Business Processes Modeling Solution for Cross-Organizational Collaboration

Summary of
PhD Thesis for obtaining the scientific
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for

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This thesis entitled **„Business Processes Modeling Solution for Cross-Organizational Collaboration"** encompasses the research of 3 years at the Politehnica University of Timisoara.
Working as a Project Manager in software outsourcing industry for many years challenged me in finding solutions for supporting a multi-organizational context in collaboration between organizations. The difficulties and the problems encountered opened up the perspective for the current research: propose techniques and tools that contribute to the setup of the collaboration and to the realization of projects in a dynamic inter-organizational structure with limited time for setup, in a scenario with clearly identified business cases proposed to a collaborative implementation.
Management trends nowadays consider reinventing the organizational culture in which the setup is performed on a long term basis. Instead of a complete change, this thesis proposes a simple automated solution process oriented, able to support business cases in collaboration between organizations.
In the first step an evaluation is performed of how compatible from operational perspective the organizations are. Business process comparison is executed either by using a syntactic interpretation of the labels, or a semantic context. As the semantic space is wide and computing resources are limited, the semantic space is limited to the mapping of the ontology domains for the participating organizations. Techniques are proposed when the similarity factor is computed to model a one to one relation, a one to many relation when business process have a different granularity and a many to many relation when modularity is considered during the design phase between process models. The resulted factor is a single number able to quantify how similar organizations implement their operational plan and setup their processes to reach the business objectives for specific business cases.
If a good similarity is calculated, organizations could collaborate on specific business cases; this thesis offers solutions for composing a collaborative business process as a result of merging the input process models of all participating organizations.
The quality of the common process model is assessed and the process is validated functionally by modeling the business objectives in test datasets and verifying the conformance of the resulted process model with composed datasets.
Once the execution of the collaborative process model is started, operational support is ensured, the execution is verified in real time. A new rule definition language operating with process mining concepts is specified and implemented in the current thesis for this purpose.
Techniques for further process improvements are considered for ensuring the process can evolve in an agile dynamic environment. Patterns in execution are extracted by analyzing monitoring results and are used further for updates in the business process definition.
At the end of the thesis future perspectives and limitations of the current system are discussed.