Chapter 3
Analysis of Interoperability of e-Business Documents

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ABSTRACT

The purpose of this chapter is to provide insight into factors that influence the development of electronic business documents and their exchange. In particular, the chapter addresses the issue of achieving interoperability between partners involved in electronic communications. It gives an overview of problems that occur at each level of interoperability and suggests ways to resolve them in accordance with current trends. The chapter also contains a projection of future developments in the field including the use of ontologies in business documents.

INTRODUCTION

Most organizations today use a variety of applicative systems where data are stored in many different formats. It should be borne in mind that e-Business documents do not only refer to files stored in PDF or similar formats, but also include all messages that are shared between business partners. Constant changes in the business environment stimulate the restructuring of the organization as a result of cost reductions or mergers with other organizations. Integrating products from different manufacturers and on different platforms is a complex and expensive process since the problems of interactions between different systems need to be solved in the process. Interoperability is a very dynamic area that is increasingly relying on Internet technologies. Over the last few years a series of norms, standards and guidelines have been released with the aim to provide interconnection or improve the already used method of communication. Data can be stored under different operating systems and in different types of files, or in different da-
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tabases. Understanding the interoperability of an e-Business document is critical because it directly affects its structure and syntax.

This chapter describes e-Business documents and their exchange from the interoperability point of view. It addresses issues and challenges that arise due to the presence of different operating systems, coding and communication standards required by legal regulations. E-Business documents are described with respect to the level of interoperability since each level implies specific tags and data. These data are becoming an integral part of e-Business documents. The aim of presenting e-Business documents from this perspective is to show the complexity of the area and provide an overview of current standards and technologies.

Real-world interoperability problems are discussed along with an overview of ways to deal with them. In this chapter particular attention is paid to the semantic and technical level of interoperability because they significantly influence document structure and content. Although delimiter-based standards are widely adopted and in use today, the focus of the chapter is on XML-based standards. This can be justified by the simple reason that it is a technology which is obsolete and is used because of considerable investments into it as well as due to the fact that in most cases it is fulfilling its purpose (Fox, 2006). Over the last decade no significant delimiter-based standard has been released, while at the same time tenths of standards based on XML have been issued. Most of delimiter-based standards have their XML versions. The use of many different standards requires conversion between documents. The basic problems that occur in that respect are presented along with guidelines for their resolution.

Taking into consideration the complexity of the e-Business documents area, the final section of the chapter is dedicated to small and medium-sized enterprises and the ways they are engaged in e-Business by outsourcing part of their business operations to service providers.

INTEROPERABILITY
ISSUES IN E-BUSINESS
DOCUMENTS EXCHANGE

A certain degree of alignment between business processes is required to enable businesses to communicate electronically. Interoperability is the central point in the establishment of e-Business. The aim of interoperability is to enable information to be presented consistently between business systems regardless of the technology, applicative programming system (the utility system) or platform used. A focus on increased interoperability can yield numerous benefits for companies. It allows a larger number of partners and customers to be served by high quality services, which results in higher profit. Achieving a critical mass in the use of IT solutions cuts overall costs. The emphasis on interoperability issues increases the agility of enterprises so that the company can better respond to customer needs. It also leads to increased productivity by raising the efficiency and effectiveness of processes and allowing the management and staff to spend more time on core tasks.

Interoperability means the ability of information and communication technology (ICT) systems and of the business processes they support to exchange data and to enable the sharing of information and knowledge. (IDABC, 2008)

To successfully achieve interoperability it is necessary to define a set of norms and guidelines that apply to a specific interaction. The more members accept the same set of standards, the fewer problems arising from lack of interoperability are to be expected.

Particular business areas are covered by e-Business frameworks. E-Business frameworks are high-level standards that specify business documents, business processes and messaging. E-Business frameworks are usually limitedly open and have been mostly standardized in formal organizations. A comparison of several XML-based e-Business frameworks is proposed by Nurmilaakso.