

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

TU Dortmund University, Germany

Madhu Sudan

Microsoft Research, Cambridge, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Roel Wieringa Anne Persson (Eds.)

Requirements Engineering: Foundation for Software Quality

16th International Working Conference, REFSQ 2010
Essen, Germany, June 30–July 2, 2010
Proceedings

Volume Editors

Roel Wieringa
University of Twente
Enschede, The Netherlands
E-mail: r.j.wieringa@utwente.nl

Anne Persson
University of Skövde
Skövde, Sweden
E-mail: anne.persson@his.se

Library of Congress Control Number: 2010929494

CR Subject Classification (1998): D.2, C.2, H.4, F.3, K.6.5, D.4.6

LNCS Sublibrary: SL 2 – Programming and Software Engineering

ISSN 0302-9743
ISBN-10 3-642-14191-9 Springer Berlin Heidelberg New York
ISBN-13 978-3-642-14191-1 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

springer.com

© Springer-Verlag Berlin Heidelberg 2010
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper 06/3180

Preface

This volume compiles the papers accepted for presentation at the 16th Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ 2010), held in Essen during June 30 and July 1-2, 2010.

Since 1994, when the first REFSQ took place, requirements engineering (RE) has never ceased to be a dominant factor influencing the quality of software, systems and services. Initially started as a workshop, the REFSQ working conference series has now established itself as one of the leading international forums to discuss RE in its (many) relations to quality. It seeks reports of novel ideas and techniques that enhance the quality of RE products and processes, as well as reflections on current research and industrial RE practices. One of the most appreciated characteristics of REFSQ is that of being a highly interactive and structured event. REFSQ 2010 was no exception to this tradition.

In all, we received a healthy 57 submissions. After all submissions had been carefully assessed by three independent reviewers and went through electronic discussions, the Program Committee met and finally selected 15 top-quality full papers (13 research papers and 2 experience reports) and 7 short papers, resulting in an acceptance rate of 38 %.

The work presented at REFSQ 2009 continues to have a strong anchoring in practice with empirical investigations spanning over a wide range of application domains.

As in previous years, these proceedings serve as a record of REFSQ 2010, but also present an excellent snapshot of the state of the art of research and practice in RE. As such, we believe that they are of interest to the whole RE community, from students embarking on their PhD to experienced practitioners interested in emerging knowledge, techniques and methods. At the time of writing, REFSQ 2010 has not taken place yet. All readers who are interested in an account of the discussions that took place during the conference should consult the post-conference summary that we intend to publish as usual in the *ACM SIGSOFT Software Engineering Notes*.

REFSQ is essentially a collaborative effort. First of all, we thank Klaus Pohl for his work as General Chair of the conference. We also extend our gratitude to Ernst Sikora and Mikael Berndtsson who served REFSQ 2010 very well as Organization Chair and Publication Chair, respectively. Also we thank Andreas Gehlert for serving very well as Workshop and Poster Chair and Mikael Berndtsson for his work as Publications Chair.

As the Program Chairs of REFSQ 2010, we deeply thank the members of the Program Committee and the additional referees for their careful and timely reviews. We particularly thank those who have actively participated in the Program Committee meeting and those who have volunteered to act as shepherds to help finalize promising papers.

April 2010

Roel Wieringa
Anne Persson

Matthias Jarke	RWTH Aachen, Germany
Sara Jones	City University, London, UK
Natalia Juristo	Universidad Politécnica de Madrid, Spain
Erik Kamsties	University of Applied Sciences Dortmund, Germany
Kim Lauenroth	University of Duisburg-Essen, Germany
Søren Lauesen	IT University of Copenhagen, Denmark
Seok-Won Lee	University of North Carolina at Charlotte, USA
Nazim H. Madhavji	University of Western Ontario, Canada
Raimundas Matulevičius	University of Tartu, Estonia
Ana Moreira	Universidade Nova de Lisboa, Portugal
Haris Mouratidis	University of East London, UK
John Mylopoulos	University of Toronto, Canada
Cornelius Ncube	Bournemouth University, UK
Andreas Opdahl	University of Bergen, Norway
Barbara Paech	University of Heidelberg, Germany
Oscar Pastor	Valencia University of Technology, Spain
Gilles Perrouin	University of Luxembourg
Gil Regev	EPFL and Itecor, Switzerland
Björn Regnell	Lund University, Sweden
Colette Rolland	University of Paris-1— Panthéon Sorbonne, France
Camille Salinesi	University of Paris 1 – Panthéon Sorbonne, France
Kristian Sandahl	Linköping University, Sweden
Peter Sawyer	Lancaster University, UK
Kurt Schneider	University of Hanover, Germany
Norbert Seyff	City University, London, UK
Guttorm Sindre	NTNU, Norway
Janis Stirna	Royal Institute of Technology, Sweden
Eric Yu	University of Toronto, Canada
Didar Zowghi	University of Technology Sydney, Australia

External Reviewers

Willem Bekkers	Daniel Kerkow
Andreas Classen	Dewi Mairiza
Alexander Delater	Anshuman Saxena
Oscar Dieste	Kevin Vlaanderen
Arash Golnam	Inge van de Weerd
Florian Graf	Richard Bertsson Svensson
Wiebe Hordijk	Robert Heinrich Rумыana
Jennifer Horkow	Proynova Sebastian
Cedric Jeanneret	Barney Sira Vegas
Isabel John	

Table of Contents

Keynote

Keynote Talk Piecing Together the Requirements Jigsaw-Puzzle	1
<i>Ian Alexander</i>	

Decision-Making in Requirements Engineering

Understanding the Scope of Uncertainty in Dynamically Adaptive Systems	2
<i>Kristopher Welsh and Pete Sawyer</i>	

Use of Personal Values in Requirements Engineering – A Research Preview	17
<i>Rumyana Proynova, Barbara Paech, Andreas Wicht, and Thomas Wetter</i>	

Requirements and Systems Architecture Interaction in a Prototypical Project: Emerging Results	23
<i>Remo Ferrari, Oliver Sudmann, Christian Henke, Jens Geisler, Wilhelm Schafer, and Nazim H. Madhavji</i>	

Scenarios and Elicitation

Videos vs. Use Cases: Can Videos Capture More Requirements under Time Pressure?	30
<i>Olesia Brill, Kurt Schneider, and Eric Knauss</i>	

Supporting the Consistent Specification of Scenarios across Multiple Abstraction Levels	45
<i>Ernst Sikora, Marian Daun, and Klaus Pohl</i>	

Product Families I

Requirements Value Chains: Stakeholder Management and Requirements Engineering in Software Ecosystems	60
<i>Samuel Fricker</i>	

Binary Priority List for Prioritizing Software Requirements	67
<i>Thomas Bebensee, Inge van de Weerd, and Sjaak Brinkkemper</i>	

Requirements Patterns

Towards a Framework for Specifying Software Robustness Requirements Based on Patterns	79
<i>Ali Shahrokni and Robert Feldt</i>	
A Metamodel for Software Requirement Patterns	85
<i>Xavier Franch, Cristina Palomares, Carme Quer, Samuel Renault, and François De Lazzer</i>	
Validation of the Effectiveness of an Optimized EPMcreate as an Aid for Creative Requirements Elicitation	91
<i>Victoria Sakhnini, Daniel M. Berry, and Luisa Mich</i>	

Product Families II

Towards Multi-view Feature-Based Configuration	106
<i>Arnaud Hubaux, Patrick Heymans, Pierre-Yves Schobbens, and Dirk Deridder</i>	
Evaluation of a Method for Proactively Managing the Evolving Scope of a Software Product Line	113
<i>Karina Vilella, Jörg Dörr, and Isabel John</i>	

Requirements Engineering in Practice

Challenges in Aligning Requirements Engineering and Verification in a Large-Scale Industrial Context	128
<i>Giedre Sabaliauskaite, Annabella Loconsole, Emelie Engström, Michael Unterkalmsteiner, Björn Regnell, Per Runeson, Tony Gorschek, and Robert Feldt</i>	
On the Perception of Software Quality Requirements during the Project Lifecycle	143
<i>Neil A. Ernst and John Mylopoulos</i>	
Lessons Learned from Integrating Specification Templates, Collaborative Workshops, and Peer Reviews	158
<i>Marko Komssi, Marjo Kauppinen, Kimmo Toro, Raimo Soikkeli, and Eero Uusitalo</i>	
A Case Study on Tool-Supported Multi-level Requirements Management in Complex Product Families	173
<i>Margot Bittner, Mark-Oliver Reiser, and Matthias Weber</i>	

Natural Language

A Domain Ontology Building Process for Guiding Requirements Elicitation	188
<i>Inah Omoronyia, Guttorm Sindre, Tor Stålhane, Stefan Biffel, Thomas Moser, and Wikan Sunindyo</i>	
Tackling Semi-automatic Trace Recovery for Large Specifications.....	203
<i>Jörg Leuser and Daniel Ott</i>	
Ambiguity Detection: Towards a Tool Explaining Ambiguity Sources ...	218
<i>Benedikt Gleich, Oliver Creighton, and Leonid Kof</i>	
Ambiguity in Natural Language Software Requirements: A Case Study	233
<i>Fabian de Bruijn and Hans L. Dekkers</i>	

Security Requirements

On the Role of Ambiguity in RE	248
<i>Vincenzo Gervasi and Didar Zowghi</i>	
Towards a Framework to Elicit and Manage Security and Privacy Requirements from Laws and Regulations	255
<i>Shareeful Islam, Haralambos Mouratidis, and Stefan Wagner</i>	
Visualizing Cyber Attacks with Misuse Case Maps	262
<i>Peter Karpati, Guttorm Sindre, and Andreas L. Opdahl</i>	

Poster

How Do Software Architects consider Non-Functional Requirements: A Survey	276
<i>David Ameller and Xavier Franch</i>	

Author Index	279
---------------------------	-----