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Business Process Management Workshops

BPM 2006 International Workshops
BPD, BPI, ENEI, GPWW, DPM, semantics4ws
Vienna, Austria, September 4-7, 2006
Proceedings
Preface

BPM 2006 was the fourth in a conference series that provides a forum for researchers and practitioners in all areas of business process management. In conjunction with BPM 2006, a series of workshops were held. They were meant to facilitate the exchange of ideas and experiences between active researchers, and to stimulate discussions on new and emerging topics in line with the conference topics. We see the workshops as a necessary extension to the main conference.

BPM has established itself rapidly as a high quality conference with a highly competitive selection process. The following workshops were approved and accepted for inclusion in the BPM 2006 program:

- BPI 2006 – 2nd International Workshop on Business Process Intelligence
- ENEI 2006 – 2nd International Workshop on Enterprise and Networked Enterprises Interoperability
- GPWW 2006 – 2nd International Workshop on Grid and Peer-to-Peer based Workflows
- semantics4ws 2006 – Advances in Semantics for Web Services

The program of each of these workshops was developed by a separate dedicated organization team and program committee. In summary the respective calls for papers attracted a total of 94 submissions out of which 40 papers were selected for presentation and are included in this volume.

The organization of these workshops was made possible by the voluntary dedicated efforts of many individuals. We thank all the workshop organizers, the members of the program committees and the additional reviewers for their excellent service to the community. We thank the authors for submitting papers to these workshops. And last but not least we thank Marek Lehmann for the careful compilation of this volume.

June 2006

Johann Eder
Schahram Dustdar
Organization

BPM 2006 was organized by the VitaLab, Distributed Systems Group, Institute of Information Systems, Vienna University of Technology.

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We acknowledge the support of the following companies and institutions:
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Business Process Management (BPM) remains of high popularity as a paradigm for the evaluation and design of organizational and IT systems as well as an increasingly attractive domain for academic research. There are definite signs of maturity in the operationalization and value generation of process-based management approaches and communities of practice (e.g., BPMG.org), and events like the annual Business Process Management conference contribute to a fast growing body of knowledge on BPM.

However, it is surprising to note that the actual process of process management still remains largely unstructured. Unlike other areas such as Project Management (e.g., PMBOK) or Software Engineering (e.g., Spiral Model, RUP), the Business Process Management community lacks a well-accepted and empirically evaluated procedure model. This is even more disturbing as “process” is the core focus of BPM.

On the one hand, a high number of idiosyncratic methodologies have been developed in-house or are distributed as vendorized packages by consulting companies. Furthermore, related concepts such as Six Sigma are often used in practice as the main reference point for the design of BPM initiatives. On the other hand, the academic community tends to focus its attention on the intellectually stimulating parts of the business process lifecycle such as issues related to modeling and executing business processes. The core challenge of a BPM initiative, generating improved, more compliant or entire new business processes, however, seems to remain based on the ATAMO principle (“and then a miracle occurs”).

The aim of this Second Workshop on Business Process Design was to continue the discussion initiated at last year’s event and to further nurture the development of a body of knowledge on the disciplined, well-understood and appropriately evaluated design of business processes.

The Call for Papers for this workshop attracted 12 high quality international submissions. Within a rigorous process, in which each paper was reviewed by at least two experts, we selected 7 papers for inclusion in this workshop.

We are very grateful to the efforts of all authors related to writing, revising and presenting their papers. Finally, we appreciate the indispensable support of the members of the Program Committee who provided excellent feedback and valuable directions.

June 2006

Tom Davenport
Selma Mansar
Hajo Reijers
Michael Rosemann
(Editors)
Workshop Organization

Co-chairs

Tom Davenport
School of Executive Education
Babson College at Wellesley
Babson Park, MA 02457-0310
USA

Hajo Reijers
Department of Technology Management
Eindhoven University of Technology
5600 MB, Pav.D14, Eindhoven
The Netherlands

Selma Limam Mansar
College of Business Sciences
Zayed University
P.O. BOX 19282, Dubai
U.A.E.

Michael Rosemann
BPM Research Group
Queensland University of Technology
126 Margaret Street, Brisbane Qld 4000
Australia

Workshop Program Committee

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Preface

Surviving in today’s competitive market demands that enterprises improve the efficiency of their business processes not only by their automation, as they have done for years, but also by gaining intelligence about such processes to get reduced costs and higher performance. Business Process Intelligence (BPI) is an emerging, interdisciplinary area that aims at developing models, techniques and tools to improve different aspects of how business processes are modeled and conducted. BPI is not only the application of Business Intelligence techniques to business processes but it also integrates contributions from other research areas like BAM (Business Activity Monitoring), BOM (Business Operations Management), BPM (Business Performance Management), and others.

Following the success of the first BPI workshop, held in Nancy on September 5, 2005, this second workshop intended to bridge across the various research areas that are related to BPI. At the same time the workshop was an opportunity to continue consolidating this area and building a multidisciplinary community.

The workshop BPI 2006 consisted of a keynote talk on “Process Mining: Practical Experiences and a Reality Check”, seven contributed papers that were selected by the program committee for presentation at the workshop, and a panel on “Business Process Intelligence and Business Intelligence: Differences and Convergences”.

In his keynote talk, Wil van der Aalst gave an overview of the various process mining techniques that have been developed in the last 10 years, and discussed the many perspectives of viewing process mining: from the reverse engineering of code and the monitoring of embedded systems to cross-organizational workflows and health-care processes. The goal was to promote a discussion on the challenges that need to be addressed to improve the applicability of process mining.

The seven papers cover some of the main topics addressed by BPI. In particular, the paper “Process Mining and Petri Net Synthesis” by E. Kindler, V. Rubin and W. Schäfer, deals with the topic of process discovery, which refers to the analysis of enterprise operations in order to derive the process models that these operations obey. A contribution to this topic is also given by the industrial paper “A Generic Import Framework for Process Event Logs” by C.W. Günther and W.M.P. van der Aalst, which illustrates a framework for acquiring log data from a Process-Aware Information System. The topic of intelligent process analysis (analysis of business process execution to discover interesting correlations) is addressed by the paper “Process Mining by Measuring Process Block Similarity” by J. Bae, J. Caverlee, L. Liu, B. Rouse, and H. Yan, which presents an approach for measuring the similarity between two process models.
Another topic relevant to BPI, exception handling, is dealt with by the paper “Improving Exception Handling by Discovering Change Dependencies in Adaptive Process Management Systems” by B. Weber, W. Wild, M. Lauer and M. Reichert. A novel topic of process modeling and reasoning is covered by the paper “Process Representation and Reasoning Using a Logic Formalism with Object-Oriented Features” by A. Gualtieri, T. Dell’Armi and N. Leone. The topic of business process measurement is analyzed by the survey paper “A Discourse on Complexity of Process Models” by J. Cardoso, J. Mendling, G. Neumann and H.A. Reijers, which focuses on the problem of defining complexity metrics for business processes. Finally, the position paper “Measuring Performance in the Retail Industry” by G. Marketos and Y. Theodoridis deals with the application of BPI in the context of the retail industry by suitably exploiting the RFID technology.

The panel discussed convergences between Business Intelligence (BI) and Business Process Intelligence: how techniques of BI can be effectively applied to add intelligence to the analysis of processes? The panel also intended to evidence differences between the two areas, as BPI is not just an application of BI, but it is a multidisciplinary area.

Acknowledgments

We wish to express a special word of thanks to the Program Committee members (Francesco Archetti, Boualem Benatallah, Fabio Casati, Jonathan E. Cook, Peter Dadam, Saso Dzeroski, Fosca Giannotti, Mati Golani, Gianluigi Greco, Dimitrios Georgakopoulos, Joachim Herbst, Shlomit S. Pinter, Michael Rosemann, Wil van der Aalst, Mathias Weske, Michael zur Muhlen) for providing their technical expertise in reviewing the submitted papers and their valuable support to create an interesting program. We are particularly grateful to the keynote speaker, Wil van der Aalst, for his interesting keynote talk and, more generally, for his pioneering contribution to the area of BPI. We also thank all the authors of the accepted papers for sharing their work and experiences in this workshop. Finally, we want to express our sincere appreciation to the BPM 2006 Workshops Chair, Johann Eder, for his support in the organization of the workshops and the proceedings.

June 2006

Malu Castellanos
Domenico Saccà
Ton Weijters
(Editors)
Workshop Organization

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The agility of an enterprise increasingly depends on its ability to dynamically set up new business processes or to modify existing ones, and to quickly adapt its information systems to these process changes. Companies are therefore developing a growing interest in concepts, technologies and systems that help them to flexibly align their businesses and engineering processes to meet changing needs and to optimize their interactions with customers and business partners.

In this context dynamic process support has become an extensive research topic in areas like business process management, Web service technology and engineering workflows with several specialized aspects. Besides business requirements there are many technical challenges like the correct and efficient support of dynamic workflows (e.g., evolution of workflow specifications and dynamic change propagation, data-driven workflows), the support of autonomic or self-organizing processes, the dynamic selection of best service providers, the dynamic evolution of local processes as well as their involvement in cross-organizational collaborations, or the handling of security and trust issues in dynamic processes. While there has been major progress in some of these areas, dynamic process support is still a vision when looking at more complex scenarios.

The aim of the DPM 2006 workshop, which took place in Vienna on September 4th, was to provide a forum wherein challenges and paradigms for dynamic process management could be debated. The workshop brought together researchers and practitioners from different communities and application domains who share an interest in dynamic process support. We received 10 contributions from which 5 were accepted for the workshop proceedings. Papers were evaluated on the basis of significance, relevance, technical quality and exposition. We hope you will find the papers of this workshop interesting and stimulating.

We would like to acknowledge the support of the workshop program committee. We also thank Johann Eder as workshops chair and Schahram Dustdar as general chair of the BPM 2006 conference.

September 2006

Manfred Reichert
Kunal Verma
Andreas Wombacher
(Editors)
Workshop Organization

Organization Committee

Manfred Reichert
University of Twente
m.u.reichert@utwente.nl

Kunal Verma
The University of Georgia
verma@cs.uga.edu

Andreas Wombacher
University of Twente
a.wombacher@utwente.nl

Program Committee

Wil van der Aalst, The Netherlands
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Paolo Bussetta, Linh Thao Ly, Michael Predeschly
Preface

Following the success of the first workshop, ENEI 2005 (http://www.loria.fr/~nacer/BPM-ENEI05/ENEI-CfP.html), this second event addressed computer-supported integration and interoperability of enterprise applications and software. Indeed, enterprises are provided with collections of heterogeneous applications and software tools that were neither designed nor developed to favor their interaction and their cooperation.

The problem is more crucial when one considers networked enterprises and enterprise expansion (through, for instance, alliances or mergers). Moreover, interoperability within an enterprise and between enterprises is not limited to data interoperability but should also consider additional levels like applications, business models, process models, enterprise models, and their supporting systems and software.

The workshop was divided into three sessions. The first session shows issues related to enterprise systems interoperability, and more particularly at the manufacturing and shop floor level of enterprises where the product, as seen by enterprises applications, is one of the main information producers and consumers. Interdependence between the subsystems of an enterprise is one of the driving reasons for integrating the enterprise.

The second session is related to model-based approaches for enterprise interoperability. Indeed, while a modeling framework is needed to map semantics between enterprise models, business-to-business collaboration models also requiring a flexible IT-architecture. Different protocols, such as P2P, may be applied to cooperatively develop business process models for enterprise interoperability.

The last session deals with ontology-based approaches. These approaches may be evaluated within an application for decision making, but also using Web services technology applied to workflow time management algorithms. However, research is in progress to define reference conceptual frameworks to organize ontology knowledge spaces and semantic annotations to augment enterprise models with meaningful meta-data, in order to improve human understanding, machine interoperability, and advanced automatic information management.

It has been a great pleasure to work with the members of the international program committee, who dedicated their valuable effort to reviewing, in time, the submitted papers: we are indebted to all of them as we are indebted to the INTEROP Network of Excellence (FP6 IST-508-011, http://www.interop-noe.org) for its scientific and financial support.

June 2006

Nacer Boudjlida
Hervé Panetto
(Editors)
Workshop Organization

Workshop and Program Committee Co-chairs

Boudjlida, Nacer  
LORIA UMR 7503, Nancy-University, France
Panetto, Hervé  
CRAN UMR 7039, Nancy-University, CNRS, France

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FST, University of Tunis, Tunisia
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Whitman, Larry  
Wichita State University, USA
Additional Referees

Bergholtz, Maria  
Elgedawy, Islam  
Gooneratne, Nalaka  
Jaudoin, Hélène  
Montanelli, Stefano,  
Saleem, Khalid  
Shazib E., Sheikh

KTH, Sweden  
RMIT University, Melbourne, Australia  
RMIT University, Melbourne, Australia  
ISIMA, France  
University of Milan, Italy  
University of Montpellier, LIRMM, France  
Lahore University of Management Sciences, Pakistan
Workshop on Grid and Peer-to-Peer Based Workflows (GPWW 2006)

Preface

Nowadays, many data- and/or computation-intensive applications in the area of e-science and e-business involve coordinated sharing of highly distributed resources in a grid environment. In this context, a collaborative workflow management system is always required as part of the sophisticated problem solving process. Efficient management of workflow in grid environments has become increasingly important. Issues such as grid workflow infrastructure based on the Grid toolkits, grid workflow modeling and specification, grid workflow verification and validation, and decentralized grid workflow execution based on peer-to-peer technology have already evoked a high degree of interest.

With the success of the 1st workshop, which was held in Melbourne, Australia in 2005, the 2nd International Workshop on Grid and Peer-to-Peer based Workflows (GPWW) was held in conjunction with the 4th International Conference on Business Process Management (BPM 2006), in Vienna, Austria. The aim of this workshop was to bring together researchers and practitioners from academia, industry and governments to report advances in grid and peer-to-peer based workflow research.

Overall, we received 11 submissions from Australia, Belgium, China, Germany, Hungary, Italy, Korea, Netherlands, Poland and USA. Each paper was carefully reviewed by 3 members from the International Program Committee. Based on the quality of the submissions and their relevance to the workshop themes, the Program Committee accepted 5 papers to be included in the workshop proceedings.

We would like to thank all the members of the Program Committee for reviewing the papers in a very short time period. We are grateful to all the colleagues who submitted papers to GPWW. We would also like to thank the organizers of BPM 2006 for their cooperation and partnership. Finally, we acknowledge the professional support from Springer, who published the proceedings in its LNCS series.

June 2006

Yun Yang
Jun Shen
Jun Yan
Jinjun Chen
(Editors)
Workshop Organization

Organizers

Yun Yang, Swinburne University of Technology, Australia
Jun Shen, University of Wollongong, Australia
Jun Yan, University of Wollongong, Australia
Jinjun Chen, Swinburne University of Technology, Australia

International Program Committee

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Markus Stumpter, University of South Australia, Australia
Kunal Vemar, University of Georgia, USA
Jian Yang, Macquarie University, Australia
Hai Zhuge, Institute of Computing Technology, CAS, China

External Reviewers

Georg Grossmann, Australia
Aneesh Krishna, Australia
Jia Yu, Australia
Xiaohui Zhao, Australia
These proceedings contain the papers accepted for presentation at the “Advances in Semantics for Web services (semantics4ws 2006)” workshop held in Vienna, Austria, on September 4, 2006, in conjunction with the Fourth International Conference on Business Process Management (BPM 2006).

The main topics of this workshop are related to applicability of semantic technologies to Web services. Web services have added a new level of functionality to the current Web by taking a first step towards seamless integration of distributed software components using Web standards. Nevertheless, current Web service technologies around SOAP, WSDL and UDDI operate at a syntactic level and, therefore, although they support interoperability (i.e., interoperability between the many diverse application development platforms that exist today) through common standards, they still require human interaction to a large extent. For example, the human programmer has to manually search for appropriate Web services in order to combine them in a useful manner, which limits scalability and greatly curtails the added economic value envisioned with the advent of Web services.

Recent research (which we refer to as Semantic Web Services – SWS), which draws on a variety of fields such as Semantic Web, knowledge representation, formal methods, software engineering, process modeling, workflow, and software agents, is gaining momentum, in particular in the context of Web services usage. Research in the above mentioned fields can be exploited to automate Web services-related tasks, like discovery, selection, composition, mediation, monitoring, and invocation, thus enabling seamless interoperation between them while keeping human intervention to a minimum. Although several initiatives, like OWL-S, WSMO, WSDL-S, or IRS, have emerged in this area aiming at addressing the problem of semantics in Web services, many major challenges still need to be addressed and solved in this field.

In this context, this workshop aims to provide a forum in which to focus on selected core technical challenges for deployment of Semantic Web Services, and reach a better understanding of the relationships between commercial Web service standards, current SWS research efforts, and the ultimate requirements for full-scale deployment of these technologies. More specifically, this workshop aims to tackle the research problems (as well as recent practical experiences) around methods, concepts, models, languages and technology that enable semantics in the context of Web services, as well as discussing recent advances in semantics for Web services. Of particular interest are the architectural, technical, and developmental foundations of SWS, and showing how they combine synergistically
to enable service automation on the scale required by today’s Internet-connected enterprises.

This workshop aims to bring together researchers and industry practitioners (e.g., leading modelers, architects, system vendors, open-source projects, developers, and end-users) addressing many of these issues (including recent developments in tools and techniques, and real-world implementations of SWS applications), and promote and foster a greater understanding of how semantics can assist automation in Web services, thus helping people develop and manage services more efficiently and effectively.

The workshop organizers would like to thank the authors for their high-quality submissions and the members of the program committee for their reviewing and review coordination efforts.

June 2006

Steven Battle
John Domingue
David Martin
Dumitru Roman
Amit Sheth
(Editors)
Workshop Organization

Program Chairs

Steven Battle, Hewlett-Packard Labs, UK
John Domingue, The Open University, UK
David Martin, SRI International, USA
Dumitru Roman, DERI Innsbruck, Austria
Amit Sheth, University of Georgia, USA

Program Committee

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Stuart Williams, HP Bristol, UK

External Reviewers

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# Table of Contents

## Workshop on Business Process Design (BPD 2006)

Preface .......................................................... 3  
_**Tom Davenport, Selma Mansar, Hajo Reijers, Michael Rosemann**_

Designing Compliant Business Processes with Obligations and Permissions .......................................................... 5  
_**Stijn Goedertier, Jan Vanthienen**_

Design Methods for Collaborative Emergent Processes ............... 15  
_**Igor Hawryszkiewycz**_

Process Design Strategies to Address Breadth and Depth Complexity.... 25  
_**Michael Soanes**_

Improving Business Process Models with Reference Models in Business-Driven Development ........................................ 35  
_**Jochen M. Küster, Jana Koehler, Ksenia Ryndina**_

ERP Reference Process Models: From Generic to Specific ............... 45  
_**Avi Wasser, Maya Lincoln, Reuven Karni**_

Business Process Design by View Integration .......................... 55  
_**Jan Mendling, Carlo Simon**_

An Approximate Analysis of Expected Cycle Time in Business Process Execution .......................................................... 65  
_**Byung-Hyun Ha, Hajo A. Reijers, Joonsoo Bae, Hyerim Bae**_

## Workshop on Business Process Intelligence (BPI 2006)

Preface .......................................................... 77  
_**Malu Castellanos, Domenico Saccà, Ton Weijters**_

A Generic Import Framework for Process Event Logs ...................... 81  
_**Christian W. Günther, Wil M.P. van der Aalst**_

Improving Exception Handling by Discovering Change Dependencies in Adaptive Process Management Systems .......................... 93  
_**Barbara Weber, Werner Wild, Markus Lauer, Manfred Reichert**_
### Table of Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Mining and Petri Net Synthesis</td>
<td>105</td>
</tr>
<tr>
<td><em>Ekkart Kindler, Vladimir Rubin, Wilhelm Schäfer</em></td>
<td></td>
</tr>
<tr>
<td>A Discourse on Complexity of Process Models</td>
<td>117</td>
</tr>
<tr>
<td><em>J. Cardoso, J. Mendling, G. Neumann, H.A. Reijers</em></td>
<td></td>
</tr>
<tr>
<td>Measuring Performance in the Retail Industry</td>
<td>129</td>
</tr>
<tr>
<td><em>Gerasimos Marketos, Yannis Theodoridis</em></td>
<td></td>
</tr>
<tr>
<td>Process Mining by Measuring Process Block Similarity</td>
<td>141</td>
</tr>
<tr>
<td><em>Joonsoo Bae, James Caverlee, Ling Liu, Hua Yan</em></td>
<td></td>
</tr>
<tr>
<td>Process Representation and Reasoning Using a Logic Formalism</td>
<td>153</td>
</tr>
<tr>
<td>with Object-Oriented Features</td>
<td></td>
</tr>
<tr>
<td><em>Andrea Gualtieri, Tina Dell’Armi, Nicola Leone</em></td>
<td></td>
</tr>
</tbody>
</table>

#### Workshop on Dynamic Process Management (DPM 2006)

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>167</td>
</tr>
<tr>
<td><em>Manfred Reichert, Kunal Verma, Andreas Wombacher</em></td>
<td></td>
</tr>
<tr>
<td>A Declarative Approach for Flexible Business Processes</td>
<td>169</td>
</tr>
<tr>
<td><em>M. Pesic, W.M.P. van der Aalst</em></td>
<td></td>
</tr>
<tr>
<td>Flexibility of Data-Driven Process Structures</td>
<td>181</td>
</tr>
<tr>
<td><em>Dominic Müller, Manfred Reichert, Joachim Herbst</em></td>
<td></td>
</tr>
<tr>
<td>Business Rules Segregation for Dynamic Process Management</td>
<td>193</td>
</tr>
<tr>
<td>with an Aspect-Oriented Framework</td>
<td></td>
</tr>
<tr>
<td><em>Semih Cetin, N. Ilker Altintas, Remzi Solmaz</em></td>
<td></td>
</tr>
<tr>
<td>A Dynamic Workflow Management System for Coordination</td>
<td>205</td>
</tr>
<tr>
<td>of Cooperative Activities</td>
<td></td>
</tr>
<tr>
<td><em>François Charoy, Adnene Guabtni, Miguel Valdes Faura</em></td>
<td></td>
</tr>
<tr>
<td>Modeling</td>
<td></td>
</tr>
<tr>
<td><em>Birgit Burmeister, Hans-Peter Steiert, Thomas Bauer,</em></td>
<td></td>
</tr>
<tr>
<td><em>Hartwig Baumgärtel</em></td>
<td></td>
</tr>
</tbody>
</table>
## Workshop on Enterprise and Networked Enterprises Interoperability (ENEL 2006)

### Preface

Nacer Boudjlida, Hervé Panetto

### Session 1: Enterprise Systems Interoperability Issues

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop Floor Information Management and SOA</td>
<td>237</td>
</tr>
<tr>
<td>Konrad Pfadenhauer, Burkhard Kittl, Schahram Dustdar, David Levy</td>
<td></td>
</tr>
<tr>
<td>Product-Driven Enterprise Interoperability for Manufacturing Systems Integration</td>
<td>249</td>
</tr>
<tr>
<td>Michele Dassisti, Hervé Panetto, Angela Tursi</td>
<td></td>
</tr>
<tr>
<td>Understanding Interdependence in Enterprise Systems: A Model and Measurement Formalism</td>
<td>261</td>
</tr>
<tr>
<td>Ronald E. Giachetti</td>
<td></td>
</tr>
</tbody>
</table>

### Session 2: Model-Based Approach for Enterprise Interoperability

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semaphore – A Model-Based Semantic Mapping Framework</td>
<td>275</td>
</tr>
<tr>
<td>Andreas Limyr, Tor Neple, Arne-Jørgen Berre, Brian Elvesæter</td>
<td></td>
</tr>
<tr>
<td>B2B Protocol Construction as a Basis for Integration Architecture Configuration</td>
<td>285</td>
</tr>
<tr>
<td>Bettina Bazijanec, Klaus Turowski</td>
<td></td>
</tr>
<tr>
<td>A P2P Approach for Business Process Modelling and Reuse</td>
<td>297</td>
</tr>
<tr>
<td>José A. Rodrigues Nt., Jano Moreira de Souza, Geraldo Zimbrão, Geraldo Xexéo, Eduardo Neves, Wallace A. Pinheiro</td>
<td></td>
</tr>
</tbody>
</table>

### Session 3: Ontology-Based Approach for Enterprise Interoperability

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoperable and Multi-flow Software Environment: Application to Health Care Supply Chain</td>
<td>311</td>
</tr>
<tr>
<td>Pierre Féniès, Michel Gourgand, Sophie Rodier</td>
<td></td>
</tr>
</tbody>
</table>
An Architecture for Proactive Timed Web Service Compositions .......... 323
Johann Eder, Horst Pichler, Stefan Vielgut

Ontology Knowledge Spaces for Semantic Collaboration in Networked Enterprises.......................................................... 336
Silvana Castano, Alfio Ferrara, Stefano Montanelli

About Semantic Enrichment of Strategic Data Models as Part of Enterprise Models .................................................. 348
Claudia Diamantini, Nacer Boudjlida

Workshop on Grid and Peer-to-Peer Based Workflows (GPWW 2006)

Preface .......................................................... 363
Yun Yang, Jun Shen, Jun Yan, Jinjun Chen

Requirements for a Workflow System for Grid Service Composition ...... 365
Niels Joncheere, Wim Vanderperren, Ragnhild Van Der Straeten

Web Services Composition in Autonomic Grid Environments ............ 375
Danilo Ardagna, Silvia Lucchini, Raffaela Mirandola, Barbara Pernici

Event-Based Peer-to-Peer Process Enactment for Ubiquitous Web Service Devices .................................................. 387
Jae-Yoon Jung, Jonghun Park, Seung-Kyun Han, Kangchan Lee

Expressing Business Process Models as OWL-S Ontologies .......... 400
Muhammad Ahtisham Aslam, Sören Auer, Jun Shen, Michael Herrmann

Combining i* and BPMN for Business Process Model Lifecycle Management .................................................. 416
George Koliadis, Aleksandar Vranecevic, Moshiur Bhuiyan, Aneesh Krishna, Aditya Ghose

Advances in Semantics for Web Services (semantics4ws 2006)

Preface .......................................................... 431
Steven Battle, John Domingue, David Martin, Dumitru Roman, Amit Sheth
The Semantics of Business Service Orchestration ...................... 435
   Bill Karakostas, Yannis Zorgios, Charalampos C. Alevizos

Requirements for Automated Service Composition .................... 447
   Harald Meyer, Dominik Kuropka

Semi-automatic Semantic-Based Web Service Classification ............. 459
   Miguel Ángel Corella, Pablo Castells

Modeling, Matching and Ranking Services Based on Constraint Hardness ............................................ 471
   Claudia d’Amato, Steffen Staab

Version Management in Semantic Web Services Using OWL-S .......... 483
   Maria Cecilia Bastarrica, Carlos Hurtado, Alejandro Vaisman

BPEL Behavioral Abstraction and Matching .......................... 495
   Nomane Ould Ahmed M’bareck, Samir Tata

Author Index .......................................................... 507