FAULT-TOLERANT PROCESS DEBUGGER FOR BUSINESS PROCESS DESIGN

Minsoo Kim[1] and Dongsoo Kim[2,*]

[1]Department of Systems Management and Engineering
Pukyong National University
San-100, Yongdang-Dong, Nam-Gu, Busan, Korea
minsky@pknu.ac.kr

[2]Department of Industrial and Information System Engineering
Soongsil University
511 Sangdo-Dong, Dongjak-Gu, Seoul, Korea
*Corresponding author: dskim@ssu.ac.kr

ABSTRACT. *Nowadays, BPM system is recognized as one of the main enterprise systems. Through the proper use of BPMS, business processes in an enterprise can be executed efficiently and be coordinated seamlessly. For the sound execution of business process, it is important to debug its run-time processing and verify its logic before deploying business process model to BPMS. In our previous research, a simple process debugging scheme which is called request-reply debug model was suggested as an implementation framework for BPMS. Though it was somewhat successful while debugging business processes, it could not handle some exceptional situations such as failures of either client or server. In this paper, we incorporate some fault tolerance features in the request-reply debug model, and advanced its architectural design to robustly handle process debugging. With this extended debug model, it is expected that the debugging of business process can be done in a more robust and reliable way.*
Keywords: Fault tolerance, Process debugger, Business process management

1. **Introduction.** It is widely accepted in the enterprise IT environment that BPM (Business Process Management) is an enabling technology for process control and management [1,2]. Now BPM systems cover wide business application areas from managing end-to-end tasks that organizations perform daily to create business value for their customers to controlling long-term business policies for the achievement of business goals.

The development of business process standards such as XPDL, WS-BPEL and BPMN, has facilitated various BPM researches [2-4]. BPM research issues now cover wide aspects of business processes; for example, interoperability and compatibility of business processes, composition of cooperative business process model, optimization of process execution, and development of process improvement framework [6,7,17,20]. Among those research issues, there are, however, few researches that deal with the debugging of business process. In order to execute business process successfully, a robust mechanism for checking its runtime processing and verifying its logic before the deployment to BPMS is mandatory [13-16]. In the previous research, Kim et al. suggested a simple debug model and defined 8 functional requirements for business process debugging [5,8]. In this paper, we extend their model to support fault tolerance by introducing asynchronous communication mechanism and synchronization concept of execution path.

The composition of this paper is as follows. In Section 2, we introduce previous research results including request-reply debug model. In Section 3, failure and recovery issues at