## Table of Contents

### Research Papers

### Business Process Management

**Configuration Rule Mining for Variability Analysis in Configurable Process Models** .................................................. 1  
*Nour Assy and Walid Gaaloul*

**ProcessBase: A Hybrid Process Management Platform** .............. 16  
*Moshe Chai Barukh and Boualem Benatallah*

**A Multi-objective Approach to Business Process Repair** ........... 32  
*Chiara Di Francescomarino, Roberto Tiella, Chiara Ghidini, and Paolo Tonella*

**Memetic Algorithms for Mining Change Logs in Process Choreographies** .......................................................... 47  
*Walid Fdhila, Stefanie Rinderle-Ma, and Conrad Indiono*

**Flexible Batch Configuration in Business Processes Based on Events** .... 63  
*Luise Pufahl, Nico Herzberg, Andreas Meyer, and Mathias Weske*

**Automatic Generation of Optimized Workflow for Distributed Computations on Large-Scale Matrices** ....................... 79  
*Farida Sabry, Abdelkarim Erradi, Mohamed Nassar, and Qutaibah M. Malluhi*

### Service Composition and Discovery

**A Dynamic Service Composition Model for Adaptive Systems in Mobile Computing Environments** .................................. 93  
*Nanxi Chen and Siobhán Clarke*

**Optimal and Automatic Transactional Web Service Composition with Dependency Graph and 0-1 Linear Programming** ............. 108  
*Virginie Gabrel, Maude Manouvrier, and Cécile Murat*

**A Framework for Searching Semantic Data and Services with SPARQL** ....................................................... 123  
*Mohamed Lamine Mouhoub, Daniela Grigori, and Maude Manouvrier*
Conformance for DecSerFlow Constraints ................................. 139
   Yutian Sun and Jianwen Su

Integrating On-policy Reinforcement Learning with Multi-agent
Techniques for Adaptive Service Composition ............................. 154
   Hongbing Wang, Xin Chen, Qin Wu, Qi Yu, Zibin Zheng, and
   Athman Bouguettaya

Service Design, Description and Evolution

An Agent-Based Service Marketplace for Dynamic and Unreliable
Settings .................................................................................. 169
   Lina Barakat, Samhar Mahmoud, Simon Miles, Adel Taweel, and
   Michael Luck

Architecture-Centric Design of Complex Message-Based Service
Systems .................................................................................. 184
   Christoph Dorn, Philipp Waibel, and Schahram Dustdar

Managing Expectations: Runtime Negotiation of Information Quality
Requirements in Event-Based Systems ........................................ 199
   Sebastian Frischbier, Peter Pietzuch, and Alejandro Buchmann

C2P:Co-operative Caching in Distributed Storage Systems ............. 214
   Shripad J. Nadgowda, Ravella C. Sreenivas, Sanchit Gupta,
   Neha Gupta, and Akshat Verma

Detection of REST Patterns and Antipatterns: A Heuristics-Based
Approach .................................................................................. 230
   Francis Palma, Johann Dubois, Naouel Moha, and
   Yann-Gaël Guéhéneuc

How Do Developers React to RESTful API Evolution? ................. 245
   Shaohua Wang, Iman Keivanloo, and Ying Zou

Cloud and Business Service Management

How to Enable Multiple Skill Learning in a SLA Constrained Service
System? .................................................................................. 260
   Sumit Kalra, Shivali Agarwal, and Gargi Dasgupta

ADVISE – A Framework for Evaluating Cloud Service Elasticity
Behavior .................................................................................. 275
   Georgiana Copil, Demetris Trihinas, Hong-Linh Truong,
   Daniel Moldovan, George Pallis, Schahram Dustdar, and
   Marios Dikaiakos
Transforming Service Compositions into Cloud-Friendly Actor Networks .......................... 291
   Dragan Ivanovic and Manuel Carro

A Runtime Model Approach for Data Geo-location Checks of Cloud Services .......................... 306
   Eric Schmieders, Andreas Metzger, and Klaus Pohl

Heuristic Approaches for Robust Cloud Monitor Placement ........................................... 321
   Melanie Siebenhaar, Dieter Schuller, Olga Wenge, and Ralf Steinmetz

Compensation-Based vs. Convergent Deployment Automation for Services Operated in the Cloud .................................................. 336
   Johannes Wettinger, Uwe Breitenbücher, and Frank Leymann

Research Papers - Short

Ensuring Composition Properties

On Enabling Time-Aware Consistency of Collaborative Cross-Organisational Business Processes ........................................ 351
   Saoussen Cheikhrouhou, Slim Kallel, Nawal Guermouche, and Mohamed Jmaiel

Weak Conformance between Process Models and Synchronized Object Life Cycles .................. 359
   Andreas Meyer and Mathias Weske

Failure-Proof Spatio-temporal Composition of Sensor Cloud Services ............................... 368
   Azadeh Ghari Neiat, Athman Bouguettaya, Timos Sellis, and Hai Dong

Quality of Services

Probabilistic Prediction of the QoS of Service Orchestrations: A Truly Compositional Approach ........................................... 378
   Leonardo Bartoloni, Antonio Brogi, and Ahmad Ibrahim

QoS-Aware Complex Event Service Composition and Optimization Using Genetic Algorithms ........................................... 386
   Feng Gao, Edward Curry, Muhammad Intizar Ali, Sami Bhiri, and Alessandra Mileo

Towards QoS Prediction Based on Composition Structure Analysis and Probabilistic Models ........................................... 394
   Dragan Ivanovic, Manuel Carro, and Peerachai Kaowichakorn
Semantic Web Services

Orchestrating SOA Using Requirement Specifications and Domain Ontologies ................................................................. 403
  Manoj Bhat, Chunyang Ye, and Hans-Arno Jacobsen

Estimating Functional Reusability of Services ................................. 411
  Felix Mohr

Negative-Connection-Aware Tag-Based Association Mining and Service Recommendation ................................................................. 419
  Yayu Ni, Yushun Fan, Keman Huang, Jing Bi, and Wei Tan

Service Management

Choreographing Services over Mobile Devices ................................. 429
  Tanveer Ahmed and Abhishek Srivastava

Adaptation of Asynchronously Communicating Software ................ 437
  Carlos Canal and Gwen Salaün

Handling Irreconcilable Mismatches in Web Services Mediation ........ 445
  Xiaoqiang Qiao, Quan Z. Sheng, and Wei Chen

Cloud Service Management

Evaluating Cloud Users’ Credibility of Providing Subjective Assessment or Objective Assessment for Cloud Services ................................. 453
  Lie Qu, Yan Wang, Mehmet A. Orgun, Duncan S. Wong, and Athman Bouguettaya

Composition of Cloud Collaborations under Consideration of Non-functional Attributes ................................................................. 462
  Olga Wenge, Dieter Schuller, Ulrich Lampe, Melanie Siebenhaar, and Ralf Steinmetz

Bottleneck Detection and Solution Recommendation for Cloud-Based Multi-Tier Application ................................................................. 470
  Jinhui Yao and Gueyoung Jung

Business Service Management

Towards Auto-remediation in Services Delivery: Context-Based Classification of Noisy and Unstructured Tickets ................................. 478
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIL Metamodel</td>
<td>486</td>
</tr>
<tr>
<td><em>Nelson Gama, Marco Vicente, and Miguel Mira da Silva</em></td>
<td></td>
</tr>
<tr>
<td>Formal Modeling and Analysis of Home Care Plans</td>
<td>494</td>
</tr>
<tr>
<td><em>Kahina Gani, Marinette Bouet, Michel Schneider, and Farouk Toumani</em></td>
<td></td>
</tr>
<tr>
<td>Effort Analysis Using Collective Stochastic Model</td>
<td>502</td>
</tr>
<tr>
<td><em>Vugranam C. Sreedhar</em></td>
<td></td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td></td>
</tr>
<tr>
<td>A Novel Equitable Trustworthy Mechanism for Service Recommendation</td>
<td>510</td>
</tr>
<tr>
<td>in the Evolving Service Ecosystem</td>
<td></td>
</tr>
<tr>
<td><em>Keman Huang, Yi Liu, Surya Nepal, Yushun Fan, Shipping Chen, and Wei Tan</em></td>
<td></td>
</tr>
<tr>
<td>Semantics-Based Approach for Dynamic Evolution of Trust Negotiation</td>
<td>518</td>
</tr>
<tr>
<td>Protocols in Cloud Collaboration</td>
<td></td>
</tr>
<tr>
<td><em>Seung Hwan Ryu, Abdelkarim Erradi, Khaled M. Khan, Saleh Alhazbi, and Boualem Benatallah</em></td>
<td></td>
</tr>
<tr>
<td>Social Context-Aware Trust Prediction in Social Networks</td>
<td>527</td>
</tr>
<tr>
<td><em>Xiaoming Zheng, Yan Wang, Mehmet A. Orgun, Guanfeng Liu, and Haibin Zhang</em></td>
<td></td>
</tr>
<tr>
<td><strong>Service Design and Description</strong></td>
<td></td>
</tr>
<tr>
<td>Decidability and Complexity of Simulation Preorder for Data-Centric</td>
<td>535</td>
</tr>
<tr>
<td>Web Services</td>
<td></td>
</tr>
<tr>
<td><em>Lakhdar Akroun, Boualem Benatallah, Lhouari Nourine, and Farouk Toumani</em></td>
<td></td>
</tr>
<tr>
<td>Market-Optimized Service Specification and Matching</td>
<td>543</td>
</tr>
<tr>
<td>*Svetlana Arifulina, Marie Christin Platenius, Steffen Becker,</td>
<td></td>
</tr>
<tr>
<td>Christian Gerth, Gregor Engels, and Wilhelm Schäfer</td>
<td></td>
</tr>
<tr>
<td>Designing Secure Service Workflows in BPEL</td>
<td>551</td>
</tr>
<tr>
<td><em>Luca Pino, Khaled Mahbub, and George Spanoudakis</em></td>
<td></td>
</tr>
<tr>
<td><strong>Industrial Papers</strong></td>
<td></td>
</tr>
<tr>
<td>Runtime Management of Multi-level SLAs for Transport and Logistics</td>
<td>560</td>
</tr>
<tr>
<td>Services</td>
<td></td>
</tr>
<tr>
<td><em>Clarissa Cassales Marquezan, Andreas Metzger, Rod Franklin, and Klaus Pohl</em></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Single Source of Truth (SSOT) for Service Oriented Architecture</td>
<td>575</td>
</tr>
<tr>
<td>Candy Pang and Duane Szafron</td>
<td></td>
</tr>
<tr>
<td>Model for Service License in API Ecosystems</td>
<td>590</td>
</tr>
<tr>
<td>Maja Vukovic, Liangzhao Zeng, and Sriram Rajagopal</td>
<td></td>
</tr>
<tr>
<td>Author Index</td>
<td>599</td>
</tr>
</tbody>
</table>