

# The Practice of Enterprise Modeling

Jaap Gordijn, Wided Guédria, Henderik Proper

# ▶ To cite this version:

Jaap Gordijn, Wided Guédria, Henderik Proper. The Practice of Enterprise Modeling: 12th IFIP Working Conference, PoEM 2019, Luxembourg, Luxembourg, November 27–29, 2019, Proceedings. Springer International Publishing, LNBIP-369, 2019, Lecture Notes in Business Information Processing, 978-3-030-35150-2. 10.1007/978-3-030-35151-9. hal-03231350

# HAL Id: hal-03231350 https://inria.hal.science/hal-03231350

Submitted on 20 May 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



# **Lecture Notes** in Business Information Processing

369

# Series Editors

Wil van der Aalst

RWTH Aachen University, Aachen, Germany

John Mylopoulos (D)

University of Trento, Trento, Italy

Michael Rosemann

Queensland University of Technology, Brisbane, QLD, Australia

Michael J. Shaw

University of Illinois, Urbana-Champaign, IL, USA

Clemens Szyperski

Microsoft Research, Redmond, WA, USA

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

Jaap Gordijn · Wided Guédria · Henderik A. Proper (Eds.)

# The Practice of Enterprise Modeling

12th IFIP Working Conference, PoEM 2019 Luxembourg, Luxembourg, November 27–29, 2019 Proceedings



Editors
Jaap Gordijn 
Vrije Universiteit Amsterdam
Amsterdam, Noord-Holland
The Netherlands

Henderik A. Proper Luxembourg Institute of Science and Technology
Esch-sur-Alzette, Luxembourg

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

ISSN 1865-1348 ISSN 1865-1356 (electronic) Lecture Notes in Business Information Processing ISBN 978-3-030-35150-2 ISBN 978-3-030-35151-9 (eBook) https://doi.org/10.1007/978-3-030-35151-9

#### © IFIP International Federation for Information Processing 2019

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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

### **Preface**

The 12th IFIP Working Conference on the Practice of Enterprise Modeling (PoEM 2019), was held during November 27–29, 2019, in Luxembourg, hosted by the Luxembourg Institute of Science and Technology (LIST).

PoEM is supported by the IFIP WG 8.1 and is a conference to stimulate the interaction between practitioners in the field of enterprise modeling, and researchers in this interesting discipline, with the goal to inform and learn from each other. After all, enterprise modeling methods and approaches should be usable in practice.

Concretely, the conference presented a wide variety of topics in the realm of enterprise modeling (EM) including requirements engineering, modeling and ontologies, reference architectures and patterns, methods for developing models and architectures, and security and privacy. Additionally, two interesting EM related workshops preceded the conference: the Third International Workshop on Practicing Open Enterprise Modeling within OMiLAB (PrOse 2019) and the Second Workshop on Teaching and Learning Conceptual Modelling (TLCM 2019). Finally, interesting new topics were presented using the format of PoEM Forum papers with their own online proceedings. These Forum papers were integrated in the main program of the conference using a slightly different format.

This year, PoEM received 35 paper submissions covering a wide variety of EM topics. Each paper was evaluated by at least three members of our expert Program Committee, providing constructive feedback. In total 15 high-quality papers were accepted, which can all be found in this volume. The acceptance rate for full papers was thus below 43%.

This conference would not have been possible without the hard work of the Program Committee members and additional reviewers. Additionally, we are thankful to the authors of the papers who submitted and presented their high-quality papers at the conference. We thank the session chairs for ensuring a smooth organization of the sessions and stimulating interesting discussions. We also acknowledge the PoEM Steering Committee chairs for their continuous assistance and the chairs of the Forum for creating an exciting event. Finally, we thank LIST/Luxembourg for the organization of the PoEM conference this year.

September 2019

Jaap Gordijn Wided Guédria Erik Proper

# **Organization**

# **Steering Committee**

Anne Persson University of Skövde, Sweden Janis Stirna Stockholm University, Sweden Kurt Sandkuhl University of Rostock, Germany

General Chair

Erik Proper LIST, Luxembourg

**Program Chairs** 

Jaap Gordijn VUA Amsterdam, The Netherlands

Wided Guédria LIST, Luxembourg

**Forum Chairs** 

Paul Johannesson University of Stockholm, Sweden

Christophe Feltus LIST, Luxembourg

**Industry Chairs** 

Frank Harmsen PNA Group, The Netherlands Hans Mulder Antwerp University, Belgium

Yannick Naudet LIST, Luxembourg

**Organization Chair** 

Noémie Courtois LIST, Luxembourg

**Program Committee** 

Wided Guedria LIST, Luxembourg

Sybren De Kinderen University of Luxembourg, Luxembourg Moonkun Lee Chonbuk National University, South Korea

Keng Siau Missouri University of Science and Technology, USA

Jelena ZdravkovicStockholm University, SwedenJanis StirnaStockholms Universitet, SwedenAndrea PoliniUniversity of Camerino, Italy

Ana-Maria Ghiran Babes-Bolyai University of Cluj-Napoca, Romania Robert Andrei Buchmann Babes-Bolyai University of Cluj Napoca, Romania

Paul Johannesson University of Stockholm, Sweden

Henderik Proper LIST, Luxembourg

Sergio de Cesare
Haralambos Mouratidis
Dimitris Karagiannis
Costin Badica
University of Westminster, UK
University of Brighton, UK
University of Vienna, Austria
University of Craiova, Romania

Ulrike Lechner Universität der Bundeswehr München, Germany

Hans-Georg Fill University of Fribourg, Switzerland Roel Wieringa The Value Engineers, The Netherlands

Geert Poels Ghent University, Belgium Frederik Gailly Ghent University, Belgium

Selmin Nurcan Université Paris 1 Panthéon – Sorbonne, France

Robert Woitsch BOC Asset Management, Austria

Oscar Pastor Lopez Universitat Politècnica de València, Spain

Raimundas Matulevicius

Raian Ali

Manfred Jeusfeld

University of Tartu, Estonia

Bournemouth University, UK

University of Skövde, Sweden

Rimantas Butleris Kaunas University of Technology, Lithuania

Jānis GrabisRiga Technical University, LatviaEric YuUniversity of Toronto, CanadaMarite KirikovaRiga Technical University, Latvia

Heinrich C. Mayr

Alpen-Adria-Universität Klagenfurt, Austria

Vrije Universiteit Amsterdam, The Netherlands

Nikolay Shilov SPIIRAS, Russia

Birger Lantow
University of Rostock, Germany
Lutz Kirchner
Scape Consulting GmbH, Germany
Jolita Ralyté
University of Geneva, Switzerland
University of the Punjab, Pakistan
University of Rostock, Germany
University of Los Andes, Venezuela
Joao-Paulo Almeida
University of Espírito Santo, Brazil

Jennifer Horkoff Chalmers and the University of Gothenburg, Sweden

Ivan Jureta University of Namur, Belgium
Monika Kaczmarek University Duisburg Essen, Germany

Tony Clark Aston University, UK Yoshinori Hara Kyoto University, Japan

Stijn Hoppenbrouwers HAN University of Applied Sciences, The Netherlands

Kurt Sandkuhl The University of Rostock, Germany

Giuseppe Berio Université de Bretagne Sud and IRISA UMR 6074,

France

Estefanía Serral Katholieke Universiteit Leuven, Belgium

Herve Pingaud Institut National Universitaire Champollion, France

Graham Mcleod Inspired.org, South Africa

Monique Snoeck Katholieke Universiteit Leuven, Belgium

University of Skövde, Sweden Anne Persson Pnina Soffer University of Haifa, Israel Darijus Strasunskas HEMIT, Norway

Colette Rolland University of PARIS-1, France

Robert Lagerström KTH Royal Institute of Technology, Sweden

# **Contents**

# Requirements

Evaluating the Impact of User Stories Quality on the Ability to Understand and Structure Requirements	3
Yves Wautelet, Dries Gielis, Stephan Poelmans, and Samedi Heng	
Requirements for Observing, Deciding, and Delivering Capability Change  Georgios Koutsopoulos, Martin Henkel, and Janis Stirna	20
Towards Architecting a Knowledge Management System: Requirements for an ISO Compliant Framework	36
Modeling and Ontologies	
The OntoREA© Accounting and Finance Model: Inclusion of Future Uncertainty.  Walter S. A. Schwaiger, Aqif Nasufi, Natalia Kryvinska, Christian Fischer-Pauzenberger, and Ömer Faruk Dural	53
A Role-Based Capability Modeling Approach for Adaptive Information Systems	68
A Financial Reporting Ontology for Market, Exchange, and Enterprise Shared Information Systems	83
Reference Architectures and Patterns	
Towards a Cross-Border Reference Architecture for the Once-Only Principle in Europe: An Enterprise Modelling Approach	103
Identifying HCI Patterns for the Support of Participatory Enterprise Modeling on Multi-touch Tables	118

Assessing the Adoption Level of Agile Development Within Software Product Lines: The AgiPL-AM Model	134
Methods for Architectures and Models	
Developing a Structured Approach to Converging Business Process  Management and Customer Experience Management Initiatives	151
A Modeling Approach for Bioinformatics Workflows  Laiz Heckmann Barbalho de Figueroa, Rema Salman, Jennifer Horkoff,  Soni Chauhan, Marcela Davila, Francisco Gomes de Oliveira Neto, and Alexander Schliep	167
Process Algebra to Control Nondeterministic Behavior of Enterprise Smart IoT Systems with Probability	184
Enterprise Architecture for Security, Privacy and Compliance	
Using an Enterprise Architecture Model for GDPR Compliance Principles Gaëlle Blanco-Lainé, Jean-Sébastien Sottet, and Sophie Dupuy-Chessa	199
Challenges for Risk and Security Modelling in Enterprise Architecture Gudmund Grov, Federico Mancini, and Elsie Margrethe Staff Mestl	215
Cybersecurity Evaluation of Enterprise Architectures: The e-SENS Case Tanja Pavleska, Helder Aranha, Massimiliano Masi, Eric Grandry, and Giovanni Paolo Sellitto	226
Author Index	243