

# Preface

BMSD (<http://www.is-bmsd.org>) – the International Symposium on Business Modeling and Software Design – is an annual event that brings together researchers and practitioners interested in looking into both enterprise engineering and software engineering, inspired by the goal of proposing innovative ideas and solutions about a better utilization by enterprises of the current technical (IT) possibilities.

The above-mentioned goal is reflected in the evolution of business processes: Considered as an essential enterprise asset, business processes used to receive much attention, for the sake of improving the enterprise performance, decreasing the enterprise costs, increasing the satisfaction of customers, and so on. Hence, it was widely agreed that by improving business processes, enterprises could substantially increase their value. Many years ago, improving business processes was a matter of enterprise engineering – then the big challenge was how to organize ordering, accounting, shipping, etc., such that all the different tasks are in synch while the business processes are as simple as possible, leading to effectiveness and efficiency in serving the customer. Nevertheless, changes in business processes came when computers first appeared on the scene and it was possible to replace paper streams by databases, to re-use document constructs, and to search faster through information – then the big challenge was how to make better use of computers heavily dependent, in turn, on corresponding software: this was a matter of software engineering. Initially these two disciplines developed separately because the so-called computerization was simply about automation – the same tasks realized by human entities had to be “given” to computers. Indeed, this allowed many companies to tremendously bring down their workforce but the quality of the IT support delivered to enterprises used to be low exactly for that reason: Enterprise engineers would only superficially re-design their business processes because they lacked deep IT knowledge while software engineers would only partially respond to the business requirements because they lacked deep domain knowledge. This was labeled as a “mismatch between enterprise modeling and software design,” and since the new millennium we have been witnessing more and more efforts directed toward bringing together enterprise engineering and software engineering, for the sake of bridging the above-mentioned gap. This would de facto mean bringing together: (a) social theories, such as enterprise ontology, organizational semiotics, theory of organized activity, etc., and (b) computing paradigms, such as component-based software development, service-oriented computing, model-driven engineering, etc. However, this appeared to be a non-trivial task because:

- Enterprise engineering has delivered knowledge on how to create enterprise models usefully restricting the software system-to-be, but this only reached the level of software functionality specification, leaving ambiguity with regard to the implementation choices, platform choices, networking choices, and their impact with regard to the business processes.

- Software engineering has delivered knowledge on how to develop software based on computation-independent models or how to compose software services at high level (not being burdened by the underlying technical complexity), but all these issues stem from a view on the software itself, not assuming an enterprise modeling-driven derivation of software.

Bringing together all those enterprise engineers and software engineers who acknowledge the challenge and are working (from their perspective) toward new ideas and solutions on further bridging business modeling and software design is of key importance to the BMSD community.

Since 2011, we have enjoyed six successful BMSD editions. The first BMSD edition (2011) took place in Sofia, Bulgaria, with the theme “Business Models and Advanced Software Systems.” The second BMSD edition (2012) took place in Geneva, Switzerland, under the theme “From Business Modeling to Service-Oriented Solutions.” The third BMSD edition (2013) took place in Noordwijkerhout, The Netherlands, and the theme was “Enterprise Engineering and Software Generation.” The fourth BMSD edition (2014) took place in Luxembourg, Grand Duchy of Luxembourg, with the theme “Generic Business Modeling Patterns and Software Re-use.” The fifth BMSD edition (2015) took place in Milan, Italy, and had the theme of “Towards Adaptable Information Systems.” The sixth BMSD edition (2016) took place in Rhodes, Greece, under the theme “Integrating Data Analytics in Enterprise Models and Software Development.” In 2017, BMSD is going to Barcelona, Spain, with the theme “Modeling Viewpoints and Overall Consistency.”

The Rhodes edition of BMSD demonstrated for a sixth consecutive year a high quality of papers and presentations as well as a stimulating discussion environment.

In 2016, the scientific areas of interest to the symposium were: (a) enterprise modeling and elicitation of requirements; (b) enterprise engineering and service-oriented computing; (c) enterprise modeling-driven software generation; and (d) information systems architectures. Further, there was an application-oriented special session, namely, the special session on “Green IT Solutions.”

BMSD 2016 received 59 paper submissions from which 27 papers were selected for publication in the symposium proceedings. Of these papers, 17 were selected for a 30-minute oral presentation (full papers), leading to a full-paper acceptance ratio of 29% – an indication of our intention to preserve a high-quality forum for the next editions of the symposium. The BMSD 2016 authors and keynote lecturers were from Austria, Belgium, Bulgaria, Colombia, Greece, Finland, Germany, Japan, The Netherlands, Poland, Portugal, Sweden, Switzerland, Tunisia, UK, and USA (listed alphabetically); this indicates the strong international spirit of the sixth edition of BMSD.

The high quality of the BMSD 2016 program was enhanced by three keynote lectures, delivered by distinguished guests who are renowned experts in their fields: Paris Avgeriou (University of Groningen, The Netherlands), Jan Jürjens (University of Koblenz-Landau/Fraunhofer ISST, Germany), and Mathias Kirchmer (University of Pennsylvania/BPM-D, USA). Their lectures inspired the audience for interesting discussions touching upon software development, and in particular technical debt and security certification, and also touching upon business process management and

strategy execution. Further, Mathias's and Paris's participation (together with Dr. Cordeiro from Portugal and Dr. Mitrakos from Greece) in the BMSD 2016 panel was of additional value.

BMSD 2016 was organized and sponsored by the Interdisciplinary Institute for Collaboration and Research on Enterprise Systems and Technology (IICREST), being technically co-sponsored by BPM-D. Cooperating organizations were the Aristotle University of Thessaloniki, Delft University of Technology, University of Twente – Center for Telematics and Information Technology (CTIT), Bulgarian Academy of Sciences – Institute of Mathematics and Informatics (IMI), the Dutch Research School for Information and Knowledge Systems (SIKS), and AMAKOTA Ltd.

This book contains revised and extended versions of 11 BMSD 2016 papers (selected as a result of additional post-symposium reviewing considering both the quality of the papers and the way they were presented), covering a large number of BMSD-relevant research topics: from business-processes-related topics, such as business process management, variability of business processes, and inconsistencies in risk detection (here it should be mentioned that several papers consider and analyze particular business process modeling formalisms and tools), through system engineering-related topics, such as conceptual modeling, enterprise architectures, human-centered design, sign modeling, and idiosyncrasies capturing, to service-oriented software engineering-related topics, such as service orchestration and e-services design.

I would like to take this opportunity to express our gratitude to Springer for the inspiring collaboration on six books (including the current book), namely, LNBIP 109, LNBIP 142, LNBIP 173, LNBIP 220, LNBIP 257, and LNBIP 275, and to extend my compliments to Ralf Gerstner, Viktoria Meyer, Eleonore Samklu, and Christine Reiss, with whom we have collaborated brilliantly over the years!

We hope that you will find the current LNBIP volume interesting. We believe that the 11 selected papers will be a helpful reference with regard to the aforementioned topics.

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