Research Challenges for the Modelling of the Resource and Organizational View

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Abstract: One reason for the success of automating business processes by means of business process management systems (BPMS) is that with BPMN, a widely accepted industry standard exists. The availability of a standard together with powerful visual process diagramming tools allows (up to a certain degree) to model processes independently of the runtime environment. However, a closer look reveals that not all relevant information is equally well supported by BPMN. The ISO standard 19439 [In06] differentiates between four views: The function view (process steps and decisions) and the information view (flow of data) are what can be called the core function of BPMN. On the other hand, the resource view (describing human as well as technical resources) and the organizational view (describing responsibilities and authorities) are to a large degree outside the scope of the BPMN standard.

Nevertheless, for describing the execution of business processes and for automating them, the latter two views have to be considered as well. In our work, we investigated the state of research on modelling the resource and organizational view. We found that while there is quite a lot of research on this topic, some requirements of practical relevance are still not yet fully covered. Furthermore, we examined how information on resource and organizational view has to be modelled in four current BPMS. We found that all four tools provided basic support for this purpose, but did not cover all requirements, for example with respect to more complex substitution plans.

Keywords: business process management system, workflow system, resource perspective, resource modelling

1 Motivation

When the execution of business processes shall be supported at run-time by business process management systems, it is necessary to define to whom manual activities have to be assigned. In exceptional cases, it must be possible to delegate the execution of a task. Furthermore, BPMS should be able to monitor the execution of tasks and to escalate them if necessary (e. g., when they have not been completed after a given time). In case of an absence of a responsible person, substitution plans should be applied.

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While thanks to the BPMN standard, no programming knowledge is necessary for defining the flow of control for a business process, we observed that this is not the case for defining the mentioned information on resources. In current BPMS, inclusion of such resource-related information is tool-specific. For instance, to define sophisticated actor assignments, as required in many scenarios from practice, languages as JavaScript or XPath have to be used. It is the aim of our ongoing work to get an overview on existing work on the topic, to compare it with requirements from practice and to identify open research challenges.

2 Findings and Further Questions

It has to be stated that there is no lack of work on the resource view. Remarkable work include the seminal work on workflow resource patterns [Ru05], suggestions for adding the resource perspective to BPMN [SCV15] and even a graphical language for defining resource requirements and constraints [Ca15]. Anyway, certain details such as substitution plans can turn out as more complicated as it might seem at a first glance.

On the other hand, an examination of four current BPMS (Bizagi Studio, IBM Business Process Designer, K2 Cloud and Signavio Workflow Accelerator) revealed that none of them was powerful enough to fulfil all our requirements on flexibility and ease for defining resource assignments. In addition, there is currently no standard that would allow the exchange of business process models with resource information between different tools.

In a next step, we want to compare the existing work on meta-models for the resource and organizational view. In particular, it is an open question whether the requirements on resource allocation is domain-independent. Further outstanding issues include the understandability of different formalisms for specifying resource-related requirements, a concept to map such formalisms to directory services such as LDAP, and concepts that are not yet sufficiently covered (in particular, complex escalation rules and substitution plans).

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