

Introduction to the Proceedings of the EDOC 2005 Workshop Middleware for Web Services (MWS) 2005

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Welcome to the Proceedings of the EDOC 2005 workshop Middleware for Web Services (MWS) 2005!

In the past few years, Web services have become very popular in the research community as well as industry. Web services are distributed computing application components with services-oriented architecture. They use Extensible Markup Language (XML) interface description languages, such as the standardized Web Services Description Language (WSDL), and uniform communication protocols, such as the standardized SOAP protocol (previously known as the Simple Object Access Protocol). Typical application areas of Web services are business-to-business (B2B) integration, enterprise application integration (EAI), e-business process integration and management services. Implementation-independence of Web services technologies provides that Web services distributed over the Internet, run on different platforms, implemented in different programming languages, and provided by different businesses can collaborate in achieving common business goals. In particular, Web services technologies are supported by all major computing companies, including IBM, Microsoft, Sun, HP, and Oracle. An important role for Web services technologies. For example, implementation-independence of Web services is achieved using middleware, such as application servers and/or SOAP engines. In addition, different middleware solutions are used to provide, monitor, and manage quality of service (QoS) aspects, such as performance, security, and reliability.

The goals of this one-day workshop are to bring together industrial, academic, and government researchers and developers interested in Web services and/or middleware technologies in order to contribute to the exchange of knowledge and ideas, dissemination of results about completed and on-going research projects, as well as identification and analysis of remaining open

research issues and possible approaches towards their solution.

In this respect, we have composed an interesting and diverse program, containing a keynote speech, presentations of peer-reviewed papers, and a panel discussion. Heiko Ludwig from IBM Research (USA) will present his keynote speech "Capacity-Aware Middleware for Web Services". This talk discusses the open research issues related to Web services middleware for service capacity provisioning, acquisition, management, and consumption, particularly in a cross-organizational environment. It identifies the challenges, past results (such as the WS-Agreement specification by the GRAAP working group of the Global Grid Forum), and potential directions for future work. An abstract of this keynote speech is included into these proceedings.

The first among the peer-reviewed papers is "AdaptiveBPEL: A Policy-Driven Middleware for Flexible Web Services Composition" by Abdelkarim Erradi and Piyush Maheshwari, who are both from the University of New South Wales (Australia). They describe their ongoing work on AdaptiveBPEL, the goal of which is to leverage Aspect-Oriented Software Development (AOSD) techniques to improve dynamic (i.e., run-time) configurability and adaptability of Web service compositions. The second paper is "Modeling and Managing Service Oriented Business Collaboration" by Bart Oriens from Tilburg University (The Netherlands) and Jian Yang from Macquarie University (Australia). This paper presents novel Business Collaboration Design Framework (BCDF), which includes a new methodology for comprehensive modeling of adaptable business collaborations that can be implemented using Web services. The third paper is "Decentralised Coordination of Web Services for B2B Integration" by Simon Woodman, Doug Palmer, Santosh Shrivastava, and Stuart Wheeler. The first three authors are from the University of Newcastle upon Tyne (United Kingdom),

while the last author is from Arjuna Technologies (United Kingdom). Their paper presents a workflow specification and the corresponding workflow engine that allows distributed enactment of workflows. The fourth paper is “Automatic Negotiated Integration of Services in Pervasive Environments” by Noha Ibrahim, Frederic Le Mouel, and Stephane Frenot, who are all from CITI-INSA Lyon (France). This paper presents architecture of a middleware for negotiation and diverse integration of services in pervasive environments.

The fifth peer-reviewed paper is “Enterprise Business, Computing, and Information Services in a Multi-Agency Environment: A case Study in Enterprise Architect-Engineering” by Kenneth C. Hoffman, Thomas J. Pawlowski II, David L. Payne, and Kangmin Zheng, who are all from MITRE (USA). They present a case study of using Web services, semantic technology, geographic information system (GIS) based business performance modeling and planning tools, and other enterprise architecture and engineering tools and methods to monitor and manage international trade in an environment of heightened security risk. The sixth paper is “Open Web Services-Based Middleware for Brokering of Composed eHomeCare Services” by Sofie Van Hoecke, Koert Vlaeminck, Filip De Turck, and Bart Dhoedt, who are all from Ghent University (Belgium). This paper describes a middleware architecture that offers dynamic selection, composition, and automatic load balancing of services and discusses how this middleware pertains to the eHomeCare e-health application. The seventh paper is “WSODL – An Object-Oriented Specification for RPC-Based Web Services” by Enric Jaen Villoldo from the Universitat Autònoma de Barcelona (Spain) and Joan Serrat-Fernandez from the Universitat Politècnica de Catalunya (Spain). They propose the Web ServiceObject Definition Language (WSODL), which enables modeling of Web services as object-oriented middleware, based on Interface Defini-

tion Language (IDL), Common Information Model (CIM), and WSDL concepts. The eighth paper is “Template-Driven Performance Modeling of Enterprise Java Beans” by Jing Xu and Murray Woodside, both from Carleton University (Canada). This paper describes templates for performance evaluation/prediction of Enterprise Java Bean (EJB) based software, including Web services.

Finally, we have organized the panel “Quality of Service (QoS) Middleware for Web Services: Achieved Results and Challenges for the Future”, moderated by Aad van Moorsel from the University of Newcastle upon Tyne (United Kingdom). The panelists are: Patrick C.K. Hung from the University of Ontario Institute of Technology (Canada), Heiko Ludwig from IBM Research (USA), Pierluigi Plebani from Politecnico di Milano (Italy), and Stephen A. Uczekaj from Boeing (USA). These industrial and academic experts will discuss the strengths and weaknesses of the existing research and commercial middleware based on contracts and/or policies, examine standardization efforts, and identify the main challenges for future work. An abstract of the panel discussion is included into these proceedings.

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We hope that the papers, presentations, and discussions at MWS 2005 will be lead to further research and development in this exciting area.