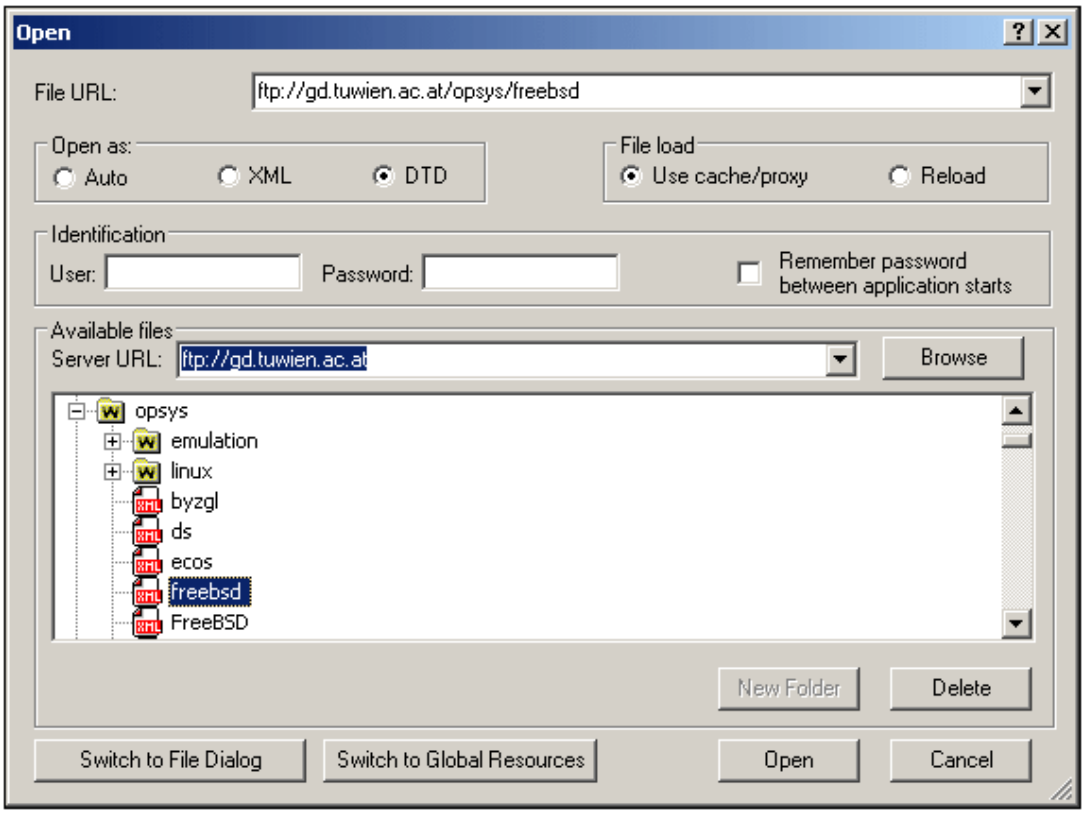
Selecting files via URLs

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.

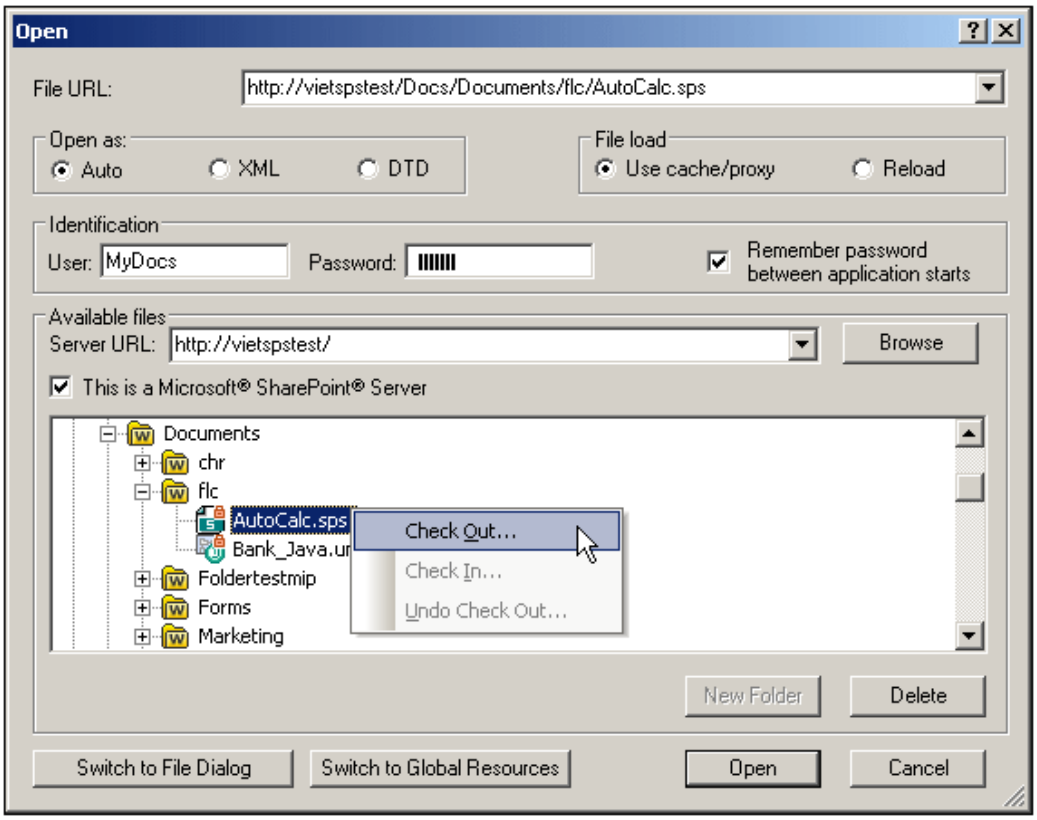
Note: The Browse function is only available on servers which support WebDAV and on Microsoft SharePoint Servers. The supported protocols are FTP, HTTP, and HTTPS.

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.

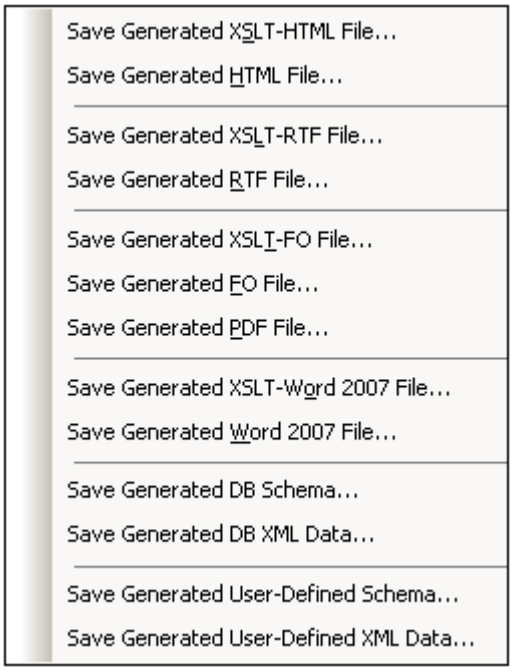
Save Authentic XML Data, Save As

In Authentic View, you can edit the Working XML File or DB related to the SPS. The **Save Authentic XML Data** command saves these modifications to the Working XML File or DB. Alternatively to editing the XML file in StyleVision, you can edit an XML document or DB in the Authentic View of Altova XMLSpy or Altova Authentic Desktop.

The **Save Authentic XML Data As** command enables you to saves the Authentic XML document as another file.

Save Generated Files

The **Save Generated Files** command pops up a submenu which contains options for saving the following files (*screenshot below*). For perspective on how the generated files fit into the general usage procedure, see Usage Procedure | Generated Files.



Save Generated XSLT-HTML File
The Save Generated XSLT-HTML File command generates an XSLT file for HTML output from your SPS. You can use this XSLT file subsequently to transform an XML document to HTML.

Save Generated HTML File
The Save Generated HTML File command generates an HTML file. This operation requires two input files:

- The Working XML File assigned to the currently active SPS file. If no Working XML File has been assigned, the **Save Generated HTML File** command is disabled. For DB-based SPSs, the automatically generated non-editable XML file is the Working XML File (see The DB Schema and DB XML files); you do not assign a Working XML File.
- An XSLT file, which is automatically generated from the currently active SPS file.

Save Generated XSLT-RTF File
The Save Generated XSLT-RTF File command generates an XSLT file for RTF output from your SPS. You can use this XSLT file subsequently to transform an XML document to RTF.

Save Generated RTF File
The Save Generated RTF File command generates an RTF file. This operation requires two input files:

- The Working XML File assigned to the currently active SPS file. If no Working XML File has been assigned, the command is disabled. For DB-based SPSs, the automatically

generated non-editable XML file is the Working XML File (see The DB Schema and DB XML files); you do not assign a Working XML File.
- An XSLT-for-RTF file, which is automatically generated from the currently active SPS file.

Save Generated XSLT-FO File
The XSL-FO File command generates an XSLT-for-FO (XSL-FO) file from your SPS. You can use this XSL-FO file subsequently to transform an XML document to an FO document.

Save Generated FO File
The Save Generated FO File command generates an FO file. This operation requires two input files:

- The Working XML File assigned to the currently active SPS file. If no Working XML File has been assigned, an error message saying the XML file could not be loaded is displayed. For DB-based SPSs, the automatically generated non-editable XML file is the Working XML File (see The DB Schema and DB XML files); you do not assign a Working XML File.
- An XSLT-for-FO file, which is generated from the currently active SPS file.

Save Generated PDF File
The Save Generated PDF File command generates a PDF file. It requires the following inputs and settings:

- A Working XML File. If no Working XML File has been assigned, an error message saying the XML file could not be loaded is displayed. For DB-based SPSs, the automatically generated non-editable XML file is the Working XML File (see The DB Schema and DB XML files); you do not have to assign a Working XML File.
- An XSLT-for-FO file, which is generated from the currently open SPS file.
- The path to the FO processor must be set in the XSL-FO tab of the Options dialog (**Tools | Options**).

Save Generated DB Schema
When you connect to a DB in order to create a DB-based SPS, StyleVision generates and loads a temporary XML Schema based on the DB structure. The Save Generated DB Schema command enables you to save this generated XML Schema. Note that for XML DBs, StyleVision does not generate a schema file; it uses a schema file from the DB or some other external file location. Consequently, this command is not enabled for XML DBs.

Save Generated DB XML Data
The Save Generated DB XML Data command generates and saves an XML file that contains data from the DB in an XML structure conformant with the structure of the XML Schema generated from the DB. If DB Filters have been defined in the StyleVision Power Stylesheet, these are applied to the data import. Note that for XML DBs, StyleVision does not generate an XML file, but uses XML data in the XML columns of the XML DB. Consequently, this command is not enabled for XML DBs.

Save Generated User-Defined Schema
This command is activated when the SPS involves a user-defined schema. The schema you create in the Schema Tree sidebar is saved as an XML Schema with the . `xsd` extension.

Save Generated User-Defined XML Data
The data in the imported HTML file that corresponds to the user-defined schema is saved as an XML file. The corresponding data are the nodes in the HTML document (in Design View) that have been created as XML Schema nodes.

Assign/Unassign Working XML File

A Working XML File is an XML file that is assigned to an SPS in StyleVision in order to preview the Authentic View and output of the XML document in StyleVision. Without a Working XML File, the SPS in StyleVision will not have any dynamic XML data to process. The **Assign Working XML File** command assigns an XML file as the Working XML File to the SPS. Clicking the command, opens a dialog in which you can browse for the Working XML File. If a Working XML File is already assigned, clicking this command and assigning a file replaces the existing assignment with the new assignment.

Unassigning the Working XML File
The **Unassign Working XML File** command removes the assignment from the SPS. This command is enabled only when a Working XML File has been assigned for the active SPS.

Assign/Unassign Template XML File

The **Assign Template XML File** command assigns an XML file to the SPS (SPS). When the SPS is opened in Authentic View, it displays the data present in the assigned XML file according to the design of the SPS. The XML file therefore provides the starting data of a new XML file. In effect it provides the data for an template XML file, which is based on the SPS and can be saved under any name. We therefore call the XML file you assign to the SPS a Template XML File.

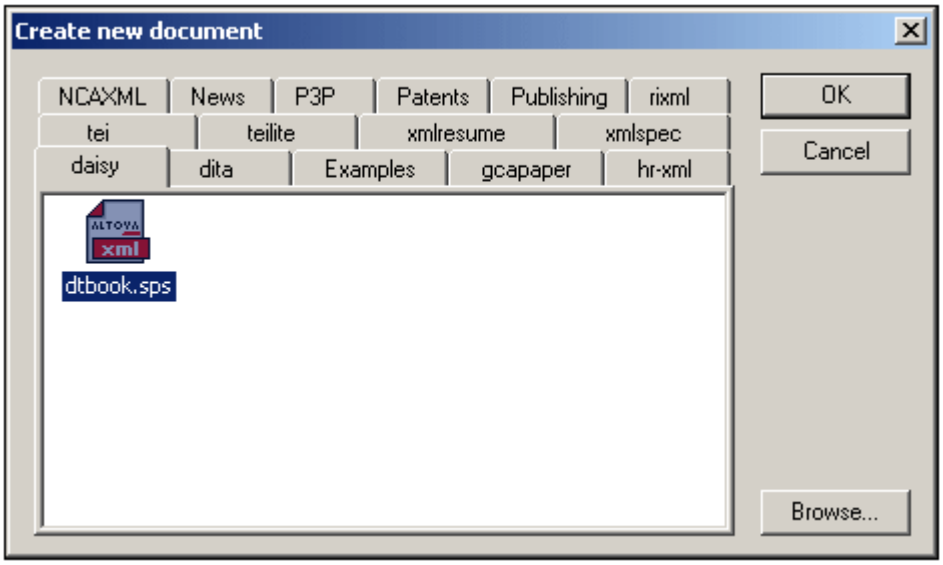
Assigning and changing a Template XML File
To assign a Template XML File, click **Authentic | Assign Template XML File**, select the required file, and save the SPS. To change the Template XML File, click **Authentic | Assign Template XML File**, select the new Template XML File, and save the SPS.

Note:

- The Template XML file must conform to the same schema as that of the SPS to which it is linked.
- The Template XML File can also be assigned and changed using the Template XML File entry of a schema in the Schema Tree sidebar.

Opening a template XML document in Authentic View
An Authentic View user can open a template XML document as follows:

1. In XMLSpy or Authentic Desktop, select **File | New** or **Authentic | New Document...**. This pops up the Create New Document dialog. The tabs in this dialog each represent a folder in the `sps/Template` folder within the XMLSpy or Authentic Desktop application folder. In each tab, the SPS files for the corresponding folder are displayed. These SPS files provide general use templates for popular schemas.



2. Select an Altova-supplied SPS template from one of the tabs or browse for the required SPS (using the **Browse...** button).
3. Click OK. A template based on the SPS and carrying starting data from a Template XML File, if any is associated with the SPS, is opened in Authentic View.

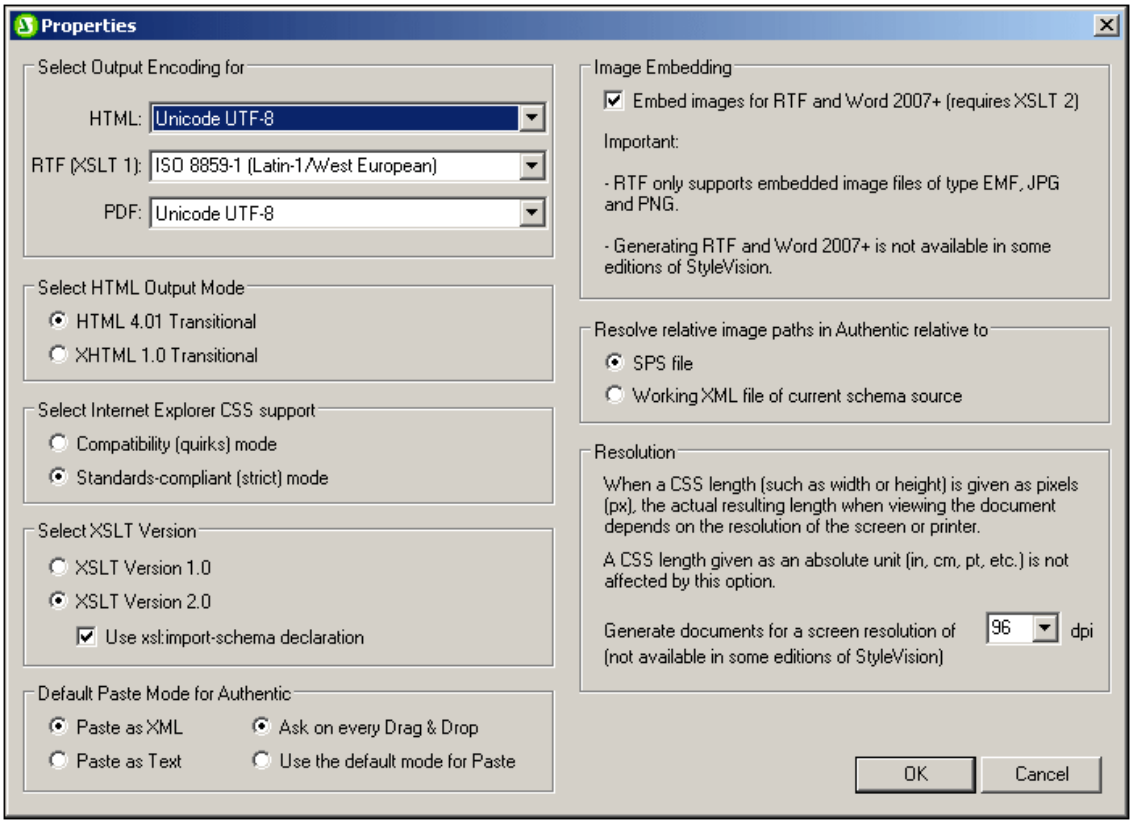
Adding folders and SPS files to the tabbed list in the Create a New Document dialog
You can add your own SPS files to the tabbed list in the Create a New Document dialog. Do this by copying/moving the folders containing the SPS files into the `sps/Template` folder within the

XMLSpy or Authentic Desktop application folder. The added folder will then be displayed as a tab in the Create a New Document dialog. The SPS files which are in the folder will be displayed in the tab for that folder.

Unassigning the Template XML File
The **Unassign Template XML File** command removes the assignment from the SPS. This command is enabled only when a Template XML File has been assigned for the active SPS.

Properties

The **Properties** command pops up the Properties dialog, in which you can set properties for the active SPS: (i) the encoding of output documents; (ii) the CSS support level of the HTML and Authentic Views; and (iii) image handling.



Encoding

In the Output Encoding pane you can select the encoding of your output documents. Changing the encoding in this dialog changes the encoding for the currently active SPS. You can also specify the default encoding for all subsequently created SPS documents; this is done in the Encoding tab of the Options dialog.

HTML output mode

You can select whether an HTML 4.01 document or XHTML 1.0 Transitional document is generated for the HTML output. This setting can be changed at any time while creating or editing the SPS document.

Internet Explorer CSS support

CSS support in versions of Internet Explorer (IE) prior to IE 6.0 was incomplete and in some respects incorrectly interpreted. CSS support was enhanced and corrected in IE 6.0, and further improved in IE 7.0.

In IE 6.0 and later, an HTML document can be displayed either in **compatibility mode** (corresponding to the CSS support level in IE versions prior to IE 6.0), or in **standards-**

compliant mode (corresponding to CSS support in IE 6.0 and later). Which mode is used depends on a switch coded in the HTML document. (See CSS Support in IE 6.0 and CSS Support in IE 7.0 for details.)

In an SPS, you can select the desired mode in the Properties dialog (*screenshot above*). The appropriate switch will be generated in the output document, and the specified level of support is immediately available in Authentic View and HTML Preview. Note that new SPS documents are created with Standards-Compliant Mode selected. SPS documents created in versions of Altova StyleVision prior to Altova StyleVision 2007 sp2 will be opened in Compatibility Mode; they can be re-saved in Standards-Compliant Mode (by selecting the Standards-Compliant option in the Properties dialog).

Note: When setting CSS styles in a document, you should be aware of what CSS support level has been set for the document output and you should assign CSS styles accordingly.

Select XSLT version
The XSLT version for the active document can be selected in the Select XSLT Version pane. Checking the *Use xsl:import-schema declaration* option causes the `xsl:import-schema` element of the XSLT 2 specification to be included in the XSLT 2.0 document generated by StyleVision. It is recommended that you use select this option in order for datatypes to be read from the schema in the event that there is no `xsi:schemaLocation` attribute in the XML document.

Default paste mode for Authentic
Specifies whether an Authentic View selection that has been saved to the clipboard will be pasted, by default, as XML or text in Authentic View. If it is pasted as XML, it will be pasted with markup (XML tags), if the copied selection contains markup. Otherwise the default paste mode copies the text content of nodes without markup. The default paste mode can be overridden in Authentic View by right-clicking at the insertion point and, in the context menu that appears, selecting the command **Paste As | XML** or **Paste As | Text**, as required. The default paste mode can be changed at any time while editing the SPS document.

You can also specify whether, when text is dragged and dropped in Authentic View, the user is given the option of selecting how to paste the text or whether the default paste mode is used. To give the user the choice of deciding the past mode, select the radio button *Ask on every drag-and-drop;* to use the default paste mode without consulting the user, select the radio button *Use default mode for paste*.

Image embedding in RTF and Word 2007+
In the RTF and Word 2007+ output, images can either be embedded (when XSLT 2.0 is used) or linked. This setting is made for each SPS individually.To embed images, do the following:

1. With the required SPS active, open the Properties dialog (**File | Properties**).
2. Check the Embed Images check box (default setting is checked). Note that images will only be embedded if XSLT 2.0 is set as the XSLT version of the active SPS.
3. Click **OK** and save the SPS. The setting is saved for the active SPS.

To make this setting for another SPS, make this SPS active and repeat the steps listed above.

If the Embed Images check box is not checked, images will be linked according to the image file

path specified in the images properties (select the image and select URL in the Properties entry helper). For information about how paths are resolved, see the section Image URIs.

Note: The RTF format supports embedded images only for EMF, JPG, and PNG files.

Relative image paths in Authentic View
You can set whether relative image paths in Design View and Authentic View should be relative to the SPS or to the XML file.

Print Preview, Print

The **Print Preview** command  is enabled in Design View and Authentic View (*Authentic View is supported in the Enterprise and Professional editions only*). The **Print Preview** command opens a window containing a preview of the SPS design (when Design View is active) or of the Authentic View of the Working XML File when Authentic View is active). The preview will show the design with or without tags according to what is on screen.

You can do the following in the Print Preview window, via the toolbar commands at the top of the page (*screenshot above*) and the page navigation icons at the bottom of the page. The commands in the Print Preview toolbar are as follows, starting from the left.

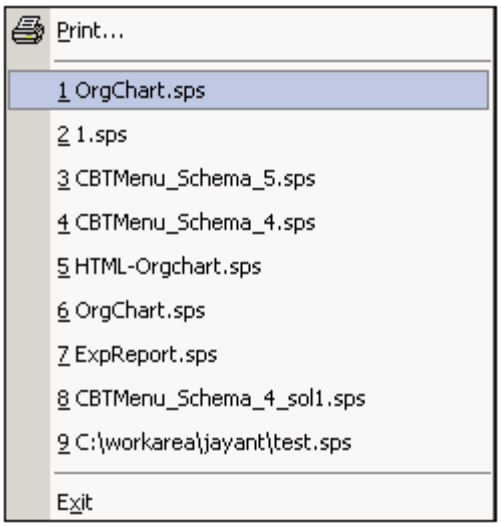
- Print the page using the Print button.
- Set paper orientation to portrait or landscape.
- Set page properties by clicking the **Page Setup** button to get the Page Setup dialog.
- Toggle on/off the display and printout of headers and footers.
- Set the view so that either the page width or page height occupies, respectively, the full screen width or full screen height.
- Set how many pages are to fit within the screen.
- Change the zoom factor of the preview pages using the Zoom In and Zoom Out buttons or the combo box to select a zoom factor.

To navigate the pages of the preview, use the page navigation buttons at the bottom of the preview or by entering the page number in the Page text-box.

The **Print** command  is enabled in the Authentic View and output preview tabs. It prints out the selected view of the Working XML File according to the page setup for that view. Note that the page setup for Authentic View can be edited in the Page Setup dialog, which you access via the Print Preview window.

Most Recently Used Files, Exit

The list of most recently used files, shows the file name and path information for the nine most recently used files. Clicking one of these entries, causes that file to be opened in a new tab in the Main Window.



To access these files using the **keyboard**, press **ALT+F** to open the File menu, and then the number of the file you wish to open; for example, pressing **1** will open the first file in the list, **2** the second file, and so on.

The **Exit** command is used to quit StyleVision. If you have an open file with unsaved changes, you will be prompted to save these changes.

19.4 Edit Menu

The **Edit** menu contains commands that aid the editing of SPS and Authentic View documents. Besides the standard editing commands, such as **Cut** (Shift+Del), **Copy** (Ctrl+C), **Paste** (Ctrl+V), and **Delete** (Del), which are not described in this section, the following commands are available:

- Undo, Redo, Select All, to undo or restore your previous actions, and to select all content of the SPS.
- Find, Find Next, Replace, to find text in the SPS, Authentic View, and XSLT stylesheet previews, and to replace text in Authentic View.
- Stylesheet Parameters, to edit parameters declared globally for the SPS.
- Collapse/Expand Markup, to collapse and expand SPS design component tags.

Commands are also available via the context menu which appears when you right-click a component or right-click at a cursor insertion point. Additionally, some commands are available as keyboard shortcuts and/or toolbar icons. Note, however, that commands which are not applicable in a particular document view or at a given location are grayed out in the menu.

Undo, Redo, Select All

The **Undo (Ctrl+Z)** command  enables you to undo an editing change. An unlimited number of Undo actions is supported. Every action can be undone and it is possible to undo one command after another till the first action that was made since the document was opened.

The **Redo (Ctrl+Y)** command  allows you to redo any number of previously undone commands. By using the Undo and Redo commands, you can step backward and forward through the history of commands.

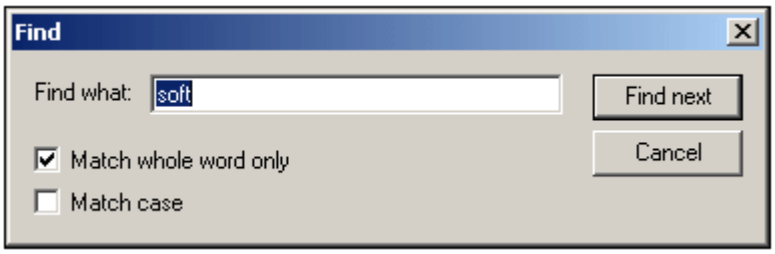
The **Select All** command selects the entire contents of the Design Document window.

Find, Find Next, Replace

The **Find (Ctrl+F)** command allows you to find words or fragments of words in the Design View, JavaScript Editor, Authentic View, and XSLT-for-HTML, XSLT-for-RTF, XSLT-for-FO, and XSLT-for-Word 2007+ stylesheets.

Design View and Authentic View

Clicking the **Find** command in Design View or Authentic View pops up the following dialog:

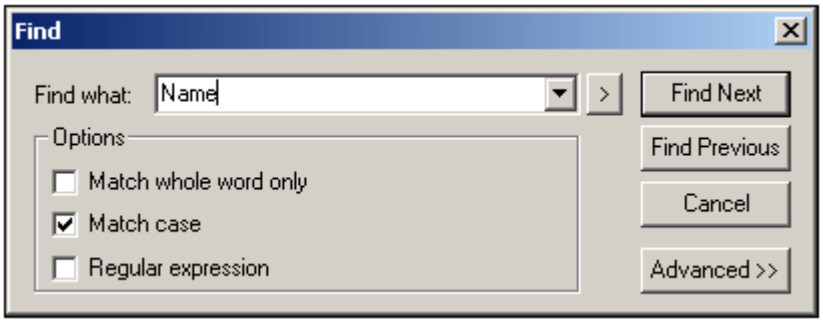


Note the following:

- In Design View, the static data is searched, but not node names.
- In Authentic View, the dynamic data (XML data) is searched, not text from the static (XSLT) input.
- To match the entry with whole words, check "Match whole word only". For example, an entry of `soft` will find only the whole word `soft`; it will not find, for example, the `soft` in `software`.
- To match the entry with fragments of words, leave the "Match whole word only" check box unchecked. Doing this would enable you, for example, to enter `soft` and `software`.
- To make the search case-insensitive, leave the "Match case" checkbox unchecked. This would enable you to find, say, `Soft` with an entry of `soft`.

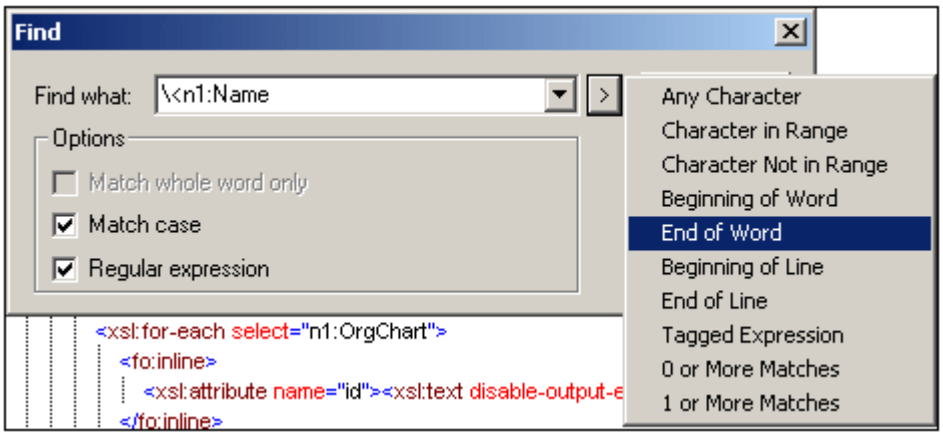
XSLT-for-HTML, XSLT-for-RTF, XSLT-for-FO, XSLT-for-Word 2007+, and JavaScript Editor

Clicking the **Find** command in the XSLT-for-HTML, XSLT-for-RTF, XSLT-for-PDF, XSLT-for-Word 2007+, or JavaScript Editor tab pops up the following dialog:

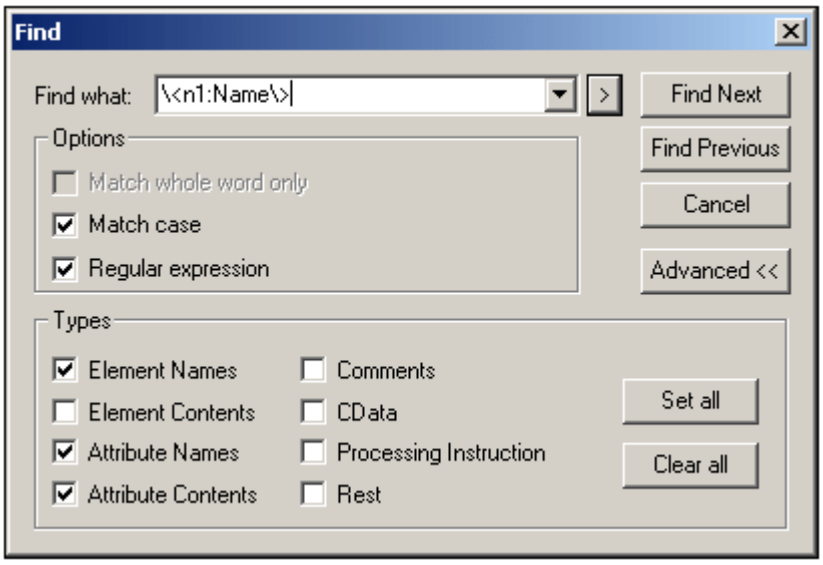


The following points should be noted:

- To enter a regular expression as the search term, check the Regular expression check box. You can create a regular expression with the help of a menu that pops out when you click the right-pointing arrowhead near the search term entry field.



- To set restrictions on what part of the document to search, click the Advanced button. This makes more search options available (*screenshot below*):



Select the types of document content you wish to search by checking the appropriate check box.

Find Next command

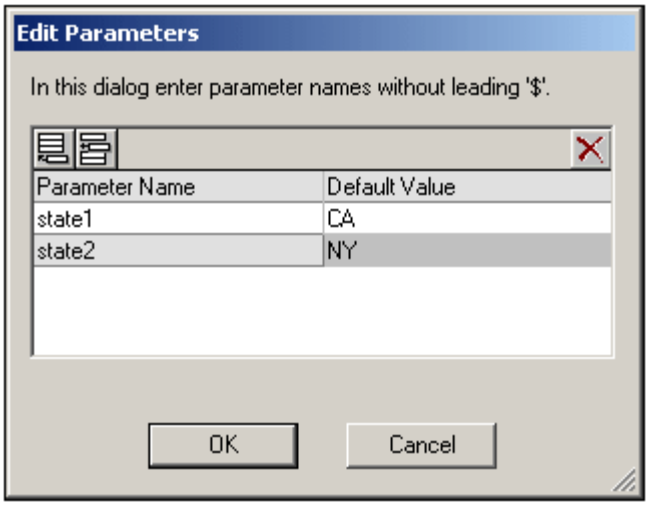
The **Find Next (F3)** command  repeats the last Find command to search for the next occurrence of the requested text. See Find for a description of how to use the search function.

Replace (Ctrl+H)

The **Replace** command is enabled in Design View, JavaScript Editor, and Authentic View (*not supported in Standard edition*) and enables you to search for a text string and replace it with another text string.

Stylesheet Parameters

The **Stylesheet Parameters** command enables you to declare and edit parameters and their default values. The command is available in both the Design Document view and the Authentic Editor View. When you click this command, the Edit Parameters dialog (*shown below*) pops up.



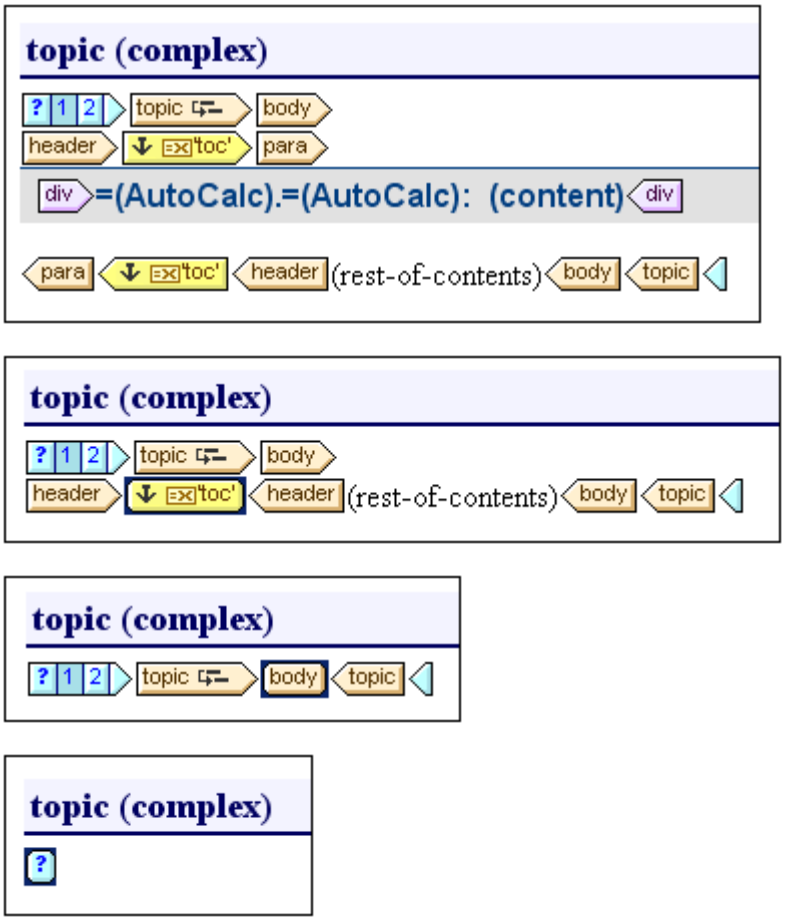
The following points should be noted:

- You can insert, append, edit and delete parameters for the entire stylesheet and for the DB Filters.
- Parameter names must begin with a letter, and can contain the characters `A` to `Z`, `a` to `z`, `0` to `9`, and the underscore.
- The Edit Parameters dialog contains all the user-defined parameters in an SPS.
- Parameters can also be declared in the Design Overview sidebar.

Collapse/Expand Markup

The **Collapse/Expand Markup** command is a toggle command, which collapses and expands the selected tag. It can be applied to any kind of tag: node, predefined format, SPS mechanism, etc. To collapse/expand a tag, double-click the tag; the end tag of an expanded tag may also be double-clicked to collapse that tag.

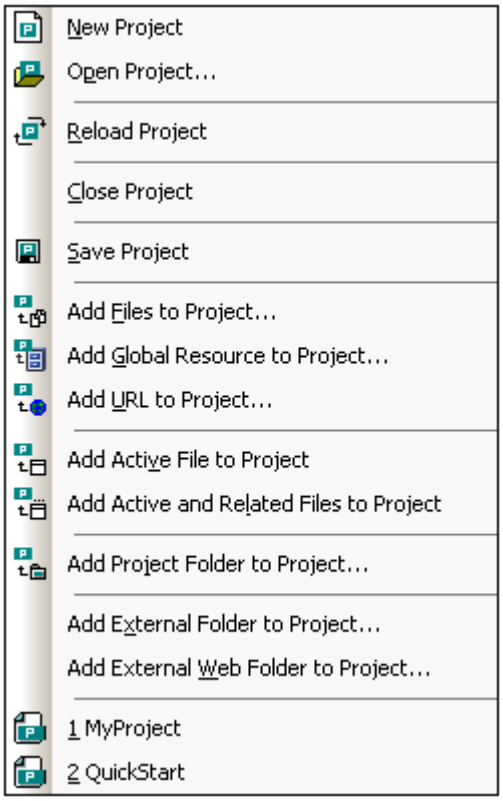
The screenshots below show how a series of tags are collapsed. Double-clicking a collapsed tag expands it.



Collapsing a tag can be useful for optimizing the display according to your editing needs.

19.5 Project Menu

The **Project** menu (*screenshot below*) enables you to create, structure, and modify projects. You can quickly set up a project, specify files in the project, and organize files by file type into separate folders. A project is displayed graphically in the Project sidebar, from where files can be accessed for use in the SPS design.



The **Project** menu contains the following commands, which are explained in detail in the sub-sections of this section:

- New Project, for creating a new project
- Open Project, for opening an existing project
- Reload Project, for refreshing a project in the Projects sidebar
- Close Project, for closing a project in the Project sidebar
- Save Project, for saving and naming a project
- Add Files to Project, for adding files to a project in the Project sidebar
- Add Global Resource to Project, for adding Altova Global Resources to a project in the Project sidebar
- Add URL to Project, for adding a file via a URL to a project in the Project sidebar
- Add Active File to Project, for adding the file currently active SPS file to a project
- Add Active and Related Files to Project, for adding the currently active SPS file and its related files
- Add Project Folder to Project, for adding folders to a project in the Project sidebar
- Add External Folder to Project, for adding local folders to a project in the Project sidebar
- Add External Web Folder to Project, for adding folders via URL to a project in the Project sidebar

Recent projects
At the bottom of the Project menu, the file names of the nine most recently used projects are listed, thus allowing quick access to these files.

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 sidebar.

New Project, Open Project, Reload Project

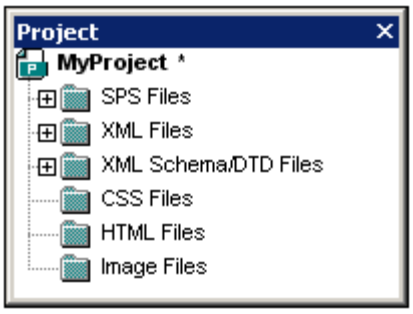
The **New Project** command  creates a new project. The new project replaces the previous project (if any) in the Projects sidebar. If the project you have been working on has unsaved changes, a prompt appears asking whether you wish to save changes to the project. Note that the **New Project** command only creates a new project without saving it; you have to explicitly save the project using the **Save Project** command.

The **Open Project** command  opens an existing project and displays it in the Projects sidebar. If a project was previously open in the Projects sidebar, it is replaced by the opened project. If the previous project has unsaved changes, a prompt appears asking whether you wish to save changes to that project before it is replaced in the Projects sidebar.

The **Reload Project** command  reloads the current project. This command is especially useful if you are working in a multi-user environment, where other users might make changes to the project.

Close Project, Save Project

The **Close Project** command closes the active project. If the project contains unsaved changes, a prompt appears asking whether you wish to save the project before closing it. A project with unsaved changes is indicated with an asterisk after the project name in the Project sidebar (*screenshot below*).



The **Save Project** command saves the current project. Note that it is when a project is saved for the first time that it is named. A project can only be renamed outside StyleVision; for example, by using Windows File Explorer to locate and rename the file.

Add Files / Global Resource / URL to Project

Add Files to Project

The **Add Files to Project** command adds files to the current project. The command pops up an Open dialog box, in which you select a single file or a group of files to add to the project. The file/s will be added to sub-folders within the project folder according to the file type extensions defined for each sub-folder. If the same file type extension has been defined for more than one folder, then a file with that file type extension will be added to the first folder (in the Projects sidebar) having that file type extension.

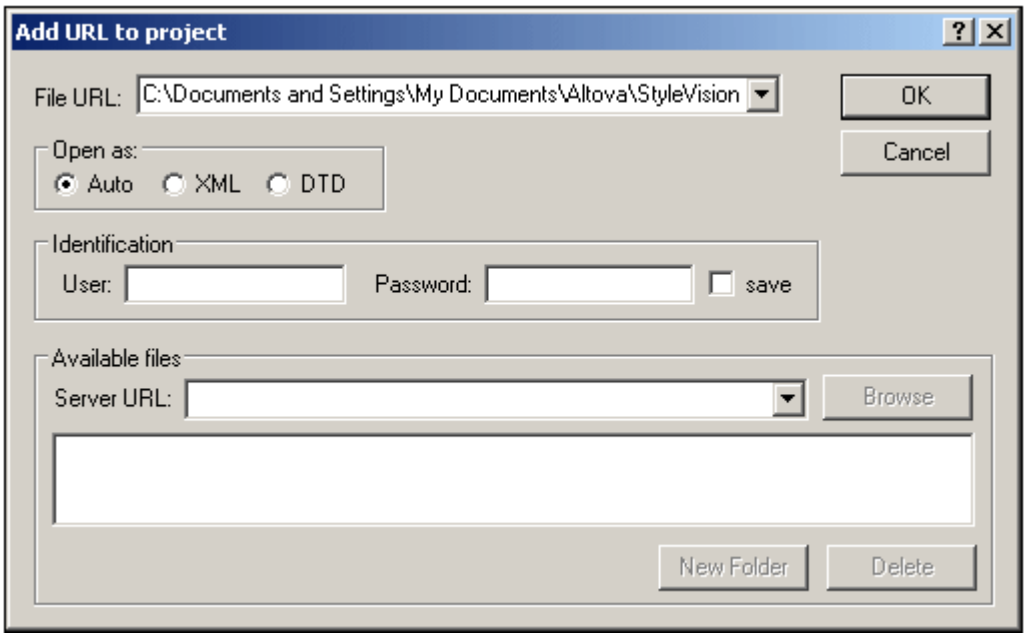
To add a file to a folder or sub-folder within the main project folder, right-click that folder, select the command **Add Files**, and then browse for the required file/s.

Add Global Resource to Project

The **Add Global Resource to Project** command pops up a dialog that lists global resources in the currently active Global Resources XML File and enables you to select one of these resources to add to the active project. Select the required global resource and click **OK**.

Add URL to Project

The **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. The command pops up the Add URL to Project dialog (*screenshot below*).



You can enter either a file URL (with or without the `file:\\` protocol) or a server URL. For the server URL, enter your user name and password, then enter the server URL. Click **Browse** to connect to the server, then, from the list that appears in the Available Files display, click the file you wish to add to the project folder.

Note that URLs can also be added to folders and sub-folders of the main project folder. To do this, right-click the project folder and select the command **Add URL**. This pops up the Add URL dialog. Proceed as described above.

Drag-and-drop
A file can be dragged to another folder, but cannot be moved within the same folder (within which files are arranged alphabetically). Additionally, files can be dragged from Windows File Explorer to the Project window.

Deleting Files, Resources, and URL
To delete a file, Altova Resource, or URL, select that object in the Project sidebar, right-click, and, from the context menu, select **Delete**.

Add Active (and Related) Files to Project

Add Active File to Project
The **Add Active File to Project** command adds the active SPS file to the current project. This file is added to the first folder defined for the `.sps` file type extension. If you wish to add not just the SPS but the related schema, Working XML, Template XML, CSS and image files, use the **Add Active and Related Files to Project** command (*see below*). To add the active file to a folder or sub-folder within the main project folder, right-click that folder, select the command **Add Active File**.

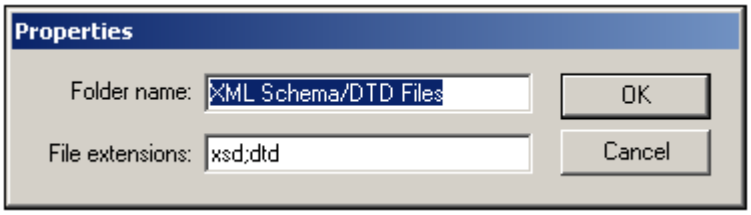
Add Active and Related Files to Project
The **Add Active and Related Files to Project** command adds the currently active SPS file as well as the related schema files, and, if any, the Working XML, Template XML, CSS and image files. Each file is added to the first folder defined for that particular file type extension. To add the active file and related files to a folder or sub-folder within the main project folder, right-click that folder, select the command **Add Active and Related Files**.

Deleting Files
To delete a file, select the file in the Project sidebar, right-click, and, from the context menu, select **Delete**.

Add Project and External Folders to Project

Add Project Folder to Folder

The **Add Project Folder to Project** command adds a new folder to the current project. When you click the command, the Properties dialog (*screenshot below*) pops up, in which you enter the name and file type extensions for the folder (file type extensions are separated by a semi-colon). When a file having the file type extension defined for the folder is added to the project, the file will automatically be added to this folder. The newly added project folder is appended to the list of project folders in the Project sidebar.



To create a sub-folder of any given project folder, right-click the folder for which the sub-folder is required. In the context-menu that pops up, select **Add Project Folder**. In the Properties dialog, enter the folder name and the file type extensions for the folder.

Add External Folder to Project

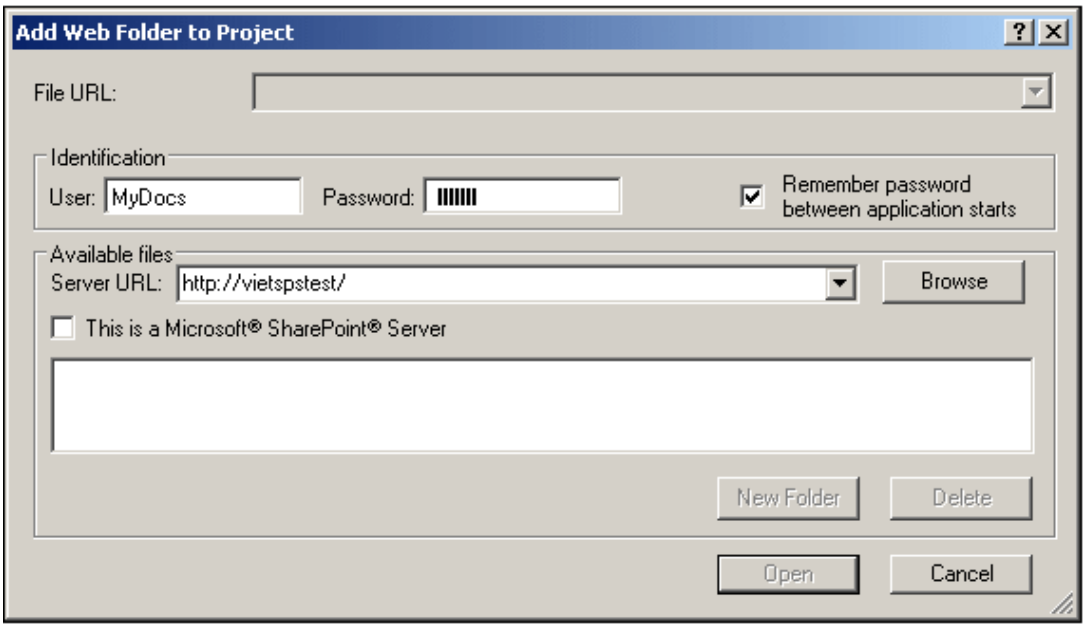
The **Add External Folder to Project** command adds a new external folder to the current project. The command adds a local or network folder, with all its contents, to the current project. The added external folder can be expanded and collapsed. To add an external folder to a project folder as a sub-folder, right-click the project folder and, from the context menu, select the command **Add External Folder**.

Add External Web Folder to Project

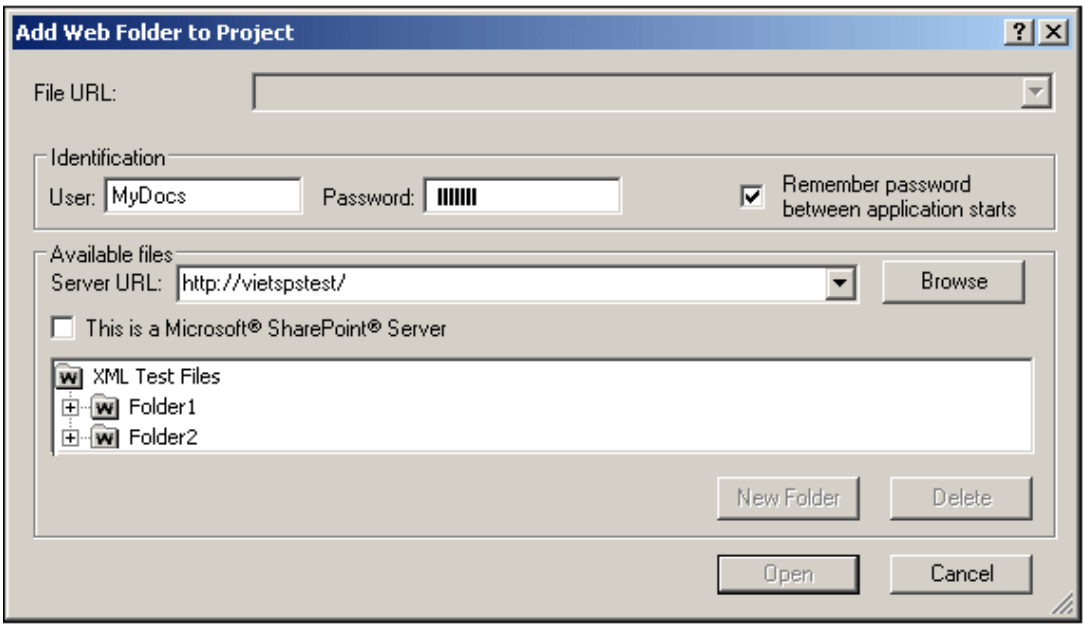
The **Add External Web Folder to Project** command adds a new external folder via a URL to the current project. The added external folder can be expanded and collapsed. To add an external web folder to a project folder as a sub-folder, right-click the project folder and, from the context menu, select the command **Add External Web Folder**.

On clicking the command, the Add Web Folder dialog pops up (*screenshot below*). Do the following:

1. Click in the Server URL field to enter the server URL, and enter the login ID in the User and Password fields.



2. Click **Browse** to connect to the server and view the folders available there.



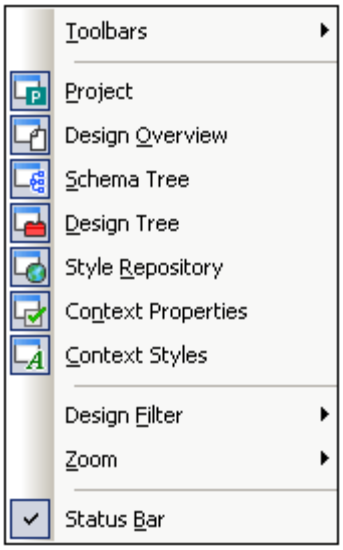
3. Click the folder you want to add to the project view. The **OK** button only becomes active once you do this. The folder name and server URL now appear in the File URL field.
4. Click **OK** to add the folder to the project.
5. Click the plus icon to view the folder contents.
6. To define the file types to display for the web folder, right-click, select **Properties** from the context menu, and enter the required file type extensions.

Drag-and-drop
In the Project window, a folder can be dragged to another folder or to another location within the same folder. Additionally, folders can be dragged from Windows File Explorer to the Project window.

Deleting Folders
To delete a folder or multiple folders, select the file in the Project sidebar, right-click, and, from the context menu, select **Delete**.

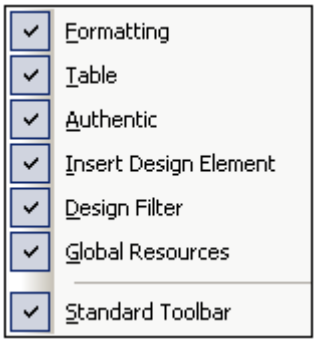
19.6 View Menu

The **View** menu (*screenshot below*) enables you to change the look of the GUI and to toggle on and off the display of GUI components. You can switch the display of individual toolbars, individual design sidebars, design filters, and the status bar on and off.



Toolbars and Status Bar

Placing the cursor over the **Toolbars** item pops out a submenu (*screenshot below*), which enables you to turn on and off the display of the different toolbars.



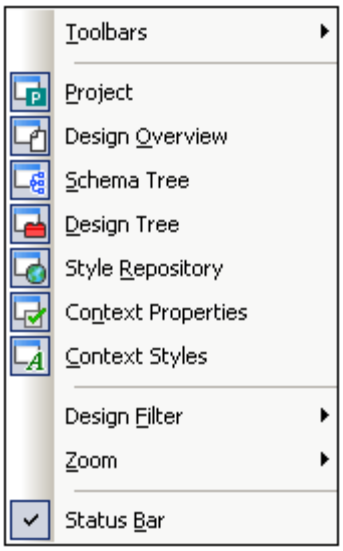
When a toolbar is checked, it is displayed. In the screenshot above all the toolbars are displayed. To toggle on or off the display of a toolbar, click the appropriate toolbar. For a complete description f toolbars, see the section Reference | Toolbars.

Status Bar

The display of the Status Bar, which is located at the bottom of the application window, can be switched on or off by clicking the **Status Bar** toggle command.

Design Sidebars

The **View** menu contains toggle commands to switch the display of each sidebar on and off (*screenshot below*).



When a sidebar is toggled on (the command's icon is framed) it is displayed in the GUI. Click a sidebar to set its display on or off, as required. This command is also used to make a hidden sidebar visible again. The display setting specified for a sidebar is View-specific: a setting made in a particular View (Design View, Authentic View, Output View, no document open) is retained for that particular View till changed.

Design Filter, Zoom

Design Filter

The **Design Filter** menu item rolls out a sub-menu containing commands that enable you to filter the templates that are displayed in Design View. This is useful if your design is very long or contains several templates. Using the Design Filter mechanism, you can specify what kinds of template to display. The following filter options are available:

Icon	Command	Description
	**Show only one template**	Shows the selected template only. Place the cursor in a template and click to show that template only.
	**Show all template types**	Shows all templates in the SPS (main, global, named, and layout) .
	**Show imported templates**	Toggles the display of imported templates on and off.
	**Show/Hide main template**	Toggles the display of the main template on and off.
	**Show/Hide global templates**	Toggles the display of global templates on and off.
	**Show/Hide Design Fragments**	Toggles the display of Design Fragments on and off.

Note that these commands are also available as toolbar icons in the Design Filters toolbar.

Zoom

The **Zoom** command enables you to select a Zoom factor from the submenu that rolls out. You can also zoom in or out by changing the Zoom factor in the Zoom combo box (in the Standard toolbar), or by pressing the **Ctrl** key and scrolling with the mouse.

19.7 Insert Menu

The **Insert** menu provides commands enabling you to insert a variety of design components into the SPS. Some of these commands are available as toolbar icons. Additionally, **Insert** menu commands are also available via context menus which appear when, in the SPS design, you right-click a cursor insertion point. In the context menus, commands that are not available at that location in the SPS are disabled.

Note: Since the **Insert** commands are used for constructing the SPS, they are available in Design View only.

Contents

The **Contents** command inserts a `( content)` placeholder at the cursor location point. There `( content)` placeholder can be inserted within two types of node, **element** and **attribute**, and it indicates that all children of the current node will be processed.

- If the current node is an element node, the node's children element nodes and text nodes will be processed. For the processing of children element nodes, global templates will be used if these exist. Otherwise the built-in template rule for elements will be used. For the processing of text nodes, the built-in template rule for text nodes will be used, the effect of which is to output the text. Effectively, the built-in template rule for elements, outputs the text of all descendant text nodes. It is important to note that the values of attributes will not be output when the `( content)` placeholder is used—unless a global template is defined for the attribute's parent element or one of its ancestors and the attribute is explicitly output, using either the `( content)` placeholder or any other content-rendering component.
- If the current node is an attribute node, the built-in template rule for the attribute's child text node will be used. This template copies the text of the text node to the output, effectively outputting the attribute's value.

The `( content)` placeholder can also be inserted for a node by placing the cursor inside the node tags, right-clicking, and selecting **Insert | Contents** or by clicking the **Insert Contents** icon in the Insert Design Elements toolbar, and then clicking the location in the design where the element is to be inserted.

Styling the contents

The `( content)` placeholder can be formatted by selecting it and using a predefined format and/or properties in Styles sidebar. This formatting is visible in the design, and, in the output, it will be applied to the contents of the node.

Replacing contents

If another node from the schema tree is dropped into a node containing a `( content)` placeholder, then the existing `( content)` placeholder is replaced by the new node.

Deleting contents

The `( content)` placeholder can be deleted by selecting it and pressing the **Delete** key on the keyboard.

Note: You can create an **empty template rule** by deleting the `( content)` placeholder of a node. An empty template rule is useful if you wish to define that some node have no template applied to it, i.e. produce no output.

Rest of Contents

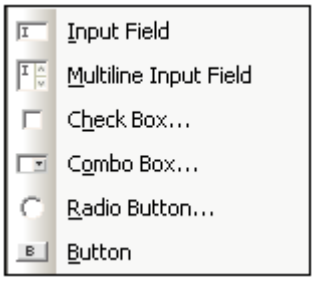
The **Rest of Contents** command inserts the `( rest-of-contents)` placeholder for that node. This placeholder represents the content of **unused child nodes** of the current node; it corresponds to the `xsl:apply-templates` rule of XSLT applied to the unused elements and text nodes of the current element. Note that templates are not applied for child attributes. the `( rest-of-contents)` placeholder can also be inserted for an element by placing the cursor inside the element tags, right-clicking, and selecting **Insert | Rest of Contents**.

Use the `( rest-of-contents)` placeholder in situations where you wish to process one child element in a specific way and apply templates to its siblings. It is important to apply templates to siblings in order to avoid the possibility that the siblings are not processed. This enables you to reach elements lower down in the document hierarchy.

The `( rest-of-contents)` placeholder can be deleted by selecting it and pressing the **Delete** key on the keyboard.

Form Controls

Mousing over the **Form Controls** command rolls out a submenu (*screenshot below*) containing commands to insert various form controls (data-entry devices).

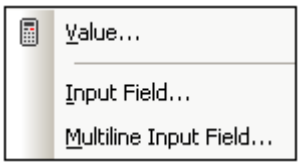


How to create each of these form controls is described in the section Using Data-Entry Devices. After a form control has been created, its properties can be edited by selecting it and then editing the required property in the Properties sidebar.

Form controls can also be inserted in the design by right-clicking at the insertion point and selecting **Insert | Contents**, or by clicking the respective Form Control icon in the Insert Design Elements toolbar, and then clicking the location in the design where the element is to be inserted.

Auto-Calculation

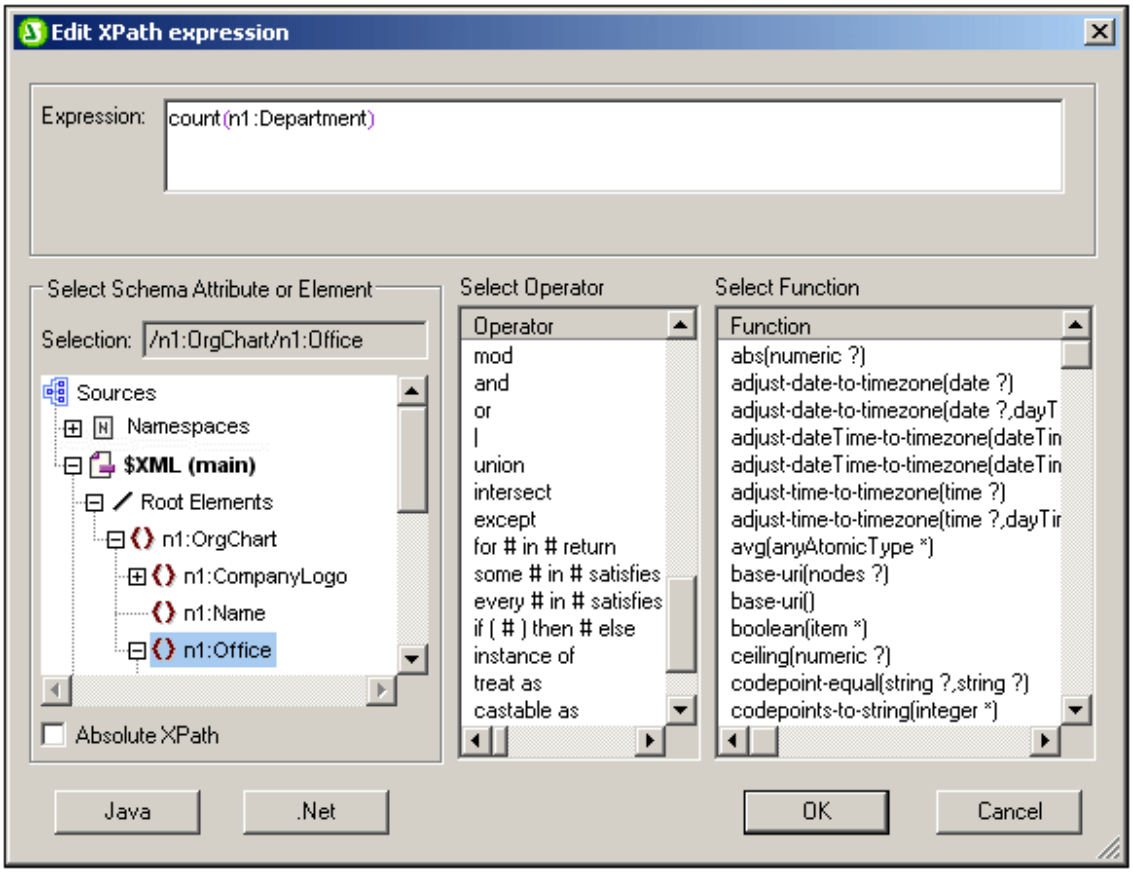
An **Auto-Calculation** uses an XPath expression to calculate a value. This value is displayed at the point where the Auto-Calculation is inserted. An Auto-Calculation can be inserted in the SPS as a text value, input field, or multiline input field. Place the cursor at the location where the Auto-Calculation is to be inserted, then either right-click or use the command in the **Insert** menu. When the cursor is placed over **Insert | Auto-Calculation**, a menu pops out (*screenshot below*), enabling you to choose how the Auto-Calculation should be inserted. Alternatively, you can use the Auto-Calculation icon in the Insert Design Elements toolbar.



The value of the Auto-Calculation will be displayed accordingly in Authentic View and the output document.

The XPath expression for the Auto-Calculation

On selecting how the Auto-Calculation should be represented, the Edit XPath Expression dialog (*screenshot below*) pops up.



The context node for the expression being built is highlighted in the schema tree in the pane at extreme left. You can enter the XPath expression directly in the text box, or you can double click an item (in any of the three panes) to insert that item. Nodes inserted from the schema tree in the left-hand pane are inserted relative to the context node (if the Absolute XPath check box is

unchecked) or as an absolute expression starting from the document node (if the Absolute XPath check box is checked).

After completing the XPath expression, click **OK** to finish inserting the Auto-Calculation.

Updating an XML node with an Auto-Calculation
A node in an XML document can be updated with the result of an Auto-Calculation. How to do this is described in the section, Updating Nodes with Auto-Calculations.

Date Picker

The **Date Picker** command inserts a Date Picker at the current cursor position. It will be enabled only when the cursor is within an `xs:date` or `xs:dateTime` node and if the element has been created as `(contents)` or an input field.

Paragraph, Special Paragraph

The **Paragraph** command  inserts an HTML paragraph `<p>` element around the selected component. A component is considered selected for this purpose when the entire node is selected (by clicking either of its tags) or when static text is selected. If the cursor is placed within static text, the paragraph element is inserted (start and end tags) at this point. A paragraph can also be inserted by using the **Insert Paragraph** icon in the Insert Design Elements toolbar.

The **Special Paragraph** command allows you to assign a predefined format to the selected node. The available predefined formats can also be selected from the combo box in the toolbar.

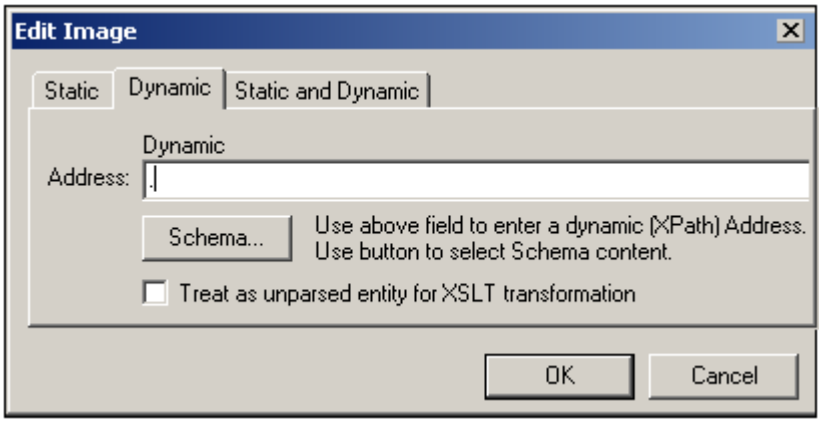
Each paragraph type has particular formatting features that can be used to advantage. Note that the `pre` format type enables carriage returns to be output as such instead of them being normalized to whitespace.

Image

The **Image** command allows you to insert an image using an image location address that either comes from the XML document (dynamic) or is entered by you directly in the SPS (static).

To insert an image, do the following:

1. Click **Insert | Image** or the Insert Image toolbar icon. The Insert Image dialog (*shown below*) appears. An image can also be inserted by using the **Insert Image** icon in the Insert Design Elements toolbar.

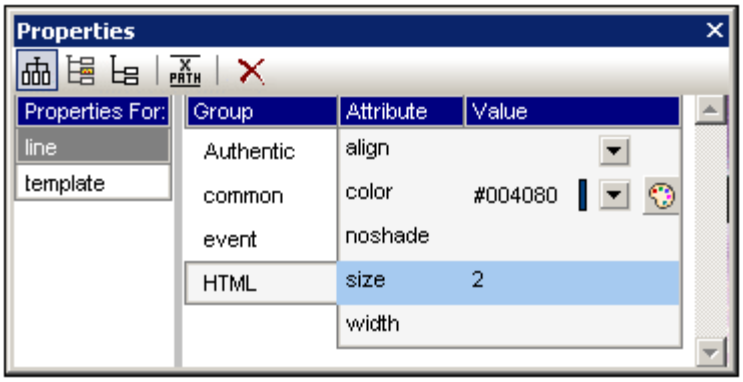


2. Select the required tab (Static, Dynamic, or Static and Dynamic), and enter the address of the image location and/or the XPath expression that locates the image address in the XML document. The screenshot above shows how a Static and Dynamic address is entered.

Using unparsed entities
If the SPS is DTD-based and uses unparsed entities, then, for the dynamic part of an image address, the URI declared as the value of the unparsed entity can be used. For details of how to use unparsed entities, see Unparsed Entity URIs.

Horizontal Line

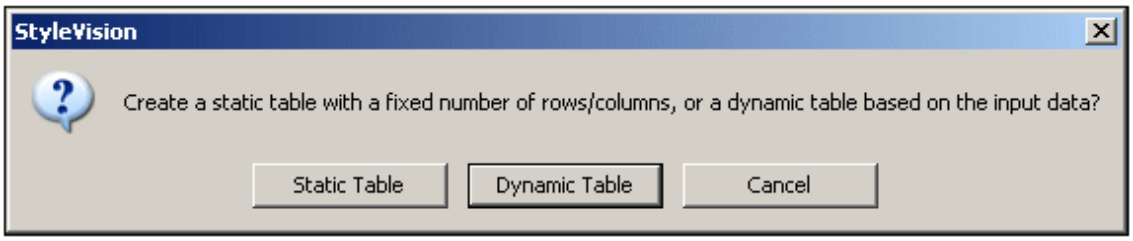
The **Horizontal Line** command inserts a horizontal line at the cursor insertion point. This command is not available when an SPS component is selected. To set properties for the horizontal line, select the line in the design, and in the Properties sidebar, select *line*, and specify values for properties in the *line* group (*see screenshot below*).



You can specify the following properties for the line: its `color`, `size` (thickness), `width` (in the design), `alignment`, and the `noshade` property.

Table

The **Insert Table** command pops up the Create Table dialog (*screenshot below*).



According to whether you wish to create a static table or a dynamic table, select the appropriate button. How to proceed with each type of table is described in the section: Static SPS Tables and Dynamic SPS Tables.

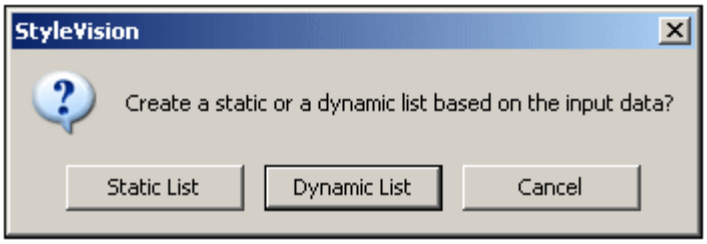
Note that tables can also be created by using the **Table | Insert Table** menu command and the **Insert Table** icon in the Insert Design Elements toolbar.

Bullets and Numbering

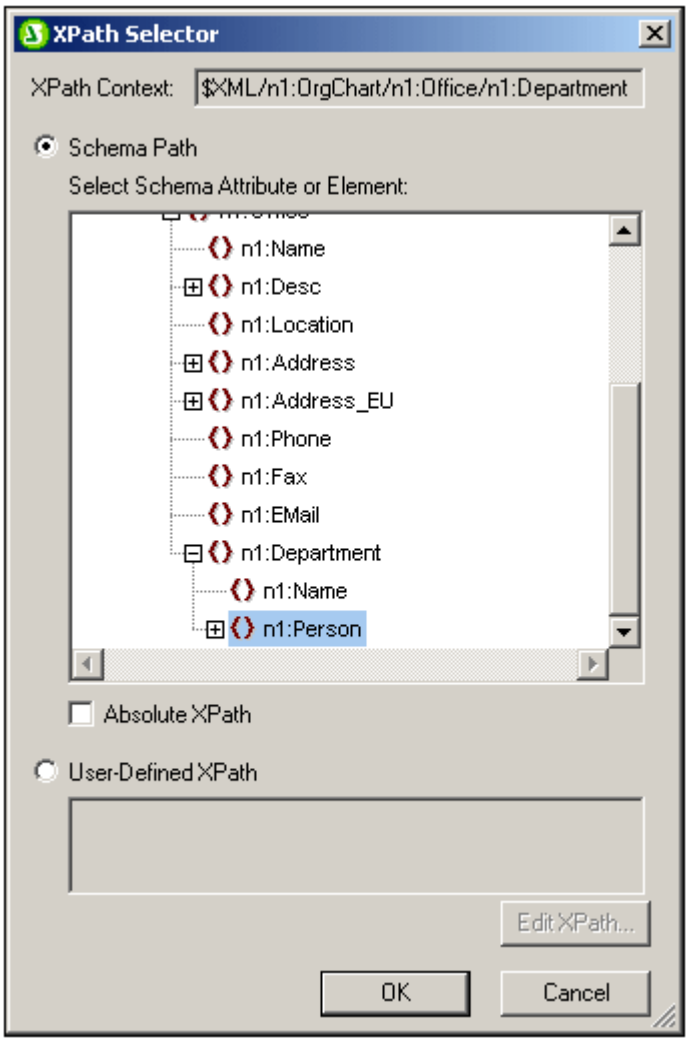
The **Bullets and Numbering** command allows you to create a list, either static or dynamic. The list items of a static list are entered in the SPS, while those of dynamic lists are the values of sibling nodes in the XML document.

To create a list do the following:

1. Place the cursor at the location where you wish to insert the list and click the **Bullets and Numbering** command. This pops up a dialog asking whether you wish to create a static list or dynamic list (*screenshot below*).

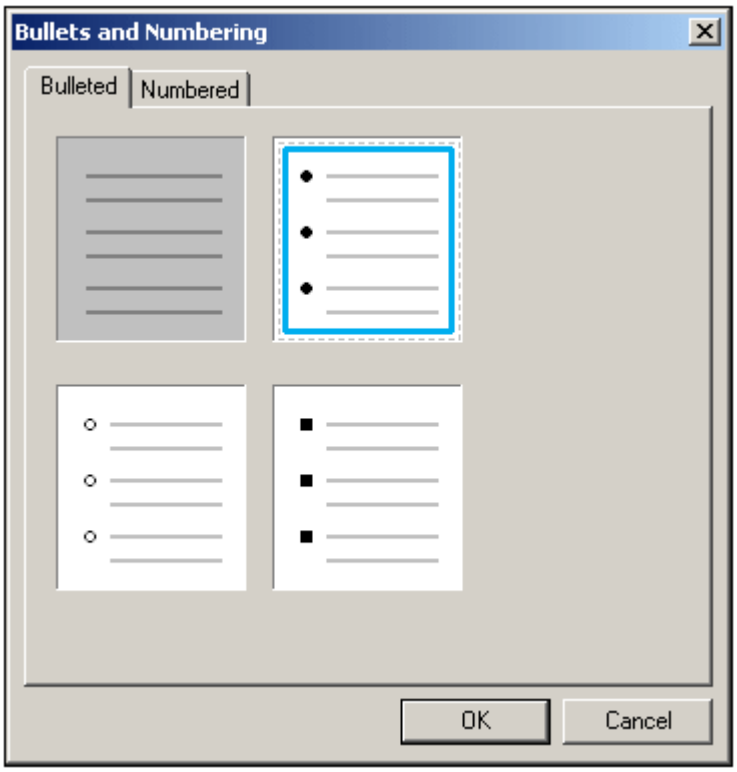


   If you click **Static List**, the Bullets and Numbering dialog described in Step 3 pops up. If you click **Dynamic List**, the XPath Selector dialog pops up (*screenshot below*).
2. In the XPath Selector dialog, notice that the XPath Context is the context of the insertion location, and that it cannot be changed in the dialog. Select the node that is to be created as the dynamic list. In the screenshot below, the context node is `n1:Department`, and the `n1:Person` node has been selected as the node to be created as a list. This means that the content of each `n1:Person` node will be created as an item in the list.



If you select the User-defined XPath option, then you can enter an XPath expression to select the node to be created as the dynamic table. Clicking **OK** pops up the Bullets and Numbering dialog described in the next step.

3. In the the Bullets and Numbering dialog, select the kind of list you wish to create. You can choose from a bulleted list (with a bullet, circle, or square as the list item marker), or a numbered list. Clicking **OK** creates the list with the type of list item marker you selected.



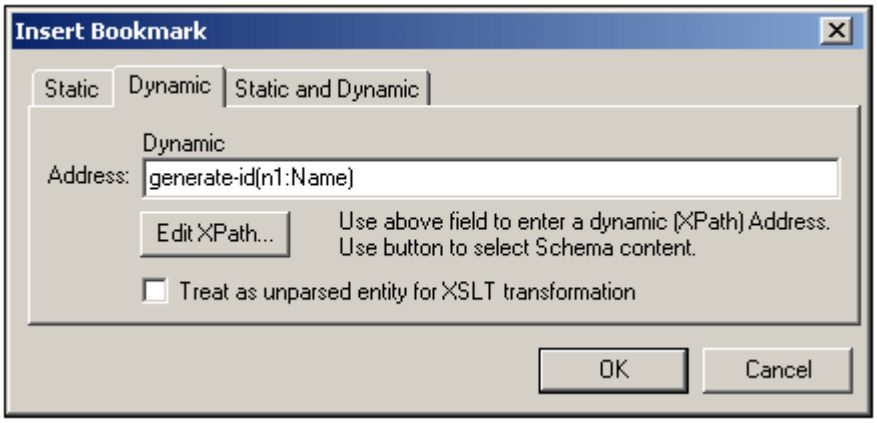
Note: A static list can also be created by placing the cursor at the location where the list is to be created and then clicking the Bulleted List icon or Numbered List icon in the Insert Design Elements toolbar as required. A dynamic list can also be created by dragging a node from the Schema Tree into the design.

Bookmark

The **Bookmark** command allows you to insert a bookmark (or anchor) anywhere in the SPS. A bookmark can be referenced by a Hyperlink.

To insert a bookmark, do the following:

1. Place the cursor at the location where you wish to create the bookmark.
2. Select **Insert | Bookmark**, or right-click and select **Insert | Bookmark**. The Insert Bookmark dialog appears.



3. In the Insert Bookmark dialog, select a tab according to whether the name of the bookmark should be static (Static tab), dynamically obtained from the XML document (Dynamic), or composed of both static and dynamic parts (Static and Dynamic). In the screenshot above a dynamic bookmark is created, which has a name that is a unique ID for each `Name` child of the context node.
4. Click **OK**. The bookmark is defined.

Note: Bookmarks are created at the location specified in the design. If that location is within an element that repeats, a bookmark is created within each instance of that repeating element. If a static name is given, then each bookmark will have the same name. Therefore, it is better in such cases (of repeating elements) to give a dynamic name, which can be, for example, the name of a child element of the context node (the element within which the bookmark is created). If the node selected for the dynamic name might have the same content across multiple instances, then the uniqueness of the bookmark name can be ensured by using the `generate-id()` function to generate the name (*see screenshot above*). To reference such a bookmark, the same ID can be generated as the `href` value of a hyperlink. In this case make sure you use the fragment-identifier `#` in front of the `generate-id()` function. The XPath expression would be: `concat('#', generate-id(nodeXXX))`.

You can edit the name of a bookmark after it has been created. Do this by right-clicking the bookmark and selecting the **Edit Bookmark Name** command from the context menu that appears. Alternatively, in the Properties sidebar, in the *Link* group of properties for the link, you can click the **Edit** button of the bookmark name attribute and make the required changes.

Deleting a bookmark

To delete a bookmark, select it in the design and press the **Delete** key. Alternatively, select the link in the Properties sidebar and click the **Delete** button in the toolbar of the sidebar.

Hyperlink

The **Hyperlink** command enables you to insert a link from any part of the output document (HTML, RTF, PDF, or Word ML) to an anchor within the output document or to an external document or document fragment. Note that links are created only in the output document; linking is not available in Authentic View.

To insert a hyperlink, do the following:

1. A hyperlink can be created around an existing design component or inserted at any point in the document (with the link text inserted subsequently). Select the SPS component or text fragment to be made into a hyperlink or place the cursor at the point where the link is to be inserted.
2. Click the Hyperlink icon in the toolbar, or select **Insert | Hyperlink**, or right-click and select **Insert | Hyperlink** (when no design component is selected) or **Enclose With | Hyperlink** (when a design component is selected). A hyperlink can also be inserted by using the **Insert Hyperlink** icon in the Insert Design Elements toolbar.
3. In the Insert Hyperlink dialog that appears, specify the document or document fragment you wish to link to. If you are linking to a document fragment (that is, to a bookmark within a document, remember to include the `#` symbol. The URI for the hyperlink is specified in one of the following forms:
   - As a static address (entered directly; you can select an HTML file via the **Browse** button, and a fragment in the current document via the **Bookmark** button). Examples would be: `http://www.altova.com` (static Web page URI); `U:\documentation\index.html` (via Browse button); or `#top_of_page` (via Bookmark button).
   - As a dynamic address (which comes from a node in the XML document; you specify the node). An example would be a node such as `//otherdocs/doc1`. If the name of a bookmark has been generated using the `generate-id()` function, then the `href` of the hyperlink should be generated using the same `generate-id()` function. For information, see Defining Hyperlinks.
   - As a combination of static and dynamic text for an address (you specify the static text and the XML document node). An example would be `www.altova.com -- department/name -- #intropara`.
4. Click **OK**. The hyperlink is created.

Note: When specifying the node for a dynamic hyperlink entry, you can enter the XPath expression as an absolute XPath expression by checking the Absolute Path check box. If this check box is not checked, the XPath expression for the node you select via the Schema button is entered as being relative to the currently selected component.

Using unparsed entities

For the dynamic part of a hyperlink address, you can use the URI declared for an unparsed entity in the DTD—if you are using a DTD. For details of how to use unparsed entities, see Using unparsed entity URIs.

Removing a hyperlink

You can edit the `href` of a hyperlink after it has been created. Do this by right-clicking the hyperlink and selecting the **Edit URL** command. Alternatively, in the Properties sidebar, in the *Link* group of properties for the link, you can click the **Edit** button of the URL attribute and make the required changes.

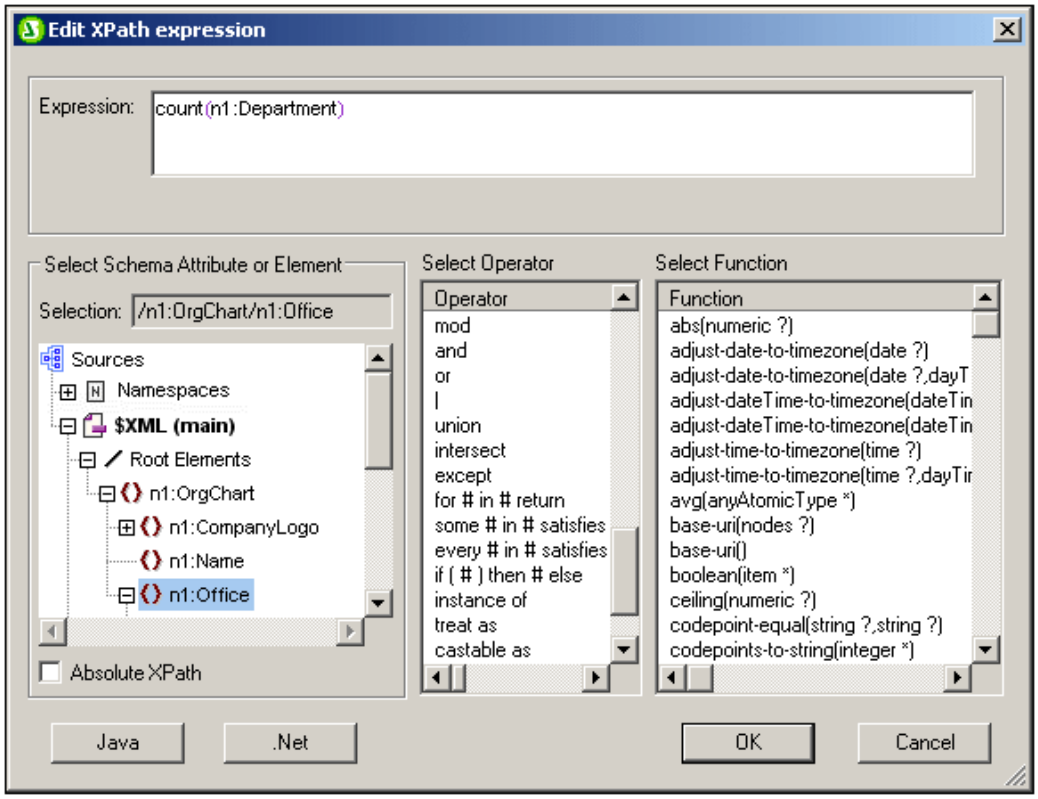
Deleting a hyperlink
To delete a hyperlink, select it in the design and press the **Delete** key. Alternatively, select the link in the Properties sidebar and click the **Delete** button in the toolbar of the sidebar.

Condition, Output-Based Condition

The **Condition** command enables you to insert a condition at the cursor point or around the selection. A condition consists of one or more branches, with each branch containing a specific set of processing rules. In this way, different sets of processing rules can be specified for different branches. For example, if the content of a node is the string `Stop`, the branch can test this, and specify that the contents of the node be colored red; a second branch can test whether the contents of the node is the string `Go`, and, if yes, color the contents of the node green; a third branch can specify that if the contents of the node is neither the string `Stop` nor the string `Go`, the contents of the node should be colored black.

To insert a condition, do the following:

1. Place the cursor at the desired location in the design or select the component around which the condition is to be inserted.
2. Select the menu command **Insert | Condition** or right-click and select the context menu command **Insert | Condition**.
3. In the Edit XPath Expression dialog that pops up (*screenshot below*), enter the XPath expression.



The context node for the expression being built is highlighted in the schema tree in the pane at extreme left. You can enter the XPath expression directly in the text box, or you can double click an item (in any of the three panes) to insert that item. Nodes inserted from the schema tree in the left-hand pane are inserted relative to the context node (if the Absolute XPath check box is unchecked) or as an absolute expression starting from the document node (if the Absolute XPath check box is checked).

4. Click **OK** to finish inserting the condition. The condition is created with one branch, the test for which is the XPath expression you entered.

Insert Output-Based Condition

This command inserts an output based-condition at the cursor location or around the selected component. Each branch of the condition represents a single output (Authentic View, RTF, PDF, Word 2007, or HTML). To determine which branch represents which output, mouseover the branch tag or check the XPath expression of the selected branch (in the Properties sidebar, in the Condition Branch entry, click the Edit button). If the output-based condition was created at a cursor insertion point, all branches will be empty and content will have to be inserted for each branch. If the output-based condition was created around a component, each branch will contain that component. For more details about output-based conditions, see Output-Based Conditions. You can edit, move, and delete output-based conditions in the same way you would with a standard condition.

Editing the XPath expressions of branches

To edit the XPath expression of a branch, select the branch in Design View. Then, in the Properties sidebar, select `condition branch | when`. Click the **Edit** button  for the XPath item. This pops up the Edit XPath Expression dialog (*screenshot above*), in which you can edit the expression. Click `OK` when done.

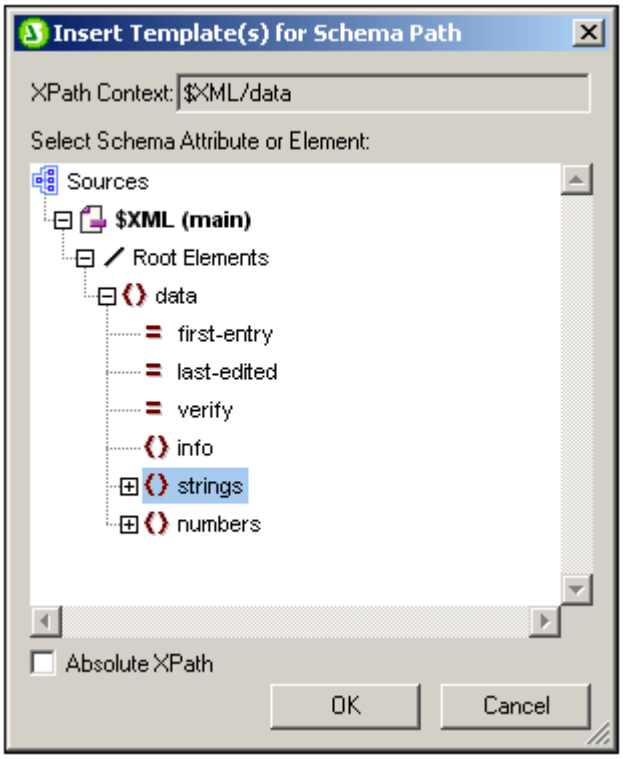
Adding branches, changing the order of branches, and deleting branches

To add new branches, change the order of branches, and delete branches, right-click the required branch and select the relevant item from the context menu.

Template

The **Template** command inserts, at the cursor insertion point, an empty template for the schema tree node you select. Insert a template as follows.

1. Place the cursor in the design at the location where the template is to be inserted.
2. Click the **Insert | Template** command. This pops up the Insert Template dialog (*screenshot below*).



3. The XPath Context field contains the context node of the cursor insertion point and will be the context node for the template when it is created. Select the node for which you wish to create the template. In the screenshot above the `strings` node is selected as the node for which the template is being created.
4. Click **OK** to finish.

An empty template for the selected node will be created (in the screenshot below, an empty template for the `strings` node has been created).

User-Defined Template

The **User-Defined Template** command inserts, at the cursor insertion point, an empty template that selects a node the user specifies in an XPath expression. Insert a user-defined template as follows.

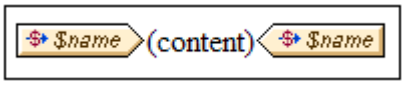
1. Place the cursor in the design at the location where the template is to be inserted.
2. Click the **Insert | User-Defined Template** command. This pops up the Edit XPath Expression dialog.
3. Enter the XPath expression to select the node you want. There are a few points to note in this connection: (i) The XPath expression will be evaluated in the context of the node within which the user-defined template is being created; (ii) The XPath expression can select any node anywhere in the document as well as in another XML document.
4. After you have entered the XPath expression, click **OK** to finish.

An empty user-defined template for the targeted node will be created.

For more detailed information, see the section, SPS File: Contents | User-Defined Templates.

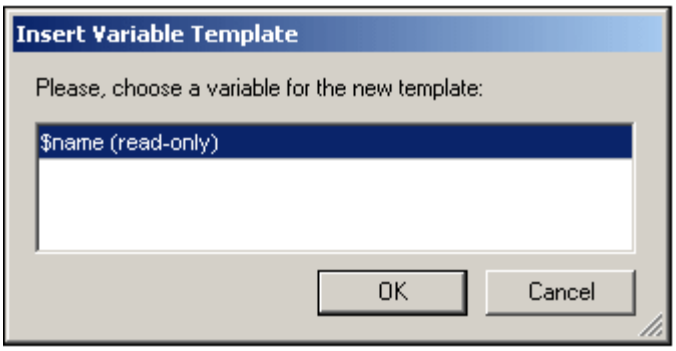
Variable Template

A **Variable Template** is a template that targets a variable and, by default outputs its content. It is inserted with the **Insert | Variable Template** or **Enclose with | Variable** command, which inserts, at the cursor insertion point, a template for a variable defined in the SPS. The variable template (*screenshot below*) contains a `content` placeholder by default, and this serves to output the contents of the variable. You can insert additional content (static as well as dynamic) in the variable template as required, or modify it as you would any other template.



To insert a variable template, do the following:

1. Place the cursor in the design at the location where the template is to be inserted.
2. Click the **Insert | Variable Template** command. This pops up the Insert Variable Template dialog (*screenshot below*).



3. The dialog contains a list of all the user-declared parameters and variables defined in the SPS. Select the variable for which you wish to add a variable template.
4. Click **OK** to finish.

Layout Container, Layout Box, Line

The **Insert | Layout Container** command enables a Layout Container to be inserted anywhere in the design. A Layout Box and a Line can be inserted in a Layout Container, and both these commands are enabled only when a Layout Container is selected.

Layout Containers, Layout Boxes, and Lines can also be inserted via the respective icons in the Insert Design Elements toolbar. To insert via the toolbar icons, you must first select the appropriate toolbar icon and then click in the design at the location where you wish to insert the layout item.

For a detailed description of Layout modules and how to insert and use them in the design, see the section Layout Modules.

Table of Contents

Mousing over the **Table of Contents** command rolls out a submenu containing commands to insert various commands relating to the creation of a Table of Contents (TOC) template, TOC bookmarks, and a design document structure for the TOC.

The list of commands is as follows. For the details of how to use them click on the respective links, which will take you to the section on how to use that particular TOC component.

- Insert Table of Contents
- TOC Bookmark
- TOC Bookmark (Wizard)
- TOC Reference
- TOC Reference | Entry Text / Leader / Page Reference
- Hierarchical Numbering
- Sequential Numbering
- Level
- Level Reference
- Template Serves as Level

Note: These commands are also available as commands in a context menu, depending on where you right click in the design.

Design Fragment

Mousing over the **Design Fragment** command rolls out a submenu containing all the Design Fragments currently in the design. Clicking a Design Fragment in the submenu inserts it at the cursor insertion point.

Page / Column / Document Section

With the **Page / Column / Document Section** command you can insert, for paged media output, a page break (HTML printouts, RTF, PDF, and Word 2007+ outputs) and page number (RTF, PDF, and Word 2007+ outputs). Such insertions are possible only at cursor insertion points.

New Page

Click **New Page** to insert a page break at the cursor insertion point. The page break is displayed as a dashed line across the whole of the Design window. In HTML output, while the page break has no effect in the browser view, a page break will be inserted when the browser view of the HTML file is printed out. In PDF, Word 2007+ and RTF output, a page break is inserted at the specified locations.

Page Number

Click **Page | Number** to insert the current page number in the RTF, PDF, and Word 2007+outputs. The page number appears as a block (i.e. as a separate line) or as an inline (embedded in document text), depending on where in the document the page number has been inserted. For example, if the page number is inserted within a paragraph element, then the page number appears inline within the paragraph. If, on the other hand, the page number is inserted, say, between two elements, then it appears on a separate line by itself.

Page Total

Click **Page | Total** to insert the total number of pages in the PDF output. The page total can be inserted anywhere in the document design, including in headers and footers. It is particularly useful when numbering pages. For example, the page total can be inserted in a header design as follows: `Page: (page number)/(page total)`. This would produce output in the form: `Page: 1/25`.

New Column

The number of columns that a page in a given section must have is specified in the page properties of that section. In the output, text will fill the columns on a multi-column page one by one. Text can however be forced into a new column by inserting a column break (new column) in the design. To insert a new column in a document, place the cursor at the location in the design where the new section is to be added and click the **New Column** command, which is also available via the context menu.

New Document Section

A document is made up of one initial section and, optionally, additional sections. Each section has its own page properties. To insert a new section in a document, place the cursor at the location in the design where the new section is to be added and click the **New Document Section** command, which is also available via the context menu.

Deleting Page Breaks, Page Numbers, and Page Total

To delete page breaks, page numbers, and page total, select the placeholder and click **Delete**.

DB Control

Mousing over the **DB Controls** command rolls out a submenu containing commands to insert controls in Authentic View that enable the Authentic View user to navigate the display of records in Authentic View and to query the DB. These control can be inserted in the design and will appear in the Authentic View document at the corresponding locations.

The list of commands is as follows. For the details of how to use them click on the respective links.

- Navigation
- Navigation + Goto
- Query Button

For details about how these controls are created and what they do, see the section SPS Design Features for DB.

XBRL Element

The **Insert XBRL Element** command inserts any of the following XBRL elements as a template:

- *Context:* Creates an empty `xbrli:context` element template. The location where the template is inserted determines what `context` element is selected. The content of the template will have to be created.
- *Periods:* The three empty period templates match three period elements: `period`; `startDate`; and `endDate`. Note that `startDate` and `endDate` are children of the `period` element. There is no template for the `instant` element, which is also an allowed child of `period`; however, since `instant` can only occur as an only child of `period`, the built-in XSLT templates will select the `instant` template automatically if templates are applied (`xsl:apply-template`) to the period template (with the `contents` placeholder, for example).
- *Identifier:* Creates an empty template for the `identifier` element.
- *Unit:* Creates an empty template to match the unit element. You can create a global template for `xbrli:measure`, and use this locally within the Unit template to actually generate the monetary unit.
- *Footnote:* Creates a template that matches the `footnote` element. Footnotes have two parts: a reference and the actual footnote text.

For more information, see the section XBRL Templates.

User-Defined Item

Mousing over the **Insert | User-Defined Item** command causes a sub-menu to roll out that contains commands to insert a User-Defined Element or a User-Defined XML Text Block. How to use these two components is described in the section SPS File: Content | User-Defined Elements, XML Text Blocks.

19.8 Enclose With Menu

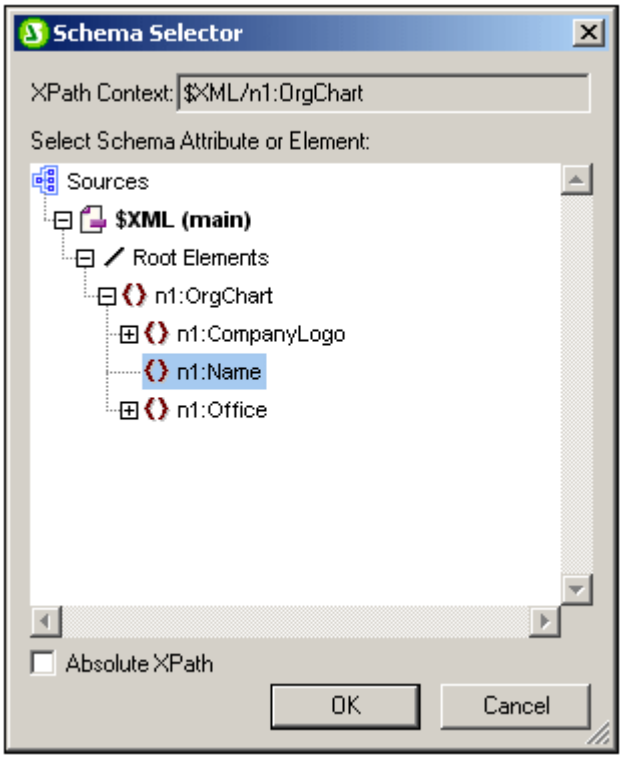
The **Enclose witht** menu provides commands enabling you to enclose a selection in the design with a variety of design components. Some of these commands are available as toolbar icons that enable you to insert the component in the design (equivalent commands are available in the **Insert menu**). Additionally, **Enclose with** menu commands are also available via context menus which appear when, in the SPS design, you right-click a selection. In the menus and context menus, commands that are not available at that location in the SPS are disabled.

Note: Since the **Enclose with** commands are used for constructing the SPS, they are available in Design View only.

Template

The **Enclose with | Template** command encloses the selected design component or text with a template for the schema tree node you select. Do this as follows.

1. Select the design component or text you wish to enclose with a template.
2. Click the **Enclose with | Template** command. This pops up the Schema Selector dialog (*screenshot below*).



3. The XPath Context field contains the context node of the selection and will be the context node of the template when it is created. Select the node for which you wish to create the template. In the screenshot above the `n1:Name` node is selected as the node for which the template is being created.
4. Click **OK** to finish.

A template for the selected node will be created around the selection.

User-Defined Template

The **Enclose with | User-Defined Template** command encloses the selection with a template for a node the user specifies in an XPath expression. Insert a user-defined template as follows.

1. Select the component in the design that you wish to enclose with a user-defined template.
2. Click the **Enclose with | User-Defined Template** command. This pops up the Edit XPath Expression dialog.
3. Enter the XPath expression to select the node you want. There are a few points to note in this connection: (i) The XPath expression will be evaluated in the context of the node within which the user-defined template is being created; (ii) The XPath expression can select any node anywhere in the document as well as in another XML document.
4. After you have entered the XPath expression, click **OK** to finish.

A user-defined template for the targeted node will be created around the selection.

For more information, see the section, SPS File: Structure | Templates and Design Fragments | Variable Templates.

Variable Templates

The **Enclose with | Variable Template** command encloses the selection with a template for a variable defined in the SPS design.

1. Select the component in the design that you wish to enclose with a variable template.
2. Click the **Enclose with | Variable Template** command. This pops up the Enclose with Variable Template dialog.
3. From the list in the dialog, select the variable for which you wish to create the template.
4. Click **OK** to finish.

A variable template will be created around the selection.

For more information, see the section, SPS File: Structure | Templates and Design Fragments | Variable Templates.

Paragraph, Special Paragraph

The **Paragraph** command  inserts an HTML paragraph `<p>` element around the selected component. A component is considered selected for this purpose when the entire node is selected (by clicking either of its tags) or when static text is selected. If the cursor is placed within static text, the paragraph element is inserted (start and end tags) at this point. A paragraph can also be inserted by using the **Insert Paragraph** icon in the Insert Design Elements toolbar.

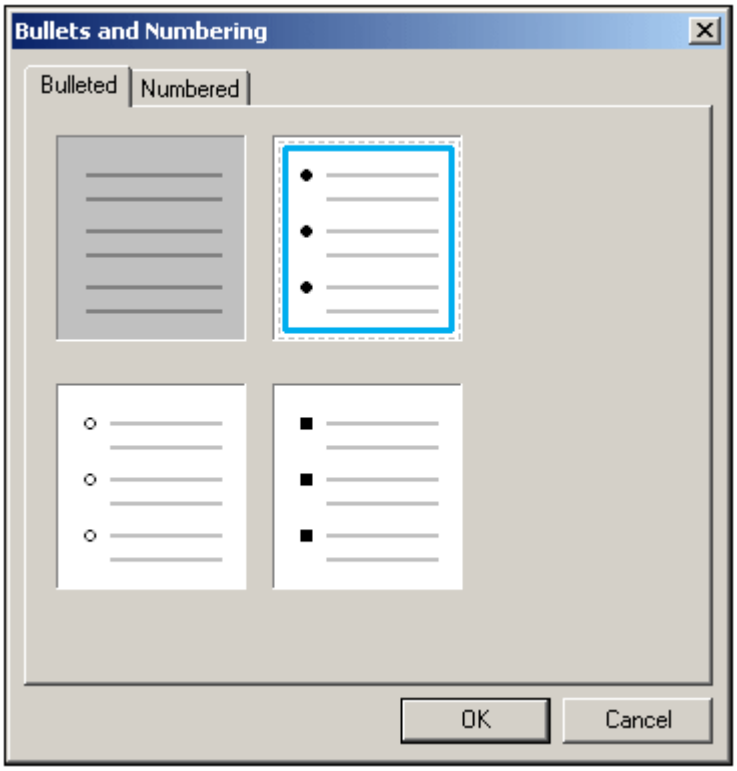
The **Special Paragraph** command allows you to assign a predefined format to the selected node. The available predefined formats can also be selected from the combo box in the toolbar.

Each paragraph type has particular formatting features that can be used to advantage. Note that the `pre` format type enables carriage returns to be output as such instead of them being normalized to whitespace.

Bullets and Numbering

The **Enclose with | Bullets and Numbering** command creates a static list and list items around the selection. If the selection contains a CR-LF, carriage-return and/or linefeed (inserted by pressing the **Enter** key), then separate list items are created for each text fragment separated by a CR-LF.

When this command is selected, the Bullets and Numbering dialog (*screenshot below*) pops up.



Select the list item marker you want and click **OK**. A list is created. The number of list items in the list corresponds to the number of CR-LFs (carriage-returns and/or linefeeds) in the selection. You can add more list items to the list by pressing **Enter**.

Note: You can obtain the same results by selecting static content and then clicking the Bulleted List or Numbered List icons in the Insert Design Elements toolbar.

Bookmarks and Hyperlinks

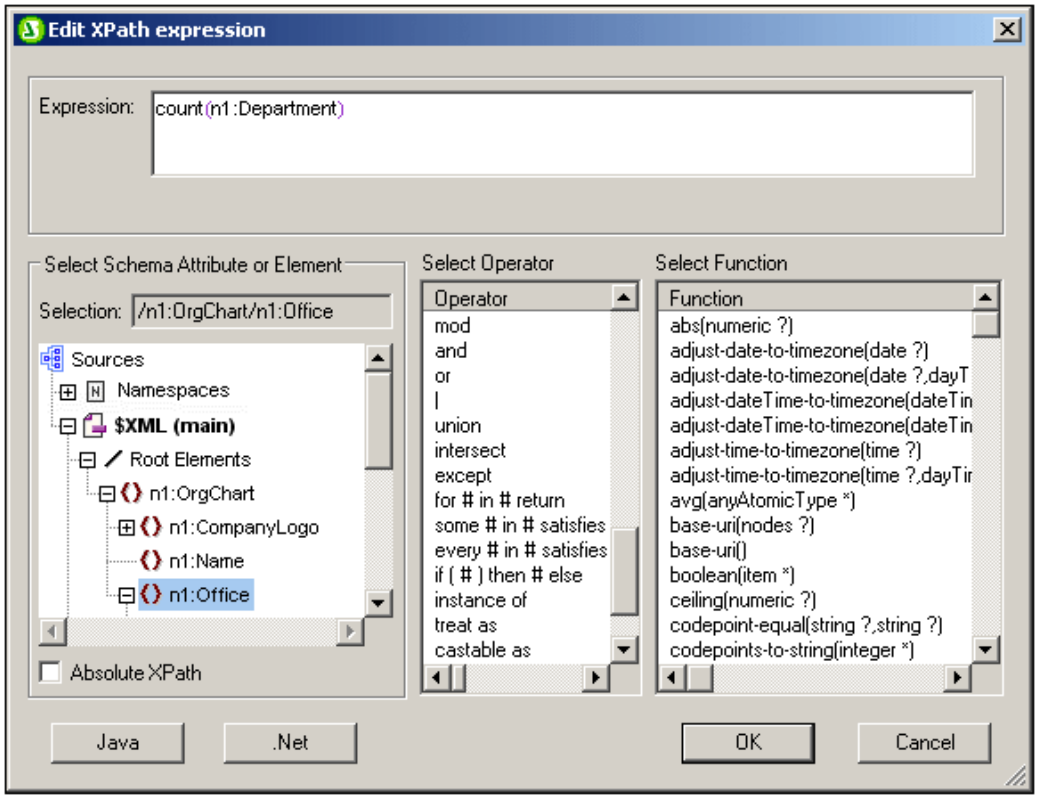
The **Enclose with | Bookmark** and **Enclose With | Hyperlink** commands are enabled when some text or component in the SPS design is selected. These commands enable a bookmark and hyperlink, respectively, to be created around the selection. For more information about how bookmarks and hyperlinks work and how to create them, see the section Advanced Features | Table of Contents, Referencing, Bookmarks.

Condition, Output-Based Condition

The **Condition** command enables you to insert a condition at the cursor point or around the selection. A condition consists of one or more branches, with each branch containing a specific set of processing rules. In this way, different sets of processing rules can be specified for different branches. For example, if the content of a node is the string `Stop`, the branch can test this, and specify that the contents of the node be colored red; a second branch can test whether the contents of the node is the string `Go`, and, if yes, color the contents of the node green; a third branch can specify that if the contents of the node is neither the string `Stop` nor the string `Go`, the contents of the node should be colored black.

To insert a condition, do the following:

1. Place the cursor at the desired location in the design or select the component around which the condition is to be inserted.
2. Select the menu command **Insert | Condition** or right-click and select the context menu command **Insert | Condition**.
3. In the Edit XPath Expression dialog that pops up (*screenshot below*), enter the XPath expression.



The context node for the expression being built is highlighted in the schema tree in the pane at extreme left. You can enter the XPath expression directly in the text box, or you can double click an item (in any of the three panes) to insert that item. Nodes inserted from the schema tree in the left-hand pane are inserted relative to the context node (if the Absolute XPath check box is unchecked) or as an absolute expression starting from the document node (if the Absolute XPath check box is checked).

4. Click **OK** to finish inserting the condition. The condition is created with one branch, the test for which is the XPath expression you entered.

Insert Output-Based Condition

This command inserts an output based-condition at the cursor location or around the selected component. Each branch of the condition represents a single output (Authentic View, RTF, PDF, Word 2007, or HTML). To determine which branch represents which output, mouseover the branch tag or check the XPath expression of the selected branch (in the Properties sidebar, in the Condition Branch entry, click the Edit button). If the output-based condition was created at a cursor insertion point, all branches will be empty and content will have to be inserted for each branch. If the output-based condition was created around a component, each branch will contain that component. For more details about output-based conditions, see Output-Based Conditions. You can edit, move, and delete output-based conditions in the same way you would with a standard condition.

Editing the XPath expressions of branches

To edit the XPath expression of a branch, select the branch in Design View. Then, in the Properties sidebar, select `condition branch | when`. Click the **Edit** button  for the XPath item. This pops up the Edit XPath Expression dialog (*screenshot above*), in which you can edit the expression. Click `OK` when done.

Adding branches, changing the order of branches, and deleting branches

To add new branches, change the order of branches, and delete branches, right-click the required branch and select the relevant item from the context menu.

TOC Bookmarks and TOC Levels

When a component in the design is selected, it can be enclosed with one or more relevant Table of Contents (TOC) components. The list of TOC commands is as follows. For the details of how to use them click on the respective links, which will take you to the section on how to use that particular TOC component.

- TOC Bookmark
- TOC Bookmark (Wizard)
- Level
- Level Reference

Note: These commands are also available as commands in a context menu, depending on where you right click in the design.

User-Defined Element

The **Enclose with | User-Defined Element** command creates a User-Defined Element around the selection in the design. How to use user-defined elements is described in the section SPS File: Content | User-Defined Elements.

19.9 Table Menu

The **Table** menu provides commands enabling you to insert a static or dynamic table and to change the structure and properties of static and dynamic tables. You can edit table structure by appending, inserting, deleting, joining, and splitting rows and columns. Properties of the table as well as of individual columns, rows, and cells are defined using CSS styles and HTML properties for tables and its sub-components.

The Table commands are available in the **Table** menu (*see list below*) and as icons in the Table toolbar. The availability of various table commands depends on the current cursor position. A table can be inserted at any location in the SPS by clicking the Insert Table command. To edit the table structure, place the cursor in the appropriate cell, column, or row, and select the required editing command. To edit a formatting property, place the cursor in the appropriate cell, column, row, or table, and, in the Styles sidebar and/or Properties sidebar, define the required property for that table component.

The following commands are available in the Table menu:

- Insert Table, Delete Table
- Add Table Headers, Footers
- Append/Insert Row/Column
- Delete Row, Column
- Join Cell Left, Right, Below, Above
- Split Cell Horizontally, Vertically
- View Cell Bounds, Table Markup
- Table Properties
- Vertical Alignment of Cell Content

Headers and footers
When you create a dynamic table, you can specify whether you wish to include headers and/or footers. (Footers are allowed only when the table grows top–down.) You can create a header and footer in a static table by manually inserting a top and bottom row, respectively. The structures of headers and footers in both static and dynamic tables can be modified by splitting and joining cells.

Navigating in tables
Use the Tab and arrow keys to navigate the table cells.

Adding cell content
Any type of SPS component can be inserted as the content of a cell. The component should be formatted using the standard formatting tools.

Insert Table, Delete Table

The **Insert Table** command  inserts an empty static table into the design tab. Selecting this command opens a dialog box in which you select whether you wish to create a static or dynamic table.

- If you choose to create a static table, a dialog prompts you for the size of the table (in terms of its rows and columns).
- If you choose to create a dynamic, the XPath Selector dialog pops up, in which you can select the node that is to be created as a dynamic table. On clicking **OK**, the Create Dynamic Table dialog pops up, in which you can select the child nodes you wish to display as the fields of each table item. For details, see Creating dynamic tables.

You can change the structure of a table subsequently by appending, inserting, and deleting rows and/or columns.

The **Delete Table** command  deletes the static or dynamic table in which the cursor is.

Add Table Headers, Footers

Table headers can appear as a header row (above the table body) or as a header column (to the left of the table body, though markup-wise a header column might be placed inside the table body). Similarly, table footers can appear as a footer row (below the table body) or as a footer column (to the right of the table body, though markup-wise a footer might be placed inside the table body).

Note: In the HTML output since table headers are enclosed in `th` elements, they appear bold (because the bold formatting is inherent in the `th` element).

The Add Table Header and Add Table Footer commands add table headers and footers as columns and rows, as follows:


Add Table Header Column: Adds a header column to the left of the table body.


Add Table Footer Column: Adds a footer column to the right of the table body.


Add Table Header Row: Adds a header row above the table body.


Add Table Footer Row: Adds a footer row below the table body.

Append/Insert Row/Column

The **Append Row** command  appends a row to the static or dynamic table in which the cursor is.

The **Insert Row** command  inserts a row above the row in which the cursor is. This command applies to both static and dynamic tables.

The **Append Column** command  appends a column to the static or dynamic table in which the cursor is.

The **Insert Column** command  inserts a column to the left of the column in which the cursor is. This command applies to both static and dynamic tables.

Delete Row, Column

The **Delete Row** command  deletes the row in which the cursor is. This command applies to both static and dynamic tables.

The **Delete Column** command  deletes the column in which the cursor is. This command applies to both static and dynamic tables.

Join Cell Left, Right, Below, Above

The **Join Cell Left** command 

joins the cell in which the cursor is to the adjacent cell on the left. The contents of both cells are concatenated in the new cell. All property values of the cell to the left are passed to the new cell. This command applies to both static and dynamic tables.

The **Join Cell Right** command 

joins the cell in which the cursor is to the cell on the right. The contents of both cells are concatenated in the new cell. All property values of the cell to the left are passed to the new cell. This command applies to both static and dynamic tables.

The **Join Cell Below** command 

joins the cell in which the cursor is to the cell below. The contents of both cells are concatenated in the new cell. All property values of the cell on the top are passed to the new cell. This command applies to both static and dynamic tables.

The **Join Cell Above** command 

joins the cell in which the cursor is to the cell above. The contents of both cells are concatenated in the new cell. All property values of the cell on top are passed to the new cell. This command applies to both static and dynamic tables.

Split Cell Horizontally, Vertically

The **Split Cell Horizontally** command  creates a new cell to the right of the cell in which the cursor is. The contents of the original cell stay in the original cell. All properties of the original cell are passed to the new cell. This command applies to both static and dynamic tables.

The **Split Cell Vertically** command  creates a new cell below the cell in which the cursor is. The contents of the original cell remain in the upper cell. All properties of the original cell are passed to the new cell. This command applies to both static and dynamic tables.

View Cell Bounds, Table Markup

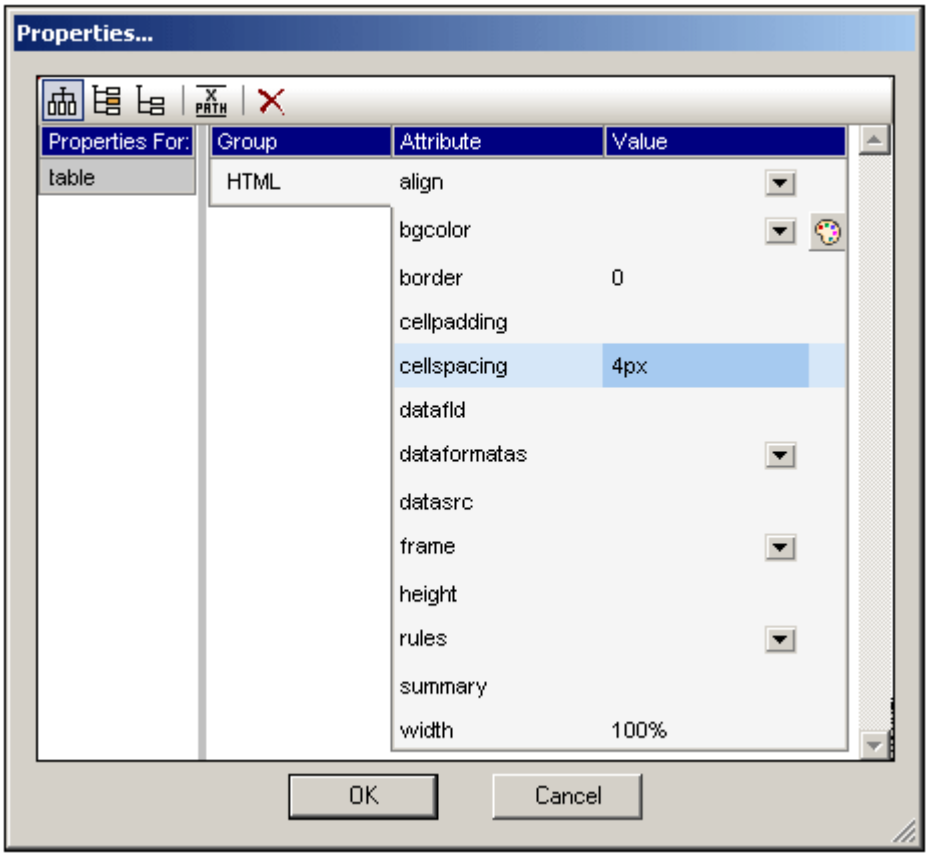
The **View Cell Bounds** and **View Table Markup** commands display the boundaries of cells and table column and row markup, respectively. With tese two options switched on, you can better understand the structure of the table. Switched off, however, you can visualize the table more accurately.

The **View Cell Bounds** command toggles the display of table boundaries (borders) on and off for tables that have a table border value of 0.

The **View Table Markup** command toggles the display of the blue column and row markers on and off.

Table Properties

The **Table Properties** command is enabled when the cursor is placed inside a static or dynamic table. Clicking the command, pops up the Properties sidebar, with the *Table* component selected (*screenshot below*).



You can now edit the properties of the table. Click **OK** when done.

Vertical Alignment of Cell Content

Commands to set the vertical alignment of cell content are available as icons in the Table toolbar. Place the cursor anywhere in the cell, and click the required icon.

 **Vertically Align Top** vertically aligns cell content with the top of the cell.

 **Vertically Align Middle** vertically aligns cell content with the middle of the cell.

 **Vertically Align Bottom** vertically aligns cell content with the bottom of the cell.

19.10 Authentic Menu

The **Authentic** menu contains commands that enable you to:

- Customize aspects of the Authentic View of an XML document that will be displayed using the SPS.
- Edit documents in the Authentic View preview of StyleVision.

The commands in the Authentic menu are listed below:

- Text State Icons
- CALS/HTML Tables
- Auto-Add Date Picker
- Auto-Add DB Controls
- Reload, Validate XML
- Select New Row with XML Data for Editing
- Define XML Entities
- Markup Commands
- (Dynamic Table) Row Commands

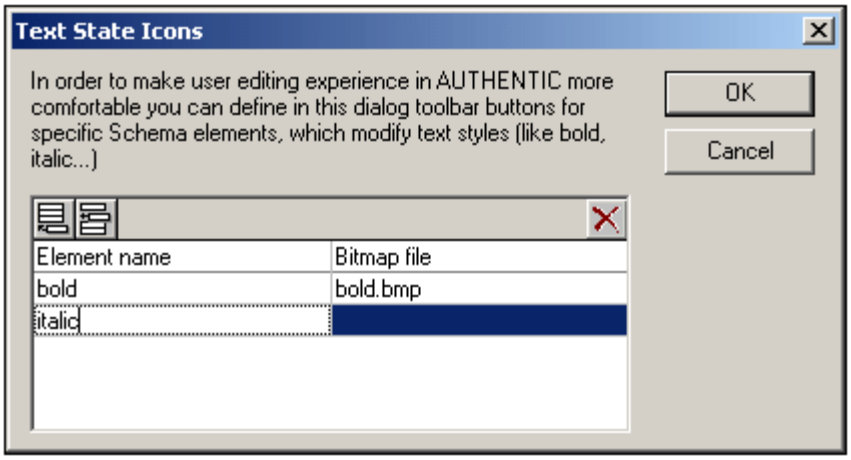
Each of these commands is described in detail in the sub-sections of this section.

Text State Icons

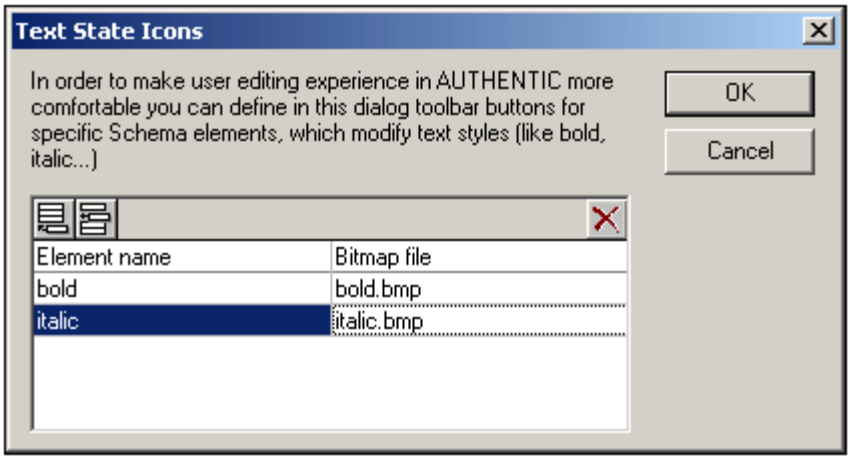
The **Text State Icons** command enables you to define an icon for a global element. Once defined the icon can be displayed in the toolbar of Authentic View (i.e. in Altova's XMLSpy, Authentic Desktop, and Authentic View products), thus allowing the Authentic View user to insert an element around selected text by clicking the icon. This feature is intended for elements that provide inline formatting, such as bold and italic fonts.

All global elements in the schema appear in the All Global Elements list in the Schema Tree sidebar. To create a Text State icon, do the following:

1. Define a global template for the global element that is to get a Text State icon. The formatting that you define for the global template will be applied to text when the Authentic View user clicks the Text State icon. (If the element you require is not available as a global element, you must make it a global element if you wish to use this feature.)
2. Select the menu option **Authentic | Text State Icons**. This opens the Text State Icons dialog box.
3. Click the Append button to add a new Text State icon.
4. In the **Element name** field, enter the name of the element for which you wish to create the Text State icon, and click OK.



5. Press **Tab** or double click in the **Bitmap file** column, and enter the name of the icon image that you wish to have displayed in the Authentic View toolbar.



6. Click **OK** to confirm.

7. Place the icon image file (. `bmp` file) in the `\\sps\Picts` folder of your application folder.

When you edit an XML document in Authentic View (in Altova's XMLSpy, Authentic Desktop, and Authentic View products) using this StyleVision Power Stylesheet, the icon image appears in the toolbar as a Text State icon. If the Authentic View user selects text and clicks the icon, the element represented by that icon is created around the selected text and the formatting you defined in the global template for that element is applied to the selected text.

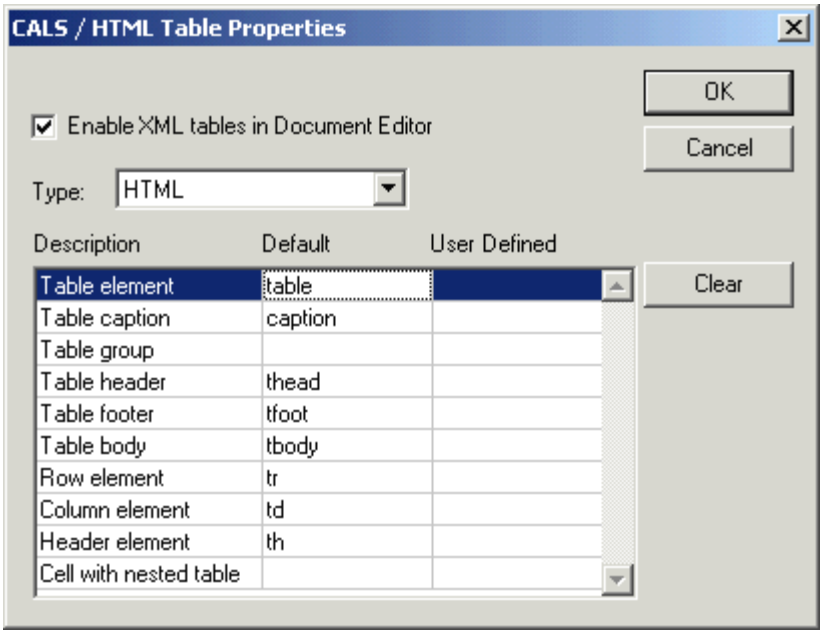
Note: Text State icons are not available in Authentic Preview of StyleVision.

CALS/HTML Tables

The **CALS / HTML Tables...** command pops up a dialog in which you specify:

- whether the Authentic View user may insert XML tables (following either the CALS or the HTML table model) in the XML document or not, and
- the XML elements that will constitute the XML table structure if XML tables are allowed.

When you click **Authentic | CALS / HTML Tables...**, the following dialog appears:



Enabling XML Tables in Authentic View
To enable XML tables in Authentic View, check the box marked Enable XML tables in Document Editor.

Enabling XML tables allows the Authentic View user to insert tables that can be structured and formatted as required by the user. This is as opposed to static and dynamic SPS tables, which are structured and formatted by you, the designer of the StyleVision Power Stylesheet. When an XML table is inserted in Authentic View, a set of XML elements conforming to either the CALS or HTML table model is inserted in the XML document. Cell content in Authentic View is entered as content of the corresponding element in the XML document. When the table is formatted in Authentic View, the appropriate attributes and their values are added to the relevant elements in the XML document.

Defining schema elements for the selected table model
In the combo box, select the table model (CALS or HTML) with which you want your schema table structure to correspond. This combo box is enabled only if the Enable XML tables check box has been checked. Note the following points:

- The **table elements in the schema** must correspond exactly with the structure of the selected table model (either CALS or HTML) to ensure the correct functioning of this feature; however, they do not need to have the same names as those of the table model elements.
- If a table element in the schema is named differently from the corresponding element in the selected table model, then the schema element must be mapped to the corresponding table model element by entering its name in the User Defined column of the CALS / HTML Table Properties dialog.

- The names of all **attributes** of schema table elements must correspond exactly with the relevant attribute names in the table model. These attributes must therefore be defined in the schema. Attribute names must correspond exactly because when the Authentic View user modifies the table structure or enters (for HTML tables) table properties, Authentic View enters attributes and enters/modifies attribute values for the appropriate element in the XML file. If these attributes are not present in the schema or are named (or spelled) differently in the schema, then the XML file will be invalid.

After selecting the appropriate model, all elements in the selected model which do not exist in the table structure of the schema, or which do not have a corresponding schema element specified for it, are displayed in red. If a schema element exists that corresponds to a CALS/HTML element, then you must map this element to the corresponding CALS/HTML element.

Note: When all the elements in the CALS / HTML Table Properties dialog are displayed in black, this means that the schema contains elements that correspond to the elements of the selected table model. If an element name in the Default column is displayed in red, this indicates that either no corresponding schema element exists or that a corresponding schema element exists but has not been mapped to the table model element; in the latter case you must enter the name of the corresponding schema element into the User Defined column.

Caution: If all the element names are displayed in black, be aware that this does not necessarily mean that the table structure of the schema corresponds exactly with the selected table model. There may still be additional elements in the table structure of the schema that could cause errors. You should carefully check your schema for this. Also check the attributes of the schema elements for exact correspondence and naming. Absent or wrongly named attributes will cause validation errors if the Authentic View user uses table formatting properties that use these attributes.

Auto-Add Date Picker

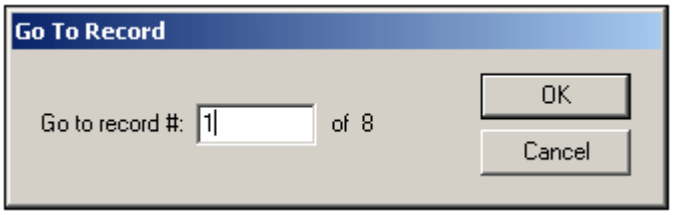
This is a toggle command that switches the Auto-Add Date Picker feature on and off. When the Auto-Add Date Picker feature is ON, any `xs:date` or `xs:dateTime` datatype element that is created as contents or as an input field will have the Date Picker automatically inserted within the element tags and after the `contents` placeholder or input field.

Auto-Add DB Controls

This is a toggle command that switches the Auto-Add DB Controls feature on and off.

When the Auto-Add DB Controls is on, then, whenever a DB table element is dropped into the design, the DB Controls panel (*shown below*) is inserted immediately before the `Row` child element of that DB table element.

The DB Controls panel enables the Authentic View user to navigate the rows of the DB table in Authentic View. The first (leftmost) button navigates to the first record; the second button navigates to the previous record; the third button is the Goto button; it pops up a dialog (*screenshot below*) that prompts you for the number of the record to which you wish to go; the fourth button navigates to the next record; and the fifth button navigates to the last record.



When the Auto-Add DB Controls toggle is turned off, the DB Controls panel is **not** inserted when a DB table is dropped into the Design document.

Note: You can manually insert navigation buttons by placing the cursor anywhere between the start and end tags of the DB table and selecting the required option from the **Insert | DB Controls** submenu. Note that in this submenu the DB Controls panel can be inserted as the four navigation buttons or as the four navigation buttons plus the button that calls the Goto Record dialog.

Reload Authentic View, Validate XML

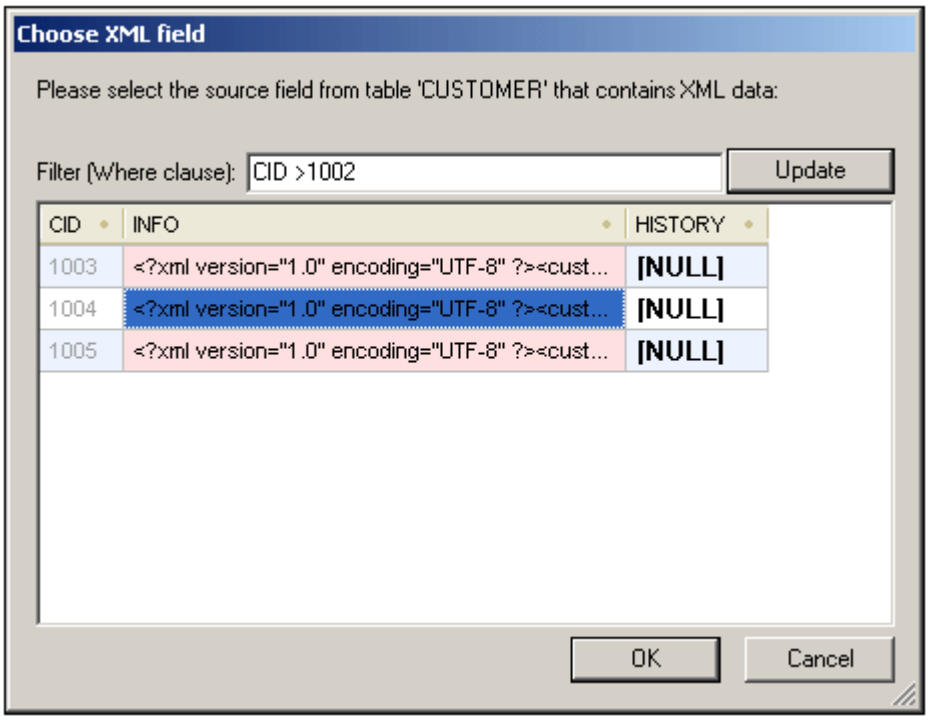
The **Reload** command reloads the Authentic XML data file. This can be useful if the file has been modified outside StyleVision, especially by another user working from another machine.

The **Validate XML (F8)** command  checks the validity of the XML file against the associated schema. Any additional validation requirement that you have entered for individual nodes (**Authentic | Node Settings**) is also checked. The result of the validation check is displayed in a pop-up message box.

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.

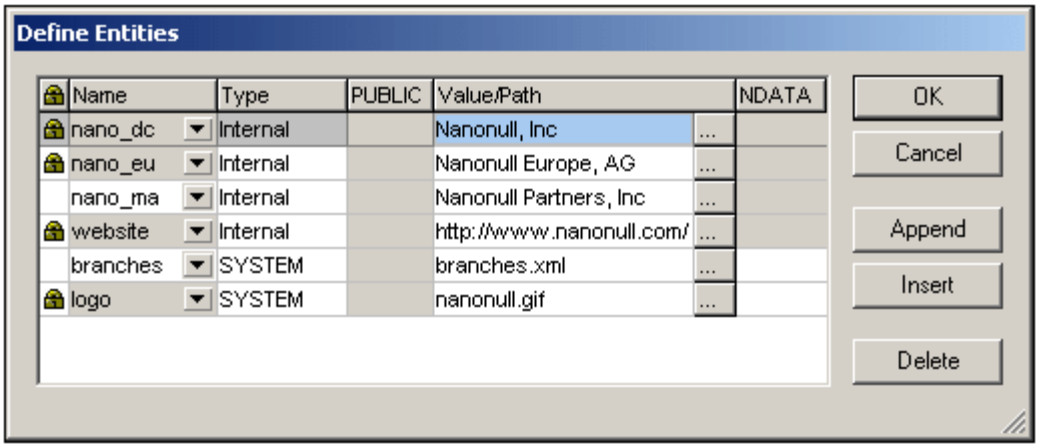
Define XML Entities

The **Define XML Entities** command is available only in Authentic View. With the **Define Entities** command in Authentic View, you can define entities that you want to add to your **XML document**. After an entity has been defined, it can be inserted in the XML document by right-clicking at the location where you wish to insert the entity, and, from the context menu that pops up, selecting **Insert Entity**, and then the name of the entity to be inserted.

An entity that you define with this command can be any of three types:

- Internal parsed entity. The value of the entity is a text string that usually occurs frequently in the document. Using an entity ensures that all occurrences are expanded to the value defined here.
- External parsed entity. This is an external XML file that will replace each occurrence of the entity. The value of the entity is the URI of the external XML file.
- External unparsed entity. This is an external resource that will be called when the entity is processed. The value of the entity is the URI of the external resource.

Clicking the command, pops up the Define Entities dialog (*screenshot below*).



For a description of how to use this dialog, see Define Entities in the Authentic View documentation.

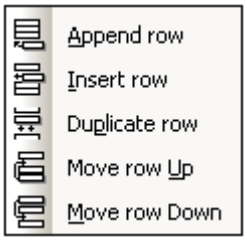
Markup Commands

With the four **Markup commands** (*screenshot below*), you can select between the Hide Markup and the various Show Markup modes.

The markup refers to how the various node tags are displayed in Authentic View. These are mutually exclusive options, and one option must be selected at any given time. With Hide Markup selected node tags are not displayed. Small Markup shows opening and closing tags without node names. Large Markup shows opening and closing node tags with their respective node names. Mixed Markup refers to the markup specified in the Authentic Node Properties of individual nodes. Since the default markup property for individual nodes is Hide Markup, no markup (either small or large) will be displayed—unless you have specified (as a node property) small or large markup for some node/s.

(Dynamic Table) Row Commands

The **(Dynamic Table) Row commands** are enabled in Authentic View when the cursor is placed inside the row of a dynamic table. They enable you to manipulate the rows of a dynamic table. You can append, insert, duplicate, and delete rows, and you can move the selected row up and down relative to the other rows of the table. Since a row in a dynamic table represents a fixed data structure, the Authentic View user will be manipulating units of a data structure in the context of the data structure represented by the dynamic table.



A row is selected by placing the cursor inside it. An empty row can then be inserted (before) or appended (after) the selected row. A row can be duplicated, in the sense that a copy of the row plus its content is created after the selected. A row can also be moved up or down relative to adjacent rows.

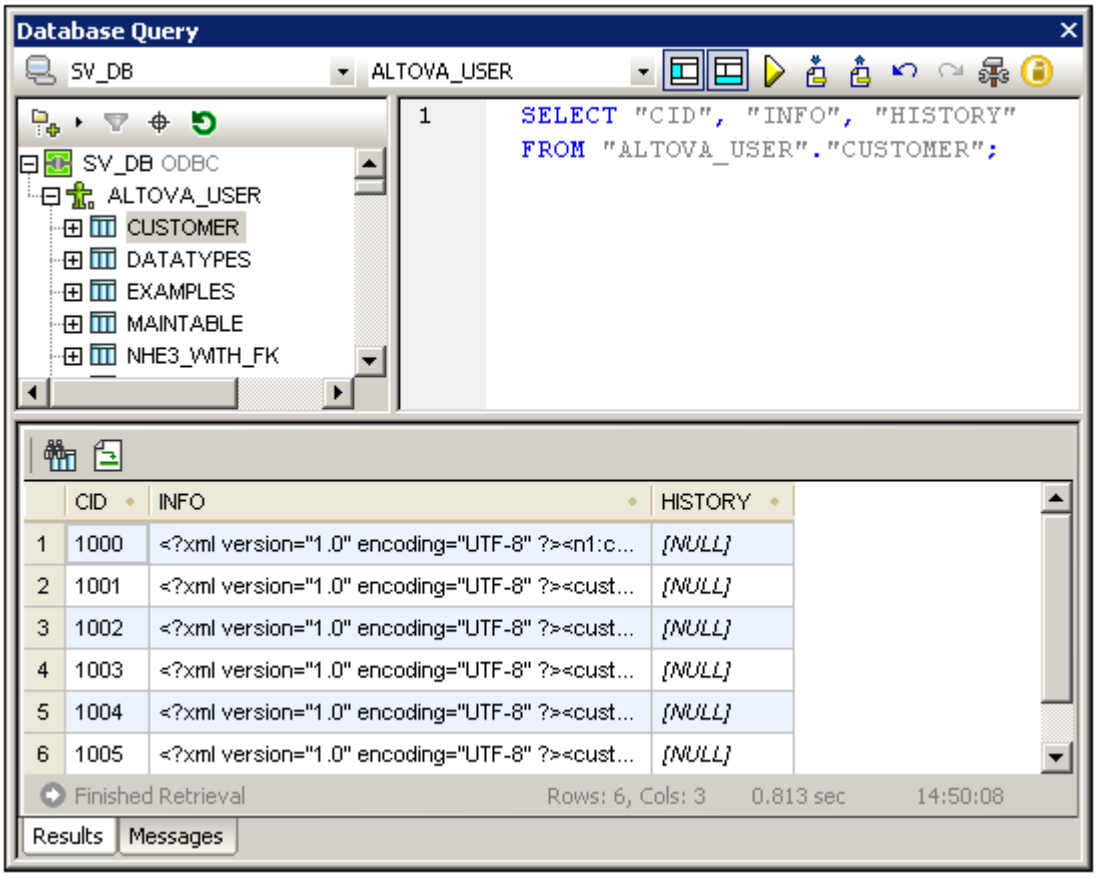
19.11 Database

The **Database** menu contains commands to query the connected database and to edit and clear the filters applied to the connected database.

- Query Database starts up the Connect to Database process and opens the Database Query window.
- Edit DB Filter, Clear DB Filter, to access the Edit DB Filters dialog and clear DB Filters, respectively.

Query Database

The **Query Database** command pops up the Database Query window (*screenshot below*), via which you can connect to a database and query it. How to use the Database Query window is explained in the section Query Database.



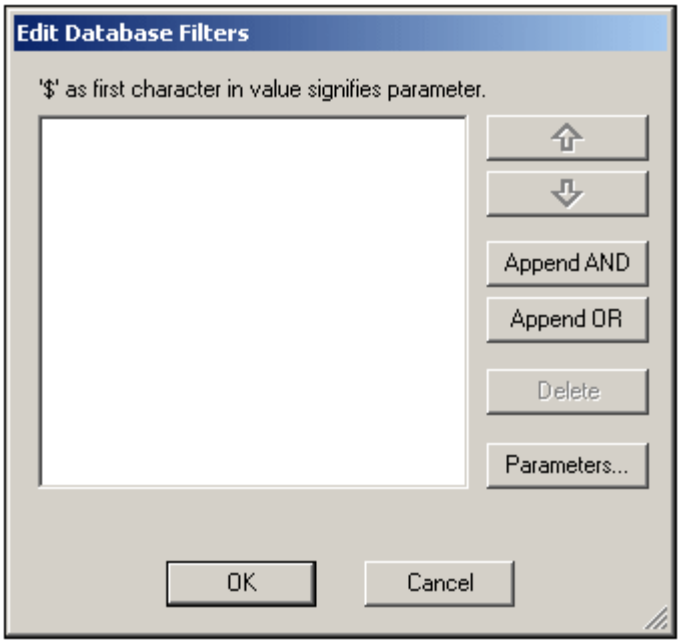
The Database Query window is toggled on and off by clicking the **View | Query Database** command.

Edit DB Filter, Clear DB Filter

The **Edit DB Filter** command allows you to create and edit a filter for a database table (a DB Filter). A DB Filter determines what data from the selected database table is imported and displayed. A DB Filter consists of one or more criteria. When you specify criteria, you use an expression, which is a combination of operators (**=** or **>**) and values (text or numbers). Additionally, criteria can be joined by the logical operators **AND** or **OR**.

To create or edit a DB Filter, do the following:

1. Select the top-level data table element for which you wish to create or edit a DB Filter. Do this by clicking either the element tag in Design View or the element name in the schema tree.
2. Select **Edit | Edit DB Filter** or click the toolbar icon for the command. This pops up the Edit Database Filters dialog.



3. To add criteria use the **Append AND** and **Append OR** buttons. To move a criterion up or down, use the arrow buttons. To delete a criterion, use the Delete button.
4. Specify the criteria for the DB Filter. Each criterion consists of three parts: **Field Name + Operator + Value**. The options for Field Names and Operators are available in combo boxes. The value of the expression must be keyed in, and may be a parameter (indicated by a preceding $ character).

Clear DB Filter command

The **Clear DB Filter** command deletes the filter after asking for and receiving a confirmation from you.

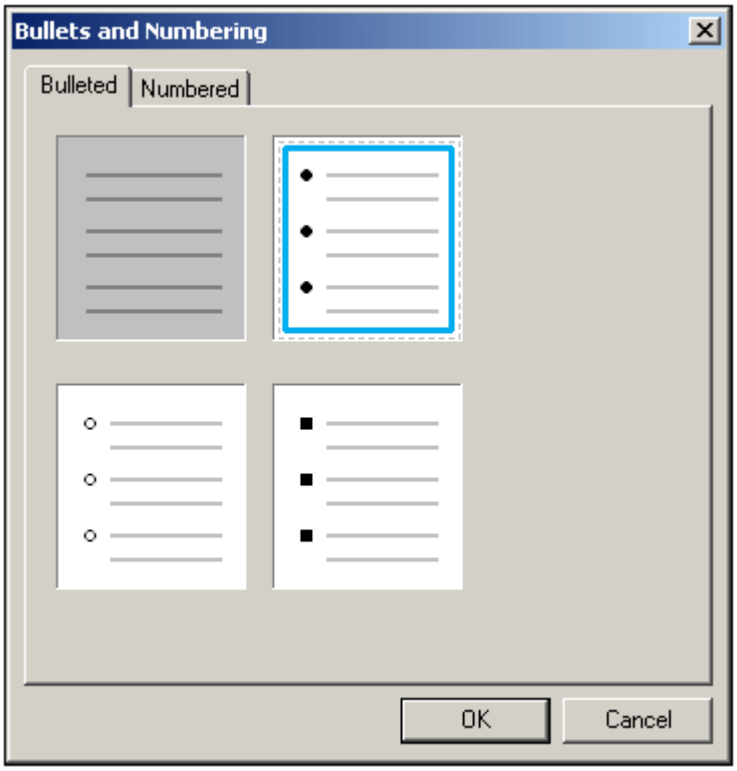
19.12 Properties Menu

The **Properties** menu contains commands that enable you to insert lists and define datatype formats for the input formatting feature. The description of the commands is organized into the following sub-sections:

- Bullets and Numbering command, to insert lists.
- Predefined Format Strings command, to define numeric datatype formats for a given SPS.

Edit Bullets and Numbering

The **Edit Bullets and Numbering** command enables you to insert a list at the cursor location. Clicking the command pops up the Bullets and Numbering dialog (*screenshot below*), in which you can select the list style; in the case of a numbered list, the initial number can also be specified.



Predefined Value Formatting Strings

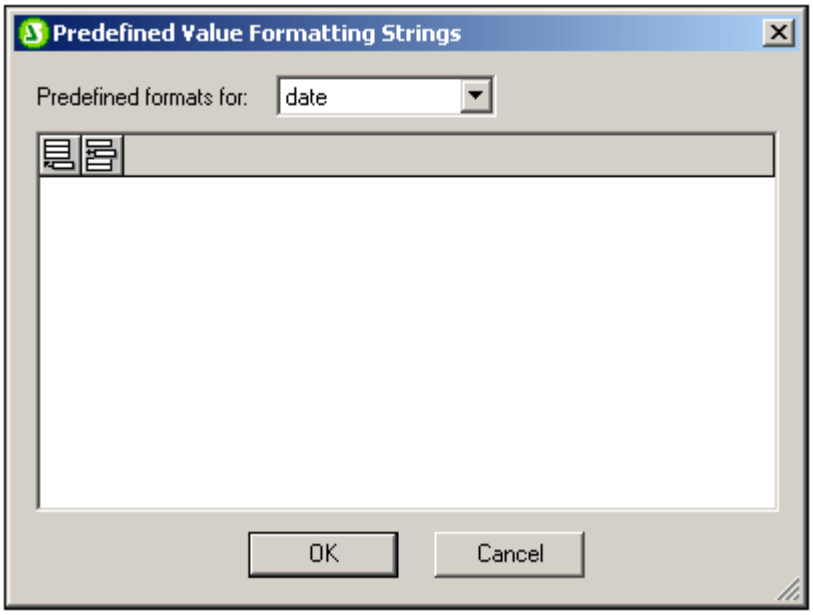
Any `( content)` placeholder, input field, or Auto-Calculation which is of a `numeric`, `date`, `time`, `dateTime` or `duration` datatype can be assigned a custom format with the Value Formatting dialog. In the Value Formatting dialog, you can either create a format directly or select from a drop-down list of predefined formats.

The predefined formats that are available in the dropdown list are of two types:

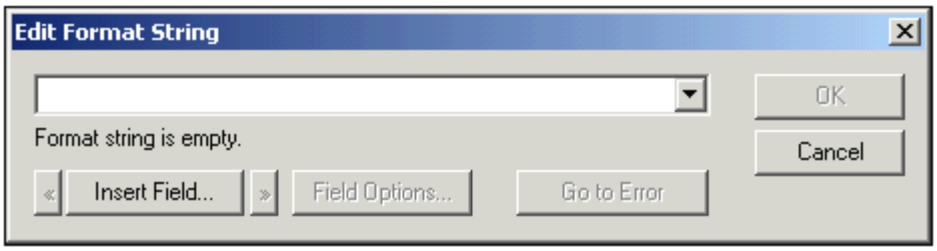
- Predefined formats that have been delivered with StyleVision, and
- Predefined formats that the user creates with the **Predefined Value Formatting Strings** command (this command). When a user creates predefined value formats, these are created for the currently open SPS file—not for the entire application. After the user creates predefined value formats, the SPS file must be saved in order for the formats to be available when the file is next opened.

Creating a predefined value formatting string
A predefined value format string is specific to a datatype. To create a predefined value formatting string, do the following:

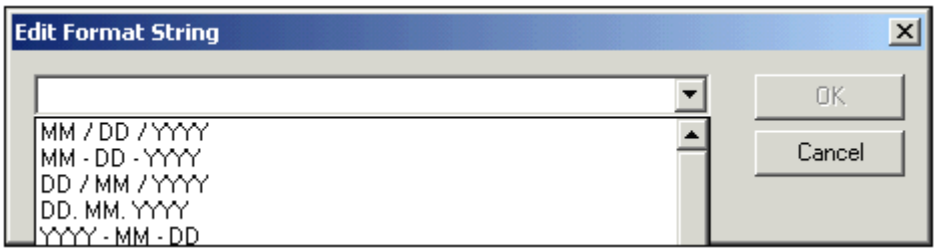
1. Click **Properties | Predefined Value Formatting Strings**. The following dialog appears:



2. Select a datatype from the drop-down list in the combo box, and then click the **Append** or **Insert** icon as required. This pops up the Edit Format String dialog:



If you click the down arrow of the combo box, a drop-down list with the StyleVision -supplied predefined formats for that datatype is displayed (shown in the screenshot below).



You can either select a format from the list and modify it, or you can enter a format directly into the input field. The syntax for defining a format is explained in the section, Value Formatting. If you need help with the syntax, use the **Insert Field** and **Field Options** buttons.

3. After you have defined a format, click **OK** and save the SPS file. The formatting string is added to the list of predefined formats for that datatype, and it will appear as an option in the Value Formatting dialog (of the current SPS file) when the selected element is of the corresponding datatype.

Note:

- You can add as many custom format strings for different datatypes as you want.
- The sequential order of format strings in the Predefined Format Strings dialog determines the order in which these format strings appear in the Value Formatting dialog. The customized format strings appear above the supplied predefined formats.
- To edit a custom format string, double-click the entry in the Predefined Format Strings dialog.
- To delete a custom format string, select it, and click the **Delete** icon in the Predefined Value Formatting Strings dialog.

19.13 Tools Menu

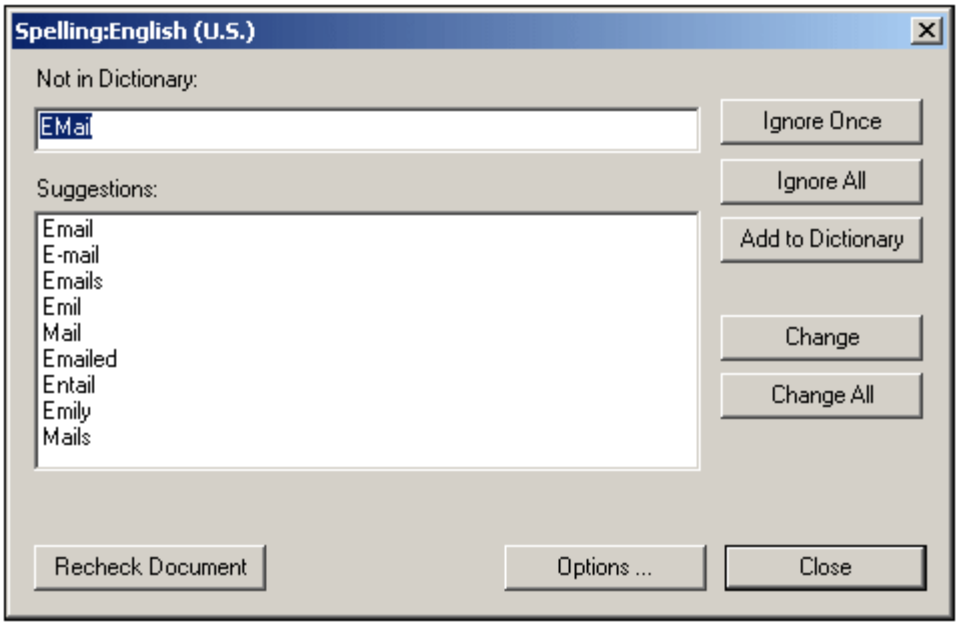
The **Tools** menu contains the spell-check command and commands that enable you to customize StyleVision. Among other options, you can customize the toolbar, and specify spell-checking and FO processor options.

The description of the Tools menu commands is organized into the following sub-sections:

- Spelling
- Spelling Options
- Global Resources
- Active Configuration
- Customize
- Options

Spelling

The **Spelling (Shift+F7)** command runs a spelling check on the SPS (in Design View) or the document in Authentic View, depending on which is active. On clicking this command, the dialog shown below appears. Words that are not present in the selected dictionary are displayed, in document order and one at a time, in the Not in Dictionary field of the dialog and highlighted in the Design Document.



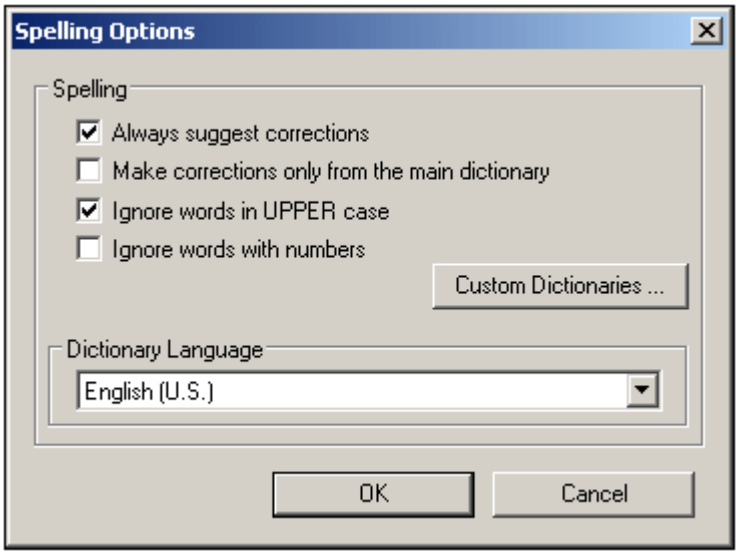
You can then select an entry from the list in the Suggestions pane and click **Change** or **Change All** to change the highlighted instance of this spelling or all its instances, respectively. (Double-clicking a word in the Suggestions list causes it to replace the unknown word.) Alternatively, you can ignore *this instance* of the unknown word (**Ignore Once**); or ignore *all instances* of this unknown word (**Ignore All**); or add this unknown word to the (default user) dictionary (**Add to Dictionary**). Adding the unknown word to the dictionary causes the spell-checker to treat the word as correct and to pass on to the next word not found in the dictionary.

After all the words not found in the dictionary have been displayed in turn, and an action taken for each, the spell-checker displays the message: "The spelling check is complete." You can then recheck the document from the beginning (**Recheck Document**) or close the dialog (**Close**).

The **Options** button opens the Spelling Options dialog, in which you can specify options for the spelling check.

Spelling Options

The **Spelling options** command opens a dialog box (shown below) in which you specify options for the spell check.



Always suggest corrections
Selecting this option causes suggestions from the current dictionary (main dictionary plus listed custom dictionaries) to be displayed in the Suggestions list box. Otherwise no suggestions will be shown.

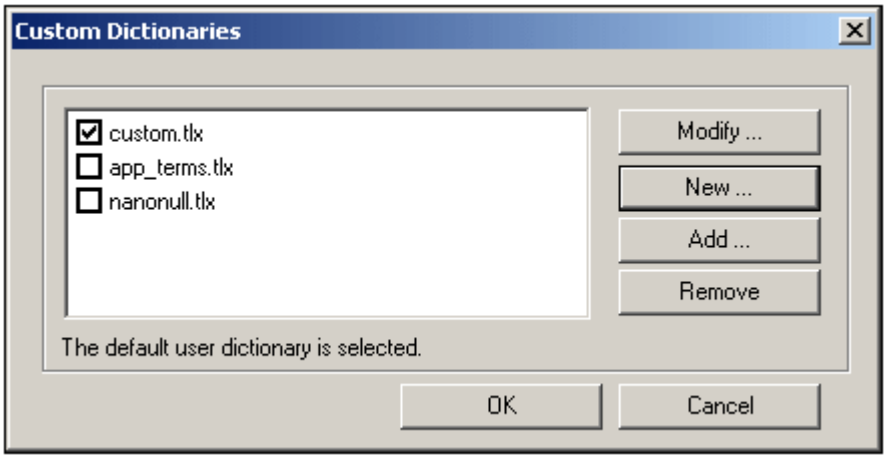
Make corrections only from main dictionary:
Selecting this option causes only the main dictionary to be used; none of the custom dictionaries is used. Additionally, the Custom Dictionaries... button is disabled, which prevents editing of the custom dictionaries.

Ignore words in UPPER case:
Selecting this option causes all upper case words to be ignored.

Ignore words with numbers:
Selecting this option causes all words containing numbers to be ignored.

Dictionaries
Each spell-checking round uses the current dictionary. The current dictionary consists of one uneditable main dictionary and the listed custom dictionaries. The number of available main dictionaries is fixed. You select a main dictionary from the drop-down menu in the Dictionary Language combo box. To edit the list of custom dictionaries used in a spell-check, or to edit the contents of a custom dictionary, click the Custom Dictionaries... button and select the required custom dictionary from the list of custom dictionaries.

When you click the **Custom Dictionaries** button, the following dialog appears:



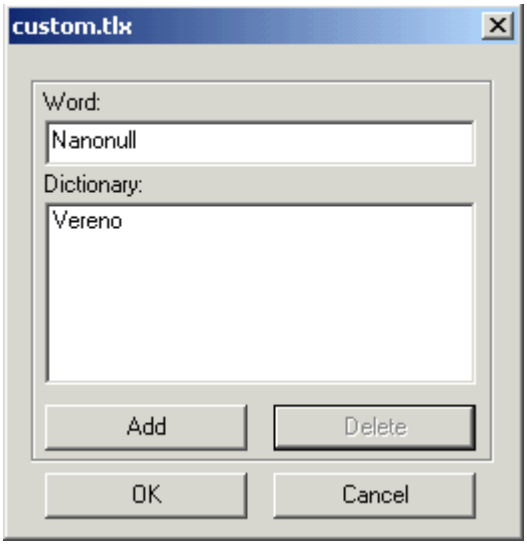
Editing the Custom Dictionaries list
The listed custom dictionaries are part of the current dictionary.

- To add an existing custom dictionary to the list, click the **Add** button; then browse for the required dictionary, and select it.
- To remove a custom dictionary from the list (and, therefore, from the current dictionary), select the dictionary to be removed and click the **Remove** button. This causes the dictionary to be removed from the list. It is, however, not deleted, and can be added to the list subsequently.
- To create a new custom dictionary and add it to the list, click the **New** button, open the folder in which the new dictionary is to be created, and give the new dictionary a name. This file must have a `.tlx` suffix.

When you start a spell check, all dictionaries listed in the Custom Dictionaries list box are searched. If you want to limit the search to specific dictionaries, use the Remove command to remove form the list those dictionaries you do not want searched.

The **default user dictionary** is the custom dictionary to which unknown words encountered in a spell-check are added when you click the Add to Dictionary command (during the spell-check). Select the default user dictionary by clicking the check box next to the dictionary you wish to make the default user dictionary.

Modifying the contents of a custom dictionary
To modify the content of a custom dictionary, click the custom dictionary to be modified, and click **Modify**. This opens the dictionary editor (shown below for the dictionary `custom.tlx`).

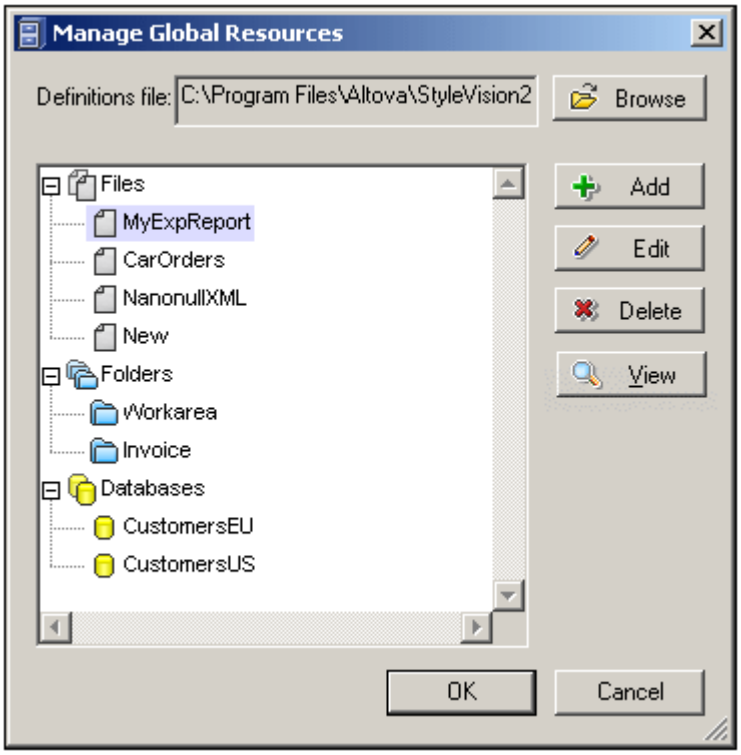


You can now add words to the dictionary and delete words. To add a word, place the cursor in the Word input field, enter the word, and click Add. To delete a word, select the word in the Dictionary pane, and click Delete.

Global Resources

The **Global Resources** command pops up the Altova Global Resources dialog (*screenshot below*), in which you can:

- Specify the Altova 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.

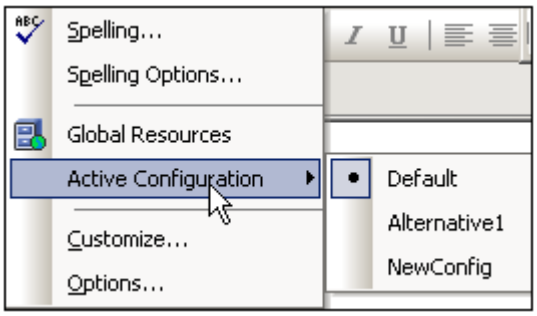


How to define global resources is described in detail in the section, Defining Global Resources.

Note: The Altova Global Resources dialog can also be accessed via the Global Resources toolbar (**View | Toolbars | Global Resources**).

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.

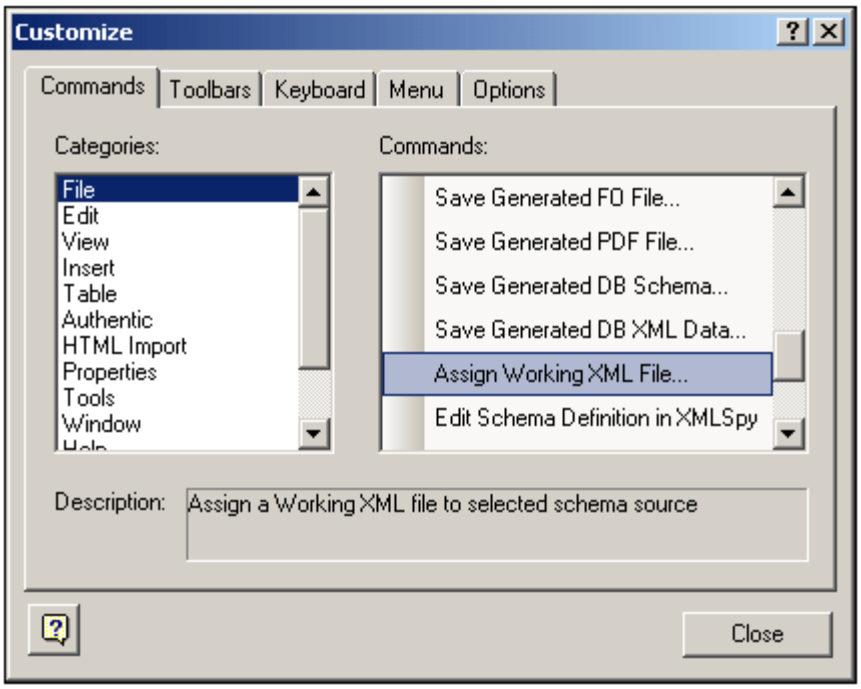
Note: The active configuration can also be selected via the Global Resources toolbar (**View | Toolbars | Global Resources**).

Customize

The customize command lets you customize StyleVision to suit your personal needs.

Commands

The **Commands** tab of the Customize dialog allows you to place individual commands in the menu bar and the toolbar.



To add a command to the menu bar or toolbar, select the command in the Commands pane of the Commands tab, and drag it to the menu bar or toolbar. When the cursor is placed over a valid position an I-beam appears, and the command can be dropped at this location. If the location is invalid, a check mark appears. When you drop the command it is created as an icon if the command already has an associated icon; otherwise the command is created as text. After adding a command to the menu bar or toolbar, you can edit its appearance by right-clicking it and then selecting the required action.

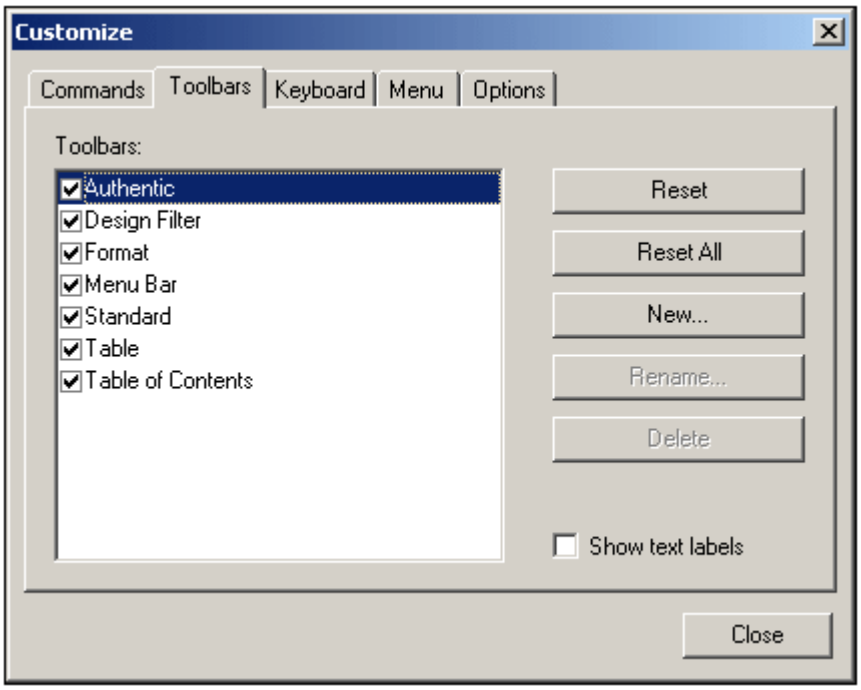
To delete a menu bar or toolbar item, with the Customize dialog open, right-click the item to be deleted, and select Delete.

Note:

- The customization described above applies to the application, and applies whether a document is open in StyleVision or not.
- To reset menus and toolbars to the state they were in when StyleVision was installed, go to the Toolbars tab and click the appropriate Reset button.

Toolbars

The **Toolbars** tab allows you to activate or deactivate specific toolbars, to show text labels for toolbar items, and to reset the menu bar and toolbars to their installation state.



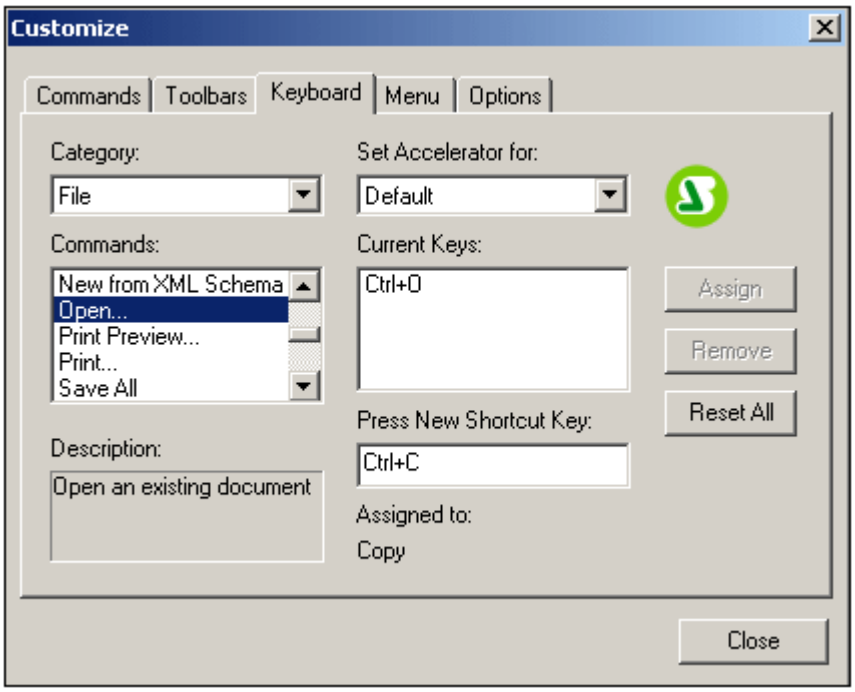
The StyleVision interface displays a fixed menu bar and several optional toolbars (Authentic, Design Filter, Format, Standard, Table, and Table of Contents).

Each toolbar can be divided into groups of commands. Commands can be added to a toolbar via the Commands tab. A toolbar can be dragged from its docked position to any location on the screen. Double-clicking a toolbar's (maximized or minimized) title bar docks and undocks the toolbar.

In the Toolbars tab of the Customize dialog, you can toggle a toolbar on and off by clicking in its checkbox. When a toolbar is selected (in the Toolbars tab), you can cause the text labels of that toolbar's items to be displayed by clicking the **Show text labels** check box. You can also reset a selected toolbar to the state it was in when StyleVision was installed by clicking the **Reset** button. You can reset all toolbars and the menu bar by clicking the **Reset All** button.

Menu Bar
Commands can be added to, and items deleted from, the menu bar: see Commands above. To reset the menu bar to the state it was in when StyleVision was installed, select Menu Bar in the Toolbars tab of the Customize dialog, and click the **Reset** button. (Clicking the **Reset All** button will reset the toolbars as well.)

Keyboard
The **Keyboard** tab allows you to define (or change) keyboard shortcuts for any StyleVision command.



To assign a shortcut to a command

1. Select the category in which the command is by using the Category combo box.
2. Select the command you want to assign a shortcut to in the Commands list box.
3. Click in the Press New Shortcut Key input field, and press the shortcut keys that are to activate the command. The shortcut immediately appears in the Press New Shortcut Key input field. If this shortcut has already been assigned to a command, then that command is displayed below the input field. (For example, in the screenshot above, Ctrl+C has already been assigned to the Copy command and cannot be assigned to the Open File command.) To clear the New Shortcut Key input field, press any of the control keys, Ctrl, Alt, or Shift.
4. Click the **Assign** button to permanently assign the shortcut. The shortcut now appears in the Current Keys text box.

To de-assign (or delete) a shortcut

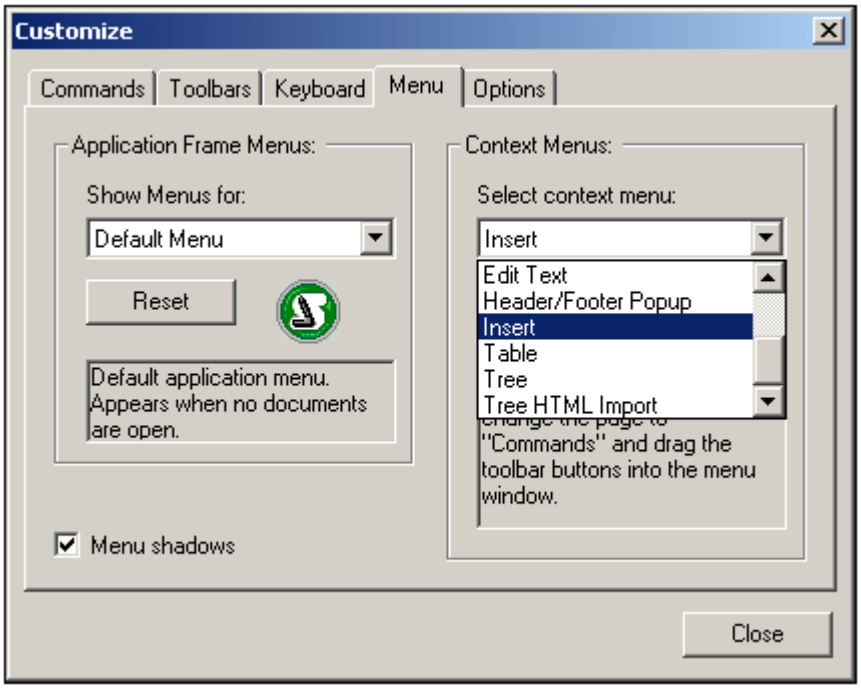
1. Select the command for which the shortcut is to be deleted.
2. Click the shortcut you want to delete in the Current Keys list box.
3. Click the **Remove** button (which has now become active).

To reset all keyboard assignments

1. Click the **Reset All** button to go back to the original, installation-time shortcuts. A dialog box appears prompting you to confirm whether you want to reset all keyboard assignments.
2. Click Yes if you want to reset all keyboard assignments.

Set accelerator for
Currently no function is available.

Menu
The **Menu** tab allows you to customize the main menu bar as well as the context menus (right-click menus).



To customize a menu

1. Select the menu bar you want to customize (Default Menu currently).
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, and
2. Select the **Delete** option from the popup menu,
   or,
1. Select **Tools | Customize** to open the Customize dialog box, and
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 the Default Menu entry in the 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 a context menu (a right-click menu)

1. Select the context menu from the combo box.
2. Click the **Commands** tab and drag the commands to the context menu that is now open.

To delete commands from a context menu

1. Click right on the command or icon representing the command, and
2. Select the **Delete** option from the popup menu
   or
1. Select **Tools | Customize** to open the Customize dialog box, and
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 a context menu

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.

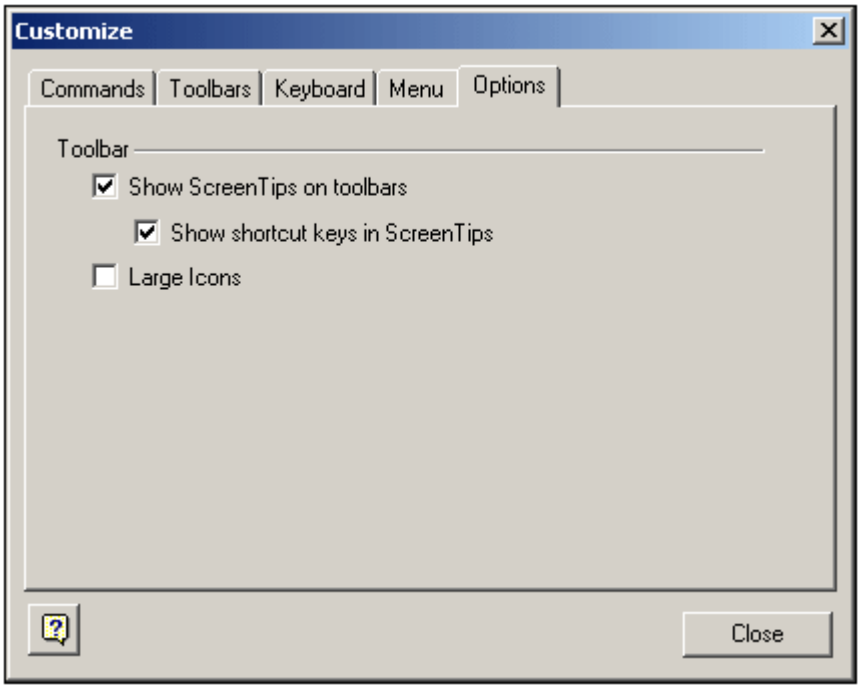
To close a context menu window

- Click on the **Close icon** at the top right of the title bar, or
- Click the Close button of the Customize dialog box.

Menu animations
The menu animation option specifies the way a menu is displayed when a menu is clicked. Select an option from the drop-down list of menu animations.

Menu shadows
If you wish to have menus displayed with a shadow around it, select this option. All menus will then have a shadow.

Options
The **Options** tab allows you to customize additional features of the toolbar.



Screen Tips for toolbar items will be displayed if the Show Screen Tips option is checked. The Screen Tips option has a sub-option for whether shortcuts (where available) are displayed in the Screen Tips or not.

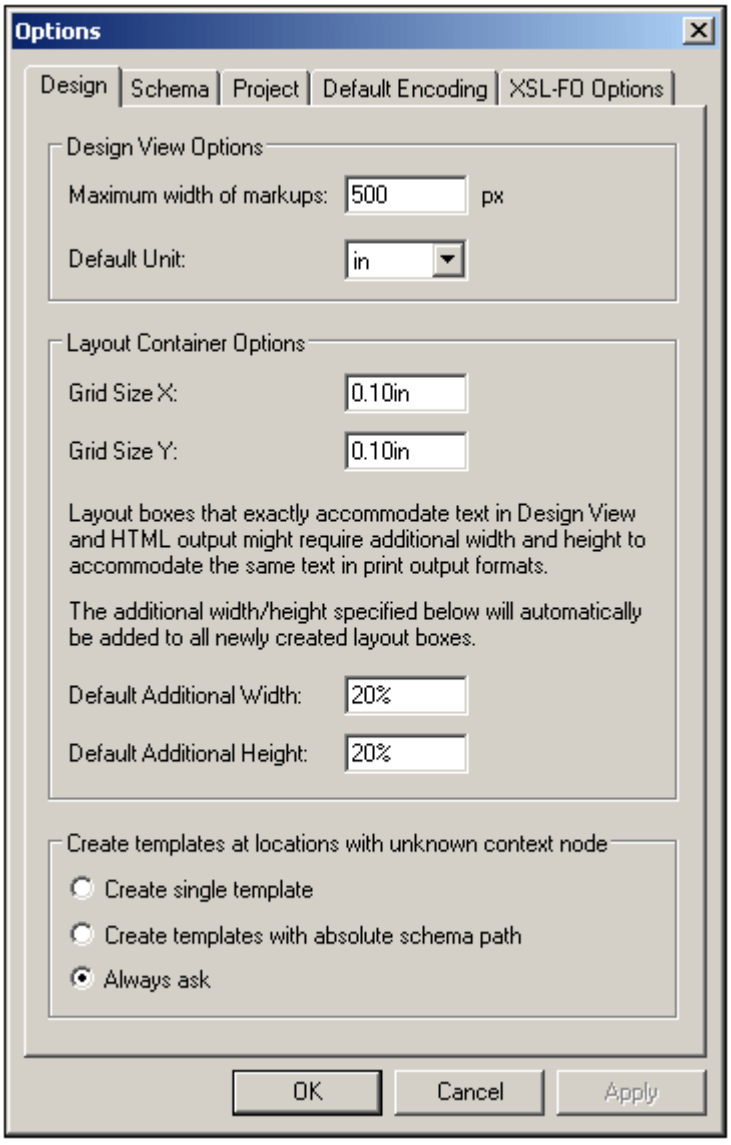
Toolbar items can also be displayed as large icons. To do this, check the Large Icons option.

Options

The **Options** command opens a dialog in which you specify settings for:

- The maximum width of markup tags in Design View.
- Actions to undertake when a file is double-clicked from within a project window.
- Sorting of attributes and elements in the Schema Tree View,
- The encoding of the output documents, and
- The processing of the internally generated XSL-FO document, which is required in order to enable the PDF Preview and the generation of PDF files in StyleVision.

Design View options
In the Design tab (*screenshot below*), you can set the application-wide general options for designs.



The following options can be set:

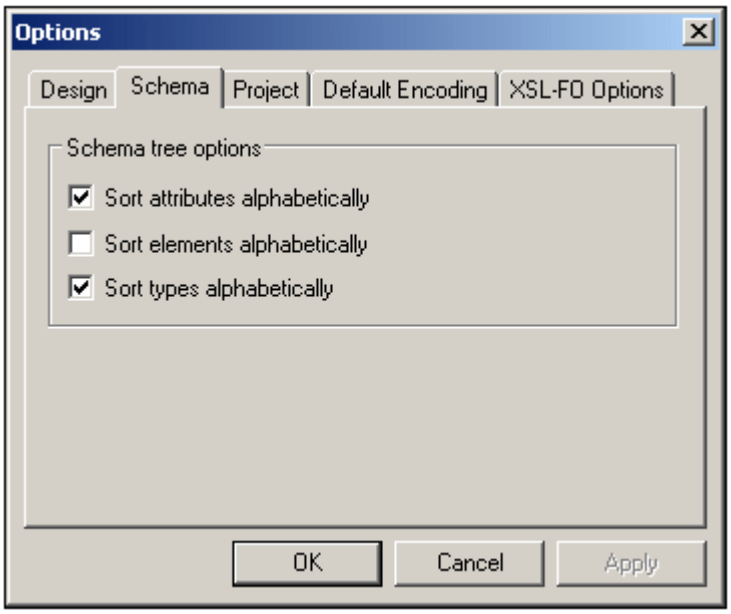
- Maximum width (in pixels) of markup tags. Enter the positive integer that is the required

number of pixels.

- Grid size of layout containers in absolute length units. The specified lengths are the distances between two points on the respective grid axis.
- Default additional width and height of Layout Boxes. These additional lengths are added to all layout boxes in order to provide the extra length that is often required to accommodate the bigger text renditions of print formats. These values can be specified as percentage values or as absolute length units.
- The default behavior when a node-template is created at a location where the context node is not know. This option typically applies to User-Defined Templates in which the template has been created for items that cannot be placed in context in the schema source of the design. If a node is created within such a user-defined template, then the node can be created with (i) only its name, or (ii) with the full path to it from the schema root. You can set one of these options as the default behavior, or, alternatively, ask to be prompted each time this situation arises. The default selection for this option is *Always Ask*.

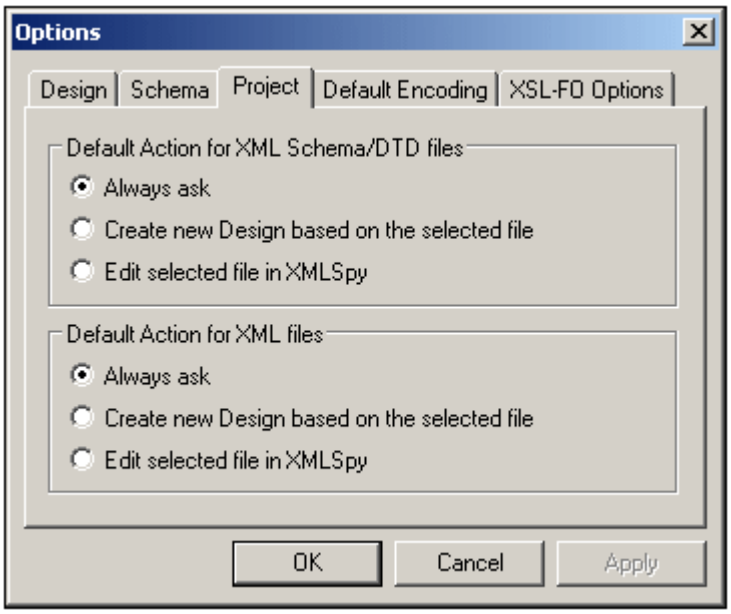
Schema Tree options

In the Schema Tree, elements and attributes can be listed alphabetically in ascending order. To do this, check the respective check boxes in the Schema tab (*screenshot below*). By default, attributes are listed alphabetically and elements are listed in an order corresponding to the schema structure, as far as this is possible.

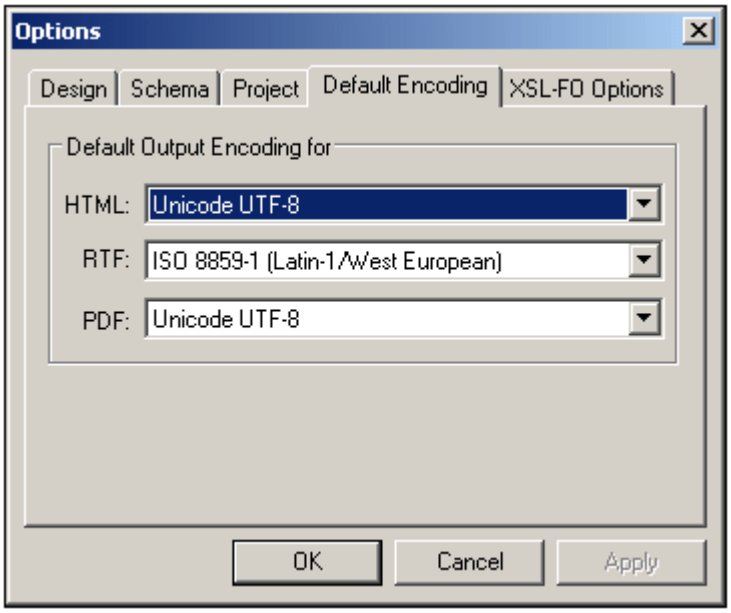


Project options

In the Project sidebar, when an XML file or XSD file is double-clicked, one of three actions is executed depending on the options set in the Project tab of the Options dialog (*screenshot below*): (i) Edit the file in XMLSpy; (ii) Create a new design based on the selected file; (iii) Ask the user which action to execute.



Encoding of output files
In the Default Encoding tab (*screenshot below*), you can set default encodings for the various outputs separately. The encoding specifies the codepoints sets for various character sets. The dropdown list of each combo box displays a list of encoding options. Select the encoding you require for each output type, and click **OK**. Every new SPS you create from this point on will set the respective output encodings as defined in this tab.



In the XSLT-for-HTML, the output encoding information is registered at the following locations:

- In the `encoding` attribute of the stylesheet's `xsl:output` element:
```
<xsl:output version="1.0" encoding="UTF-8" indent="no"
omit-xml-declaration="no" media-type="text/html" />
```
- In the `charset` attribute of the `content-type meta` element in the HTML header:

```
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
```

In the XSLT-for-RTF, the output encoding information is registered in the `encoding` attribute of the stylesheet's `xsl:output` element:

-
```
<xsl:output version="1.0" encoding="ISO-8859-1" indent="no"
method="text" omit-xml-declaration="yes" media-type="text/rtf" />
```

In the XSLT-for-PDF, the output encoding information is registered in the `encoding` attribute of the stylesheet's `xsl:output` element:

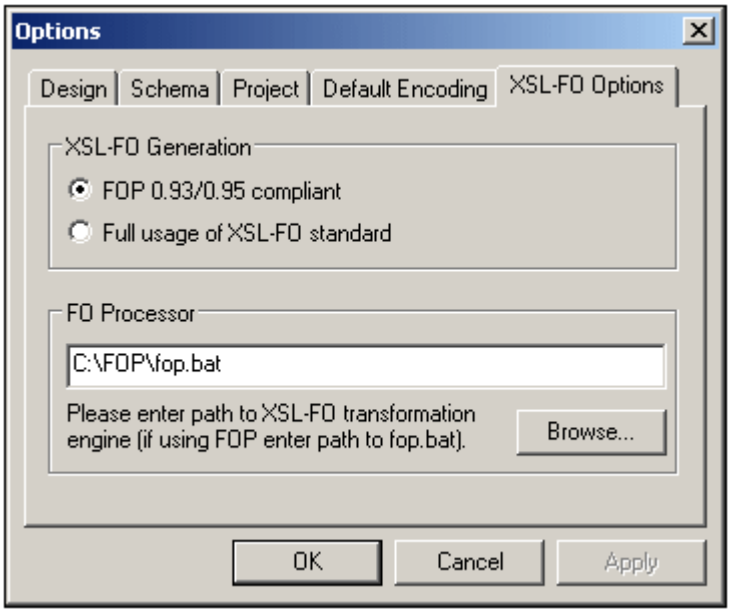
-
```
<xsl:output version="1.0" encoding="UTF-8" indent="no"
omit-xml-declaration="no" media-type="text/html" />
```

Note: These settings are the default encodings, and will be used for new SPSs. You cannot change the encoding of the currently open SPS using this dialog. To change the encoding of the currently open SPS, use the File | Properties command.

XSL-FO options
Once the XSL-FO settings are correctly made, each time the PDF Preview tab is clicked, the following happens:

1. An XSL-FO document is generated (behind the interface) by processing the Working XML File with the currently active SPS.
2. The XSL-FO is then processed by an FO processor to generate the PDF that is displayed in the PDF Preview window.

In the XSL-FO tab, the following settings **must** be made in order for the PDF Preview to be enabled and for PDF files to be generated.



FO Processor
You can use any FO processor of your choice. All you have to do is enter the path to the processor's executable in this dialog. For details, see Setting up StyleVision.

XSL-FO Generation
Selecting the **FOP 0.93/0.95 compliant** option filters out those FOP properties that have not yet

been implemented in the latest version of FOP. Selecting the **Full XSL-FO standard** option will not filter out any properties when the XSLT-for-FO is being generated.

Depending on your selection, the XSLT-for-FO will be created with or without the objects, properties, and values that are beyond the compliance level of FOP 0.93/0.95. You should be aware of the possible outcomes from this point in the processing. These are as follows:

- If you have selected FOP compliance and use FOP as your processor, then the PDF generation should work fine.
- If you have selected full usage of the XSL-FO standard and use FOP as your processor, then any formatting object or property in the FO document that is not supported by the current version of FOP will cause FOP to generate either a warning or an error. An error is fatal, and no PDF will be generated.
- If you use a processor other than FOP, the success of the transformation will depend upon the compliance level of the processor.

For standard use, we recommend:

- Using FOP 0.95. If you notice that there are memory problems with FOP 0.95, we recommend that you use FOP 0.93. Installers for both FOP 0.95 and 0.93 are available in the Downloads section of the Altova website.
- Selecting FOP 0.93/0.95 compliant in the Options dialog.

Note: The XSLT-for-FO that you generate with the **File | Save Generated Files | Save Generated XSL-FO File** command will be either in compliance with FOP 0.93/0.95 or with the full XSL-FO standard, depending on the selection you make for the XSL-FO Generation option in this dialog. Any error will only be reported when the FO document is processed by the FO processor.

Technical Note: StyleVision opens the executable of the FO processor using the path you enter in the FO Processor pane of the Options dialog. It sends the following arguments to the executable:

```
%1 : -fo
%2 : filename.fo
%3 : -pdf
%4 : filename.pdf
```

These arguments are as used in the FOP command: `FOP -fo filename.fo -pdf fileame.pdf`. You can use these arguments to invoke any FO processor, if the arguments suffice to make a successful call.

19.14 Window Menu

The **Window menu** has commands to specify how StyleVision windows should be displayed in the GUI (cascaded, tiled, or maximized). To maximize a window, click the maximize button of that window.

Additionally, all currently open document windows are listed in this menu by document name, with the active window being checked. To make another window active, click the name of the window you wish to make active.

Windows dialog
At the bottom of the list of open windows is an entry for the Windows dialog. Clicking this entry opens the Windows dialog, which displays a list of all open windows and provides commands that can be applied to the selected window/s. (A window is selected by clicking on its name.)

Warning: To exit the Windows dialog, click OK; do **not** click the Close Window(s) button. The Close Window(s) button closes the window/s currently selected in the Windows dialog.

19.15 Help Menu

The **Help** menu contains commands to access the onscreen help manual for StyleVision, commands to provide information about StyleVision, and links to support pages on the Altova web site. The Help menu also contains the Registration dialog, which lets you enter your license key-code once you have purchased the product.

The description of the Help menu commands is organized into the following sub-sections:

- Table of Contents, Index, Search
- Activation, Order Form, Registration, Updates
- Other Commands

Table of Contents, Index, Search

The **Table of Contents** command opens the onscreen help manual for StyleVision with the Table of Contents displayed in the left-hand-side pane of the Help window. The Table of Contents provides a good overview of the entire Help document. Clicking an entry in the Table of Contents takes you to that topic.

The **Index** command opens the onscreen help manual for StyleVision with the Keyword Index displayed in the left-hand-side pane of the Help window. The index lists keywords and lets you navigate to a topic by double-clicking the keyword. If a keyword is linked to more than one topic, you are presented with a list of the topics to choose from.

The **Search** command opens the onscreen help manual for StyleVision with the Search dialog displayed in the left-hand-side pane of the Help window. To search for a term, enter the term in the input field, and press Return. The Help system performs a full-text search on the entire Help documentation and returns a list of hits. Double-click any item to display that item.

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.

Other Commands

The **Support Center** command is a link to the Altova Support Center on the Internet. The Support Center provides FAQs, discussion forums where problems are discussed, and access to Altova's technical support staff.

The **FAQ on the Web** command is a link to Altova's FAQ database on the Internet. The FAQ database is constantly updated as Altova support staff encounter new issues raised by customers.

The **Components Download** command is a link to Altova's Component Download Center on the Internet. From here you will be able to download a variety of companion software to use with Altova products. Such software ranges from XSLT and XSL-FO processors to Application Server Platforms. The software available at the Component Download Center is typically free of charge.

The **StyleVision on the Internet** command is a link to the Altova website on the Internet. You can learn more about StyleVision and related technologies and products at the Altova website.

The **StyleVision Training** command is a link to the Online Training page at the Altova website. Here you can select from online courses conducted by Altova's expert trainers.

The **About StyleVision** command displays the splash window and version number of your product. If you are using the 64-bit version of StyleVision, this is indicated with the suffix (x64) after the application name. There is no suffix for the 32-bit version.

Chapter 20

Programmers' Reference

20 Programmers' Reference

StyleVision as an Automation Server
StyleVision is an Automation Server. That is, it is an application that exposes programmable objects to other applications (called Automation Clients). As a result, an Automation Client can directly access the objects and functionality that the Automation Server makes available. This is beneficial to an Automation Client because it can make use of the functionality of StyleVision. For example, an Automation Client can generate an XSLT file from an SPS via StyleVision. Developers can therefore improve their applications by using the ready-made functionality of StyleVision.

The programmable objects of StyleVision are made available to Automation Clients via the **StyleVision API**, which is a COM API. A complete description of all available objects are provided in this documentation (see the section The StyleVision API).

20.1 The StyleVision API

The COM-based API of StyleVision enables other applications to use the functionality of StyleVision. As a result, it is now possible to automate a wide range of StyleVision tasks.

StyleVision and the StyleVision API follow the common specifications for automation servers set out by Microsoft. It is possible to access the methods and properties of the StyleVision API from common development environments, such as those using C, C++, VisualBasic, and Delphi, and with scripting languages like JavaScript and VBScript.

The following limitations must be considered in your client code:

- Be aware that if your client code crashes, instances of StyleVision may still remain in the system.
- Don't hold references to objects in memory longer than you need them. 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.
- Free references explicitly if you are using C or C++.

Interfaces

This chapter contains the reference of the StyleVision Type Library

Application

The `Application` interface has the following methods and properties:

Methods

- NewDocument
- OpenDocument
- Quit

Properties

- ActiveDocument
- Application
- Documents
- Edition
- IsAPISupported
- MajorVersion
- MinorVersion
- Parent
- ServicePackVersion
- Status
- Visible

Events

OnShutDown

Event: `OnShutDown()`

Description
Sent just before StyleVision shuts down.

ActiveDocument

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.

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Documents

Property: `Documents` as `Documents`

Description
Collection of all open documents.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Edition

Property: `Edition` as String

Description
Returns the edition of the application. Eg: Enterprise, Professional, Standard

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

IsAPISupported

Property: `IsAPISupported` as Boolean

Description
Returns the 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

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

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.

NewDocument

Method: `NewDocument` as `Document`

Return Value
None

Description
Creates a new empty document based on the previous template.

Errors
1000 The application object is invalid.
1005 Error when creating a new document
1006 Cannot create document

OpenDocument

Method: `OpenDocument( strFileName as String)` as `Document`

Return Value
None

Description
Opens an existing SPS file.

Errors
1000 The application object is invalid.
1002 Invalid file extension.
1003 Error when opening document.
1004 Cannot open document.

Parent

Property: `Parent` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Quit

Method: Quit()

Return Value
None

Description
This method terminates StyleVision. All modified documents will be closed without saving the changes. This is also true for an open project.

If StyleVision 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.

ServicePackVersion

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.

Status

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.

Visible

Property: `Visible` as Boolean

Description
Sets or gets the visibility attribute of StyleVision.

Errors
1110 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

AppOutputLine

Represents a message line. Its structure is more detailed and can contain a collection of child lines, thereby forming a tree of message lines.

Properties and Methods

Properties to navigate the object model:

Application
Parent

Line access:

GetLineSeverity
GetLineSymbol
GetLineText
GetLineTextEx
GetLineTextWithChildren
GetLineTextWithChildrenEx

A single AppOutputLine consists of one or more sub-lines.
Sub-line access:

GetLineCount

A sub-line consists of one or more cells.
Cell access:

GetCellCountInLine
GetCellIcon
GetCellSymbol
GetCellText
GetCellTextDecoration
GetIsCellText

Below an AppOutputLine there can be zero, one, or more child lines which themselves are of type AppOutputLine, which thus form a tree structure.

Child lines access:

ChildLines

Application

Property: `Application` as Application (read-only)

Description
Retrieves the application's top-level object.

Errors

4100	The object is no longer valid.
4101	Invalid address for the return parameter was specified.

ChildLines

Property: `ChildLines` as AppOutputLines (read-only)

Description
Returns a collection of the current line's direct child lines.

Errors
4100 The application object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetCellCountInLine

Method: `GetCellCountInLine` (*nLine* as Long) as Long

Description
Gets the number of cells in the sub-line indicated by *nLine* in the current AppOutputLine.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetCellIcon

Method: `GetCellIcon` (*nLine* as Long , *nCell* as Long) as Long

Description
Gets the icon of the cell indicated by *nCell* in the current AppOutputLine's sub-line indicated by *nLine*.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetCellSymbol

Method: `GetCellSymbol` (*nLine* as Long , *nCell* as Long) as AppOutputLineSymbol

Description
Gets the symbol of the cell indicated by *nCell* in the current AppOutputLine's sub-line indicated by *nLine*.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetCellText

Method: `GetCellText` (*nLine* as Long , *nCell* as Long) as String

Description
Gets the text of the cell indicated by *nCell* in the current AppOutputLine's sub-line indicated by *nLine*.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetCellTextDecoration

Method: `GetCellTextDecoration` (*nLine* as Long , *nCell* as Long) as Long

Description
Gets the decoration of the text cell indicated by *nCell* in the current AppOutputLine's sub-line indicated by *nLine*.
It can be one of the ENUM AppOutputLine_TextDecoration values.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetIsCellText

Method: `GetIsCellText` (*nLine* as Long, *nCell* as Long) as Boolean

Description
Returns true, if the cell indicated by *nCell* in the current AppOutputLine's sub-line indicated by *nLine* is a text cell.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineCount

Method: `GetLineCount` () as Long

Description
Gets the number of sub-lines the current line consists of.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineSeverity

Method: `GetLineSeverity` () as Long

Description
Gets the severity of the line. It can be one of the ENUM AppOutputLine_Severity values:

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineSymbol

Method: `GetLineSymbol` () as AppOutputLineSymbol

Description
Gets the symbol assigned to the whole line.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineText

Method: `GetLineText` () as String

Description
Gets the contents of the line as text.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineTextEx

Method: `GetLineTextEx` (*psTextPartSeperator* as String , *psLineSeperator* as String) as String

Description
Gets the contents of the line as text using the specified part and line separators.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineTextWithChildren

Method: `GetLineTextWithChildren` () as String

Description
Gets the contents of the line including all child and descendant lines as text.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

GetLineTextWithChildrenEx

Method: `GetLineTextWithChildrenEx` (*psPartSep* as String , *psLineSep* as String , *psTaÄSep* as String , *psItemSep* as String) as String

Description
Gets the contents of the line including all child and descendant lines as text using the specified part, line, tab and item separators.

Errors
4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as AppOutputLines (read-only)

Description
The parent object according to the object model.

Errors

4100 The object is no longer valid.
4101 Invalid address for the return parameter was specified.

AppOutputLines

Represents a collection of `AppOutputLine` message lines.

Properties and Methods
Properties to navigate the object model:

Application
Parent

Iterating through the collection:

Count
Item

Application

Property: `Application` as Application (read-only)

Description
Retrieves the application's top-level object.

Errors
4000 The object is no longer valid.
4001 Invalid address for the return parameter was specified.

Count

Property: `Count` as Integer (read-only)

Description
Retrieves the number of lines in the collection.

Errors
4000 The object is no longer valid.
4001 Invalid address for the return parameter was specified.

Item

Property: `Item` (*nIndex* as Integer) as AppOutputLine (read-only)

Description
Retrieves the line at nIndex from the collection. Indices start with 1.

Errors
4000 The object is no longer valid.
4001 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as AppOutputLine (read-only)

Description
The parent object according to the object model.

Errors

4000 The object is no longer valid.
4001 Invalid address for the return parameter was specified.

AppOutputLineSymbol

An `AppOutputLineSymbol` represents a link in an `AppOutputLine` message line which can be clicked in the StyleVision Messages window.
It is applied to a cell of an `AppOutputLine` or to the whole line itself.

Properties and Methods

Properties to navigate the object model:

`Application`
`Parent`

Access to AppOutputLineSymbol methods:

`GetSymbolHREF`
`GetSymbolID`
`IsSymbolHREF`

Application

Property: `Application` as Application (read-only)

Description
Retrieves the application's top-level object.

Errors
4200 The object is no longer valid.
4201 Invalid address for the return parameter was specified.

GetSymbolHREF

Method: `GetSymbolHREF` () as String

Description
If the symbol is of type URL, returns the URL as a string.

Errors
4200 The object is no longer valid.
4201 Invalid address for the return parameter was specified.
.

GetSymbolID

Method: `GetSymbolHREF` () as Long

Description
Gets the ID of the symbol.

Errors
4200 The object is no longer valid.
4201 Invalid address for the return parameter was specified.

IsSymbolHREF

Method: `IsSymbolHREF` () as Boolean

Description

Indicates if the symbol is of kind URL.

Errors

4200 The object is no longer valid.
4201 Invalid address for the return parameter was specified.

Parent

Property: `Parent` as Application (read-only)

Description

The parent object according to the object model.

Errors

4200 The object is no longer valid.
4201 Invalid address for the return parameter was specified.

Document

The `Document` interface has the following methods and properties:

Methods

- Activate
- AssignWorkingXMLFile
- Close
- Save
- SaveAs
- Saved
- SaveGeneratedFOFile
- SaveGeneratedFOFileEx
- SaveGeneratedHTMLFile
- SaveGeneratedHTMLFileEx
- SaveGeneratedPDFFile
- SaveGeneratedPDFFileEx
- SaveGeneratedRTFFile
- SaveGeneratedRTFFileEx
- SaveGeneratedWord2007File
- SaveGeneratedWord2007FileEx
- SaveGeneratedXSLTFOFile
- SaveGeneratedXSLTFOFileEx
- SaveGeneratedXSLTHTMLFile
- SaveGeneratedXSLTHTMLFileEx
- SaveGeneratedXSLTRTFFile
- SaveGeneratedXSLTRTFFileEx
- SaveGeneratedXSLTWord2007File
- SaveGeneratedXSLTWord2007FileEx

Properties

- Application
- FullName
- Name
- Parameters
- Parent
- Path
- SchemaSources

Events

OnDocumentClosed

Event: `OnDocumentClosed(`*`Document`* as `Document`)

Description
This event gets fired as a result of closing a document.

OnModifiedFlagChanged

Event: `OnModifiedFlagChanged(`as Boolean)

Description
Returns true if the Modified flag has been changed.

Activate

Method: `Activate` ()

Description
Activate document frame.

Errors
1200 Document object is invalid.
1201 Invalid input parameter.

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

AssignWorkingXMLFile

Method: `AssignWorkingXMLFile` (*`strWorkingXMiFileName`* as String, *`strSchemaSourceName`* as String)

Description
Assigns the Working XML File and Schema Source by supplying URIs as strings.

Errors
1200 The document object is invalid.
1201 Invalid input parameter.
1203 Error assigning Working XML File
1404 Missing XML Schema or DTD

Close

Method: `Close` (*`ÄDiscard` hanges* 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.

FullName

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.

Errors
1400 The document object is no longer valid.
1402 Empty string has been specified as full file name.

Name

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.

Parameters

Property: `Parameters` as `Parameters` (read-only)

Description
Reference to the current `Parameters` object.

Errors
1200 Document object is invalid.
1201 Invalid input parameter.

Parent

Property: `Parent` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Path

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.

Save

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

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

Property: `Saved` as Boolean (read-only)

Description
This property can be used to check if the document has been saved after the last modifications.

Errors
1400 The document object is no longer valid.
1407 Invalid address for the return parameter was specified.

SaveGeneratedFOFile

Method: `SaveGeneratedFOFile` (*`strFileName`* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedFOFileEx

Method: SaveGeneratedFOFileEx (*strFileName* as String, *pÄError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedHTMLFile

Method: SaveGeneratedHTMLFile (*strFileName* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedHTMLFileEx

Method: SaveGeneratedHTMLFileEx (*strFileName* as String, *pÄError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedPDFFile

Method: SaveGeneratedPDFFile (*strFileName* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedPDFFileEx

Method: SaveGeneratedPDFFileEx (*strFileName* as String, *pÄError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors

1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedRTFFile

Method: `SaveGeneratedRTFFile` (*`strFileName`* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedRTFFileEx

Method: `SaveGeneratedRTFFileEx` (*`strFileName`* as String, *`pÄError`* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedWord2007File

Method: `SaveGeneratedWord2007File` (*`strFileName`* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedWord2007FileEx

Method: `SaveGeneratedWord2007FileEx` (*`strFileName`* as String, *`pÄError`* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTFOFile

Method: `SaveGeneratedXSLTFOFile` (*`strFileName`* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTFOFileEx

Method: SaveGeneratedXSLTFOFileEx (*strFileName* as String, *pAError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTHTMLFile

Method: SaveGeneratedXSLTHTMLFile (*strFileName* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTHTMLFileEx

Method: SaveGeneratedXSLTHTMLFileEx (*strFileName* as String, *pAError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTRTFFile

Method: SaveGeneratedXSLTRTFFile (*strFileName* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTRTFFileEx

Method: SaveGeneratedXSLTRTFFileEx (*strFileName* as String, *pAError* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTWord2007File

Method: `SaveGeneratedXSLTWord2007File` (*`strFileName`* as String)

Description
Saves the generated file to the location specified.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SaveGeneratedXSLTWord2007FileEx

Method: `SaveGeneratedXSLTWord2007FileEx` (*`strFileName`* as String, *`pÄError`* as Variant) as AppOutputLines

Description
Saves the generated file to the location specified and gives error description.

Errors
1201 Invalid document object.
1204 Cannot generate output file.

SchemaSources

Property: `SchemaSources` as `SchemaSources` (read-only)

Description
Reference to the current `SchemaSources` object.

Errors
1200 Document object is invalid.
1201 Invalid input parameter.

Documents

The `Documents` interface has the following methods and properties:

Methods

- ActiveDocument
- Item
- NewDocument
- OpenDocument

Properties

- Application
- Count
- Parent

ActiveDocument

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.
1600 Invalid `Documents` object
1601 Invalid input parameter

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Count

Property: `Count` as long

Description
Count of open documents.

Errors
1600 Invalid `Documents` object
1601 Invalid input parameter

Item

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

NewDocument

Method: `NewDocument()` as `Document`

Return Value
None

Description
Creates a new empty document based on the previous template.

Errors
1000 The application object is invalid.
1005 Error when creating a new document
1006 Cannot create document
1600 Invalid `Documents` object
1601 Invalid input parameter

OpenDocument

Method: `OpenDocument( strFileName as String)` as `Document`

Return Value
None

Description
Opens an existing SPS file.

Errors
1000 The application object is invalid.
1002 Invalid file extension.
1003 Error when opening document.
1004 Cannot open document.
1600 Invalid `Documents` object
1601 Invalid input parameter

Parent

Property: `Parent` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.

1100 Invalid address for the return parameter was specified.

Parameter

The `Parameter` interface has the following properties:

Properties

- Application
- Name
- Parent
- Value

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Name

Property: `Name` as String (read-only)

Errors
1600 Invalid `Documents` object
1601 Invalid input parameter

Parent

Enter topic text here.

Value

Property: `Value` as String (read-only)

Errors
1600 Invalid `Documents` object
1601 Invalid input parameter

Parameters

The `Parameters` interface has the following properties:

Properties

- Application
- Count
- Item
- Parent

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Count

Property: `Count` as long

Description
Count of parameters.

Errors
1600 Invalid `Parameters` object
1601 Invalid input parameter

Item

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

Parent

Enter topic text here.

SchemaSource

The `SchemaSource` interface has the following properties:

Properties

- Application
- IsMainSchemaSource
- Name
- Parent
- SchemaFileName
- TemplateFileName
- Type
- TypeName
- WorkingXMLFileName

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

IsMainSchemaSource

Property: `IsMainSchemaSource` as Boolean (read-only)

Description
Returns true if schema source is the main schema source.

Errors
1400 Invalid schema source object.
1401 Invalid parameter.

Name

Property: `Name` as String (read-only)

Description
Use this property to retrieve the name of the schema source.

Errors
1400 The schema source object is not valid.
1401 Invalid parameter.

Parent

Property: `Parent` as `SchemaSource` (read-only)

Description
The parent object according to the object model.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

SchemaFileName

Property: `SchemaFileName` as String

Description
Use this property to retrieve the name of the Schema File.

Errors
1400 Invalid schema source object.
1401 Invalid parameter.
1403 Missing XMLSchema or DTD
1406 Error assigning schema File

TemplateFileName

Property: `TemplateFileName` as String

Description
Use this property to retrieve the name of the Working XML File.

Errors
1400 Invalid schema source object.
1401 Invalid parameter.
1403 Missing XMLSchema or DTD
1407 Error assigning Template XML File

Type

Property: `Type` as ENUMSchemaSourceType (read-only)

Description
Use this property to retrieve the type of the schema source.

Errors
1400 Invalid schema source object.
1401 Invalid parameter.

TypeName

Property: `Type` as String (read-only)

Description
Use this property to retrieve the type of the schema source.

Errors
1400 Invalid schema source object.
1401 Invalid parameter.

WorkingXMLFileName

Property: `WorkingXMLFileName` as String

Description
Use this property to retrieve the name of the Working XML File.

Errors

1400	Invalid schema source object.
1401	Invalid parameter.
1403	Missing XMLSchema or DTD
1203	Error assigning Working XML File

SchemaSources

The `SchemaSources` interface has the following properties:

Properties

- Application
- MainSchemaSource
- Parent

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

Count

Property: `Count` as long (read-only)

Description
Count of schema sources.

Errors
1300 Invalid `SchemaSources` object
1301 Invalid input parameter

Item

Method: `Item` (*n* as long) as `Document`

Description
Gets the document with the index n in this collection. Index is 1-based.

Errors
1300 Invalid `SchemaSources` object
1301 Invalid input parameter

MainSchemaSource

Property: `MainSchemaSource` as SchemaSource (read-only)

Errors
1300 Invalid `SchemaSources` object
1301 Invalid input parameter

Parent

Property: `Parent` as SchemaSources (read-only)

Description
The parent object according to the object model.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

StyleSheet

The `StyleSheet` interface has the following methods and properties:

Methods

- Save
- SaveAs
- SaveGeneratedXSLTFile
- SaveGeneratedXSLTFOFile

Properties

- Application
- FullName
- Name
- Parent
- Path
- Saved

Application

Property: `Application` as `Application` (read-only)

Description
Access the StyleVision application object.

Errors
1111 The application object is no longer valid.
1100 Invalid address for the return parameter was specified.

FullName

Enter topic text here.

Name

Enter topic text here.

Parent

Enter topic text here.

Path

Enter topic text here.

Save

Enter topic text here.

SaveAs

Enter topic text here.

Saved

Enter topic text here.

SaveGeneratedXSLTFile

Enter topic text here.

SaveGeneratedXSLTFOFile

Enter topic text here.

Enumerations

This is a list of enumerations used by the StyleVision API. If your scripting environment does not support enumerations use the given number-values instead.

The following enumerations are available:

- ENUMApplicationStatus
- ENUMAppOutputLine_TextDecoration
- ENUMAppOutputLine_Severity
- ENUMSchemaSourceType
- ENUMSchemaType

ENUMApplicationStatus

Description
Enumeration to specify the current Application status.

Possible values:

eApplicationRunning	= 0
eApplicationAfterLicenseCheck	= 1
eApplicationBeforeLicenseCheck	= 2
eApplicationConcurrentLicenseCheckFailed	= 3
eApplicationProcessingCommandLine	= 4

ENUMAppOutputLine_TextDecoration

Description
Enumeration values for the different kinds of text decoration of an AppOutputLine.

Possible values:

eTextDecorationDefault	= 0
eTextDecorationBold	= 1
eTextDecorationDebugValues	= 2
eTextDecorationDB_ObjectName	= 3
eTextDecorationDB_ObjectLink	= 4
eTextDecorationDB_ObjectKind	= 5
eTextDecorationDB_TimeoutValue	= 6
eTextDecorationFind_MatchingString	= 7
eTextDecorationValidation_Speclink	= 8
eTextDecorationValidation_ErrorPosition	= 9
eTextDecorationValidation_UnkownParam	= 10

ENUMAppOutputLine_Severity

Description
Enumeration values to identify the severity of an AppOutputLine.

Possible values:

eSeverity_Undefined	= -1
eSeverity_Info	= 0
eSeverity_Warning	= 1
eSeverity_Error	= 2
eSeverity_CriticalError	= 3
eSeverity_Success	= 4
eSeverity_Summary	= 5
eSeverity_Progress	= 6
eSeverity_DataEdit	= 7
eSeverity_ParserInfo	= 8
eSeverity_PossibleInconsistencyWarning	= 9
eSeverity_Message	= 10
eSeverity_Document	= 11
eSeverity_Rest	= 12
eSeverity_NoSelect	= 13
eSeverity_Select	= 14
eSeverity_Autoinsertion	= 15
eSeverity_GlobalResources_DefaultWarning	= 16

ENUMSchemaSourceType

Description
Enumeration to specify the source schema type: XML Schema, DTD, DB, DB cell, User-Defined, or XBRL.

Possible values:

eSchemaSourceType_XSDorDTD	= 0
eSchemaSourceType_DB	= 1
eSchemaSourceType_DBCell	= 2
eSchemaSourceType_User	= 3
eSchemaSourceType_XBRL	= 4

ENUMSchemaType

Description
Enumeration to specify the schema type: W3C XML Schema or DTD.

Possible values:

eSchemaTypeW3CSchema	= 0
eSchemaTypeDTD	= 1

20.2 StyleVision Integration

StyleVisionControl is a control that provides a means of integration of the StyleVision 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 StyleVision you must install the StyleVision Integration Package. Ensure that you install StyleVision first, and then the StyleVision 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 StyleVisionControl?
- Should the integrated UI look exactly like StyleVision 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 StyleVision 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 StyleVision Automation Interface is accessible from the StyleVisionControl as well.

For information about how to integrate StyleVision into Microsoft Visual Studio see the section, StyleVision in Visual Studio.

Integration at Application Level

Integration at application level is simple and straightforward. It allows you to embed the complete interface of StyleVision into a window of your application. Since you get the whole user interface of StyleVision, you get all menus, toolbars, the status bar, document windows, and helper windows. Customization of the application's user interface is restricted to what StyleVision provides. This includes rearrangement and resizing of helper windows and customization of menus and toolbars.

The only ActiveX control you need to integrate is `StyleVisionControl`. 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 `StyleVisionControlDocument` or `StyleVisionControlPlaceHolder` ActiveX controls when integrating at application-level.

If you have any initialization to do or if you want to automate some behaviour of StyleVision, use the properties, methods, and events described for `StyleVisionControl`. Consider using `StyleVisionControl.Application` for more complex access to StyleVision functionality.

In this section is an example (Example: HTML) showing how the StyleVision 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.

Example: HTML

This example shows a simple integration of the StyleVision control at application-level into a HTML page. The integration is described in the following sections:

- Instantiate a StyleVisionControl 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 StyleVision installation: `StyleVisionExamples\ActiveX\HTML\StyleVisionActiveX_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 StyleVisionControl. The `Classid` is that of StyleVisionControl. Width and height specify the window size. No additional parameters are necessary, since application-level is the default.

```
<OBJECT id="objStyleVisionControl"
       Classid="clsid:559db547-71fc-435d-aa8e-7faa321d0c6e"
       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 StyleVisionControl. We use a method to locate the file relative to the StyleVisionControl so the example can run on different installations.

```
<SCRIPT ID="Javahandlers" LANGUAGE="javascript">
// --------------------------------
// open a pre-defined document
function BtnOpen()
{
    if(strPath.value.length > 0)
    {
        var absolutePath = MakeAbsolutePath(strPath.value);
        var objDoc = objStyleVisionControl.Open(absolutePath);
        if (objDoc == null)
           alert("Unable to locate " + absolutePath + " at: " +
objStyleVisionControl.BaseHref);
    }
    else
    {
        alert("Please set path for the document first!");
        strPath.focus();
    }
}
</SCRIPT>
```


Check Validity of Current Document

The validity of the current document is checked using the following script:.

```
// check validity of current document.
// if validation fails, show validation result in alert box .
function BtnTest()
{
    // get top-level object of automation interface
    var objApp = objStyleVisionControl.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");
    }
}
```

Connect to Custom Events

The example implements two event callbacks for StyleVisionControl custom events to show the principle:

```
<!-- ------------------------------------------------------------ -->
<!--  custom event 'OnDocumentOpened" of StyleVisionControl object  -->
<SCRIPT FOR="objStyleVisionControl" event="OnDocumentOpened( objDocument )"
LANGUAGE="javascript">
       // alert("Document '" + objDocument.Name + "' opened!");
</SCRIPT>

<!-- ------------------------------------------------------------ -->
<!--  custom event 'OnDocumentClosed" of StyleVisionControl object  -->
<SCRIPT FOR="objStyleVisionControl" event="OnDocumentClosed( objDocument )"
LANGUAGE="javascript">
       // alert("Document '" + objDocument.Name + "' closed!");
</SCRIPT>
```

Integration at Document Level

Integration at document level gives you freedom over instantiation and placement of the following parts of the StyleVision user interface:

If necessary, a replacement for the menus and toolbars of StyleVision 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 StyleVisionControl OCX.

- Use StyleVisionControl to set the integration level and access application wide functionality.
- Use StyleVisionControlDocument 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 StyleVisionControlPlaceholder to embed StyleVision entry helper windows, validator output or other windows mentioned above.
- Access run-time information about commands, menus, and toolbars available in StyleVisionControl to seamlessly integrate these commands into your application's menus and toolbars. See Query StyleVision Commands for more information.

If you want to automate some behaviour of StyleVision use the properties, methods, and events described for the StyleVisionControl, StyleVisionControlDocument and StyleVisionControlPlaceHolder. Consider using StyleVisionControl.Application, StyleVisionControlDocument.Document and StyleVisionControlPlaceHolder.Project for more complex access to StyleVision functionality. However, to open a document always use StyleVisionControlDocument.Open or StyleVisionControlDocument.New on the appropriate document control. To open a project always use StyleVisionControlPlaceHolder.OpenProject on a placeholder control embedding a StyleVision project window.

See Examples on how to instantiate and access the necessary controls in different programming environments.

Use StyleVisionControl

To integrate at document level, instantiate a StyleVisionControl 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 StyleVisionControlDocument and StyleVisionControlPlaceHolder, instead.

See Query StyleVision Commands for a description of how to integrate StyleVision commands into your application. Send commands to StyleVision via the method Exec. Query if a command is currently enabled or disabled using the method QueryStatus.

Use StyleVisionControlDocument

An instance of the `StyleVisionControlDocument` ActiveX control allows you to embed one StyleVision 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 supports 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.

Use StyleVisionControlPlaceHolder

Instances of StyleVisionControlPlaceHolder ActiveX controls allow you to selectively embed the additional helper windows of StyleVision into your application. The property PlaceholderWindowID selects the StyleVision helper window to be embedded. Use only one StyleVisionControlPlaceHolder for each window identifier. See for valid window identifiers.

For placeholder controls that select the StyleVision project window, additional methods are available. Use OpenProject to load a StyleVision project. Use the property Project and the methods and properties from the StyleVision automation interface to perform any other project related operations.

Query StyleVision Commands

When integrating at document-level, no menu or toolbar from StyleVision 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 StyleVision even provides you with command label images used within StyleVision. See the folder `StyleVisionExamples\ActiveX\Images` of your StyleVision installation for icons in GIF format. The file names correspond to the `labels` of commands.

Examples

This section contains examples of StyleVision document-level integration using different container environments and programming languages. Source code for all examples is available in the folder `StyleVisionExamples\ActiveX` of your StyleVision installation.

C#

The C# example shows how to integrate the StyleVisionControl in a common desktop application created with C# using Visual Studio 2008.
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 StyleVision components to the Toolbox
Before you take a look at the sample project please add the assemblies to the .NET IDE Toolbox. The StyleVision 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 `AxStyleVisionControl`, `AxStyleVisionControlDocument` and `AxStyleVisionControlPlaceholder` on the .NET Framework Components tab. Check all to make them available to the IDE.

Now, to load the project, you can open the `StyleVision.sln` file in the `StyleVisionExamples\ActiveX\C#\StyleVision` folder of your application folder.

Placing the StyleVisionControl

It is necessary to have one StyleVisionControl instance to set the integration level and to manage the Document and Placeholder controls of the StyleVision 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 StyleVisionControl. It is important to set the `IntegrationLevel` property to **`ICActiveXIntegrationOnDocumentLevel`** in order to turn on the Document and Placeholder support of the StyleVision library.

HTML

This example shows an integration of the StyleVision control at document-level into a HTML page. The following topics are covered:

- Instantiate a StyleVisionControl ActiveX control object in HTML code
- Instantiate a StyleVisionControlDocument ActiveX control to allow editing a StyleVision file
- Instantiate one StyleVisionControlPlaceHolder for a StyleVisionControl project window
- Instantiate one StyleVisionControlPlaceHolder to alternatively host one of the StyleVision helper windows
- Create a simple customer toolbar for some heavy-used StyleVision commands
- Add some more buttons that use the COM automation interface of StyleVision
- Use event handlers to update command buttons

This example is available in its entirety in the file `StyleVision ActiveX_ApplicationLevel.htm` within the `C:\Program Files\Altova\StyleVision2010\Examples\ActiveX\HTML\` folder of your StyleVision installation.

Note: This example works only in Internet Explorer.

Instantiate the StyleVisionControl

StyleVisionControlThe HTML `OBJECT` tag is used to create an instance of the StyleVisionControl. The Classid is that of StyleVisionControl. 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=""
        Classid="clsid:559db547-71fc-435d-aa8e-7faa321d0c6e"
        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. The additional custom parameter specifies that the control is to be initialized with a new empty mapping.

```
<OBJECT id="objDoc1"
        Classid="clsid:8EE4E77E-C793-468B-A0D8-5D6334CD6986"
        width="600"
        height="500"
        VIEWASTEXT>
    <PARAM NAME="NewDocument">
</OBJECT>
```

Create Project Window

The HTML `OBJECT` tag is used to create a StyleVisionControlPlaceHolder window. The first additional custom parameter defines the placeholder to show the StyleVision project window. The second parameter loads one of the example projects delivered with your StyleVision installation (located in the `<yourusername>/MyDocuments` folder).

```
<OBJECT id="objProjectWindow"
        Classid="clsid:E6ECBA9C-0E01-4FD5-98C3-C08B3D4824BC"
        width="200"
        height="200"
        VIEWASTEXT>
    <PARAM name="PlaceholderWindowID" value="-1">
      <PARAM name="FileName" value="StyleVisionExamples/Examples.svp">
</OBJECT>
```

Create Placeholder for Helper Windows

The HTML `OBJECT` tag is used to instantiate a StyleVisionControlPlaceHolder ActiveX control that can host the different StyleVision helper windows. Initially, no helper window is shown. See the example file.

```
<OBJECT id="objEHWindow"
```



```
        Classid="clsid:E6ECBA9C-0E01-4FD5-98C3-C08B3D4824BC"
        width="200"
        height="200"
        VIEWASTEXT>
    <PARAM name="PlaceholderWindowID" value="-1">
</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

```
<input type="button" value="New File" onclick="BtnNewFile(objDoc1)">
<input type="button" value="Open file" onclick="BtnOpenFile(objDoc1)">
<input type="button" value="Save File" onclick="BtnSaveFile(objDoc1)">
<input type="button" value="Open project" onclick="BtnOpenProject(objDoc1)">
<input type="button" value="Save project" onclick="BtnSaveProject()">
<input type="button" value="Close project" onclick="BtnCloseProject()">
```

Mandatory Event Handlers

A mandatory event handler, such as for an already opened file:

```
<SCRIPT FOR="objStyleVisionControl" event="OnOpenedOrFocused( strFilePath,
bOpenWithThisControl, bFileAlreadyOpened)" LANGUAGE="javascript">
       alert("Opening...");
       if (!bFileAlreadyOpened)
       DoOpenFile(objDoc1, strFilePath);
</SCRIPT>
```

Command Table for StyleVision

Tables in this section list the names and identifiers of all commands that are available within StyleVision. Every sub-section lists the commands from the corresponding top-level menu of StyleVision. 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 StyleVision you have installed, some of these commands might not be supported. See `Query StyleVision Commands` on how to query the current resource structure and command availability.

Use the command identifiers with `StyleVisionControl.QueryStatus` or `StyleVisionControlDocument.QueryStatus` to check the current status of a command. Use `StyleVisionControl.Exec` or `StyleVisionControlDocument.Exec` to execute a command.

File Menu

File menu commands (some are not available in Pro and Std editions):

New/New from XML Schema/DTD/XML...	IDC_FILE_NEW_FROM_SCHEMA	37579
New/New from DB...	IDC_FILE_NEW_FROM_DB	37577
New/New from XML column in DB table...	IDC_FILE_NEW_FROM_DBCELL	37861
New/New from XBRL Taxonomy...	IDC_FILE_NEW_FROM_XBRL_TAXONOMY	37912
New/New from HTML file...	IDC_FILE_NEW_FROM_HTML	37578
New/New (empty)	IDC_FILE_NEW_EMPTY	37576
Open...	ID_FILE_OPEN	57601
Reload	IDC_FILE_RELOAD	36002
Close	ID_FILE_CLOSE	57602
Close All	ID_FILE_CLOSE_ALL	37777
Save Design	ID_FILE_SAVE	57603
Save As...	ID_FILE_SAVE_AS	57604
Save All	ID_FILE_SAVE_ALL	37778
Save Authentic XML Data	ID_SAVE_AUTHENTIC_XML	32860
Save Authentic XML Data as ...	ID_SAVE_AUTHENTIC_XML_AS	32812
Save Generated Files/Save Generated XSLT-HTML File...	IDC_SAVE_GEN_XSLT_HTML	37642
Save Generated Files/Save Generated HTML File...	IDC_SAVE_GEN_HTML	37636
Save Generated Files/Save Generated XSLT-RTF File...	IDC_SAVE_GEN_XSLT_RTF	37643
Save Generated Files/Save Generated RTF File...	IDC_SAVE_GEN_RTF	37638
Save Generated Files/Save Generated XSLT-FO File...	IDC_SAVE_GEN_XSLT_FO	37641

contd...

Save Generated Files/Save Generated FO File...	IDC_SAVE_GEN_FO	37635
Save Generated Files/Save Generated PDF File...	IDC_SAVE_GEN_PDF	37637
Save Generated Files/Save Generated XSLT-Word 2007+ File...	IDC_SAVE_GEN_XSLT_WORDML	37523
Save Generated Files/Save Generated Word 2007+ File...	IDC_SAVE_GEN_WORDML	37529
Save Generated Files/Save Generated DB Schema...	IDC_SAVE_GEN_DB_SCHEMA	37633
Save Generated Files/Save Generated DB XML Data...	IDC_SAVE_GEN_DB_XML	37634
Save Generated Files/Save Generated User-Defined Schema...	IDC_SAVE_GEN_USERDEF_SCHEMA	37639
Save Generated Files/Save Generated User-Defined XML Data...	IDC_SAVE_GEN_USERDEF_XML	37640

Assign Working XML File...	IDC_ASSIGN_WORKING_XML_FILE	37526
Unassign Working XML File	IDC_UNASSIGN_WORKING_XML_FILE	37683
Assign Template XML File...	IDC_ASSIGN_TEMPLATE_XML_FILE	37525
Unassign Template XML File	IDC_UNASSIGN_TEMPLATE_XML_FILE	37682
Properties...	IDC_FILE_PROPERTIES	36027
Print Preview...	ID_FILE_PRINT_PREVIEW	57609
Print...	ID_FILE_PRINT	57607
Recent File	ID_FILE_MRU_FILE1	57616
Exit	ID_APP_EXIT	57665

Edit Menu

Edit menu commands:

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
Find	ID_EDIT_FIND	57636
Find Next	ID_EDIT_FINDNEXT	36802
Replace...	ID_EDIT_REPLACE	57641
Stylesheet Parameters...	IDC_EDIT_PARAMETERS	37573
Collapse/Expand Markup	IDC_SPSGUI_COLLAPSE_EXPAND_MARKUP	36804
Select All	ID_EDIT_SELECT_ALL	57642

Project Menu

Project menu commands:

New Project	IDC_ICPROJECTGUI_NEW	37200
Open Project...	IDC_ICPROJECTGUI_OPEN	37201
Reload Project	IDC_ICPROJECTGUI_RELOAD	37202
Close Project	IDC_ICPROJECTGUI_CLOSE	37203
Save Project	IDC_ICPROJECTGUI_SAVE	37204
Add Files to Project...	IDC_ICPROJECTGUI_ADD_FILES_TO_PROJECT	37205
Add Global Resource to Project...	IDC_ICPROJECTGUI_ADD_GLOBAL_RESOURCE_TO_PROJECT	37239
Add URL to Project...	IDC_ICPROJECTGUI_ADD_URL_TO_PROJECT	37206
Add Active File to Project	IDC_ICPROJECTGUI_ADD_ACTIVE_FILE_TO_PROJECT	37208
Add Active and Related Files to Project	IDC_ICPROJECTGUI_ADD_ACTIVE_AND_RELATED_FILES_TO_PROJECT	37209
Add Project Folder to Project...	IDC_ICPROJECTGUI_ADD_FOLDER_TO_PROJECT	37210
Add External Folder to Project...	IDC_ICPROJECTGUI_ADD_EXT_FOLDER_TO_PROJECT	37211
Add External Web Folder to Project...	IDC_ICPROJECTGUI_ADD_EXT_URL_FOLDER_TO_PROJECT	37212
Recent Project	IDC_ICPROJECTGUI_RECENT	37224

View Menu

View menu commands:

Toolbars/Dummy entry	ID_VIEW_TOOLBARS	37807
Project	ID_VIEW_PROJECT	57682
Design Overview	ID_VIEW_DESIGNOVERVIEW	37883
Schema Tree	ID_VIEW_SCHEMASOURCES	37805
Design Tree	ID_VIEW_DESIGNTREE	37804
Style Repository	ID_VIEW_STYLEREPOSITORY	37806
Context Properties	ID_VIEW_CONTEXTPROPERTY_COMMON	37802
Context Styles	ID_VIEW_CONTEXTPROPERTY_STYLES	37803
Design Filter/Show only one template at once	IDC_DESIGN_FILTER_ONE	37704
Design Filter/Show all template types	IDC_DESIGN_FILTER_ALL	37700
Design Filter/Show imported templates	IDC_DESIGN_FILTER_IMPORTED	37870
Design Filter/Show/Hide main template	IDC_DESIGN_FILTER_MAIN	37701
Design Filter/Show/Hide global templates	IDC_DESIGN_FILTER_MATCH	37702
Design Filter/Show/Hide design fragments	IDC_DESIGN_FILTER_NAMED	37703
Design Filter/Show/Hide page layout templates	IDC_DESIGN_FILTER_PAGELAYOUT	37705
Zoom/Zoom In	IDC_SPSGUI_ZOOM_IN	36805
Zoom/Zoom Out	IDC_SPSGUI_ZOOM_OUT	36806
Zoom/Zoom 500%	IDC_SPSGUI_ZOOM_500	36807
Zoom/Zoom 400%	IDC_SPSGUI_ZOOM_400	36808
Zoom/Zoom 200%	IDC_SPSGUI_ZOOM_200	36809
Zoom/Zoom 150%	IDC_SPSGUI_ZOOM_150	36810
Zoom/Zoom 100%	IDC_SPSGUI_ZOOM_100	36811
Zoom/Zoom 75%	IDC_SPSGUI_ZOOM_75	36812
Zoom/Zoom 50%	IDC_SPSGUI_ZOOM_50	36813
Status Bar	ID_VIEW_STATUS_BAR	59393

Insert Menu

Insert menu commands (some are not available in Pro and Std editions):

Insert Contents	IDC_INSERT_CONTENTS	37846
Insert Rest of Contents	IDC_INSERT_REST_OF_CONTENTS	37617
Insert Form Controls/Input Field	IDC_INSERT_EDITFIELD	37854
Insert Form Controls/Multiline Input Field	IDC_INSERT_MULTILINEEDITFIELD	37855
Insert Form Controls/Check Box...	IDC_INSERT_CHECKBOX	37857
Insert Form Controls/Combo Box...	IDC_INSERT_COMBOBOX	37856
Insert Form Controls/Radio Button...	IDC_INSERT_RADIOBUTTON	37858
Insert Form Controls/Button	IDC_INSERT_BUTTON	37859
Insert Auto-Calculation/Value...	IDC_INSERT_AUTOCALC_VALUE	37596
Insert Auto-Calculation/Input Field...	IDC_INSERT_AUTOCALC_FIELD	37594
Insert Auto-Calculation/Multiline Input Field...	IDC_INSERT_AUTOCALC_MULTILINE_FIELD	37595
Insert Date Picker	IDC_INSERT_DATEPICKER	37602
Insert Paragraph	IDC_INSERT_PARAGRAPH	37847
Insert Special Paragraph/Address	IDC_INSERT_ADDRESS	37843
Insert Special Paragraph/Block (div)	IDC_INSERT_BLOCK	37528
Insert Special Paragraph/Blockquote	IDC_INSERT_BLOCKQUOTE	37527
Insert Special Paragraph/Center	IDC_INSERT_CENTER	37534
Insert Special Paragraph/Fieldset	IDC_INSERT_FIELDSET	37574
Insert Special Paragraph/Preformatted	IDC_INSERT_FORMATTED	37580
Insert Special Paragraph/Preformatted, wrapping	IDC_INSERT_FORMATTED_WRAP	37876
Insert Special Paragraph/Heading 1 (h1)	IDC_INSERT_HEADING1	37585
Insert Special Paragraph/Heading 2 (h2)	IDC_INSERT_HEADING2	37586
Insert Special Paragraph/Heading 3 (h3)	IDC_INSERT_HEADING3	37587

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Insert Special Paragraph/Heading 4 (h4)	IDC_INSERT_HEADING4	37588
Insert Special Paragraph/Heading 5 (h5)	IDC_INSERT_HEADING5	37589
Insert Special Paragraph/Heading 6 (h6)	IDC_INSERT_HEADING6	37590
Insert Image...	IDC_INSERT_IMAGE	37593
Insert Horizontal Line	IDC_INSERT_HORIZONTAL_LINE	37606
Insert Table...	IDC_INSERT_TABLE	40212
Insert Bullets and Numbering...	IDC_INSERT_FORMAT_BULLETS	37848
Insert Bookmark...	IDC_INSERT_BOOKMARK	37530

Insert Hyperlink...	IDC_INSERT_HYPERLINK	37849
Insert Condition...	IDC_INSERT_CONDITION	37850
Insert Output-based Condition	IDC_INSERT_CONDITION_PER_OUTPUT	37851
Insert Template	IDC_INSERT_TEMPLATE	40216
Insert User-Defined Template...	IDC_INSERT_USER_DEFINED_TEMPLATE	40184
Insert Variable Template...	IDC_INSERT_VARIABLE_TEMPLATE	37531
Insert Layout Container	IDC_INSERT_LAYOUT_CONTAINER	40213
Insert Layout Box	IDC_INSERT_LAYOUT_BOX	40214
Insert Line	IDC_INSERT_SHAPE_LINE	40215
Insert Table Of Contents/Table of Contents...	IDC_INSERT_TOC_WIZARD	37618
Insert Table Of Contents/TOC Bookmark	IDC_INSERT_MARKER	37608
Insert Table Of Contents/TOC Bookmark (Wizard)...	IDC_INSERT_MARKER_WIZARD	37609
Insert Table Of Contents/TOC Reference	IDC_INSERT_REF	37613
Insert Table Of Contents/TOC Reference/Entry Text	IDC_INSERT_REF_ENTRY_TEXT	37614
Insert Table Of Contents/TOC Reference/Leader	IDC_INSERT_REF_LEADER	37615
Insert Table Of Contents/TOC Reference/Page Reference	IDC_INSERT_REF_PAGE_REFERENCE	37616
Insert Table Of Contents/Hierarchical numbering	IDC_INSERT_AUTO_NUMBER_LEVEL	37598
Insert Table Of Contents/Sequential numbering	IDC_INSERT_AUTO_NUMBER_FLAT	37597

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Insert Table Of Contents/TOC Level	IDC_INSERT_LEVEL	37607
Insert Table Of Contents/TOC Level Reference	IDC_INSERT_REFLEVEL	37860
Insert Table Of Contents/Template serves as Level	IDC_ASSIGN_LEVEL	37524
Insert Design Fragment/Dummy entry	IDC_INSERT_NAMED_TEMPLATE	39300
Insert Page/Column/Document Section/New Page	IDC_INSERT_PAGE_BREAK	37610
Insert Page/Column/Document Section/Page Number	IDC_INSERT_PAGE_NUMBER	37611
Insert Page/Column/Document Section/Page Total	IDC_INSERT_PAGE_TOTAL	37612
Insert Page/Column/Document Section/New Column	IDC_INSERT_COLUMN_BREAK	37864
Insert Page/Column/Document Section/New Document Section	IDC_INSERT_DOCUMENT_SECTION	37951
Insert DB Control/Navigation	IDC_INSERT_DBNAVIGATION	37603
Insert DB Control/Navigation + Goto	IDC_INSERT_DBNAVIGATIONGOTO	37604
Insert DB Control/Query Button	IDC_INSERT_DBQUERY	37605
Insert XBRL Element/Context	IDC_INSERT_XBRL_CONTEXT	37942
Insert XBRL Element/Period	IDC_INSERT_XBRL_PERIOD	37909
Insert XBRL Element/Period Start	IDC_INSERT_XBRL_PERIOD_START	37947

Insert XBRL Element/Period End	IDC_INSERT_XBRL_PERIOD_END	37948
Insert XBRL Element/Identifier	IDC_INSERT_XBRL_IDENTIFIER	37910
Insert XBRL Element/Unit	IDC_INSERT_XBRL_UNIT	37946
Insert XBRL Element/Footnote	IDC_INSERT_XBRL_FOOTNOTE	37911
Insert User-Defined Item/User-Defined Element	IDC_STYLEVISIONGUI_INSERT_USERXMLELEM	37908
Insert User-Defined Item/User-Defined Block	IDC_STYLEVISIONGUI_INSERT_USERXMLTEXT	37920

Enclose With Menu

Enclose With menu commands (some might not be available in Pro and Std editions):

Template...	IDC_ENCLOSE_WITH_TEMPLATES	40180
User-Defined Template...	IDC_ENCLOSE_WITH_USER_DEFINED_TEMPLATES	40217
Variable Template...	IDC_ENCLOSE_WITH_VARIABLE_TEMPLATES	37520
Paragraph	IDC_ENCLOSE_PARAGRAPH	37627
Special Paragraph/Address	IDC_ENCLOSE_ADDRESS	40194
Special Paragraph/Block (div)	IDC_ENCLOSE_BLOCK	40195
Special Paragraph/Blockquote	IDC_ENCLOSE_BLOCKQUOTE	40196
Special Paragraph/Center	IDC_ENCLOSE_CENTER	40197
Special Paragraph/Fieldset	IDC_ENCLOSE_FIELDSET	40198
Special Paragraph/Preformatted	IDC_ENCLOSE_FORMATTED	40199
Special Paragraph/Preformatted, wrapping	IDC_ENCLOSE_FORMATTED_WRAP	40200
Special Paragraph/Heading 1 (h1)	IDC_ENCLOSE_HEADING1	40201
Special Paragraph/Heading 2 (h2)	IDC_ENCLOSE_HEADING2	40202
Special Paragraph/Heading 3 (h3)	IDC_ENCLOSE_HEADING3	40203
Special Paragraph/Heading 4 (h4)	IDC_ENCLOSE_HEADING4	40204
Special Paragraph/Heading 5 (h5)	IDC_ENCLOSE_HEADING5	40205
Special Paragraph/Heading 6 (h6)	IDC_ENCLOSE_HEADING6	40206
Bullets and Numbering...	IDC_ENCLOSE_FORMAT_BULLETS	37581
Bookmark...	IDC_ENCLOSE_BOOKMARK	40207
Hyperlink...	IDC_ENCLOSE_HYPERLINK	37620
Condition...	IDC_ENCLOSE_CONDITION	37599
Output-based Condition	IDC_ENCLOSE_CONDITION_PER_OUTPUT	37600
TOC Bookmark	IDC_ENCLOSE_MARKER	40210
TOC Bookmark (Wizard)...	IDC_ENCLOSE_MARKER_WIZARD	40211
TOC Level	IDC_ENCLOSE_LEVEL	40208
TOC Level Reference	IDC_ENCLOSE_REFLEVEL	40209
User-Defined Element...	IDC_ENCLOSE_WITH_USER_DEFINED_XML_ELEMENT	40222

Table Menu

Table menu commands:

Insert Table...	IDC_INSERT_TABLE	40212
Delete Table	IDC_TABLE_DELETE	37658
Add Table Header Column	IDC_TABLE_ADD_HEADERCOL	37888
Add Table Footer Column	IDC_TABLE_ADD_FOOTERCOL	37889
Add Table Header Row	IDC_TABLE_ADD_HEADERROW	37900
Add Table Footer Row	IDC_TABLE_ADD_FOOTERROW	37901
Append Row	IDC_TABLE_APPEND_ROW	37657
Append Column	IDC_TABLE_APPEND_COL	37656
Insert Row	IDC_TABLE_INSERT_ROW	37664
Insert Column	IDC_TABLE_INSERT_COL	37662
Delete Row	IDC_TABLE_DELETE_ROW	37660
Delete Column	IDC_TABLE_DELETE_COL	37659
Join Cell Left	IDC_TABLE_JOIN_LEFT	37666
Join Cell Right	IDC_TABLE_JOIN_RIGHT	37667
Join Cell Below	IDC_TABLE_JOIN_DOWN	37665
Join Cell Above	IDC_TABLE_JOIN_UP	37668
Split Cell Horizontally	IDC_TABLE_SPLIT_HORZ	37670
Split Cell Vertically	IDC_TABLE_SPLIT_VERT	37671
View Cell Bounds	IDC_TABLE_SHOW_ZERO_BORDER	37669
View Table Markup	IDC_TABLE_SHOW_UICELLS	37887
Table Properties...	IDC_TABLE_EDIT_PROPERTIES	37661

Authentic Menu

Authentic menu commands (some are not available in Pro and Std editions):

Text State Icons...	IDC_TEXT_STATE_ICONS	37672
CALS / HTML Tables...	IDC_CALS_HTML_TABLES	37533
Auto-add Date Picker	IDC_TOGGLE_DATEPICKER_AUTOINSERT	37674
Auto-add DB Controls	IDC_TOGGLE_DBCONTROL_AUTOINSERT	37675
Reload Authentic View	IDC_AUTHENTICGUI_RELOAD	32800
Validate XML	IDC_VALIDATE	32954
Select New Row with XML Data for Editing...	IDC_CHANGE_WORKING_DB_XML_CELL	32861
Define XML Entities...	IDC_DEFINE_ENTITIES	32805
Hide Markup	IDC_MARKUP_HIDE	32855
Show Small Markup	IDC_MARKUP_SMALL	32858
Show Large Markup	IDC_MARKUP_LARGE	32856
Show Mixed Markup	IDC_MARKUP_MIXED	32857
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

Database Menu

Database menu commands:

Query Database	ID_VIEW_DBQUERY	37818
Edit DB Filter...	IDC_EDIT_DBFILTERS	37571
Clear DB Filter	IDC_CLEAR_DBFILTERS	37547

Properties Menu

Properties menu commands:

Edit Bullets and Numbering...	IDC_EDIT_BULLETS_AND_NUMBERING	37839
Predefined Input Formatting Strings...	IDC_FORMAT_PREDEFINES	37582

Tools Menu

Tools menu commands:

Spelling...	IDC_SPSGUI_SPELL_CHECK	36800
Spelling Options...	IDC_SPSGUI_SPELL_OPTIONS	36801
Global Resources	IDC_GLOBALRESOURCES	37401
Active Configuration/<plugin not loaded>	IDC_GLOBALRESOURCES_SUBMENUENTRY1	37408
Customize...	IDC_CUSTOMIZE_VIEW	37560
Restore Toolbars and Windows...	IDC_APP_RESET_TOOLBARS_AND_WINDOWS	32956
Options...	IDC_TOOLS_OPTIONS	37676

Window Menu

Window menu commands:

Cascade	ID_WINDOW_CASCADE	57650
Tile Horizontal	ID_WINDOW_TILE_HORZ	57651
Tile Vertical	ID_WINDOW_TILE_VERT	59405
Arrange Icons	ID_WINDOW_ARRANGE	57649

Help Menu

Help menu commands:

Table of Contents	ID_HELP_FINDER	57667
Index...	ID_HELP_INDEX	57666
Search...	ID_HELP_SEARCH	36036
Software Activation...	IDC_ACTIVATION	36025
Order form...	ID_HELP_ORDERFORM	36034
Registration...	ID_HELP_REGISTRATION	36035
Check for Updates...	IDC_CHECK_FOR_UPDATES	36026
StyleVision Product Comparison...	IDC_PRODUCT_COMPARISON	32955
Support Center...	ID_HELP_SUPPORTCENTER	36037
FAQ on the Web...	ID_HELP_FAQ	36032
Components Download...	ID_HELP_COMPONENTS	36031
StyleVision on the Internet...	ID_HELP_INTERNET	36033
StyleVision Training...	ID_HELP_TRAINING	36038
About StyleVision...	ID_APP_ABOUT	57664

Misc Menu

Miscellaneous menu and context menu commands (some are not available in Pro and Std editions):

Active	IDC_ACTIVATE_PART_TOGGLE	37532
Database	IDC_ADDRESOURCE_DATABASE	37405
File	IDC_ADDRESOURCE_FILE	37403
Folder	IDC_ADDRESOURCE_FOLDER	37404
Copy Branch	IDC_ADD_COPY_OPTION	37515
Add New Branch	IDC_ADD_NEW_OPTION	37516
Append element	IDC_ADD_NEXT_NODE	37517
Insert element	IDC_ADD_PREV_NODE	37518
Add Child element	IDC_ADD_SUB_NODE	37519
	IDC_ALIGN_CENTER	37826
	IDC_ALIGN_JUSTIFY	37828
	IDC_ALIGN_LEFT	37825
	IDC_ALIGN_RIGHT	37827
Assign XML Schema/DTD File...	IDC_ASSIGN_SCHEMA_FILE	37886
Assign Template XBRL File...	IDC_ASSIGN_TEMPLATE_XBRL_FILE	37938
Assign Working XBRL File...	IDC_ASSIGN_WORKING_XBRL_FILE	37939
Assign XBRL Taxonomy File...	IDC_ASSIGN_XBRL_TAXONOMY_FILE	37935
Authentic	IDC_AUTHENTIC	37692
	IDC_BOLD	37822
	IDC_BULLET_ORDERED	37829
	IDC_BULLET_UNORDERED	37830
Change page margins...	IDC_CHANGE_PAGE_MARGINS	37535
Dummy entry	IDC_CHANGE_TEMPLATE_MATCH	39320
Contents	IDC_CHANGE_TO_ALL_CONTENTS	37536
Button	IDC_CHANGE_TO_BUTTON	37537
Check Box...	IDC_CHANGE_TO_CHECKBOX	37538
Input Field	IDC_CHANGE_TO_FIELD	37539
Image...	IDC_CHANGE_TO_IMAGE	37540
Multiline Input Field	IDC_CHANGE_TO_MULTILINE_FIELD	37542
Paragraph	IDC_CHANGE_TO_PARAGRAPH	37543

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Radio Button...	IDC_CHANGE_TO_RADIO_BUTTON	37544
Rest of Contents	IDC_CHANGE_TO_REST_OF_CONTENTS	40220

Combo Box...	IDC_CHANGE_TO_SELECTION	37545
Table...	IDC_CHANGE_TO_TABLE	37546
Clear XPath Filter	IDC_CLEAR_FILTER	37925
	IDC_COMMAND_REFRESH_DATASOURCE	36674
Add to Data Comparison Document	IDC_COMMAND_SHOW_IN_EXISTING_COMPARISON	36542
Add to Schema Comparison Document	IDC_COMMAND_SHOW_IN_EXISTING_SCHEMA_COMPARISON	36690
Show in new Data Comparison Document	IDC_COMMAND_SHOW_IN_NEW_COMPARISON	36541
Show in new Schema Comparison Document	IDC_COMMAND_SHOW_IN_NEW_SCHEMA_COMPARISON	36691
Construct Entry Text using XPath	IDC_CONSTRUCT_ENTRY_TEXT_USING_XPATH	37831
Convert all to Global Resources	IDC_CONVERT_ALL_DATASOURCES_TO_GLOBAL_RESOURCES	36687
Convert to Global Resource	IDC_CONVERT_DATASOURCE_TO_GLOBAL_RESOURCES	36684
Copy Global Template Locally	IDC_CONVERT_FROM_GLOBAL_TEMPLATE	37548
Convert to attribute	IDC_CONVERT_TO_ATTRIBUTE	37549
Convert to element	IDC_CONVERT_TO_ELEMENT	37550
Make Global Template	IDC_CONVERT_TO_GLOBAL_TEMPLATE	37551
Use Global Template	IDC_CONVERT_TO_GLOBAL_TEMPLATE_WITH_EXISTS	37552
Copy Global Resource into Project	IDC_COPY_GLOBAL_RESOURCES_TO_PROJECT	36685
Create Button	IDC_CREATE_BUTTON	37553
Create Check Box...	IDC_CREATE_CHECKBOX	37554
Create Image...	IDC_CREATE_DYNAMIC_IMAGE	37555
Create Combo Box...	IDC_CREATE_DYNAMIC_SELECTION	37556
Create Input Field	IDC_CREATE_FIELD	37557
Create Hyperlink	IDC_CREATE_HYPERLINK	37842
Insert as Hyperlink	IDC_CREATE_HYPERLINK_FROM_FILE	37881
Insert as Image	IDC_CREATE_IMAGE_FROM_FILE	37882
Create Multiline Input Field	IDC_CREATE_MULTILINE_FIELD	37558
Create new Design...	IDC_CREATE_NEW_DESIGN_FROM_FILE	37878
Create Radio Button...	IDC_CREATE_RADIOBUTTON	37559

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Autocommit all changes on saving Database XML Document	IDC_DBQUERY_AUTOCOMMIT	38012
Autohide Database Query window	IDC_DBQUERY_AUTOHIDE	38011
	IDC_DBQUERY_OPTIONS	38005
	IDC_DBQUERY_SQLVIEW_EXECUTE	38006

	IDC_DBQUERY_SQLVIEW_EXECUTE_EDIT	38007
	IDC_DBQUERY_SQLVIEW_OPEN	38004
Open in DatabaseSpy	IDC_DBQUERY_SQLVIEW_OPENINDBSPY	38002
	IDC_DBQUERY_SQLVIEW_SAVE	38003
	IDC_DBQUERY_SQLVIEW_STOPEXECUTION	38009
	IDC_DBQUERY_TOGGLEBROWSER	38001
	IDC_DBQUERY_TOGGLERESULT	38000
Edit Parameters...	IDC_DEFINE_NAMED_TEMPLATE_ACTUAL_PARAMETERS	39715
Define Parameters...	IDC_DEFINE_NAMED_TEMPLATE_FORMAL_PARAMETERS	39716
Define Variables...	IDC_DEFINE_VARIABLES	40185
Delete	IDC_DELETE_NODE	37561
Delete Branch	IDC_DELETE_OPTION	37562
Add Footer	IDC_DESIGNTREE_ADD_FOOTER_ALL	37564
Add Footer Even	IDC_DESIGNTREE_ADD_FOOTER_EVEN	37565
Add Footer First	IDC_DESIGNTREE_ADD_FOOTER_FIRST	40119
Add Footer Last	IDC_DESIGNTREE_ADD_FOOTER_LAST	40123
Add Footer Odd	IDC_DESIGNTREE_ADD_FOOTER_ODD	37566
Add Header	IDC_DESIGNTREE_ADD_HEADER_ALL	37567
Add Header Even	IDC_DESIGNTREE_ADD_HEADER_EVEN	37568
Add Header First	IDC_DESIGNTREE_ADD_HEADER_FIRST	39995
Add Header Last	IDC_DESIGNTREE_ADD_HEADER_LAST	40075
Add Header Odd	IDC_DESIGNTREE_ADD_HEADER_ODD	37569
Add Main Template	IDC_DESIGNTREE_ADD_MAIN_TEMPLATE	37866
Add Module...	IDC_DESIGNTREE_ADD_MODULE	37865
Add Design Fragment	IDC_DESIGNTREE_ADD_NAMED_TEMPLATE	37570
Create Design Fragment	IDC_DESIGNTREE_CREATE_NAMED_TEMPLATE	40181

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Goto Definition	IDC_DESIGNTREE_GOTO_DEF	37869
Move Down	IDC_DESIGNTREE_MOVE_DOWN	37868
Move Up	IDC_DESIGNTREE_MOVE_UP	37867
Bring Forward	IDC_DESIGN_BRING_FORWARD	37961
Bring To Front	IDC_DESIGN_BRING_TO_FRONT	37959
Edit Blueprint Image Properties...	IDC_DESIGN_EDIT_BLUEPRINT_IMAGE_PROPERTIES	40187
Edit Line Properties...	IDC_DESIGN_EDIT_LINE_PROPERTIES	40188
Enable Snap to Grid	IDC_DESIGN_ENABLE_SNAP_TO_GRID	37963
Design Filter	IDC_DESIGN_FILTER	37699

	IDC_DESIGN_FILTER_TEMPLATE_COMBO	37706
Auto-fit to Paper size	IDC_DESIGN_LAYOUTCONTAINER_AUTOFIT_TO_PAPER_SIZE	40190
Add CSS File...	IDC_DESIGN_OVERVIEW_ADD_CSS	37890
Add Parameter...	IDC_DESIGN_OVERVIEW_ADD_PARAMETER	37793
Add XSLT File...	IDC_DESIGN_OVERVIEW_ADD_XSLT	37871
Change DB Connection...	IDC_DESIGN_OVERVIEW_CHANGE_DB_CONNECTION	37891
Open Module	IDC_DESIGN_OVERVIEW_OPEN_MODULE	37931
Active	IDC_DESIGN_OVERVIEW_PAGE_LAYOUT_ACTIVE	37922
Edit Page Properties...	IDC_DESIGN_OVERVIEW_PAGE_LAYOUT_PROPERTIES	37921
Select DB Tables and Views...	IDC_DESIGN_OVERVIEW_SELECT_DB_TABLES_AND_VIEWS	37892
Select XML Schema from DB...	IDC_DESIGN_OVERVIEW_SELECT_SCHEMA_FROM_DB	37621
Select Working XML DB Field...	IDC_DESIGN_OVERVIEW_SELECT_WORKING_XML_DB_FIELD	37622
Edit XBRL Taxonomy Source Properties...	IDC_DESIGN_OVERVIEW_XBRL_TAXONOMY_PROPERTIES	37945
Send Backward	IDC_DESIGN_SEND_BACKWARD	37960
Send To Back	IDC_DESIGN_SEND_TO_BACK	37958
Show Grid	IDC_DESIGN_SHOW_GRID	37962
Show Large Design Markups	IDC_DESIGN_SHOW_LARGE_MARKUPS	37954
Show Small Design Markups	IDC_DESIGN_SHOW_SMALL_MARKUPS	37953
Auto-resize Layout Box	IDC_DESIGN_TEXTBOX_AUTORESIZE	40189
	IDC_DEVHELPER_ADDERRORTESTCASE	36014
	IDC_DEVHELPER_ADDTESTCASE	36005
	IDC_DEVHELPER_HTMLVIEW_SRC	36803

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Edit Alt...	IDC_EDIT_ALT	37841
Edit Format...	IDC_EDIT_AUTO_NUMBER_FORMAT	37834
Edit Bookmark Name...	IDC_EDIT_BOOKMARK_NAME	37838
Edit Checked Values...	IDC_EDIT_CHECKED_VALUES	37835
Edit Combo Box entry values...	IDC_EDIT_COMBOBOX_ENTRY_VALUES	37836
Edit XPath Filter...	IDC_EDIT_FILTER	37924
Edit Global Resource...	IDC_EDIT_GLOBAL_RESOURCES	36686
Edit Input Formatting...	IDC_EDIT_INPUT_FORMATTING	37833
Edit File in XMLSpy	IDC_EDIT_IN_XMLSPY	37575
Edit Name....	IDC_EDIT_NAME	37840
Edit Condition	IDC_EDIT_OPTION_CONDITION	37572
Edit Paragraph Type...	IDC_EDIT_PARAGRAPH_TYPE	37845
Edit Scope...	IDC_EDIT_SCOPE	37844

Edit Template Match...	IDC_EDIT_TEMPLATE_MATCH	40182
Edit Update XML Node...	IDC_EDIT_UPDATE_XML_NODE	37853
Edit URL...	IDC_EDIT_URL	37837
Edit User-Defined Element...	IDC_EDIT_USERXMLELEM	37949
Edit User-Defined Block...	IDC_EDIT_USERXMLTEXT	37950
Edit XBRL Label...	IDC_EDIT_XBRL_LABEL	37933
Edit XPath...	IDC_EDIT_XPATH	37832
Check In...	IDC_FILE_CHECK_IN	32951
Check Out...	IDC_FILE_CHECK_OUT	32952
Undo Check Out...	IDC_FILE_UNDO_CHECK_OUT	32953
Formatting	IDC_FORMAT	37707
Browse...	IDC_GLOBALRESOURCESUI_CHOOSEFILEASFILE	37420
Choose another Global Resource...	IDC_GLOBALRESOURCESUI_CHOOSEFILEASGR	37419
Add configuration	IDC_GLOBALRESOURCESUI_DETAILS_ADDCONFIG	37423
Add a configuration copy	IDC_GLOBALRESOURCESUI_DETAILS_ADDCONFIGCOPY	37424
Delete configuration	IDC_GLOBALRESOURCESUI_DETAILS_DELETECONFIG	37425
Active Global Resource Configuration	IDC_GLOBALRESOURCES_ACTIVECONFIG	37400

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Delete	IDC_GLOBALRESOURCES_MAINDLG_DELETERESOURCE	37422
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY2	37409
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY3	37410
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY4	37411
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY5	37412
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY6	37413
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY7	37414
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY8	37415
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY9	37416
<placeholder>	IDC_GLOBALRESOURCES_SUBMENUENTRY_LAST	37417
Goto Next Bookmark	IDC_GOTONEXTBOOKMARK	37583
Goto Previous Bookmark	IDC_GOTOPREVBOOKMARK	37584
Edit Authentic Properties...	IDC_GOTO_AUTHENTIC_PROPERTIES	37852
Group by...	IDC_GROUP	37874
	IDC_HYPERLINK	37591
	IDC_HYPERLINK_PROPERTIES	37592

	IDC_ICDBWNDS_ADD_SELECT_STATEMENT	36663
	IDC_ICDBWNDS_DELETE_DSN	36666
Edit a SELECT Statement...	IDC_ICDBWNDS_EDIT_LOCALVIEW	36676
	IDC_ICDBWNDS_MANAGE_LOCAL_RELATIONS	36688
	IDC_ICDBWNDS_NEW_DSN	36661
Locate File...	IDC_ICDBWNDS_OPENINEXPLORER	36540
	IDC_ICDBWNDS_REFRESH_DSN	36667
Remove SELECT statement	IDC_ICDBWNDS_REMOVE_LOCALVIEW	36680
	IDC_ICDBWND_BACK_COLOR	36543
	IDC_ICDBWND_BOLD	36544
Add a SELECT Statement...	IDC_ICDBWND_CREATE_LOCALVIEW	36677
	IDC_ICDBWND_EDIT_DSN	36662
Generate and add a SELECT Statement.	IDC_ICDBWND_GENEATE_SQL_FOR_LOCALVIEW	36678
	IDC_ICDBWND_ITALIC	36545
Remove from Online Browser	IDC_ICDBWND_REMOVE_FROM_BROWSERVIEW	36683
	IDC_ICDBWND_TEXT_COLOR	36546
	IDC_ICDBWND_TOOLBAR_COLOR	36547
	IDC_ICDBWND_UNDERLINE	36548

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Add Active and Related Files	IDC_ICPROJECTGUI_ADD_ACTIVE_AND_RELATED_FILES	37217
Add Active File	IDC_ICPROJECTGUI_ADD_ACTIVE_FILE	37216
Add External Folder...	IDC_ICPROJECTGUI_ADD_EXT_FOLDER	37219
Add External Web Folder...	IDC_ICPROJECTGUI_ADD_EXT_URL_FOLDER	37220
Add Files...	IDC_ICPROJECTGUI_ADD_FILES	37213
Add Project Folder...	IDC_ICPROJECTGUI_ADD_FOLDER	37218
Add Global Resource File...	IDC_ICPROJECTGUI_ADD_GLOBAL_RESOURCE	37238
Add URL...	IDC_ICPROJECTGUI_ADD_URL	37214
Explore Containing Folder	IDC_ICPROJECTGUI_OPEN_CONTAINING_FOLDER	37237
Open	IDC_ICPROJECTGUI_OPEN_IN_EXTERNAL_APP	37236
Edit File in MapForce	IDC_ICPROJECTGUI_OPEN_IN_MAPFORCE	37234
Edit File in XMLSpy	IDC_ICPROJECTGUI_OPEN_IN_XMLSPY	37233
Properties...	IDC_ICPROJECTGUI_PROPERTIES	37222
Refresh	IDC_ICPROJECTGUI_REFRESH_EXT_FOLDER	37221
Import as Module	IDC_IMPORT_MODULE_FROM_FILE	37879
Import into Style Repository	IDC_IMPORT_STYLESHEET_FROM_FILE	37880
Insert Design Element	IDC_INSERT_DESIGN_ELEMENT	40192

Insert AutoCalc	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_AUTOCALC	40164
Ask for Data Source on Insert	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_AUTO_CREATE_TEMPLATES	40193
Insert Check Box...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_CHECKBOX	40177
Insert Combo Box...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_COMBOBOX	40176
Insert Contents	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_CONTENTS	40165
Insert Input Field	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_EDITFIELD	40174
Insert Multiline Input Field	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_EDITFIELD_MULTILINE	40175
Insert Image...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_IMAGE	40173
Insert Layout Box	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_LAYOUT_BOX	40157
Insert Layout Container	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_LAYOUT_CONTAINER	40156
Insert Bullets and Numbering...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_LIST	40171
Insert Paragraph	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_PARAGRAPH	40167
Insert Radio Button...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_RADIOBUTTON	40178
Insert Line	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_SHAPE_LINE	40186
Insert Table...	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_TABLE	40169
Insert Template	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_TEMPLATE	40166
Insert User-Defined Template	IDC_INSERT_DESIGN_ELEM_INTERACTIVE_USER_DEFINED_TEMPLATE	40183
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Append Element	IDR_SCHEMASOURCES_ADD_ELEMENT	37709
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+02 : 00	ID_CONTENT_TIMEZONES_M14_1600	18372
+03 : 00	ID_CONTENT_TIMEZONES_M14_1700	18373
+04 : 00	ID_CONTENT_TIMEZONES_M14_1800	18374
+05 : 00	ID_CONTENT_TIMEZONES_M14_1900	18375
+06 : 00	ID_CONTENT_TIMEZONES_M14_2000	18376
+07 : 00	ID_CONTENT_TIMEZONES_M14_2100	18377
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+09 : 00	ID_CONTENT_TIMEZONES_M14_2300	18379
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+11 : 00	ID_CONTENT_TIMEZONES_M14_2500	18381
+12 : 00	ID_CONTENT_TIMEZONES_M14_2600	18382
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Create Contents	ID_CREATE_ALL_CONTENTS	37735
Create Bullets and Numbering	ID_CREATE_LIST	37736
Create Paragraph	ID_CREATE_PARAGRAPH	37737
Create Table...	ID_CREATE_TABLE	37738
Create Templates	ID_CREATE_TEMPLATES	37739
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Create XBRL Template	ID_CREATE_XBRL_TEMPLATE	37914
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Disconnect	ID_DISCONNECT	38014
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'CE' / 'BCE'	ID_FIELDTYPES_CE	37746
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	ID_ICDBWND_BROWSER_SEARCH	36572
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Check Children	ID_ICDBWND_CHECK_ALL	36580
Clear	ID_ICDBWND_CLEAR_ROWCOUNT	36538
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Siblings	ID_ICDBWND_COLLAPSE_SIBLING	36582
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	ID_ICDBWND_FLAG_PURPLE	36602
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Disconnect	ID_ICDBWND_MENU_DATASOURCE_DISCONNECT	36606
Get Tables	ID_ICDBWND_MENU_DATASOURCE_GETTABLES	36607

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Flat	ID_LAYOUT_FLAT	36615
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Manage XML Schemas...	ID_OPEN_MANAGE_XMLSCHEMA_DIALOG	36658
	ID_PREV_PANE	57681
New Project	ID_PROJECT_NEWPROJECT	36620
Remove all Data Sources	ID_REMOVEALLDATASOURCES	36621
Remove	ID_REMOVE_DATASOURCE	36622
Remove from Favorites	ID_REMOVE_FAVORITE_ITEM	36623
Remove	ID_REMOVE_FROM_PROJECT	36624
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	ID_RESULTGRID_FINDPREV	36672
All rows	ID_RETRIEVE_ALLROWS	36625
First n rows	ID_RETRIEVE_FIRSTROWS	36626
Save Project	ID_SAVEPROJECT	36627
Save Project As...	ID_SAVEPROJECTAS	36628
Add	ID_SHOW_SQL_ADD	36629
Alter	ID_SHOW_SQL_ALTER	36630
Create	ID_SHOW_SQL_CREATE	36631

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Delete data	ID_SHOW_SQL_DELETE	36632
Drop	ID_SHOW_SQL_DROP	36633
Execute	ID_SHOW_SQL_EXECUTE	36673
Insert	ID_SHOW_SQL_INSERT	36634
Name	ID_SHOW_SQL_NAME	36635
Path	ID_SHOW_SQL_PATH	36636
Rename	ID_SHOW_SQL_RENAME	36637
Select	ID_SHOW_SQL_SELECT	36638
Update	ID_SHOW_SQL_UPDATE	36639
Sort into User and System Tables	ID_SORT_BY_TABLE_TYPE	36640
Dummy entry	ID_STYLES_ADD_SELECTOR_CLASS_RANGE_FIRST	19661
Dummy entry	ID_STYLES_ADD_SELECTOR_HTML_RANGE_FIRST	21031
Dummy entry	ID_STYLES_ADD_SELECTOR_ID_RANGE_FIRST	19681
	ID_STYLEVISION	36039
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Office 2003	ID_VIEW_APPLOOK_2003	37798
Visual Studio.NET 2005	ID_VIEW_APPLOOK_VS2005	37799
Windows XP	ID_VIEW_APPLOOK_WIN_XP	37800

Office XP	ID_VIEW_APPLOOK_XP	37801
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<User Toolbar>	ID_VIEW_USER_TOOLBAR10	37817
<User Toolbar>	ID_VIEW_USER_TOOLBAR2	37809
<User Toolbar>	ID_VIEW_USER_TOOLBAR3	37810
<User Toolbar>	ID_VIEW_USER_TOOLBAR4	37811
<User Toolbar>	ID_VIEW_USER_TOOLBAR5	37812
<User Toolbar>	ID_VIEW_USER_TOOLBAR6	37813
<User Toolbar>	ID_VIEW_USER_TOOLBAR7	37814
<User Toolbar>	ID_VIEW_USER_TOOLBAR8	37815
<User Toolbar>	ID_VIEW_USER_TOOLBAR9	37816

Accessing StyleVisionAPI

The focus of this documentation is the ActiveX controls and interfaces required to integrate the StyleVision 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 StyleVision automation interface (StyleVisionAPI):

```
StyleVisionControl.Application
StyleVisionControlDocument.Document
StyleVisionControlPlaceHolder.Project
```

Some restrictions apply to the usage of the StyleVision automation interface when integrating StyleVisionControl at document-level. See Integration at document level for details.

Object Reference

Objects:
StyleVisionCommand
StyleVisionCommands
StyleVisionControl
StyleVisionControlDocument
StyleVisionControlPlaceHolder

To give access to standard StyleVision functionality, objects of the **StyleVision automation interface** can be accessed as well. See StyleVisionControl.Application, StyleVisionControlDocument.Document and StyleVisionControlPlaceHolder.Project for more information.

StyleVisionCommand

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.

StyleVisionCommands

Properties:
Count
Item

Description:
Collection of Command objects to get access to command labels and IDs of the StyleVisionControl. 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.

StyleVisionControl

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 StyleVision library is used in the Application Level mode.

Properties

The following properties are defined:

IntegrationLevel
EnableUserPrompts
Appearance
BorderStyle

Command related properties:
CommandsList
MainMenu
Toolbars
CommandsStructure (deprecated)

Access to StyleVisionAPI:
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 StyleVision 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 StyleVisionControl.

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 `StyleVisionControl` object.

MainMenu

Property: `MainMenu` as `Command` (read-only)

Dispatch Id: *1003*

Description:
This property gives access to the description of the StyleVisionControl main menu.

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 StyleVisionControl.

Methods

The following methods are defined:

`Open`
`Exec`
`QueryStatus`

Exec

Method: `Exec` (`nCmdID` as long) as boolean

Dispatch Id: *6*

Description:
`Exec` calls the `StyleVision` 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 `StyleVisionControlDocument.Open` and `StyleVisionControlPlaceHolder.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 StyleVision command. If `QueryStatus` returns a value of `1` or `5`, the command is disabled.

Events

The StyleVisionControl 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 StyleVision 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 StyleVisionControl 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 not used in StyleVision

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 StyleVision 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 `StyleVisionControlDocument. OnDocumentOpened` instead.

OnFileChangedAlert

Event: `OnFileChangedAlert` (`i_strFilePath` as String) as bool

Dispatch Id: *1001*

Description:
This event is triggered when a file loaded with StyleVisionControl, is changed on the harddisk by another application. Clients should return true, if they handled the event, or false, if StyleVision 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 StyleVisionControl 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 StyleVision.

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 StyleVisionControl, 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 StyleVision commands using `StyleVisionControl.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.

StyleVisionControlDocument

Properties:
Appearance
BorderStyle
Document
IsModified
Path
ReadOnly

Methods:
Exec
New
Open
QueryStatus
Reload
Save
SaveAs

Events:
OnDocumentOpened
OnDocumentClosed
OnModifiedFlagChanged
OnContextChanged
OnFileChangedAlert
OnActivate

If the StyleVisionControl is integrated in the Document Level mode each document is displayed in an own object of type `StyleVisionControlDocument`. The `StyleVisionControlDocument` 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.

Properties

The following properties are defined:

ReadOnly
IsModified
Path
Appearance
BorderStyle

Access to StyleVisionAPI:
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 StyleVision 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 StyleVision 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 StyleVision 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: `OpenDocument` (`strFileName` as string) as boolean

Dispatch Id: *1004*

Description:
`SaveAs` sets `Path` to *strFileName* and then saves the document to this location.

Events

The StyleVisionControlDocument 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: None

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 StyleVision 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 StyleVision 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 StyleVision 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.

StyleVisionControlPlaceHolder

Properties available for all kinds of placeholder windows:
PlaceholderWindowID

Properties for project placeholder window:
Project

Methods for project placeholder window:
OpenProject
CloseProject

The StyleVisionControlPlaceHolder control is used to show the additional StyleVision windows like Overview, Library or Project window. It is used like any other ActiveX control and can be placed anywhere in the client application.

Properties

The following properties are defined:

PlaceholderWindowID

Access to StyleVisionAPI:
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

Dispatch Id: *1*

Description:
Using this property the object knows which StyleVision 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 enumeration. The control changes its state immediately and shows the new StyleVision window.

Project

Property: Project as Project (read-only)

Dispatch Id: *2*

Description:
The Project property gives access to the Project object of the StyleVision 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 StyleVisionXProjectWindow (=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 `StyleVisionXProjectWindow ( =3).`

Events

The StyleVisionControlPlaceholder 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 `StyleVisionXProjectWindow ( =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.

Enumerations

The following enumerations are defined:

ICActiveXIntegrationLevel
StyleVisionControlPlaceholderWindow

ICActiveXIntegrationLevel

Possible values for the IntegrationLevel property of the StyleVisionControl.

```
ICActiveXIntegrationOnApplicationLevel    = 0
ICActiveXIntegrationOnDocumentLevel       = 1
```

StyleVisionControlPlaceholderWindow

This enumeration contains the list of the supported additional StyleVision windows.

```
StyleVisionControlNoToolWnd                =  -1
StyleVisionControlProjectWnd               =   0
StyleVisionControlDesignOverviewWnd     =   1
StyleVisionControlSchemaSourcesWnd         =   2
StyleVisionControlDesignTreeWnd         =   3
StyleVisionControlStyleRepositoryWnd    =   4
StyleVisionControlContextPropertiesWnd  =   5
StyleVisionControlContextStylesWnd         =   6
StyleVisionControlMessageWnd               =   7
```

Chapter 21

Appendices

21 Appendices

These appendices contain (i) information about the XSLT Engines used in StyleVision; (ii) information about the conversion of DB datatypes to XML Schema datatypes; (iii) technical information about StyleVision; and (iv) licensing information for StyleVision. Each appendix contains the sub-sections listed below:

XSLT Engine Information
Provides implementation-specific information about the Altova XSLT Engines, which are used by StyleVision to generate output.

- Altova XSLT 1.0 Engine
- Altova XSLT 2.0 Engine
- XPath 2.0 and XQuery 1.0 Functions
- Extension Functions (Java, .NET, and MSXSL)

DatatypesDB2XSD
When DB fields are converted to XML nodes, the DB datatypes are converted to XML Schema datatypes. This appendix lists the mappings for the following source DBs.

- MS Access
- MS SQL Server
- MySQL
- Oracle
- ODBC
- ADO
- Sybase

Technical Data
Provides technical information about StyleVision.

- OS and memory requirements
- Altova XML Parser
- Altova XSLT and XQuery Engines
- Unicode support
- Internet usage

License Information
Contains information about the way StyleVision is distributed and about its licensing.

- Electronic software distribution
- License metering
- Copyright
- End User License Agreement

21.1 XSLT Engine Information

This section contains information about implementation-specific features of the Altova XSLT 1.0 Engine and Altova XSLT 2.0 Engine.

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</>. </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.
```

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.

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.

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: `base16tobinary` and `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: `binarytobase16` and `binarytobase64`.

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.

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.

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.

contd. /

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.

contd. /

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.

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. 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.

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.

Note: If you wish to add a namespace to an XSLT stylesheet being generated from an SPS created in StyleVision, the namespace must be added to the top-level `schema` element of the XML Schema on which the SPS is based. Note that the following namespace declaration `xmlns:java="java"` is created automatically by default in every SPS created in StyleVision.

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).

.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).

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.

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.

- **altova:evaluate()**
- **altova:distinct-nodes()**
- **altova:encode-for-rtf()**
- **altova:xbrl-labels()**
- **altova:xbrl-footnotes()**

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()*
```

21.2 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.

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

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

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.

My SQL 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

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.

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

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

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

21.3 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

OS and Memory Requirements

Operating System

This software application is a 32-bit Windows application that runs on Windows XP, Windows Server 2003 and 2008, 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.

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.

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.

Unicode Support

Unicode is the new 16-bit character-set standard defined by the Unicode Consortium that 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, JustSystem, 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.

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.

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.

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.

21.4 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

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- 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).

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For further details, please refer to the Altova Software License Agreement at the end of this section.

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* http://www.isi.edu/in-notes/iana/assignments/port-numbers *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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