Chapter V

Semantic Web Services and BPEL: Semantic Service-Oriented Architecture Economical and Philosophical Issues

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Abstract

An emerging technology like business process execution language (BPEL) and its implementation in BPEL for Web services (BPEL4WS) gives extra possibilities in describing business processes. It further adheres, as a technology, in a consistent way to the underlying Web service-based implementation technology and is a perfect fit for service-oriented architectures (SOA) as they are currently implemented throughout organizations as a successor to enterprise application integration (EAI). However, BPEL4WS, in its current implementation, will only serve in a static way for production workflows. In this chapter we discuss how Semantic Web services
through a semantic service-oriented architecture (SSOA) can be used to extend BPEL4WS to create ad hoc and collaborative workflows.

Introduction

New (business) applications based upon Web services are very promising. An example is enterprise resource planning (ERP) with Web services. Today, more and more vendors agree upon Web services standards. One of them is BPEL4WS. However, at this moment only static workflows can be created with BPEL4WS.

Since SOA has made a breakthrough in EAI and e-business and since SOA uses Web services, we will look at the possibilities of SOA in this context.

Today, programmers still need to make the link between a Web service and the application that supports a particular step in a business process. Semantic Web services may add a dynamic dimension to workflow systems. In this way it becomes possible to automate ad hoc and collaboration workflows. The BPEL workflow manager can decide, based on the results returned by Semantic Web services, which Semantic Web services will perform the next step in the workflow.

This and the other services of SOA need to be adapted to the semantic technology. This is our contribution to the SSOA.

In the remainder of this chapter, the following topics will be treated in more detail:

- business context of an organisation;
- business processes and workflow where BPEL4WS could be used with Semantic Web services;
- BPEL4WS and dynamic workflows;
- issues about information management;
- decision-making process, since software has to make autonomously itself some decisions;
- the roadmap of SSOA; and
- finally, further research concerning SSOA and the conclusions.
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