

# FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

## FIPA Agree Communicative Act Specification

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## **1 Scope**

This document specifies the Agree communicative act which is compliant to [FIPA00037] requirements.

## 2 Agree

<b>Summary</b>	The action of agreeing to perform some action, possibly in the future.
<b>Content</b>	A tuple, consisting of an action expression denoting the action to be done, and a proposition giving the conditions of the agreement.
<b>Description</b>	<p><i>Agree</i> is a general purpose agreement to a previously submitted <i>request</i> act (see [FIPA00056]) to perform some action. The agent sending the agreement informs the receiver that it does intend to perform the action, but not until the given precondition is true.</p> <p>The proposition given as part of the <i>agree</i> act indicates the qualifiers, if any, that the agent is attaching to the agreement. This might be used, for example, to inform the receiver when the agent will execute the action which it is agreeing to perform.</p> <p><i>Pragmatic note:</i> the precondition on the action being agreed to can include the perlocutionary effect of some other CA, such as an <i>inform</i> act (see [FIPA00046]). When the recipient of the agreement (e.g. a contract manager) wants the agreed action to be performed, it should then bring about the precondition by performing the necessary CA. This mechanism can be used to ensure that the contractor defers performing the action until the manager is ready for the action to be done.</p>
<b>Formal Model</b>	$\langle i, \text{agree}(j, \langle i, \text{act} \rangle, \phi) \rangle \equiv$ $\langle i, \text{inform}(j, I_i \text{ Done}(\langle i, \text{act} \rangle, \phi)) \rangle$ <p style="margin-left: 40px;">FP: <math>B_i \alpha \wedge \neg B_i (Bif_j \alpha \vee Uif_j \alpha)</math></p> <p style="margin-left: 40px;">RE: <math>B_j \alpha</math></p> <p>Where:</p> $\alpha = I_i \text{ Done}(\langle i, \text{act} \rangle, \phi)$ <p>Note that the formal difference between the semantics of <i>agree</i> and <i>accept-proposal</i> (see [FIPA00039]) rests on which agent is performing the action.</p>
<b>Example</b>	<p>Agent i (a job-shop scheduler) requests j (a robot) to deliver a box to a certain location. J answers that it agrees to the request but it has low priority.</p> <pre>(request   :sender i   :receiver j   :content     (action j (deliver box017 (location 12 19)))   :protocol FIPA-Request   :reply-with order567)  (agree   :sender j   :receiver i   :content     ((action j (deliver box017 (location 12 19))       (priority order567 low)))   :in-reply-to order567   :protocol FIPA-Request)</pre>

### 3 References

- [FIPA00037] FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.  
<http://www.fipa.org/specs/fipa00037/>
- [FIPA00039] FIPA Accept Proposal Communicative Act Specification. Foundation for Intelligent Physical Agents, 2000. <http://www.fipa.org/specs/fipa00039/>
- [FIPA00046] FIPA Inform Communicative Act Specification. Foundation for Intelligent Physical Agents, 2000.  
<http://www.fipa.org/specs/fipa00046/>
- [FIPA00056] FIPA Reject Communicative Act Specification. Foundation for Intelligent Physical Agents, 2000.  
<http://www.fipa.org/specs/fipa00056/>