2016 42th Euromicro Conference on Software Engineering and Advanced Applications

SEAA 2016

Table of Contents

Message from the General Chair..................................................................................................................................................xi
Message from the Program Chairs...............................................................................................................................................xii
Committees..................................................................................................................................................................................xiv
Program Committee Members...................................................................................................................................................xvi
Subreviewers...................................................................................................................................................................................xix

SPPI-1: Life-Cycle Management
ALM Tool Data Usage in Software Process Metamodeling ........................................................................................................1
  Petr Pícha and Přemek Brada
Time to Say ‘Good Bye’: Feature Lifecycle .................................................................................................................................9
  Aleksander Fabijan, Helena Holmström Olsson, and Jan Bosch

SPPI-2: Risk Management & Decision Making Support
Supporting Feature Estimation with Risk and Effort Annotations ..................................................................................................17
  Simon Grapenthin, Matthias Book, Thomas Richter, and Volker Gruhn
Towards Guidelines for Preventing Critical Requirements Engineering Problems ........................................................................25
  Priscilla Mafra, Marcos Kalinowski, Daniel Méndez Fernández, Michael Felderer, and Stefan Wagner
Analyzing Performance Issues of Industrial User Interfaces: Experiences and Results .................................................................30
  Claus Klammer, Rudolf Ramler, Mario Winterer, and Heinz Stummer
Providing Tool-Support for Value-Based Decision-Making: A Usability Assessment .................................................................34
  Vitor Freitas, Emilia Mendes, and Burak Turhan
SPPI-3: Software Architecture & Technical Dept

Busting Software Architecture Beliefs: A Survey on Success Factors in Architecture
Decision Making .................................................................42
   Jan Salvador van der Ven and Jan Bosch

Technical Debt Management with Genetic Algorithms ................................................50
   Sri Harsha Vathsavayi and Kari Systä

Modelling Propagation of Technical Debt ..............................................................54
   Johannes Holvitie, Sherlock A. Licorish, and Ville Leppänen

SPPI-4: Software Process Improvement

Evidence-Based Timelines for User eXperience Software Process Improvement
Retrospectives ........................................................................59
   Pariya Kashfi, Robert Feldt, Agneta Nilsson, and Richard Berntsson Svensson

Identifying Developers’ Expertise in Social Coding Platforms ........................................63
   Eleni Constantinou and Georgia M. Kapitsaki

Continuous Integration and Delivery Traceability in Industry: Needs and Practices ............68
   Daniel Stähl, Kristofer Hallén, and Jan Bosch

Continuous, Lean, and Wasteless: Minimizing Lead Time from Development Done
to Production Use .....................................................................73
   Timo Lehtonen, Terhi Kilamo, Sampo Suonsyrjä, and Tommi Mikkonen

SM-1: Empirical Research in Software Management

Implementing Continuous Customer Care: First-Hand Experiences from an Industrial
Setting .....................................................................................78
   Aapo Koski, Kati Kuusinen, Sampo Suonsyrjä, and Tommi Mikkonen

Comparing Test and Production Code Quality in a Large Commercial Multicore System ...............................................................................86
   S. Counsell, G. Destefanis, X. Liu, S. Eldh, A. Ermedahl, and K. Andersson

SM-2: Software Measurement

Estimating and Quantifying the Benefits of Refactoring to Improve a Component
Modularity: A Case Study ..................................................................92
   Antonio Martini, Erik Sikander, and Niel Medlani

A Validation of a Measurement Based E-Government Portals’ Maturity Model ....................100
   Abdoullah Fath-Allah, Laila Cheikhi, Rafa E. Al-Qutaish, and Ali Idri

A Case Study on the Utilization of Problem and Solution Domain Measures
for Software Size Estimation ..........................................................108
   Tülin Erçelebi Ayyıldız and Altan Koçyiğit
SE4SU-1: Theory and Concepts in Startup Research
MVP Explained: A Systematic Mapping Study on the Definitions of Minimal Viable Product ................................................................. 112
   Valentina Lenarduzzi and Davide Taibi
Towards an Early Stage Software Startups Evolution Model ......................................................... 120
   Anh Nguyen-Duc, Syed Muhammad Ali Shah, and Pekka Abrahamsson

SE4SU-2: Lessons Learned from Startup Case Studies
Product Innovation through Internal Startup in Large Software Companies: A Case Study ................................................................. 128
   Henry Edison, Xiaofeng Wang, and Pekka Abrahamsson
The Fall and Rise of NimBees ........................................................................ 136
   Javier Berrocal, Jose Garcia-Alonso, and Juan M. Murillo

SMSE-1: Knowledge Management
Systematic Mapping Study of Dealing with Error in Software Development Effort Estimation ........................................................................... 140
   Salma El Koutbi, Ali Idri, and Alain Abran
Bayesian Synthesis for Knowledge Translation in Software Engineering: Method and Illustration ........................................................................ 148
   Deepika Badampudi and Claes Wohlin

MOCS: Model-Based Development
Modeling IoT Applications with SysML4IoT ..................................................................................... 157
   Bruno Costa, Paulo F. Pires, and Flávia C. Delicato
A Property Model Ontology ........................................................................................................... 165
   Séverine Sentilles, Efi Papatheocharous, Federico Ciccozzi, and Kai Petersen
Handling Uncertainty in Automatically Generated Implementation Models in the Automotive Domain ........................................................................ 173
   Alessio Bucaioni, Antonio Cicchetti, Federico Ciccozzi, Saad Mubeen, Alfonso Pierantonio, and Mikael Sjödin

SMSE-2: Quality
Literature Review of Empirical Research Studies within the Domain of Acceptance Testing ..................................................................................... 181
   Johannes Weiss, Alexander Schill, Ingo Richter, and Peter Mandl
A Systematic Literature Review and a Unified Model of ATD ........................................................................ 189
   Terese Besker, Antonio Martini, and Jan Bosch
# SPLECO/TET-DEC: Software and Education Ecosystems

Modelling and Certifying Safety for Cyber-Physical Systems: An Educational Experiment .......................... 198  
Xabier Larrucea  

Collaborative Innovation: A Model for Selecting the Optimal Ecosystem Innovation Strategy .................. 206  
Helena Holmström Olsson and Jan Bosch  

# CPS-1: Autonomous Systems

Leveraging Collective Run-Time Adaptation for UAV-Based Systems ......................................................... 214  
Darko Bozhinoski, Antonio Bucchiarone, Ivano Malavolta, Annapaola Marconi,  
and Patrizio Pelliccione  

Mathematical Test Effort Estimation for Dependability Assessment of Sensor-Based Driver Assistance Systems ................................................................. 222  
Florian Bock, Sebastian Siegl, and Reinhard German  

# SPPI-5: Software Testing & Test Automation

Harnessing Automated Test Case Generators for GUI Testing in Industry ................................................. 227  
Claus Klammer, Rudolf Ramler, and Heinz Stummer  

Specifying Executable or Nonexecutable Acceptance Test Cases for Event Processing Applications ................................................................................................................................. 235  
Johannes Weiss and Alexander Schill  

Application of Mahalanobis-Taguchi Method and 0-1 Programming Method to Cost-Effective Regression Testing ......................................................................................................................................................................... 240  
Hirohisa Aman, Yuta Tanaka, Takashi Nakano, Hideto Ogasawara, and Minoru Kawahara  

Mobile Application Quality Assurance: Reading Scenarios as Inspection and Testing Support .................. 245  
Konstantin Holl and Frank Elberzhager  

# CPS-2: Industrial Control and IoT

Kiuas — IoT Cloud Environment for Enabling the Programmable World ..................................................... 250  
Petri Selonen and Antero Taivalsaari  

Software Containers for Industrial Control .................................................................................................. 258  
Thomas Goldschmidt and Stefan Hauck-Stattelmann
**ESE-1: Embedded Software Requirements and Analysis**

Combining Requirements, Use Case Maps and AADL Models for Safety-Critical Systems Design ................................................................. 266

* Dominique Blouin and Holger Giese

Analysing and Modelling the On-Chip Traffic of Parallel Applications ................................................................. 275

* Thomas Canhao Xu, Jonne Pohjankukka, and Ville Leppänen

**ESE-2: Software Engineering in Automotive and Industry**

Modeling of End-to-End Resource Reservations in Component-Based Vehicular Embedded Systems ................................................................. 283

* Saad Mubeen, Mohammad Ashjaei, Thomas Nolte, John Lundbäck, Mattias Gålnander, and Kurt-Lennart Lundbäck

Pruning Architectural Models of Automotive Embedded Systems via Dependency Analysis ................................................................. 293

* Raluca Marinescu, Saad Mubeen, and Cristina Seceleanu

Exploring Test Overlap in System Integration: An Industrial Case Study ................................................................. 303

* Daniel Flemström, Wasif Afzal, and Daniel Sundmark

**SMSE-3: Product Lines**

Functional Safety in Product Lines — A Systematic Mapping Study ........................................................................ 313

* Stephan Baumgart and Joakim Fröberg

On the Dependability for Dynamic Software Product Lines: A Comparative Systematic Mapping Study ........................................................................ 323


**A-BPM: Advancing Business Process Management**

Automating BPMN Interchange Testing ........................................................................ 331

* Matthias Kurz

AAISP: An Approach for Aligning Information Systems Perspectives ........................................................................ 339

* Stefanie Betz, Susan Hickl, and Andreas Oberweis

It is All about the Interface: Factors Which Drive Process Interface Criticality in Organizations ........................................................................ 347

* Matthias Lederer and Laura Heider
EsPreSSE: Estimation and Prediction in Software and Systems Engineering

Managing the Uncertainty of Bias-Variance Tradeoff in Software Predictive Analytics ..................................................351
  Nikolaos Mittas and Lefteris Angelis

Requirements for Integrating Defect Prediction and Risk-Based Testing ...............................................................359
  Rudolf Ramler and Michael Felderer

Automated Bug Triaging in an Industrial Context ......................................................................................................363
  Václav Dedík and Bruno Rossi

A Replication Study: Where and When Should Defects be Re-Assigned ..............................................................368
  Tamer Abdou and Ayse Bener

Author Index .........................................................................................................................................................372