

# **2015 11th International ACM SIGSOFT Conference on Quality of Software Architectures (QoSA 2015)**

**Montreal, Quebec, Canada  
4-8 May 2015**



**IEEE Catalog Number: CFP15F54-POD  
ISBN: 978-1-5090-1464-4**

**Copyright © 2015, Association for Computing Machinery (ACM)  
All Rights Reserved**

***\*\*\*This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP15F54-POD
ISBN (Print-On-Demand):	978-1-5090-1464-4
ISBN (Online):	978-1-4503-3470-9

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# Table of Contents

<b>CompArch 2015 Organization</b> .....	vii
<b>QoSA 2015 Conference Organization</b> .....	ix
<b>Session 1: Modeling Quality I</b>	
• <b>Representing and Configuring Security Variability in Software Product Lines</b> .....	1
Varvana Myllärniemi, Mikko Raatikainen ( <i>Aalto University</i> ), Tomi Männistö ( <i>University of Helsinki</i> )	
• <b>Control Theory for Model-based Performance-driven Software Adaptation</b> .....	11
Davide Arcelli, Vittorio Cortellessa ( <i>Università dell'Aquila</i> ), Antonio Filieri ( <i>Universität Stuttgart</i> ), Alberto Leva ( <i>Politecnico di Milano</i> ),	
• <b>Architecture-based Assessment and Planning of Change Requests</b> .....	21
Kiana Rostami ( <i>Karlsruhe Institute of Technology</i> ), Johannes Stammel ( <i>andrena objects ag</i> ), Robert Heinrich, Ralf Reussner ( <i>Karlsruhe Institute of Technology</i> )	
<b>Session 2: Modeling Quality II</b>	
• <b>Preemptive Management of Model Driven Technical Debt for Improving Software Quality</b> .....	31
Clemente Izurieta ( <i>Montana State University</i> ), Gonzalo Rojas ( <i>University of Concepción</i> ), Isaac Griffith ( <i>Montana State University</i> )	
• <b>QoS-based Feedback for Service Compositions</b> .....	37
Mauro Caporuscio ( <i>Linnaeus University</i> ), Raffaella Mirandola ( <i>Politecnico di Milano</i> ), Catia Trubiani ( <i>Gran Sasso Science Institute</i> )	
• <b>Modeling Fault Tolerance Tactics with Reusable Aspects</b> .....	43
Naif A. Mokhayesh Alzahrani, Dorina C. Petriu ( <i>Carleton University</i> )	
<b>Session 3: Architectural Tactics for Mobile Computing</b>	
• <b>A Catalog of Architectural Tactics for Cyber-Foraging</b> .....	53
Grace Lewis ( <i>Carnegie Mellon Software Engineering Institute &amp; VU University Amsterdam</i> ), Patricia Lago ( <i>VU University Amsterdam</i> )	
• <b>On Architectural Qualities and Tactics for Mobile Sensing</b> .....	63
Mikkel Baun Kjærgaard, Marco Kuhrmann ( <i>University of Southern Denmark</i> )	
<b>Session 4: Cloud Computing Architectures</b>	
• <b>Making Real Time Data Analytics Available as a Service</b> .....	73
Donna Xu ( <i>NICTA &amp; Sydney University</i> ), Dongyao Wu ( <i>NICTA &amp; University of New South Wales</i> ), Xiwei Xu ( <i>NICTA</i> ), Liming Zhu ( <i>NICTA, Sydney University &amp; University of New South Wales</i> ), Len Bass ( <i>NICTA</i> )	
• <b>Scalability, Elasticity, and Efficiency in Cloud Computing: A Systematic Literature Review of Definitions and Metrics</b> .....	83
Sebastian Lehrig, Hendrik Eikerling, Steffen Becker ( <i>Chemnitz University of Technology</i> )	
• <b>Exploring Performance Models of Hadoop Applications on Cloud Architecture</b> .....	93
Xing Wu, Yan Liu ( <i>Concordia University</i> ), Ian Gorton ( <i>Carnegie Mellon University</i> )	
<b>Session 5: Cyber-physical Systems</b>	
• <b>Identifying Optimal Sets of Standardized Architectural Features – A Method and Its Automotive Application</b> .....	103
Darko Durisic ( <i>Volvo Car Corporation</i> ), Miroslaw Staron, Matthias Tichy ( <i>University of Gothenburg</i> )	

- **Investigating Quality Trade-offs in Open Source Critical Embedded Systems** ..... 113  
 Daniel Feitosa, Apostolos Ampatzoglou, Paris Avgeriou (*University of Groningen*),  
 Elisa Yumi Nakagawa (*University of São Paulo*)
- **Automated Failure Propagation using Inner Port Dependency Traces** ..... 123  
 Kai Höfig, Marc Zeller (*Siemens AG*), Konstantin Schorp (*fortiss GmbH*)

**Session 6: Doctoral Symposium on Components and Architecture (WCOP)**

- **A Generative Approach to Change-Driven Consistency in Multi-View Modeling** ..... 129  
 Max E. Kramer (*Karlsruhe Institute of Technology*)
- **Managing Safety and Adaptability in Mobile Multi-Robot Systems** ..... 135  
 Darko Bozhinoski (*Gran Sasso Science Institute*)

**Author Index** ..... 141