

2014 IEEE/IFIP Conference on Software Architecture

(WICSA 2014)

**Sydney, Australia
7-11 April 2014**



**IEEE Catalog Number: CFP14WIC-POD
ISBN: 978-1-4799-3413-3**

2014 IEEE/IFIP Conference on Software Architecture

WICSA 2014

Table of Contents

Message from General Chair	ix
Message from Program Chairs	x
Message from Industry Chair	xii
Organizing Committee	xiii
Program Committee	xiv
Additional Reviewers	xvi
Keynotes	xvii

Software Architecture Design

The Stream Software Connector Design Space: Frameworks and Languages for Distributed Stream Processing	1
<i>Masiar Babazadeh and Cesare Pautasso</i>	
The Role of Platform Boundary Resources in Software Ecosystems: A Case Study	11
<i>Vittorio Dal Bianco, Varvana Myllärniemi, Marko Komssi, and Mikko Raatikainen</i>	
A Journey through the Land of Model-View-Design Patterns	21
<i>Artem Syromiatnikov and Danny Weyns</i>	
Deriving Component Interfaces after a Restructuring of a Legacy System	31
<i>Abderrahmane Seriai, Salah Sadou, Houari Sahraoui, and Salma Hamza</i>	
Green Architectural Tactics for the Cloud	41
<i>Giuseppe Procaccianti, Patricia Lago, and Grace A. Lewis</i>	
Lessons Learned from Safety-Critical Software-Based Automation Architectures of Nuclear Power Plants	45
<i>Eero Uusitalo, Mikko Raatikainen, Mika Koskela, Varvana Myllärniemi, and Tomi Männistö</i>	
Scalability of Ecosystem Architectures	49
<i>Simone da Silva Amorim, Eduardo Santana de Almeida, and John D. McGregor</i>	

Sustaining Agility through Architecture: Experiences from a Joint Research and Development Laboratory	53
<i>Balthasar Weitzel, Dominik Rost, and Mathias Scheffe</i>	

Software Architecture for Runtime Adaptation

A Flexible Framework for Runtime Monitoring of System-of-Systems Architectures	57
<i>Michael Vierhauser, Rick Rabiser, Paul Grünbacher, Christian Danner, Stefan Wallner, and Helmut Zeisel</i>	
Scapegoat: An Adaptive Monitoring Framework for Component-Based Systems	67
<i>Inti Gonzalez-Herrera, Johann Bourcier, Erwan Daubert, Walter Rudametkin, Olivier Barais, François Fouquet, and Jean-Marc Jézéquel</i>	
Consistent Runtime Evolution of Service-Based Business Processes	77
<i>Luciano Baresi, Sam Guinea, and Valerio Panzica La Manna</i>	
Architecture Adaptation Based on Belief Inaccuracy Estimation	87
<i>Rima Al Ali, Tomas Bures, Ilias Gerostathopoulos, Jaroslav Keznikl, and Frantisek Plasil</i>	
Architecting Self-Aware Software Systems	91
<i>Funmilade Faniyi, Peter R. Lewis, Rami Bahsoon, and Xin Yao</i>	

Software Architecture Analysis and Evaluation

Automatic Reference Architecture Conformance Checking for SOA-Based Software Systems	95
<i>Rainer Weinreich and Georg Buchgeher</i>	
Evaluating a Representational State Transfer (REST) Architecture: What is the Impact of REST in My Architecture?	105
<i>Bruno Costa, Paulo F. Pires, Flávia C. Delicato, and Paulo Merson</i>	
Software Architecture Evaluation in Practice: Retrospective on More Than 50 Architecture Evaluations in Industry	115
<i>Jens Knodel and Matthias Naab</i>	
A Recoverability-Oriented Analysis for Operations on Cloud Applications	125
<i>Min Fu, Liming Zhu, Len Bass, and Xiwei Xu</i>	

Software Architecture Modeling

Component-Aware Triggered Scenarios	129
<i>Ivo Krka and Nenad Medvidovic</i>	

Processing the Evolution of Quality Requirements of Web Service Orchestrations: A Pattern-Based Approach	139
<i>Tarek Zernadji, Chouki Tibermacine, and Foudil Cherif</i>	
Consolidating a Process for the Design, Representation, and Evaluation of Reference Architectures	143
<i>Elisa Y. Nakagawa, Milena Guessi, José C. Maldonado, Daniel Feitosa, and Flavio Oquendo</i>	
Inconsistency Resolution in Merging Versions of Architectural Models	153
<i>Hoa Khanh Dam, Alexander Reder, and Alexander Egyed</i>	
Cumulative Software Architecture Development	163
<i>Eric J. Braude</i>	
Towards a Reference Architecture to Provision Tools as a Service for Global Software Development	167
<i>Muhammad Aueef Chauhan and Muhammad Ali Babar</i>	
The Functional Architecture Modeling Method Applied on Web Browsers	171
<i>Wilbert Seele, Shaheen Syed, and Sjaak Brinkkemper</i>	

Software Architecture Decisions and Knowledge Management

Architectural Decisions for HW/SW Partitioning Based on Multiple Extra-Functional Properties	175
<i>Gaetana Sapienza, Ivica Crnkovic, and Pasqualina Potena</i>	
A Study on Group Decision-Making in Software Architecture	185
<i>V. Smrithi Rekha and Henry Muccini</i>	
Towards an Evidence-Based Understanding of Emergence of Architecture through Continuous Refactoring in Agile Software Development	195
<i>Lianping Chen and Muhammad Ali Babar</i>	
A Dynamic Software Product Line Architecture for Prepackaged Expert Analytics: Enabling Efficient Capture, Reuse and Adaptation of Operational Knowledge	205
<i>Karen Smiley, Shakeel Mahate, and Paul Wood</i>	
The Supportive Effect of Traceability Links in Architecture-Level Software Understanding: Two Controlled Experiments	215
<i>Muhammad Atif Javed and Uwe Zdun</i>	
Industrial Implementation of a Documentation Framework for Architectural Decisions	225
<i>Christian Manteuffel, Dan Tofan, Heiko Koziulek, Thomas Goldschmidt, and Paris Avgeriou</i>	
Model-Based Formalization of Software Architecture Knowledge	235
<i>Daniel Perovich and María Cecilia Bastarrica</i>	

Empirical Study of Architectural Knowledge Management Practices	239
<i>Matthias Galster and Muhammad Ali Babar</i>	
Agile Software Architecture in Advanced Data Analytics	243
<i>K. Eric Harper and Aldo Dagnino</i>	
Architecting in Networked Organizations	247
<i>Damian A. Tamburri, Patricia Lago, Christoph Dorn, and Rich Hilliard</i>	
Architecture Description Leveraging Model Driven Engineering and Semantic Wikis	251
<i>Alessandro Baroni, Henry Muccini, Ivano Malavolta, and Eoin Woods</i>	
Systematic Architectural Decision Management, A Process-Based Approach	255
<i>Ana Dragomir, Horst Lichter, and Tiberiu Budau</i>	
Author Index	259