Friendly Change Extraction for BPMN Workflows

Motivation

- Precisely identifying workflow changes is a key need for process model evolution:
  - Changes in a process model specification may affect its corresponding implementation
  - Collaborative development often requires synchronizing changes from several stakeholders
- Manual change extraction is error-prone and time-consuming

Objectives

- Find the difference between two BPMN workflow models without relying on change history or unique element identifiers
- Present individual changes by means of human-readable and intuitive operations such as insert, delete, move and update
- Optimize the number of operations for producing the minimum edit script that can be applied to one workflow to obtain the other

Background

- SESE decomposition (Vanhatalo et al.)
- Change extraction of hierarchical data (Chawathe et al.)
- Optimal AST matching (Fluri et al.)

Edit Script

Matching criterion for model elements (leaves)

Minimum script (both below are correct, second is min.)

Prototype

- Eclipse plugin
- Java-based
- On top of SOA Tools Platform BPMN Modeler
- Textual and graphic outputs

Evaluation and Limitations

- 38 real change scenarios were replayed: edit scripts were minimum in 72% of the cases
- Matching is only syntactic
- Current complexity is $O(N^2)$