

BPMN/BPNE Translating into BPEL

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Abstract - In this paper the concept of translating BPMN and its extended version BPNE into BPEL code is given. Existing mapping tools are considered and the concept of a tool, mapping BPNE into BPEL is introduced.

Keywords – BPMN, BPNE, BPEL, translation.

I. INTRODUCTION

BPMN - BPEL translation should become a bridge between process design and enactment stages of BPM lifecycle, that is the bridge between business and IT, but the instrumentation of this method is hindered because of fundamental mismatch between these two standards [1]. What is more, state-of-the-art BPMN - BPEL transformation strategies and tools are not applicable for any BPMN extensions [2] and require appropriate modifications to provide their more flexibility.

II. TRANSLATION STRATEGIES AND TOOLS

There are five BPMN - BPEL transformation strategies.

The first strategy is Element-Preservation. The general idea is that all graph elements and arcs are being transformed into flows and links respectively [3].

The second strategy is Element-Minimization. In this strategy empty activities that have been generated from connectors are being removed [3].

The third strategy is Structure-Identification. The idea is to use the reduction rules with identified structured activities [3].

The other strategy is Structure-Maximization. In this strategy in order to identify a maximum of a structure the reduction rules are being used as often as possible [3].

The last strategy is Event-Condition-Action-Rules [4]. In this strategy parts of graph, which were not transformed by other strategies, are being translated using BPEL event handlers.

A basic idea of mapping which is used as a core for most algorithms of translating BPMN or any other WF-net into BPEL code uses a mix of mentioned strategies.

Each graph's element is mapped into corresponding BPEL block. There are three options. First, if an element is well-structured, it can be transformed directly into BPEL code. Second option is for acyclic not well-structured elements. These elements can be mapped using control link-based BPEL code. If the first two options are not able to transform the element, it can be mapped by using BPEL event handlers [5].

There are two concepts of tools, which are used in practice.

First one implies a three step process. The BPMN graph is serialized to an XML document. After that, the XML document is translated into an abstract BPEL document in an automatic way. The abstract BPEL is enriched with the pieces of information, needed to make it executable.

Second idea implies that BPMN graph will be translated

directly into executable BPEL code. This is only possible when input/output files of the future Web Service (WSDL files) are written in advance.

The proposed concept of the tool for translating BPNE [2] into BPEL code has the same idea as the second tool, mentioned above, but with several modifications. BPEL is not functionally complete. In order to overcome this problem, elements like human tasks and subprocesses should be added in the BPMS [6] using its own constructs.

Not only BPEL should be modified. The translation tool itself should be changed, because existing tools don't support modified BPNE elements. The schema of the element should be changed as well as the stage of mapping to cover the additional elements and modifications of old ones.

III. CONCLUSION

In this paper BPMN-BPEL transformation strategies are considered and the concept of translating BPMN/BPNE into BPEL is presented. Two algorithms for mapping tools are discussed and one of them is taken as a basis for developing BPMN/BPNE - BPEL transformation tool. Chosen algorithm provides the advantage of omission the stage of working with abstract BPEL.

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