Chapter 1

Agile Service–Oriented E–Business in a Collaborative Networked Environment

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ABSTRACT

The goal of this chapter is to explore potential IT support for collaborative networked organizations encompassing both the service and network orientations of e-business environments. First, it is argued that the main reason for collaboration among organizations is the need for a competitive advantage, leading to the concept of Collaborative Networked Organization (CNO) proposed as an appropriate organizational structure supporting the collaboration of organizations. Then, the concept of Service-Oriented Virtual Organization Breeding Environment (SOVOBE) is presented as a means to support CNO creation and operations, while emphasizing both the network and service orientation of SOVOBEs. Next, a feedback loop encompassing adaptation, business processes, monitoring, and networks is proposed as a means to provide SOVOBE members with support for agile collaboration within CNOs. Finally, implementation concerns are discussed, with an introduction of the ErGo system supporting organizations willing to cooperate in an agile service-oriented manner in collaborative networked environments.

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INTRODUCTION

Currently two main trends may be observed in IT: cloud computing and service orientation. The purpose of cloud computing is the networked provision of functions which may be shared by a large set of organizations and/or individuals. In this approach, an information system located in the cloud should provide its customers with a large set of functions and let the customers tailor the system to their needs with the help of metadata. In a cloud computing approach, a single information system available in the cloud is available to many cloud clients, even if the information system may be highly customized to address the needs of each individual client. As an example, Salesforce.com (http://www.salesforce.com/) provides a set of functions related with customer relationship management (CRM) in the cloud. Depending on the chosen set of functions, two pricing options are available: /user/month or by data volume.

Service orientation is about the building of complex applications as the integration of smaller bricks potentially originating from various providers. Providers specialize themselves on narrow functions while consumers assemble various services in more complex applications, picking up the service implementation that matches best their requirements. It is an “open market, on-demand” approach: when a consumer needs a particular service to be performed, potentially many implementations may be already available. In a service orientation approach, many service providers are assumed to serve many service consumers: first, a service is usually available to many consumers and may be integrated to various complex applications. Second, a service consumer usually integrates many services to obtain the required functionality of the complex application. Finally in a service oriented approach, actors, i.e., service consumers and providers, are usually in a rather balanced power situation in which an actor is frequently both a service consumer and a service provider at the same time. As an example both UPS and FedEx, two global courier companies, provide as set of comparable services, these services being targeted to a large set of consumers worldwide. At a technical level, both UPS (United Parcel Service of America, 2011) and FedEx (FedEx, 2011) provide access to their services as a set of interfaces.

Works on both cloud computing and service orientation have lead to important results for the technical infrastructure underlying e-business. Customization and resource centralization are definitively two major features of cloud computing, while decentralization and specialization are two major features of service orientation. An interesting common feature of both cloud computing and service orientation is a new set of business models based on a “pay per use” approach, instead of the “pay per installation host” traditional approach.

While cloud computing and service orientation represent a solid base for the development of an IT infrastructure for e-business, IT support for the collaboration of organizations for e-business is still to be developed. BPEL, WS-* are focusing on the IT infrastructure layer and do not address the human element of collaboration of organizations. Even BPEL4People and WS-HumanTask, which aim at integrating tasks performed by humans in executable business process models, are only partially addressing the importance of humans in the collaboration among organizations.

Two main aspects of the collaboration among organizations are usually eluded, or at least are insufficiently supported: agility and social aspects. In this chapter, the word *agility* refers to the capabilities of a group of individuals and/or organizations to change the way they are collaborating, during the collaboration itself. Individuals are usually agile, adapting continuously their behavior to their context. Organizations are usually less agile than individuals. However support for agility for the collaboration of organizations is usually low.

Social aspects, i.e., relations among individuals and organizations, often play a major role in the collaboration among organizations, from the
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