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Semantic Web Services

Concepts, Technologies and Applications



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which allows applications to reason about domain knowledge.

Orchestration – Web Services Orchestration concerns the realisation of composite Web Services by means of other Web Services. The orchestration of a Web Service determines the set of operations and interactions that must be followed in order to realise its overall functionality.

Semantic Annotation – Semantic annotation is meta data that captures the meaning of resources by means of a machine-interpretable description. Such descriptions are expressed in terms of an ontological vocabulary provided by an ontology for some domain of interest. In the context of Semantic Web Services, semantic annotation describes the functionality offered through a Web Service.

Semantic Web – The vision of the Semantic Web is to semantically annotate content in the World Wide Web by machine-interpretable meta data, such that computer programs are enabled to reason about the meaning of this content. Ontologies play a key role in this vision, in that they provide the domain vocabulary in terms of which semantic annotation is formulated. This semantic enhancement supports various areas of web-based applications such as document search, web portals, information integration or service-oriented systems.

Semantic Web Services – The Semantic Web Services' vision is to semantically annotate Web Services with machine-interpretable meta data, such that computer programs are enabled to reason about their functionality. In this way, various kinds of services, such as book selling, shipment of goods or provision

of stock market information, can be advertised and discovered on the Internet in an automated way, and their functionalities can be combined in composite services at run-time in order to achieve higher-level goals. Semantic Web Services particularly aim at realising smooth information integration through flexible architectures within and across organisation boundaries.

Service – A service is an activity of value that a *provider* party offers to a *requester* party. In the context of Semantic Web Services, a service, such as book selling, is realised through a (set of) Web Service(s), such as Amazon's Web Service interface, which provide(s) technical means to access a service via the Internet.

Service-Oriented Architecture (SOA) – The term Service-Oriented Architecture expresses a software architectural concept that defines the use of services to support the requirements of software users. In a SOA environment, nodes on a network make resources available to other participants in the network as independent services that the participants access in a standardised way. One can implement SOA using any service-based technology.

Web Service – A Web Service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web Service in a manner prescribed by its description using SOAP messages, typically conveyed using the HTTP protocol with an XML serialisation in conjunction with other web-related standards.