

21st IEEE International

# Requirements Engineering Conference



## Conference Program

Rio de Janeiro, Brasil  
July 15th – 19th, 2013



# 21st IEEE International Requirements Engineering Conference

July 15th-19th, 2013. Rio de Janeiro, Brasil.



Plenary

Research

Industry

RE@21

RE Interactive

## MONDAY ♦ JULY 15, 2013

### WORKSHOPS

W1 (MoDRE) [Padre Anchieta Auditorium]



W2 (RE4SuSy) (*RE'13 Best Workshop Poster – Audience Award Winner*) [RDC Auditorium]



W3 (EmpiRE with GRIPP session) [Room L 150]



9:00  
12:30

### TUTORIALS

T1 (full-day) "Writing Good Requirements" *Sarah Gregory* (Intel, USA) [FB6 Auditorium]



### DOCTORAL SYMPOSIUM

*David G. Gordon* (Carnegie Mellon University, United States), *Sunil Nair* (University of Oslo, Norway), *Sandeep Reddivari* (*RE'13 Best Doctoral Poster – Audience Award Winner*) (Mississippi State University, United States), *George Valença* (UFPE, Brasil) [Room L 154]

Coffee Breaks (10:30–11:00 & 16:00–16:30); Lunch (12:30–14:30)

### Workshops (continued)

14:30  
18:00

### Tutorials (continued)

T1 (full-day; continued) [FB6 Auditorium]

T3 (half-day) "Applying Model Driven Engineering and Domain Specific Languages to Requirements Engineering" *Bruce Trask and Angel Roman* (MDE Systems Inc., USA) [Room L 120]



### Doctoral Symposium (continued)

## TUESDAY ♦ JULY 16, 2013

### WORKSHOPS

W4 (RePa with REPOS session) [Padre Anchieta Auditorium]



W5 (CMA) [Room L 210]



W7 (TwinPeaks) [Room L 214]



W8 (RELAW) [Room L 218]



9:00  
12:30

### TUTORIALS

T4 (full-day) "Implement Visual Models for Software Requirements Immediately" *Joy Beatty and James Hulgan* (Seilevel Inc., USA) [Room L 222]



T5 (half-day) "Requirements Quality and Productivity Improvement Based on Examples Usage" *Marcelo Tueiv, Marcelo do Carmo Coelho, and Erica Mourão da Silva* (IBM, Brasil) [Room L 224]



T6 (half-day) "Observational and Experimental Case Study Research in Requirements Engineering: Methodology and Examples" *Roel Wieringa* (University of Twente, The Netherlands) [Room L 206]



### CO-LOCATED EVENT

ER@BR [RDC Auditorium]

Coffee Breaks (10:30–11:00 & 16:00–16:30); Lunch (12:30–14:30)

### Workshops (continued)

14:30  
18:00

### Tutorials (continued)

T4 (full-day; continued) [Room L 222]

T7 (half-day) "Model-Based Systems Requirements" *Jean-Michel Bruel and João Araújo* (Université de Toulouse, France; Universidade Nova de Lisboa, Portugal) [Room L 224]



### Co-located Event (continued)

Welcome Cocktail – 00 Night Clube (19:00–22:00) [Rua Vice Governador Rubens Berardo, 100 – Gávea – Planetário]



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WEDNESDAY ♦ JULY 17, 2013

MORNING SESSIONS

**PLENARY SESSION I [Planetário]**

**Welcome to RE'13**

Prof. José Ricardo Bergmann, Pontifícia Universidade Católica do Rio de Janeiro, Brasil (Vice Academic Rector of PUC-Rio)  
 Prof. Marcus V.S. Poggi de Aragão, Pontifícia Universidade Católica do Rio de Janeiro, Brasil (Director of the Informatics Department, PUC-Rio)  
 Julio Cesar Sampaio do Prado Leite, Pontifícia Universidade Católica do Rio de Janeiro, Brasil (RE'13 General Chair)  
 Orlena (Olly) Gotel, Independent Researcher, USA (RE'13 Program Chair)  
 Alistair Mavin (Mav), Rolls Royce PLC, UK (RE'13 Industry Chair)  
 Simone D.J. Barbosa, Pontifícia Universidade Católica do Rio de Janeiro, Brasil (RE'13 Local Chair)

**Keynote Address: Requirements Engineering as Information Search and Idea Discovery**  
 Keynote Speaker: *Neil Maiden (City University London, UK)*  
 Introduced by: Alistair Mavin (RE'13 Industry Chair)

9:00  
10:30

Coffee Break (10:30–11:00); Lunch (12:30–14:30)

**RE Papers: Legal and Privacy Requirements [FB6 Auditorium]**

Chair: Jaelson Castro (Universidade Federal de Pernambuco, Brasil)

Automated Text Mining for Requirements Analysis of Policy Documents  
*Aaron K. Massey, Jacob Eisenstein, Annie I. Antón, and Peter P. Swire (Georgia Tech, USA; Ohio State University, USA)*



Formal Analysis of Privacy Requirements Specifications for Multi-tier Applications  
*Travis D. Breaux and Ashwini Rao (CMU, USA)*



An Empirical Investigation of Software Engineers' Ability to Classify Legal Cross-References

*Jeremy C. Maxwell, Annie I. Antón, and Julie B. Earp (North Carolina State University, USA; Georgia Tech, USA)*



11:00  
12:30

**RE@21 Papers: Keeping Requirements on Track [Padre Anchieta Auditorium]**

Chair: Bashar Nuseibeh (Open University, UK, & Lero, Ireland)

A History of the International Requirements Engineering Conference (RE) (RE@21)

*Nancy R. Mead (SEI, USA)*



A Review of Traceability Research at the Requirements Engineering Conference (RE@21)

*Sunil Nair, Jose Luis de la Vara, and Sagar Sen (Simula Research Laboratory, Norway)*



Models in the RE Series (RE@21)

*Stephen J. Morris (City University London, UK)*



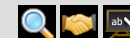
A Vision for Generic Concern-Oriented Requirements Reuse (RE@21)

*Gunter Mussbacher and Jörg Kienzle (University of Ottawa, Canada; McGill University, Canada)*



**RE Micro Tutorials: Top Tips You Can Apply Immediately to Projects – Highlights from the RE'13 Tutorials [RDC Auditorium]**

Organizers: Joy Beatty (Seilevel Inc., USA) and Maria Lencastre (Universidade de Pernambuco, Brasil)



Instructors:

Joy Beatty and James Hulgán (Seilevel Inc., USA)

Sarah Gregory (Intel, USA)

Roel Wieringa (University of Twente, The Netherlands)

Jean-Michel Bruel (Institut de Recherche en Informatique de Toulouse, France) and João Araújo (Universidade Nova de Lisboa, Portugal)

Bruce Trask and Angel Roman (MDE Systems Inc., USA)

Marcelo Tueiv, Marcelo do Carmo Coelho, and Erica Mourão da Silva (IBM, Brasil)

**Keynote Address: Requirements Engineering as Information Search and Idea Discovery**  
*Neil Maiden (City University London, UK)*

Creativity has been the subject of considerable research over the last 60 years. This keynote will argue that most requirements work is creative but not recognized as such. It will summarize recent applications of creativity theories and techniques to requirements work, then posit the general case that most requirements activities involve information search and idea discovery, and hence can be characterized as creative. Requirements research reported over the 21 years of this conference series will be reframed using theories of creativity as information search and idea discovery to support this argument, alongside macro-economic drivers and the shifting landscape of computing and design disciplines and conferences. The keynote will end with a call for researchers and practitioners at RE@21 to reframe requirements work as creative endeavors.

PLENARY SESSION I (July 17, 9:30–10:30)

**Keynote Address: Starchitects and Jack-Hammers: Requirements Engineering Challenges and Practices in the Construction Industry**  
*Fiona Cousins (Arup, USA)*

Our built environment is a marvel of engineering. It is the continuously evolving product of collaboration between civil engineers, mechanical engineers, electrical engineers, architects, owners, governments, voters, contractors and more. Many of the requirements-related challenges that are commonly encountered in the engineering of software systems have been around for centuries in the construction industry. This keynote seeks to describe those requirements engineering problems that are intrinsic to the development of complex twenty-first century buildings and to explain the practices that have evolved to address them. It will highlight those requirements-related challenges that the construction industry is still grappling with and some new challenges that are emerging. The keynote will be illustrated with examples of complex building projects from Arup. The objective is to explore the potential synergies and the possible transfer of practical ideas between some of the oldest engineering disciplines and one of the youngest.

PLENARY SESSION II (July 18, 9:30–10:30)

**Keynote Panel: Brazilian Perspectives on Software Production**

*Karin Breitman (EMC, Brasil)*  
*Roberto Leite (Siemens Chemtech, Brasil)*  
*Jaime Sábat (Accenture, Brasil)*

This keynote panel will explore different perspectives on software production from three very experienced leaders in large companies in Brasil. The panelists will present a blend of industrial research and industrial development experiences, and their requirements engineering challenges will be discussed. The keynote panel will be moderated by Julio Cesar Leite of PUC-Rio, the General Chair of RE'13.

PLENARY SESSION III (July 19, 14:30–16:30)



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Plenary Research Industry RE@21 RE Interactive

WEDNESDAY ♦ JULY 17, 2013

AFTERNOON SESSIONS

Lunch (12:30–14:30)

14:30  
16:00

**RE Papers: Automated Traceability [FB6 Auditorium]**

Chair: Barbara Paech (University of Heidelberg, Germany)

Supporting Requirements Traceability through Refactoring  
*Anas Mahmoud and Nan Niu* (Mississippi State University, USA)



Foundations for an Expert System in Domain-Specific Traceability  
*Jin Guo, Jane Cleland-Huang, and Brian Berenbach* (DePaul University, USA; Siemens, USA)



Application of Reinforcement Learning to Requirements Engineering: Requirements Tracing  
*Hakim Sultanov and Jane Huffman Hayes* (University of Kentucky, USA)



**RE Papers: Industry Challenges and Research Needs [Padre Anchieta Auditorium]**

Chair: Marjo Kauppinen (Aalto University, Finland)

Requirements Reviews Revisited: Residual Challenges and Open Research Questions  
*Frank Salger* (City of Munich, Germany)



Challenges in Balancing the Amount of Solution Information in Requirement Specifications for Embedded Products  
*Juha Savolainen, Dagný Hauksdóttir, and Mike Mannion* (Danfoss Power Electronics, Denmark; DTU, Denmark; Glasgow Caledonian University, UK)



Towards a Systematic Requirement-Based Test Generation Framework: Industrial Challenges and Needs  
*Shokoofeh Hesari, Razieh Behjati, and Tao Yue* (Simula Research Laboratory, Norway; University of Oslo, Norway)



Why Feature Dependencies Challenge the Requirements Engineering of Automotive Systems: An Empirical Study  
*Andreas Vogelsang and Steffen Fuhrmann* (TU Munich, Germany; BMW, Germany)



**RE Panel: Identifying Top Challenges for International Research on Requirements Engineering for Systems of Systems Engineering [RDC Auditorium]**

Moderator: Cornelius Ncube (University of Bournemouth, UK)



Panelists:

Judith Dahmann (The MITRE Corporation, USA)

Anthony Finkelstein (University College London, UK)

Alan Harding (BAE Systems, UK)

Nancy Mead (SEI, CMU, USA)

Coffee Break (16:00–16:30)

16:30  
18:00

**RE Papers: Formal Modeling [FB6 Auditorium]**

Chair: Zhi Jin (Peking University, China)

On Requirements Verification for Model Refinements  
*Carlo Ghezzi, Claudio Menghi, Amir Molzam Sharifloo, and Paola Spoletini* (Politecnico di Milano, Italy; Università dell'Insubria, Italy)



Distributing Refinements of a System-Level Partial Behavior Model  
*Ivo Krka and Nenad Medvidovic* (University of Southern California, USA)



A Mode-Based Pattern for Feature Requirements, and a Generic Feature Interface  
*David Dietrich and Joanne M. Atlee* (University of Waterloo, Canada)



**RE@21 Spotlight: RE's Most Influential Papers I [Padre Anchieta Auditorium]**

Chair: Martin Glinz (University of Zurich, Switzerland)

Analyzing Software Requirements Errors in Safety-Critical, Embedded Systems  
*Robyn Lutz* (2003 MIP Award Winner)



Goal-Based Requirements Analysis  
*Annie Antón* (2006 MIP Award Winner)



Towards Modelling and Reasoning Support for Early-Phase Requirements Engineering  
*Eric Yu* (2007 MIP Award Winner)



**RE Interactive: Creative Collisions – Meet and Create! [RDC Auditorium]**

Organizers: Martin Mahaux (University of Namur, Belgium) and David Callele (University of Saskatchewan, Canada)



Participants:

You!

RE Steering Committee Meeting (18:15–19:45) [Room 511 RDC]



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Plenary Research Industry RE@21 RE Interactive

THURSDAY ♦ JULY 18, 2013

MORNING SESSIONS

**PLENARY SESSION II [Planetário]**

9:00  
10:30

**Program Awards**

RE'13 Best Papers (Research and Industry) and Most Influential Paper from RE'03

**Service Awards**

Distinguished Service to the Requirements Engineering Community Awards (Daniel M. Berry and Roel Wieringa)

**Keynote Address: *Starchitects and Jack-Hammers: Requirements Engineering Challenges and Practices in the Construction Industry***

Keynote Speaker: *Fiona Cousins (Arup, USA)*

Introduced by: *Orlena Gotel (RE'13 Program Chair)*

Coffee Break (10:30–11:00); Lunch (12:30–14:30); RE'14 Organizing Committee Meeting (12:30–14:30) [Room 511 RDC]

**RE Papers: Elicitation in Theory and in Practice [FB6 Auditorium]**

Chair: *Stephen Morris (City University London, UK)*

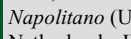
Requirements Elicitation: Towards the Unknown Unknowns

*Alistair Sutcliffe and Pete Sawyer (University of Lancaster, UK)*



Early Phase Telemedicine Requirements Elicitation in Collaboration with Medical Practitioners

*Nekane Larburu, Ing Widya, Richard G. A. Bults, Hermie J. Hermens, and Carlo Napolitano (University of Twente, Netherlands; IRCCCS Fondazione Salvatore Maugeri, Italy)*



How Cloud Providers Elicit Consumer Requirements: An Exploratory Study of Nineteen Companies

*Irina Todoran, Norbert Seyff, and Martin Glinz (University of Zurich, Switzerland)*



11:00  
12:30

**RE@21 Spotlight: RE's Most Influential Papers II [Padre Anchieta Auditorium]**

Chair: *Roel Wieringa (University of Twente, The Netherlands)*

Acquiring COTS Software Selection Requirements

*Neil Maiden and Cornelius Ncube (2008 MIP Award Winner)*



An Analysis of the Requirements Traceability Problem

*Orlena Gotel and Anthony Finkelstein (2004 MIP Award Winner)*



Improving Requirements Tracing via Information Retrieval

*Jane Huffman Hayes, Alex Dekhtyar, and James Osborne (2013 MIP Award Winner)*



**RE Interactive: Workshops and Doctoral Symposium at RE'13 – The Results (Presentation Session of New Ideas for Researchers and Practitioners Who Weren't There) [RDC Auditorium]**

Organizers: *Oliver Creighton (Siemens AG, Germany) and Marcos Borges (Universidade Federal do Rio de Janeiro, Brasil)*

Participants:

Ana Moreira (Universidade Nova de Lisboa, Portugal) (W1: MoDRE)

Birgit Penzenstadler (University of California Irvine, USA) (W2: RE4SuSy)

Sabrina Marczak (Pontificia Universidade Católica do Rio Grande do Sul University, Brasil) and Tayana Conte (UFAM, Brasil) (W3: EmpIRE with GRIPP session)

Liping Zhao (University of Manchester, UK) (W4: RePa with REPOS session)

Gunter Mussbacher (University of Ottawa, Canada) (W5: CMA)

Xavier Franch (Universitat Politècnica de Catalunya, Spain) (W7: TwinPeaks)

Aaron Massey (Georgia Tech, USA) (W8: RELAW)

**RE'13 Best Research Paper Award Winner**

**Visual Notation Design 2.0: Towards User Comprehensible Requirements Engineering Notations**

*Patrice Caire, Nicolas Genon, Patrick Heymans, and Daniel L. Moody (University of Luxembourg, Luxembourg; University of Namur, Belgium; Ozemantics, Australia)*

The success of requirements engineering depends critically on effective communication between business analysts and end users, yet empirical studies show that business stakeholders understand RE notations very poorly. This paper proposes a novel approach to designing RE visual notations that actively involves naïve users in the process. We use *i\**, one of the most influential RE notations, to demonstrate the approach, but the same approach could be applied to any RE notation. We present the results of 5 related empirical studies that show that novices outperform experts in designing symbols that are comprehensible to novices: the differences are both statistically significant and practically meaningful. Symbols designed by novices increased semantic transparency (their ability to be spontaneously interpreted by other novices) by almost 300% compared to the existing *i\** notation. The results challenge the conventional wisdom about visual notation design: that it should be conducted by a small group of experts; our research suggests that it should instead be conducted by large numbers of novices. The approach is consistent with Web 2.0, in that it harnesses the collective intelligence of end users and actively involves them in the notation design process as “prosumers” rather than passive consumers. We believe this approach has the potential to radically change the way visual notations are designed in the future.

RE PAPERS SESSION (July 18, 14:30–16:00)

**RE'13 Best Industry Paper Award Winner**

**The Impact of Requirements on Software Quality across Three Product Generations**

*John Terzakis (Intel, USA)*

In a previous case study, we presented data demonstrating the impact that a well-written and well-reviewed set of requirements had on software defects and other quality indicators between two generations of an Intel product. The first generation was coded from an unorganized collection of requirements that were reviewed infrequently and informally. In contrast, the second was developed based on a set of requirements stored in a Requirements Management database and formally reviewed at each revision. Quality indicators for the second software product all improved dramatically even with the increased complexity of the newer product. This paper will recap that study and then present data from a subsequent Intel case study revealing that quality enhancements continued on the third generation of the product. The third generation software was designed and coded using the final set of requirements from the second version as a starting point. Key product differentiators included changes to operate with a new Intel processor, the introduction of new hardware platforms and the addition of approximately fifty new features. Software development methodologies were nearly identical, with only the change to a continuous build process for source code check-in added. Despite the enhanced functionality and complexity in the third generation software, requirements defects, software defects, software sightings, feature commit vs. delivery (feature variance), defect closure efficiency rates, and number of days from project commit to customer release all improved from the second to the third generation of the software.

RE PAPERS SESSION (July 18, 16:30–18:00)



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AFTERNOON SESSIONS

Lunch (12:30–14:30);

RE'14 Organizing Committee Meeting (12:30–14:30) [Room 511 RDC]

### RE Papers: New Perspectives on Requirements Sources [FB6 Auditorium]

Chair: Didar Zowghi (University of Technology, Sydney, Australia)

Visual Notation Design 2.0: Towards User Comprehensible Requirements Engineering Notations

Patrice Caire, Nicolas Genon, Patrick Heymans, and Daniel L. Moody (RE'13 Best Research Paper Award Winner)

(University of Luxembourg, Luxembourg; University of Namur, Belgium; Ozemantics, Australia)



14:30

16:00

User Feedback in the AppStore: An Empirical Study

Dennis Pagano and Walid Maalej (TU Munich, Germany; University of Hamburg, Germany)



An Industrial Case Study of the Impact of Domain Ignorance on the Effectiveness of Requirements Idea Generation during Requirements Elicitation

Ali Niknafs and Daniel M. Berry (University of Waterloo, Canada)



### RE Mini Tutorial: Winning the Hidden Battle – Requirements Tool Selection and Adoption [Padre Anchieta Auditorium]

Chair: Nan Niu (Mississippi State University, USA)



Presenter:

Joy Beatty (Seilevel, USA)

### RE Interactive: Posters and Demos Science Slam [RDC Auditorium]

Organizers: Leticia Duboc (Universidade do Estado do Rio de Janeiro, Brasil) and Birgit Penzenstadler (University of California Irvine, USA)

See list of posters on the next page.

Coffee Break (16:00–16:30)

### RE Papers: Handling Change [FB6 Auditorium]

Chair: Nelly Bencomo (Aston University, UK)

Learning from Evolution History to Predict Future Requirement Changes

Lin Shi, Qing Wang, and Mingshu Li (ISCAS, China; UCAS, China)



Assessing Regulatory Change through Legal Requirements Coverage Modeling

David G. Gordon and Travis D. Breaux (CMU, USA)



16:30

18:00

A Goal Model Elaboration for Localizing Changes in Software Evolution

Hiroyuki Nakagawa, Akihiko Ohsuga, and Shinichi Honiden (University of Electro-Communications, Japan; National Institute of Informatics, Japan)



### RE Papers: Improving the Quality of Requirements in Practice [Padre Anchieta Auditorium]

Chair: Daniel M. Berry (University of Waterloo, Canada)

The Impact of Requirements on Software Quality across Three Product Generations

John Terzakis (RE'13 Best Industry Paper Award Winner) (Intel, USA)



Requirements Clinic: Third Party Inspection Methodology and Practice for Improving the Quality of Requirements Specifications

Shinobu Saito, Mutsuki Takeuchi, Masatoshi Hiraoka, Tsuyoshi Kitani, and Mikio Aoyama (NTT DATA, Japan; Nanzan University, Japan)



Using Defect Taxonomies for Requirements Validation in Industrial Projects

Michael Felderer and Armin Beer (University of Innsbruck, Austria; QE LaB Business Services, Austria; Beer Test Consulting, Austria)



### RE Panel: Ready-Set-Transfer – Technology Transfer in the Requirements Engineering Domain [RDC Auditorium]

Organizers: Jane Cleland-Huang (DePaul University, USA) and Smita Ghaisas (Tata Consulting Services, India)



Academic Competitors:

"Requirements Reuse through Software Requirement Patterns", Xavier Franch (Universitat Politècnica de Catalunya, Spain)

"The Role of Domain Ignorance in RE", Ali Niknafs (University of Waterloo, Canada)

"Mind the Gap - A Trace Retrieval Solution", Jin Guo (De Paul University, USA) and Jane Huffman Hayes (University of Kentucky, USA) (RE'13 Ready-Set-Transfer Award Winner)

Industry Panelists:

Carlos Henrique Duarte (National Bank for Economic and Social Development (BNDES) of Brasil, Brasil)

Tony Gorschek (Blekinge Institute of Technology, Sweden)

Sarah Gregory (Intel, USA)

Conference Dinner – Porção Churrascaria (20:00–0:00) [Av. Infante Dom Henrique, S/N, Aterro do Flamengo, Rio de Janeiro]

THURSDAY ♦ JULY 18, 2013RE Interactive: Posters and Demos Science Slam (14:30–16:00)

- Requirements Bazaar: Social Requirements Engineering for Community-Driven Innovation  
*Dominik Renzel, Malte Behrendt, Ralf Klamma, and Matthias Jarke (RE'13 Best Demo – Audience Award Winner)* (RWTH Aachen University, Germany)  

- A Safety Requirement Engineering Method and Tool  
*Romarie Guillerm, Hamid Demmou, and Nabil Sadou* (LAAS-CNRS, France; University of Toulouse, France; SUPELEC, France)  

- MIRA: A Tooling-Framework to Experiment with Model-Based Requirements Engineering  
*Sabine Teuffl, Dongyue Mou, and Daniel Ratiu* (Fortiss, Germany)  

- PABRE-Proj: Applying Patterns in Requirements Elicitation  
*Cristina Palomares, Carme Quer, and Xavier Franch* (Universitat Politècnica de Catalunya, Spain)  

- A Tool Implementation of the Unified Requirements Modeling Language as Enterprise Architect Add-In  
*Florian Schneider, Bernd Bruegge, and Brian Berenbach* (TU Munich, Germany; Siemens, USA)  

- IRET: Requirements for Service Platforms  
*Luciano Baresi, Gianluca Ripa, and Liliana Pasquale* (Politecnico di Milano, Italy; Cefriel, Italy; Lero, Ireland; University of Limerick, Ireland)  

- Using TraceLab to Design, Execute, and Baseline Empirical Requirements Engineering Experiments  
*Jane Cleland-Huang, Adam Czauderna, and Jane Huffman Hayes* (DePaul University, United States; University of Kentucky, United States)  

- Requirements-Driven Adaptive Digital Forensics  
*Liliana Pasquale, Yijun Yu, Mazeiar Salehie, Luca Cavallaro, Thein Than Tun, and Bashar Nuseibeh (RE'13 Best Poster – Audience Award Winner)*  
 (Lero, Ireland; Open University, UK)  


Legend:

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li> Requirements engineering process definition, measurement, and improvement</li> <li> Stakeholder identification, engagement, and management</li> <li> Requirements elicitation, analysis, documentation, validation, and verification</li> <li> Requirements negotiation, prioritization, and domain ontology construction</li> <li> Requirements specification languages and model-driven approaches</li> <li> Modeling of requirements, goals, and wider system concerns</li> <li> Requirements management and traceability</li> <li> Evolution of requirements over time, product families, and variability</li> <li> Requirements across the entire system lifecycle</li> <li> Domain-specific problems, experiences, and solutions</li> <li> Requirements in market-driven, service-oriented, and product line environments</li> <li> Requirements for highly complex systems on a global scale</li> <li> Social, cultural, global, personal, and cognitive factors in requirements engineering</li> <li> Industry and research collaboration, learning from practice, and technology transfer</li> <li> Requirements engineering education and training</li> <li> Tool support for requirements engineering</li> </ul> | <ul style="list-style-type: none"> <li> <b>Level 0.</b> Basic principles observed and reported (i.e., the lowest level of industry readiness, but the groundwork for concept development is in place)</li> <li> <b>Level 1.</b> Concept and/or its application proposed, with supporting evidence from the literature (i.e., speculative, but with scientific foundations)</li> <li> <b>Level 2.</b> Concept and/or its application proposed, with supporting evidence from the literature AND industry supplied data (i.e., speculative, but with BOTH scientific and empirical foundations)</li> <li> <b>Level 3.</b> Applicability and validity of the concept described analytically (i.e., partial proof of concept, through theory and/or argument only)</li> <li> <b>Level 4.</b> Applicability and validity of the concept described analytically AND experimentally (i.e., full proof of concept, with initial evidence empirically provided via experimentation or worked demonstration)</li> <li> <b>Level 5.</b> Concept used and validated in a hypothetical study (i.e., through prototype and/or pilot study in a stand-alone and relevant simulated and/or "lab" environment)</li> <li> <b>Level 6.</b> Concept used and validated in multiple hypothetical studies (i.e., through prototypes and/or pilot studies in various representative and stand-alone simulated and/or "lab" environments)</li> <li> <b>Level 7.</b> Concept used and validated in a real industry setting (i.e., through test and demonstration in a single realistic operational working environment)</li> <li> <b>Level 8.</b> Concept used and validated in multiple real industry settings (i.e., through test and demonstration in varied realistic operational working environments)</li> <li> <b>Level 9.</b> Concept used and proven repeatedly in industrial practice over an extended period of time (i.e., a fully mature concept)</li> </ul> |
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## FRIDAY ♦ JULY 19, 2013

**RE Papers: Directions in Decentralized RE** [FB6 Auditorium]  
Chair: João Araújo (Universidade Nova de Lisboa, Portugal)

Ongoing Software Development without Classical Requirements  
*Thomas A. Alspaugh and Walt Scacchi* (UC Irvine, USA)

Assumptions-Based Risk Identification Method (ARM) in Dynamic Service Provisioning  
*Alireza Zarghami, Eelco Vriezekolk, Mohammad Zarifi Eslami, Marten van Sinderen, and Roel Wieringa* (University of Twente, Netherlands)

Can Requirements Dependency Network Be Used as Early Indicator of Software Integration Bugs?  
*Junjie Wang, Juan Li, Qing Wang, Da Yang, He Zhang, and Mingshu Li* (ISCAS, China; UCAS, China; University of East London, UK)

9:00  
-  
10:30

**RE Papers: RE Processes and Tools in Action**  
Chair: Neil Ernst (Software Engineering Institute, USA) [Padre Anchieta Auditorium]

Requirements Engineering for the Uganda Police Force Crime Records Management System  
*Andrew Muyanja, Paul Isaac Musasizi, Catherine Nassimbwa, Sandy Stevens Tickodri-Togboa, Edward Kale Kayihura, and Amos Ngabirano* (Makerere University, Uganda; Uganda Police Force, Uganda)

The Integration of an RE Method and AHP: A Pilot Study in a Large Swiss Bank  
*Arash Golnam, Gil Regev, Alain Wegmann, and Sofia Kyriakopoulou* (EPFL, Switzerland; Credit Suisse, Switzerland)

Automatic Extraction of Glossary Terms from Natural Language Requirements  
*Anurag Dwarakanath, Roshni R. Ramnani, and Shubhashis Sengupta* (Accenture Technology Labs, India)

**RE Working Session: The Requirements Engineering Body of Knowledge (REBoK)** [RDC Auditorium]  
Organizers: Birgit Penzenstadler and Debra Richardson (University of California Irvine, USA), and David Callele (University of Saskatchewan, Canada)

REBoK Visionaries:  
Mikio Aoyama (Nanzan University, Japan)  
Oliver Creighton (Siemens AG, Germany)  
Sarah Gregory (Intel, USA)  
Martin Glinz (University of Zurich, Switzerland)  
Pete Sawyer (University of Lancaster, UK)

### Coffee Break (10:30–11:00)

**RE Papers: Traceability in Practice** [FB6 Auditorium]  
Chair: Michael Panis (Teradyne, USA)

An Empirical Study on Project-Specific Traceability Strategies  
*Patrick Rempel, Patrick Mäder, and Tobias Kuschke* (TU Ilmenau, Germany)

An Approach to Carry Out Consistency Analysis on Requirements: Validating and Tracking Requirements through a Configuration Structure  
*Padmalata Nistala and Priyanka Kumari* (Tata Consultancy Services, India)

Keeping Requirements on Track via Visual Analytics  
*Nan Niu, Sandeep Reddivari, and Zhangji Chen* (Mississippi State University, USA)

11:00  
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12:30

**RE Mini Tutorial: Practical Applications of i\* in Industry – The State of the Art**  
Chair: Seok Won Lee (Ajou University, Republic of Korea) [Padre Anchieta Auditorium]

Presenters:  
Eric Yu (University of Toronto, Canada)  
Daniel Amyot (University of Ottawa, Canada)  
Jaelson Castro (Universidade Federal de Pernambuco, Brasil)  
Xavier Franch (Universitat Politècnica de Catalunya, Spain)  
Gunter Mussbacher (University of Ottawa, Canada)

**RE@21 Panel: Future Directions of the RE Conference and Its Community** [RDC Auditorium]  
Moderator: Neil Maiden (City University London, UK)

Panelists:  
"Requirements Engineering Conferences: Wither Industry Tracks?", Roel Wieringa and Pascal van Eck (University of Twente, The Netherlands), and John Mylopoulos (University of Trento, Italy)  
"A New Paradigm for Applied Requirements Engineering Research", Martin Mahaux (University of Namur, Belgium) and Alistair Mavin (Rolls Royce PLC, UK)  
"A Little Rebellion Now and Then Is a Good Thing: Views on the Requirements Engineering Conference", Tony Gorschek (Blekinge Institute of Technology, Sweden)  
Anthony Finkelstein (University College London, UK)

### Lunch (12:30–14:30)

**PLENARY SESSION III** [Planetário]

**Audience Awards**  
RE'13 Best Poster, Best Demo, Best Workshop Poster, Best Doctoral Poster, and Ready Set Transfer Winner

**Keynote Panel: Brazilian Perspectives on Software Production**  
Keynote Panelist: *Karin Breitman* (EMC, Brasil), *Roberto Leite* (Siemens Chemtech, Brasil), *Jaime Sábat* (Accenture, Brasil)  
Moderated by: Julio Cesar Leite (RE'13 General Chair)

**Conference Closing and Invitation to RE'14**  
Jane Cleland-Huang, De Paul University, USA (RE Steering Committee Chair)  
Tony Gorschek, Blekinge Institute of Technology, Sweden (RE'14 General Chair)  
Robyn Lutz, Iowa State University, USA (RE'14 Program Chair)

14:30  
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16:00