Chapter 3.9
Application of the FUSION Approach for Tool Assisted Composition of Web Services in Cross Organisational Environments

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ABSTRACT

The research project FUSION aims at supporting collaboration and interconnection between enterprises with technologies that allow for the semantic fusion of heterogeneous service-oriented business applications. The resulting FUSION approach is an enterprise application integration (EAI) conceptual framework proposing a system architecture that supports the composition of business processes using semantically annotated Web services as building blocks. The approach has been validated in the frame of three collaborative commercial proof-of-concept pilots. The chapter provides an overview on the FUSION approach and summarises our integration experiences with the application of the FUSION approach and tools during the implementation of transnational career and human resource management services.

APPLICATION FOR A JOB INTRODUCTION

Small and medium enterprises (SMEs) cooperating with international partners in the Enlarged Europe need holistic Enterprise Applications Integration (EAI) solutions in order to operate effectively. The project FUSION (Business process fusion based on Semantically-enabled Service-oriented Business Applications, IST-027385) corresponded to this need: it aimed at supporting collaboration and interconnection between commercial enterprises by developing a framework and technologies that allow for the semantic fusion of heterogeneous service-oriented business applications.

FUSION results are based on Service Oriented Architectures (SOA). In SOA services are described using formal definitions such as WSDL. High level languages such as BPEL allow us to define the orchestration for the fine grained services exposed by different systems which then can be incorporated into workflows and business processes implemented in composite applications.

These standards however, can't overcome inconsistencies at the data and functional level. FUSION has addressed these interoperability issues by developing a conceptual framework, system architecture and a toolset that supports semantically enhanced business processes deploying of semantic Web service annotations.

FUSION has facilitated three trans-national business cases, typical examples of cross-organizational collaboration in the 'Enlarged Europe'. The first is the integration of transactions of a franchising firm (Greece, Poland, Romania, Bulgaria, Ukraine, Cyprus and FYROM); the second pilot deals with the collaboration of companies in a chain of schools of foreign languages and computing (Bulgaria, FYROM, Albania); the final example is the automation of international career and human resource management services (Hungary and Germany).

Since the authors of this chapter are practitioners (working at CAS Software and InfomatiX), this chapter is based on their experiences made in the process of applying the FUSION solution from the integrator's perspective. Accordingly, it intends to provide a proof of concept of the outcomes of the project FUSION, but does not follow an academic approach. After an overview of the FUSION approach and methodology and a short presentation of the FUSION business cases we will concentrate on our integration experiences gained within the InterJob pilot, a HR scenario between Hungary and Germany.

FUSION APPROACH AND METHODOLOGY OVERVIEW

Fusion Approach

The project FUSION has proposed a Global Architecture and a Reference Framework including an appropriate toolset that facilitate effective Enterprise Application Integration (EAI), by offering semi-automated search and discovery of services, dynamic data mediation and semantically-assisted manual and semi-automatic business process composition. FUSION has utilised Semantic Web Services by uplifting traditional Web Services to semantically annotated services and deploying a common reference conceptual model. FUSION has realised a conceptual architecture adopting widely accepted Web Service industry standards, in combination with the most promising Semantic Web Services standardization efforts, i.e. SA-WSDL, OWL-S and WSMO (Friesen, 2007).

The FUSION approach consists of the following phases:

1. **Web Service Enablement and System Installation:** expose the functionality required for implementation of the business processes as Web Services
2. **Ontology Engineering Phase:** extensions and instantiations to customise the FUSION EAI Ontology

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