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Applies To:

The technology discussed in this article is relevant for SAP NetWeaver. More precisely, it is related to layers that deal with the process integration and business process management.

By: [Ivana Trickovic](#)

Company: SAP AG

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Abstract

This article explains briefly the need for an extension to the Web Services Business Process Execution Language (WS-BPEL) that supports designing of how people interact with business processes. It should help readers understand why SAP and IBM have worked jointly on a proposal for user interactions in WS-BPEL.

Introduction

The Web Services Business Process Execution Language, version 2.0 (WS-BPEL 2.0 or BPEL for short) has gained a lot of traction recently. The language is suitable primarily for designing processes which orchestrate activities of different software components exposed as Web services. This is an important step towards building fully automated business processes. The model introduces the process logic as a first-class element while reusable business logic is encapsulated in Web services. The idea of a process as a first-class element has its roots in the workflow technology, which focuses primarily on the coordination of activities between people.

There are compelling scenarios showing the need for more flexibility in fully automated processes which assumes involvement of people. The *WS-BPEL Extension for People – BPEL4People* white paper¹ published by SAP and IBM, describes how the BPEL language needs to be extended in principle to cover user interactions with business processes. The value of the proposal is that it can be used as a basis for a solution that covers different flavours of processes ranging from fully automated processes to processes supporting different user interactions patterns, including ad-hoc collaborations.

The sections below explain further the problem and the approach suggested in the white paper.

¹ The white paper is available at [SAP Developer Network](#) and [IBM developerWorks](#).

Problem Statement and Goal

Service orchestration is a process that specifies the order in which two or more (Web) services are executed. It deals with the process logic only, while the business logic is implemented in a language, such as Java or ABAP, and exposed to the processes as a (Web) service. Service orchestration assumes an engine responsible for the execution of the process. BPEL has emerged as the most promising model for Web service orchestration. As such, it has been taken as the “backbone” of the business process management technology.

However, business processes go beyond processes which activities are implemented as Web services, but include people as a special kind of implementation of process activities. An example would be when a process waits for multiple inputs that must be collected within a certain number of hours. Based on the current BPEL features, one possible outcome could be that the process throws a timeout fault and, as the consequence, some parts of the business process must be “undone”. Assuming that the business process has already run for several days the compensation may not be desirable, since it wastes resources and efforts already spent. Instead, it may be desirable to notify the process owner so that he or she can decide how the process should proceed. There might be several possible alternatives: continue the process using data that has been received so far; extend the deadline and wait for missing data; or feed the process with the missing data and proceed with the process execution. This is just one of many scenarios illustrating how people may interact with business processes.

There are probably multiple ways to address the problem. One may argue that the BPEL `invoke` activity is sufficient and the missing semantics could be mapped into the existing BPEL features. However, this approach would lead to many problems. The way of how people interact with business processes significantly differs from interactions between Web services and business processes. When people need to interact with a BPEL process, the BPEL engine needs to create work items for the corresponding activity and distribute them to those people who are eligible to execute the activity. One of the eligible users may claim the activity, which means he or she is ready to perform the requested task. Later on, the user may also revoke the claim, which means that he or she gives up the responsibility for the activity and other eligible users may now claim the activity. These interaction patterns between people and business processes cannot be captured by the BPEL `invoke` activity or by other existing BPEL features.

Thus, it is proposed to define a BPEL extension that addresses different scenarios related to how users interact with business processes. This extension, combined with the existing BPEL features, will allow designing business processes that range from fully automated processes to processes that support different user interactions patterns.

Approach

Currently there is no standard that spans both the service orchestration and user interactions. Rather than developing a new specification that particularly covers user interactions, SAP and IBM determined that it is most suitable to extend the existing BPEL specification (more precisely version 2.0). Although the work on this version is still in progress, it is not expected that the BPEL core features will be changed dramatically.

The BPEL4People extension is layered on top of the BPEL language so that its features can be composed with the BPEL core features. It is envisaged that additional BPEL extensions may be introduced that may in turn use the BPEL4People extension. In this way it can be avoided to build a monolithic specification that would contain numerous features and rather be pursued a more modular approach by building separate extensions on top of the BPEL core features. This will allow implementations to support the core features and only those extensions that are needed with respect to the business case.

The reader may wonder why this work has not been done within the OASIS WS-BPEL Technical Committee. The main reason is that the charter of this technical committee, which ultimately defines the scope of the work agreed by all members of the technical committee, does not mention this topic. Extending the charter would mean postponing the finalization of the work on the WS-BPEL specification.

The white paper is a first step towards synergy between traditional workflow technology and the business process management technology.

SAP NetWeaver supports BPEL, as well as processes involving user interactions. BPEL4People fills the missing gap for SAP NetWeaver and SAP's customers in that it suggests a common model for designing both service orchestration and user interactions.

Summary

The white paper published jointly by SAP and IBM introduces the idea behind the BPEL4People extension. It describes scenarios of how people are involved in business processes, and outlines features needed to address requirements derived from these scenarios.

Author Bio

Ivana Trickovic is a standards architect in SAP's Platform Ecosystem Industry Standards Group. Her work focuses on technology standards concerning the area of business process management and Web services.