

# Using Web Services for Business, Part II

■ This glossary explains many of the terms and ideas in my “Using Web Services for Business” article (part 2). Some are specific to Web services. Others have more general applicability. However, in this article, their use of the term as they apply to Web services is the main way in which they are described.

The descriptions also identify many links to further information on the Web. All the links were live at the time this document was written.

**ACORD:** An insurance industry association in the US that is developing XML standard documents for electronic data sharing. See [www.acord.org](http://www.acord.org).

**Address route:** Describes the set of Web addresses through which a Web Service message (i.e. a *SOAP Message*) is sent from when it is first created until it reaches its final destinations.

**Address routing:** See *address route*

**Agreements:** Describes how two, sometimes more, businesses have agreed to carry out business with each other electronically. They are typically created by comparing one business' use of profiles and policies with the other business' use and selecting and agreeing a subset of technology that both support. They are identified with an *agreement identifier*.

**Agreement identifier:** A unique identifier that identifies an *agreement*. Agreement Identifiers are often carried in the *SOAP Headers* of a *SOAP Message* so that the agreement that applies to the processing of a message can be determined by the recipient of the message

**Attachment:** Additional documents sent at the same and in the same message as a main business document. Attachments can be both XML and non-XML. To include an attachment, methods such as *MIME*, *DIME*, or *SOAP with Attachments* have to be used to combine all the parts together into one message.

**Authentication:** The process by which a recipient of a message, such as a *SOAP Message*, can determine the identity of the sender of the message with certainty. This often involves the

sender of a message digitally signing the message using a digital certificate and the recipient of the message checking the digital signature for accuracy when the message is received.

**Authorization:** Process of checking that a request implied by the receipt of a message, e.g., a *SOAP Message* is one that the sender of the message is allowed to make and therefore the request should be acted on by the service that receives it.

**B2Bi:** Business-to-Business Integration is the process of integrating the information systems of different businesses together. Often used in the context of integrating a buyers information systems with those of their suppliers. See *EAI*.

**Basic Profile:** The WS-I Basic Profile is one of the activities of WS-I. It is a specification that provides precise rules on how the basic Web Services specifications of SOAP 1.1, WSDL 1.1 and UDDI 2.0 should be used together in order to maximize interoperability.

**BPELWS:** Business Process Execution Language for Web Services is a specification developed by IBM, BEA, Microsoft, Siebel, and SAP. It is a definition language for business processes and is being developed in the Web Services Business Process Execution Language Technical Committee in OASIS. See [www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wsbpel](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsbpel).

**BPML:** Business Process Modeling Language (BPML) provides a model for expressing executable processes that address all aspects of enterprise business processes. See [www.bpmi.org](http://www.bpmi.org)

**BPSS:** The Business Process Specification Schema defines how two or more businesses exchange information in order to integrate their systems together (see *B2Bi*). The BPSS specification can be used to define a *choreography*.

**Business document:** A name for the documents such as orders, invoices, shipment notices, or any other document that is exchanged between businesses in order to carry out business

**Business process:** The sequence and conditions in which the processes within a business are executed to meet some useful purpose, for example generating a purchase order. Most business processes involve the execution of several sub-processes involving multiple systems both within and, often, outside the business. A business process can be used to define the sequence of actions used to implement a service. Business processes can be defined using business process execution languages such as *BPELWS*, *XLANG*, *WSFL*, and *BPML*.

**Business process definition:** A description of a specific business process often expressed in a business process language such as *BPELWS*.

**Business process language:** A definition language used to define a business process. Examples of business process languages include *BPELWS*, *XLANG*, and *WSFL*.

**Business Process Specification Schema:** See *BPSS*.

**Business transaction:** A business transaction is an instance of two or more businesses carrying out business. For example a buyer placing an order with a seller.

**Business transaction protocol:** A protocol that allows the synchronization of data between remote servers using an XML based protocol using the ideas of two-phase commit. BTP is a Technical Committee within OASIS ([www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=business-transaction](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=business-transaction)).

**Callback address:** See *return address*

**Choreography:** Specifies the sequence and conditions in which messages are exchanged between two or more cooperating services to execute some useful purpose, for example between two businesses to place an order. Choreographies are defined using a *choreography definition language*.

**Choreography definition language:** A definition language that can be used to define a *choreography*. Typically it is defined using XML.

**Conversation:** A set of related messages. For example the set of messages used by a buyer to place an order, the seller to provide a response, and the buyer to make multiple changes through sending change orders. Conversation instances are identified with a Conversation Identifier

**Conversation identifier:** A unique identifier for an instance of a *choreography*. For example, the exchange of *messages* required to complete the placement of an order could have a choreog-

raphy identifier associated with them. Choreography identifiers are transported in *SOAP Headers* of a *SOAP Message* so that the *conversation* being executed can be identified.

**Definition language:** A language, often defined using XML, that can be used to describe the precise characteristics and structure of objects that are of interest to Web services. For example, definition languages can be created to describe such things as Web services, *business documents*, *business processes*, *choreographies*, *messages*, and more.

**De Jure standard:** One that has been sanctioned and approved by a formal standards-setting authority. Strictly speaking, for computer standards this must be one of ANSI (American National Standards Institute), ITU (International Telecommunication Union), IEEE (Institute of Electrical and Electronic Engineers), ISO (International Standards Organization), or VESA (Video Electronics Standards Association). In practice, for Web services, OASIS and the W3C are the main standards setting authorities.

**Delivery receipt:** A message, usually a *SOAP Message*, that is returned by a recipient of an earlier message to indicate to the sender of the earlier message that the message was received.

**Digital signature:** A way of signing an electronic document in a similar way to a pen used by a person to sign a paper document. This means that a digital signature can be used to determine the authenticity of a business document or message. Digital signatures can also be used to ensure that any alterations to a business document can always be detected. See also *XML Signature*. Digital signatures are created and checked using a *digital certificate*.

**Digital certificate:** A set of codes used to create and verify a digital signature and/or encrypt a message or XML document. Digital certificates can be thought of as “keys” that can be used to lock or unlock a document. See also *key management*.

**DIME:** Direct Internet Message Encapsulation was a specification for combining multiple documents into a single *SOAP Message*. It was originally developed by IBM and Microsoft and was submitted to the IETF as an Internet Draft. The DIME specification however has not been progressed and the Internet Draft published at the IETF has been allowed to lapse (see [www.ietf.org/internet-drafts/draft-nielsen-dime-03.txt](http://www.ietf.org/internet-drafts/draft-nielsen-dime-03.txt)). The original specification is available at <http://msdn.microsoft.com/library/en-us/dnglobspec/html/draft-nielsen-dime-02.txt>. See also *SOAP with Attachments*.

**Direct Internet Message Encapsulation:** See *DIME*.

**Document:** In a Web services context, a document is the data that is placed in the content or payload of a *SOAP Message*. A document can be placed either in the *SOAP Body* or in an attachment. Documents are often *business documents*.

**Document definitions:** A definition of a document in a definition language. Document definitions are usually written using XML or XML Schema.

**EAI:** Enterprise Application Integration is a set of technologies used to integrate the systems and solutions within a business. Web Services technologies are often used for the exchange of messages between the systems involved. See also *B2Bi*.

**ebXML:** A joint, 18-month initiative between OASIS and UN/CEFACT that started in November 1999. Its objective was to enable eCommerce globally through the development of a set of standards. When it finished, ongoing development of the technical ebXML specifications moved to OASIS and the business-focused specifications moved to UN/CEFACT. See [www.ebxml.org](http://www.ebxml.org).

**ebXML Messaging:** One of the standards within ebXML. Its purpose is to provide a set of standards to support the secure reliable delivery of SOAP messages. See [www.oasis-open.org/com-mittees/tc\\_home.php?wg\\_abbrev=ebxml-msg](http://www.oasis-open.org/com-mittees/tc_home.php?wg_abbrev=ebxml-msg).

**Electronic Business XML:** See *ebXML*.

**Encryption:** A method by which data can be scrambled so that it cannot be understood by anyone unless they have the key to unscramble it. XML or other data can be encrypted using the XML Encryption standard.

**Intellectual property:** Intellectual property is associated with unique and novel ideas over which a business claims rights. Patents and copyrights are used to establish those rights. Once a business has established those rights, they can then require other businesses to get a license from them before using those ideas. Granting of a license can often involve the payment of fees. Patents and copyright have been established around many of the software ideas associated with Web services.

**IP:** See *intellectual property*.

**ISO:** The International Organization for Standardization) is one of the *De Jure standards*-setting organizations. See [www.iso.ch](http://www.iso.ch).

**Key management:** Key management is the management of the processes required for creating, updating, distributing, and deprecating the keys or digital certificates required to generate digital signatures or to encrypt documents. The

XML Key Management Working Group in the W3C is addressing the distribution part of key management with the XKMS specification. See [www.w3.org/2001/XKMS](http://www.w3.org/2001/XKMS).

**Liberty Alliance:** A standards group that is developing a set of specifications for federated identity services. It allows users to link identity information between accounts without centrally storing personal information. See [www.projectliberty.org](http://www.projectliberty.org).

**Logical address:** An identifier or address for a Web service that identifies who is running the service and what it does rather than where it is located on the Web. For example, urn:www-dnb-com/dunsno/1234567890 12345/salesorder could identify the sales order service operated by the company with the DUNS no 123456789012345. Logical addresses usually need to be mapped to a *physical address* before a *SOAP Message* can be sent. Logical addresses usually remain the same even when the *physical address* has changed.

**Message:** Consists of an envelope and its contents. For Web services it is a *SOAP Envelope* with a *business document* contained in the *SOAP Body*. Messages are created by one service and sent to another service that processes them. A message can also contain additional documents as an attachment.

**Message correlation:** The idea of relating one message that is sent with its reply. Typically, the first message contains a *message identifier* in a *SOAP Header* that is then included in the *SOAP Header* of any reply

**Message encryption:** The process of scrambling a message so that its contents are not decipherable by anyone who does not have access to the digital certificate required to unscramble the message. See also *encryption*.

**Message envelope:** A way of electronically grouping together the different message parts within a message. For Web services, a message envelope is always a *SOAP Envelope*.

**Message expiry:** Message expiry is information typically stored in the *SOAP Header* of a message that indicates to the recipient of the message the time after which the message should no longer be processed

**Message identifier:** A unique identifier for a message that allows the message to be referenced and retrieved. They are often globally unique identifiers (GUIDs), which means that no two identifiers are ever the same. Message identifiers are stored in the *SOAP Header* of a message. See also *message correlation*.

**Message part:** Contains a discrete separate part of a message. Message parts can be located in

the *SOAP Body* or in an attachment.

**Message privacy:** The idea of protecting the contents of a message from view by people or software that are not authorized to see it. Encryption techniques are usually used to do this. See also *message encryption* and *SSL*.

**Message routing:** The process of specifying the servers through which a message passes when it is sent from the original creator of the message to its final destination.

**Message security:** Involves one or more of making sure that a message has not been tampered with through the use of a *digital signature*, is kept private using *message privacy*, is authentic and authorized. See also *message encryption*.

**Message sequencing:** The idea of making sure that messages are processed in the same sequence at the destination as the sequence in which they were sent even if some of the messages were delayed so that some messages arrive after messages that were sent later

**OAGI:** The Open Applications Group is a nonprofit consortium focusing on best practices and processes based on XML content for *B2Bi* and *EAI*. See [www.openapplications.org](http://www.openapplications.org).

**OASIS:** Organization for the Advancement of Structured Information Standards. A not-for-profit, global consortium that drives the development, convergence, and adoption of e-business standards. Together with the *W3C*, it is the home for the development of many of the standards used by Web services. See [www.oasis-open.org](http://www.oasis-open.org).

**Physical address:** The location of a service on the Web. It is typically defined as a URL. See also *logical address*.

**PIDX:** The Petroleum Industry Data Exchange is a committee of the American Petroleum Institute. Its objective is to "achieve petroleum industry and enterprise-wide integration of business processes through seamless electronic business communication." It has developed several XML *business document* standards.

**Port:** A location or interface on the Web to which *SOAP messages* can be sent. See also *WSDL*.

**Privacy:** The process of making sure that only those that are allowed can see a message or its contents. The techniques used involve *encryption*. See also *XML Encryption* and *SSL*.

**RDF:** The Resource Description Framework is a *W3C* specification that defines how to keep additional metadata about resources on the Web in an XML format. See [www.w3.org/TR/REC-rdf-syntax](http://www.w3.org/TR/REC-rdf-syntax).

**Reliable messaging:** A protocol that allows

a message to be delivered to its destination with a high probability that the message will be delivered. Reliable messaging works by requesting that an acknowledgement message be sent in return to a message that was sent. If no acknowledgement is received after a period of time, the original message is resent until the acknowledgement arrives or the original sender gives up.

**Resource Description Framework:** See *RDF*

**Return address:** Information stored in a *SOAP Header* that indicates to the recipient of the message where a reply to the message should be sent. It is also sometimes known as a callback address.

**Role:** Involved in business processes; describe the types of behavior that a business can take in that process. Examples of roles include buyer, seller, payer, financial institution, etc.

**RosettaNet:** An organization that focuses on defining messaging, business document and choreography standards for the High tech Industry. See [www.rosettanet.org](http://www.rosettanet.org).

**Secure Sockets Layer:** See *SSL*.

**Semantics:** The explanation of the meaning of things; for example, the explanation of the meaning of a shipping date on an order. Semantics are key to realizing interoperability since, unless meanings are shared, data in, for example, a business document will be misunderstood and therefore processed incorrectly.

**Semantic definition:** Documents that describe semantics.

**Semantic Web:** A *W3C* initiative to "better enable computers and people to work in co-operation" by specifying how to keep additional data about information and resources on the Web to make it more easily understandable by machines. As a result, better and more accurate searching and retrieval of information and resources on the Web should occur. *RDF* is used to define the additional data. See [www.w3.org/2001/sw](http://www.w3.org/2001/sw).

**Service:** A process operated by a business that accepts requests and generates an appropriate response. For example, a quotation service could accept a request for a quotation and respond with a quote. A Web service is a service that accepts requests and generates responses using Web Service standards such as *SOAP*.

**SMTOM:** See *SOAP Message Transmission Optimization Mechanism*

**SMTP:** Simple Mail Transport Protocol is a widely used protocol for sending e-mail messages. All e-mail systems that use the Internet use *SMTP* for sending messages between one e-mail server and another. *SMTP* is built on top of

*TCP/IP*. See [www.ietf.org/rfc/rfc1123.txt](http://www.ietf.org/rfc/rfc1123.txt).

**SOAP:** The Simple Object Access Protocol describes how two servers can interact with each other by exchanging information in *SOAP messages*. A *SOAP Message* consists of *SOAP Envelope* with a *SOAP Header* and a *SOAP Body*. The original version of *SOAP* was version 1.1, and was replaced by version 1.2.

**SOAP 1.1:** The original version of *SOAP*. See [www.w3.org/TR/soap](http://www.w3.org/TR/soap).

**SOAP 1.2:** Replacement for *SOAP 1.1*. *SOAP 1.2* is being developed in the *W3C*; see [www.w3.org/TR/soap12-part1](http://www.w3.org/TR/soap12-part1).

**SOAP Body:** The second part of the *SOAP Envelope*. It contains the payload of the message typically in the form of a business document.

**SOAP Envelope:** The outermost part of a *SOAP Message*. It contains a *SOAP Header* and a *SOAP Body*.

**SOAP Header:** The first part of the *SOAP envelope*, it contains additional information about the message such as *address routing*, *conversation identifiers*, *digital signatures*, *message correlation*, *message expiry*, and *message identifiers*.

**SOAP Message:** A *SOAP Envelope* wrapped in a transport protocol such as *HTTP* or *SMTP*.

**SOAP Message Transmission Optimization Mechanism:** *SMTOM* provides "a concrete implementation of it for optimizing the transmission and/or wire format of *SOAP messages*." This provides a mechanism for transporting multiple different parts of a message while still allowing the message to appear as *XML* to the application that is processing it. It is based on the ideas of *PASWA*. See [www.w3.org/TR/soap12-otom](http://www.w3.org/TR/soap12-otom).

**SOAP with Attachments:** A specification that describes how to carry a *SOAP Envelope* with attachments using *MIME*. See [www.w3.org/TR/soap-attachments](http://www.w3.org/TR/soap-attachments).

**Software stubs:** Automatically generated software, often generated from *WSDL*, that allows ordinary APIs to be used to process *SOAP Messages* without the programmer needing to understand the detail of how *SOAP* works.

**SSL:** Secure Sockets Layer is a protocol for sending or transmitting private messages via the Internet. It works by encrypting any data that is sent over a connection. By convention, URLs that start with *https*: instead of *http*: are using *SSL*. See also *XML Encryption*.

**Standard Representation:** A generally agreed and accepted way of defining how some-

thing appears. For example there can be a standard way of describing the structure of an XML order *business document*.

**Standard semantics:** Generally agreed and accepted way of defining what something means. For example, USD is generally accepted as identifying the US Dollar. Standard semantics can apply to business documents, as well as messages and choreographies.

**Transport security:** A method of encrypting a message as it is sent between servers. See *SSL*.

**Two-phase commit:** A process by which two processes running at separate locations can synchronize what they do so that, at both ends, everything works or nothing works. It is based on the idea of two-phase commit used with distributed databases to make sure that multiple copies of a database are always identical

**UBL:** The Universal Business Language initiative is a technical committee within OASIS that is developing standard representations for business documents used in B2Bi. See [www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=ubl](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ubl)

**Universal Business Language:** See *UBL*

**UDDI:** Universal Description, Discovery and Implementation is a standard for storing, searching, and managing information in registries. It is a technical committee within OASIS. See [www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=uddi-spec](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=uddi-spec).

**UDDI 2.0:** Version of UDDI used to create the Basic Profile within WS-I.

**Universal Discovery Description and Integration:** See *UDDI*

**UN/CEFACT:** The United Nations Center for Trade Facilitation and Electronic Business is the department of the United Nations historically responsible for defining and maintaining the international version of EDI. More recently it has sponsored several standards activities related to the definition of business documents and business processes including *ebXML*. See [www.unece.org/cefact](http://www.unece.org/cefact).

**W3C:** The World Wide Web Consortium is the original standards-setting authority that developed many of the original standards for the Web, such as HTML and HTTP. With OASIS, it is the home for the development of many of the standards used by Web Services. See [www.w3.org](http://www.w3.org).

**Web Services Interoperability Organization:** See *WS-I*

**Web services middleware:** Software that supports Web Services standards, protocols and principles providing a convenient set of APIs that an

application programmer can use to develop Web services.

**Web Services Transaction Management:**

The WS-TXM specification developed by Arjuna, Fujitsu, IONA, Oracle, and Sun provides a mechanism for handling the problems that can occur when multiple different business transactions need to cooperate and one of them fails causing the other business transactions to take some compensatory action. See [www.arjuna.com/library/specs/ws\\_caf\\_1-0/WS-TXM.pdf](http://www.arjuna.com/library/specs/ws_caf_1-0/WS-TXM.pdf).

**World Wide Web Consortium:** See *W3C*.

**WS Acknowledgement:** A specification published by BEA that "allows a sender of a message to request that an acknowledgement is sent in a response." See [http://dev2dev.bea.com/technologies/Webservices/WS-Acknowledgement-0\\_9.jsp](http://dev2dev.bea.com/technologies/Webservices/WS-Acknowledgement-0_9.jsp)

**WS Addressing:** A specification published by IBM, BEA, and Microsoft that "provides transport-neutral mechanisms to address Web services and messages." See <http://msdn.microsoft.com/Webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-addressing.asp>.

**WS Authorization:** A specification that IBM and Microsoft plan to develop that will "describe how to manage authorization data and authorization policies."

**WS Callback:** Specification published by BEA in February 2003 that is "used to dynamically specify where to send asynchronous responses to a SOAP request." See [http://dev2dev.bea.com/technologies/webservices/WS-Callback-0\\_9.jsp](http://dev2dev.bea.com/technologies/webservices/WS-Callback-0_9.jsp).

**WS Context:** Specification published by Sun, Oracle, Iona, Arjuna, and Fujitsu that provides a mechanism for sharing context information between a set of Web services that are taking part in some common process. See [www.rjuna.com/library/specs/ws\\_caf\\_1-0/WS-CTX.pdf](http://www.rjuna.com/library/specs/ws_caf_1-0/WS-CTX.pdf).

**WS Coordination:** Specification developed by IBM, Microsoft, and BEA. It "describes an extensible framework for providing protocols that coordinate the actions of distributed applications." See [www-106.ibm.com/developerworks/library/ws-coor](http://www-106.ibm.com/developerworks/library/ws-coor).

**WSFL:** A business process language developed by IBM. See [www-3.ibm.com/software/solutions/Webservices/pdf/WSFL.pdf](http://www-3.ibm.com/software/solutions/Webservices/pdf/WSFL.pdf)

**WS-I:** The Web Services Interoperability Organization is an "open, industry organization chartered to promote Web services interoperability across platforms, operating systems, and programming languages." See [www.ws-i.org](http://www.ws-i.org).

**WS MessageData:** Specification published by BEA. It provides metadata definitions for *message identity*. See [http://dev2dev.bea.com/technologies/Webservices/WS-MessageData-0\\_9.jsp](http://dev2dev.bea.com/technologies/Webservices/WS-MessageData-0_9.jsp).

**WS Policy:** A specification developed by IBM, Microsoft, BEA, and SAP that provides "a general-purpose model and corresponding syntax to describe and communicate the policies of a Web service." See <http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-policy.asp>.

**WS Policy Assertions:** A language specification published by IBM, Microsoft, and SAP. It "defines general messaging-related assertions for use with WS-Policy." See <http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-policyassertions.asp>.

**WS Policy Attachments:** A specification published by IBM, Microsoft, BEA, and SAP. It "specifies three specific attachment mechanisms for using policy expressions with existing XML Web service technologies." See [www-106.ibm.com/developerworks/library/ws-polatt](http://www-106.ibm.com/developerworks/library/ws-polatt).

**WS Reliability:** A specification published by Sonic, Sun, NEC, Fujitsu, Oracle, and Hitachi that defines a protocol "for exchanging SOAP messages with guaranteed delivery, no duplicates, and guaranteed message ordering." See <http://sunonedev.sun.com/platform/technologies/ws-reliability.v1.0.pdf>.

**WS Reliable Messaging:** A specification published by BEA, Microsoft, Tibco, and IBM. It "describes a protocol that allows messages to be delivered reliably between distributed applications in the presence of software component, system, or network failures." See <http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-reliablemessaging.asp>.

**WS Routing:** WS Routing is a specification published by Microsoft that "defines mechanisms for routing SOAP messages." See [www.getdotnet.com/team/xml\\_wsspecs/xlang-c/default.htm](http://www.getdotnet.com/team/xml_wsspecs/xlang-c/default.htm).

**XML Common Business Library:** See *xCBL*

**XML Encryption:** An activity within the W3C that has developed a specification for "a process for encrypting data and representing the result in XML." See [www.w3.org/TR/xmlenc-core](http://www.w3.org/TR/xmlenc-core).

**XML Schema:** XML Schema is the definition language developed in the W3C that is universally used to define the structure of XML documents. See [www.w3.org/XML/Schema](http://www.w3.org/XML/Schema).

**XML Signature:** The activity within the W3C that specified a way of digitally signing a document using XML. See [www.w3.org/Signature](http://www.w3.org/Signature). ©