

Business negotiations on the Internet

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Abstract

In this paper we explain the commonality in the structure of different price negotiation mechanisms such as fixed price sales, various forms of auctions, and brokerages. We then discuss the various kinds of auctions. Next we describe the steps of an auction process and the functionality required in each step. Finally, we briefly present the design elements of a generic auction application.

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Introduction:

Business activity on the Internet is currently limited to publicizing the business opportunity and catalog based sales, but it will rapidly expand to include the negotiations conducted to settle the price of the goods or commodities being traded. These negotiations are currently conducted by human intermediaries through various forms of auctions, bidding systems for awarding contracts, and brokerages. The role of the intermediaries can now be performed by Internet trading applications at a fraction of the cost. Trading on the Internet allows a business to reach a larger number of potential customers and suppliers in a shorter time and a lower cost than possible by other modes of communication, and to settle business transactions with lower cost overhead in a shorter time. Hence the emergence of Internet based trading applications is imminent. Lee discusses the factors behind the success of Internet auction of second hand automobiles in Japan [1] supporting our belief.

Auctioned or brokered sales are the norm in business world for negotiating trades of large monetary value. But consumer sales and small scale purchases have used the fixed price mode, perhaps because of the high overhead cost of using the auction or brokerage method. The new economics of the Internet will make auctions popular in consumer and small business transactions also. Lee and Clark present economic forces underlying this transition [2]. Several success stories about Internet auctions are cited by Turban [3].

Auctions are just one form of business negotiations. Other examples are competitive bids for procurement, brokerages/exchanges/cartels, and two party negotiations. While these negotiation techniques appear to be fundamentally different from each other, from the business process modeling or work flow point of view, they can be strikingly similar. In the first section of this paper we model each of these processes in a way that brings out this similarity. Auctions can be of many different kinds: Dutch auctions, regular open cry auctions, sealed bid auctions, etc. Each type of auction can further have many variations such as reserve prices, information available to the bidders, tie breaking rules etc. We present a taxonomy for auctions.

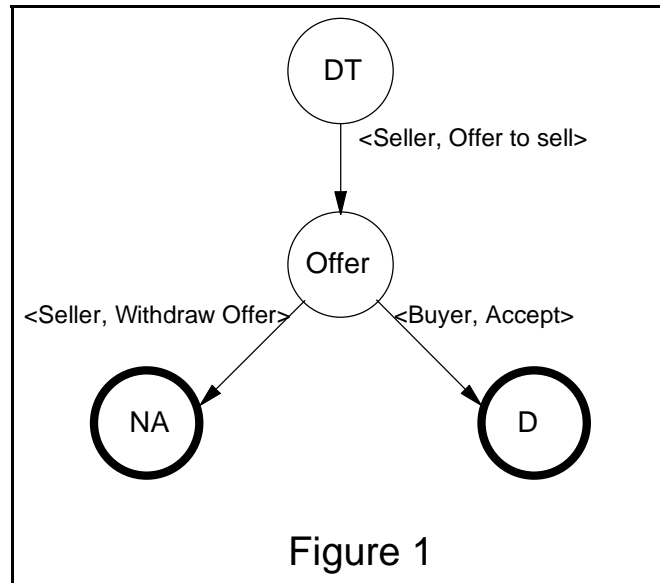
The auction types discussed above are actually practiced in different real world situations to optimize different business objectives such as best price, guaranteed sale, minimize collusion possibility, etc. Ralph Cassady presents an extensive survey of auction practices around the world [4]. Game theoretic treatment of the different kinds of auctions can be found in [5,6,7], while some experimental results are reported in [8]. In this paper we describe the design of an Internet auction system that can support most of the auction types and other business negotiation models.

Models of Business Negotiations:

The heart of negotiations is a “**negotiable deal**” which is modified by the participants in the negotiations with the aim of reaching a “**final deal**” or “**trade**”. Consequently the five key elements of a negotiation process are:

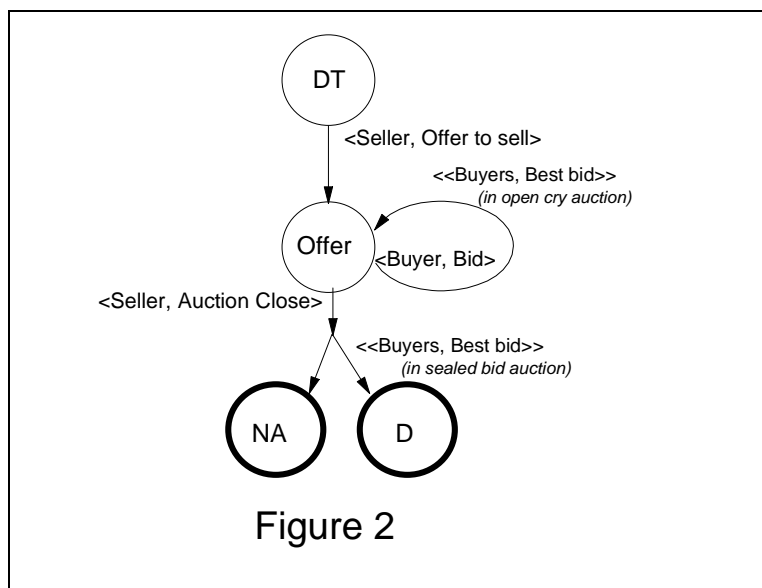
1. A deal which can be in various states such as negotiable, final offer from buyer or seller, or a settled trade.
2. Participants such as buyers, sellers, auctioneers, brokers, etc.
3. Messages sent by the participants to modify the deal. Examples of messages are bids and offers to buy or sell, and price changes.
4. Process flow describing how the state of the deal changes as a result of the messages sent by the participants.
5. Messages sent to the participants as the deal changes.

A negotiation can be modeled as a finite state machine (FSM). The states of the FSM are states of the deal. While ‘negotiable’ or ‘nonnegotiable’ are different states of the deal, different bid or asking prices do not create different states of the deal. The input alphabet of the FSM is the set of messages that can be possibly sent by the participants, expressed as a pair <participant, input-message> where participant is the sender of the message. The output alphabet of the FSM



is the power set of the set of messages sent to participants. These messages are expressed as a pair <<participants, output-message>> where participants is the subset of all participants that will receive the output-message (outbound messages are placed in double angular brackets to distinguish them from the inbound messages in subsequent figures). The process flow of the negotiation maps into the state transition rules of the FSM. Figure 1 describes a fixed price sale. The states DT, Offer, NA, and D, are deal template, offer to sell, negotiation aborted, and deal, respectively. The offer to sell message from a seller creates a offer which can either be accepted by a buyer to conclude the deal or can be withdrawn by the seller to abort the negotiation.

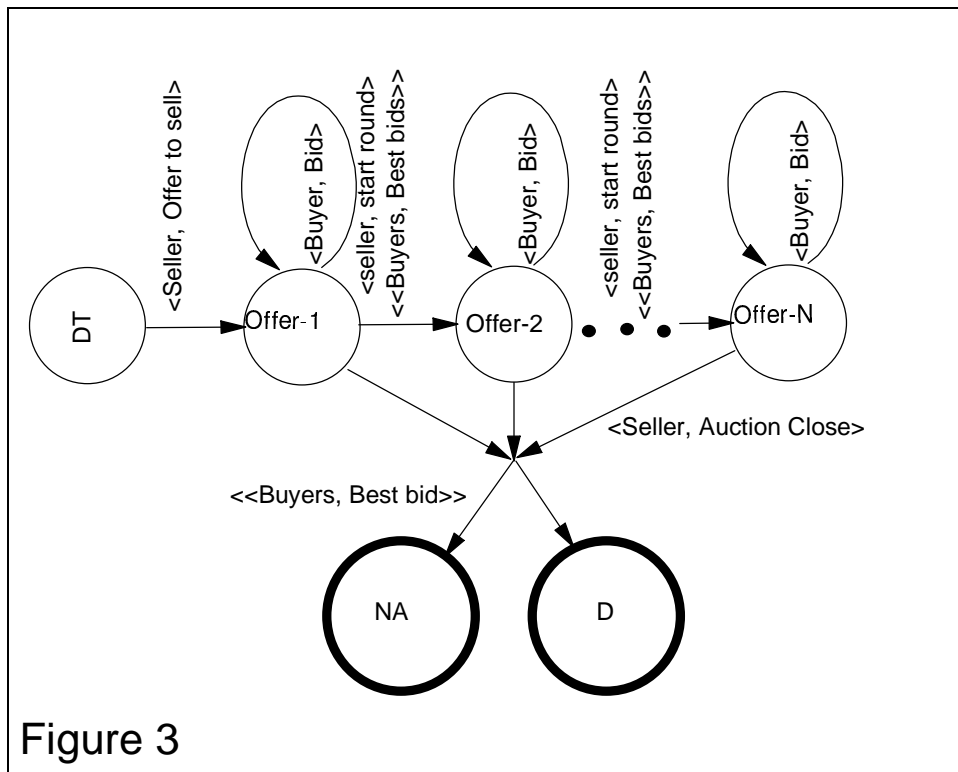
Figure 2 shows the negotiation process in a simple open cry or sealed bid auction. As in a fixed price sale, the seller starts by creating an offer to sell. However, unlike the fixed price sale model this offer does not contain a final sale piece. While the auction is in the offer state the



buyers can submit bids, which results in a transition back to the offer-state. In an open cry auction this transition creates an outbound message to all buyers which contains the current best bid while in a sealed bid auction no information is fed back. The negotiation process ends with the seller closing the auction at a time based on pre-agreed rules such as at a previously agreed time, or after a certain duration of inactivity, or a combination of the two. There is a deal if there is at least one bidder and the highest bid exceeds the reserve price if the bidder has specified one.

To keep the preceding and the following discussion simple, we have omitted the details like authenticating the buyers and sellers or taking deposits in various stages of the negotiations because these steps are common to all negotiation processes. We have also assumed that the seller is the auctioneer.

A multi-round sealed bid auction proceeds as above except that while the auction is in offer state, the seller publishes the highest bid at regular intervals which are declared in advance. At the end of each period the seller can either close the auction or initiate the next round of bids. The multi-round sealed bid auction process, with a limit on the maximum number of rounds, is illustrated in Figure 3. In a Dutch auction the seller states a sufficiently high initial starting price



at which he expects no buyers. The buyers bid is essentially a decision to accept the current price offered by the seller (assuming only one item is up for auction). This process is illustrated in Figure 4.

In the price negotiation models discussed so far, one can reverse the roles of buyers and sellers. The sealed bid single and multiple round auctions in that case result in the traditional

RFQ (request for quote) procurement process. The two party negotiation model shown in Figure 5 is essentially a hybrid of auctions and fixed price sales. It starts as an auction and procurement (RFQ) procurement model combination where either the buyer or seller can start a negotiable deal, the ND state in figure 5. The deal would contain both the sellers asking price and the buyers bid, and either party can modify their position. From this state either the buyer or seller can create his final offer, Offer-B and Offer-S respectively, similar to the transition to the offer state in figure 1. If the seller initiates the final offer, he can withdraw it or the buyer can accept it as in figure 1. If the buyer initiates the final offer he can withdraw it or the seller can accept it.

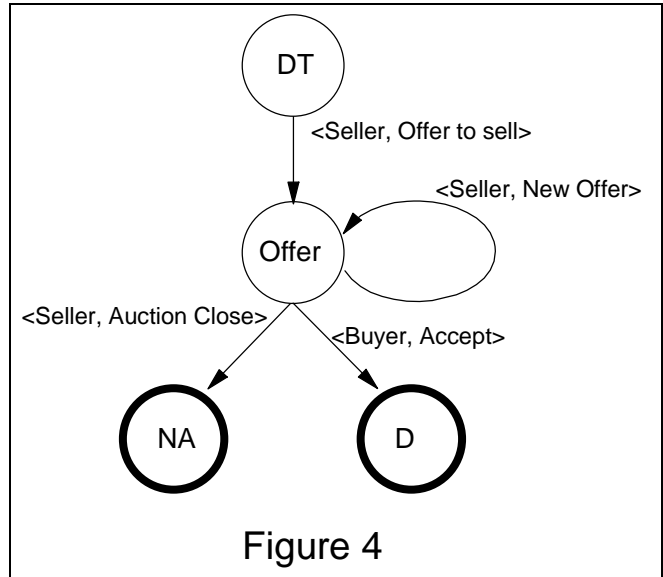


Figure 4

The transition from auctions to exchanges or brokerages is not an abrupt one. When selling multiple items, business deals are not necessarily the result at the end of the negotiation process. Instead, they occur continuously in response to bids or accept messages from the buyers. For example, if multiple items are being sold at a Dutch auction, instead of accepting the offer by the seller for buying one item, the buyers bid to purchase the number of items specified in the bid at the price currently offered by the seller. A business deal results from each bid from the buyer. Instead of two final states, NA and D, there is only one final state at the end of the auction. A Dutch auction for multiple items is shown in figure 6. The model for selling multiple items at a Dutch auction also degenerates to selling multiple items at fixed price when we disallow the seller to revise his price. The brokerage processes are similar to the auction process for multiple items with the appropriate extensions to support multiple buyers and multiple sellers. The process is not supposed to end because of continuous arrival of new buyers and sellers. Like auctions, brokerage processes or also of many different kinds.

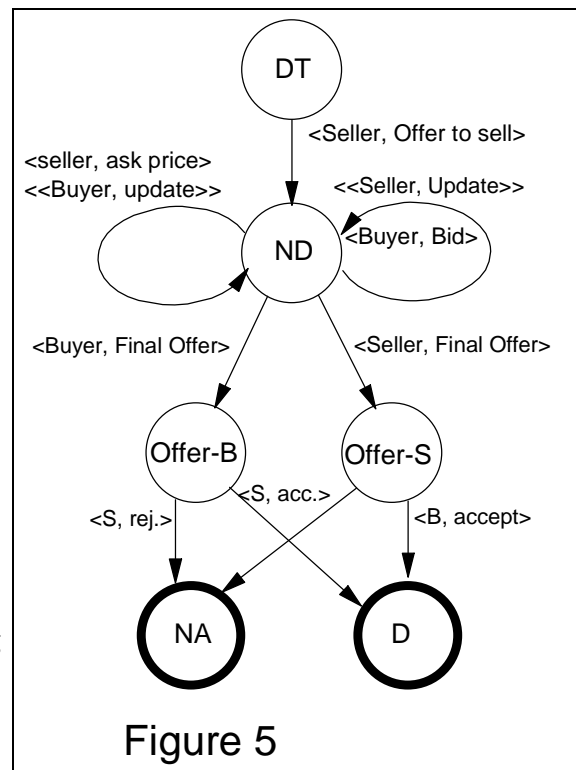


Figure 5

Classification of Auctions:

Auctions can be broadly classified according to the following three key attributes: Interaction

format, who controls the bids/offers and whether it is ascending bid or descending bid (Dutch) auction, policy for setting prices.

Interaction format

Open cry auctions take the public meeting approach. In this approach the response to each bid, for example, a higher counter-bid by another party, or the decision to close the auction, happens in a short time, sometimes in few seconds.. These auctions work in a situation where the prospective buyers can: 1) afford to participate in the auction at the same time; and 2) feel comfortable about making counter bids in a few seconds. Traditionally such auctions are conducted with all participants present at the same location such as meeting/auction room where inter-party communication is instantaneous. Remote participation by phone and through proxy (order bid) is limited. However, if such an auction is conducted over a network, say the Internet, the bids must be communicated to all participating bidders with sub-second latency.

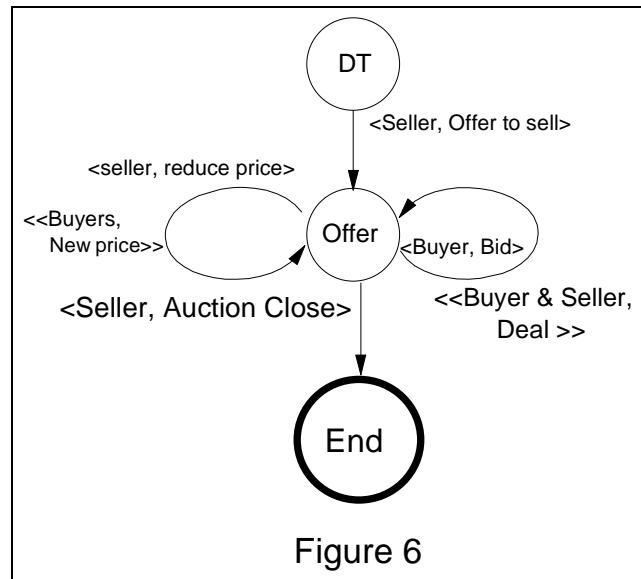


Figure 6

Sealed bid auctions are practiced when it is impractical for the bidders to prepare counter bids instantaneously. This could be because it takes time to prepare a counter bid, the prior bid information needed to prepare the counter bid such as the prior bid can not be disseminated to the other bidders instantaneously, or because the bidders are not available to participate in the auction at the same time. In single round sealed bid auction, all bidders submit their bids by a deadline, and the bids are evaluated at this deadline. In multiround sealed bid auctions, there is a deadline for each round of bids, and at that deadline either the auction is closed or a fresh round of bids is solicited by some new deadline.

Single round sealed bid auctions lack the competitive atmosphere (bidding frenzy) in open cry auctions which encourages the bidders to outbid their rivals. Multiple round sealed bid auctions rectify this situation somewhat but take too much time, sometimes months. An alternative to the above two is to use an electronic bulletin board approach. Information about the prior bids is published on the bulletin board, but new bids are not required in seconds. The bidders can be expected to monitor the bulletin board few times a day for a few days, and they have a chance to offer counter-bids to the existing highest bid. This approach alleviates the communication latency and simultaneous participation requirement of the open cry auction, but retain its competitive nature. This approach makes most sense for Internet based auctions, especially if bidders are from around the globe.

Control of Bids/Offers

In an auction, the initiator of the auction or auctioneer can either require the participants to submit bids or announce its own bids to see if there are participants willing to conduct trade at his bid price. When the participants provide the bids in open cry or bulletin board auction, each successive bid is higher than the previous one.

When the auctioneer puts up the bids, he can either start with a high bid, perhaps at which no bidder is willing to trade, and lower the bid gradually until he has sufficient bidders to clear his inventory. This is the Dutch auction in real time. Alternatively he can start at a low bid, low enough at which there are more buyers than his inventory, and increase his bid until the number of buyers willing to buy his merchandise matches his inventory.

Setting the trading price

Once the bidding phase is over, the bidders with the highest bids get the item being auctioned, but the price they pay could be the same as what they bid or lower. In *Discriminative Auction*, also known as *Yankee Auction*, the bidders pay their actual bid amounts. When the bidders are repeat customers of the seller, dissatisfaction among the bidders who have to pay a higher price compared to other bidders is sometimes of concern. This is addressed by allowing the bidders with winning bids to pay the price paid by the winning bidder with lowest bid. This latter policy is widely known in literature as *Dutch Auction*, but we will refer to it in rest of the paper as *Non discriminative Auction*, because the term *Dutch Auction* is also widely used to describe auctions where auctioneer starts with a high price and bids the price lower while buyers have the option of buying the items at any time at the current bid price. Non-discriminative auction is widely used by corporations to repurchase their shares (though it is referred to as Dutch auction in this context).

A variation of the non-discriminative auction called *Vickrey Auction* was proposed by 1996 economics Nobel laureate William Vickrey [9]. Here the winning bidder pays the price bid by the highest non winning bidder. This policy is stated to create a disincentive for speculative bidding and encourage the bidders to submit bids reflecting their true value for the item being auctioned. This policy is suggested for pricing of public utility services.

Additional policy variations

The preceding section provided a primary classification of auctions. The above auction methods are further fine tuned according to the policy decisions discussed next. Each of the following policy choices is applicable to several, if not all, auction methods described above.

Anonymity: Many factors go into deciding what information about bids should be made available to bidders before and after the closing of the auctions. In an open cry auction one could conceal the identity of the bidders or conceal the association between the bidders and the bids. In sealed bid auctions the identity of the bidders and/or their bids could be revealed to other bidders after the close of auction. Alternatively, only the winning bids and/or bidder's identity could be revealed.

When auctioning multiple items, the number of items being auctioned, and the number of items bid for in each bid could be kept secret until various stages in the auction. This is specially important for open cry auctions of multiple items because if the inventory being auctioned is known the lowest winning (successful or qualifying) bidder is known to all bidders and there will be little incentive for high bidders to increase their bids beyond that of the lowest successful bidder. In Dutch auctions also, if the bidders know that a large inventory exists, they will be reluctant to bid in anticipation of prices going down.

Restrictions on bid amount: In all auctions the seller can specify the minimum starting bid. When auctions of the same kind of item happen regularly, the minimum bid is usually some fraction (say 70%) of the lowest winning bids averaged over a specified number of preceding auctions. To speed up the bidding process minimum bid increments are often enforced. The bid increment is roughly proportional to the current bid, i.e., they are smaller for lower bids and larger at higher bids.

Rules for closing the auction: Open cry auctions can finish by a posted closing time. Alternatively the auctions could be kept open until new bids continue to arrive within some time interval of the preceding bid. This interval would be several minutes in an Internet auction and few seconds for auction being conducted in a meeting room. One could also choose to close the auction if either of the above two conditions is met or only when both conditions are met. Dutch auctions could close at a prespecified time, when all the inventory has been sold, when the price has fallen to a prespecified level, or at some combination of these three conditions.

Evaluation rules and breaking tied bids: All auctions will have some rule for evaluating bids. When an item is being sold in an auction, generally a higher bid would be better than a lower bid. But other factors such as terms of payment can factor in comparison of two bids. A bid requiring delivery of goods on a schedule convenient to the seller may be preferred over another bid that matches the first one in all respects but has a delivery schedule inconvenient to the seller. Advance payment or payment on delivery may call for a higher valuation of the bid compared to a bid where payment is due within 90 days of delivery.

If multiple bids tie at the same value and the available inventory can satisfy some but not all of the bids, tie breaking rules are required. Preference may be given to bids that are for larger quantity, and in case of two bids specifying the same quantity preference could be given to the bid that arrived earlier. If the seller maintains a history of its auctions, it can give preference to the bidder with whom he had better business dealings in the past.

Services provided to sellers and bidders: Reserve prices (hidden lower limit on price acceptable to seller) is one service that the auctioneer can provide to the seller. Other services may be credit check on the bidders, certify quality of the product, collect payment on behalf of the seller, etc. Order bid (bidding through auctioneer provided proxy) is an important service that the auctioneer can provide to the bidders. Alerting registered bidder to upcoming auction events of interest to them and arranging line of credits for them are examples of some other services.

Auction process:

An auction service comprises five basic activities, 1) initial buyer/seller registration, 2) setting up a particular auction event, 3) bidding, 4) evaluation of bids and closing the auction, and finally, 5) the trade settlement. The first step deals with the issues relating to authentication, exchange of cryptography keys, etc. The second step deals with describing the item being sold or acquired, setting up the rules of the auction, explaining the parameters for negotiation (price, delivery dates, options to purchase more or less, terms of payment, etc.). The bidding step implements the bid control rules of the auction, and for open cry auctions notifies the participants when new high bids are submitted. The fourth step implements the auction closing rules and notifies the winners and losers of the auction. The final step handles the payment to the seller, the transfer of goods to the buyer, and if the seller is not the auctioneer, payment of fees to the auctioneer.

The buyer/seller registration and trade settlement steps discussed above are common to all business negotiations and will not be discussed in this paper. Similarly many of the catalog creation tools available in the market can be used to develop the web pages that describe the item being auctioned. In this section we address the remaining steps of the auction process.

Creating auction announcement and rules:

Choosing the auction method: As discussed in section 2, there are many auction methods and within each method many policy variations. Good user interface tools are required to help the seller choose the type of auction and its variation which best optimizes objectives.

Scheduling the auction event: One of the crucial success factors for an auction service is to bring the maximum number of buyers interested in a commodity to the auction event of that commodity. Two simple means of furthering this goal are auctioning commodities of interest to a common buyer together, and to set up a regular schedule and publicizing it well in advance so that potential buyers can set aside time to participate in the auction. Tools should be provide to schedule the auctions of related things near each other. Popular auctions can be mixed with less popular ones to force people to be present in the less popular auctions. Online schedules should provide good search tools.

Alerting potential buyers: Potential buyers who have pre-registered with the auction service and have indicated interest their profile in the item being scheduled for auction should be alerted when an auction of interest to them is scheduled.

Security Considerations: Security mechanisms are needed to ensure that the site announcing the auction and its rules is not sabotaged by an outsider. This includes preventing unauthorized postings and alterations as well as preventing denial of service attacks. Cryptographic tools that prove that a particular auction notice was posted and accessible during a certain time period will be very useful in government auctions.

Restricted Access: The auction house policy and the instructions from the seller would dictate whether the auction is accessible to public at large, to the buyers/sellers registered with the auction services, or only to buyers registered to participate in the current auction.

The bidding process:

Notification: The key choice in bidding mechanism is that of the notification mechanism used to provide the latest information about the auction to the bidders. The choice ranges from connection held permanently by each bidder for the duration of the auction to refresh on client request. In the middle are various server push and client polling mechanisms.

Terms and Conditions: If the bidding process allows the buyers to request change in payment or shipping terms, these terms and conditions should be treated as part of the bid. The auction chart should display the offered terms and conditions along side the bids shown. Furthermore, when creating the product description, the seller should specify the range of terms and conditions acceptable to him and indicate how they are factored in bid evaluation.

Deposits with bids: Finally, a deposit may be required, or a bond may have to be posted before a bidder can participate in an auction. For deposits, existing Internet payment methods can be adopted. For posting a bond, the appropriate electronic commerce protocols need to be developed.

Security Considerations: During the bidding phase cryptographic tools are needed to ensure that a bid submitted is not tampered with, that it is not disclosed to other bidders in violation of the auction rules. In open cry auctions, spurious bids injected by the seller or auctioneer to prompt the highest bidder to further increase his bids, must be prevented by establishing a verifiable connection from every bid to a known bidder.

Retraction of Auction and Bids: During the bidding phase, under certain condition the seller may be allowed to stop or withdraw the auction or modify the rules. Similarly, under certain conditions the bidders should be allowed to withdraw or modify their bids.

Closing the auction:

Normally the auction would close according to the closing rules specified. At this time the winning bids can be treated as, and if needed translated to, traditional purchase orders. At the closing of the auction the following additional activities need to take place.

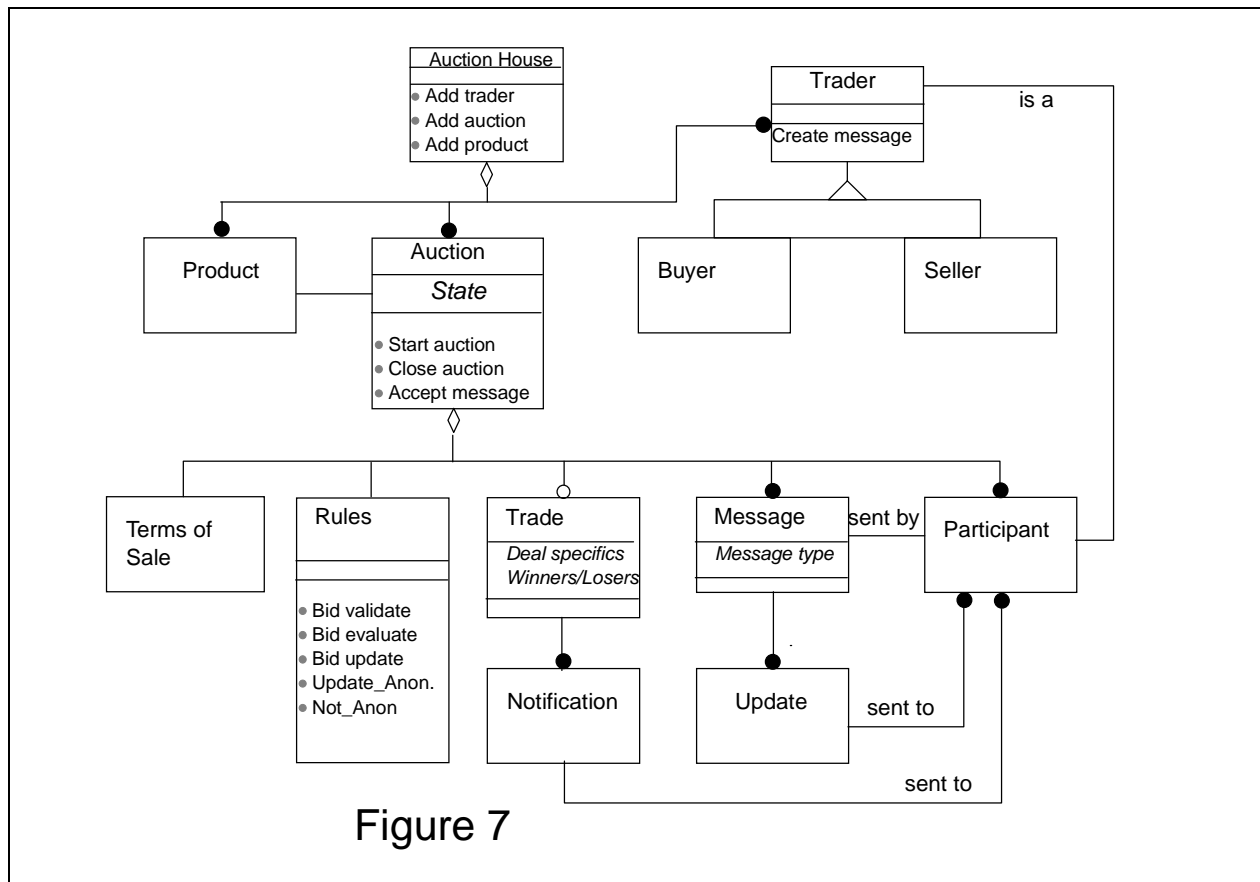
Notification: The auctioneer must communicate the results of the auction to the bidders. Depending on the auction policy some information would be made available publicly, some common information would be made available to all bidders, and some would be communicated only to bidders to whom it is relevant. Once again security and privacy tools are needed. If the auctioneer is not the seller himself, the auction results must be communicated to the seller also. The auction results comprise of the winning bidder's or top few bidder's names and addresses, the

bid amounts, and the shipping and payment terms if the bidding process allowed changes to these terms.

Record retention: The auctioneer must prove to the bidders and the seller that he conducted the auction fairly. The seller needs to maintain it for his own internal book keeping requirements and to prove that he met government rules and regulations such as fair trade practices. The record retention policy will vary from organization to organization, and will also depend on the monetary value of the transaction and commodity being sold. The records will include the product description page, where it was posted, and for what period. It could include the list of bidders who participated and the log of the bids. The evaluation method should also be retained as part of the records. The auction record would be digitally signed by the auctioneer.

Design of Auction Software:

In this section we describe the design of an auction application. Figure 7 shows the object model and figure 8 shows the data flow diagram of a generic auction application. It supports the various types of auctions discussed in the previous sections. Though figures 7 and 8 are labeled with auction specific terminology to simplify discussions, in light of the discussions in section 2 the readers will easily notice that the model supports other forms of negotiations, such as procurement (RFD) and two party negotiations equally well. The remaining component



of the design, the dynamic model, is omitted because it is very close to the finite state machine (FSM) model discussed in section 2.

Multiple products, traders, and auctions are part of the auction house. Each auction is for a product and a subset of traders participate in it. The *state* attribute of auction restricts the type of messages a participant can create when the auction is in that state. Messages created by participants are part of the auction, other components being the terms of the final sale, rules of the auction, and the final trade generated at the end of the auction. The rule object contains methods which modify the behavior of other objects such as capability of participants to send messages and notifications and updates sent to the participants. Different types of auctions are created by creating instances of the rules class which enforce the different rules of the respective auction types.

In the process flow diagram in figure 8, the three rectangles (buyers, sellers, and settlement system) are the active producers or consumers of information at the boundary of the data flow graph. The disk symbols are information repositories internal to the data flow model. Ovals represent processes, solid arrows represent flow of information, and dashed arrows represent control signals. A hollow triangle at the end of a line indicates a repository created by a process, some of which can be temporary. The five steps of the auction process mentioned in the previous sections are identified in the data flow model at the bottom of Figure 8.

The Auction application is fundamentally driven by the auction rules repository. It includes the schedule for the auctions, templates for creating the popular kinds of auctions, and the rules governing individual auctions. Different product in the product repository can be auctioned using different auction types and policies. As shown in figure 8, the auctions rules drive:

1. What is the content of a bid, i.e., price and quantity for a regular auction or quantity only for a Dutch auction.
2. The seller's ability to modify the sell offer by lowering published price in a Dutch auction, or modifying the offer price private to a particular buyer in a two party negotiation.
3. The information sent back to the buyers and sellers in response to the above two actions. For example, in an open cry auction the notification to the buyers in response to a bid would be some subset of highest bids while in a sealed bid auction it would be a simple acknowledgment of a bid received.
4. Auction closing rules, i.e., whether the auction ends by seller's manual intervention, at a fixed time automatically, after a fixed period of bidder inactivity, or some combination of the three.

By controlling the behavior of the above four processes from the rule repository we can support the various types of auctions and auction policies discussed in the previous sections. In addition to the above listed processes, the rule repository also drives:

1. Which set of users get alerted when certain products are placed on auction.

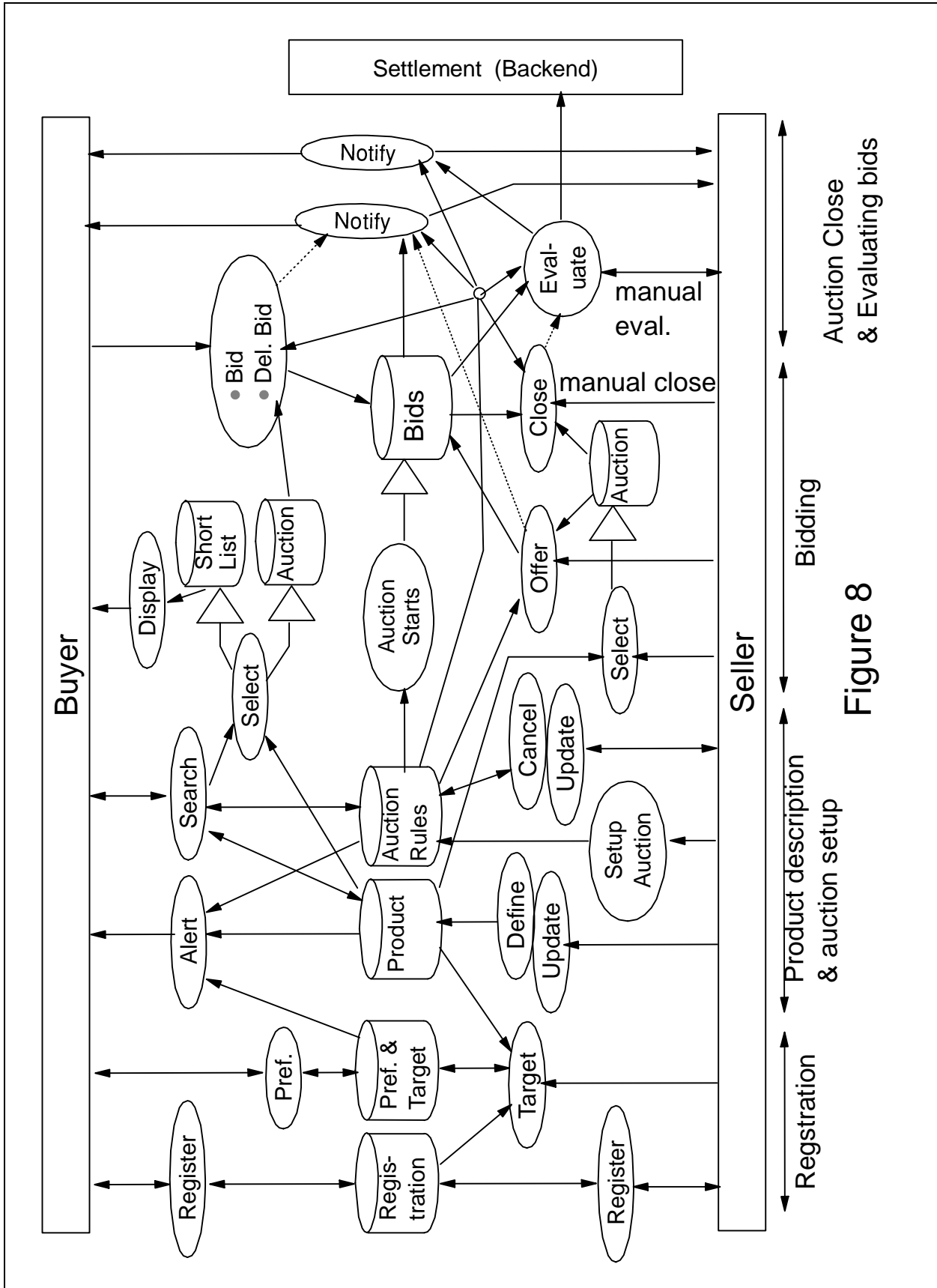


Figure 8

2. Under what conditions, if any, can the seller change the auction rules or withdraw the auction.
3. Which subset of buyers are eligible to submit bids.
4. What are the restrictions on bid amount and bid increments. For simplicity we have not shown that a deposit can be required with each bid.

Novel aspects of Internet auctions:

Internet is a new and evolving medium of communication. Its differences from other mediums of communication provide some advantages, and at the same time present some challenges. Most of the challenges arise from the fact that while open cry actions in the real world move rapidly with bidders responding to posted bids in seconds or sub seconds, Internet auctions must move at a slower pace because of Internet latencies. Some of the advantages and challenges of Internet auctions are presented in this section.

Notification

In real world open-cry auctions, the bidders notice all the bids from all bidders as they are present in the auction room. But if we adopt the bulletin board approach for Internet auction to address the latency issues, the bidders may or may not be at the auction site when a new high bid is submitted. To handle bidders who are not at the auction web site when a bid update, auction closing, or new auctions announcement event take place, e-mail must be sent. However, bidders who are at the auction web site would prefer a more direct or obvious notification mechanism. One could have a small message frame in all web pages of a web site. This frame would have a Java applet which either polls the auction server for messages, or listens for messages from the auction server.

Detecting shills and phantom bids

Seasoned buyers in real world have the ability to detect shills in the audience or whether the auctioneer is accepting phantom bids. Shills tend to bid on a wide variety of unrelated goods, and never seem to buy any thing. On the Internet the auctioneer can create electronic shills. If he can successfully do so, he has no need for phantom bids. Furthermore, if he can create one shill, he may as well create many, assigning none or more to each related set of goods, and activating them sporadically. Cryptographic techniques to check this sort of fraud are important for success of Internet auctions.

Participating in multiple auctions simultaneously

Auction houses in the real world typically auction multiple items in a session. These items are auctioned sequentially. When two or more similar things are being auctioned, and a buyer wishes to buy some but not all of them, he has to speculate on bid values of auctions to be

held later while he is bidding in the earlier auctions. In Internet auctions, all auctions can proceed concurrently, especially in the bulletin board paradigm. Speculation on bid values is not needed if the auctions are scheduled to close at the same time. Even if the closing of auction is based on predefined duration of bidding inactivity, the need for speculation is reduced because the bidder can see how the bidding has progressed in each auction.

Impact of Internet auctions:

As discussed in the preceding sections of this paper, conducting auctions on the Internet itself is not difficult. However, a traditional auction house, in addition to bringing buyers and sellers of similar commodities together, provides information about the quality or authenticity of the goods being auctioned and takes responsibility for delivery of goods and payment. As Internet auctions become more popular, these functions will also be supported on the Internet.

The existing web search agents (or insects) will evolve into matchmakers bringing buyers and sellers of the same goods together. While the role of the traditional auctioneer will be disintermediated, new intermediaries will evolve to perform the function of evaluating the quality or authenticity of goods being sold, and also possibly escrowing the physical goods being sold. Finally, escrowing the deposits and payments of the buyers will be undertaken by a second set of intermediaries. These intermediaries would assume the tasks of authenticating the buyers and sellers and act as the certificate issuing authority.

Summary and Future Research:

In this paper we showed that different business processes are essentially composed of common building blocks: the deal object, inbound messages, outbound messages, and product description. A finite state machine model can be used to describe how these building blocks interact. We also reviewed a variety of auctions, presented a taxonomy for them, and briefly discussed their relevance in the real world. We then dwelled upon the different steps of an auction process and the functionality required in each step. In the final section we presented a high level design of the auction software.

Two important research issues not addressed in this paper are the security/confidentiality requirements during various steps of the auction process and efficient notification mechanisms to inform buyers on the Web when information about the auction such as the current highest bid changes. These issues are being investigated by us currently.

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