

2012 38th Euromicro Conference on Software Engineering and Advanced Applications

(SEAA 2012)

**Cesme, Izmir, Turkey
5 – 8 September 2012**



**IEEE Catalog Number: CFP1292A-PRT
ISBN: 978-1-5090-0004-3**

2012 38th Euromicro Conference on Software Engineering and Advanced Applications

SEAA 2012

Table of Contents

Message from the General Chair.....	xii
Message from the Program Chairs.....	xiii
Program Committee.....	xv
Reviewers.....	xviii
Sponsors.....	xxiv
Organizer.....	xxv
Keynote Abstracts.....	xxvi

Embedded Software Engineering (ESE)

ESE Session 1: Model-Based Development

DiplodocusDF, a Domain-Specific Modelling Language for Software Defined Radio Applications	1
<i>Jair Gonzalez-Pina, Rabéa Ameur-Boulifa, and Renaud Pacalet</i>	
A MDD Approach for RTOS Integration on Valid Real-Time Design Model	9
<i>Rania Mzid, Chokri Mraidha, Jean-Philippe Babau, and Mohamed Abid</i>	
Multi-view Power Modeling Based on UML, MARTE and SysML	17
<i>Carlos Gomez, Julien DeAntoni, and Frédéric Mallet</i>	

ESE Session 2: Formal Methods

A Property-Based Proof System for Contract-Based Design	21
<i>Alessandro Cimatti and Stefano Tonetta</i>	
Max-Plus Algebraic Throughput Analysis of Synchronous Dataflow Graphs	29
<i>Robert de Groote, Jan Kuper, Hajo Broersma, and Gerard J.M. Smit</i>	

ESE Session 3: Certification and Tool Support

A Framework for the Development of Parallel and Distributed Real-Time Embedded Systems	39
<i>Ricardo Garibay-Martínez, Luis Lino Ferreira, and Luís Miguel Pinho</i>	
Structuring Modular Safety Software Certification by Using Common Criteria Concepts	47
<i>Christopher Preschern and Kurt Dietrich</i>	
Database Proxy Tool Support in an AUTOSAR Development Environment	51
<i>Andreas Hjertström, Dag Nyström, and Mikael Sjödin</i>	

ESE Session 4: Analysis and Synthesis

Analyzing Long-Running Controller Applications for Specification Violations Based on Deterministic Replay	55
<i>Roland Schatz and Herbert Prähofer</i>	
Varying Topology of Component-Based System Architectures Using Metaheuristic Optimization	63
<i>Ramin Etemaadi and Michel R.V. Chaudron</i>	
Towards Automatic Synthesis of Hardware-Specific Code in Component-Based Embedded Systems	71
<i>Luka Lednicki, Ivica Crnković, and Mario Žagar</i>	
A Bridge from System to Software Development for Safety-Critical Automotive Embedded Systems	75
<i>Roland Mader, Gerhard Grießnig, Eric Armengaud, Andrea Leitner, Christian Kreiner, Quentin Bourrouilh, Christian Steger, and Reinhold Weiß</i>	
Real-Time Component Integration Using Runnable Virtual Nodes	80
<i>Rafia Inam, Jukka MäKi-Turja, Mikael Sjödin, and Jiří Kunčar</i>	

Model-Based Development, Components, and Services (MOCS)

MOCS Session 1: Product Lines

An Aspect-Based Feature Model for Architecting Component Product Lines	85
<i>Leonardo P. Tizzei, Cecilia M.F. Rubira, and Jaejoon Lee</i>	
TIRT: A Traceability Information Retrieval Tool for Software Product Lines Projects	93
<i>Wylliams Barbosa Santos, Eduardo Santana de Almeida, and Silvio Romero de L. Meira</i>	
CodeScoping: A Source Code Based Tool to Software Product Lines Scoping	101
<i>Thiago Fernandes Lins de Medeiros, Eduardo Santana de Almeida, and Silvio Romero de Lemos Meira</i>	
A Lightweight Approach for Product Line Scoping	105
<i>Markus Nöbauer, Norbert Seyff, Iris Groher, and Deepak Dhungana</i>	

MOCS Session 2: Embedded Systems

Ensuring Component Application Consistency on Small Devices: A Repository-Based Approach	109
<i>Premek Brada and Kamil Ježek</i>	
Towards a Model-Based Approach for Allocating Tasks to Multicore Processors	117
<i>Juraj Feljan, Jan Carlson, and Tiberiu Seceleanu</i>	

MOCS Session 3: Extra-functional Properties

Reliability Prediction for Service Component Architectures with the SCA-ASM Component Model	125
<i>Elvinia Riccobene, Pasqualina Potena, and Patrizia Scandurra</i>	
Path Coverage Criteria for Palladio Performance Models	133
<i>Henning Groenda</i>	
Using Virtual Machine Security to Reinforce Components Constraints	138
<i>Aurélio A.M. Matsui, Straus Michalsky, and Marco Aurélio Gerosa</i>	

MOCS Session 4: Modeling Components

Toward Model-Based Trade-off Analysis of Non-functional Requirements	142
<i>Mehrdad Saadatmand, Antonio Cicchetti, and Mikael Sjödin</i>	
An MDE Approach for Runtime Monitoring and Adapting Component-Based Systems: Application to WIMP User Interface Architectures	150
<i>Javier Criado, Luis Iribarne, Nicolás Padilla, Javier Troya, and Antonio Vallecillo</i>	
X-MAN: An MDE Tool for Component-Based System Development	158
<i>Kung-Kiu Lau and Cuong M. Tran</i>	
A Model-Driven Engineering Framework for Fault Tolerance in Dependable Embedded Systems Design	166
<i>Adel Ziani, Brahim Hamid, and Jean-Michel Bruel</i>	
Automatic Adaptation of Transformations Based on Type Graph with Multiplicity	170
<i>Quyêt-Thang Pham and Antoine Beugnard</i>	

MOCS Session 5: Frameworks and Architecture

Testing a Component-Based Application for Road Traffic Crossroad Control Using the SimCo Simulation Framework	175
<i>Tomáš Potužák, Richard Lipka, Přemek Brada, and Pavel Herout</i>	
ORCA: Architecture for Business Tier Components Driven by Dynamic Adaptation and Based on Call Level Interfaces	183
<i>Óscar Mortágua Pereira, Rui Luís Aguiar, and Maribel Yasmína Santos</i>	

MOCS Session 6: Finding and Building Components

Extracting Components from Open Source: The Component Adaptation Environment (COPE) Approach	192
<i>George Kakarontzas, Ioannis Stamelos, Stefanos Skalistis, and Athanasios Naskos</i>	
Federated Search for Open Source Software Reuse	200
<i>Fotios Kokkoras, Konstantinos Ntonas, Apostolos Kritikos, George Kakarontzas, and Ioannis Stamelos</i>	
Application and UI Composition Using a Component-Based Description and Annotations	204
<i>Christian Brel, Philippe Renevier-Gonin, Anne-Marie Pinna-Déry, and Michel Riveill</i>	

MOCS Session 7: Modeling Services and Components

Engineering Emergent Semantics into Pervasive Resource Discovery	208
<i>Mauro Caporuscio</i>	
Low-Level Profiling and MARTE-Compatible Modeling of Software Components for Real-Time Systems	216
<i>Konstantinos Triantafyllidis, Egor Bondarev, and Peter H.N. de With</i>	
LogOS: An Automatic Logging Framework for Service-Oriented Architectures	224
<i>Stéphane Frénot and Julien Ponge</i>	
FOAM: A Lightweight Method for Verification of Use-Cases	228
<i>Viliam Simko, Petr Hnetyinka, Tomas Bures, and Frantisek Plasil</i>	
A Model-Driven Dependability Analysis Method for Component-Based Architectures	233
<i>Barbara Gallina, Muhammad Atif Javed, Faiz Ul Muram, and Sasikumar Punnekkat</i>	

MOCS Session 8: Special Sessions Papers: Cyber-Physical Systems (Invited Papers)

DEZENT—A Cyber-Physical Approach for Providing Affordable Regenerative Electric Energy in the Near Future	241
<i>Horst F. Wedde</i>	
Applying the Organic Robot Control Architecture ORCA to Cyber-Physical Systems	250
<i>Raphael Maas, Erik Maehle, and Karl-Erwin Großpietsch</i>	
Bee-Inspired Road Traffic Control as an Example of Swarm Intelligence in Cyber-Physical Systems	258
<i>Sebastian Senge and Horst F. Wedde</i>	

Software Process and Product Improvement (SPPI)

SPPI Session 1: Agile and Lean Processes

Adapting the Lean Enterprise Self-Assessment Tool for the Software Development Domain	266
<i>Teemu Karvonen, Pilar Rodriguez, Pasi Kuvaja, Kirsi Mikkonen, and Markku Oivo</i>	
Investigating Daily Team Meetings in Agile Software Projects	274
<i>Viktoria Gulliksen Stray, Nils Brede Moe, and Aybüke Aurum</i>	
Organizational Values and Agile Methods Deployment	282
<i>Stavros Stavru</i>	

SPPI Session 2: Process Improvement and Quality Measurement and Assurance

Random Test Case Generation and Manual Unit Testing: Substitute or Complement in Retrofitting Tests for Legacy Code?	286
<i>Rudolf Ramler, Dietmar Winkler, and Martina Schmidt</i>	
A Case Study on Measuring Process Quality: Lessons Learned	294
<i>Ahmet Dikici, Oktay Turetken, and Onur Demirors</i>	
From Assumptions to Context-Specific Knowledge in the Area of Combined Static and Dynamic Quality Assurance	298
<i>Frank Elberzhager and Thomas Bauer</i>	
Micro Pattern Fault-Proneness	302
<i>Giuseppe Destefanis, Roberto Tonelli, Ewan Tempero, Giulio Concas, and Michele Marchesi</i>	

SPPI Session 3: Process and Product Modeling

From Software to Software System Products: An Add-on Process Reference Model for Enhancing ISO/IEC 12207 with Product Management and System-Level Reuse	307
<i>Fritz Stallinger and Robert Neumann</i>	
Towards a Metamodel for Integrating Multiple Models for Process Improvement	315
<i>Edgar L. Banhesse, Clenio F. Salviano, and Mario Jino</i>	
The Barriers to Traceability and their Potential Solutions: Towards a Reference Framework	319
<i>Gilbert Regan, Fergal McCaffery, Kevin McDaid, and Derek Flood</i>	
A Practice for Recording Problem and Solution Domain Requirements in VLSRE	323
<i>Markus Kelanti, Jari Lehto, Sanja Aaramaa, and Pasi Kuvaja</i>	

SPPI Session 4: Practical Experiences and New Ideas for Process Improvement

A Consolidated Process for Software Process Simulation: State of the Art and Industry Experience	327
<i>Nauman Bin Ali and Kai Petersen</i>	
Fostering Cross-site Coordination through Awareness: An Investigation of State-of-the-Practice through a Focus Group Study	337
<i>Darja Šmite and Torgeir Dingsøy</i>	
Low Degree of Separation Does Not Guarantee Easy Coordination	345
<i>Zane Galvina and Darja Šmite</i>	

Special Session: MeSVAM—Measurement as a Strategy for Software Value Management

Managing Software Quality Requirements	349
<i>Laura B. Phillips, Aybüke Aurum, and Richard Berntsson Svensson</i>	
Software Measurement in Software Engineering Education: A Delphi Study to Develop a List of Teaching Topics and Related Levels of Learning	357
<i>Mónica Villavicencio and Alain Abran</i>	
Value-Based Coverage Measurement in Requirements-Based Testing: Lessons Learned from an Approach Implemented in the TOSCA Testsuite	363
<i>Rudolf Ramler, Theodorich Kopetzky, and Wolfgang Platz</i>	

Software Management (SM)

SM Session 1

An Investigation of Software Effort Phase Distribution Using Compositional Data Analysis	367
<i>Panagiota Chatzipetrou, Efi Papatheocharous, Lefteris Angelis, and Andreas S. Andreou</i>	
Developers Motivation in Agile Teams	376
<i>Claudia de O. Melo, Célio Santana, and Fabio Kon</i>	
A Fuzzy Multi Criteria Decision Making Approach to Software Life Cycle Model Selection	384
<i>Mumin Hicdurmaz</i>	
Climbing the “Stairway to Heaven”—A Multiple-Case Study Exploring Barriers in the Transition from Agile Development towards Continuous Deployment of Software	392
<i>Helena Holmström Olsson, Hiva Alahyari, and Jan Bosch</i>	

SM Session 2

Towards the Understanding and Classification of the Personality Traits of Software Development Practitioners: Situational Context Cards Approach	400
<i>Murat Yilmaz and Rory V. O'Connor</i>	
Guiding Testing Activities by Predicting Defect-Prone Parts Using Product and Inspection Metrics	406
<i>Frank Elberzhager, Stephan Kremer, Jürgen Münch, and Danilo Assmann</i>	
An Analysis of Accuracy and Learning in Software Project Estimating	414
<i>A.H. Zapata and M.R.V. Chaudron</i>	
Pocket Estimator—A Commercial Solution to Provide Free Parametric Software Estimation Combining an Expert and a Learning Algorithm	422
<i>Florian Schnitzhofer and Peter Schnitzhofer</i>	
Estimating the Return on Investment of Defect Taxonomy Supported System Testing in Industrial Projects	426
<i>Michael Felderer and Armin Beer</i>	

Cloud Software (CS)

CLOUD Session 1: Cloud Technology

Feedback Control Algorithms to Deploy and Scale Multiple Web Applications per Virtual Machine	431
<i>Adnan Ashraf, Benjamin Byholm, Joonas Lehtinen, and Ivan Porres</i>	
Towards Mobile Multimedia Mashup Architecture	439
<i>Mikko Hartikainen, Arto Salminen, and Jarno Kallio</i>	

CLOUD Session 2: Cloud Software

A Model for Global Software Development with Cloud Platforms	446
<i>Luisanna Cocco, Katuscia Mannaro, and Giulio Concas</i>	
Differentiation in the Cloud: Methodology for Integrating Customer Values in Experience Design	453
<i>Andrey Sirotkin, Kaisa Koskela-Huotari, Kaarina Karppinen, Javier Del Ser, and Bronan McCabe</i>	

Author Index	460
---------------------------	-----