

# FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

## FIPA English Auction Interaction Protocol Specification

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23 universities that are active in the field of agents. FIPA makes the results of its activities available to all interested parties  
24 and intends to contribute its results to the appropriate formal standards bodies.

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32 of specification may be found in the FIPA Procedures for Technical Work. A complete overview of the FIPA  
33 specifications and their current status may be found in the FIPA List of Specifications. A list of terms and abbreviations  
34 used in the FIPA specifications may be found in the FIPA Glossary.

35 FIPA is a non-profit association registered in Geneva, Switzerland. As of January 2000, the 56 members of FIPA  
36 represented 17 countries worldwide. Further information about FIPA as an organization, membership information, FIPA  
37 specifications and upcoming meetings may be found at <http://www.fipa.org/>.

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## 42 1 FIPA English Auction Interaction Protocol

43 In the FIPA English Auction Interaction Protocol (IP), the auctioneer seeks to find the market price of a good by initially  
44 proposing a price below that of the supposed market value and then gradually raising the price. Each time the price is  
45 announced, the auctioneer waits to see if any buyers will signal their willingness to pay the proposed price. As soon as  
46 one buyer indicates that it will accept the price, the auctioneer issues a new call for bids with an incremented price. The  
47 auction continues until no buyers are prepared to pay the proposed price, at which point the auction ends. If the last  
48 price that was accepted by a buyer exceeds the auctioneer's (privately known) reservation price, the good is sold to that  
49 buyer for the agreed price. If the last accepted price is less than the reservation price, the good is not sold

50  
51 In *Figure 1*, the auctioneer's calls, expressed as the general *cfp* act (see [FIPA00037]), are multicast to all participants  
52 in the auction. For simplicity, only one instance of the message is portrayed. Note also that in a physical auction, the  
53 presence of the auction participants in one room effectively means that each acceptance of a bid is simultaneously  
54 broadcast to all participants and not just the auctioneer. This may not be true in an agent marketplace, in which case it  
55 is possible for more than one agent to attempt to bid for the suggested price. Even though the auction will continue for  
56 as long as there is at least one bidder, the agents will need to know whether their bid (represented by the *propose* act -  
57 see [FIPA00037]) has been accepted. Hence the appearance in the IP of the *accept-proposal* (see [FIPA00037]) and  
58 *reject-proposal* acts (see [FIPA00037]), despite this being implicit in the English Auction process that is being modelled.

59  
60 Note that the proposals that are submitted by the bidders primarily concern the bidding process. In response to a *cfp* to  
61 submit bids to purchase a good X, a proposal would be something of the order: "I propose that the bidding level be  
62 raised to purchase price Z and I assert that I am able to pay Z for X." This allows the auctioneer to be confident that the  
63 bidder can indeed pay the price without committing to actually paying it until the auctioneer specifically requests X (at  
64 price Z) from the winning bidder.

65  
66 At the end of the IP, the auctioneer will typically enter a *request* IP (see [FIPA00026]) with the winning bidder to  
67 complete the auction transaction.

68  
69 The representation of this IP is given in *Figure 1*.

70

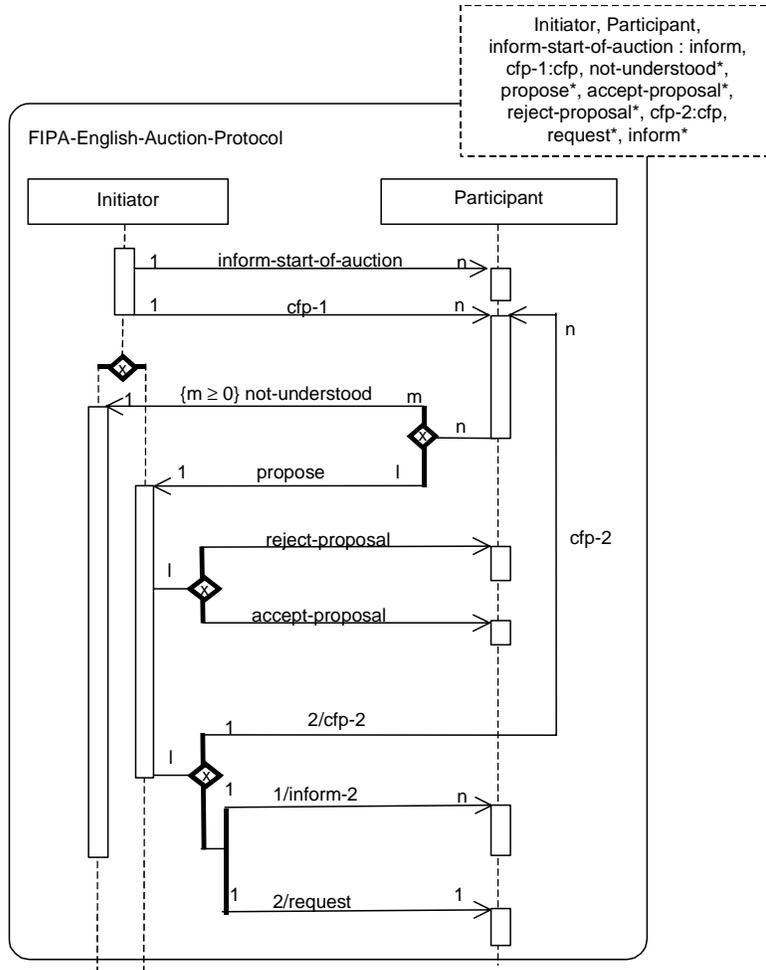


Figure 1: FIPA English Auction Interaction Protocol

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72  
73  
74

75 **1.1 Exceptions to Interaction Protocol Flow**

76 This IP is a pattern for a simple interaction type. Elaboration on this pattern will almost certainly be necessary in order to  
77 specify all cases that might occur in an actual agent interaction. Real world issues of cancelling actions, asynchrony,  
78 abnormal or unexpected IP termination, nested IPs, and the like, are explicitly not addressed here.

79  
80

80 **2 References**

81 [FIPA00026] FIPA Request Interaction Protocol Specification. Foundation for Intelligent Physical Agents, 2000.  
82 <http://www.fipa.org/specs/fipa00026/>

83 [FIPA00037] FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.  
84 <http://www.fipa.org/specs/fipa00037/>