Abstract: A Design and Implementation Rule-based BPEL System using Aspect-Oriented Programming

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Abstract

BPEL is an OASIS standard executable language for specifying actions within business processes with Web services. BPEL workflow requires a rule engine to describe application process in BPEL. As the application becomes more complex the requirements increase. In this paper, we propose R4BPEL document, which uses the original BPEL’s grammar and includes a rule document. The system was implemented with AspectJ and B2J. AspectJ is an aspect-oriented programming extension for JAVA programming language. As a result, it is possible to apply new rules to BPEL program without modifying the generated source code by B2J engine. B2J is one of BPEL engines. It receives BPEL document, transforms it into JAVA source code, and compiles it to produce a JAVA target program. We define generated source code of BPEL’s requirement as core concern, and generated source code of R4BPEL’s requirement as cross-cutting concern. The two concerns are woven to produce rule-based BPEL program, which is the key idea of this paper. With this method, it is possible to add rules without modifying the source code generated by B2J engine. By managing the rule document and BPEL document independently, it is possible to make a model of services using rules and to increase reusability of documents.

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