FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA Request When Communicative Act Specification


Geneva, Switzerland

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1 Scope
This document specifies the Request When communicative act which is compliant to [FIPA00037] requirements.
2 Request When

| Summary | The sender wants the receiver to perform some action when some given proposition becomes true. |
| Content | A tuple of an action description and a proposition. |

**Description**  
Request-when allows an agent to inform another agent that a certain action should be performed as soon as a given precondition, expressed as a proposition, becomes true.

The agent receiving a request-when should either refuse to take on the commitment, or should arrange to ensure that the action will be performed when the condition becomes true. This commitment will persist until such time as it is discharged by the condition becoming true, the requesting agent cancels (see [FIPA00041]) the request-when, or the agent decides that it can no longer honour the commitment, in which case it should send a refuse message (see [FIPA00055]) to the originator.

No specific commitment is implied by the specification as to how frequently the proposition is re-evaluated, nor what the lag will be between the proposition becoming true and the action being enacted. Agents which require such specific commitments should negotiate their own agreements prior to submitting the request-when act.

**Example**  
Agent i tells agent j to notify it as soon as an alarm occurs.

```
(request-when
  :sender i
  :receiver j
  :content
    ((inform
      :sender j
      :receiver i
      :content
        "something alarming!"
      (Done( alarm )))
   ...
```

**Formal Model**

\[
<i, \text{request-when}(j, <j, \text{act}>, \phi)> \equiv \\
<i, \text{inform}(j, (\exists e') \text{Done}(e') \land \text{Unique}(e') \land \\
I_i \text{Done}(<j, \text{act}>, (\exists e) \text{Enables}(e, B_j \phi) \land \\
\text{Has-never-held-since}(e', B_j \phi)))>
\]

\[
FP: B_i \alpha \land \neg B_i (Bif_j \alpha \lor Uif_j \alpha)
\]

\[
RE: B_j \alpha
\]

Where:

\[
\alpha = (\exists e') \text{Done}(e') \land (\text{Unique}(e')) \land \\
I_i \text{Done}(<j, \text{act}>, (\exists e) \text{Enables}(e, B_j \phi) \land \\
\text{Has-never-held-since}(e', B_j \phi))
\]

Agent i informs j that i intends for j to perform some act when j comes to believe \( \phi \).
3 References

http://www.fipa.org/specs/fipa00037/

http://www.fipa.org/specs/fipa00041/

http://www.fipa.org/specs/fipa00055/