On Supporting Collaborative Business Processes
— an Organisation-Oriented Perspective

by

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Abstract

Current globalisation of economy drives organisations to streamline their business processes and to quickly form collaboration for responding to fast changing market opportunities. This thesis is dedicated to proposing a novel organisation-oriented view methodology for collaborative business process management. This methodology observes a collaborative business process from the perspective of individual organisations, and provides comprehensive solutions to the privacy, autonomy and openness issues in business collaboration.

In this thesis, we first propose a relative workflow model to formalise the business process modelling from the organisation-oriented perspective. This model deploys a constraint-based visibility control mechanism to protect business privacy, and to distinguish the partnerships between collaborating organisations. At the instance level, we investigate the instance correspondence in a collaborative business process, and characterise the instance correspondence in terms of the workflow cardinality and instance correlations. An extended Petri net model formalises the representation and dynamic tracing of the instance correspondence. On this basis, we utilise the instance correspondence to perform inter-organisational workflow tracking from each participating organisation point of view. In addition, we develop a series of representation matrices and matrix operations that allow dynamic tracking and monitoring on collaborative business processes. To demonstrate the applicability of the organisation-oriented view methodology, we conduct two case studies on a virtual organisation alliance and a transient supply chain, respectively. Finally, a system design is introduced to demonstrate the feasibility and deployment of our methodology in the Web service environment.

The research reported in this thesis provides a comprehensive solution for collaborative business process management. The reported research puts forward an innovative idea and constructs a solid foundation for future research towards collaborative business process management.
The Author’s Publications

Journal papers

Conference papers


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Declaration

This thesis contains no material which has been accepted for the award to the candidate of any other degree or diploma, except where due reference is made in the text of the thesis. To the best of the candidate’s knowledge, this thesis contains no material previously published or written by another person except where due reference is made in the text of the thesis.

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