



# Special section of BPMDS'2020 business process management meets data

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The business process modeling, development and support (BPMDS) working conference series serves as a meeting place for researchers and practitioners in the areas of Business Process Modeling, Development and Support. Business process analysis and design has been recognized as a central issue in the area of information systems (IS) engineering. The continued interest in these topics on behalf of the IS community is reflected by the success of the last BPMDS events and the recent emergence of new conferences and workshops devoted to the theme. In 2011, BPMDS became a two-day working conference held in conjunction with CAiSE (Conference on Advanced Information Systems Engineering). The goals, format, and history of BPMDS can be found on the website <http://www.bpmds.org/>.

## 1 Scope

This special section follows the 21st edition of the BPMDS (Business Process Modeling, Development and Support) series, organized in conjunction with CAiSE'20, which was held online in Grenoble, France, June 2020. BPMDS'2020 received 30 submissions from 19 countries, and 13 papers were selected and published in Springer LNBP 387 volume.

The theme of BPMDS'2020: '*BPM meets Data*' follows the emergence of data science as a prominent area, and is thus investigating various aspects of the relations between processes and data. These relations can be viewed along the business process life cycle:

- Designing and modeling data-aware processes,
- Integrating and incorporating different kinds and sources of data in process execution environments (IOT, blockchain, network traffic),

- Monitoring, assessing performance and conformance, and predicting the outcomes of running processes using the data they generate,
- Creating process models from various sources of data through process discovery.

The five papers in this special section reflect this focus. They are extensively revised and extended versions of research papers that were initially presented at the BPMDS'2020 working conference and passed again a two-round blind review for the SoSyM Journal special section publication.

## 2 Five selected papers for this special section

A key analysis task for process analysts is to understand the distinctive features of different variants of the process and their impact on process performance. Techniques for log-delta analysis (or variant analysis) mostly build on automatic techniques, but provide limited support for interactively exploring the dividing line between typical and atypical behavior. The paper by M. Vidgof, D. Djurica, Djordje, S. Bala, and J. Mendling, '*Interactive log-delta analysis using multi-range filtering*,' addresses this research gap. This is done by developing and evaluating an interactive technique for log-delta analysis, which the authors call InterLog. By interactively partitioning the log, the analyst can manually separate the typical behavior from the atypical. The authors implemented InterLog as a prototype and demonstrated its application for a real-world event log. A preliminary design study with process mining experts for assessing usefulness and ease of use, allowed a first evaluation of the proposed approach.

Business process management suites (BPMSs) have been adopted in organizations to model, improve, and automate business processes, as they aim to increase the quality, efficiency, and agility of their business processes. Yet, many organizations struggle to achieve the benefits they expected

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from a BPMS. The second paper by L. Seymour and A. Koopman, ‘*Analysing factors impacting BPMS performance: a case of a challenged technology adoption*,’ presents an interpretive case study in a large South African financial services organization and explains factors found to negatively impact successful BPMS adoption. The theoretical contribution of this paper includes two models. The first, an inductively derived explanatory contextual model, should be useful for practitioners wanting to adopt a BPMS. Using this study’s findings and models from the literature, a second, more generic explanatory model of information systems performance, is derived for a BPMS.

The third paper by D. Rooein, D. Bianchini, F. Leotta, M. Mecella, P. Paolini, and B. Pernici, ‘*aCHAT-WF: Generating conversational agents for teaching business process models*,’ proposes a general approach for using conversational interfaces, such as chatbots, to offer adaptive learning of business processes in an environment involving different actors. The aCHAT-WF framework (adaptive chatbot for Work-Flows), proposed in this paper for managing conversational interfaces, conceptually represents all the aspects related to a conversation about business processes, with different facets for the user, the conversation flow, and the conversation contents, combining them to obtain a flexible interaction with the user. The paper focuses on the different preparation phases for instructional material based on Business Process Modeling Notation (BPMN) models, separating the different roles involved in the construction of a chatbot for teaching business processes, and offering the possibility of defining different styles for the interaction with the users. The proposed method is configuration-driven, to facilitate the separation of the different aspects of the control of the interaction and the delivery of contents.

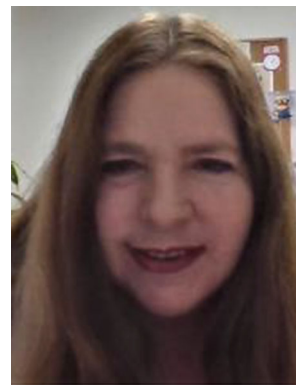
Trusted environments constitute a challenge, particularly for interorganizational business processes. The fourth paper by C. Di Ciccio, M. Giovanni, and P. Plebani, ‘*On the adoption of blockchain for business process monitoring*,’ focuses on blockchain-oriented business process design, or on execution engines that are able to enact processes through smart contracts. The authors pursue the objective of clarifying to what extent blockchain can be beneficial for business process monitoring, and what could be the critical issues to be faced. The paper (i) provides a reference architecture for enabling the adoption of blockchain technologies in business process monitoring solutions, (ii) defines a set of relevant research challenges derived from this adoption, and (iii) discusses the current approaches to address the aforementioned challenges.

The last paper by S. Ihde, K. Andree, M. Weske, and L. Pufahl, ‘*An exception handling framework for case management*,’ proposes an exception handling framework for stage-oriented case management languages, namely Guard Stage Milestone model (GSM), Case Management Model

and Notation (CMMN), and Fragment-based Case Management (fCM). Exceptions can be handled by defining additional fragments in fCM or stages in CMMN and GSM. This approach is limited because not all exceptions occurring at run-time can be imagined at design time, while many are so-called unpredictable exceptions. Moreover, the resulting model would increase in complexity. The adaption of exception handling to flexible processes has not happened yet, leaving the knowledge worker to identify and handle exceptions on their own without any support, with the risks of delays or issues in the cases. Thus, the authors aim to apply the exception handling patterns by Russel et al., which were originally developed for well-structured and coordination-driven processes, and develop a structured exception handling framework for case management models.

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