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Subject :- Web Service

CASE STUDY : - SOAP, UDDI AND SEMANTIC WEB

Introduction :-

The growth of the World Wide Web has created a virtual forum that allows rapid exchange of information between parties. However, there is no common manner for transferring application-specific data. The key protocols of the current web infrastructure are HTTP and HTML. HTTP concerns itself with how data should be transported between a server and client. HTML defines the predominate data format that is used to render text on the current infrastructure. The cloud of technology that should enable this level of peer-to-peer interaction is called Web Services. We will examine SOAP, a new initiative that defines a much stricter data format that allows integrity and allows for proper syntactic validation of the message. We will also introduce UDDI, which is a service for discovering available web services using a public directory. Finally, we will look at the Semantic Web. In addition to defining the syntax of these interactions using Web Services technologies, the Semantic Web may also be helpful to define the semantic meanings of these interactions.

SOAP :-

Simple Object Access Protocol (SOAP) Version 1.2 is defined by the W3C as "a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment" SOAP is meant to promote shared understanding of data in a way that machines can easily and correctly parse them. To achieve this goal of extensibility, SOAP uses XML as the principal data format. SOAP consists of several components and actors that work together. A SOAP envelope consists of the data to be transmitted. Each actor is represented by a server node that has a role in processing the message that defines its behavior and responsibilities. In addition, SOAP also has an error structure that allows for graceful handling of faults. Each of these will be further discussed in detail in the following sections.

Advantages of Soap

WS Security: SOAP defines its own security known as WS Security.

Language and Platform independent: SOAP web services can be written in any programming language and executed in any platform.

Disadvantages of Soap

Slow: SOAP uses XML format that must be parsed to be read. It defines many standards that must be followed while developing the SOAP applications. So it is slow and consumes more bandwidth and resource.

WSDL dependent: SOAP uses WSDL and doesn't have any other mechanism to discover the service

SOAP Fault :-

A SOAP fault is generated when an error occurs during the processing of the SOAP message. A fault may be generated by a SOAP intermediary or by a SOAP recipient. A SOAP faults is separate from binding-related errors. A binding error is reported using the error mechanisms of the underlying transport protocol. When a SOAP fault occurs, no additional data may be returned. Therefore, it is not possible to return partial data and a SOAP fault in the same message. A SOAP fault must contain a code element which describes the type of error that occurred. Furthermore, it must also contain a reason element that should provide further explanation as to why the fault was generated. Optionally, the SOAP fault may indicate the node and role where the fault originated.

Problems with SOAP

In theory, SOAP creates a very fine line about what it can and can not do. However, in application, the predominate use of SOAP has corrupted the integrity of its architecture. Most of these problems can be traced to architectural mismatches with the predominate protocol binding - HTTP.

- Layering of resources and representations
- Idempotent operations

UDDI

The Universal Description Discovery and Integration (UDDI) system defined as “a set of services supporting the description and discovery of businesses, organizations, and other Web services providers, the Web services they make available, and the technical interfaces which may be used to access those services.” The Universal Description Discovery and Integration (UDDI) system is built as a mechanism on top of SOAP . Its primary goal is to allow multi-organizational collaboration stored within an UDDI registry

What is UDDI Based On?

- ➢ UDDI uses World Wide Web Consortium (W3C) and Internet Engineering Task Force (IETF) Internet standards such as XML, HTTP, and DNS protocols.

- ➢ UDDI uses WSDL to describe interfaces to web services

- ➢ Additionally, cross platform programming features are addressed by adopting SOAP, known as XML Protocol messaging specifications found at the W3C Web site.

Challenges to UDDI

There are several challenges and issues with UDDI that may affect its acceptance and chances for long-term survival. The first is that UDDI has a non-uniform security model. The second is that UDDI may be limited by its ability to only have single ownership of an entity. Finally, the subscription model may place an undue burden upon the clients of the UDDI system.

- Non-uniform security model
- Duration and history of subscriptions
- Single ownership

Semantic Web

In addition to the umbrella of Web Services, there is also work on creating a Semantic Web. The W3C working group defines the Semantic web as way to "bring to the Web the idea of having data defined and linked in a way that it can be used for more effective discovery, automation, integration, and reuse across various applications Similarly to Web Services, the Semantic Web is looking to enhance the interaction of sites. If Web Services could be viewed as the syntactic agreement of how web sites can interact, then the Semantic Web is an agreement on what is being transferred. Therefore, in addition to agreeing on a common format of how data should be transferred, there is also a contract as to the meaning of the transferred data

Challenges of the Semantic Web

There are two major classifications that challenge the viability of a Semantic Web. The first one is that it is not a small technical feat to create such ontologies. However, the more serious challenge arises from a social perspective. Therefore, it may be possible to address the technical challenges, but it may not be possible to address the social challenges inherent in creating a Semantic Web.

- Ambiguity in Natural Languages
- Multiple Ontologies
- Intentional Non-Participation
- Unintentional Non-Participation

CONCLUSION :-

Two web services that implement the same functionality may still have different interfaces. SOAP merely allows for the separation between display of content from the content itself. Current technologies like HTML do not create this level of separation. Therefore, just removing the element of display from content is a significant win. However, SOAP by itself does not allow for inherent migration from content providers. UDDI is a necessary technology that is required to make the adoption of Web Services widespread. Without a good naming system, Web Services would become unmanageable. Yet, UDDI suffers from scalability issues that would essentially cripple it if it gained widespread acceptance that it seeks. Issues of security, replication, and subscription would overwhelm a widespread UDDI infrastructure. The Semantic Web tries to make semantic mismatch a slightly easier problem to handle. Yet, there is still no consensus on how to define true semantic meaning. For example, there is no RDF format that everyone agrees can fully describe a document. Each individual can come up with their own RDF schema.