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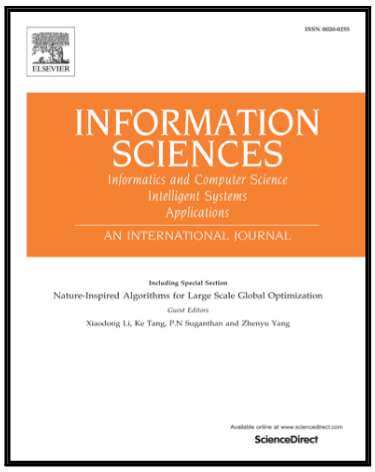

Automated Deduction of Cross-Organizational Collaborative Business Processes

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Automated Deduction of Cross-Organizational Collaborative Business Processes

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Abstract

Being able to implement efficient cross-organizational collaborations has become a key factor for enterprises to respond to emerging market opportunities. The Business Process Management approach is commonly used to design cross-organizational collaborations. This type of business process aims at achieving specific collaborative objectives by addressing three main steps according to a top-down approach: (i)defining the business services that have to be performed to reach the objectives, (ii)finding the best set of partners to provide them and (iii)ordering the business services in an optimized way. While the resulting business processes are a cornerstone to support the interoperability among the partners of a collaboration, their design step remains often humanly-conducted and laborious. Moreover, seeking the "best" set of partners involves non-additive criteria such as the delivery time (i.e. business services can be performed in sequence or in parallel within the process). In this context, this paper presents a decision support system based on an Ant Colony Optimization algorithm to exploit collaborative knowledge gathered from companies on a dedicated platform (companies' profile models registered to the platform and collaborative opportunity models) and deduce quasi-optimal collaborative business processes. A prototype that supports this system is also presented.

Keywords: Business Process Management, Interoperability, Decision Support System, Model-driven architecture, Ontology, Business Services Composition

1. Introduction

In the current economic context, surviving as an isolated company has become unrealistic. The necessity to quickly respond to the emerging market opportunities leads to two consequences: (i) the companies have to react quickly

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