

Asit Dan
Winfried Lamersdorf (Eds.)

LNCS 4294

Service-Oriented Computing – ICSOC 2006

4th International Conference
Chicago, IL, USA, December 2006
Proceedings

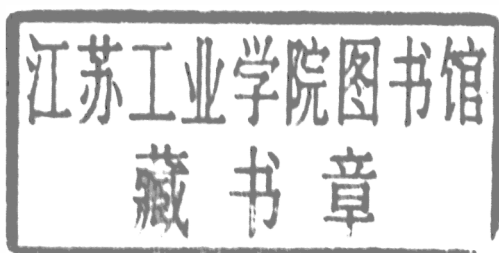


Springer

Asit Dan Winfried Lamersdorf (Eds.)

Service-Oriented Computing – ICSOC 2006

4th International Conference
Chicago, IL, USA, December 4-7, 2006
Proceedings



Volume Editors

Asit Dan

IBM T.J. Watson Research Center

19, Skyline Drive, Hawthorne, NY, 10532, USA

E-mail: asit@us.ibm.com

Winfried Lamersdorf

University of Hamburg

Distributed Systems and Information Systems, Computer Science Department

Vogt-Kölln-Str. 30, 22527 Hamburg, Germany

E-mail: lamersdorf@informatik.uni-hamburg.de

Library of Congress Control Number: 2006937445

CR Subject Classification (1998): C.2, D.2, D.4, H.4, H.3, K.4.4

LNCS Sublibrary: SL 2 – Programming and Software Engineering

ISSN 0302-9743

ISBN-10 3-540-68147-7 Springer Berlin Heidelberg New York

ISBN-13 978-3-540-68147-2 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, re-use of illustrations, recitation, broadcasting, reproduction on microfilms 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 to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springer.com

© Springer-Verlag Berlin Heidelberg 2006

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper SPIN: 11948148 06/3142 5 4 3 2 1 0

Preface

This volume contains the proceedings of the 4th International Conference on Service-Oriented Computing (ICSOC 2006), which took place in Chicago, USA, December 4–7, 2006. ICSOC 2006 followed on the success of three previous editions of the International Conference on Service-Oriented Computing in Amsterdam, Netherlands (2005), New York City, USA (2004) and Trento, Italy (2003). ICSOC is recognized as the main conference for service-oriented computing research that covers the entire spectrum from theoretical and foundational results to empirical evaluations as well as practical and industrial experiences. ICSOC 2006 built on that foundation while introducing several innovations in furthering this goal.

Service-oriented computing brings together ideas and technologies from many different fields in an evolutionary manner to address research challenges such as service composition, discovery, integration, monitoring and management of services, service quality and security, methodologies for supporting service development, governances in their evolution, as well as their overall life-cycle management. ICSOC 2006 strengthened the link to two important communities, *Software Engineering* and *Grid Computing*, with well-known leaders from these communities serving in important organizing roles such as general chairs in shaping the conference.

In order to provide a balanced coverage and equal emphasis on all SOC topics, these topics are divided into six major areas. They include *Business Service Modeling*, *Service Assembly*, *Service Deployment*, and *Management* – covering the research issues in the four primary life-cycle phases of a service, modeling, assembly, deployment, and management. Additionally, the runtime architectural issues are covered by the *SOA Runtime*, and quality of service issues – spanning all life-cycle stages, i.e., specification to autonomic management – are covered by the *Quality of Service* area. Finally, the *Grid Services* area covers application of service-oriented computing in managing infrastructural resources.

Organizationally, for each of these areas, respective *Area Coordinators* have the key role of defining topics, reaching out to the scientific communities and supporting the evaluation and selection of papers related to the diverse communities.

The paper selection process was very thorough. Matching diversity of paper topics and reviewer expertise is definitely a challenge. Therefore, we worked closely with the Area Coordinators, i.e., two experts representing each of the areas, to assign reviewers to submitted papers, and also to sort out the differences in opinions from different reviewers by weighing in their expert opinion. Since the content of a paper may be identified by multiple areas, reviewers were drawn from all the associated areas. Overall in the selection process, we sought a diversity of papers and balance across the areas while selecting the top papers in each of the areas. ICSOC 2006 received over 200 contributions in the research track, accepting only 34 full and 16 short papers.

This year we also enhanced the industrial track by attracting many industry leaders – representing the gamut of software middleware vendors, consulting analysts, solution integrators and practitioners of service-oriented architecture (SOA) – both to serve on the Program Committee and to submit papers sharing valuable hands-on experiences and key challenges in practicing service-oriented computing. The industrial papers highlight lessons learned, analysis of technology gap, methodology used in practice, noteworthy and innovative application scenarios, need for new standardization, and major improvements to the state of practice. The industry track received more than 60 submissions, out of which only 9 full papers were selected. It also features two invited vision papers discussing the evolution of service-oriented computing.

In addition to the regular, industry, and short presentations, the ICSOC 2006 conference featured three tutorials, two panels examining the role of open-source software and research challenges, and – as customary in ICSOC conferences – top-notch keynotes, given by leaders in the industrial and academic community.

The excellent program that we assembled for presentation at the conference is a reflection of the hard and dedicated work of numerous people. We would like to thank the members of the Program Committee and the reviewers for their great efforts in selecting the papers, and the Area Coordinators in making an extra effort in looking over the reviews and sorting out differences in opinions. We also acknowledge the great contributions of Julie Wulf-Knoerzer in the local organization, of Vincenzo D'Andrea for handling finances, of Matei Ripeanu in handling the publicity, of Boualem Benatallah for handling publication of the conference proceedings, and of Martin Swamy for handling registration. We also thank Dimitrios Georgakopoulos, Norbert Ritter (Workshop Chairs), Frank Leymann and Heiko Ludwig (Tutorial Chairs) for organizing associated workshops and tutorials. We would also like to thank some individuals for their special help and contributions: Sonja Zaplata for assisting the Program Chairs in tracking various issues that arose throughout the review process, and for being prompt in responding to queries from authors, reviewers and other conference chairs, Harald Weinreich, who created and adapted the conftool for us several times – often without anyone really noticing—and Anne Awizen for her support. And last but not the least, we would like to thank the Steering Committee members, Fabio Casati, Paco Curbera, Mike Papazoglou, and Paolo Traverso, for their guidance, and our partners, ACM SIGWeb and SIGSoft.

We hope you find the papers in this volume interesting and stimulating.

December 2006

Ian Foster and Carlo Ghezzi (General Chairs)

Asit Dan and Winfried Lamersdorf (Program Chairs)

Robert Johnson, and Jeff Mischkinsky (Industrial Track Chairs)

Organization

ICSOC 2006 Conference Chairs

General Chairs	Ian Foster, University of Chicago, USA Carlo Ghezzi, Politecnico di Milano, Italy
Program Chairs	Asit Dan, IBM, USA Winfried Lamersdorf, Hamburg University, Germany
Industrial Track Chairs	Robert Johnson, IBM, USA Jeff Mischkinsky, Oracle, USA
Workshop Coordination	Dimitrios Georgakopoulos, Telcordia, USA Norbert Ritter, Hamburg University, Germany
Tutorial Chairs	Frank Leymann, University of Stuttgart, Germany Heiko Ludwig, IBM, USA
Local Arrangements Chair	Julie Wulf, Univa Corporation, USA
Financial Chair	Vincenzo D'Andrea, University of Trento, Italy
Registration Chair	Martin Swany, University of Delaware, USA
Publicity Chair	Matei Ripeanu, University of British Columbia, Canada
Publication Chair	Boualem Benatallah, UNSW, Australia
Steering Committee	Fabio Casati, Hewlett-Packard Labs, USA Paco Curbera, IBM Research, Hawthorne, UK Mike Papazoglou, Tilburg University, Netherlands Paolo Traverso, ITC-IRST, Italy

Area Coordinators

Service Modeling	Wolfgang Emmerich, UCL, UK Mathias Weske, University of Potsdam, Germany
Service Assembly	Barbara Pernici, Politecnico di Milano, Italy Munindar Singh, North Carolina State University, USA
Service Management	Luciano Baresi, Politecnico di Milano, Italy Hiro Kishimoto, Jujitsu, Japan
SOA Runtime	Douglas Schmidt, Vanderbilt University, USA Steve Vinoski, Iona, USA
Quality of Service	Priya Narasimhan, CMU, USA Jim Pruyne, HP, USA
Grid Services	Dennis Gannon, Indiana University, USA Paul Watson, Univ. of Newcastle upon Tyne, UK

Program Committee

Research Track

Nabil R. Adam	Rutgers University, USA
Jose Luis Ambite	USC/ISI, USA
Mikio Aoyama	NISE, Japan
Alistair Barros	SAP, Australia
Boualem Benatallah	University of New South Wales, Australia
Walter Binder	EPFL, Switzerland
Athman Bouguettaya	Virginia Tech, USA
Sjaak Brinkkemper	Utrecht University, Netherlands
Tevfik Bultan	UCSB, USA
Fabio Casati	HP, USA
Malu Castellanos	HP, USA
Bruno Crispo	Vrije University Amsterdam, Netherlands
Paco Curbera	IBM Research, USA
Vincenzo D'Andrea	Università di Trento, Italy
Umesh Dayal	HP, USA
Flavio De Paoli	Università di Milano, Italy
Tommaso Di Noia	University of Bari, Italy
Jens-Peter Dittrich	ETH Zurich, Switzerland
John Domingue	KMI, UK
Schahram Dustdar	University of Technology Vienna, Austria
Boi Faltings	EPFL, Switzerland
Dieter Fensel	University of Innsbruck, Austria
Gianluigi Ferrari	University of Pisa, Italy
George Feuerlicht	University of Technology Sydney, Australia
Ioannis Fikouras	Ericsson, Germany
Geoffrey Fox	Indiana University, USA
Alex Galis	UCL, UK
Dimitrios Georgakopoulos	Telcordia, USA
Paolo Giorgini	University of Trento, Italy
Claude Godart	Université Henri Poincaré Nancy, France
Paul Grefen	Eindhoven University of Technology, Netherlands
John Grundy	University of Auckland, New Zealand
Mohand-Said Hacid	Université Lyon, France
Hakan Hacigumus	Almaden IBM, USA
Kate Keahey	Argonne National Laboratory, USA
Alfons Kemper	Technische Universität München, Germany
Roger Kilian-Kehr	SAP Karlsruhe, Germany
Jana Koehler	IBM Zurich Research Lab, Switzerland
Bernd Kraemer	Fernuniversität Hagen, Germany
Brian LaMacchia	Microsoft, USA
Frank Leymann	University of Stuttgart, Germany

Ling Liu	Georgia Institute of Technology, USA
Heiko Ludwig	IBM Research, USA
Neil Maiden	City University London, UK
Tiziana Margarina	Potsdam University, Germany
Ioana Manolescu	INRIA, France
David Martin	SRI, USA
Eugene M. Maximilien	IBM Almaden, USA
Massimo Mecella	Università di Roma, Italy
Brahim Medjahed	Michigan University, USA
Toshiyuki Nakata	NEC, Japan
Christos Nikolaou	University of Crete, Greece
David O'Hallaron	Carnegie Mellon University, USA
Guadalupe Ortiz	Universidad de Extremadura, Spain
Mike Papazoglou	Tilburg University, Netherlands
Anna Perini	ITC-IRST Trento, Italy
Marco Pistore	Università di Trento, Italy
Axel Polleres	Universidad Rey Juan Carlos, Spain
Jean Pierre Prost	IBM Montpellier, France
Omer Rana	Cardiff University, UK
Thomas Risse	Fraunhofer Gesellschaft, Germany
Norbert Ritter	Hamburg University, Germany
Colette Rolland	Université de Paris I, France
Rainer Ruggaber	SAP, Germany
Akhil Sahai	HP, USA
Volker Sander	Jülich Research Centre, Germany
Vladimiro Sassone,	University of Southampton, UK
Dimitrios N. Serpanos	University of Patras, Greece
Jun Shen	University of Wollongong, Australia
Santosh Srivastava	University of New Castle, UK
Maarten Steen	Telematica Enschede, Netherlands
Tony Storey	IBM, UK
Jianwen Su	UCSB, USA
Ravi Subramaniam	Intel, USA
Angelo Susi	ITC-IRST Trento, Italy
Katia Sycara	CMU, USA
Stefan Tai	IBM New York, USA
Kian-Lee Tan	National University of Singapore, Singapore
Paolo Tonella	ITC-IRST Trento, Italy
Farouk Toumani	ISIMA Autiere, France
Don Towsley	University of Massachusetts, USA
Paolo Traverso	ITC-RST, Italy
Aphrodite Tsalgaidou	University of Athens, Greece
Karthikeyan Umapathy	Penn State University, USA
Will van der Aalst	Eindhoven University of Technology, Netherlands
Jos van Hillegersberg	University of Twente, Netherlands
Aad Van Moorsel	University of Newcastle, UK
Vijay Varadharajan	Macquarie University, Australia
John Wilkes	HP Labs Palo Alto, USA
Martin Wirsing	Technische Universität München, Germany

Jian Yang
 Arkady Zaslavsky
 Gianluigi Zavattaro
 Yanchun Zhang
 Christian Zircpins

Macquiri University, Australia
 Monash University Melbourne, Australia
 University of Bologna, Italy
 Victoria University, Australia
 University College London, UK

Industry Track

Anne Anderson
 Paul Fremantle
 Steve Graham
 Frederick Hirsch
 Kerrie Holley
 Philippe Le Hégaret
 Mark Little
 Ashok Malhotra
 Andy Mulholland
 Srinivas Narayanan
 Eric Newcomer
 Mark Nottingham
 Sanjay Patil
 Greg Pavlik
 Harini Srinivasan
 William Vambenepe
 Sanjiva Weerawarana
 Bobbi Young

Sun, USA
 WSO2, UK
 IBM, USA
 Nokia, USA
 IBM, USA
 W3C, USA
 Redhat, USA
 Oracle, USA
 CapGemini, UK
 Tavant, USA
 Iona Technology, USA
 Yahoo, USA
 SAP, USA
 Oracle, USA
 IBM, USA
 HP, USA
 WSO2, Sri Lanka
 Unisys, USA

Additional Referees

Grigoris Antoniou
 Andrei Arion
 George Athanasopoulos
 Michael Averstegge
 Donald Baker
 Venkat Balakrishnan
 Piergiorgio Bertoli
 Aliaksandr Birukou
 Lars Braubach
 Volha Bryl
 Andrzej Cichocki
 Francesco Colasuonno
 Marco Comerio
 Nick Cook
 Eugenio Di Sciascio
 Remco Dijkman
 Nicola Dragoni
 Christian Drumm

Cu Nguyen Duy
 Paul El-Khoury
 Rik Eshuis
 Reza Eslami
 Pascal Fenkam
 Eugen Freiter
 Keisuke Fukui
 GR Gangadaran
 Steffen Göbel
 Jan Goossenaerts
 Simone Grega
 Claudio Guidi
 Michael Harrison
 Martin Husemann
 Hiroshi Igaki
 Yuji Imai
 Sarath Indrakanti
 Marijke Janssen

Rim Samia Kaabi
Raman Kazhamiakin
Natallia Kokash
Jacek Kopecky
Iryna Kozlowa
Kathleen Krebs
Christian P. Kunze
Jens Lemcke
Ching Lin
Xumin Liu
Roberto Lucchi
Matteo Maffei
Daniele Maggiore
Zaki Malik
Manolis Marazakis
Annapaola Marconi
Bogdan Marinoiu
Andrea Maurino
Harald Meyer
Stefano Modafferi
Carlos Molina-Jimenez
Graham Morgan
Enrico Mussi
Marian Nodine
Michael Pantazoglou
Panayiotis Periorellis
Marinella Petrocchi
Christian Platzer
Dimitris Plexousakis
Alexander Pokahr

Stanislav Pokraev
Frank Puhlmann
Azzurra Ragone
Claudia Raibule
Claudia Raibulet
Chun Ruan
Yacine Sam
Andreas Savva
Alberto Siena
Jim Smith
Luca Spalazzi
Alexander Stuckenholtz
Ioan Toma
Martin Treiber
Uday Kiran Tupakula
Harald Vogt
Michael von Riegen
Jochem Vonk
Jim Webber
Stuart Wheeler
Simon Woodman
Xu Yang
Qi Yu
Nicola Zannone
Sonja Zaplata
Uwe Zdun
Yi Zhang
Weiliang Zhao
George Zheng

Table of Contents

Part 1: Research Track Full Papers

Service Mediation

Requirements and Method for Assessment of Service Interoperability	1
<i>Stanislav Pokraev, Dick Quartel, Maarten W.A. Steen, Manfred Reichert</i>	
An Aspect-Oriented Framework for Service Adaptation	15
<i>Woralak Kongdenfha, Régis Saint-Paul, Boualem Benatallah, Fabio Casati</i>	
Automated Generation of BPEL Adapters	27
<i>Antonio Brogi, Razvan Popescu</i>	

Grid Services and Scheduling

Division of Labor: Tools for Growing and Scaling Grids	40
<i>T. Freeman, K. Keahey, I. Foster, A. Rana, B. Sotomayor, F. Wuerthwein</i>	
DECO: Data Replication and Execution CO-scheduling for Utility Grids	52
<i>Vikas Agarwal, Gargi Dasgupta, Koustuv Dasgupta, Amit Purohit, Balaji Viswanathan</i>	
Coordinated Co-allocator Model for Data Grid in Multi-sender Environment	66
<i>R.S. Bhuvaneswaran, Yoshiaki Katayama, Naohisa Takahashi</i>	

Mobile and P2P Services

Adaptive Preference Specifications for Application Sessions	78
<i>Christine Julien</i>	
Mobile Ad Hoc Services: Semantic Service Discovery in Mobile Ad Hoc Networks	90
<i>Andronikos Nedos, Kulpreet Singh, Siobhán Clarke</i>	

Discovering Web Services and JXTA Peer-to-Peer Services
in a Unified Manner 104
*Michael Pantazoglou, Aphrodite Tsalgatidou,
George Athanasopoulos*

Service Composition

A Hierarchical Framework for Composing Nested Web Processes 116
Haibo Zhao, Prashant Doshi

Using Dynamic Asynchronous Aggregate Search for Quality
Guarantees of Multiple Web Services Compositions 129
Xuan Thang Nguyen, Ryszard Kowalczyk, Jun Han

Service Composition (re)Binding Driven by Application-Specific QoS 141
*Gerardo Canfora, Massimiliano Di Penta, Raffaele Esposito,
Francesco Perfetto, Maria Luisa Villani*

Design of Quality-Based Composite Web Services 153
F. De Paoli, G. Lulli, A. Maurino

Adaptive Services

AMPol-Q: Adaptive Middleware Policy to Support QoS 165
Raja Afandi, Jianqing Zhang, Carl A. Gunter

Adaptive Web Processes Using Value of Changed Information 179
John Harney, Prashant Doshi

SCENE: A Service Composition Execution Environment Supporting
Dynamic Changes Disciplined Through Rules 191
Massimiliano Colombo, Elisabetta Di Nitto, Marco Mauri

A Self-healing Web Server Using Differentiated Services 203
Henri Naccache, Gerald C. Gannod, Kevin A. Gary

Data Intensive Services

Quality of Service Enabled Database Applications 215
S. Krompass, D. Gmach, A. Scholz, S. Seltzsam, A. Kemper

A Model-Based Framework for Developing and Deploying Data
Aggregation Services 227
Ramakrishna Soma, Amol Bakshi, V.K. Prasanna, Will Da Sie

Service Management: Registry, Reliability

A Distributed Approach for the Federation of Heterogeneous Registries	240
<i>Luciano Baresi, Matteo Miraz</i>	
I-Queue: Smart Queues for Service Management	252
<i>Mohamed S. Mansour, Karsten Schwan, Sameh Abdelaziz</i>	

XML Processing

Optimizing Differential XML Processing by Leveraging Schema and Statistics	264
<i>Toyotaro Suzumura, Satoshi Makino, Naohiko Uramoto</i>	
Optimized Web Services Security Performance with Differential Parsing	277
<i>Masayoshi Teraguchi, Satoshi Makino, Ken Ueno, Hyen-Vui Chung</i>	
Web Browsers as Service-Oriented Clients Integrated with Web Services	289
<i>Hisashi Miyashita, Tatsuya Ishihara</i>	

Service Modeling

Interaction Soundness for Service Orchestrations	302
<i>Frank Puhlmann, Mathias Weske</i>	
Modeling Web Services by Iterative Reformulation of Functional and Non-functional Requirements	314
<i>Jyotishman Pathak, Samik Basu, Vasant Honavar</i>	
SOCK: A Calculus for Service Oriented Computing	327
<i>Claudio Guidi, Roberto Lucchi, Roberto Gorrieri, Nadia Busi, Gianluigi Zavattaro</i>	
A Priori Conformance Verification for Guaranteeing Interoperability in Open Environments	339
<i>Matteo Baldoni, Cristina Baroglio, Alberto Martelli, Viviana Patti</i>	

Business Services: Transaction, Licensing and SLA Assessment

A Business-Aware Web Services Transaction Model	352
<i>Mike P. Papazoglou, Benedikt Kratz</i>	

Licensing Services: Formal Analysis and Implementation 365
G.R. Gangadharan, Vincenzo D’Andrea

QoS Assessment of Providers with Complex Behaviours:
An Expectation-Based Approach with Confidence 378
Gareth Shercliff, Jianhua Shao, W. Alex Gray, Nick J. Fiddian

Service Discovery and Selection

A QoS-Aware Selection Model for Semantic Web Services 390
Xia Wang, Tomas Vitvar, Mick Kerrigan, Ioan Toma

UML-Based Service Discovery Framework 402
Andrea Zisman, George Spanoudakis

BPEL-Unit: JUnit for BPEL Processes 415
Zhong Jie Li, Wei Sun

Part 2: Research Track Short Papers

**Quality of Service (Policy, Transaction
and Monitoring)**

A User Driven Policy Selection Model 427
Mariagrazia Fugini, Pierluigi Plebani, Filippo Ramoni

Abstract Transaction Construct: Building a Transaction Framework
for Contract-Driven, Service-Oriented Business Processes 434
Ting Wang, Paul Grefen, Jochem Vonk

Securing Web Service Compositions: Formalizing Authorization
Policies Using Event Calculus 440
Mohsen Rouached, Claude Godart

Supporting QoS Monitoring in Virtual Organisations 447
*Patrick J. Stockreisser, Jianhua Shao, W. Alex Gray,
Nick J. Fiddian*

Business Service Modeling

Event Based Service Coordination over Dynamic and Heterogeneous
Networks 453
Gianluigi Ferrari, Roberto Guanciale, Daniele Strollo

Implicit vs. Explicit Data-Flow Requirements in Web Service Composition Goals	459
<i>Annapaola Marconi, Marco Pistore, Paolo Traverso</i>	
Light-Weight Semantic Service Annotations Through Tagging	465
<i>Harald Meyer, Mathias Weske</i>	
Service-Oriented Model-Driven Development: Filling the Extra-Functional Property Gap	471
<i>Guadalupe Ortiz, Juan Hernández</i>	
WSMX: A Semantic Service Oriented Middleware for B2B Integration	477
<i>Thomas Haselwanter, Paavo Kotinurmi, Matthew Moran, Tomas Vitvar, Maciej Zaremba</i>	
Top Down Versus Bottom Up in Service-Oriented Integration: An MDA-Based Solution for Minimizing Technology Coupling	484
<i>Theo Dirk Meijler, Gert Kruithof, Nick van Beest</i>	
Service Assembly	
Semantic Service Mediation	490
<i>Liangzhao Zeng, Boualem Benatallah, Guo Tong Xie, Hui Lei</i>	
Examining Usage Protocols for Service Discovery	496
<i>Rimon Mikhael, Eleni Stroulia</i>	
Sliver: A BPEL Workflow Process Execution Engine for Mobile Devices	503
<i>Gregory Hackmann, Mart Haitjema, Christopher Gill, Gruia-Catalin Roman</i>	
Automated Discovery of Compositions of Services Described with Separate Ontologies.....	509
<i>Antonio Brogi, Sara Corfini, José F. Aldana, Ismael Navas</i>	
Dynamic Web Service Selection and Composition: An Approach Based on Agent Dialogues.....	515
<i>Yasmine Charif-Djebbar, Nicolas Sabouret</i>	
Leveraging Web Services Discovery with Customizable Hybrid Matching	522
<i>Natallia Kokash, Willem-Jan van den Heuvel, Vincenzo D'Andrea</i>	

Part 3: Industrial Track Vision and Full Papers

Vision Papers

Assembly of Business Systems Using Service Component
Architecture 529
Anish Karmarkar, Mike Edwards

The End of Business as Usual: Service-Oriented Business
Transformation 540
Andy Mulholland

Experience with Deployed SOA

A Service Oriented Reflective Wireless Middleware 545
Bora Yurday, Halûk Gümüşkaya

Procedures of Integration of Fragmented Data in a P2P Data Grid
Virtual Repository 557
*Kamil Kuliberda, Jacek Wislicki, Tomasz Kowalski,
Radoslaw Adamus, Krzysztof Kaczmarek, Kazimierz Subieta*

Towards Facilitating Development of SOA Application
with Design Metrics 569
Wei Zhao, Ying Liu, Jun Zhu, Hui Su

SOA Architectures

Dynamic Service Oriented Architectures Through Semantic
Technology 581
*Suzette Stoutenburg, Leo Obrst, Deborah Nichols, Ken Samuel,
Paul Franklin*

A Service Oriented Architecture Supporting Data Interoperability
for Payments Card Processing Systems 591
Joseph M. Bugajski, Robert L. Grossman, Steve Vejcek

Services-Oriented Computing in a Ubiquitous Computing Platform 601
Ji Hyun Kim, Won Il Lee, Jonathan Munson, Young Ju Tak

Early Adoption of SOA Technology

SCA Policy Association Framework 613
*Michael Beisiegel, Nickolas Kavantzias, Ashok Malhotra,
Greg Pavlik, Chris Sharp*

A Model-Driven Development Approach to Creating Service-Oriented Solutions	624
<i>Simon K. Johnson, Alan W. Brown</i>	
Towards Adaptive Management of QoS-Aware Service Compositions – Functional Architecture	637
<i>Mariusz Momotko, Michał Gajewski, André Ludwig, Ryszard Kowalczyk, Marek Kowalkiewicz, Jian Ying Zhang</i>	
Author Index	651