

Concept Drift in Process Mining

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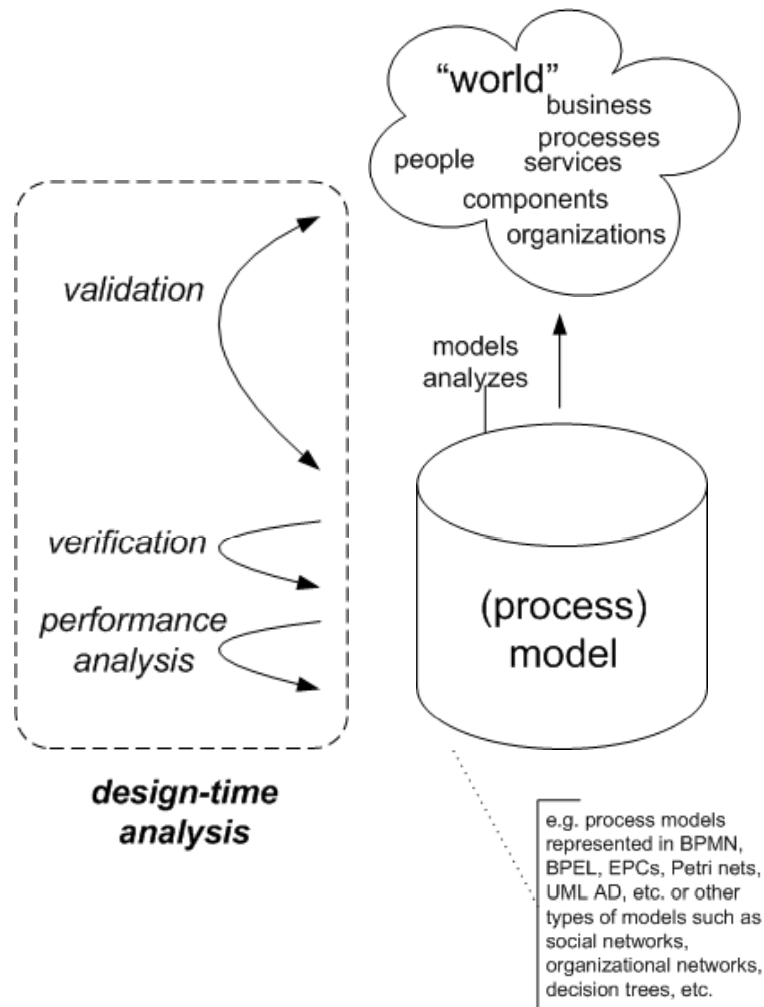
Indrė Žliobaitė

Mykola Pechenizkiy

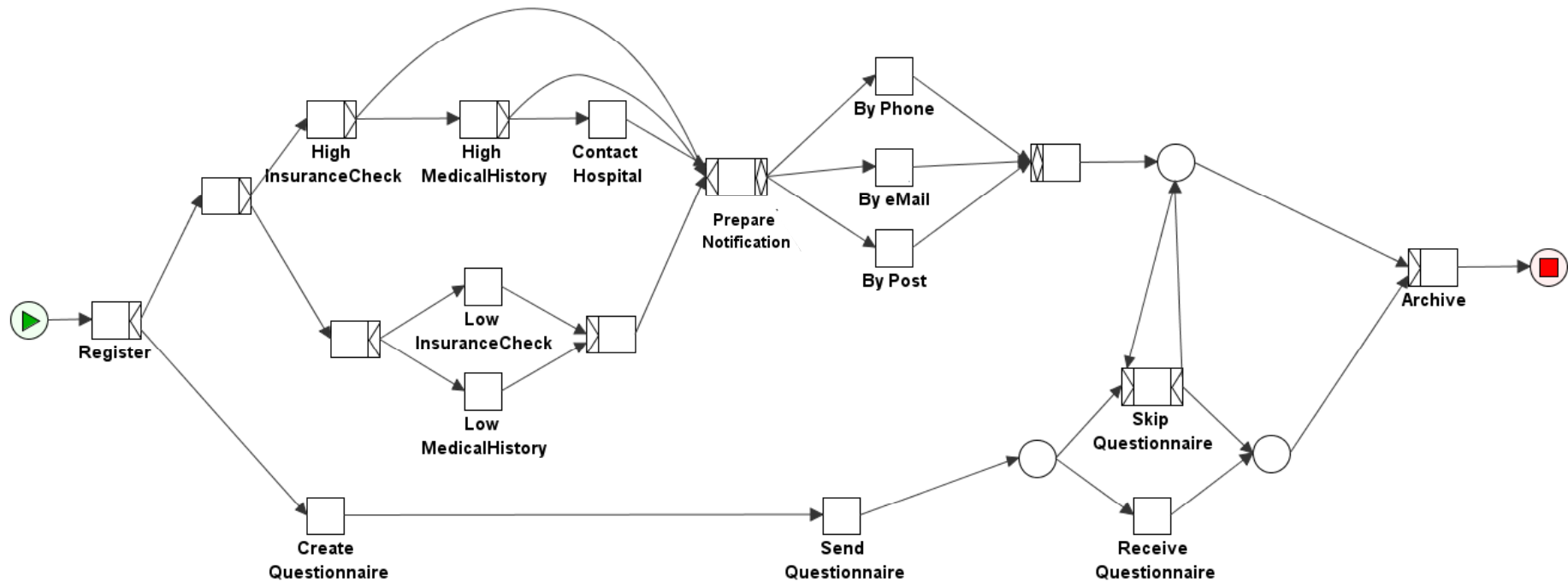
TU / **e** Technische Universiteit
Eindhoven
University of Technology

Where innovation starts

Process Mining-Linking Events to Models



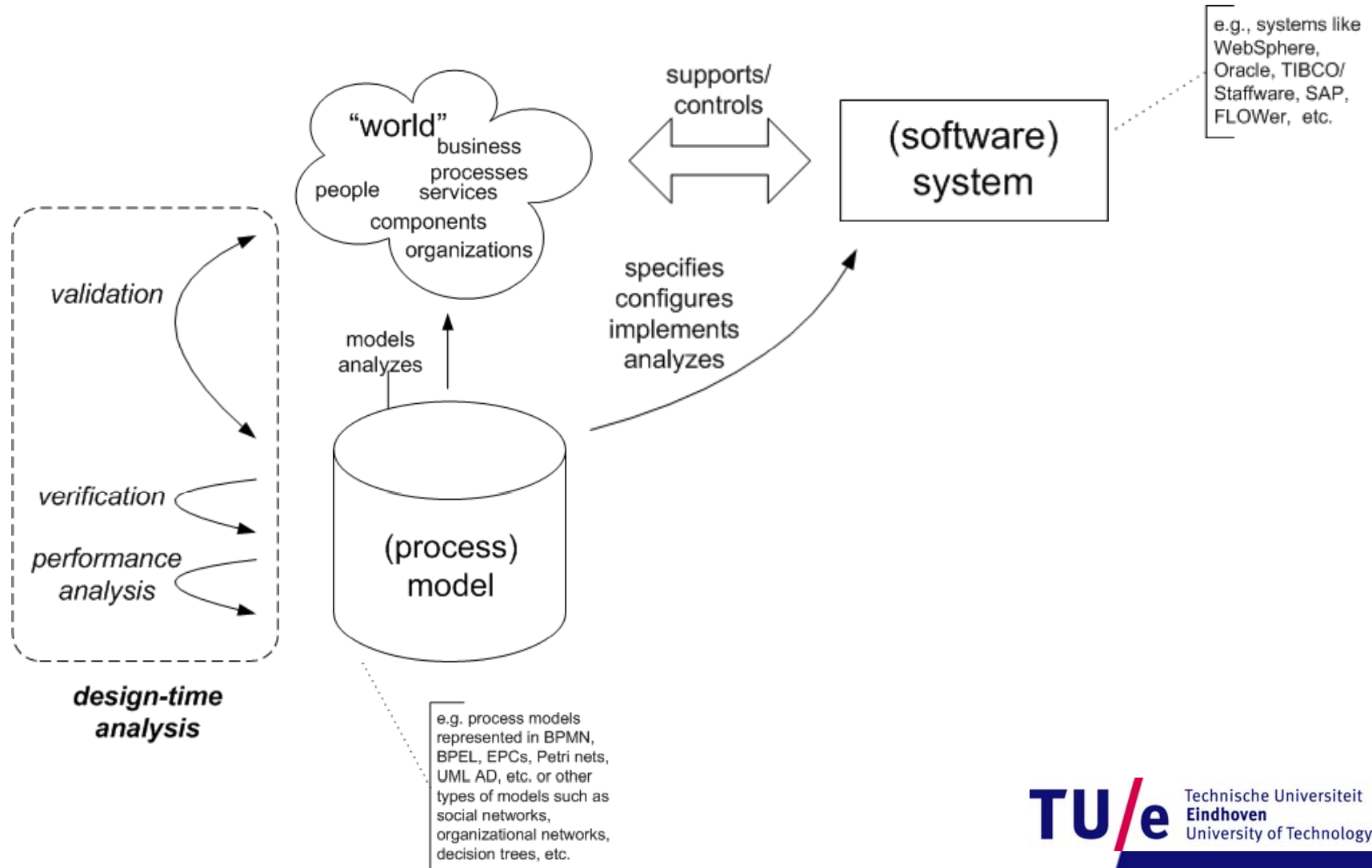
An Example Process Model



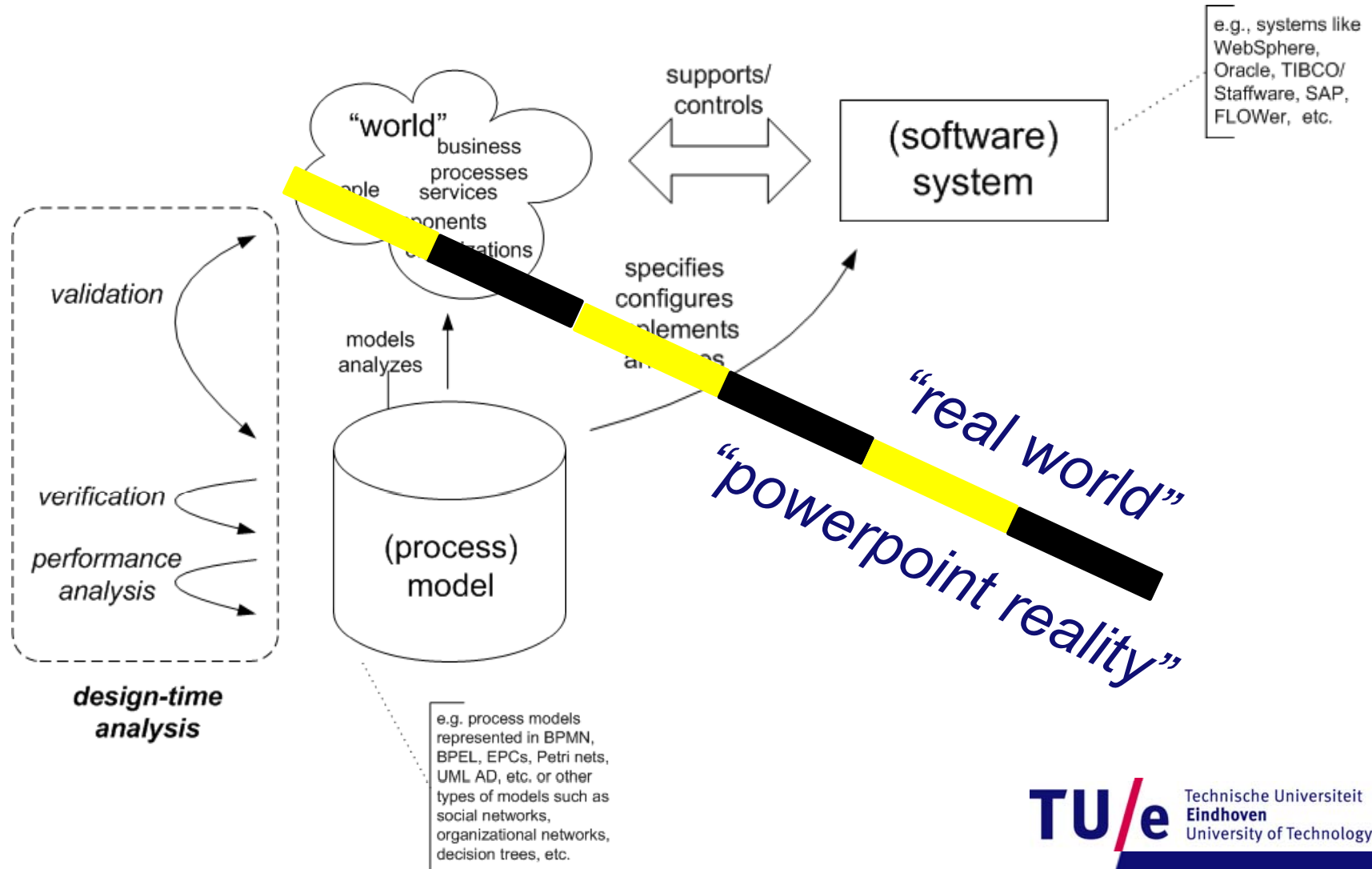
Perspectives

- Control-flow
- Data-flow
- Resource

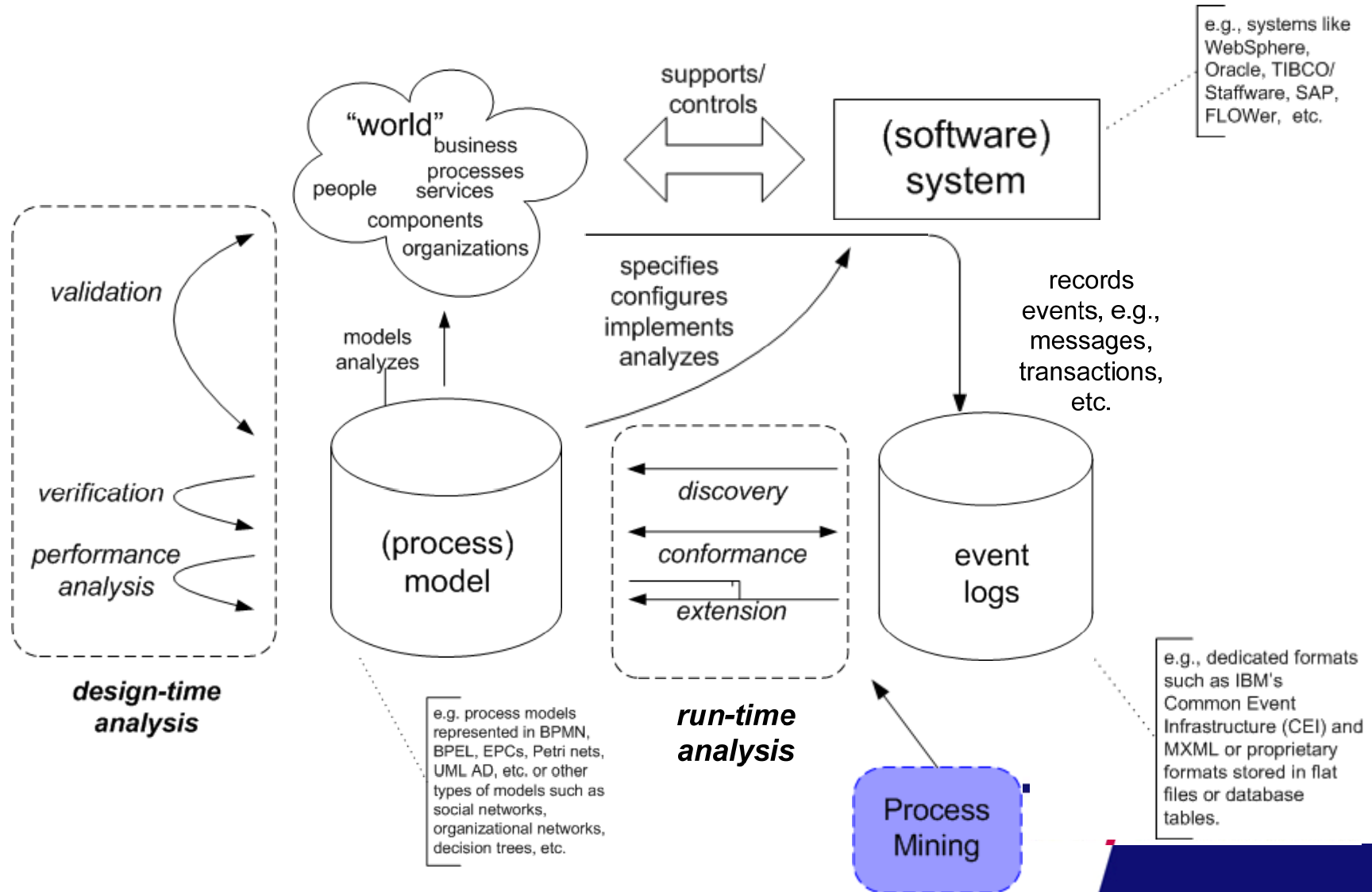
Process Mining-Linking Events to Models



The Role of Models



Event logs are a reflection of reality

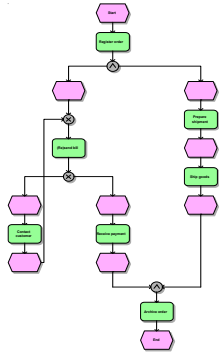


Event Log

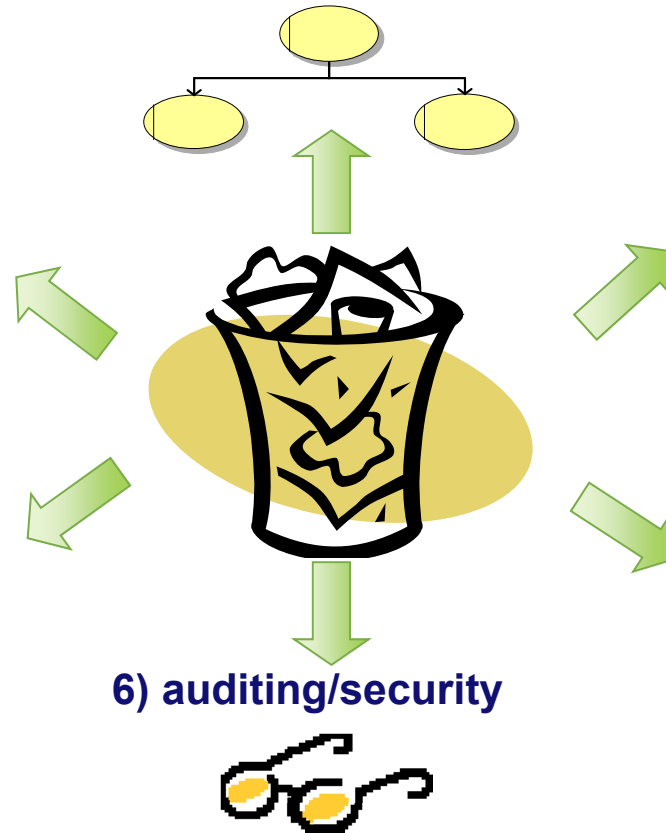
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Process Mining Overview

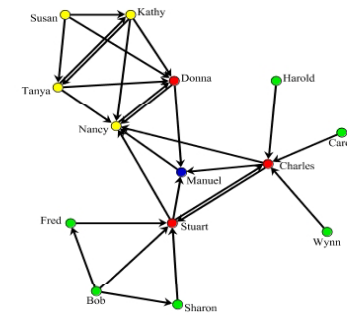
2) process model



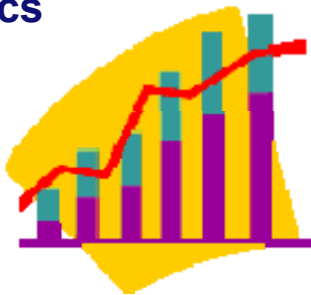
3) organizational model



4) social network



1) basic performance metrics



5) performance characteristics



6) auditing/security



Examples



IBM

staffware.
THE POWER OF PROCESS

FILENET
An IBM company

océ

Pallas Athena

PHILIPS
sense and simplicity

SAP

ORACLE

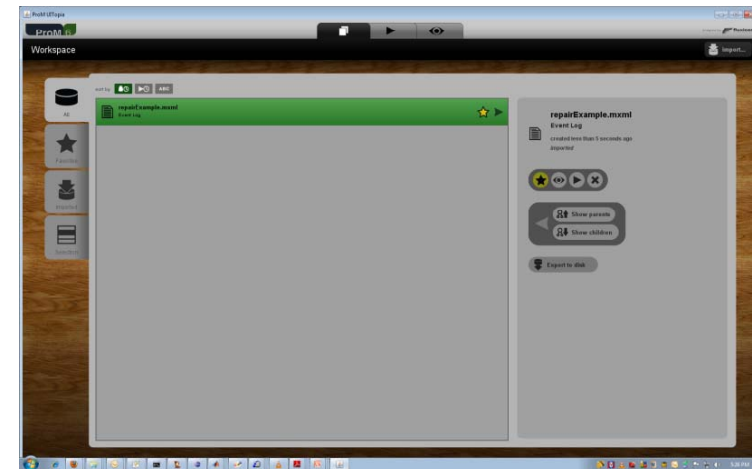
ASML

WebSphere. software



ProM – The Process Mining Framework

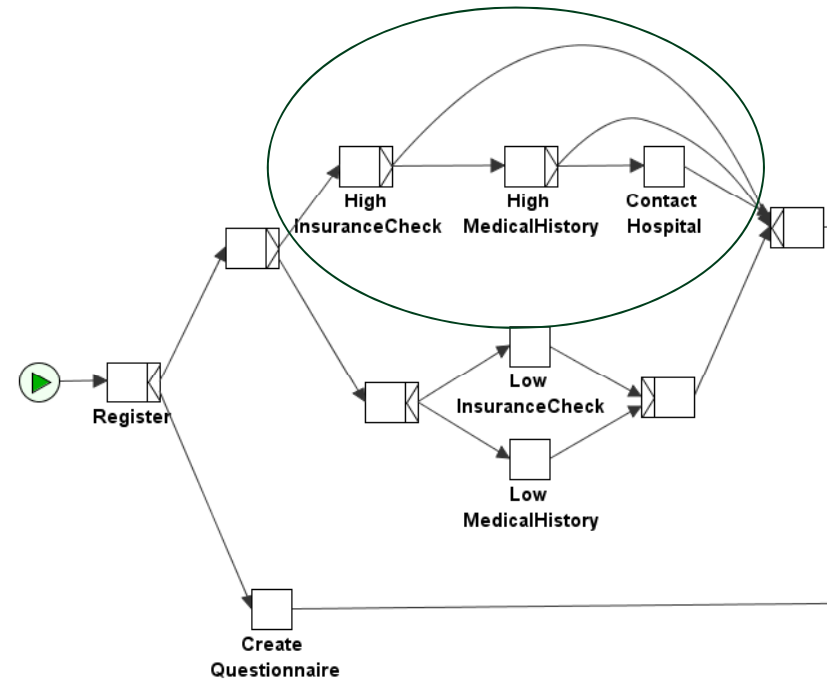
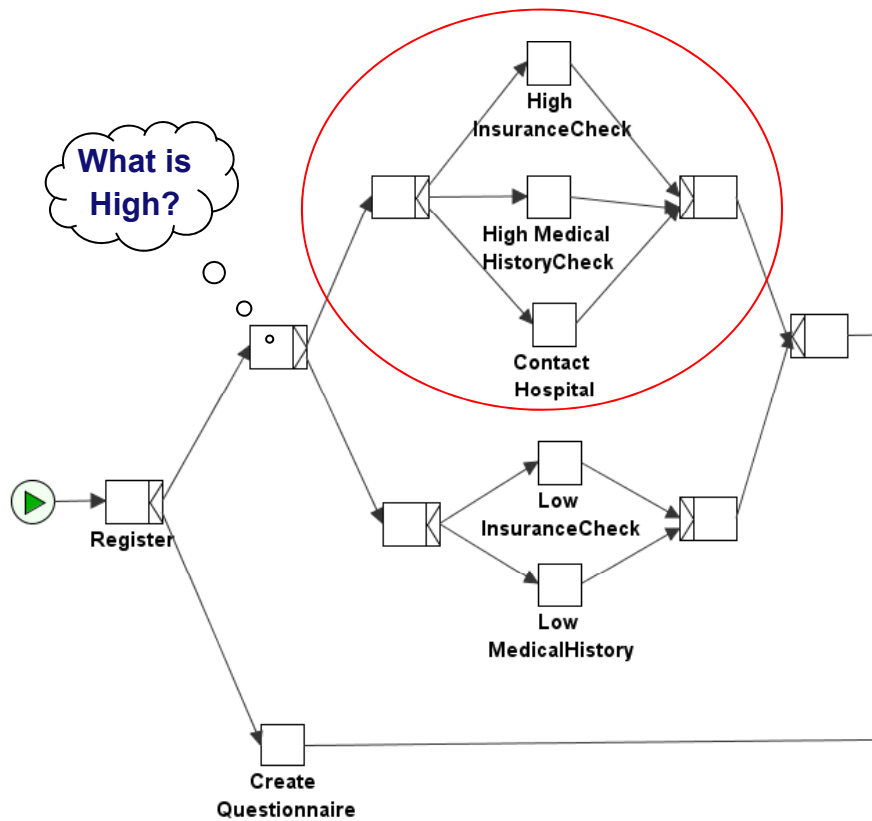
- Open-source framework
- Implementing process mining tools in a standard environment
- Plug-ins
 - process *discovery*
 - *analysis*
 - *monitoring* and
 - *conversion*
- www.processmining.org



Concept Drift in Process Mining

- **System (process) could undergo changes**
- **Aspects of change**
 - **Control-flow**
 - governed by change patterns
 - **Data-flow**
 - decision nodes in the process model could have undergone changes
 - **Resource**
 - organizational changes reflect in the manifestation of traces
 - **Combinations of the above**
- **Points of change is not explicitly known**

Aspects of change-Example

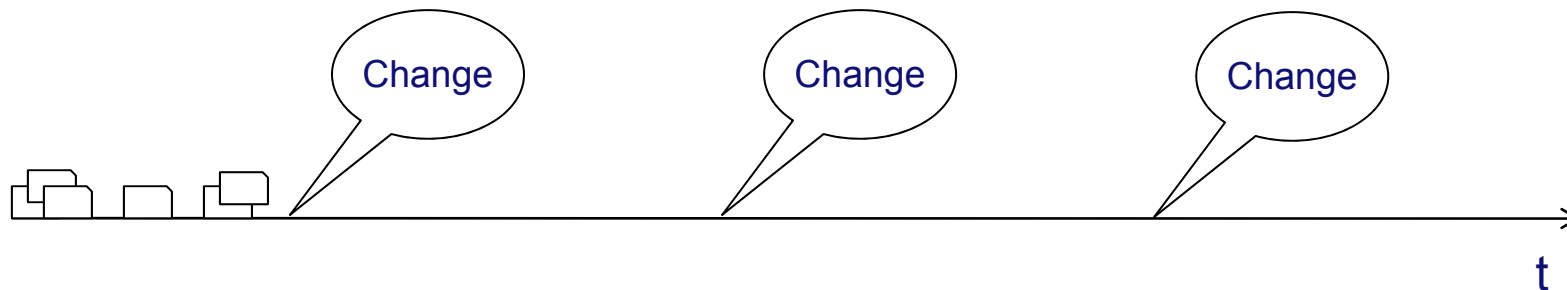


Impact of Concept Drift in Process Mining

- **Less comprehensible models**
- **May not reflect the real picture at an instant of time**
- **Prediction and recommendation (tom-tom for ProM)**
- ...

Detecting Drifts in Event Logs

- Ongoing work
 - Control-flow perspective
 - Change patterns



- Causal Foot-prints
 - Follows/Precedes relations between activities