FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA Request When Communicative Act Specification

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Foreword

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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 *cancel*s (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.

Formal Model	`<`i`, request-when(`j`, <`j`, `act`>, ` ϕ`)> ≡`
	  `<`i`, inform(`j`, (∃`e'`) Done(`e'`) ∧ Unique(`e'`) ∧`
	      `I`$_i$` Done(<`j`, `act`>, (∃`e`) Enables(`e`, B`$_j$` ` ϕ`) ∧`
	      `Has-never-held-since(`e'`, B`$_j$` ` ϕ`)))>`
	   `FP: B`$_i$` ` α` ∧ ¬B`$_i$` (Bif`$_j$` ` α` ∨ Uif`$_j$` ` α`)`
	   `RE: B`$_j$` ` α
	
	Where:
	
	α` = (∃`e'`) Done(`e'`) (Unique(`e'`) ∧`
	     `I`$_i$` Done(<`j`, `act`>, (∃`e`) Enables(`e`, B`$_j$` ` ϕ`) ∧`
	     `Has-never-held-since(`e'`, B`$_j$` ` ϕ`))`
	
	Agent *i* informs *j* that *i* intends for *j* to perform some *act* when *j* comes to believe ϕ.

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 )))`
	  `…)`

3 References

[FIPA00037]   FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.
               `http://www.fipa.org/specs/fipa00037/`
[FIPA00041]   FIPA Cancel Communicative Act Specification. Foundation for Intelligent Physical Agents, 2000.
               `http://www.fipa.org/specs/fipa00041/`
[FIPA00055]   FIPA Refuse Communicative Act Specification. Foundation for Intelligent Physical Agents, 2000.
               `http://www.fipa.org/specs/fipa00055/`