

FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA Request When Interaction Protocol Specification

Document title	FIPA Request When Interaction Protocol Specification		
Document number	SC00028H	Document source	FIPA TC Communication
Document status	Standard	Date of this status	2002/12/03
Supersedes	None		
Contact	fab@fipa.org		
Change history	See <i>Informative Annex A — ChangeLog</i>		

© 1996-2002 Foundation for Intelligent Physical Agents
<http://www.fipa.org/>
Geneva, Switzerland

Notice

Use of the technologies described in this specification may infringe patents, copyrights or other intellectual property rights of FIPA Members and non-members. Nothing in this specification should be construed as granting permission to use any of the technologies described. Anyone planning to make use of technology covered by the intellectual property rights of others should first obtain permission from the holder(s) of the rights. FIPA strongly encourages anyone implementing any part of this specification to determine first whether part(s) sought to be implemented are covered by the intellectual property of others, and, if so, to obtain appropriate licenses or other permission from the holder(s) of such intellectual property prior to implementation. This specification is subject to change without notice. Neither FIPA nor any of its Members accept any responsibility whatsoever for damages or liability, direct or consequential, which may result from the use of this specification.

21 **Foreword**

22 The Foundation for Intelligent Physical Agents (FIPA) is an international organization that is dedicated to promoting the
23 industry of intelligent agents by openly developing specifications supporting interoperability among agents and agent-
24 based applications. This occurs through open collaboration among its member organizations, which are companies and
25 universities that are active in the field of agents. FIPA makes the results of its activities available to all interested parties
26 and intends to contribute its results to the appropriate formal standards bodies where appropriate.

27 The members of FIPA are individually and collectively committed to open competition in the development of agent-
28 based applications, services and equipment. Membership in FIPA is open to any corporation and individual firm,
29 partnership, governmental body or international organization without restriction. In particular, members are not bound to
30 implement or use specific agent-based standards, recommendations and FIPA specifications by virtue of their
31 participation in FIPA.

32 The FIPA specifications are developed through direct involvement of the FIPA membership. The status of a
33 specification can be either Preliminary, Experimental, Standard, Deprecated or Obsolete. More detail about the process
34 of specification may be found in the FIPA Document Policy [f-out-00000] and the FIPA Specifications Policy [f-out-
35 00003]. A complete overview of the FIPA specifications and their current status may be found on the FIPA Web site.

36 FIPA is a non-profit association registered in Geneva, Switzerland. As of June 2002, the 56 members of FIPA
37 represented many countries worldwide. Further information about FIPA as an organization, membership information,
38 FIPA specifications and upcoming meetings may be found on the FIPA Web site at <http://www.fipa.org/>.

39 **Contents**

40	1	FIPA Request When Interaction Protocol	1
41	1.1	Explanation of the Protocol Flow	1
42	1.2	Exceptions to Interaction Protocol Flow	2
43	2	References	3
44	3	Informative Annex A — ChangeLog	4
45	3.1	2002/11/01 - version G by TC X2S	4
46	3.2	2002/12/03 - version H by FIPA Architecture Board	4

1 FIPA Request When Interaction Protocol

The FIPA Request When Interaction Protocol (IP) allows an agent to request that the receiver perform some action at the time a given precondition becomes true. This IP provides a framework for the `request-when` communicative act (see [FIPA00037]).

The representation of this IP is given in *Figure 1* which is based on extensions to UML1.x. [Odell2001]. This protocol is identified by the token `fipa-request-when` as the value of the `protocol` parameter of the ACL message.

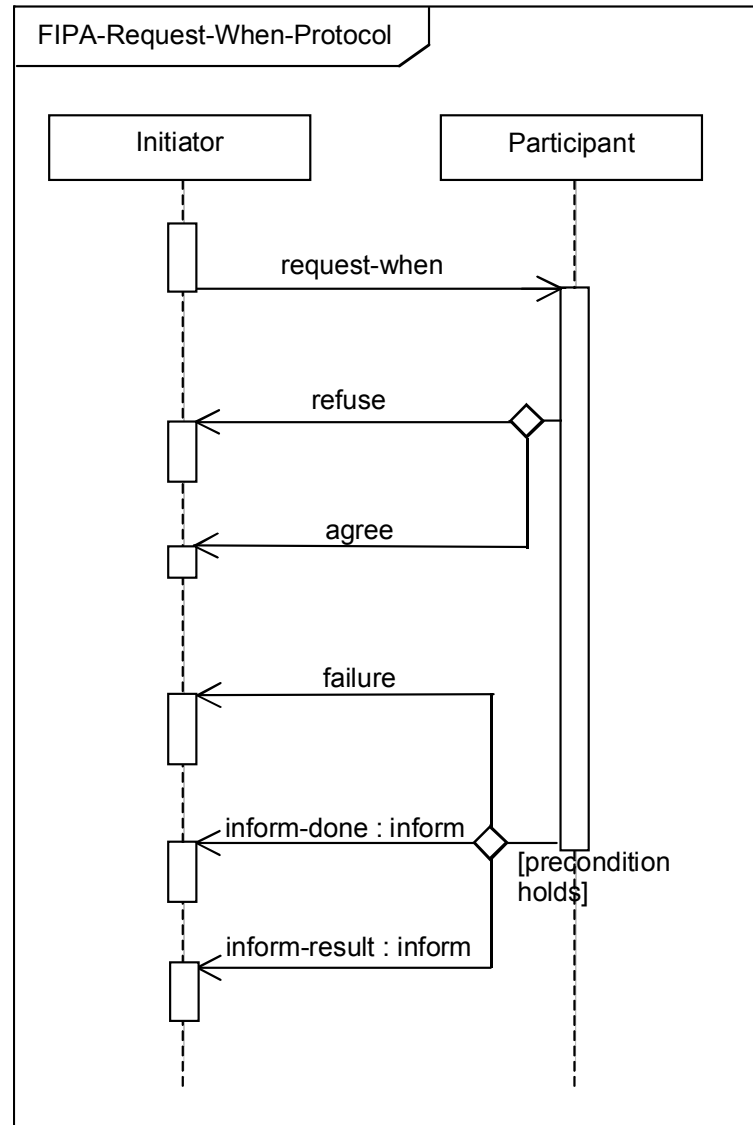


Figure 1: FIPA Request When Interaction Protocol

1.1 Explanation of the Protocol Flow

The initiator uses the `request-when` action to request that the participant do some action once a given precondition becomes true. If the requested agent understands the request and does not initially refuse, it will `agree` (see [FIPA00037]) and wait until the precondition occurs. Then, it will attempt to perform the action and notify the requester accordingly.

If after the initial agreement the participant is no longer able to perform the action, then it will send a `failure` action (see [FIPA00037]) to the initiator. Once the action has completed and the `failure`, `inform-done`, or `inform-result` has been sent, the conversation ends.

Any interaction using this interaction protocol is identified by a globally unique, non-null `conversation-id` parameter, assigned by the Initiator. The agents involved in the interaction must tag all of its ACL messages with this conversation identifier. This enables each agent to manage its communication strategies and activities, for example, it allows an agent to identify individual conversations and to reason across historical records of conversations.

1.2 Exceptions to Interaction Protocol Flow

At any point in the IP, the receiver of a communication can inform the sender that it did not understand what was communicated. This is accomplished by returning a `not-understood` message. As such, *Figure 1* does not depict a `not-understood` communication as it can occur at any point in the IP. The communication of a `not-understood` within an interaction protocol may terminate the entire IP and termination of the interaction may imply that any commitments made during the interaction are null and void.

At any point in the IP, the initiator of the IP may cancel the interaction protocol by initiating the meta-protocol shown in *Figure 2*. The `conversation-id` parameter of the cancel interaction is identical to the `conversation-id` parameter of the interaction that the Initiator intends to cancel. The semantics of `cancel` should roughly be interpreted as meaning that the initiator is no longer interested in continuing the interaction and that it should be terminated in a manner acceptable to both the Initiator and the Participant. The Participant either informs the Initiator that the interaction is done using an `inform-done` or indicates the failure of the cancellation using a `failure`.

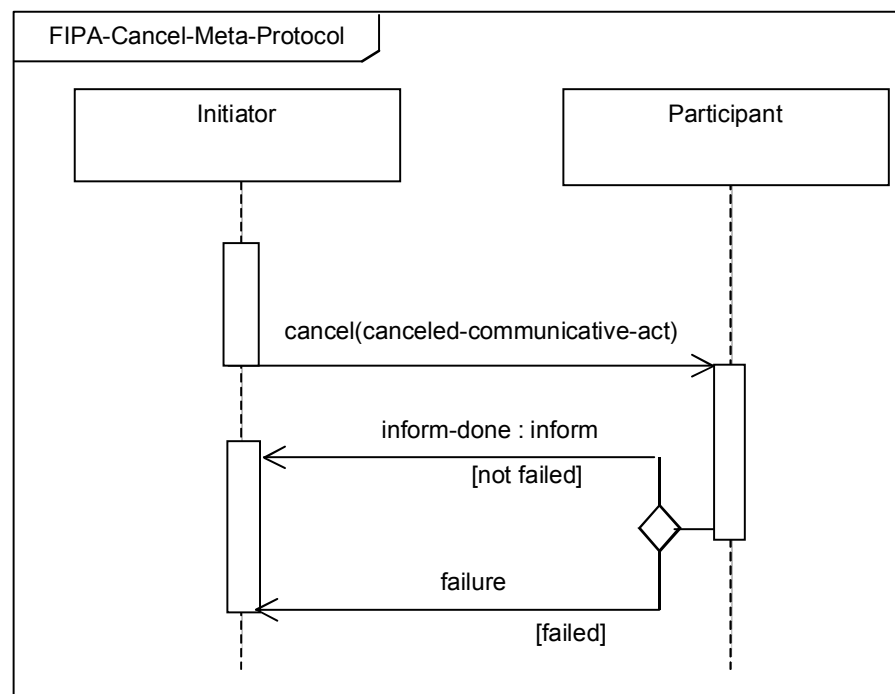


Figure 2: FIPA Cancel Meta-Protocol

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

2 References

- [FIPA00037] FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.
<http://www.fipa.org/specs/fipa00037/>
- [Odell2001] Odell, James, Van Dyke Parunak, H. and Bauer, B., *Representing Agent Interaction Protocols in UML*.
In: Agent-Oriented Software Engineering, Ciancarini, P. and Wooldridge, M., Eds., Springer, pp. 121-140, Berlin, 2001.
<http://www.fipa.org/docs/input/f-in-00077/>

3 Informative Annex A — ChangeLog

3.1 2002/11/01 - version G by TC X2S

- Page 1, Figure 1: The communication labeled `inform-ref` was changed to `inform-result` for clarity; the purpose of this communication is to inform the initiator of a result and `inform-result` implies `inform-done`
- Page 1, Figure 1: The `not-understood` communication was removed
- Page 1, Figure 1: To conform to UML 2, the protocol name was placed in a boundary, `x` is removed from the diamonds (`xor` is now the default) and the template box was removed
- Page 1, line 42: Reworked and expanded the section description of the IP
- Page 1, line 56: Added a new section on Explanation of Protocol Flow
- Page 1, line 56: Reworked and expanded the section on Exceptions of Protocol Flow to incorporate a meta-protocol for cancel
- Page 1, line 56: Added a paragraph explaining the `not-understood` communication and its relationship with the IP

3.2 2002/12/03 - version H by FIPA Architecture Board

- Entire document: Promoted to Standard status