Business Process Definition Languages Versus Traditional Methods Towards Interoperability

Leire Bastida Merino and Gorka Benguria Elguezabal

European Software Institute,
Parque Tecnológico de Zamudio, 204
E-48170 Zamudio, Spain
Tel: +34 94 420 9519, Fax: +34 94 420 9420
http://www.esi.es
{Leire.Bastida, Gorka.Benguria}@esi.es

Abstract. A business process is a collection of activities that are required to achieve a business goal and it is represented with an activity flow that specifies the orchestration needed to complete the goal. The definition of these processes allows business people to easily integrate the functionalities of the COTS in the company to support the business objectives. This activity flow can be implemented in two ways, using traditional methods or using a Business Process Definition Language (BPDL). Traditional methods encode the activity flow using state of the art programming languages such as Java, C#, etc. BPDLs describe the activity flow with a specific language that is directly interpreted by a BPDL engine. This paper analyses the use of BPDLs and traditional methods to develop solutions for services-based architectures. It presents a case study where the results obtained using a BPDL and a traditional method are compared.

1 Introduction

Nowadays organisations are evolving to *networked* organisations whose Information Systems, mainly composed by COTS, need to be interoperable in order to facilitate the interactions inside and outside their organisational limits. Web Services identify an emerging technology for integrating enterprise applications. Some technical and engineering aspects have been solved to achieve the wide use of Web Services. Others are still under Research & Development pursuing to make the *plug and do business* vision a reality.

Standardisation is a key element to achieve interoperability and to describe interoperable business processes. It is necessary to use high level modelling languages such as Business Process Definition Languages (BPDL) in order to facilitate the definition of business processes that orchestrate internal and external services through services-based technology such as Web Services to achieve the business goals.

New specifications are continuously emerging to define how Web Services are composed and deployed to achieve business goals through the interoperation among internal and external services. Most of those specifications have become or are in the process of becoming standards. Examples of these specifications are BPEL, WSCI,

X. Franch and D. Port (Eds.): ICCBSS 2005, LNCS 3412, pp. 25 – 35, 2005.

WS-Choreography, BPML, etc. There is no clear winner yet, but the availability of development tools and the industrial background will be some of the drivers to faster standard adoption.

BPDLs are interesting as Domain Specific Languages (DSL) for the specific domain of business process modelling and execution. They deal with services composition by abstracting the mechanisms of communication and the control flow. A DSL should be specific to a problem domain and provide a set of useful abstractions for working in that problem domain.

Other application domains where several DSLs have been developed, are industrial automation or graphical user interface development. For industrial automation, we have a DSL with the objective of standardising the development of control and monitoring applications for several industrial sectors such as metal processing lines or car assembly lines. This DSL is the IEC1131, which is an international standard. For graphical user interface development we have Struts. Struts define a specification language for specifying structure of views (web forms) and the interaction among them.

In recent years, there has been a growing interest in BPDL as a way to orchestrate the existing services to implement new business functionalities. But, why should we use these new BPDLs instead of using traditional programming languages that are also valid to build new applications based on existing services? This paper compares both methods to provide an explicit evidence on the advantages and disadvantages of each of those approaches to support business interoperability.

2 State of the Art on BPDL

Relevant organisations, such as W3C [1], OASIS [2], OMG [11], have recently formed groups to examine and contribute to the emerging standards in this area. W3C has formed the Web Services Choreography working group [3], OASIS has created the Business Process Execution Language Technical Committee [4] and the OMG has formed the Business Enterprise Integration Domain Task Force (BEI). Other organisations working on this subject are BPMI.org, [12] which promotes and develops the use of Business Process Management (BPM) through the establishment of standards, or WfMC, [13] that has 'Interoperability' as a core value. Figure 1 puts in context the different issues worked out by the standardisation initiatives.

The standardisation efforts in this area are trying to give a solution to issues such as how to specify the processes flow textually and graphically, how to model the relationship between several business entities, how to specify the interface of a web service implementing a process, how to use specific business protocols, …

The following list summarises the most relevant standards and emerging specifications:

– *Business Process Execution Language for Web Services* (BPEL) [5] from OASIS [2]: This is a standard that provides a XML based programming language to define a business process. This language allows to define a process that implements a new service gathering inputs from actors and invoking other available services. Once the service is defined, it can be also used by other processes. The only interface that BPEL supports is SOAP and XML messages. BPEL allows users to define an