

**17th International Workshop on
Business Process Intelligence (BPI 2021)**

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Business process intelligence (BPI) is a growing area both in industry and academia. BPI refers to the application of data- and process-mining techniques to the field of business process management. In practice, BPI is embodied in tools for managing process execution by offering several features such as analysis, prediction, monitoring, control, and optimization.

The main goal of this workshop is to promote the use and development of new techniques to support the analysis of business processes based on run-time data about the past executions of such processes. The workshop aims at discussing the current state of research and sharing practical experiences, exchanging ideas and setting up future research directions that better respond to real needs. We aim to bring together practitioners and researchers from different communities such as business process management, information systems, business administration, software engineering, artificial intelligence, process mining, and data mining who share an interest in the analysis of business processes and process-aware information systems. In a nutshell, it serves as a forum for shaping the BPI area.

The 17th edition of this workshop attracted 10 international submissions. Each paper was reviewed by at least three members of the Program Committee. From these submissions, the top five were accepted as full papers for presentation at the workshop, which was held in a hybrid format, physically in Rome but also online for remote participants. The workshop kicked-off with a keynote by Boudewijn van Dongen on the topic of “Conformance checking: A systemic view”. In the talk, an interesting perspective was provided to move conformance checking from a single instance perspective to a systemic one. The five regular papers presented at the workshop and included in this volume provide a mix of novel research ideas, as described below.

Rösel, Fahrenkrog-Petersen, van der Aa, and Weidlich focus on event log anonymization. Based on learnt event embeddings, a distance measure is defined at trace level to allow semantics to be taken into account when anonymizing an event log. As such, transformations leading to swapping events that are unrelated is avoided. In an experimental analysis, the authors show that their distance-based anonymization can result in anonymized event logs that more closely match the original input compared to traditional syntactic anonymization. Next, Stein Dani, Leopold, van der Werf, Lu, Beerepoot, Koorn, and Reijers look into a completely different problem in process mining, i.e. event log extraction. Based on an in-depth literature analysis, the authors present a taxonomy of human activities that are part of event log extraction processes. By providing a deeper understanding of the human role in event log extraction, guidance is provided to future research on automating the extraction of event data. Thirdly, van der Aalst and Santos look into partial orders as a solution to address the problems of both poor timestamping quality and events subject to irrelevant orders due to timestamp proximity. Partial orders are used to exploit the uncertainty and bring in expert knowledge to (re)order events. An open-source implementation of the technique is provided in ProM. The fourth paper by Lichtenstein, Bano, and Weske introduces a

novel technique for discovering case identifiers for unlabeled event logs. A particular weakness of existing techniques, namely poor performance in the case of cyclic behavior, is tackled by introducing a three-step algorithm based on event attributes. The method's effectiveness is demonstrated experimentally using two real-life event logs. Finally, Koschmider, Kaczmarek, Krause, and van Zelst review approaches to deal with outliers and noise in event logs. By first providing a classification of deviations observed in event data, and subsequently scrutinizing existing techniques and tools to verify which dimensions have already been addressed. As such, a number of gaps are identified which, together with some preliminary experimental results, provide for a nice research agenda.

As with previous editions of the workshop, we hope that the reader will find this selection of papers useful to keep track of the latest advances in the BPI area. We are looking forward to presenting more new advances in future editions of the BPI workshop.

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Organization

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