Standardization in Enterprise Inter- and Intraorganizational Integration

K. Kosanke, CIMOSA Association e.V., Germany

ABSTRACT

The worldwide collaboration and cooperation of enterprises of all sizes have increased the need for interoperability standards, especially for businesses in global environments. Such standards are concerned with the communication aspects of information and communication technology (ICT), such as protocols, safety, and security, as well as the syntax and semantics of the communication content. Sender and receiver must be able to trust both the communication and the validity of its content. Both parties have to have the same understanding of the meaning of the exchanged information. Unfortunately, the standards are developed independently by different standards organizations using incompatible and inconsistent terminology, thereby hampering significantly the deployment of existing standards and the development of still missing ones. The paper presents existing standards in the area of enterprise inter- and intraorganizational integration and identifies shortcomings in the current standards, especially problems in the area of terminology.

Keywords: business engineering; business management; business process modeling; enterprise engineering; enterprise integration; standardization; terminology

INTRODUCTION

Management of enterprise operations is concerned with both the enterprise internal affairs and, even more importantly, the many relations with the different environments in which the enterprise operates. With the emphasis shifting to global markets, enterprises become even more complex systems and are depending on the availability of inter- and intraorganizational information and knowledge. In addition, the focus on core competencies has intensified the need for inter-enterprise cooperation and has led to the advent of new organization paradigms comprising concepts like supply chains, extended and virtual enterprises, and so forth.

Creating such organizations by identifying and evaluating contributing partners is a task that has to be based on rather detailed knowledge about the competencies and capabilities of all partners involved and their potential for successful interoperation. In addition, exception handling during the operational and discontinuation phases will benefit from this knowledge-based decision support. This, in turn, has further increased the need for relevant
information, especially the integration and use of information coming from different organizations involved in cooperative endeavors. Business-related communication within and between enterprises will play an ever-increasing role.

The information exchanged in such communication is the basis for decisions to be made on all levels of the organization and by people of different organizational positions using different jargons and terminology. Therefore, the communication and the contained information have to be based on standards that define not only communication protocols and syntax, but also the semantics of the information itself. Only than can a common understanding among the parties involved be assured.

Several initiatives have been sponsored by the EU and the US to increase international consensus in the area of inter- and intraorganizational integration (Kosanke & Nell, 1997; Kosanke et al., 2002; Petrie, 1992).

**IMPACT OF STANDARDS ON ENTERPRISE ENGINEERING AND INTEGRATION**

The challenges in decision support concern the identification of relevant information, easy access across organizational boundaries, and its intelligent use. Building and maintaining the enterprise knowledge base and enabling its efficient exploitation for decision support are major tasks of enterprise engineering, provided the information is commonly understood and easily available. Standards-based business process modeling will play an important role in creating the knowledge base and in using it for enterprise engineering and integration, organizational interoperation, and decision support on all levels of the enterprise operation.

Such models are capable of capturing all the information and knowledge relevant for the cooperation. The processes represent the behavior of the particular part of the operation, and their activities identify the required and produced information as function, control, and resource inputs and outputs. These inputs and outputs represent all the relevant knowledge needed and produced by the particular activities.

Since-business processes may be defined for any type of enterprise operation, including management-oriented activities, the process models will identify and capture all relevant enterprise knowledge and thereby provide the model-based knowledge base of the enterprise.

Process-oriented enterprise engineering and integration will be a significant contributor to the needed technology, provided it can become an easy-to-use and commonly accepted decision-support tool for the new types of enterprise organizations identified previously.

Standardization has to play an important role in this field. Only if a common representation of process models is available and accepted globally by the industry will the exchange of models and their interoperability become common practice, and only then will decision support for creation, operation, and discontinuation for the new types of enterprise organization become a reality.

The use of enterprise inter- and intraorganization integration technology and its ICT support has been hampered, among others, by a plethora of seemingly conflicting terminology. Contributing to these inconsistencies is the fact that relevant standards are not developed in a monolithic approach but rather independently and by different groups and even within different standard organizations. This terminology barrier inhibits, or at least delays, the use of relevant methods and tools in the industry, especially in small- to medium-sized enterprises (SMEs).

**STANDARDS: STATE OF THE ART**

The international organizations ISO, IEC, and CEN on the European level have produced a starting set of relevant standards. Industry-wide consortia also are involved in the creation of industry standards.

In ISO, IEC, and CEN, the work is progressing in joint projects that will lead to additional international standards for business pro-
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