Development of a BPMN Model Validation and Automatic Correction Tool for SAP Solution Manager

2019-11-25

Bachelor Thesis Defense
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Bachelor Thesis Defense
SAP Solution Manager
Business Process Model and Notation (BPMN)
What did I create?

- A web-based program...
  - ...that detects violations of selected readability criteria and corrects them.
  - ...designed with BPMN models created in SAP Solution Manager in mind.
Why was it created?

- Improve pragmatic quality of BPMN models
- Feature provided by similar products
- Proposal by Vostura GmbH
- Personal experience
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How did I create it?

1. Selection of Guidelines
   a. Research and Initial Evaluation of Guidelines
   b. Selection Criteria

2. Proof-of-Principle Prototype

3. Implementation of the Tool
   a. Usability Tests
Research and Initial Evaluation of Guidelines

Process Diagram 2

No lanes are present in the pool, add at least 1 lane first

This element can not be renamed
Selection Criteria

- Part of BPMN guidelines as defined by Vostura
- Possibility of automatic adjustment
- Feasibility of implementation
- Frequency of violations based on project samples
Proof-of-Principle Prototype

- Will it work?
  - Upload
  - Read
  - Display output
  - Modify
  - Download
Usability Tests

- First round: Vostura employees
- Second round: FU Computer Science students
- Evaluation of the tool by participants
- Observation of how participants used the tool
- Feedback → Improvements
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Corrected Diagram
Hold the Ctrl key while scrolling with your mouse or touchpad to zoom in and out of the diagram. You can also drag the diagram around.

BPMN Validation Report

Absence of Start Event
A model should have at least one start event. This helps the model represent reality. It also improves the model's understandability.
No Start Event found.

Absence of End Event
A model should have at least one end event. This helps the model represent reality. It also improves the model's understandability.
No End Event found.

Mixed-Use Gateways
Gateways should not show splitting and joining behavior at the same time. If a gateway has multiple inputs and multiple outputs at the same time, this should be split to improve the model's understandability.

- Mixed-use gateway found.
- Mixed-use gateways split.

Unlabeled Sequence Flows
Sequence Events form splitting XOR gateways should be labeled.
Unlabeled outgoing sequence flows from splitting gateways found.

- Unlabeled outgoing sequence flows.

Implemented Guidelines

- **Insertion of missing elements**
  - Absence of start events
  - Absence of end events
  - Mixed-use gateways
  - Absence of explicit gateways

- **Insertion of missing attributes (labels)**
  - Unlabeled sequence flows
  - Unlabeled gateways
  - Unlabeled events
Example: Mixed-Use Gateways

❌ Wrong:
Example: Mixed-Use Gateways

Correct:
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Suggested Future Work

- More guidelines and wider scope
- Configurability
- UI/UX improvements
- More usability tests
Personal Lessons

- Pen-and-paper programming
- Development journal
- Productivity in difficult situations
Thank you!
Any questions?
Demonstration of the Tool

http://ren.userpage.fu-berlin.de/thesis/webapp/