



Auditor decisions during event log building for process mining

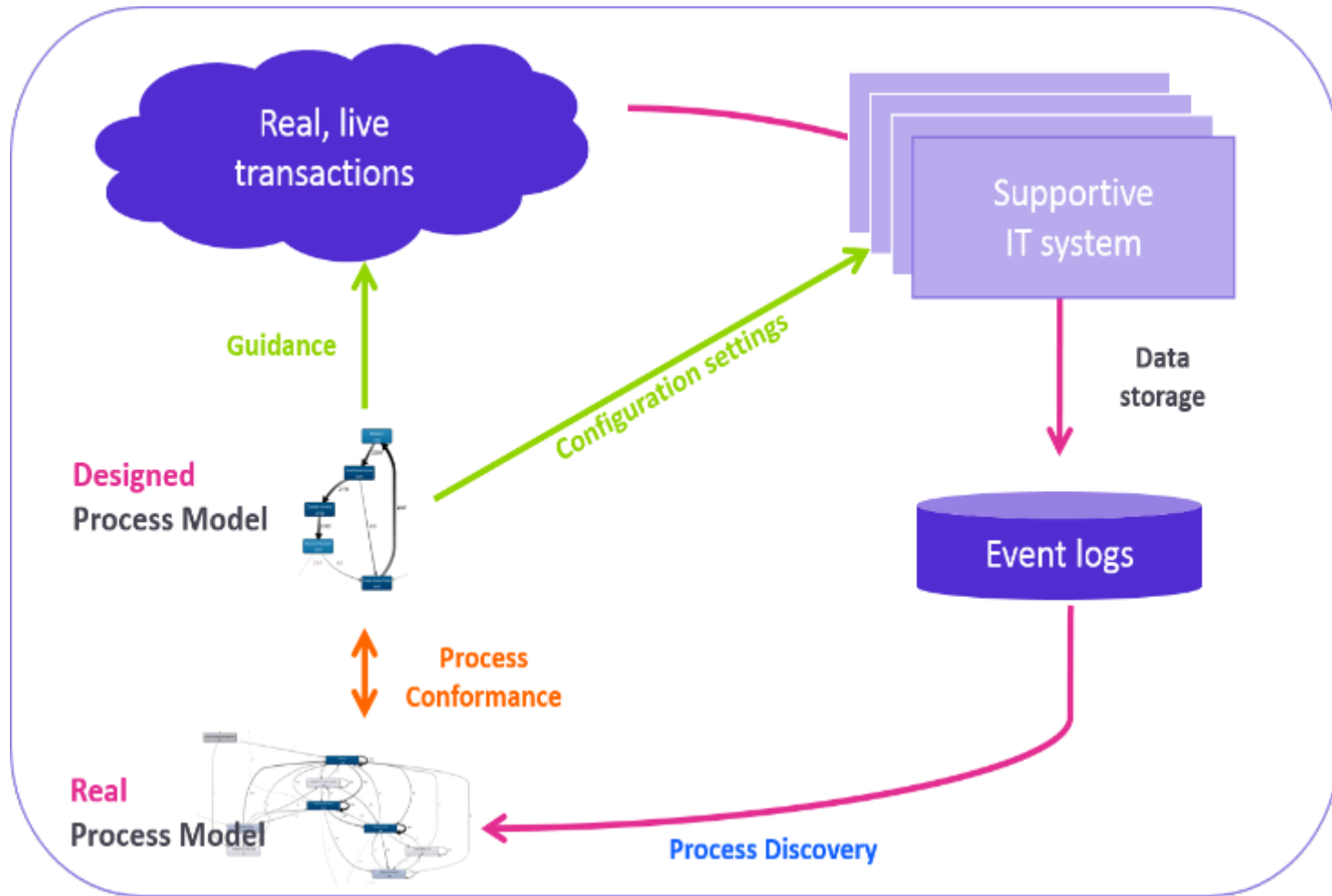
A first exploration

Mieke Jans

Content

- Process mining
- Why process mining for auditing?
- Problem statement and RQ
- Research strategy
- Study & results
- Conclusions

Concept of process mining



Sources of added value for auditing


- Elaborated audit evidence
- Objective process view
- Full population testing
- Elaborated test of controls
- Segregation of Duties
- Collaboration fraud detection
- ...

Start of process mining analysis



The art of creating an event log

Event log building step

Decisions  no "correct" vs "wrong"



impact on analysis options

Research Question

Which choices are made by the (internal) auditor during the event log architecture building phase, if a process mining approach was selected as analyzing technique to conduct the audit?

Research strategy (1/2)

- Combination of action research & survey

- Action research...

...addresses problems that people experience in their practices by using active collaboration between researchers and practitioners

... implies a cyclical process where research is carried out, changes are implemented in practice, and where the researcher reflects on the changes to evaluate them

➡ used to uncover decisions and form hypotheses

Research strategy (2/2)

- Survey...

...aims to map out a certain topic to get an overview

...well-suited to investigate narrow, well-defined topics

- A face-to-face survey was chosen as research method
- Exploratory survey: Experienced 'event log builders for auditing purposes' were addressed
- Data collection: interviews and document analysis

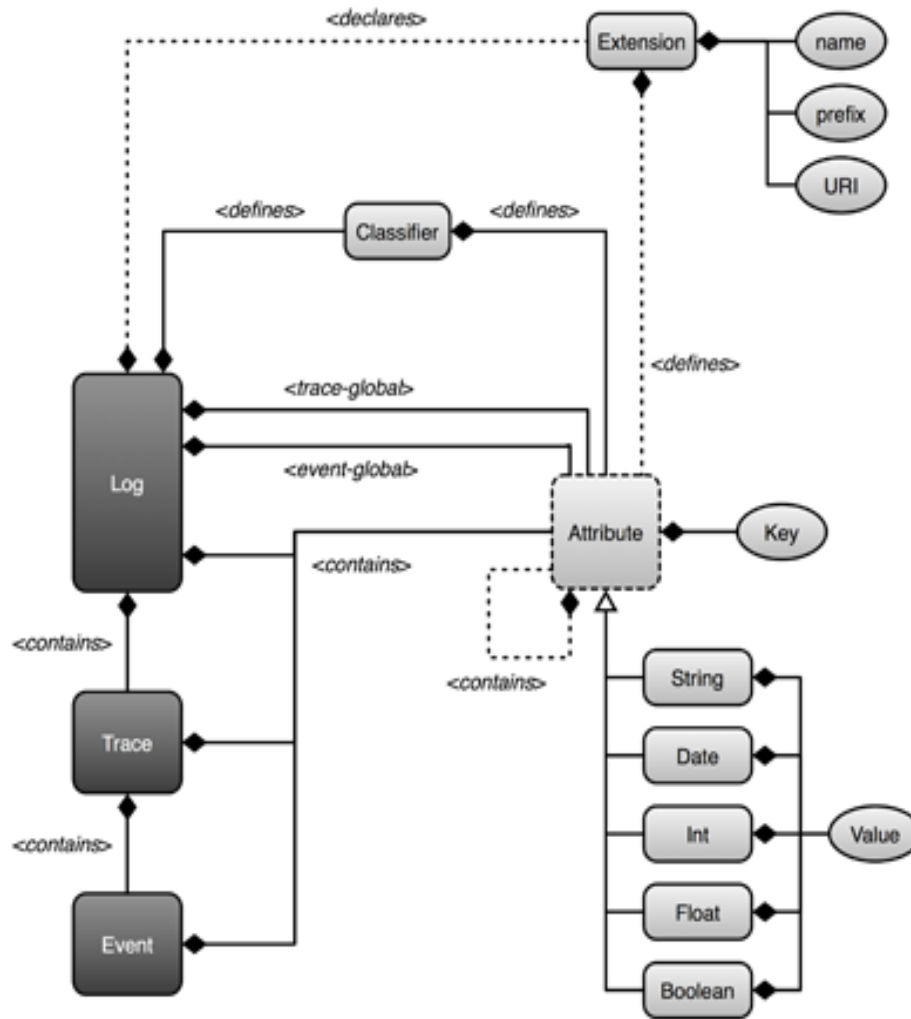
Respondents:

9 people (9 companies): auditors, internal auditors and consultants

9 different processes

Several hundreds of process mining projects in an auditing context

Standard of event log format (XES)



Categories of decisions

Based on the XES-structure, there are 3 categories of decisions that need to be taken:

- 1) Which process instance to follow?
- 2) Which activities on that process instance to capture?
- 3) Which attributes (extra characteristics) to store?

Hypothesis 1

When setting up the architecture of a minable event log and selecting a process instance,

the auditor will prefer to select the **start document** at

such level that there is maximum a **one-to-many** relationship **between the process instance (one) and the end document (many)** at that level

(so there is no artificial multiplication of the financial document)

Hypothesis 1 – not rejected

The survey respondents,
interviewed thus far,
applied the hypothesized principle.

Whether or not they consciously took this
decisions, based on the consequences in the
analysis phase, still needs to be examined.

Hypothesis 2

When setting up the architecture of a minable event log and selecting the activities, the auditor will prefer to select activities that reside in one of the following groups:

- Key activities that a regular stakeholder would mention when describing the process
- Create, approve, or alter a document, related to the process of interest
- Activities that reveal differences in timing aspects of a single activity

Hypothesis 2 – partially accepted

- Key activities that a regular stakeholder would mention when describing the process accepted
- Create, approve, or alter a document, related to the process of interest
 - create doc: always (transaction data)
 - approve doc: always (meta-level data)
 - alter doc: selection (meta-level data)
- Activities that reveal differences in timing aspects of a single activity
 - true, but no real selection (transaction data)

Hypothesis 3 – no results yet

H3a: When setting up the architecture of a minable event log, the following attributes are always considered:

resource attributes,

the value (and quantity) that is stated on the different documents,

the impacted general ledger number,

and the business partner of the process at interest.

Hypothesis 3 – no results yet

H3b: When setting up the architecture of a minable event log and considering attribute information as activity dimensions,
the auditor will only consider event attributes (as opposed to case attributes),
and only in case of a manageable number of possible extra dimensions.

Conclusions

- First exploratory study on decisions during event log building phase
- Overview of decisions and the consequences for the analysis phase
- Categorization, based on standard format of event log
- Hypotheses are not rejected, nor fully accepted
- Further investigation on the decisions drivers is necessary



Thank you

Mieke.jans@uhasselt.be