

## Optimizing Event Pattern Matching Using Business Process Models (Extended Abstract)\*

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A growing number of enterprises use complex event processing for monitoring and controlling their operations, while business process models are used to document working procedures. In this work, we propose a comprehensive method for complex event processing optimisation using business process models. Our proposed method is based on the extraction of behavioural constraints that are used, in turn, to rewrite patterns for event detection, and select and transform execution plans. We offer a set of rewriting rules that is shown to be complete with respect to the all, seq, and any patterns. We consider optimisation at three stages: First, we provide transformation rules that aim at reformulating the original pattern without changing its semantics in terms of the matching set. Second, we provide rules that guide the selection of an efficient execution plan for a given pattern. Third, we provide rules that transform execution plans by specifying new events that enable more efficient pattern processing.

To evaluate our approach, we experimented with a large case from industry to answer the following questions: What is the applicability of our optimisation rules and what are the achieved savings for real-world processes? To which extent do these savings materialise in systems for event processing? What improvements can be expected when combining the proposed method with existing optimisation techniques? Our evaluation illustrates that the proposed optimisation leads to significant savings in query processing. By integrating the optimisation in state-of-the-art systems for event pattern matching, we demonstrate that these savings materialise in different technical infrastructures and can be combined with existing optimisation techniques.

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