PROCESS ORIENTED EVALUATION FROM RESPONSIBLE AI PERSPECTIVE

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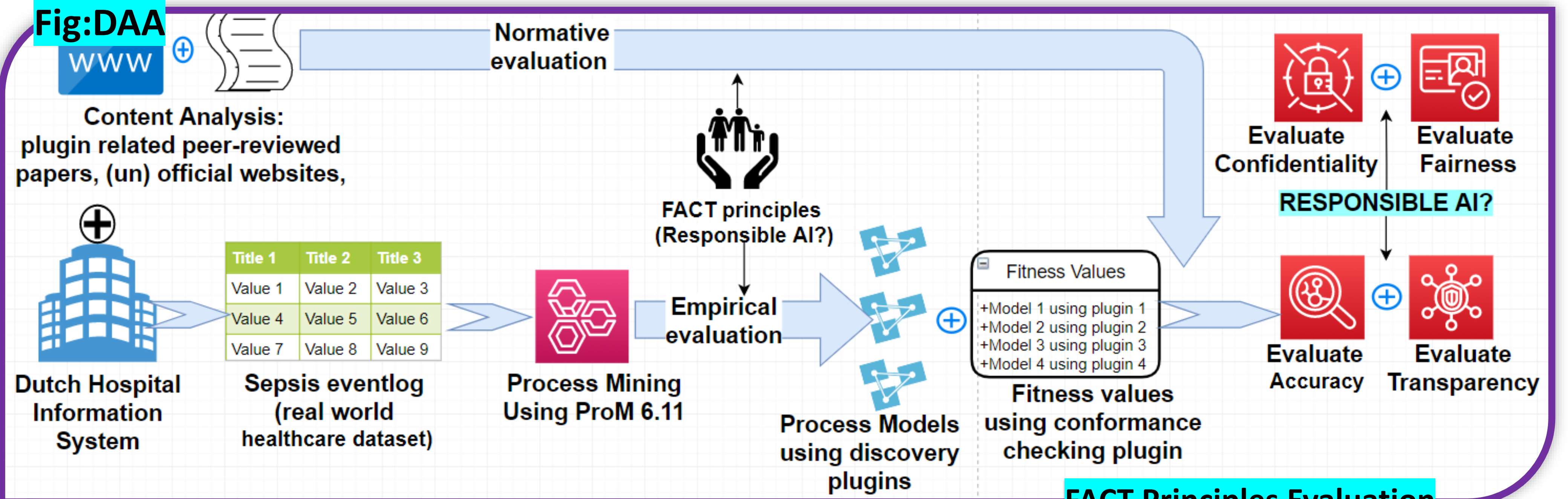
Problem Statement: Process Mining (PM) technology uses AI and ML to automatically visualize business process models using event log (i.e., a dataset from ISs) analytics. PM's time/cost-efficient outputs and large-scale applicability have led to the **rapid designing and launching of multiple PM tools that lack responsible evaluation**.

Goal: Still, the one-stop-shop for quality process evaluations is the only, openly accessible PM tool called ProM. Therefore, we selected the ProM tool for a normative and empirical evaluation against FACT (Fair, Accurate, Confidential, and Transparent) principles from a responsible AI perspective.
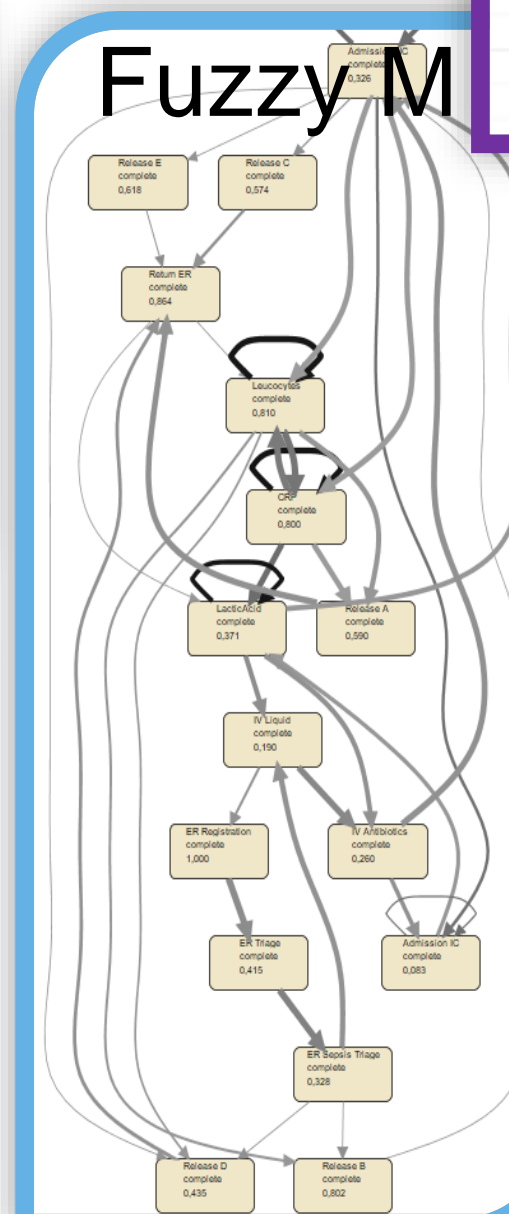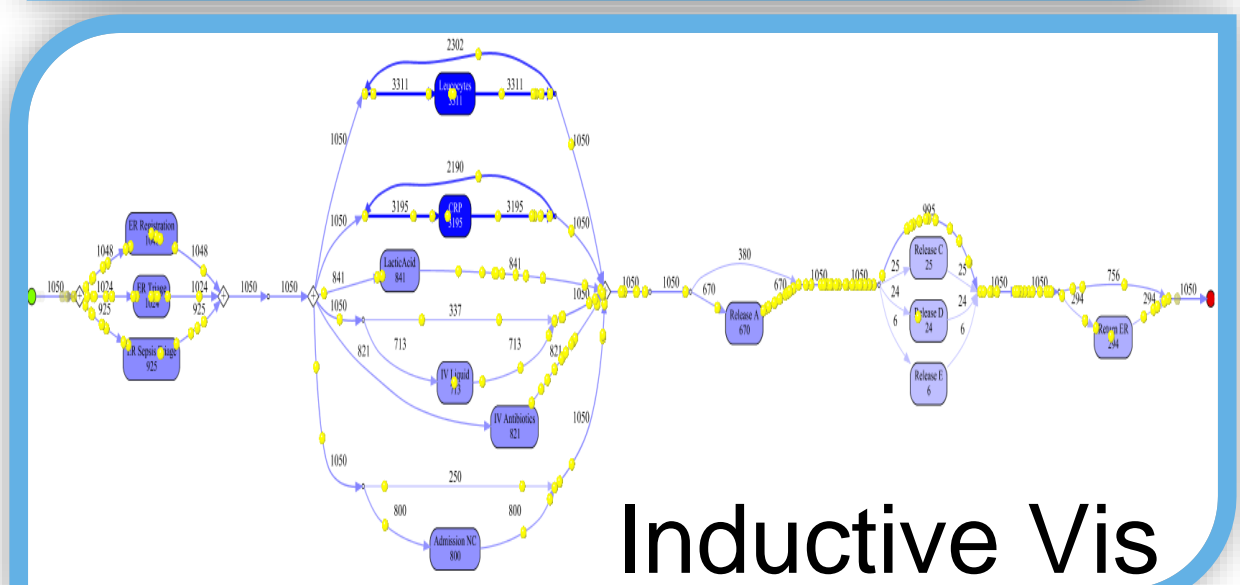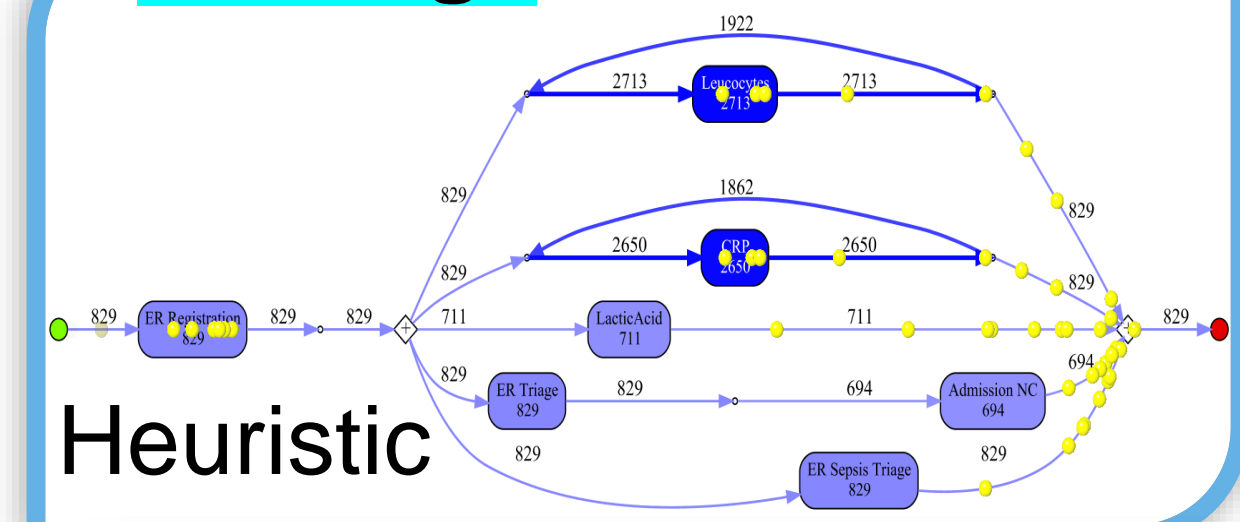
Data Analytical Approach (DAA)

- **Normatively**, we did content analysis of ProM's official websites, related plugins publications at the backdrop of FACT principles.
- **Empirically** on Sepsis event log using Prom 6.11 we used different discovery plugins that gave us differently-visualized process models.

Fig:DAA

Findings

Heuristic

Inductive Vis

Fuzzy M

The experiments identified that accuracy and transparency directly influence the end user's (fair/unfair) decision-making and confidentiality of the data subjects.

Normative using Content Analysis		Empirical using Process Mining	
ProM versions	Latest is most relevant (keep updating)	Fitness values (for different plugins)	vary, differ for same plugin (by changing parameters)
Plugins descriptions	Dispersed in (un) official websites/papers	Completeness (process model)	IvM as most complete and insightful, rest showcase different features
Plugins properties	Dispersed in (un) official websites/papers	Reproducibility	Gets difficult with updating ProM versions and added plugins' parameters
Plugins names	Mostly sustain with additions	Plugins properties	Partially described
Plugins default parameters	Keep changing	Plugins default parameters	Sometimes show misleading models e.g. heuristic miner & fuzzy miner with the default ratio

FACT Principles Evaluation

- Transparent, accurately described knowledge transfer is required.
- ProM 6.11 user interface (or even the official website) lacks algorithm targeted properties.
- PM is inherently not confidential.
- A wrongly chosen plugin and process model (can) lead to faulty value extraction and decision-making, leading to harmful socio-economic repercussions

References:
1. ProM tool official, last accessed 24-3-2022, www.promtools.org,
2. Process Mining, last accessed 24-3-2022, processmining.org
3. PM (un)official website, last accessed 24-3-2022, https://www.win.tue.nl/promforum/

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