

Proceedings

2006 IEEE International Conference on Services Computing

SCC 2006

September 18-22, 2006
Chicago, Illinois

Sponsored by

IEEE Computer Society Technical Committee on Services Computing



Los Alamitos, California

Washington • Tokyo

Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number P2670
ISBN-13: 978-0-7695-2670-6
ISBN-10: 0-7695-2670-5
Library of Congress Number 2006928886

Additional copies may be ordered from:

IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, CA 90720-1314
Tel: + 1 800 272 6657
Fax: + 1 714 821 4641
<http://computer.org/cspress>
csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: + 1 732 981 0060
Fax: + 1 732 981 9667
[http://shop.ieee.org/store/
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

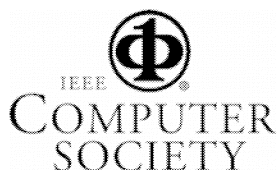
IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: + 81 3 3408 3118
Fax: + 81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: reprints@computer.org

Editorial production by Lisa O'Conner

Cover art production by Joe Daigle/Studio Productions

Printed in the United States of America by The Printing House



IEEE Computer Society
Conference Publishing Services

<http://www.computer.org/proceedings/>

Table of Contents

2006 IEEE International Conference on Services Computing SCC 2006

Message from the General Chairs	<i>xii</i>
Message from the Program Committee Chairs	<i>xiii</i>
Organizing Committee	<i>xiv</i>
Technical Program Committee	<i>xvi</i>
Technical Steering Committee	<i>xviii</i>
External Reviewers	<i>xviii</i>

Keynotes

Web Services at Amazon.com	<i>xxii</i>
<i>Werner Vogels</i>	
Business Drivers for Services Computing	<i>xxiii</i>
<i>K Ananth Krishnan</i>	
Service Computing: The AppExchange Platform	<i>xxiv</i>
<i>Steve Fisher</i>	

Panels

Panel 1: Software and Services: Where do they meet?	<i>xxvi</i>
<i>Moderator: Ling Liu</i>	
<i>Panelists (alphabetical order): Carl K Chang, Ephraim Feig, Hemant Jain, and Liang-Jie Zhang</i>	
Panel 2: Web Services — A View from the Top	<i>xxviii</i>
<i>Panel Moderators: Frank E. Ferrante and A.W. (Jay) Bragg</i>	
<i>Panelists (alphabetical order): Karen Evans, Gil Miller, Henry Schaffer, George Strawn, and Linda Wilbanks</i>	
Panel 3: Event-Driven Architectures and Complex Event Processing	<i>xxx</i>
<i>Moderator: Opher Etzion</i>	
<i>Panelists (alphabetical order): Mani Chandy, Rainer von Ammon, and Roy Schulte</i>	
Panel 4: Mobile Web Services Trend Perspectives	<i>xxxii</i>
<i>Panel Moderator: Pat Narendra</i>	
<i>Panelists (alphabetical order): Ephraim Feig, David Heit, Quentin Miller, and Timo Burns</i>	

Tutorials

Tutorial 1: SOA and Web Services.....	xxxi
<i>Liang-Jie Zhang</i>	
Tutorial 2: SOA Services and Solutions	xxxvii
<i>Hong Cai and Jia Zhang</i>	
Tutorial 3: Automatic Web Service Composition	xxxviii
<i>Giuseppe De Giacomo and Massimo Mecella</i>	
Tutorial 4: Web Services on Rails: Using Ruby and Rails for Web Services Development and Mashups	xxxix
<i>E. Michael Maximilien</i>	
Tutorial 5: Business Agility and Process Management	xl
<i>Hemant Jain</i>	
Tutorial 6: Security in SOA and Web Services	xli
<i>Elisa Bertino and Lorenzo Martino</i>	

Regular Research Papers

Research Session 1: Services and Semantics

Ontology Reconciliation for Service-Oriented Computing	3
<i>Jingshan Huang, Jiangbo Dang, and Michael N. Huhns</i>	
Semantic Web Services for Human Activities.....	11
<i>E. Michael Maximilien</i>	
m3po: An Ontology to Relate Choreographies to Workflow Models	19
<i>Armin Haller, Eyal Oren, and Paavo Kotinurmi</i>	

Research Session 2: Compliance, Access Control & SLAs

Compatibility of Service Contracts in Service-Oriented Applications	28
<i>Surya Nepal, John Zic, and Thi Chau</i>	
The First Step of Introducing Risk Management for Prepossessing SLAs.....	36
<i>Matthias Hovestadt, Odej Kao, and Kerstin Vofß</i>	
Multiagent Policy Architecture for Virtual Business Organizations	44
<i>Yathiraj B. Udupi and Munindar P. Singh</i>	

Research Session 3: Services Management

A Distributed Services Management Infrastructure for Enterprise Data Centers Based on Peer-to-Peer Technology.....	52
<i>Chunqiang Tang, Rong N. Chang, and Edward So</i>	
Ubiquitous Provision of Context Aware Web Services.....	60
<i>Irene Y.L. Chen, Stephen J.H. Yang, and Jia Zhang</i>	
A Language-based Approach to Service Deployment.....	69
<i>Xiaoning Wang, Wei Li, Hong Liu, and Zhiwei Xu</i>	

Research Session 4: Business Process Management

A Knowledge Model-driven Recommender System for Business Transformation.....	77
<i>Mao Chen and Jakka Sairamesh</i>	
An OO Based Semantic Model for Service Oriented Computing	85
<i>Arun Kumar, Anindya Neogi, and D. Janaki Ram</i>	

Piloting an Empirical Study on Measures for Workflow Similarity.....	94
<i>Andreas Wombacher and Maarten Rozie</i>	
Research Session 5: Business Process Integration	
Business Process Adaptations via Protocols.....	103
<i>Nirmit Desai, Amit K. Chopra, and Munindar P. Singh</i>	
Designing Enterprise Solutions with Web Services and Integration Patterns	111
<i>Karthikeyan Umamathy and Sandeep Purao</i>	
Model- and Architecture-Driven Development in the Context of Cross-Enterprise Business Process Engineering	119
<i>Stephan Roser, Bernhard Bauer, and Jörg P. Müller</i>	
Research Session 6: SOA and Service Infrastructures	
QoS Support for Media Broadcast in a Services Oriented Architecture.....	127
<i>D.S. Turaga, K. Ratakonda, and J. Lai</i>	
Service Oriented Architecture for E-Health Support Services Based on Grid Computing Overlay.....	135
<i>Wail M.Omar and A. Taleb-Bendiab</i>	
A Model for Extending Legacy Applications by Implementing New Requirements as Components.....	143
<i>Nicomedes L. Cavalcanti, Roberto Souto Maior de Barros, and Mlexener Bezerra Romeiro</i>	
Research Session 7: SOA Programming and Benchmark	
SOAF: An Architectural Framework for Service Definition and Realization	151
<i>Abdelkarim Erradi, Sriram Anand, and Naveen Kulkarni</i>	
A Dynamic Service-Oriented Implementation for Java EE Servers	159
<i>Mikael Desertot, Didier Donsez, and Philippe Lalanda</i>	
Process Control-Flow Complexity Metric: An Empirical Validation.....	167
<i>Jorge Cardoso</i>	
Research Session 8: Services Orchestration and Choreography	
Interoperability among Heterogeneous Services	174
<i>George Athanasopoulos, Aphrodite Tsalgatiidou, and Michael Pantazoglou</i>	
A Rule Driven Approach for Developing Adaptive Service Oriented Business Collaboration.....	182
<i>Bart Orriens and Jian Yang</i>	
A Decentralized Services Choreography Approach for Business Collaboration.....	190
<i>Qiao Xiaoqiang and Wei Jun</i>	
Research Session 9: Services Composition and Discovery	
Personalized Active Service Spaces for End-User Service Composition.....	198
<i>Jun Han, Yanbo Han, Yan Jin, Jianwu Wang, and Jian Yu</i>	
Control the Flow: How to Safely Compose Streaming Services into Business Processes	206
<i>Biörn Biörnstad, Cesare Pautasso, and Gustavo Alonso</i>	
A Model-Driven Approach to Service Composition in Virtual Enterprises	214
<i>Khalid Belhajjame and Suzanne M. Embury</i>	
Research Session 10: Service-Oriented Modeling	
Modeling Non-Functional Aspects in Service Oriented Architecture	222
<i>Hiroshi Wada, Junichi Suzuki, and Katsuya Oba</i>	
Service Views: A Coherent View Model of the SOA in the Enterprise	230
<i>Duraïd Ibrahim and Vojislav B. Mišić</i>	

Modeling and Verifying Configuration in Service Deployment.....	238
<i>Ying Li, Jie Qiu, Kewei Sun, and Ying Chen</i>	

Short Papers

Short Paper Session 1: SOA Management

Consideration of Operation Composition in Semantic Service Matchmaking	249
<i>Shuiguang Deng, Jian Wu, Ying Li, and Zhaohui Wu</i>	
A Framework & Negotiation Protocol for Service Contracts.....	253
<i>Michael Parkin, Dean Kuo, and John Brooke</i>	
Evaluation of Strategies for Integrating Legacy Applications as Services in a Service Oriented Architecture.....	257
<i>Abdelkarim Erradi, Sriram Anand, and Naveen Kulkarni</i>	

Short Paper Session 2: SLA and Services Optimization

Towards a Low-Cost High-Quality Service Call Architecture	261
<i>Isaac Cheng, Neil Boyette, and Vikas Krishna</i>	
Memory Servers: A Scope of SOA for High-End Computing	265
<i>Surendra Byna, Xian-He Sun, and Ryan Nakhoul</i>	

Short Paper Session 3: Service-Oriented Architecture and Development

How Clustering Enterprise Architectures Helps to Design Service Oriented Architectures	269
<i>Stephan Aier</i>	
An Approach to Modeling Service-Oriented Development Process	273
<i>Yukyong Kim and Hongran Yun</i>	
On Exploiting System Dynamics Modeling to Identify Service Requirements.....	277
<i>Lianjun An, Jun-Jang Jeng, and Cagdas E. Gerede</i>	

Short Paper Session 4: Business Process Integration

Model Driven Distribution of Collaborative Business Processes	281
<i>Wasim Sadiq, Shazia Sadiq, and Karsten Schulz</i>	
Co-Innovation in a Service Oriented Strategic Network	285
<i>Jens-Magnus Arndt and Jens Dibbern</i>	
Using Assumptions in Service Composition Context.....	289
<i>Zheng Lu, Aditya Ghose, Peter Hyland, and Ying Guan</i>	

Short Paper Session 5: Business Services

Individual Tariffs for Mobile Services: Bargaining Model and Calculation	293
<i>H. Chen and L-F Pau</i>	
Large Scale Order Processing through Navigation Plan Concept	297
<i>João Eduardo Ferreira, Osvaldo K. Takai, Kelly R. Braghetto, and Calton Pu</i>	

Short Paper Session 6: Industry Applications

Discovering HealthGrid Services	301
<i>Aisha Naseer and Lampros K. Stergioulas</i>	
A Domain-Specific Service-Oriented Development Environment.....	307
<i>Cristina Marin and Philippe Lalanda</i>	

Towards Scaleable and Adaptive Document Routing Services	311
<i>Deepak Ramachandran, Neil Boyette, Isaac Cheng, Vikas Krishna, and Savitha Srinivasan</i>	

Short Paper Session 7: Services in Web and Mobile Environment

Coupling RDF/RSS and WSRP for Dynamic Reusable Portlets: An Approach and a Use Case	315
<i>Krishnendu Kunti, Shaurabh Bharti, Anshuk Pal Chaudhuri, and Srinivas Padmanabhuni</i>	
Life Cycle Management of Personalized and Context-aware Mobile Services — Goals, Requirements, and Interfaces.....	319
<i>Bharat Bhushan, Stephan Steglich, Bernd Mrohs, and Christian Räck</i>	
An Application Streaming Service for Mobile Handheld Devices	323
<i>Joeng Kim, Ricardo A. Baratto, and Jason Nieh</i>	

Short Paper Session 8: QoS, RFID, and Grid Flow Management

Introducing QoS Profiles in the Pricing of 3G Services	327
<i>Vitalis G. Ozianyi, Neco Ventura, and Eugene Golovins</i>	
Agent based Resource Brokering and Allocation in Wireless Grids	331
<i>M.N. Birje, S.S. Manvi, and Bhanu Prasad</i>	
Data Management in Manufacturing Grid.....	335
<i>Ruyue Ma, Xiangxu Meng, and Shijun Liu</i>	

Industry Track

Industry Paper Session 1: Architecture & Case Studies

Develop Service-Oriented Finance Business Processes: A Case Study in Capital Market	341
<i>Aries Tao Tao and Jian Yang</i>	
Solution Architecture for N-Tier Applications	349
<i>Tony C. Shan and Winnie W. Hua</i>	
Concepts for Service-Oriented Business Thinking.....	357
<i>Nitin Nayak, Anil Nigam, Jorge Sanz, David Marston, and David Flaxer</i>	
Implementing Shared Data Services (SDS): A Proposed Approach	365
<i>Sriram Anand and Senthil Kumar</i>	

Industry Paper Session 2: Business Process Management

Business Service Management: The Impact of IT Governance Models on IT Management Policies.....	373
<i>Mathias Sallé and Giuliano Di-Vitantonio</i>	
A Safety Criterion for Reusing a Business Process in the Desired Integrated Process.....	381
<i>Souvik Barat, Vinay Kulkarni, and D. Janakiram</i>	

Industry Paper Session 3: Business Process Modeling

Linking Contracts, Processes and Services: An Event-Driven Approach	390
<i>Z. Milosevic, M. Orłowska, and S. Sadiq</i>	
Data Quality Management using Business Process Modeling.....	398
<i>Sugato Bagchi, Xue Bai, and Jayant Kalagnanam</i>	
The Workflow Based Architecture for Mobile Information Access in Occasionally Connected Computing	406
<i>Ali Bahrami, Changzhou Wang, Jun Yuan, and Anne Hunt</i>	

Industry Paper Session 4: Application of Grid Services

Architecture for Service Request Driven Solution Delivery Using Grid Systems.....	414
<i>Vijay K. Naik, Pawel Garbacki, and Ajay Mohindra</i>	
Semantic based Service-Oriented Grid Architecture for Business Processes.....	423
<i>Zakir Laliwala, Prateek Jain, and Sanjay Chaudhary</i>	

Industry Paper Session 5: Service Composition and Dynamic Service Invocation

A Novel Business Model for Web Service Composition	431
<i>Rajesh Karunamurthy, Ferhat Khendek, and Roch H. Glitho</i>	
Using Data Semantics to Enable Automatic Composition of Web Services	438
<i>Danny Gagne, Marwan Sabbouh, Scott Bennett, and Susan Powers</i>	
A Requester-based Mediation Framework for Dynamic Invocation of Web Services.....	445
<i>Baoping Lin, Naijie Gu, and Qing Li</i>	

Services Computing Contest

Effective Acquisition of Geospatial Data Products in a Collaborative Grid Environment.....	455
<i>Yaxing Wei, Peng Yue, Upendra Dadi, Min Min, Chengfang Hu, and Liping Di</i>	
A Dynamic-SOA Home Control Gateway	463
<i>Johann Bourcier, Antonin Chazalet, Mikaël Desertot, Clément Escoffier, and Cristina Marin</i>	
Applying Distributed Business Rules — The ViDRE Approach	471
<i>Florian Rosenberg, Christoph Nagl, and Schahram Dustdar</i>	
A SOA-based Self-Adaptive Personal Mobility Manager.....	479
<i>D. Lorenzoli, S. Mussino, M. Pezzé, A. Sichel, D. Tosi, and Daniela Schilling</i>	
The MIDAS System: A Service Oriented Architecture for Automated Supply Chain Management	487
<i>Firat Kart, Zhongnan Shen, and Cagdas Evren Gerede</i>	
Secure and Provable Service Support for Human-Intensive Real-Estate Processes	495
<i>Emerson Ribeiro de Mello, Savas Parastatidis, Philipp Reinecke, Chris Smith, Aad van Moorsel, and Jim Webber</i>	

SOA Industry Summit

Keynote for IEEE SOA Industry Summit.....	505
<i>Jeff Barr</i>	
Drivers for SOA in the Transaction Banking Domain.....	506
<i>Sriram Anand and Jayakumar Venkataraman</i>	
Contextual Spectrums in Technology and Information Platform	508
<i>Tony C. Shan and Winnie W. Hua</i>	
Service-Oriented Computing Kit.....	509
<i>Tony C. Shan and Winnie W. Hua</i>	
Optimal Asynchronous Service Scheduling in BISON	510
<i>Hakan Hacigümüş and James Rhodes</i>	
Service Contract Template	511
<i>Arnaud Simon and Thomas Rischbeck</i>	
Enterprise Service Oriented Architecture (ESOA) Adoption Reference	512
<i>Yan Zhao</i>	

Building SOA based Solution for a Workforce Management	513
<i>Pawan Chhabra, Sandeep Karamongikar, Gilbert Owusu, and Shyam Doddavula</i>	
Beyond SOA: Context-Aware Composite Services.....	514
<i>Ali Arsanjani and Sri Ramanathan</i>	
The Service Integration Maturity Model: Achieving Flexibility in the Transformation to SOA	515
<i>Ali Arsanjani and Kerrie Holley</i>	
An SOA Compass for Next Generation Networks	516
<i>Raghu Anantharangachar, Prasanna Anantharamaiah, and Krishnamurthy Thalapathy</i>	
Using State Machine to Integrate Human Activity into BPEL in Dartflow.....	517
<i>Wei Shi, Jian Wu, and Zhaohui Wu</i>	
Towards Self-Composing, Prioritized and Consequential Services	518
<i>Raghu Anantharangachar, Gorur N. Shrinivas, and S.K. Nandy</i>	
ITSGrid: A Novel Integrated Intelligent Transportation Information and Service Platform.....	519
<i>Wei Shi, Jian Wu, Shuiguang Deng, Li Kuang, Huajun Chen, DongCai Shi, Zhao Xu, Zhiyong Ye, Zhaohui Wu, Xiaohong Qian, Xiuhai Chen, Quanming Xu, and Feihu Chen</i>	
Web Services based SOA for Next Generation Telecom Networks.....	520
<i>Abhijit Sur, Dean Skidmore, and Shoma Chakravarty</i>	
Service-Oriented Modeling and Architecture for Realization of an SOA	521
<i>Ali Arsanjani and Abdul Allam</i>	
A Flexible Framework for Tools Integration using Service Oriented Architecture.....	522
<i>Raghu Anantharangachar, K. Krishna, and Gorur N. Shrinivas</i>	

Work-in-Progress

Towards a Service-Oriented Participatory Design Studio Supported by UCLP.....	525
<i>Sandy Liu, Bruce Spencer, Martin Brooks, Michael Jemtrud, Konstantin Privalov, John Spence, Michel Savoie, and Bobby Ho</i>	
Event-Driven Dynamic Web Services Composition and Automation of Business Processes.....	527
<i>Zakir Laliwala</i>	
Mapping the QoS of the Services on the QoS of the Systems' Resources in an Adaptive Resource Management System.....	529
<i>Claudia Raibulet, Francesca Arcelli, and Stefano Mussino</i>	
Web Content Consistency Through Explicit Ownership Definition.....	531
<i>Chi-Hung Chi, Lin Liu, and Choon-Keng Chua</i>	
Content Grid Architecture for Pervasive Content Delivery.....	533
<i>Su Mu, Chi-Hung Chi, Henry Palit, and Lin Liu</i>	

Author Index	535
---------------------------	-----