Automatic Processing of BPMN Models into an homogeneous Datastructure

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Summary

As part of an EU project in the field of computer security, we need to monitor and protect business processes. In larger companies such process are found in the form of BPMN 2.0 compliant xml documents.

Due to the fact that BPMN 2.0 is very verbose and established modelling tools vaguely comply to the given standard, a robust implementation is needed, such that needed information can be extracted. Information from multiple documents and processes shall be merged into one unified data structure. This includes a consistency check with given ground data.

This Bachelor's thesis is open for all study fields. No special knowledge of computer security is needed. Business Informatics students are highly welcome.

Example

Listing 1 shows a heavily shortened extract of an BPMN 2.0 compliant business process. We are interested in the "subProcess", "Task" and all associated "DataStores".

Listing 1: Heavily shortened BPMN

```
<?xml version="1.0" encoding="UTF-8"?>
<bpnm2:definitions ...>
  <bpnm2:process id="Process_1" isExecutable="false">
    <bpnm2:ioSpecification id="InputOutputSpecification_1" />
    <bpnm2:subProcess id="SubProcess_1" name="Allow_remote...">
      <bpnm2:task id="Task_1" name="Grant_availability...">
        <bpnm2:documentation/>
        <bpnm2:outgoing>SequenceFlow_1</bpnm2:outgoing>
        <bpnm2:documentation/>
      </bpnm2:task>
      <bpnm2:receiveTask id="ReceiveTask_1" name="Request_activ...">
        <bpnm2:documentation/>
        <bpnm2:extensionElements>...
      </bpnm2:receiveTask>
      <bpnm2:receiveTask id="ReceiveTask_2" name="Request_activ...">
        <bpnm2:documentation/>
        <bpnm2:extensionElements>...
      </bpnm2:receiveTask>
    </bpnm2:subProcess>
    <bpnm2:dataStore id="DataStore_1" name="Data/Store/...">
      <bpnm2:dataStore id="DataStore_2" name="Data/Store/...">
        ...
      </bpnm2:dataStore>
    </bpnm2:subProcess>
  </bpnm2:process>
</bpnm2:definitions>
```

Prerequisites

- Solid programming skills in Java
- Regular expressions will be useful
- Basic XML knowledge
- Databases (SQL)

Goals

- Excellent thesis
- Java Implementation
- Market overview of modelling tools
- Conference paper
- Use of your implementation in an EU project

Contact

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