Lecture Notes in Business Information Processing 318

More information about this series at http://www.springer.com/series/7911

Jens Gulden · Iris Reinhartz-Berger
Rainer Schmidt · Sérgio Guerreiro
Wided Guédria · Palash Bera (Eds.)

Enterprise, Business-Process and Information Systems Modeling

19th International Conference, BPMDS 2018
23rd International Conference, EMMSAD 2018
Held at CAiSE 2018, Tallinn, Estonia, June 11–12, 2018
Proceedings

Springer

Editors
Jens Gulden
University of Duisburg-Essen
Essen
Germany

Iris Reinhartz-Berger
University of Haifa
Haifa
Israel

Rainer Schmidt
Munich University of Applied Sciences
Munich
Germany

Sérgio Guerreiro
INESC-ID
University of Lisbon
Lisbon
Portugal

Wided Guédria
Luxembourg Institute of Science and Technology
Esch-sur-Alzette
Luxembourg

Palash Bera
Saint Louis University
St. Louis, MO
USA

ISSN 1865-1348 ISSN 1865-1356 (electronic)
Lecture Notes in Business Information Processing
ISBN 978-3-319-91703-0 ISBN 978-3-319-91704-7 (eBook)
https://doi.org/10.1007/978-3-319-91704-7

Library of Congress Control Number: 2018944292

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

This book contains the proceedings of two long-running events held along with the CAiSE conferences relating to the areas of enterprise, business process and information systems modeling: the 19th International Conference on Business Process Modeling, Development and Support (BPMDS 2018) and the 23rd International Conference on Evaluation and Modeling Methods for Systems Analysis and Development (EMMSAD 2018). The two working conferences are introduced below.

BPMDS 2018

The topics addressed by the BPMDS series, in conjunction with CAiSE (Conference on Advanced Information Systems Engineering), are focused on business processes and their IT support. This is one of the keystones of information systems theory beyond short-lived fashions. The continued interest in this topic on behalf of the information systems community is reflected by the success of the past BPMDS events, and their promotion from a workshop to a working conference.

The BPMDS series produced 18 events from 1998 to 2017. From 2011, BPMDS became a two-day working conference attached to CAiSE. The basic principles of the BPMDS series are:

1. BPMDS serves as a meeting place for researchers and practitioners in the areas of business development and business applications (software) development.
2. The aim of the event is mainly discussions, rather than presentations.
3. Each event has a theme that is mandatory for idea papers.
4. Each event's results are, usually, published in a special issue of an international journal.

The goals, format, and history of BPMDS can be found on the website: http://www.bpmds.org/.

BPMDS solicits papers related to business process modeling, development, and support (BPMDS) using quality, relevance, originality, and applicability as main selection criteria. As a working conference, BPMDS 2018 aimed to attract *full research papers* describing mature research, *experience reports* related to using BPMDS in practice, and visionary *idea papers*. To encourage new and emerging challenges and research directions in the area of business process modeling, development and support, BPMDS has a unique focus theme every year. Papers submitted as idea papers are required to be of relevance to the focus theme, thus providing a mass of new ideas around a relatively narrow but emerging research area. Full research papers and experience reports do not necessarily need to be directly connected to this theme.

The focus theme for BPMDS 2018 idea papers was "Ecosystem-Aware Business Process Modeling, Development, and Support." For the 19th edition of the BPMDS conference, we invited the interested authors to engage during the two days of BPMDS 2018 in Tallinn, and to take part in a deep discussion with all participants about the challenges of business transformation in the digitally connected world and the ways *business process modeling, development, and support* may provide capabilities to deal with these challenges. The challenges result from, among others, the impacts of the ubiquity of the actors, social networks, and new business models as well as the co-existence of flexibility, exception handling, context awareness, and personalization requirements together with other compliance and quality requirements.

Practitioners are producing business process models, researchers are studying and producing business process models, and are also producing new modeling languages when they consider that existing ones are not sufficient. What is beyond? Which kind of analyses can we make using these process models? How can we complete and enhance these process models with annotations, with data coming from everywhere out of the immediate process environment? How can the understanding we gain by working on these models in a sandbox help or facilitate the undergoing business transformation?

BPMDS 2018 received 29 submissions from 23 countries (Austria, Denmark, Egypt, Estonia, France, Germany, Greece, Israel, Italy, Latvia, Libya, The Netherlands, New Zealand, Norway, Pakistan, Poland, Russia, Saudi Arabia, Slovenia, Spain, Sweden, Switzerland, and Tunisia). Each paper received at least three reviews from the members of the international Program Committee. Eventually, 13 high-quality papers were selected, among them 11 research papers, one experience report, and one idea paper. The accepted papers cover a wide spectrum of issues related to business process development, modeling, and support. They are organized under the following section headings:

- Context-Awareness in Business Processes
- Automatic Analysis of Business Processes
- Advanced Approaches for Business Process Modeling
- Evaluation of Business Process Modeling Techniques
- An Experience Report on Modeling Collaborative Processes

We wish to thank all the people who submitted papers to BPMDS 2018 for having shared their work with us, as well as the members of the BPMDS 2018 Program Committee, who made a remarkable effort in reviewing submissions. We also thank the organizers of CAiSE 2018 for their help with the organization of the event, and IFIP WG8.1 for the support.

April 2018

Jens Gulden
Rainer Schmidt

EMMSAD 2018

The field of information and software systems development has resulted in a rich heritage of modeling approaches (e.g., business process modeling, enterprise modeling, value modeling, capability modeling, ontology modeling, and so on). This canon of approaches continuous to be enriched with extensions, refinements, and even new languages to deal with new challenges. Even with some attempts toward standardization (e.g., UML for object-oriented software design, ArchiMate for enterprise architecture modeling, and BPMN for business process modeling), new modeling methods are constantly being introduced, especially in order to deal with emerging trends such as compliance and regulations, cloud computing, big data, business analytics, the Internet of Things, cyber-physical systems, etc. These introduce challenges to modeling as well: scalability, privacy, security, and performance, to list a few, and may call for extending existing modeling methods or developing new ones. These ongoing changes significantly impact the way systems are being analyzed and designed in practice.

Evaluation of modeling methods contributes to the knowledge and understanding of their strengths and weaknesses. This knowledge may guide researchers toward the development of the next generation of modeling methods and help practitioners select the modeling methods most appropriate for their needs. A variety of empirical and non-empirical evaluation approaches can be found in the literature: feature comparison, meta-modeling, metrics, paradigmatic analyses, contingency identification, ontological evaluation, surveys, laboratory and field experiments, case studies, and action research. Yet, there is a paucity of such research in the literature.

The objective of the EMMSAD conference series is to provide a forum for researchers and practitioners interested in modeling methods for systems analysis and development (SA&D) to meet and exchange research ideas and results. To this end, the focus is on both insights in modeling for SA&D in general and the fostering of cross-pollination of insights between different specific modeling approaches (such as business process modeling, enterprise modeling, value modeling, capability modeling, etc.). More details can be found at http://www.emmsad.org/.

EMMSAD 2018 accepted six papers that underwent a rigorous review process with four reviewers for each submission. The accepted papers cover a wide spectrum of issues related to modeling:

- "The Power/Generality Trade-Off in Decision and Problem Modeling: Theoretical Background and Multi-Level Modeling as a Resolution"
- "Modeling Organizational Structures in the Realm of Enterprise Modeling: Limitations of the Current Paradigm and Prospects of Multilevel Language Architectures"
- "DevOps Competences and Maturity for Software Producing Organizations"
- "An Agile Modeling Oriented Process for Logical Architecture Design"

– “Exploring the Design Needs for the New Database Era”
– “Evaluation of a Design Method for Graph Database”

We wish to thank the EMMSAD 2018 authors for having shared their work with us, as well as the members of the EMMSAD 2018 Program Committee for their valuable reviews. We also thank the organizers of CAiSE 2018 for their help with the organization of the event, and IFIP WG8.1 for the support.

April 2018

Iris Reinhartz-Berger
Sérgio Guerreiro
Wided Guédria
Palash Bera

BPMDS 2018 Organization

Organizers

Jens Gulden	University of Duisburg-Essen, Germany
Rainer Schmidt	Munich University of Applied Sciences, Germany

Steering Committee

Ilia Bider	Stockholm University and IbisSoft, Sweden
Selmin Nurcan	Université Paris 1 Panthéon - Sorbonne, France
Rainer Schmidt	Munich University of Applied Sciences, Germany
Pnina Soffer	University of Haifa, Israel

Industrial Advisory Board

Ilia Bider	Stockholm University and IbisSoft, Sweden
Pascal Negros	Arch4IE, France
Gil Regev	EPFL and Itecor, Switzerland

Industrial Track Chairs

Rainer Schmidt	Munich University of Applied Sciences, Germany
Jens Gulden	University of Duisburg-Essen, Germany

Program Committee

João Paulo A. Almeida	Federal University of Espirito Santo, Brazil
Judith Barrios Albornoz	University of Los Andes, Colombia
Kahina Bessai	Loria University of Lorraine, France
Ilia Bider	Stockholm University/IbisSoft, Sweden
Karsten Boehm	FH KufsteinTirol - University of Applied Science, Austria
Lars Brehm	Munich University of Applied Science, Germany
Dirk Fahland	Eindhoven University of Technology, The Netherlands
Claude Godart	Loria University of Lorraine, France
Renata Guizzardi	Universidade Federal do Espirito Santo, Brazil
Jens Gulden	University of Duisburg-Essen, Germany
Amin Jalali	Stockholm University, Sweden
Paul Johannesson	Royal Institute of Technology, Sweden
Marite Kirikova	Riga Technical University, Latvia
Agnes Koschmider	Karlsruhe Institute of Technology, Germany
Marcello La Rosa	The University of Melbourne, Australia
Jan Mendling	Vienna University of Economics and Business, Austria

Michael Möhring	Aalen University, Germany
Pascal Negros	Université Paris 1 Panthéon - Sorbonne, France
Jens Nimis	University of Applied Sciences Karlsruhe, Germany
Selmin Nurcan	Université Paris 1 Panthéon - Sorbonne, France
Oscar Pastor Lopez	Universitat Politècnica de València, Spain
Elias Pimenidis	University of the West of England, UK
Gregor Polančič	University of Maribor, Slovenia
Gil Regev	Ecole Polytechnique Fédérale de Lausanne, Switzerland
Manfred Reichert	University of Ulm, Germany
Iris Reinhartz-Berger	University of Haifa, Israel
Stefanie Rinderle-Ma	University of Vienna, Austria
Colette Rolland	Université Paris 1 Panthéon - Sorbonne, France
Michael Rosemann	Queensland University of Technology, Australia
Shazia Sadiq	The University of Queensland, Australia
Rainer Schmidt	Munich University of Applied Sciences, Germany
Stefan Schönig	University of Bayreuth, Germany
Samira Si-Said Cherfi	CEDRIC - Conservatoire National des Arts et Métiers, France
Pnina Soffer	University of Haifa, Israel
Roland Ukor	FirstLinq Ltd., UK
Barbara Weber	University of Innsbruck, Austria
Matthias Weidlich	Humboldt-Universität zu Berlin, Germany
Jelena Zdravkovic	Stockholm University, Sweden
Alfred Zimmermann	Reutlingen University, Germany

Additional Reviewers

Bock, Alexander
Kaes, Georg
de Kinderen, Sybren
Mohring, Tim
Mundbrod, Nicolas
Nolte, Mario
Stach, Michael
Tsoury, Arava
Wang, Wei

EMMSAD 2018 Organization

Co-chairs

Iris Reinhartz-Berger	University of Haifa, Israel
Sérgio Guerreiro	Instituto Superior Técnico/Universidade de Lisboa, Portugal
Wided Guédria	Luxembourg Institute of Science and Technology (LIST), Luxembourg
Palash Bera	Saint Louis University, USA

Advisory Committee

John Krogstie	Norwegian University of Science and Technology (NTNU), Norway
Henderik A. Proper	Luxembourg Institute of Science and Technology (LIST), Luxembourg, and Radboud University Nijmegen, The Netherlands

Program Committee

Palash Bera	Saint Louis University, USA
Tony Clark	Sheffield Hallam University, UK
Dolors Costal	Universitat Politècnica de Catalunya, Spain
Sybren De Kinderen	University of Duisburg-Essen, Germany
Claudio Di Ciccio	Vienna University of Economics and Business, Austria
John Erickson	University of Nebraska-Omaha, USA
Neil Ernst	University of Victoria, Canada
Peter Fettke	German Research Center for Artificial Inteilligence (DFKI) and Saarland University, Germany
Kathrin Figl	Vienna University of Economics and Business (WU), Austria
Mohamad Gharib	University of Florence, Italy
Jeff Gray	University of Alabama, USA
Wided Guedria	LIST
Sérgio Guerreiro	Instituto Superior Técnico, University of Lisbon, Portugal
Stijn Hoppenbrouwers	HAN University of Applied Sciences, The Netherlands
Jennifer Horkoff	Chalmers and the University of Gothenburg, Sweden
Timothy Lethbridge	University of Ottawa, Canada
Florian Matthes	Technical University of Munich, Germany
Raimundas Matulevicius	University of Tartu, Estonia
Haralambos Mouratidis	University of Brighton, UK
Andreas L. Opdahl	University of Bergen, Norway

Sietse Overbeek	Utrecht University, The Netherlands
Hervé Panetto	CRAN, University of Lorraine, CNRS, France
Oscar Pastor Lopez	Universitat Politècnica de València, Spain
Barbara Pernici	Politecnico di Milano, Italy
Anne Persson	University of Skövde, Sweden
Nuno Pombo	University of Beira Interior, Portugal
Jolita Ralyté	University of Geneva, Switzerland
Iris Reinhartz-Berger	University of Haifa, Israel
Alberto Silva	Universidade de Lisboa, Portugal
Sase Singh	Elizabeth City State University, USA
Janis Stirna	Stockholm University, Sweden
Arnon Sturm	Ben-Gurion University, Israel
Dirk van der Linden	University of Bristol, UK
Steven van Kervel	Formetis BV
Carson Woo	The University of British Columbia, Canada
Michael Wufka	Douglas College, Canada
Marielba Zacarias	Universidade do Algarve, Portugal
Anna Zamansky	University of Haifa, Israel
Jelena Zdravkovic	Stockholm University, Sweden

Additional Reviewers

Bhat, Manoj
Borsato, Milton
Detro, Silvana
Li, Qing
Waltl, Bernhard

Contents

Evaluation of Business Process Modeling Techniques (BPMDS 2018)

An Experience Report on Modeling Collaborative Processes (BPMDS 2018)

EMMSAD 2018