

## Equifax Case Study



An Altova customer uses XMLSpy's schema design component and API to build an advanced SOAP interface for their identity verification and authentication Web service, eIDverifier®.

### Overview

Equifax® is a leading credit reporting entity and provider of analytical and decision support tools. Their real-time authentication system, eIDverifier, offers government and businesses personalized online security measures that help protect them against fraud and comply with federal legislation.

The eIDverifier process is used within e-commerce and other online applications to authenticate users' identities based on their answers to personalized questions drawn from Equifax's extensive data stores. The authentication process consists of five steps:

- 1. Integrity Check** – eIDverifier standardizes and screens applicant-provided information to test for data inconsistencies and irregularities.
- 2. Pattern Recognition** – A pattern recognition algorithm is conducted on each transaction. For example, a velocity parameter determines the number of times an applicant has applied for authentication in a specific time frame.
- 3. Identity Validation** – To confirm an identity's legitimacy, eIDverifier uses a “waterfall” approach in gathering validation information from multiple data sources. This means that if the identity cannot be validated with the first data source, eIDverifier will proceed to the next data source until the identity is validated.
- 4. Interactive Query** – eIDverifier presents multiple-choice questions to the applicant based upon “shared secret” information that should only be known to the applicant and Equifax. The question sets are customizable to meet individual risk thresholds.
- 5. Decision Logic / Output Assessment** – There are two output components to eIDverifier – an assessment score and reason codes. The assessment score indicates the likelihood of an applicant presenting fraudulent information, while reason codes provide important details on questionable information and highlight any discrepancies between the consumer's application information and Equifax data sources.

eIDverifier relies on the SOAP protocol to send messages defining these interactions back and forth between the client interface and the Equifax servers. Third party institutions license the eIDverifier SOAP interface for use within their online application processes, enabling

them to integrate its functionality and access information contained in Equifax's databases.

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### The Challenge

Equifax needed a sophisticated tool for designing the XML Schemas that would define the data types for their Web service, as well as a mechanism for creating the WSDL documents that would describe the interface as a whole.

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As a Java shop, Equifax needed a solution that would be compatible with their other development tools, and that would work seamlessly with the Eclipse IDE. Though there are plenty of Java tools available that have the capacity for XML

Schema development, XMLSpy presented the most attractive option for schema design because of its comprehensive graphical design and editing options.

The Equifax development team took a further step to simplify their Web services creation, using XML Beans and the Codehaus XFire/CXF Java SOAP framework to auto-generate WSDL from their XML Schemas.

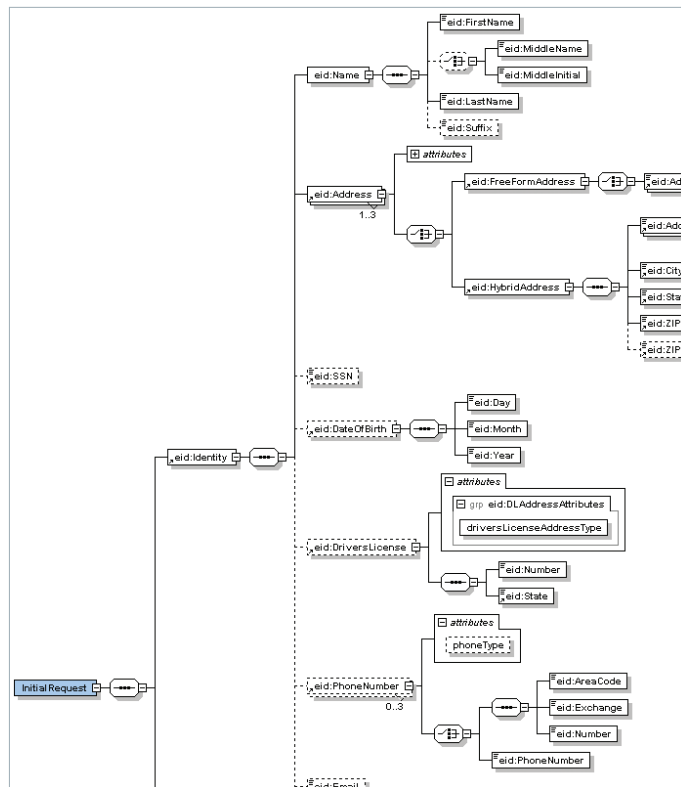
### The Solution

eIDverifier relies on a variety of different technologies to bring identity verification and authentication to its clients. XMLSpy provides the following benefits:

#### XML Schema

XML Schema is used to express the structure of the data, as well as the individual elements and attributes that it is comprised of. Because a large portion of the data relies on end-user input in the form of address, phone number, driver's license number, etc., it is vital that this information is in a format that can be digested by the system.

Using XMLSpy's graphical XML Schema editor, the Equifax development team was able to easily visualize and maintain the structure of their XML Schema. A portion of the schema that was created appears below:



This data type definition provides the syntax, and dictates the structure, for the data that is transmitted by the eIDverifier Web service.

XMLSpy's unique graphical XML Schema editor allowed the Equifax development team to create and maintain a complex schema definition without writing any code manually. They were also able to automatically generate human-readable documentation that can be used to present the architecture for review at any time in the development process, and that describes each element and attribute in detail.

**WSDL**

The processes executed by eIDverifier are described by a WSDL document that incorporates the XML Schema to provide information about data types, functions, and other interface details to the client – defining and dictating the actions taken by the client application to send and retrieve information between the end-user and the Equifax servers.

The Equifax team chose to autogenerate a WSDL document using the Codehaus XFire/CXF framework. The XML Schema was used as the basis

element Address			
diagram			
namespace	http://eid.equifax.com/soap/schema/v1		
properties	content complex		
children	eid:FreeFormAddress eid:HybridAddress		
used by	elements Identity UpdateRequest		
attributes	Name	Type	Use
	timeAtAddress	derived by: nonNegativeInteger	
	addressType	derived by: string	required
source	<pre> &lt;element name="Address"&gt;   &lt;complexType&gt;     &lt;choice&gt;       &lt;element ref="eid:FreeFormAddress"/&gt;       &lt;element ref="eid:HybridAddress"/&gt;     &lt;/choice&gt;     &lt;attribute name="timeAtAddress"&gt;       &lt;simpleType&gt;         &lt;restriction base="nonNegativeInteger"&gt;           &lt;minInclusive value="0"/&gt;           &lt;maxInclusive value="120"/&gt;         &lt;/restriction&gt;       &lt;/simpleType&gt;     &lt;/attribute&gt;     &lt;attributeGroup ref="eid:AddressAttributes"/&gt;   &lt;/complexType&gt; &lt;/element&gt; </pre>		
attribute Address/@timeAtAddress			
type	restriction of nonNegativeInteger		
properties	isRef 0		
facets	minInclusive 0		

The screenshot displays the graphical WSDL editor with three main panels:

- usPortType:** Lists service operations including startTransaction, interactiveQueryResponse, and avCorrection, each with their respective input and output messages and fault types.
- usHttpBinding:** Shows the SOAP binding for the service, detailing the startTransaction, interactiveQueryResponse, and avCorrection operations with their message flows.
- us:** Shows the service endpoint with the location: https://apply.eidverifier.net/eid-soap/us.

for an XMLBeans implementation, which was then compiled as a Java service class. Once the eIDverifier service was exposed, XFire automatically generated a WSDL – the WSDL is shown below in the XMLSpy graphical WSDL editor.

This WSDL serves as the basis for the eIDverifier application, defining the ports and messages that make up the communication infrastructure of the Web service.

**The Results**

The eIDverifier SOAP interface allows external applications to access Equifax's backend data stores, exposing it as a Web service and enabling them to retrieve secure information without jeopardizing the integrity of the Equifax mainframe. Utilizing WSDL and SOAP, and surrounded by Java architecture, eIDverifier is able to confirm user identity by returning a set of multiple choice questions based on the secure data maintained by Equifax.

**Verify your identity**

██████████

To protect you from ID theft, and to confirm your identity, please answer these questions. If the correct answer isn't here, just choose 'None of the above.' ([tell me more](#))

1. Your credit file indicates you may have an auto loan/lease, opened in or around May 2006. Who is the credit provider for this account?

- ACCION USA
- CHASE
- REPUBLIC BANK
- WINTRUST FINANCIAL
- NONE OF THE ABOVE

2. What is the total monthly payment for the above-referenced account?

- \$175 - \$224
- \$225 - \$274
- \$275 - \$324
- \$325 - \$374
- NONE OF THE ABOVE

3. Your credit file indicates you may have a student loan, opened in or around November 2002. Who is the credit provider for this account?

- LIBERTY FINANCE
- MITSUBISHI ACCEPT. CORP
- SALLIE MAE
- WFS FINANCIAL
- NONE OF THE ABOVE

4. What is the total monthly payment for the above-referenced account?

- \$50 - \$74
- \$75 - \$99
- \$100 - \$124
- \$125 - \$149
- NONE OF THE ABOVE

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XMLSpy enabled the Equifax team to quickly and easily create a graphical schema representation and the matching documentation to serve as the basis for the Web service. It also allowed the

development team to focus on their Java code, rather than the intricacies of XML Schema and WSDL design.

**Find out how XMLSpy can help you solve your XML and Web services application development challenges. Download a free 30-day trial today!**

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