GUEST EDITORIAL

Guest editorial to the special section on PoEM'2020

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1 Introduction

PoEM is an IFIP WG 8.1 working conference on the Practice of Enterprise Modeling. It is aimed at improving the understanding of the Practice of Enterprise Modeling by offering a forum for sharing experiences and knowledge between the academic community and practitioners from the industry and public sector. The 13th edition of the conference series was virtually hosted by the Riga Technical University (Riga, Latvia), November 25th to 27th, 2020. The special focus in 2020 was on the role of Enterprise Modeling in the Digital Age.

A total of 28 contributed papers were presented at the PoEM'2020 conference. They were dedicated to topics such as Business Process modeling, Foundations and Applications of Enterprise Modeling, Enterprise Modeling and Enterprise Architecture, Enterprise Ontologies, Formal Aspects of Enterprise Modeling, Requirements modeling, Risk and Security Modeling, and Process Mining. Two state-of-the-art keynotes explored advanced topics in Enterprise Modeling. The first keynote was dedicated to Digital Twins and Machine Learning in the enterprise context [1]. The second keynote reported the recent advances at the OMiLAB Innovation Corner [3]. The keynotes and the accepted contributed papers have been published in [2].

The best papers of PoEM'2020 were invited to this special section in the Journal of Software and Systems Modeling (SoSyM). Initially, nine papers have been invited. Each submitted article was thoroughly revised and significantly expanded on the basis of the conference paper. Following multiple rounds of reviewing, eventually, five articles were accepted for publication in this special section on PoEM'2020.

2 Selected papers

The selected articles in this special section constitute a representative sample of the research topics covered in the PoEM conference series. They address conceptual foundations of Enterprise Modeling, development of Enterprise Modeling tools as well as Enterprise Modeling in relation to cross-cutting fields such as requirements engineering and cybersecurity.

On Enterprise-Grade Tool Support for DEMO by *Mark A. T. Mulder and Henderik A. Proper*—this article surveys existing 'enterprise-grade' modeling tools that support the DEMO modeling approach and describes the endeavors of the authors toward extending the Sparx Enterprise Architect System to enable DEMO modeling. The tool not only supports the core DEMO metamodel, it is also equipped with additional functionality like validity checks and model transformation between different DEMO aspect models. Evaluation is reported based on a critical reflective discussion of the authors and by reflecting on the use of the tool in industrial cases.

Automated conceptual model clustering: a relator-centric approach by *Giancarlo Guizzardi, Tiago Sales, João Paulo A. Almeida, and Geert Poels*—this article proposes a relator-centric approach toward the modularization of overarching ontology-based conceptual models. The article elaborates on the conceptual characterization of model clusters and the development of tool support for the approach. An empirical evaluation concludes the article.

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Holistic data-driven requirements elicitation in the big data era by *Aron Henriksson and Jelena Zdravkovic*—the article supplements the traditional requirements elicitation process with data extracted from big data sources. The data-driven requirements elicitation meta-model and process are elaborated. Their utility is investigated in the case study from the video games development industry.

Formalizing the four-layer metamodeling stack with MetaMorph: potential and benefits by *Victoria Döller*—in order to provide an adequate modeling support to increasingly complex enterprises, the article presents a formal approach to specifying Enterprise Modeling Languages. The formalism is based on typed first-order logic and is referred as to MetaMorph. Application of MetaMorph is demonstrated in a couple of examples. This paper also introduced M2FOL, a formal modeling language for metamodels which is derived from the application of METAMORPH to the metamodel level.

A framework for conceptual characterization of ontologies and its application in the cybersecurity domain by *Beatriz Franco Martins, Lenin Serrano Gil, Jose Reyes Román, Jose Ignacio Panach, Óscar Pastor López, Moshe Hadad, and Benny Rochwerger*—this article elaborates a method to classify domain ontologies which is subsequently applied to classify 28 ontologies in the cybersecurity domain. A cross-ontological analysis highlights the most relevant cybersecurity concerns and facilitates domain ontology interoperability. The authors also propose recommendations for the ontology engineering process.

3 Reviewers in alphabetical order

Twenty-eight renown field experts were involved in the review process, and their contribution are gratefully acknowledged: João Paulo A. Almeida, Robert Andrei Buchmann, Rimantas Butleris, Karlis Čerāns, Marne de Vries, Michael Fellmann, Hans-Georg Fill, Ulrich Frank, Giancarlo Giancarlo, Knut Hinkelmann, Stijn Hoppenbrouwers, Jennifer Horkoff, Manfred Jeusfeld, Marite Kirikova, Robert Lagerström, Elyes Lamine, Raimundas Matulevicius, Giovanni Meroni, Alessandro Oltramari, Geert Poels, Henderik A. Proper, Stefan Schulte, Monique Snoeck, Janis Stirna, Hans Weigand, Mathias Weske, Manuel Wimmer, Robert Woitsch.

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Dominik Bork is Assistant Professor for Business Systems Engineering at the Faculty of Informatics, Institute of Information Systems Engineering, Business Informatics Group at TU Wien. His research interests comprise conceptual modeling and model engineering as well as their application in domains such as modeling tool development and web modeling. A primary focus of ongoing research is on empirical aspects of conceptual modeling and the mutual benefits of conceptual modeling and artificial intelligence.