

Sergio España, Mirjana Ivanović, Miloš Savić (Eds.)

Proceedings of the CAiSE'16 Forum at the
28th International Conference on Advanced Information
Systems Engineering (CAiSE 2016)

CAiSE'16 Forum

Ljubljana, Slovenia
13 – 17 June 2016

Proceedings of the CAiSE'16 Forum at the 28th International Conference on Advanced Information Systems Engineering (CAiSE 2016)

Ljubljana, Slovenia, 13 – 17 June 2016

Volume Editors

Sergio España
Utrecht University
Department of Information and Computing Sciences
Utrecht, Netherlands
E-mail: s.espana@uu.nl

Mirjana Ivanović
University of Novi Sad
Faculty of Sciences, Department of Mathematics and Informatics
Novi Sad, Serbia
E-mail: mira@dmi.uns.ac.rs

Miloš Savić
University of Novi Sad
Faculty of Sciences, Department of Mathematics and Informatics
Novi Sad, Serbia
E-mail: svc@dmi.uns.ac.rs

Publisher

CEUR Workshop Proceedings
<http://ceur-ws.org>
ISSN 1613-0073

Papers are copyrighted © 2016 by the authors. Copying permitted only for private and academic purposes. This volume is published and copyrighted by its editors. The contents of the published papers express the opinions of their respective authors, not the volume publisher.

Preface

CAiSE is a highly recognised conference series on information system engineering. CAiSE'16, the 28th edition of the series, is held in June 2016, in Ljubljana, Slovenia. This year, the CAiSE conference especially welcomes papers that address information systems for connecting people. The main theme of CAiSE'16 strongly emphasises the role of information systems in communication and collaboration within and between complexly structured organizations. The sociality when applied to information systems raises important research questions and challenges relevant to the development of next generation information systems.

In the tradition of the CAiSE conferences, the CAiSE'16 Forum offers opportunities for interactive presentation and open discussion of new ideas, methods and tools related to information systems engineering. The Forum aims at the presentation of emerging new topics and practical experiences, as well as the demonstration of innovative systems, tools and applications. Three types of submissions have been invited to the Forum:

- Visionary short papers present innovative research projects, which are still at a relatively early stage and do not necessarily include a full-scale validation.
- Demo papers describe innovative tools and prototypes that implement the results of research efforts.
- Experience reports are first-hand and evidence-based descriptions of how state-of-the-art methods or tools have been applied in real settings or taught in class.

Each submission to the CAiSE'16 Forum was assessed by at least three Programme Committee members. Only those submissions for which there was full agreement on the relevance and rigour were accepted for presentation in the Forum. Additionally, some papers were redirected from CAiSE main track and a Programme Committee member made sure that they fit the Forum well. These proceedings include the resulting collection of 24 excellent visionary, demo and experience report papers. The selection of papers spans a multitude of topics related to novel models, methods, techniques, architectures and platforms in and for engineering of new generation, multi-aspect information systems in various domains.

We would like to thank everyone who contributed to the CAiSE'16 conference and CAiSE'16 Forum in particular. Our special thanks are devoted to the members of the CAiSE'16 Forum Program Committee for promoting the Forum and providing thorough evaluations of submitted papers. We thank all authors who submitted papers to the Forum for having shared their work with us. Last but not least, we would like to thank the CAiSE'16 Program Committee Chairs and the Local Organisation Committee for their support.

June 2016

*Sergio España
Mirjana Ivanović
Miloš Savić*

CAiSE'16 Organization

Steering Committee

Barbara Pernici (*Politecnico di Milano, Italy*)
Oscar Pastor (*Universidad Politécnica de Valencia, Spain*)
John Krogstie (*Norwegian University of Science and Technology, Norway*)

General Chairs

Marko Bajec (*University of Ljubljana, Slovenia*)
Johann Eder (*University of Klagenfurt, Austria*)

Program Chairs

Pnina Soffer (*University of Haifa, Israel*)
Selmin Nurcan (*University of Paris 1 Panthéon-Sorbonne, France*)

Organizing Institution

Faculty of Computer and Information Science, University of Ljubljana, Slovenia

Organization Chairs

Vida Groznik (*University of Ljubljana, Slovenia*)
Slavko Žitnik (*University of Ljubljana, Slovenia*)
Marko Janković (*University of Ljubljana, Slovenia*)

Workshop Chairs

Haris Mouratidis (*University of Brighton, UK*)
Jianwen Su (*University of California at Santa Barbara, USA*)
John Krogstie (*Norwegian University of Science and Technology, Norway*)

Forum Chairs

Sergio Espana (*Universidad Politécnica de Valencia, Spain*)
Mirjana Ivanović (*University of Novi Sad, Serbia*)

Doctoral Consortium Chairs

Roel Wieringa (*University of Twente, Netherlands*)
Stefanie Rinderle-Ma (*University of Vienna, Austria*)
Oscar Pastor (*Universidad Politécnica de Valencia, Spain*)

Tutorial and Panel Chairs

Xavier Franch (*Universitat Politècnica de Catalunya, Spain*)
Jolita Ralyte (*University of Geneva, Switzerland*)

Publicity Chairs

Rebecca Deneckere (*University of Paris 1 Panthéon-Sorbonne, France*)
Marta Indulska (*The University of Queensland, Australia*)
Renata Guizzardi (*Federal University of Espírito Santo, Brasil*)

Publication Chair

Saïd Assar (*Mines-Telecom Institute, France*)

Industry Chairs

Dimitris Karagiannis (*University of Vienna, Austria*)
Niko Schlamberger (*Slovenia Society Informatica, Slovenia*)

Webmaster

Marko Janković (*University of Ljubljana, Slovenia*)

CAiSE'16 Forum Program Committee

Raian Ali (*Bournemouth University, UK*)
Costin Badica (*University of Craiova, Romania*)
Judith Barrios Albornoz (*University of Los Andes, Venezuela*)
Drazen Brdjanin (*University of Banja Luka, Bosnia and Herzegovina*)
Zoran Budimac (*University of Novi Sad, Serbia*)
Krisztian Buza (*Budapest University of Technology and Economics, Hungary*)
Nelly Condori-Fernández (*VU University of Amsterdam, Netherlands*)
Dolors Costal (*Universitat Politècnica de Catalunya, Spain*)
Jose Luis de La Vara (*Carlos III University of Madrid, Spain*)
Boris Delibašić (*University of Belgrade, Serbia*)
Tihana Galinac Grbac (*University of Rijeka, Croatia*)
Giovanni Giachetti (*Universidad Andres Bello, Chile*)
Jānis Grabis (*Riga Technical University, Latvia*)
Martin Henkel (*Stockholm University, Sweden*)
Marjan Heričko (*University of Maribor, Slovenia*)
Irena Holubova (*Charles University in Prague, Czech Republic*)
Kostas Kontogiannis (*University of Waterloo, Canada*)
Elena Kornyshova (*CNAM, France*)
Beatriz Marín (*Universidad Diego Portales, Chile*)
Anastas Mishev (*University of Sts. Cyril and Methodius, FYR Macedonia*)
Alok Mishra (*Atilim University, Turkey*)
Marcin Paprzycki (*Polish Academy of Sciences, Poland*)
Jan Paralic (*Technical University Kosice, Slovakia*)
Vedran Podobnik (*University of Zagreb, Croatia*)
Zoltán Porkoláb (*Eötvös Loránd University, Hungary*)
Ravi Ramdoyal (*CETIC, Belgium*)
Daniel Romero (*Universidad Nacional de Asunción, Paraguay*)
Kurt Sandkuhl (*The University of Rostock, Germany*)
Sagar Sen (*Simula Research Laboratory, Norway*)
Estefanía Serral (*KU Leuven, Belgium*)
Ioannis Stamelos (*Aristotle University of Thessaloniki, Greece*)
Bela Stantic (*Griffith University, Australia*)
Dragan Stojanovic (*University of Nis, Serbia*)
Victoria Torres (*Universidad Politécnica de Valencia, Spain*)
Francisco Valverde (*Universidad Politécnica de Valencia, Spain*)
Goran Velinov (*University of Sts. Cyril and Methodius, FYR Macedonia*)

Table of Contents

Models, Methods and Techniques in Information Systems Engineering

- Plausibility Checking of Formal Business Process Specifications in Linear Temporal Logic 1
Christoph Czepa, Huy Tran, Uwe Zdun, Thanh Tran Thi Kim, Erhard Weiss, Christoph Ruhsam
- On Handling Business Process Anomalies through Artifact-based Modeling 9
Luciano Baresi, Giovanni Meroni, Pierluigi Plebani
- Towards a Graphical Language for Process Modelling in Construction 17
Elisa Marengo, Patrick Dallasega, Marco Montali, Werner Nutt
- A Novel Fitness Improvement Method for Mined Business Process Models 25
Yaguang Sun, Bernhard Bauer
- Cognitive Efforts in Using Integrated Models of Business Processes and Rules 33
Wei Wang, Marta Indulska, Shazia Sadiq
- REA Business Management Ontology: Conceptual Modeling of Accounting, Finance and Management Control .. 41
Walter S.A. Schwaiger
- A Petri Net Specification of the REA Business Ontology 49
Hans Weigand, Paul Johannesson, Birger Andersson
- Social Mining as a Knowledge Management Solution 57
Mathijs Creemers, Mieke Jans

Architectures, Platforms and Domain-specific Information Systems Engineering

- Model-based Requirements for Integrating Cloud Services 65
Iyad Zikra
- A Social Network-based Framework for Data Services Selection in Modern Web Application Design 73
Devis Bianchini, Valeria De Antonellis, Michele Melchiori
- Automated Sensor Registration, Binding and Sensor Data Provisioning 81
Pascal Hirmer, Matthias Wieland, Uwe Breitenbücher, Bernhard Mitschang
- Modeling Cross-Device Systems with Use Case Diagrams 89
Dennis Wolters, Christian Gerth, Gregor Engels
- Towards Privacy-preserving Attribute Aggregation in Federated eID Systems 97
Walter Priesnitz Filho, Carlos Ribeiro, Thomas Zefferer

Multi-aspect Information Systems

- A Human-Centred Framework for Supporting Agile Model-Based Testing 105
Maria Spichkova, Anna Zamansky
- Shadow IT: Steroids for Innovation 113
Mario Silic, Dario Silic, Goran Oblakovic
- Consistent Integration of Decision (DMN) and Process (BPMN) Models 121
Laurent Janssens, Ekaterina Bazhenova, Johannes De Smedt, Jan Vanthienen, Marc Denecker
- GEMMS: A Generic and Extensible Metadata Management System for Data Lakes 129
Christoph Quix, Rihan Hai, Ivan Vatov

Demo Papers

- A Social Information Flow Graph: Design and Prototypical Implementation 137
Thomas Reschenhofer, Patrick Bürgin, Florian Matthes
- TEAL: Transparent Encryption for the Database Abstraction Layer 145
Karl Lorey, Erik Buchmann, Klemens Böhm
- A Facet-based Model Mapping Method for EA Alignment and Evolution 153
Jonathan Pepin, Pascal André, Christian Attiogbé, Erwan Breton
- Person Identification Based on Keystroke Dynamics: Demo and Open Challenge 161
Krisztian Buza

Experience Reports

- Multidimensional Process Mining: Questions, Requirements, and Limitations 169
Thomas Vogelgesang, Georg Kaes, Stefanie Rinderle-Ma, H.-Jürgen Appelrath
- A Low-resource Aware Framework for ICT Service Development in Rural Africa 177
Anna Bon, Jaap Gordijn, Hans Akkermans
- Characterizing Problem Gamblers in New Zealand: A Novel Expression of Process Cubes 185
Suriadi Suriadi, Teo Susnjak, Agate M. Ponder-Sutton, Paul A. Watters, Christoph Schumacher

