

**First Workshop on Business Process  
Management and Ontologies  
(BPMO 2016)**

# Introduction to the First Workshop on Business Process Management and Ontologies (BPMO 2016)

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**Abstract.** The BPMO 2016 workshop aims at bringing together researchers and practitioners to present, discuss, and evaluate the application of ontologies to generate new or improve existing methods, techniques, tools, and process-aware information systems that support the different phases of the business process management life-cycle. In its first edition, the workshop has received good interest from the BPM community. Several research papers of very high quality were submitted. Four of them were accepted as regular papers (with an acceptance rate of 50%). A discussion panel during the workshop with researchers and practitioners revealed several promising directions for future research integrating business process management and ontology engineering.

**Keywords:** Business process · Ontology · Process-aware system

## 1 Introduction

Business process management requires the integration and proper understanding of the organizational context, the different process representations (for analysis, modeling, and execution), the process data, and the applications/services that support the activities during the process execution. In process design, business analysts interview domain experts and translate their understanding to process models. One challenge in this

context is that the vocabulary used by domain experts is often very specific and difficult to understand by process analysts. This particularly applies to specific processes from domains such as healthcare, where often profound knowledge about domain-specific terms is required to appropriately understand the overall process context. The lack of this knowledge can lead to interpretation problems, ambiguities, and misunderstandings between the process analysts and the domain experts.

Research on process design and ontologies has received increased attention in recent years. One of the reasons is that ontologies and structured vocabularies in different domains help to make data understandable by machines. Moreover, ontologies allow to add semantics to process model representations. Among others, this enables the execution of queries to make inferences about the knowledge maintained in these representations, which can then be used by methods and tools in both design time as well as execution time of business processes.

## 2 Goals

The goal of this workshop is to bring together researchers and practitioners to present, discuss, and evaluate the application of ontologies to generate new or improve existing methods, techniques, tools, and process-aware systems that support the different phases of the business process management life cycle. It aims to provide a high quality forum for researchers and practitioners of the communities of business process management and ontology engineering, with a focus on the application of ontologies for business process management.

The list of topics that are relevant to the workshop includes the application of ontologies to the following fields of BPM, but is not limited to:

- Foundations of business process concepts
- Analysis and design of business processes
- Business process modeling languages
- Business process reference models
- Verification and validation tools of business processes
- Process execution and monitoring
- Process mining
- Process repositories
- Process data integration and data quality
- Social BPM
- Human-centric processes and knowledge-intensive processes
- Adaptive and context-aware process execution
- Inter-organizational business process management

## 3 Submissions

The first edition attracted eight submissions, out of which four submissions were accepted as regular papers for presentation. Thus, the acceptance rate was 50%.

The papers presented in the workshop provided novel ideas on the application of ontologies in tools and methods for process modeling and verification. The paper “PROMPTUM Toolset: Tool Support for Integrated Ontologies and Process Models” by *Ahmet Coşkunçay, Ozge Gurbuz, Onur Demirörs and Erdem Eser Ekinici* presents a toolset that does not only support the joint development of business process models and domain ontologies, but also building business process models by using existing ontologies and developing ontologies by using business process model collections. The toolset enables the definition and management of labels and terms within labels of the process models and the process model elements as resources within a formal domain ontology.

The paper “Ontology-based Heuristics for Process Behavior: Formalizing False Positive Scenarios” by *Jorge Roa, Emiliano Reynares, Ma. Laura Caliusco and Pablo Villarreal* proposes to use ontologies-based heuristics to reason on behavioral properties of business process models. The goal is to avoid ambiguities in the definition and implementation of heuristics, which is important for improving precision of process verification. The paper presents SWRL rules along with SPARQL queries that formalize heuristics for verification of process behavior and analyzes a set of false positive scenarios for such heuristics.

The paper “Business Process Architecture Baselines from Domain Models” by *Fernanda Gonzalez-Lopez and Guillermo Bustos* explores the use of conceptual domain models for building a business process architecture baseline in a given business domain. In line with this idea, the paper offers guidelines for using domain models together with an entity-centric approach to derive a business process architecture.

The paper “Ontology-Based Approach for Heterogeneity Analysis of EA Models” by *João Cardoso, Marzieh Bakhshandeh, Daniel Faria, Cátia Pesquita and José Borbinha* proposes an ontology-based approach for heterogeneity analysis of EA business models expressed in BPMN. The proposed approach relies on encoding the models as OWL ontologies and then applying ontology matching techniques to integrate them.

## 4 Conclusions

The workshop consisted of four regular paper presentations and a discussion panel on the future directions of combining business process management and ontology engineering. We hope the reader will be inspired by these papers on how ontologies can be applied and exploited in the area of business process management. We are looking forward to continuing discussing novel ideas on the integration of business process management and ontology engineering.

The workshop is perceived as an important start to further develop and research how ontologies can be applied to generate or improve new tools, methods, and systems for business process management.

We wish to thank all authors for their contributions and participations in the workshop, the members of the BPMO 2016 Program Committee for their support with reviewing the papers, and, finally, the workshops chairs for their support with the organization of this workshop.

## 5 Workshop Co-organizers

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## 6 Program Committee

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