

Rudi Studer
Stephan Grimm
Andreas Abecker (Eds.)

Semantic Web Services

Concepts, Technologies and Applications



Editors

Rudi Studer
Universität Karlsruhe
Inst. Angewandte Informatik und
Formale Beschreibungsverfahren
76128 Karlsruhe
Germany
studer@aifb.uni-karlsruhe.de

Andreas Abecker
Forschungszentrum Informatik (FZI)
Haid-und-Neu-Str. 10-14
76131 Karlsruhe
Germany
abecker@fzi.de

Stephan Grimm
Forschungszentrum Informatik (FZI)
Haid-und-Neu-Str. 10-14
76131 Karlsruhe
Germany
grimm@fzi.de

Library of Congress Control Number: 2007923415

ACM Classification: H.4, D.2, I.2, J.1

ISBN 978-3-540-70893-3 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable for prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media
springer.com
© Springer-Verlag Berlin Heidelberg 2007

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Typesetting by the editors
Production: Integra Software Services Pvt. Ltd., India
Cover design: KunkelLopka, Heidelberg

Printed on acid-free paper 45/3100/Integra 5 4 3 2 1 0

IPR2023-00399

Fintiv Ex. 2011 | Page 1 of 2

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.