

Process- and Resource-Aware Information Systems (Extended Abstract)

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Abstract: Business processes comprise several perspectives that have an effect in all the phases of the BPM lifecycle. The organisational perspective addresses the way in which human resources take part in process activities. Human resources are of utmost importance as they are responsible for the correct execution of processes. However, the organisational perspective has received less attention than others and the existing support is limited. With the aim of easing the development of advances in human resource management in business processes, in this paper we present a novel framework that collects several aspects to be considered along with the existing support. The work summarised in this extended abstract has been published in [Ca16].

Keywords: BPM, conceptual framework, human resources, organisational perspective, PRAIS

1 Introduction

A Process-Aware Information System (PAIS) is a software system that manages and executes operational processes involving people, applications, and/or information sources on the basis of process models [DvdAtH05]. The explicit process awareness in PAISs introduced a number of advantages for business information systems with respect to previous task-driven systems. The core elements in a business process are the activities and their execution order. However, there are more elements involved in processes that must be supported along the Business Process Management (BPM) lifecycle [Du13]. These elements are called *business process perspectives*. The *organisational perspective* addresses the way in which human resources in an organisation are involved in the processes executed in it.

Current PAISs support the organisational perspective but with significant limitations. The goal of this paper [Ca16] is to advance PAISs towards the concept of Process- and Resource-Aware Information System (PRAIS). Specifically, we present a framework for human resource management in business processes defined from the literature in the field, the characteristics found in Business Process Management Systems (BPMSs) and our own experience in this research area. The research is guided by the following research questions: (RQ1) Which are the operations involved in human resource management in business processes? (RQ2) Are there other factors that affect the way in which the operations are addressed? (RQ3) Which is the existing support on the theoretical and practical sides?

2 Framework and Existing Support

Our study led to a classification of the aspects related to human resource management in business processes in three layers, which constitute our proposed framework. The first one refers to RQ1 and presents a classification of the operations involved in human resource

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management in business processes, namely, post-execution resource analysis, resource assignment, design-time resource analysis, resource reconfiguration, resource allocation and run-time resource analysis. The second and third layers respond to RQ2, i.e., they are aspects orthogonal to the operations identified which affect the way to address them. Specifically, we found that the type of activity (individual vs. collaborative activities) and the type of process (routine vs. flexible processes) influence the interpretation of the operations.

From the analysis of the existing support for all the aspects involved in the framework we conclude that the most developed operations are automatic post-execution analysis (process mining) and the modelling of the organisational perspective (resource assignment). Since the outcome of both techniques is, in most cases, a resource-aware process model, the same evaluation framework for model expressiveness is used, specifically, the creation patterns [Ru05]. However, not all the patterns that can be modelled with resource assignments can be extracted with existing process mining techniques, generally due to a lack of information in the event logs. On the contrary, process mining techniques for the organisational perspective are already mature for both routine and flexible processes, whereas the support for resource assignment focuses on the former. Teamwork is a novel feature in both operations but the current support is still limited. In addition, there is a noticeable gap between the support developed in research and in industry. The existing support for resource allocation is limited as the approaches either do not aim to achieve the most optimal solution or simplify the setting, which becomes less realistic. Besides, the resource allocation mechanisms present in the BPMSs tend to be simpler and adjust to some of the push/pull patterns [Ru05], e.g., distribution by offer. Support for automatic teamwork allocation is still nonexistent. However, the major deficiencies in resource management in business processes nowadays relate to design-time and run-time analysis. In the few existing approaches dealing with resource analysis only individual activities in routine processes have been considered. Furthermore, this support is only partly included in some prototypical implementations but still missing in current BPMSs. In addition, the existing support for the different aspects is usually scattered over a variety of independent approaches the use their own languages and formalisms.

The identified gaps may be a starting point for process managers to enhance the support for the organisational perspective in their processes by inspiring them to adapt and integrate existing approaches or to develop new ones.

References

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