



Chapter 24

Security and Trust of Online Auction Systems in E-Commerce

P.W. Lei, C.R. Chatwin, and R.C.D. Young
University of Sussex, UK

L.K. Lo
University of Nottingham, UK

M.I. Heywood and N. Zincir-Heywood
Dalhousie University, Canada

ABSTRACT

Internet trading is an irresistible business activity, which nevertheless is constrained by unresolved security issues. With e-tailers like amazon.com having a storefront for auction and the two largest traditional auction houses in the world, Christie's and Sotheby's, operating online auctions too, online auction systems are now playing an increasingly important role in e-commerce. However, online auction fraud has been reported in several high profile cases; this chapter offers some solutions for problems identified in online auction trading; which is largely unregulated and in which small auction sites have very little security. A secure architecture for online auction systems will greatly reduce the problems. The discussion herein is restricted to those factors that are deemed critical for ensuring that consumers gain the confidence required to participate in online auctions, and hence a broader spectrum of businesses are able to invest in integrating online auction systems into their commercial operations.

INTRODUCTION

What are Auctions?

An auction is a market with an explicit set of rules determining resource allocation and prices on the basis of bids from market participants (McAfee & McMillan, 1987). Generally speaking, an auction is the standard means for performing an aggregation of supply and

demand in the marketplace to effectively establish a price for a product or service. It establishes prices according to participants' bids for buying and selling commodities, and the commodities are sold to the highest bidder. Simply stated, an auction is a method for allocating scarce goods—a method that is based upon competition among the participants. It is the purest of markets: a seller wishes to obtain as much money as possible for the commodity offered, and a buyer wants to pay as little as necessary for the same commodity. Traditionally, there are three role players in the auction: sellers, buyers, and auctioneers. An auction offers the advantage of simplicity in determining market-based prices. It is efficient in the sense that an auction usually ensures that resources accrue to those who value them most highly and ensures also that sellers receive the collective assessment of the value.

Current Electronic Auctions Hosted on the World Wide Web

As indicated above, traditional auctions are held at physical auction sites at which the majority of participants need to actually attend in order to contribute. Information technology however is changing this. In particular, the Internet is changing the way business-to-consumer and business-to-business interactions are expedited. The Internet has the potential to provide a Virtual Marketplace in which the entire global business may participate. It has dramatically changed how people sell and buy goods. The very nature of the Internet as an auction medium expands the scope of potential participants beyond those typically able to physically attend. Electronic auctions have existed for several years. Examples include the auctioning of pigs in Taiwan and Singapore and the auctioning of flowers in Holland, which was computerized in 1995 (Turban, 1997), but these were only for local area networks (i.e., subject to the same physical constraints as a classical auction market).

Auctions on the Internet have been available since 1995, one of the most successful online auctions is eBay's Auction Web (www.ebay.com), which purports to have about 29.7 million registered users. It enables trade on a local, national, and international basis, there are six million items listed for sale daily on eBay across thousands of categories. Bidnask.com (www.bidnask.com) is an online retail service that operates an interactive, real time, electronic "Trading Floor" for the purchase and sale of financial instruments with an initial focus on equities. Yahoo! Auction (auctions.yahoo.com) is a further site rapidly gaining popularity.

In all these cases, the Internet auction acts as the collection of rules governing the exchange of goods. These include those legislated, the pricing model used, the bidding rules, and security requirements. Businesses communicate with customers and partners through many channels, but the Internet is one of the newest and, for many purposes the best business communication channel. It is fast, reasonably reliable, inexpensive, and universally accessible. The Internet provides an infrastructure for executing auctions much cheaper and faster. Consumer interest in online auctions is growing.

Existing Problems

Online auctions have become very popular. In the U.S., there are 35.6 million people participating in online auctions. Most auctions are open to the public. Whatever you want, you can find. Given the rapid success of the virtual market, no de facto standards exist as to the bidding rules and policies governing the online auction business. Although online auctions have been developing for many years, there are still two major problems: trustworthy transactions, and security and safety, summarized as follows:

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