HIERARCHICAL CLUSTERING OF BUSINESS PROCESS MODELS

Jae-Yoon Jung*, Joonsoo Bae**,1 and Ling Liu***

*Department of Industrial Engineering
Kyung Hee University
Yongin-si, Gyeonggi-do, 446-701, Republic of Korea
jyjung@khu.ac.kr

**Department of Industrial and Information Systems Engineering
Chonbuk National University
Jeonju-si, Jeonbuk, 561-756, Republic of Korea
jsbae@chonbuk.ac.kr

***College of Computing
Georgia Institute of Technology
Atlanta, GA, United States
lingliu@gatech.edu

ABSTRACT. *Business process is collection of standardized and structured tasks inducing value creation of a company. Nowadays, it is recognized as one of significant intangible business assets to achieve competitive advantages. We introduce a novel approach to business process analysis, which has more and more significance as process-aware information systems that are spreading widely over a lot of companies. In this paper, a methodology of business process clustering based on process similarity is proposed. The purpose of business process clustering is to analyze accumulated process models in order to assist new process design or process reengineering. The proposed methodology exploits structural similarity metrics of business processes. We illustrated the methodology with example processes inducing the hierarchical merged models from the process clusters.*
Keywords: Hierarchical clustering, Business process management (BPM), Workflow

1. **Introduction.** The business process management (BPM) is spreading to implement process-aware information systems for the purpose of various business innovation techniques, such as real-time enterprises, balanced score-card, and knowledge management. Many researches on BPM have provided methodologies of modeling and analyzing business process for the last decade. Especially, as more and more companies introduce process-aware information systems, classification and typology of business processes are getting more significant. Some researches on the issues have been mainly made to present process reference models based on generic business activities (for instance, Process Handbook project [1]) and to provide standard process models in electronic business (for instance, RosettaNet PIPs [2]). However, such researches do not support a method of company's analyzing the own process assets which are being accumulated in a variety of process-aware information systems.

In this paper, a methodology of clustering business processes is presented as one of the means to analyze business processes accumulated in information systems. We define business process clustering as a procedure of measuring the similarities among process models

---