Chapter XX

Virtual Enterprises and the Case of BIDSAVER

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ABSTRACT

In recent years, several European projects have been launched aiming to research the new paradigm of virtual enterprise. The projects VIVE, BIDSAVER, and ALIVE are only some of which have run under the auspices of the European Commission Programme for Information Society Technologies (IST). This chapter presents the BIDSAVER project that ran between 1999 and 2002, and aimed at delivering technologies and methodologies that support the creation and operation of virtual enterprises.

INTRODUCTION

According to Hongfei (2003), a virtual enterprise is “a network of several companies, which contribute their core competencies and share resources such as information, knowledge, and even market access in order to exploit fast-changing market opportunities” (Hongfei, 2003, p. 19). The relationship can be long or short term. Thus, virtual enterprises merge geographically dispersed companies so as to develop and commercialize products and, in general, to benefit from business opportunities that would otherwise be outside the technical and production capabilities of each individual participating company.

We briefly refer to research projects related to the theme of virtual enterprises:

• COVE (cooperation infrastructure for virtual enterprises) and electronic business, (COVE project). The project assesses research results and practices in virtual enterprises (VEs) and electronic business, leading to the design of common reference models, infrastructures, etc.
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- ICSS (integrated client–server system) used by a virtual enterprise in the building industry (COVE project). It is an Internet-based virtual roundtable which discusses and solve engineering problems in a legal way.
- MASSYVE (multiagent manufacturing scheduling systems in virtual enterprise), (COVE project). It is an application of the multiagent systems paradigm in order to agile scheduling in manufacturing systems.
- DRIVE (drug in virtual enterprise) (DRIVE project). It focuses on the improvement of quality and the reduction of costs in integrated healthcare delivery systems. The project provides a secure infrastructure to support drug processes of an integrated clinical and logistic drug supply chain for end-to-end service delivery.

As far as the BIDSAVER project is concerned, the objective is to develop a methodological, technological, and legal framework to support small and medium-sized enterprises (SMEs) by helping them increase their competitiveness and business potential through the constitution and operation of VEs. The latter are managed on the basis of competitiveness-oriented criteria and by means of adopting a new concept, namely, this of the business integrator.

The general phasing concept for the operational scenario has been derived from the results of the VIVE project (VIVE project, VIVE site); these results have provided the conceptual framework and scheme for the constitution and operation of a “generic” VE. BIDSAVER concentrates on specific industrial sectors and is aimed at supporting operational issues of specific industrial sectors, based on the sectors addressed in the pilots included in the project. Furthermore, the methodology generalization in BIDSAVER addresses the methods for developing models dedicated to new specific sectors, while it also covers the dynamic aspects and nature of a VE, in terms of supporting the selection of optimized partners’ sets through Internet-based search, developed and validated through two pilot showcases: one in the microsatellite area and one in the mechanical engineering area.

In the rest of this chapter, we first start with a general description of the project, followed by a description of the project scenarios and actors. In the third section, an operational scenario is presented, and in the fourth section the operation phases of a VE according to project results. The fifth section copes with integration issues, the sixth with the proposed architecture, while the seventh and eighth sections present the BIDSAVER prototype and the main results. Finally, in the ninth section, conclusions are given that take into account the evolution and the results of the project.

DESCRIPTION OF WORK

BIDSAVER has delivered technologies and methodologies for the creation and operation of VEs among SMEs in different business sectors. The project was organized in the following logical steps:

- Definition of market-based requirements on VEs — this was conducted using a bottom-up approach, starting from the space satellites and the mechanical equipment market sectors, and from two VE types, the value-network-oriented and the supply-chain-based VE.
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