



Chapter I

Environments for Virtual Enterprise Integration

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Abstract

The virtual enterprise model is an emerging approach in answer to the new requirements of the business environment, relying on dynamically-reconfigurable partnerships, with extremely high performances, strongly time-oriented while being highly focused on cost and quality, in permanent alignment with the market, and strongly supported by information and communication technology, dictating a paradigm face shift to the traditional organizational models. Networking and reconfiguration dynamics are the main characteristics of this model, requiring enabling and supporting environments, at bearable costs. Some existing technologies and Internet-based environments can partially support this organizational model, but the reconfiguration dynamics can only be assured by environments able to manage, control, and enable networking and dynamics in virtual enterprise creation/reconfiguration. Several environments are introduced in the chapter, and particular focus is given to the market of resources, an environment coping with the requirements of the virtual enterprise model.

Introduction

A main feature of the “New Economy” consists of an increased emphasis on inter-enterprise collaboration within networked supply chains (Euroma, 2002). Enterprises are no longer confined to their four walls, and the networked value chain concept is extending to several organizational approaches, with extremely high performances, strongly time-oriented while being highly focused on cost and quality, and permanently aligned with business opportunities, in answer to the new requirements of the business environment. Some of these approaches rely on dynamically-reconfigurable business networks, in permanent alignment with the market, and strongly supported by information and communication technology, dictating a paradigm face shift to the traditional organizational models. The leading organizational model introducing these characteristics is the virtual enterprise (VE) organizational model, characterized as a dynamic organizational model.

Virtual enterprise integration (VEI) is one of the most (if not the most) important requirements for making the virtual enterprises a real, competitive, and widely-implemented organizational and management concept.

Several VE definitions and similar models exist, and several taxonomies could be tried. Terminology varies frequently, and many expressions are used: collaborative networks, collaborative supply chains, networked enterprise, star alliances, extended enterprises, agile virtual enterprises, and so forth. These are all forms of virtual enterprises, in a broad sense. What makes the distinction is the duration and the links established or intended to establish, the legal formalities, scope, sharing of responsibilities and results, coordination, reconfiguration dynamics, and so forth. Concerning duration, such networks can be established on a temporary or a long-term basis. Temporary organizations seem to better fit the dynamics of the market and the typically short duration of business opportunities, while long-term organizations better cope with the trust-building process and the investment on common infrastructures and practices. However, we will not be concerned with the particularities of these labels, their overlapping, and differences in structure, organization, or operation.

Dynamic organizational models represent solutions for highly-customized products, small series, in highly competitive and changing environments where permanent business alignment is crucial. Partnership stability is low (sometimes very low), dependency between partners is very weak, and reconfiguration dynamics should be as high as possible, given the permanent monitoring of the structure to introduce the most competitive solution at every moment of the product life cycle (Cunha & Putnik, 2005b). Some forms of extended enterprises in stable mass production-oriented businesses, in long- to medium-sized series for traditional to semi-standardized products, are examples of more stable, sometimes long-term, organizations (Cunha & Putnik, 2005b).

Most definitions of virtual enterprise (VE) incorporate the idea of extended and collaborative outsourcing to suppliers and subcontractors, in order to achieve a competitive response to market demands (Webster, Sugden, & Tayles, 2004). As suggested by several authors (Browne & Zhang, 1999; Byrne, 1993; Camarinha-Matos & Afsarmanesh, 1999; Cunha, Putnik, & Ávila, 2000; Davidow & Malone, 1992; Preiss, Goldman, & Nagel, 1996), a VE consists of a network of independent enterprises (resources providers) with reconfiguration capability in useful time, permanently aligned with the market requirements, created to take profit from a specific market opportunity, and where each participant contributes with its

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