

Table of Contents

Patterns for Specifying Bidirectional Transformations in UML-RSDS <i>Sobhan Yassipour-Tehrani, Shekoufeh Kolaheidouz-Rahimi, and Kevin Lano</i>	1
Towards a Framework for Software Product Maturity Measurement <i>Mohammad Alshayeb, Ahmad Abdellatif, Sami Zahran, and Mahmood Niazi</i>	7
An Exploratory Study on the Influence of Developers in Code Smell Introduction <i>Leandro Alves, Ricardo Choren, and Eduardo Alves</i>	12
The Object Oriented Petri Net Component Model <i>Radek Koci and Vladimir Janousek</i>	18
“Free” Innovation Environments: Lessons learned from the Software Factory Initiatives <i>Davide Taibi, Valentina Lenarduzzi, Muhammad Ovais Ahmad, Kari Liukkunen, Ilaria Lunesu, Martina Matta, Fabian Fagerholm, Juergen Muench, Sami Pietinen, Markku Tukiainen, Carlos Fernandez-Sanchez, Juan Garbajosa, and Kari Systa?</i>	25
Performance Exploring Using Model Checking A Case Study of Hard Disk Drive Cache Function <i>Takehiko Nagano, Kazuyoshi Serizawa, Nobukazu Yoshioka, Yasuyuki Tahara, and Akihiko Ohsuga</i>	31
Towards a Better Understanding of Static Code Attributes for Defect Prediction <i>Muhammed Maruf Ozturk and Ahmet Zengin</i>	40
Communication and Coordination Challenges Mitigation in Offshore Software Development Outsourcing Relationships: Findings from Systematic Literature Review <i>Rafiq Ahmad Khan, Siffat Ullah Khan, and Mahmood Niazi</i>	45
Adapting Heterogeneous ADLs for Software Architecture Reconstruction Tools <i>Dung Le, Ana Nicolaescu, and Horst Lichter</i>	52
Verifying and Constructing Abstract TLA Specifications: Application to the Verification of C programs <i>Amira Methni, Matthieu Lemerre, Belgacem Ben Hedia, Serge Haddad, and Kamel Barkaoui</i>	56
Revisiting The Package-level Cohesion Approaches <i>Waleed Albattah and Suliman Alsuhibany</i>	62
Towards a Technical Debt Management Framework based on Cost-Benefit Analysis <i>Muhammad Firdaus Bin Harun and Horst Lichter</i>	70
Design and Implementation of Business Logic Layer Object-Oriented Design versus Relational Design <i>Ali Alharthy</i>	74

Pymoult : On-Line Updates for Python Programs <i>Sebastien Martinez, Fabien Dagnat, and Jeremy Buisson</i>	80
Aiming Towards Modernization: Visualization to Assist Structural Understanding of Oracle Forms Applications <i>Kelly Garces, Edgar Sandoval, Rubby Casallas, Camilo Alvarez, Alejandro Salamanca, Sandra Pinto, and Fabian Melo</i>	86
Effects of Recency and Commits Aggregation on Change Guide Method Based on Change History Analysis <i>Tatsuya Mori, Anders Hagward, and Takashi Kobayashi</i>	96
Towards Flexible Business Software <i>Ahmed Elfatratry</i>	102
EBGSD: Emergence-Based Generative Software Development <i>Mahdi Mostafazadeh, Mohammad Reza Besharati, and Raman Ramsin</i>	108
A GPU-aware Component Model Extension for Heterogeneous Embedded Systems <i>Gabriel Campeanu, Jan Carlson, and Severine Sentilles</i>	115
Soft System Stakeholder Analysis Methodology <i>Markus Kelanti, Jarkko Hyysalo, Jari Lehto, Samuli Saukkonen, Markku Oivo, and Pasi Kuvaja</i>	122
Publish/Subscribe Cloud Middleware for Real-Time Disease Surveillance <i>Silvino Neto, Marcia Valeria, Plinio Manoel, and Felipe Ferraz</i>	131
Requirement's Variability in Model Generation from a Standard Document in Natural Language <i>Juliana Gregghi, Eliane Martins, and Ariadne Carvalho</i>	139
An Approach to Compare UML Class Diagrams Based on Semantical Features of Their Elements <i>Oksana Nikiforova, Konstantins Gusarovs, Ludmila Kozacenko, Dace Ahilcenoka, and Dainis Ungurs</i>	147
Model-Based Evaluation and Simulation of Software Architecture Evolution <i>Peter Alexander, Ana Nicolaescu, and Horst Lichter</i>	153
Towards Time-triggered Component-based System Models <i>Hela Guesmi, Belgacem Ben Hedia, Simon Bliudze, Saddek Bensalem, and Jacques Combaz</i>	157
A User-App Interaction Reference Model for Mobility Requirements Analysis <i>Xiaozhou Li and Zheyong Zhang</i>	170
Design and Implementation of a Tool to Collect Data of a Smart City Through the TV <i>Glaydstone Teixeira and Felipe Ferraz</i>	178

Comparison of Educational Project Management Tools <i>Rafael Goncalves and Christiane Wangenheim</i>	184
Model-Driven Engineering of Software Solutions for QoS Management in Real-Time DBMS <i>Salwa M'barek, Leila Baccouche, and Henda Ben Ghezala</i>	192
An Approach for Reusing Software Process Elements based on Reusable Asset Specification: a Software Product Line Case Study <i>Karen D. R. Pacini and Rosana T. V. Braga</i>	200
An Extensible Platform for the Treatment of Heterogeneous Data in Smart Cities <i>Cicero A. Silva and Gibeon S. A. Junior</i>	207
Improving the Application of Agile Model-based Development: Experiences from Case Studies <i>Kevin Lano, Hessa Alfraihi, Sobhan Yassipour-Tehrani, and Howard Haughton</i>	213
Metrics Framework for Cycle-Time Reduction in Software Value Creation - Adapting Lean Startup for Established SaaS Feature Developers <i>Pasi Tyrvaainen, Matti Saarikallio, Timo Aho, Timo Lehtonen, and Rauno Paukeri</i>	220
A Context-Driven Approach for Guiding Agile Adoption: The AMQuICk Framework <i>Hajer Ayed, Benoit Vanderose, and Naji Habra</i>	228
Kanban in Industrial Engineering and Software Engineering: A Systematic Literature Review <i>Muhammad Ovais Ahmad, Jouni Markkula, Markku Oivo, and Bolaji Adeyemi</i>	234
Efficient ETL+Q for Automatic Scalability in Big or Small Data Scenarios <i>Pedro Martins, Maryam Abbasi, and Pedro Furtado</i>	242
The Role of People and Sensors in the Development of Smart Cities: A Systematic Literature Review <i>Italberto Figueira Dantas and Felipe Silva Ferraz</i>	248
A Knowledge Base for Electric Vehicles in Inner-City Logistics <i>Volkmar Schau, Johannes Kretzschmar, Thomas Prinz, and Paul Hempel</i>	257
Building a Service Manager For a Smart City Archicture <i>Gutemberg Cavalcante, Felipe Ferraz, and Guilherme Medeiros</i>	261
Intersection of MPS.BR-E and SPICE Models Focused on Projects for the Automotive Industry <i>Vanessa Matias Leite, Jandira Guenka Palma, and Emmanuel da C. Gallo</i>	268
Quality-Based Score-level Fusion for Secure and Robust Multimodal Biometrics-based Authentication on Consumer Mobile Devices	274

An Approach for Sensor Placement to Achieve Complete Coverage and Connectivity in Sensor Networks <i>Monia Techini, Ridha Ejbali, and Mourad Zaied</i>	277
Dynamic Symbolic Execution using Eclipse CDT <i>Andreas Ibing</i>	280
Evaluating the Usability of Mobile Instant Messaging Apps on iOS Devices <i>Sergio Caro-Alvaro, Antonio Garcia-Cabot, Eva Garcia-Lopez, Luis de-Marcos, and Jose-Javier Martinez-Herraiz</i>	286
Multi-Criteria Test Case Prioritization Using Fuzzy Analytic Hierarchy Process <i>Sahar Tahvili, Mehrdad Saadatmand, and Markus Bohlin</i>	290
Analysis of Optimization Requirement of Mobile Application Testing Procedure <i>Manish Kumar, Kapil Kant Kamal, Bharat Varyani, and Meghana Kale</i>	297
Property Based Verification of Evolving Petri Nets <i>Yasir Imtiaz Khan and Ehab Al-Shaer</i>	301
Dynamic Evolution of Source Code Topics <i>Khaled Almustafa and Mamdouh Alenezi</i>	307
Model Transformation Applications from Requirements Engineering Perspective <i>Sobhan Yassipour Tehrani and Kevin Lano</i>	313
Analyzing the Evolvability of Modular Structures: a Longitudinal Normalized Systems Case Study <i>Philip Huysmans, Peter De Bruyn, Gilles Oorts, Jan Verelst, Dirk van der Linden, and Herwig Mannaert</i>	319
Applying ISO 9126 Metrics to MDD Projects <i>Ricardo Alonso Munoz Riesle, Beatriz Marin, and Lidia Lopez</i>	326
Evaluation of a Security Service Level Agreement <i>Chen-Yu Lee and Krishna M. Kavi</i>	333
Towards Systematic Safety System Development with a Tool Supported Pattern Language <i>Jari Rauhamaki, Timo Vepsalainen, and Seppo Kuikka</i>	341
An Analysis of sSven Concepts and Design Flaws in Identity Management Systems <i>Joao Jose Calixto das Chagas and Felipe Ferraz</i>	349
ATM Security: A Case Study of a Logical Risk Assessment	355

Applications of Security Reference Architectures in Distributed Systems: Initial Findings of Systematic Mapping Study <i>Sajjad Mahmood, Muhammad Jalal Khan, and Sajid Anwer</i>	363
Cif: A Static Decentralized Label Model (DLM) Analyzer to Assure Correct Information Flow in C <i>Kevin Muller, Sascha Uhrig, Michael Paulitsch, and Georg Sigl</i>	369
Minimizing Attack Graph Data Structures <i>Peter Mell and Richard Harang</i>	376
Reliability-Aware Design Specification for Allowing Reuse-Based Reliability Level Increment <i>Patricia Lopez, Leire Etxeberria, and Xabier Elkorobarrutia</i>	386
Best Practices for the Design of RESTful Web Services <i>Pascal Giessler, Michael Gebhart, Dmitrij Sarancin, Roland Steinegger, and Sebastian Abeck</i>	392
Criteria of Evaluation for Systems Using Sensor as a Service <i>Anderson Brito and Felipe Ferraz</i>	398
Middleware Applied to Digital Preservation: A Literature Review <i>Eriko Brito, Paulo Cesar Abrantes, and Bruno de Freitas Barros</i>	404
Middleware For Heterogeneous Healthcare Data Exchange: A Survey <i>Carlos Bezerra, Andre Araujo, Bruno Rocha, Vagner Pereira, and Felipe Ferraz</i>	409
Teaching Robotics and Mechanisms <i>Daniela Marghitu and Dan . Marghitu</i>	415
Case of Enterprise Architecture in Manufacturing Firm <i>Alicia Valdez, Griselda Cortes, Sergio Castaneda, Gerardo Haces, and Jose Medina</i>	419
An Empirical Investigation on the Motivations for the Adoption of Open Source Software <i>Davide Taibi</i>	426
Gamifying and Conveying Software Engineering Concepts for Secondary Education: An Edutainment Approach <i>Roy Oberhauser</i>	432
Using Cloud Services To Improve Software Engineering Education for Distributed Application Development <i>Jorge Edison Lascano and Stephen W. Clyde</i>	438
Controlled Variability Management for Business Process Model Constraints	445

Several Issues on the Model Interchange Between Model-Driven Software Development Tools <i>Una Ieva Zusane, Oksana Nikiforova, and Konstantins Gusarovs</i>	451
Testing Smart Cities Through an Extensible Testbed <i>Guilherme Medeiros, Felipe Ferraz, and Gutemberg Cavalcante</i>	457
Implementing the Observer Design Pattern as an Expressive Language Construct <i>Taher Ghaleb, Khalid Aljasser, and Musab Al-Turki</i>	463
Supporting Tools for Managing Software Product Lines: a Systematic Mapping <i>Karen D. R. Pacini and Rosana T. V. Braga</i>	470
Recovering Lost Software Design with the Help of Aspect-based Abstractions <i>Kiev Gama and Didier Donsez</i>	477
Networking-based Personalized Research Environment : NePRE <i>Heeseok Choi, Jiyoung Park, Hyoungeop Shim, and Beomjong You</i>	484
Decision Making and Service Oriented Architecture for Recruitment Process Using the New Standard Decision Model and Notation (DMN) <i>Fatima Boumahdi, Houssein Eddine Boulefrakh, and Rachid Chalal</i>	489