

# Discovery of Decision Models Complementary to Process Models

Extended Abstract

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## ABSTRACT

Business process management is an acknowledged asset for running an organization in a productive and sustainable way [13]. One of the most important aspects of business process management, occurring on a daily basis at all levels, is decision making. In recent years, a number of decision management frameworks have appeared in addition to existing business process management systems. More recently, Decision Model and Notation (DMN) [11] was developed by the OMG consortium with the aim of complementing the widely used Business Process Model and Notation (BPMN) [10]. One of the reasons for the emergence of DMN is the increasing interest in the evolving paradigm known as the separation of concerns [12]. This paradigm states that modeling decisions complementary to processes reduces process complexity by externalizing decision logic from process models and importing it into a dedicated decision model. Such an approach increases the agility of model design and execution. This provides organizations with the flexibility to adapt to the ever increasing rapid and dynamic changes in the business ecosystem. The research gap, identified by us, is that the separation of concerns, recommended by DMN, prescribes the externalization of the decision logic of process models in one or more separate decision models, but it does not specify *how* this can be achieved.

The goal of the presented work is to overcome the presented gap by developing a framework for discovering decision models in a semi-automated way from information about existing process decision making. Thus, we develop methodologies to extract decision models from: (1) control flow and data of process models that exist in enterprises (based on our works [1, 2, 5, 7, 9]); and (2) from event logs recorded by enterprise information systems, encapsulating day-to-day operations (based on our works [3, 6]). Furthermore, we provide an extension of the methodologies to discover decision models from event logs enriched with fuzziness, a tool dealing with partial knowledge of the process execution information (published in [4]). All the proposed techniques are implemented and evaluated in case studies using real-life and synthetic process models and event logs. The evaluation of these case studies shows that the

proposed methodologies provide valid and accurate output decision models that can serve as blueprints for executing decisions complementary to process models. Thus, these methodologies have applicability in the real world and they can be used, for example, for compliance checks, among other uses, which could improve the organization's decision making and hence it's overall performance.

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