Table of Contents

3rd Workshop on Middleware for Service Oriented Computing
(MW4SOC’08)

Dependable Distributed OSGi Environment ................................................................. 1
Miguel Matos and Antonio Sousa

Using Fail-stop Proxies for Enhancing Services Isolation in the OSGi Service Platform .......... 7
Kiev Gama, Walter Rudametkin and Didier Donsez

SoapME - A Lightweight Java ME Web Service Container ............................................. 13
Holger Schmidt, Andreas Köhrer and Franz J. Hauck

Workload Decomposition for QoS in Hosted Storage Services .................................. 19
Lanyue Lu, Kshitij Doshi and Peter Varman

Technical Challenges in Market-Driven Automated Service Provisioning .................... 25
Anna Chmielowiec, Guillaume Pierre, Jaap Gordijn and Maarten Van Steen

SLA-Driven Distributed Application Development ....................................................... 31
Vinod Muthusamy and Arno Jacobsen

Cross-Layer Self-Adaptation of Service-Oriented Architectures .................................. 37
Eli Gjørven, Romain Rouvoy and Frank Eliassen

Service Oriented Adaptive Java Applications ............................................................ 43
Iyad Alshabani, Richard Olejnik, Mahmoud Taifour and Bernard Toursel

Dynamic Reconfiguration Using Template Based Web Service Composition ................. 49
Kristof Geebelen, Sam Michiels and Wouter Joosen

Gossip-based Service Coordination for Scalability and Resilience ................................. 55
Filipe Campos and Jose Pereira

Achieving Causal and Total Ordering in Publish/Subscribe with DSM ....................... 61
Cássio M. M. Pereira, Lobato Daniel C., César A. C. Teixeira, and Maria G. Pimentel
1. WORKSHOP OVERVIEW

Service Oriented Computing (SOC) is a computing paradigm broadly pushed by vendors, utilizing services to support the rapid development of distributed applications in heterogeneous environments. The visionary promise of SOC is a world of cooperating services being loosely coupled to flexibly create dynamic business processes and agile applications that may span organisations and computing platforms and can nevertheless adapt quickly and autonomously to changes of requirements or context. Consequently, the subject of Service Oriented Computing is vast and enormously complex, spanning many concepts and technologies that find their origins in diverse disciplines like Workflow Management Systems, Component Based Computing, “classical” Web applications, and Enterprise Application Integration including Message Brokers and Middleware. In addition, there is a strong need to merge technology with an understanding of business processes and organizational structures, a combination of recognizing an enterprise's pain points and the potential solutions that can be applied to correct them.

Middleware, on the other hand, is defined as the software layer in a distributed computing system that lies between the operating system and the applications on each site of the system (ObjectWeb consortium). Middleware is the enabling technology of system and enterprise application integration (EAI) and therefore it clearly plays a key role for SOC.

While the immediate need of middleware support for Service Oriented Architectures (SOA) is evident, current approaches and solutions still fall short by primarily providing support for only the EAI aspect of SOC and do not sufficiently address composition support, service management and monitoring. Moreover, quality properties (in particular dependability and security) need to be addressed not only by interfacing and communication standards, but also in terms of integrated middleware support. But what makes these issues so different in a SOA setting? Why – for instance – is traditional middleware support for transaction processing different to transaction processing in SOA, reflecting different types of atomicity needs? One answer lies in
the administrative heterogeneity, the loose coupling between coarse-grained operations and long-running interactions, high dynamicity, and the required flexibility during run-time. Recently, massive-scale and mobility were added to the challenges for Middleware for SOC.

The highly dynamic modularity and need for flexible integration of services (e.g. Web service implementations) may, therefore, require new middleware architectures, protocols, and services. These considerations also lead to the question to what extent service-orientation at the middleware layer itself is beneficial (or not). Recently emerging “Middleware as service” offerings, from providers like Amazon or from the open source community, support this trend towards “infrastructure services” that can be purchased and consumed over the Internet. However, this model may not be suitable for all kinds of middleware functions, including those addressing dependability. Providing end-to-end properties and addressing cross-cutting concerns in a cross-organizational SOA is a particular challenge and the limits and benefits thereof have still to be investigated.

2. WORKSHOP PROGRAM

The eleven papers have been organised in four thematic sessions. The first session focuses on OSGi and middleware container:

- Dependable Distributed OSGi Environment
- Using Fail-stop Proxies for Enhancing Services Isolation in the OSGi Service Platform
- SoapME - A Lightweight Java ME Web Service Container

The second session is concerned with SLAs and QoS aware composition and provisioning:

- Workload Decomposition for QoS in Hosted Storage Services
- Technical Challenges in Market-Driven Automated Service Provisioning
- SLA-Driven Distributed Application Development

The third session has its focus on adaptation and reconfiguration:

- Cross-Layer Self-Adaptation of Service-Oriented Architectures
- Service Oriented Adaptive Java Applications
- Dynamic Reconfiguration Using Template Based Web Service Composition

Finally, the fourth session investigates scalability, performance, and coupling:

- Gossip-based Service Coordination for Scalability and Resilience
- Achieving Causal and Total Ordering in Publish/Subscribe with DSM

If service-oriented computing shall fulfil its promise, particular attention has to be paid to heterogeneity, scale, and dynamism of service-oriented systems, in order not to fall short by providing just “yet another technology wrapper” for existing systems. Our workshop addresses precisely these challenges on the middleware level, with a particular focus on quality of service, adaptivity, scale, and dynamics.

3. STATISTICAL DATA

This is the third year for the MW4SOC workshop and 24 submitted papers show the importance of the topic. 31 reviewers performed our double-blind review process. As the submission quality was significantly higher than in the first two years, eleven papers could finally be accepted.
4. WORKSHOP ORGANIZATION

4.1 Workshop chairs

Karl M. Göschka (chair), Vienna University of Technology, Austria
Frank Leymann (co-chair), University of Stuttgart, Germany
Schahram Dustdar (co-chair), Vienna University of Technology, Austria
Vladimir Tosevic (co-chair), National ICT Australia (NICTA), Australia
Lorenz Froihofer (organisational chair), Vienna University of Technology, Austria

4.2 Program committee

Mark Baker, Research in Motion, Canada
Sami Bhiri, Digital Enterprise Research Institute, Ireland
Paul Brebner, NICTA, Australia
Gianpaolo Cugola, Politecnico di Milano, Italy
Francisco Curbera, IBM, USA
Walid Gaaloul, Digital Enterprise Research Institute, Ireland
Harald Gall, University of Zurich, Switzerland
Nikolaos Georgantas, INRIA, France
Chrine Ghedira, University of Lyon I, France
Svein Hallsteinesen, SINTEF, Norway
Yanbo Han, ICT Chinese Academy of Sciences, China
Arno Jacobsen, University of Toronto, Canada
Mehdi Jazayeri, Università della Svizzera Italiana, Switzerland
Bernd Krämer, University of Hagen, Germany
Mark Little, JBoss, USA
Heiko Ludwig, IBM Research, USA
Hamid Reza Motahari Nezhad, University of New South Wales, Australia
Aad van Moorsel, University of Newcastle, UK
Nanjangud C Narendra, IBM Research, India
Rui Oliveira, Universidade do Minho, Portugal
Johannes Osrael, TeleTrader Software AG, Austria
Cesare Pautasso, University of Lugano, Switzerland
Fernando Pedone, Università della Svizzera Italiana, Switzerland
Jose Pereira, Universidade do Minho, Portugal
Regis Saint-Paul, CREATE-NET, Italy
Dietmar Schreiner, Vienna University of Technology, Austria
Bruno Schulze, National Lab for Scientific Computing, Brazil
Stefan Tai, University of Karlsruhe, Germany
Eric Wohlstadtner, University of British Columbia, Canada
Raymond Wong, University of British Columbia, Canada
Liming Zhu, NICTA, Australia

4.3 Additional reviewers

Domenico Bianculli, Università della Svizzera Italiana, Switzerland
Filipe Campos, Universidade do Minho, Portugal
Giacomo Ghezzi, University of Zurich, Switzerland
Miguel Matos, Universidade do Minho, Portugal
Yusuf Ozturk, San Diego State University, USA
Antonio Sousa, Universidade do Minho, Portugal