

# FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

## FIPA CFP Communicative Act Specification

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## **1 Scope**

This document specifies the Call for Proposal (CFP) communicative act which is compliant to [FIPA00037] requirements.

## 2 Call for Proposal

<b>Summary</b>	The action of calling for proposals to perform a given action.
<b>Content</b>	A tuple containing an action expression denoting the action to be done and a proposition denoting the preconditions on the action.
<b>Description</b>	<p><i>CFP</i> is a general-purpose action to initiate a negotiation process by making a call for proposals to perform the given action. The actual protocol under which the negotiation process is established is known either by prior agreement, or is explicitly stated in the <code>:protocol</code> parameter of the message.</p> <p>In normal usage, the agent responding to a <i>cfp</i> should answer with a proposition giving its conditions on the performance of the action. The responder's conditions should be compatible with the conditions originally contained in the <i>cfp</i>. For example, the <i>cfp</i> might seek proposals for a journey from Frankfurt to Munich, with a condition that the mode of travel is by train. A compatible proposal in reply would be for the 10.45 express train. An incompatible proposal would be to travel by airplane.</p> <p>Note that <i>cfp</i> can also be used to simply check the availability of an agent to perform some action.</p>
<b>Formal Model</b>	$\langle i, \text{cfp}(j, \langle j, \text{act} \rangle, \phi(x)) \rangle \equiv$ $\langle i, \text{query-ref}(j, \lambda x (I_i \text{Done}(\langle j, \text{act} \rangle, \phi(x)) \Rightarrow$ $(I_j \text{Done}(\langle j, \text{act} \rangle, \phi(x)))) \rangle$ <p>FP: <math>\neg \text{Bref}_i(\lambda x \alpha(x)) \wedge \neg \text{Uref}_i(\lambda x \alpha(x)) \wedge</math>  <math>\neg \text{B}_i I_j \text{Done}(\langle j, \text{Inform-ref}(i, \lambda x \alpha(x)) \rangle)</math></p> <p>RE: <math>\text{Done}(\langle j, \text{Inform}(i, \lambda x \alpha(x) = r_1 \rangle) \mid \dots \mid \langle j,</math>  <math>\text{Inform}(i, \lambda x \alpha(x) = r_k \rangle)</math></p> <p>Where:</p> $\alpha(x) = I_i \text{Done}(\langle j, \text{act} \rangle, \phi(x)) \Rightarrow I_j \text{Done}(\langle j, \text{act} \rangle, \phi(x))$ <p>Agent <i>i</i> asks agent <i>j</i>: "What is the 'x' such that you will perform action 'act' when 'φ(x)' holds?"</p>
<b>Example</b>	<p>Agent <i>j</i> asks <i>i</i> to submit its proposal to sell 50 boxes of plums:</p> <pre>(cfp   :sender j   :receiver i   :content     ((action i       (sell plum 50))      true)   :ontology fruit-market)</pre>

### 3 References

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