



VOCAL₂₀₁₀

PROGRAM and ABSTRACTS

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P-graph Representation and Structural Analysis of Business Process Models

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Design and management of business processes are key factors for companies to be competitive. The standard Business Process Modeling Notation (BPMN) provides the capability of understanding the internal business procedures in a graphical notation for the organizations. BPMN defines a Business Process Diagram (BPD), which is based on a flowchart technique designed for creating graphical models of business process operations. Business process analysis and optimization can be supported by software tools, with which potential decision alternatives can be defined and revealed. Currently, there is no available software on the market that supports exploring or generating structural alternatives for business processes.

The aim of our research is to develop a technique based on P-graph methodology that provides an adequate basis to describe and model business processes, as well as to algorithmically synthesize optimal and alternative cases. Activities in the business processes are represented by O-type nodes, while the set of data and events are M-type nodes in P-graphs. BPMN involves additional structural information to general process networks, e.g., mutual exclusions of tasks. In order to handle these specific requirements the P-graph based algorithms have been extended. The optimal (cost, reliability, etc.) business process can be determined by SSGLP algorithm, after

the BPD - P-graph transformation and the alternative structure generation. The transformation method, as well as algorithms for generating structural alternatives for business processes have been elaborated and implemented. The proposed methodology has been tested with a reference problem from our recent R&D projects.