

# Chapter XXVI

## Business Networking: The Technological Infrastructure Support

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### ABSTRACT

The rapid evolution of information and communication technologies, the changing client's demands, and market conditions impelled enterprises to adapt their way of undertaking business, from traditional practices to e-business, and to participate in new forms of collaboration, such as networked organizations. In this context, standards, frameworks, technologies, and infrastructures supporting collaborative business, in a networked environment, become key factors in achieving environments with a desired high level of collaboration and inter- and intra-organization business processes alignment. The aim of this chapter is to underline the main issues, trends, and opportunities related to business integration from a technological perspective, analyzing and discussing the most relevant (existing and still under development) business integration reference models, frameworks, standards, technologies, and supporting infrastructures, and to briefly

present relevant research projects in the area of business networking. A special emphasis is made on frameworks such as ebXML and RosettaNet, and the importance of papiNet, BPLE4WS, and freebXML is underlined. Challenges regarding self-forming networked organizations are also advanced.

### INTRODUCTION

Current business trends and information and communication technology (ICT) developments determined enterprises to change their way of undertaking business, from vertically-integrated companies towards flexible collaborative networked organizations (CNOs). In this context, enterprise integration and interoperability emerge as key elements supporting real-time information flow and exchange, and intra- and interorganization business processes integration and alignment. CNOs represent a valuable and effective approach

to achieve strategic objectives in a time-response and cost-effective manner, with a high level of quality of delivery and customer's satisfaction, while generating value to stakeholders.

CNOs represent a collection of heterogeneous organizations with different competences, but symbiotic interests that join, efficiently combining the most suitable set of skills and resources (e.g., knowledge, capital, assets) for a period of time in order to achieve a common objective, and make use of ICT to coordinate, develop, and support their activities. The term CNO is used in this chapter, in a broad sense, for other emerging business collaborative forms with similar proprieties, such as virtual enterprises (VE), virtual organizations (VO), or extended enterprises.

The aim of this chapter is to underline the main issues, trends and opportunities related to business integration, from a technological perspective, analyzing and discussing the most relevant (existing and still under development) business integration reference models, frameworks, standards, technologies, and supporting infrastructures, and to briefly present relevant research projects in the area of business networking in Europe and the USA. A special emphasis is made on frameworks such as ebXML and Rosetta Net, and the importance of papiNet, BPLe4WS, and freebXML is underlined.

The main research questions which motivated the present work are:

- **Question 1:** Which are the main benefits for technology integration, in a business collaborative environment formed by heterogeneous organizations with different goals, strategies, and technologies, but symbiotic interests?
- **Question 2:** Which are the main (existing or still under development) standards, technologies, and frameworks supporting business integration and interoperability?
- **Question 3:** Which are the most relevant developments/research projects in the area of business networking?

The remains of this chapter are organized as follows. The following section presents the main issues (e.g., benefits), opportunities and trends related to business integration and interoperability, from a technological perspective. The most relevant reference models, standards, frameworks, technologies, and supporting infrastructures for enterprise integration will be then analyzed, exemplifying with research projects developed in EU and the USA. A special emphasis will be made on ebXML, BPLe4WS, papiNet, freebXML, and Rosetta Net. The last section addresses the needs for further research and concludes this chapter.

## NEEDS FOR ENTERPRISE INTEGRATION AND INTEROPERABILITY IN A COLLABORATIVE BUSINESS NETWORKED ENVIRONMENT

CNOs represent a powerful mechanism to achieve competitiveness and agility in today's turbulent market conditions by comprising various entities with complementary competences, but symbiotic interests. They include geographically-distributed organizations, having different cultures, working methods, or supporting technologies. Although CNO partners aim at achieving a common business goal and following a common business strategy, each member organization has its own goal and strategy, which makes CNO coordination and management assume a critical role.

CNO have several advantages, the most relevant ones being summarized in Camarinha-Matos and Afsarmanesh (2003): agility, complementary roles, achieving dimension, competitiveness, resource optimization, and innovation.

However, the formation, development, and operation of any CNO, and its success, depends on some base commonality among its members, such as common goals, common or interoperable ICT infrastructures and supporting services, real-time information sharing and flow among

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