Chapter XXXII
Supporting Inter-Business Collaboration via Contract Negotiation and Enactment

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ABSTRACT

The increasing complexity of products and services encourages more and more companies to form collaborative networks. As these companies are independent organizations there often is an issue of governance. We suggest a possible architecture for such a business network that proposes a frame contract as the principal means of coordination and describes how such a contract can be designed and enacted. Often frame contracts are written in natural language which makes it difficult to govern the network effectively and efficiently. We therefore introduce a structured method that can support the design of such an agreement and ensure that its terms are observed in business transactions. We interpret governance as the management of workflows between the organizations, hence the contract consists primarily of business process models. We propose a method to negotiate these models among the member organizations of the network and to enact them with the help of an interorganizational workflow system.

INTRODUCTION

Today there are two seemingly opposed trends in the collaboration between businesses. On the one hand, companies are forced to concentrate on their core competencies and to outsource all activities that lie outside the core. On the other hand customers demand that a supplier covers an increasing range of products and services. They want to buy a complete solution from only one supplier instead of buying bits and pieces from many. This latter point seems to suggest an increased amount of "insourcing." The solution to both is that companies have to engage in

closer collaborations, each concentrating on its area of expertise, but jointly offering a complete suite of related products and services that are well matched (one face to the customer). But this scenario represents an enormous challenge both in terms of organization and regarding the information system support.

Companies that want to engage in a closer collaboration, for example a value network, a virtual enterprise, or the like, bring into this collaboration not only their different organizational cultures but also different, often incompatible, information systems. A successful collaboration therefore requires the alignment or integration of both the business processes and the information systems to a certain degree. In some industries, such as the automotive industry, this can go as far as the customer forcing the suppliers to introduce the ERP system of the customer's choice (e.g., SAP). But on the whole it is more common that the organizations involved will strive for some kind of mutual adaptation of their business processes and information systems. In a very simple case this could be the introduction of a file transfer accompanied by suitable import and export functionalities and some organizational measures for providing and handling the new data. In more advanced cases it will imply substantial reorganization of business processes and changes to existing information systems and/or introduction of new ones.

Our goal is to support the set-up and operation of a business network. The first phase consists mainly of the design of a contract that can be used to coordinate the behavior of network actors. The design process is cooperative, that is, the actors negotiate this contract among themselves. Such negotiations can be either bilateral or multilateral but both types will contribute to creating a common contract that is binding for all parties involved. This negotiation process can also be called a co-design process. Negotiation is a social process that can be supported by a negotiation support system. This eliminates the need for

partners to meet face to face and contributes to a flexible set-up of the business network. It implies that the lead-times for setting up the network are relatively short and replacing members that have left and adding new ones can be done with a minimum of effort. These are crucial issues for a business network.

The second phase, operation, consists of enacting the behavior specified in the contract. Here the business logic concerning the coordination of actors is incorporated into the communication network. This phase "translates" from the business network to the communication network by managing the respective message exchange via the technical network and a coordination server. This approach was used to improve governance of an existing network that consisted of three partners: the headquarters of a retail chain in the home textile and home decoration industry, the shops of this chain and a third-party logistics provider. Although this is a minimal case of a business network it nevertheless provides fundamental insights into the workings of such networks. The remainder of the paper is structured as follows. The next section addresses coordination in organizational networks in general and in business networks in particular, which leads to the identification of a suitable class of contracts, that is behavior-based contracts. The following sections study the negotiation process and a language for formulating behavioral contracts. After that the enactment of the formalized contract is treated based on a communication network and a coordination server. The conclusion summarizes the major findings and presenting an outlook on future research.

COORDINATION IN A BUSINESS NETWORK

In a business network, organizations strive for the provision of complex products and services by coordinating their activities in an "intelligent" way.

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