Chapter 6
An Approach to Deploying SOA in Technological Information Integration:
A Case Study

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ABSTRACT

The growing need for the integrated usage of information from different sources has led to the requirement for information integration. This paper proposes a business-oriented SOA deployment approach, which is derived from a real world project, for the agencies of technology to provide value-added services through integrating the existing information resources. In the approach, information services, which are supposed to be identified in accordance with information category standard, are created and used in a resource-centric way, and the concept of business service is brought out for domain users to ease the usage of information services by modeling business context and IT information coherently. Based on business services, a domain-specific service mash-up language is provided to "program" information integration applications, and the corresponding run-time support is built to parse the applications and execute business services in mediation-style architecture. The system implementation and the application of our approach are also given.

INTRODUCTION

Today, there are large amounts of information resources which are provided by diverse providers and scattered over the Internet. The growing need for an integrated view of these resources from different sources has led to the requirement of information integration. In fact, we are just facing this fair requirement in a real word project of the Ministry of Science and Technology of China, named STIS project. The goal of STIS project is to spread existing technological information to more people and provide value-added and personalized services for the masses through integrating these information distributed on the internet. Four roles are involved in the project, namely information provider, information service agency, information user and service manager. The branch departments of the Ministry of Science and Technology of China act as information providers. They provide different kinds and quantity of information for free. The aimed information users are the masses who have various requirements for different types of technological information and their aggregation. Information service agency is responsible for aggregating adequate technological information provided by information providers to satisfy the personalized requirements of information users. Information users are the masses of different districts that may need different technological information according to their different requirements. Service manager is the organizer of the project who needs to know the status of information services and guarantee the service quality for the masses. So how to provide a simple way for the agencies to build diverse value-added information services for the masses and how to help the service manager monitors the provision and usage of information services are two main issues of the STIS project.

SOA is most popular integration architecture which can bring three benefits to the STIS project: exposing information as services in an easily consumable fashion; incremental deployment and maintenance of information services; reusing and composition of information services. Due to these benefits, introducing SOA to the STIS project can make heterogeneous and distributed technological information accessible through encapsulating them as information services and providing easy way to build value-added information services. At the same time, it has been generally agreed that SOA has the potential of raising the level of abstraction and bridging the business-IT gap (Zimmermann, 2006; Han, 2003), so that business-driven application development can be facilitated.

However, there are still many challenges when deploying SOA in the STIS project:

Firstly, how to identify information services, from what view and in what granularity, is the elementary issue for deploying SOA in the STIS project. The main business of the STIS project is about information resources integration, so the identification of information services needs to be resource-centric. However, most current SOA approaches focus on operational centric integration which still resembles RPC style integration with a large degree of central control (Schmidt, 2005).

The second challenge is how to model information service in order to satisfy the requirements of information service agencies and service managers. Information service agencies need to understand the usage of information service and service managers need to know the status of information service, so information service should be modeled in a multi-view and multi-dimension way, especially the business level information.

The third challenge is to provide an easy way for information service agency to build diverse value-added applications quickly through composing information services. This type of application requirement is always brought forward suddenly and run for a short period. Ferguson (2007) concludes this type of application as opportunistic application and states that opportunistic development will become more important on the web against traditional systematic development. However, considering the ability of the people

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