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The Practice of Enterprise Modeling

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Preface

The 2018 edition of PoEM (the IFIP WG 8.1 Working Conference on the Practice of Enterprise Modeling) followed an established tradition, being the 11th annual event in this conference series that was initiated in 2008 in Stockholm and has become the main European conference on enterprise modeling. This year, from October 31 to November 2, the conference was hosted by the University of Vienna, organized by the Knowledge Engineering Research Group at the Faculty of Computer Science.

Vienna is Austria's primary cultural, political, and economic center. The University of Vienna is one of the oldest and biggest universities in the German-speaking area, founded in 1365 by Duke Rudolph IV – since then, it has been the academic home of 15 Nobel Prize winners and the origin of highly influential schools of thought. Its Faculty of Computer Science is an important academic hub for the enterprise modeling community, as it hosts the annual NEMO (“Next-Generation Enterprise Modeling”) Summer School series.

Enterprise modeling is an established research discipline that was crystallized from technological pillars and methodological enablers emerging from fundamental and applicative research in a diversity of fields – e.g., conceptual modeling, enterprise architecture management, business process management, information systems development, knowledge management systems, and decision support systems. PoEM aims at orchestrating such enablers in coherent methods for capturing multiple perspectives on enterprise systems, to solve practical challenges and to establish a shared understanding of the value of enterprise models and their building blocks. The community fostered by this conference series is interested in enterprise knowledge both for its instrumental value — as a means to an end (e.g., for decision support, information systems development) — and for its intrinsic value, as self-contained knowledge assets coming under the scrutiny of research paradigms such as design science or data science.

Since 2008 when PoEM was initiated with the support of IFIP WG 8.1, the problems raised by this community gained visibility, stimulated the dissemination of roadmaps and experience reports, as well as the development of novel modeling methods addressing various perspectives and requirements. A novel teaching agenda and a practice-oriented roadmap for “enterprise modeling for the masses” are emerging from the community and have taken central place in the recent editions of the conference, evolving in several dedicated workshops.

Two workshops were organized this year at PoEM: the second edition of the practice-oriented workshop PrOse (Practicing Open Enterprise Modeling with OMi-LAB) and the education-focused workshop TLM (Teaching and Learning Conceptual Modeling). In order to kick start the discussions during the first conference day, a doctoral consortium section was also included, highlighting key research challenges that will set future roadmaps.

We received 64 submissions for the conference, including research papers, experience papers, and short papers. Based on the reviews by members of the Program

Committee, we selected 21 full papers and five short papers (an acceptance rate of 33% for full papers and 40% including short papers). The full papers are grouped in the following topics: Business Process Modeling, Model Derivation, Collaboration Modeling, Reviews and Analyses of Modeling Methods, Semantics and Reasoning, Experience Reports, and Teaching Challenges.

We express our gratitude to the conference Steering Committee, who agreed to have this edition hosted in Vienna and have continuously provided assistance: Prof. Anne Persson, Prof. Janis Stirna, and Prof. Kurt Sandkuhl. An international, widely recognized forum of experts contributed to PoEM 2018, including the notable keynote speakers: Prof. Eric Dubois from Luxembourg Institute of Science and Technology and Prof. Dimitris Kiritsis from École Polytechnique Fédérale de Lausanne. We thank them as well as all the authors who submitted their work and the Program Committee members who ensured a high-quality selection of papers while providing insightful advice for improving the contributions.

We thank IFIP WG 8.1 for allowing this conference series to evolve under its auspices. We also thank the global community of the Open Models Laboratory (OMiLAB, www.omilab.org), which hosts and disseminates results from several enterprise modeling open access projects that have often contributed valuable submissions to PoEM and its workshops. We also thank the Springer team led by Alfred Hofmann and Ralf Gerstner for the technical support regarding the publication of this volume.

Last but not least, we would like to thank the organization team lead by Victoria Döller and Elena Miron for their hard work in ensuring the success of this event.

September 2018

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Keynotes (Abstracts)

Towards a Megamodel Driven Approach for Regulatory Information Systems

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Abstract. Today, business organizations are more and more facing compliance issues coming from international and national regulatory bodies, from standardisation bodies as well as from recognised professional and/or sectorial associations. Demonstrating compliance to all the requirements included in the different regulations and norms requires huge and costly efforts, in particular regarding the development of information systems supporting the reporting to the supervision bodies. For the supervisory authorities (regulators, auditors, etc.), there are also important challenges in particular regarding the interpretation and the comparison between the reports issued by the different supervised organisations. It is often the case that two business organisations in a completely similar situation (in terms of work practices, infrastructures, etc.) will come with a different reporting due to their interpretation of norms as well as of the nature of evidences that have been collected and compiled for the reporting. An additional complexity comes for business organisations having to report on their compliance to multiple norms.

Where overlapping multi-regulations apply, there is an additional need for a business organisation to use a unique reporting regulatory information system and not to manage several systems with overlapping information. In a world of multi-regulations/multi-regulators, we plead for a standardisation of the reporting for the benefits of regulated entities and of supervisory bodies. This standardisation should apply to the regulatory information systems shared by the different parties. Our proposal is to build these systems on top of conceptual informal models derived from the interpretation of the different norms. Because of the overlap and complementarities of these norms, there is also an important need associated with the management of models derived from them: some common sub-models associated with different norms, more specialised models, different models viewpoints associated with the business organisations and the supervisory bodies, etc. To this end, we are investigating some technological solution based on the concept of megamodel which aims at supporting the management of heterogeneous set of models.

Connecting the Dots in Smart PLM: Preparing Big Industrial Data for Cognitive Analytics and Manufacturing

Dimitris Kiritsis

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Abstract. In the context of Circular Economy, Closed-Loop PLM extends the meaning of PLM in order to close the loop of the information among the different lifecycle phases of a product. Data and information from Middle-of-Life (MOL) such as usage data, maintenance activities, updates etc., could be used at the End-of-Life (EOL) stage to support deciding the most appropriate EOL option (specially to make decisions for re-manufacturing and re-use) and, moreover, combined with EOL data and information it could be used as feedback to the Beginning-of-Life (BOL) phase for improving the new generations of products. Ontologies and associated semantic technologies such as Knowledge Graphs are rapidly becoming popular in various domains and applications to deal with the tremendous increase of available data captured all along the lifecycle of a product. Currently, there is a trend both in converting existing models into ontology-based models, and in creating new ontology-based models from scratch. The aim of this talk is to present the advantages and features provided by the ontologies into PLM models towards achieving Closed-Loop Lifecycle Management.

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