Table of Contents

Message from the Chair.................................................................................................................. viii
Program Committee .................................................................................................................. ix

Development Methods, Issues and Patterns

Determining the Applicability of Agile Practices to Mission and Life-Critical Systems ................ 3
   Ahmed Sidky and James Arthur

Mapping CMMI Project Management Process Areas to SCRUM Practices................................. 13
   Ana Sofia C. Marçal, Bruno Celso C. de Freitas, Felipe S. Furtado Soares,
   and Arnaldo D. Belchior

A Framework for Flexible and Executable Usability Patterns Standards.................................... 23
   Scott Henninger

Requirements

Aspect-Oriented Requirements Modeling...................................................................................... 35
   Jingjun Zhang, Furong Li, and Yang Zhang

Mise en Scene: Converting Scenarios to CSP Traces in Support of Requirements-Based Programming ............................................................... 41
   J. Carter and W. B. Gardner

Architectural Issues

Using Model Checking to Validate Style-Specific Architectural Refactoring Patterns .................... 53
   Zoë Stephenson and John McDermid

Research on Aspect Connectors for Software Architecture Adaptation ...................................... 63
   Jingjun Zhang, Hui Li, and Furong Li

Transformational Approaches to Model Driven Architecture - A Review .................................... 67
   Chunying Zhao and Kang Zhang

An Inconsistency Free Formalization of B/S Architecture ............................................................ 75
   Qin Li, Huibiao Zhu, and Jifeng He
Testing and Estimation

An Alternative Method Employing Uses Cases for Early Effort Estimation ........................................ 89
Gabriela Robiolo and Ricardo Oroso

The EMISQ Method - Expert Based Evaluation of Internal Software Quality ....................................... 99

Testing Patterns ........................................................................................................................................... 109
Neelam Soundarajan, Jason O. Hallstrom, Adem Delibas, and Guoqiang Shu

Formal Aspects

A Reference Net Based Formalization of Concurrent Cognitive Decision Making .............................. 121
Johann Duscher and Amine El Malki

Algebraic Approach to Operational Semantics and Observation-Oriented Semantics for a Timed Shared-Variable Language with Probability ...................................................... 131
Huibiao Zhu, Jifeng He, and Jonathan P. Bowen

A Refinement Based Framework for Computing Loop Behavior ...................................................... 144
Ali Mili

Looking into Compensable Transactions ................................................................................................. 154
Jing Li, Huibiao Zhu, Geguang Pu, and Jifeng He

Software Safety, Quality, and Reliability

A New Way to Predict Software Reliability with Parameter Evaluation: Shuttle Applications .............. 167
Norman F. Schneidewind

A Software Safety Risk Taxonomy for Use in Retrospective Safety Cases .............................................. 179
Janice Hill

Tools

The SAVE Tool and Process Applied to Ground Software Development at JHU/APL: An Experience Report on Technology Infusion ................................................................. 187
William C. Stratton, Deane E. Sibol, Mikael Lindvall, and Patricia Costa

A Formal Model for the Building of State Machines: A Lightweight Approach ................................. 194
Fernando Valles Barajas

Abstracting Pointers for a Verifying Compiler ....................................................................................... 204
Gregory Kulczycki, Heather Keown, Murali Sitaraman, and Bruce W. Weide

LTL Guided Planning: Revisiting Automatic Tool Composition in ETI ................................................ 214
Tiziana Margaria and Bernhard Steffen
Modeling and Verification Issues

An AOP-based Performance Evaluation Framework for UML Models............................................. 227
Dong Kwan Kim and Shawn Bohner

An Operational Approach to BPEL-like Programming ....................................................................... 236
Huibiao Zhu, Jifeng He, Geguang Pu, and Jing Li

Verification in the Light and Large: Large-Scale Verification for Fast-Moving
Open Source C Projects ................................................................................................................. 246
Peter T. Breuer and Simon Pickin

Modeling and Verifying Web Services Choreography Using Process Algebra.................................... 256
Jing Li, Jifeng He, Huibiao Zhu, and Geguang Pu

Distributed, Grid and Real-Time Systems

A Generative Approach to Building a Framework for Hard Real-Time Applications......................... 269
Irfan Hamid, BechirZalila, Elie Najm, and Jérome Hugues

A Layered Java Application Framework for Supplying Mathematical Computing
Power to the Distributed Environment.................................................................................................. 279
Weidong Liao and Benjamin J. Koonse

Virtualization the Enabler for the Autonomic Business Grid............................................................. 284
Shukri Wakid and Roy Sterritt

Architecting Network-Centric Software Systems: A Style-Based Beginning.................................... 290
Amine Chigani, Jamed D. Arthur, and Shawn Bohner

ASL - Autonomic System Specification Language ............................................................................. 300
Emil Vassev and Joey Paquet

Author Index........................................................................................................................................... 310