Chapter 3.6

Enterprise Information Systems and B2B E–Commerce:
The Significance of XML

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ABSTRACT

Although the overall investment in information technology (IT) decreased during the first few years of the 21st century, B2B e-commerce continued to expand at a rapid rate (Lim & Wen, 2002). The expansion of B2B e-commerce has been based to a large extent on accounting and enterprise-wide information systems (EISs) that permit electronic data transmission and execution of transactions in an effective and efficient manner. Since B2B e-commerce is Internet based, the EISs required to support B2B e-commerce must be Internet capable. The primary language of the Internet, Hyper-text Mark-up Language (HTML), is not well-suited for transmitting data and executing transactions. Consequently, Extensible Mark-up Language (XML) was developed to facilitate a wide range of electronic information exchange applications, including many applications related to B2B e-commerce. XML also allows legacy data to be accessed through the Internet. As initially conceived, XML had a number of constraints, particularly in the area of data integrity and security; however, these constraints are being overcome. This article discusses the objectives of using XML in B2B e-commerce, reviews the technical structure of XML, and discusses ways that data integrity can be maintained and security enhanced while engaging in B2B e-commerce.

INTRODUCTION

The rapid growth of B2B e-commerce has been facilitated by accounting and enterprise-wide information systems (EISs) that permit electronic data transmission and transaction execution in a rapid and effective manner. Because B2B e-commerce is Internet based, the EISs required to support B2B e-commerce must be Internet capable. Extensible Mark-up Language (XML) was developed to support a variety of Internet based data transmission applications, including many applications in B2B e-commerce. XML has a number of constraints, particularly in the

area of data integrity and security; however, these constraints are being overcome. This article discusses the objectives of using XML in B2B e-commerce, reviews the technical structure of XML, and discusses ways that data integrity can be maintained and security enhanced while engaging in B2B e-commerce.

OVERVIEW OF B2B E-COMMERCE

B2B e-commerce is defined as the electronic transmission of data and the execution of transactions between business entities, or parts of business entities, using the Internet or privately owned computer networks. B2B e-commerce necessitates an ability to transmit information between computer systems located in different places. Flanagan (1997) notes that B2B e-commerce includes various types of electronic communications between customers, suppliers, trading partners, and other related parties. In many ways, B2B e-commerce is a bridge between the publicly based Internet and various privately owned intranets. McCarthy (1997) argues that while the Internet belongs to everyone, intranets belong to specific organizations that construct private, secure networks using Internet protocols. The integration of private intranets with the Internet can be an important feature of a business entity's strategy, product delivery system, and customer support system. In effect, B2B e-commerce is a distributed computer-processing environment that links various entities. It is a virtual network within the Internet, one with security walls that prevent it from being infiltrated. The growth of B2B e-commerce has important implications for how companies conduct their businesses, and it has the potential to dramatically reduce the cost structure in many industries (Lim & Wen, 2002).

B2B e-commerce improves business efficiency by increasing the rate of data transmission and reducing errors. There is usually no need to re-enter data from paper documents; consequently clerical errors are reduced or eliminated. There is also less need for human involvement in order taking and accounts processing. At the same time, it must be recognized that if B2B e-commerce is to continue to expand there must be a common language to transmit information between different computer systems. HTML is not suited for this task because it can define only the format of data, not its meaning. XML was developed to address this drawback. All of the major hardware and software vendors, including IBM, Microsoft, Sun, and Oracle support XML and are developing applications based upon it (Lim & Wen, 2002).

BACKGROUND OF XML

XML was introduced in 1996 by the World Wide Web Consortium (W3C) (Bos, 1999; Bray et al., 2000). The creators of XML were: Jon Bosak, Chief Engineer of Sun Microsystem; Tim Bray, Textuality and Netscape; and C.M. Sperberg-McQueen, University of Illinois at Champaign-Urbana. The purpose of creating XML was to establish an Internet version of Standard Generalized Markup Language (SGML) (Markoff, 2000). The overall objective of XML is to allow organizations to create less expensive, more efficient and more maintainable information systems that can interact with systems external to the primary entity (Webber & Dutton, 2000).

Markup Languages

Markup languages have been widely used in Internet applications because they facilitate communication between different computer systems. In general, a markup language identifies the structure existing in a document (Walsh, 1998). There are three primary markup languages: SGML (Standard Generalized Markup Language); HTML (Hypertext Markup Language); and XML (Extensible Markup Language). In effect, SGML

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