



CAROLINA TECHNOLOGY CONSULTANTS

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Tech Brief

Architectural Issues in IT and Data Communications

Topic

Web Services Description Language (WSDL)

Prepared By

Tyler R. Johnson

Summary

Web Services Description Language (WSDL) is a computer language used to represent web-based functionalities in XML. Using interfaces described by WSDL, disparate web based applications can interact with one another to provide services. For example, a portal application may access many different subordinate applications, each with their own WSDL representation.

Discussion

WSDL documents are XML documents and inherit many characteristics from XML such as tagging syntax, the use of IRIs for location reference and the ability to include internal (in-line) or external text.

Like XML, WSDL is extensible. However some parts of WSDL, specifically mandatory extensions, render such documents out of conformance for that specific extension.

WSDL divides the description of web services into an abstract part

WSDL

- * Describes a web service, including
 - function
 - semantics
 - description
 - where it can be found on the network
 - error conditions
- * Useful for interconnecting disparate web applications for re-use.

and a concrete part in order to model the service functionality and specific network access methods independently.

Description components contain the top level components such as {interfaces}, {bindings}, {services}, {element declarations} and {type definitions}. These top level components may contain nested components such as {interface operations} or {endpoints}.

WSDL also includes a fault vocabulary to gracefully handle instances where normal error codes do not accurately describe unexpected behaviors.

Strategy Considerations

Because web service functionalities are described in a structured and machine-readable way in WSDL, it is possible for a remote site to query a service for its capabilities and remotely invoke that capability, often using SOAP.



Because WSDL describes fine details about how to interact with a web service, a WSDL document is also a major point of security vulnerability, potentially opening up global access to interfaces. Implementers are cautioned to exercise robust secure programming techniques on public interfaces exposed in this way. Further, it is advisable to limit the publishing of WSDL documents to those actors that legitimately require them.

While WSDL supports human and machine readable service descriptions, it is not rich enough to allow for flexible automatic interpretation of services into meaningful applications autonomously. Therefore, WSDL is appropriate for creating contracts (i.e. APIs) between various web services. WSDL is not generally rich enough to support dynamic web services, in which service descriptions change and the applications adjust themselves meaningfully. WSDL can be considered a reasonable web services API documentation format.

For Further Information

1. W3C Recommendation [Web Services Description Language \(WSDL\) Version 2.0 Part 1: Core Language](#), R. Chinnici, J. Moreau, A. Ryman, S. Weerawarana, June 2007
2. Wikipedia provides a [sample WSDL document](#) as a guide to understanding how WSDL may be used.