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Paper title*: **Towards Business Process Observability**

Keywords specific to the paper:

- Business process observability, Key performance indicators (KPIs) , Process monitoring, Unified topology.

Summary of the main contributions:

The authors highlight the use of artificial intelligence (AI) models to enhance the monitoring and maintenance of business processes in complex and distributed environments in the article "Towards Business Process Observability". AI models such as Granger Causality and Impulse Response Analysis (IRA) are mentioned as key tools for identifying causal relationships between application events, metrics, and business process KPIs. The use of artificial intelligence models can improve the monitoring and maintenance of business processes in complex and distributed environments. The article mentions AI models that use temporal causality techniques such as Granger Causality and Impulse Response Analysis (IRA) to identify causal relationships between application events, metrics and business process KPIs.

First and foremost. The article presents and analyses different types of data (MELT: Metrics, Events, Logs, Traces) to capture all the information about the processes and behaviors of the underlying systems. This analysis provides a basis for understanding how various data can be used to improve the observability of business processes.

Second. The methodology developed to predict the impact of abnormal events on business processes is a significant contribution of this study. By identifying events likely to negatively affect business operations, fault resolution can be prioritized using this prediction. The approach proposed in the paper proposes a series of modelling and analysis techniques to achieve these objectives, including:

- Using machine-learning models to predict the likely continuation of sequences of activities in business processes, enabling early detection of potential anomalies.

- Understanding the complex dynamics within processes is facilitated by exploring the causal relationships between various application and business process metrics and events.

- Forecasting models enable the future evolution of key performance indicators (KPIs) to be assessed, providing valuable information for decision-making and proactive anomaly management.

- ## AI model used (e.g. Neural network, etc.)

Several artificial intelligence models are mentioned to improve the monitoring and management of business processes: Granger Causality, Impulse Response Analysis (IRA).

- ## Introduce the AI models.

Granger Causality:
This model is based on linear regression and is used to assess the causality between time series. It determines the extent to which the past values of a time series can predict another time series, making it possible to identify causal relationships between application events and business process KPIs.

Impulse Response Analysis (IRA):
IRA is another linear AI model that detects causal relationships when sudden changes occur in time series. It can be used to identify the impact of application events on business process performance, particularly when there are sudden variations in the data.

AI models are essential for analyzing process and application data, detecting anomalies, predicting potential impacts, and prioritizing corrective measures. Organizations can better understand the relationships between application events and business process performance using techniques such as Granger Causality and IRA, enabling them to make clearer decisions and improve operational efficiency.

- ## How do they contribute the idea proposed by the paper?

What role does the concept of business process transparency play in observing and sustaining process executions?

Monitoring and maintaining process executions is done by providing insights into the correctness and performance of the processes. Business process observability can help in this regard. The ability to observe business processes allows for the identification of erratic events that affect the system. By collecting all pertinent data from sensors, organizations can spot abrupt alterations from the norm.

There's more. Business process observability helps in locating the source of an anomalous event and predicting its effect on the process once it's detected. Organizations can understand the root cause of issues and assess the potential consequences with this information.

The final step is Business process observability helps prioritize actions for resolving faults by predicting the impact of anomalous events. This ensures that organizations can take prompt and efficient steps to resolve issues and return the system to its previous state.

It is important to note that Real-time insights: The goal of business process observation is to provide near-real-time information about the execution of procedures. Key performance indicators can be monitored and responded to promptly, minimizing downtime and optimizing performance.

It is important to note that Through observability data and a cross-layer topology linking business processes and underlying software ecosystems, organizations can gain a comprehensive view of the entire process execution. This detailed visibility enables better diagnosis and correlation of business process and software execution failures. Utilizing business process transparency, organizations can enhance their surveillance capabilities, enhance operational effectiveness, and ensure the smooth operation of their business operations in dynamic and distributed environments.

- ## Supported by a software application? (If yes, provide more details)

To support these AI models, the authors mention the use of monitoring and application tools. The data generated by these tools, such as events, traces and KPIs, is essential for training and validating AI models. In addition, data pipelines are set up to simulate real environments and capture events such as failures and anomalies, providing quality data for analysis and modelling.

In conclusion, the article highlights the importance of AI models for improving the visibility and management of business processes, highlighting their role in early anomaly detection, impact prediction and prioritization of corrective actions. Organizations can better control and optimize their business processes in dynamic and complex environments thanks to this integrated approach, supported by specialized software applications.
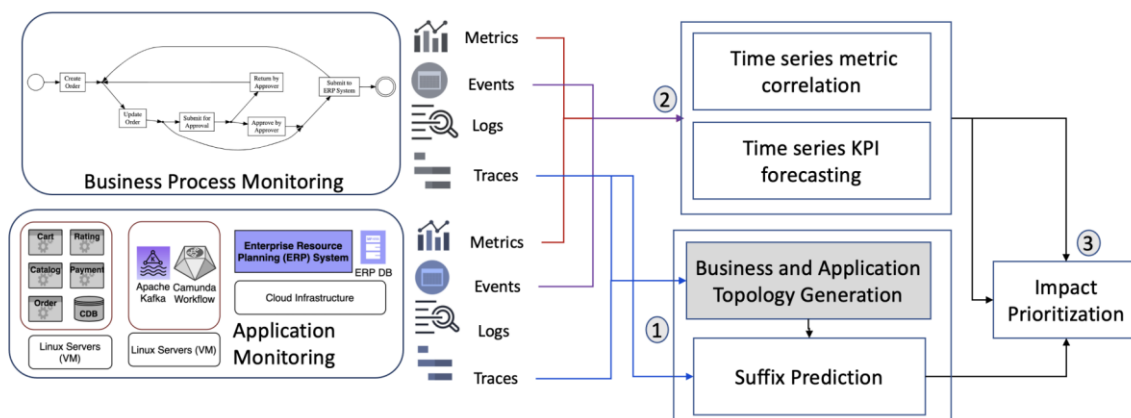

Figure 1: Overall approach towards observability for business processes