Chapter XVII

Web Services for Groupware

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Abstract

While some years ago the focus of many Groupware systems has been on the support of Web based information systems to support access with Web browsers, the focus today is shifting towards a programmatic access to software services, regardless of their location and the application used to manipulate those services. Whereas the goal of Web Computing has been to support group work on the Web (browser), Web services support for Groupware has the goal to provide interoperability between many Groupware systems. The contribution of this chapter is threefold: (1) to present a framework consisting of three levels of Web services for Groupware support, (2) to present a novel Web services management and configuration architecture with the aim of integrating various Groupware systems in one overall configurable architecture, and (3) to provide a use case scenario and preliminary proof-of-concept implementation. Our overall goal for this chapter is to provide a sound and flexible architecture for gluing together various Groupware systems using Web services technologies.
Introduction

Since the late 1960s, Groupware aims at supporting various group activities of individuals embedded in multiple teams within organizations as well as between organizations. While some years ago the focus of many Groupware systems has been the support of Web computing, that is, to support access with Web browsers, the focus today is shifting towards a programmatic access to software services, regardless of their location and the application used to manipulate those services. Web services should provide the required standards, protocols, and technologies to fulfil this goal. Whereas the goal of Web Computing has been to support group work on the Web (browser), Web services support for Groupware has the goal to provide interoperability between many Groupware systems.

Web services can be seen as a newly emerging distributed computing model for the Web. The standardization process is driven by the growing need to enable business-to-business (B2B) interactions on the Web. Web services are self-contained self-describing modular applications. The Web services model develops a componentized view of Web applications and is becoming the emerging platform for distributed computing. The architecture considers a loosely integrated component model, where a Web service interface (component) encapsulating any type of business logic is described in a standardized interface definition language, the Web Services Description Language (WSDL) (W3C-WSDL, 2003). Web service components interact over XML messaging protocols and interoperate with other components using the Simple Object Access Protocol (SOAP) (W3C-SOAP, 2003). Many software vendors and a plethora of standardization consortia, for example, ebXML (EbXML, 2003), W3C (2003), and OASIS (2003), are providing models, languages, and interfaces for the life cycle of Web services: describing, publishing, unpublishing, discovering, and making them available to users for invocation.

Web services coordination middleware needs to support key mechanisms, such as coordination, composition, synchronization, event notification, event logging, transactions, control and data flow, workflow definition and enactment, security, and monitoring management. The basic layers comprising SOAP and WSDL are agreed standards. They provide the means to exchange messages (SOAP) supporting four interaction patterns (Table 2) and to describe service interfaces (WSDL). Higher layers, such as the Web Services Endpoint Language (WSEL), dealing with issues of Quality of Service (QoS) or the Business Process Execution Language for Web Services (BPEL4WS, 2002), the Web Services Flow Language (WSFL, 2003), XLANG (2003), BPML (Business Process Modeling Language) (BPML, 2003), Web Services Choreography Interface (W3C-WSCI, 2003), ebXML BPSS (Business Process Specification Schema) (EbXML, 2003), among others, dealing with Web services workflows, are not standardized yet but only published as specifications. Currently, several BPEL4WS engines are implemented in coordination middleware systems, such as IBM’s WebSphere Process Manager or the Collaxa BPEL engine. While XLANG is an XML extension of WSDL describing private workflow processes as Web service composition, WSFL also deals with public models of workflows. XLANG is implemented within the Microsoft BizTalk server. Both of these initiatives of workflow-based Web services coordination do not support existing