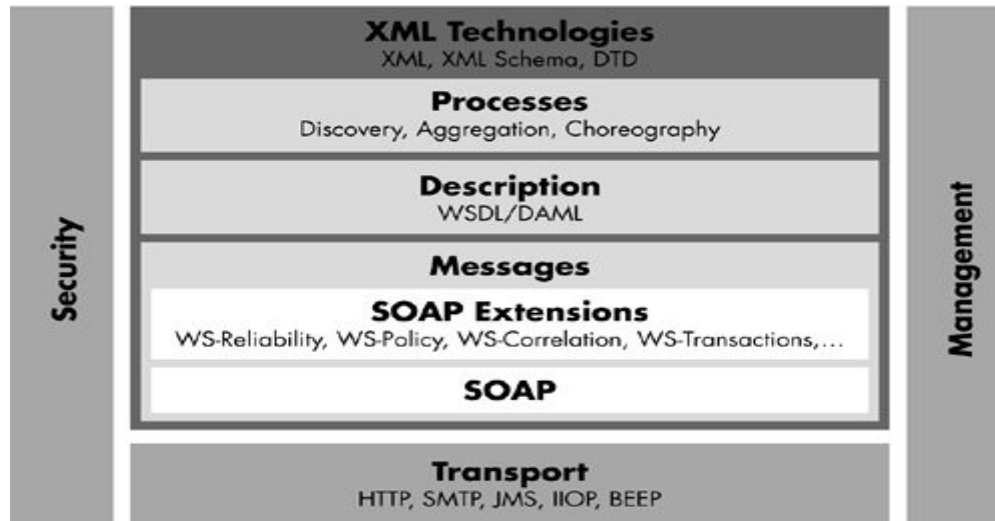


# WEB SERVICE ARCHITECTURE

A Web service is a software system identified by a URI, whose public interfaces are defined and described using XML. The other software systems can interact with these systems using XML messages. This definition closely matches the W3C Web service architecture group's definition. Figure 3.4 explains this architectural definition.

**Figure 3.4. The Web service architecture.**



The core information projected by Figure includes:

- The Web service architecture is built around the XML technologies.
- The Web service is independent of the underlying transport mechanism.
- The messages exchanged between a customer and services forms the base layer of this architecture.
- These messages may be packaged and exchanged using envelopes including SOAP and its extension models.
- The SOAP extension models provide a number of SOAP header messages for message correlation, transactional capabilities, message reliability, and service addressing.
- There is a high-level description on the messages to exchange and the interaction pattern. This description can be given through any description language of choice. The most notable among these description languages are the Web Service Description Language, or simply WSDL.

- We can build a number of technologies around this architectural model. These technologies can be high-end applications, infrastructure software, and middleware solutions.
- Other notable features are the vertical pillars for security and management, which are needed for all the horizontal architecture components .

Now we will go through the details of these layers . We will start our discussion on the core technology builder, XML.

### **3.3 XML, Related Technologies, and Their Relevance to Web Services**

We have seen earlier that the Web service agents (requesters and providers) exchange information in the form of messages. These messages are defined in terms of XML Infoset. <sup>[2]</sup> The importance of XML lies on the concepts of a standard-based, flexible, and extendable data format. The Web service messages are defined using XML Infoset, XML Schema, and XML Namespace standards. Understand that these base concepts of XML messages is important to adhere to in order to develop interoperablesolutions.

The XML Infoset defines a set of information items and their properties, which describes an XML document. These definitions help the standards and tools to validate the XML documents created. For example, the WSDL standard must conform to the XML Infoset definition of an XML document. This is also valid for the messages exchanged between agents. A well- formed XML message enables interoperation and easier integration. One important concern that may arise is the serialization format of the XML documents for transport and binding. There are many serialization formats available for XML including simple XML text streams to binary XML streams. Note that the wire format of the message is transport and binding dependent.

The other notable XML construct is the message schema or message format definition. These schemas can be defined using the XML schema <sup>[3]</sup> standard, but may not be sufficient for more complex types and assertions. As of today, most of the XML systems tend to use XML schema as the standard for type definition. In the coming years we will witness more evolution in this area with the maturity and intermingling of XML schema with other standards such as RDF, <sup>[4]</sup> RELAX-NG. <sup>[5]</sup>

We can observe in many implementation situations that the complexities of the XML messages are growing with numerous applications and standards. A proper partitioning of XML documents is needed for the correct description and exchange of the messages. The XML community addresses this document versioning and partitioning problem with XML namespace <sup>[6]</sup> definitions. As we have seen in the previous illustration, these XML technologies form the basis for all Web services-related standards and messages. This list can be extended to other XML family suites of protocols such as XML Base, <sup>[7]</sup> XPath, <sup>[8]</sup> and XPointer. <sup>[9]</sup>

Source : <http://elearningatria.files.wordpress.com/2013/10/ise-viii-grid-computing-06is845-notes.pdf>