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Emerging Web Services Technology

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Contents

Preface	vii
Organization	ix
Introduction	xi

I. Opening Keynote

<i>Jürgen Angele</i> Ontoprise: Semantic Web Technologies at Business	1
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II. Service Management

<i>Thilina Gunarathne, Dinesh Premalal, Tharanga Wijethilake, Indika Kumara and Anushka Kumar</i> BPEL-Mora: Lightweight Embeddable Extensible BPEL Engine	3
<i>Nicolas Repp, Rainer Berbner, Oliver Heckmann and Ralf Steinmetz</i> A Cross-Layer Approach to Performance Monitoring of Web Services	21
<i>Halina Kaminski and Mark Perry</i> Employing Intelligent Agents to Automate SLA Creation	33
<i>Christian Schröpfer, Marten Schönherr, Philipp Offermann and Maximilian Ahrens</i> A Flexible Approach to Service Management-Related Service Description in SOAs	47

III. Model Driven Engineering for Web Service Composition and Discovery

<i>Ricardo Quintero, Victoria Torres and Vicente Pelechano</i> Model Centric Approach of Web Services Composition	65
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<i>Marta Ruiz and Vicente Pelechano</i>	
Model Driven Design of Web Service Operations using Web Engineering Practices	83
<i>Adina Sîrbu, Ioan Toma and Dumitru Roman</i>	
A Logic-based Approach for Service Discovery with Composition Support	101
 IV. Mobile Services	
<i>Elena Sánchez-Nielsen, Sandra Martín-Ruiz and Jorge Rodríguez-Pedrianes</i>	
Mobile and Dynamic Web Services	117
<i>Pablo Rossi and Zahir Tari</i>	
Software Metrics for the Efficient Execution of Mobile Services	135
 V. Web Service Technology Challenges	
<i>Mehdi Ben Hmida, Céline Boutrous Saab, Serge Haddad, Valérie Monfort and Ricardo Tomaz Ferraz</i>	
Dynamically Adapting Clients to Web Services Changing	153
<i>Tosca Lahiri and Mark Woodman</i>	
Web Service Standards: Do we need them?	167
Author Index	183

Preface

The Workshop on Emerging Web Services Technology (WEWST06) took place in conjunction with the 4th European Conference on Web Services (ECOWS'06) on 4th December 2006, in Zurich, Switzerland.

Acting as the natural extension to the main ECOWS conference, the main goal of the WEWST workshop is serving as a forum for providing early exposure and much needed feedback to grow and establish original and emerging ideas within the Web Services community. The wide variety of tools, novel techniques and emerging technological solutions presented in WEWST share one common feature: they advance the current Web services research in new directions by introducing new and sometimes controversial ideas into the field.

WEWST focuses on research contributions advancing the state of the art in Web services technologies in the following areas: Model Driven Engineering for SOA, Mobility and Services, Streaming Services and Event Driven Architectures, Dynamic Web Service Discovery and Composition, Lightweight Orchestration Engines, SLA Creation and Service Delivery, Semantic Web, Managing Change and Service Evolution, Business Driven Development, Service-Oriented Grid Computing Middleware, Business Process Management for Web Services, Software and Service Engineering. WEWST covers the whole spectrum which makes it a very important part of ECOWS.

We would like to thank the authors of the papers for their submissions and for their contribution to the timely preparation of these proceedings, as well as for their high quality presentations and lively discussions during the workshop. In particular, we would like to thank Jürgen Angele for accepting to present a well received keynote on the topic: 'Ontoprise: Semantic Web Technologies at Business' showcasing a very important example of an emerging Web services technology. We would also like to thank Monique Calisti and Whitestein Technologies AG, for the invaluable support in finding a suitable venue for publishing the workshop proceedings and Stefan Schinkinger from Birkhauser Publishing Ltd. for fast tracking the WEWST proceedings through the publication process. And, last but not least, we would like to thank the ECOWS conference organizers (Thomas Gschwind, Abraham Bernstein, and Wolf Zimmermann) for their trust and availability to make this workshop a success.

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Introduction

No single event could completely capture the current flurry of research and development activities related to Service Oriented Architecture and Web Services. These proceedings of the first Workshop of Emerging Web Services Technology 2006 attempt to gather outstanding research achievements cutting across a wide, but representative set of emerging technologies: semantic Web services, service management, model-driven engineering for service composition and discovery, mobile services, and challenges such as change management and successful standardization. Accordingly, the proceedings have been organized into five different parts, one for each topic of the workshop contributions.

Part I opens the proceedings with the keynote given by Jürgen Angele, discussing the challenges that emerging semantic Web technologies are facing during their transition from academic prototypes into industrial products.

Part II covers several aspects of service management. It begins with a paper by Thilina Gunarathne, Dinesh Premalal, Tharanga Wijethilake, Indika Kumara and Anushka Kumar presenting a lightweight approach to the design of service composition engines. Whereas most existing BPEL (Business Process Execution Language) engines are complex platforms with heavy weight deployment requirements, the authors have shown how to radically simplify such an engine so that it becomes embeddable, delivers better performance and becomes much easier to manage. Performance optimization in service delivery is also the topic of the second paper, by Nicolas Repp, Rainer Berbner, Oliver Heckmann and Ralf Steinmetz. This position paper advocates a holistic approach to Web service performance monitoring. The authors show how to diagnose performance problems by taking a snapshot of key indicators across the entire communication stack so that more detailed information can be fed, e.g., into the planning component of a service orchestration engine. Service Level Agreements (SLAs) are also a very important aspect of Service Management. In the third paper, Halina Kaminski and Mark Perry propose to use intelligent agents to automatically create such agreements. As an alternative between the reuse of fixed boilerplate agreements and the costly manual negotiation of customized SLAs, the authors propose to automatically create SLAs using agent-based negotiation starting from a set of Service Level Objectives. Giving a good definition to Quality of Service is of paramount importance for properly managing Web services in production. Christian Schröpfer, Marten Schönherr, Philipp Offermann and Maximilian Ahrens attack the problem of defining non-functional properties for semantic Web services. In their paper, OWL-S (the Web Ontology Language for Services) is extended to support modeling of service lifecycle information and Quality of Service guarantees.

Part III is devoted to model-driven engineering applied to service composition and discovery. With the goal of raising the level of abstraction of current languages and tools, the first paper by Ricardo Quintero, Victoria Torres and

Vicente Pelechano argues that both structural (static) and behavioral (dynamic) aspects need to be combined. In particular, the paper extends the Object-Oriented Web Solutions methodology to drive the generation of BPEL code from high level conceptual models. The same methodology is also extended in the second paper, where Marta Ruiz and Vicente Pelechano deal with the design of Web service interfaces. The authors present a comprehensive solution to obtain well-designed Web services. Taking into account the requirements of model-driven service composition, the third paper is about service discovery, also a fundamental challenge of Service Oriented Architectures. In this paper, Adina Sîrbu, Ioan Toma and Dumitru Roman present a logic-based, formal discovery model based on capability matching that is meant to be integrated with service composition.

Part IV focuses on services and mobility. The first paper by Elena Sánchez-Nielsen, Sandra Martín-Ruiz and Jorge Rodríguez-Pedrianes addresses the problem of consuming Web services from resource-limited, mobile client devices. The authors present and evaluate the design of a concrete prototype based on dynamic proxies. The second paper introduces a set of software metrics for observing mobile service-oriented systems and effectively measuring their runtime efficiency. The authors (Pablo Rossi and Zahir Tari) show how such metrics can be used to perform service migration decisions.

Part V concludes the proceedings with two different technology challenges. The first is about dealing with changes of Web service interfaces through dynamic client adaptation. In this context, Mehdi Ben Hmida, Céline Boutrous Saab, Serge Haddad, Valérie Monfort and Ricardo Tomaz Ferraz apply Aspect Oriented Programming techniques to modify BPEL service compositions at run-time. The second challenge is related to current Web service standardization trends. The paper of Tosca Lahiri and Mark Woodman takes a critical look at the progress and the quality of current Web service standardization efforts.