# Leveraging LLMs for Prescriptive Business Process Monitoring and Evaluation for a Real-world Data Set

BA Topic Description

Prescriptive business process monitoring provides decision support to process managers on when and how to adapt an ongoing business process to prevent or mitigate an undesired process outcome. A key challenge is balancing prediction accuracy with earliness: earlier predictions allow more adaptation time, but are often less reliable. Different approaches were presented in the literature to reconcile this trade-off. These approaches include using a static prediction point, applying empirical thresholding, and using online reinforcement learning. In our recent journal article, we evaluated and compared the performance of these different approaches [Metzger et al., 2023 @ Information Systems; https://doi.org/10.1016/j.is.2023.102254].

The aim of the bachelor thesis is to build on these previous results, data sets, as well as experimental code and models. In particular the thesis shall leverage Large Language Models (LLMs), as a powerful generative AI approach, for prescriptive business process monitoring. LLMs have shown an impressive improvement in performance and are being applied to an increasingly broader range of problems. In the field of adaptive systems, they were proposed for generating (new) adaptations at run-time [Li et al., 2024 @ TAAS; https://doi.org/10.1145/3686803].

The figure below depicts the high-level architecture of the envisioned solution.
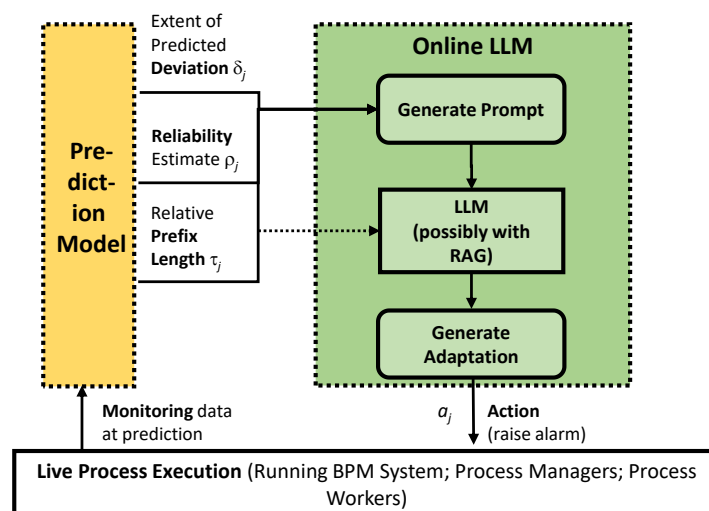
To assess the effectiveness of the LLM solution it shall be evaluated following the approach of [Metzger et al., 2023] by choosing one of the four real-world data sets.