



Chapter XIII

Business-to-Business Electronic Commerce: Electronic Tendering

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While there are many proposals to automate the buying and selling process, there has been no actual attempt to automate the tendering process (sealed auction). This chapter contributes toward the steps to move in this direction. In this chapter, the benefits of an on-line tendering system are clarified, the tendering process is analyzed, the current attempts are surveyed, the competency of EDI and on-line auctions approach is criticized, and a framework solution is proposed.

INTRODUCTION

The number of businesses and individuals through the world who are discovering and exploring the Internet is growing dramatically. The Internet is a cheap, open, distributed, and easy-to-use environment which provides an easy way to set up shop and conduct commerce at any place in the world (Lim et al., 1998).

Technology development represents a powerful driving force for the establishment of new methods of managing and organizing public procurement processes. Future development will make it possible to automate the tender process (Blomberg and Lennartsson, 1997) (Slone, 1992). Electronic tendering may contribute to increase efficiency and effectiveness of the procurement process in terms of costs, quality, performance, and time for both buyers and sellers. The sellers' efficiency and effectiveness will be increased by applying electronic tendering techniques in terms of cuts to manpower costs, reduced administrative and transaction costs, improvements in tender quality, strengthened tender preparation capacity, simplified public market access, competitiveness, and high integration capability with internal and external systems (Blomberg and Lennartsson, 1997).

The use of electronic tendering reduces the processing time and cost of RFQ (request for quotes) (Madden and Shein, 1998) (Shein, 1998). It allows analyzing the company's

purchase activities, selecting the sellers more competitively, and reducing the time to get the best price. Since the Internet is open for all, buyers can order at any time and reach out to an array of qualified small and large businesses (Madden and Shein, 1998) (Shein, 1998).

The development of an electronic infrastructure will create excellent opportunities for buyers to establish closer cooperation in many areas of great importance to them, such as coordinate tendering in order to increase their purchasing power and to minimize distribution and stock-keeping costs, exchange of supplier information, procurement plans, tender enquiry samples and technical specifications, legal and procedural aspects, etc. This cooperation between buyers may take place at any level in the community: locally, regionally, nationally, and even globally (Blomberg and Lennartsson, 1997).

This chapter is organized as following. Section 2 reviews the current efforts to facilitate on-line tendering. Section 3 analyzes the tendering process and reviews current related protocols. Section 4 discusses the related problems and points out what are still missing in electronic tendering. Section 5 discusses our framework for automating the tendering process, and Section 6 concludes the chapter.

ELECTRONIC TENDERING

Automating the tender process is a major goal for many international and governmental bodies. Many countries such as the USA, Canada, Europe, Australia, Mexico, etc. are adopting legislation to contend with some technological issues, mainly bonding and signatures. This will facilitate business on the Internet. Some examples are:

In the USA, General Electric Information Services Inc. produced Trading Process Network (TPN) (*Inc.*, 1999). TPN lets buyers prepare bids, select suppliers, and post orders to its Web site. CommerceOne Inc. (*Inc.*, 1999b) allows the employees to access the Seller's Web catalogs, select items, and order them. Gateway (1999) is a mediator matching sellers and buyers. Suppliers and buyers go to the Business Gateway Web site (www.businessgateway.com) and fill out forms indicating what they have to buy or sell plus other information. Business Gateway then matches buyers and sellers (Madden and Shein, 1998). Ariba Technologies Inc. (*Inc.*, 1999a) produces the Operating Resource Management System ORMS. ORMS lets a user open e-catalog for specific companies, create a purchase request, then it sends automatically for sign-off approval. ORMS lets a user create business rules that define the workflow and routing of the requests. SmartProcurement is developed by the National Institute for Standards and Technology and Enterprise Integration Technologies as a prototype to automate the tender process, mainly the RFQ (*Procurement*, 1996; *Technology*, 1996; Cutkosky et al., 1993). The system is initiated by RFQ, then a buyer agent acquires a list of registered vender agents for that item. Finally the buyer agent collects the bids submitted before the deadline and selects the best bid (O'Leary et al., 1997). The SmartProcurement system uses two evolving computer technologies: the World Wide Web (WWW) and software agents.

The Mexican Government started a plan for on-line tendering, in a project called Compranet (Noriega, 1997; *Compranet*, 1999). The main aim is to incorporate IT into small and medium companies. The Mexican Government regulates the procurement process in such a way that most acquisitions are made through a form of sealed bid auction. The call for tenders is announced via the Internet through Compranet. It is possible to submit tenders by Internet (Noriega, 1997).

SIMAP (*Projects*, 1999) is a European project whose objective is to develop the information systems infrastructure needed to support the delivery of an effective public

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