FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA Propose Interaction Protocol Specification

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consequential, which may result from the use of this specification.

Foreword

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

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FIPA is a non-profit association registered in Geneva, Switzerland. As of Juneanuary 20020, the 56 members of FIPA represented many17 countries worldwide. Further information about FIPA as an organization, membership information, FIPA specifications and upcoming meetings may be found on the FIPA Web site at http://www.fipa.org/.

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1   FIPA Propose Interaction Protocol

In the FIPA Propose Interaction Protocol (IP), ~~an initiator agent~~the Initiator proposes to the receiving agents that the initiator will do the actions described in the propos~~eed~~ communicative act (see [FIPA00037]) when the receiving agents accept this proposal. ~~Completion of this IP with an `accept-proposal` act (see [FIPA00037]) would typically be followed by the performance of the proposed action and then the return of a status response.~~

The representation of this IP is given in *Figure 1* which is based on an extension of UML 1.x. [Odell2001] This protocol is identified by the token fipa-propose as the value of the protocol parameter of the ACL message.
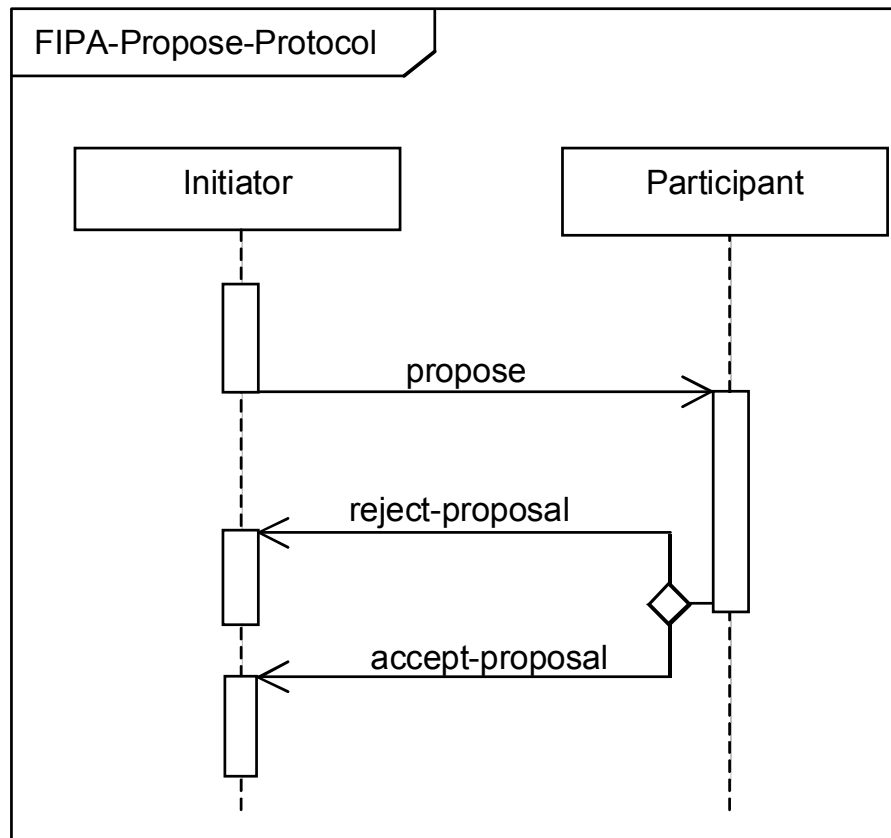
Figure 1: FIPA Propose Interaction Protocol

1.1   Explanation of the Interaction Protocol Flow

In the Propose IP, the Initiator sends a `propose` message to the Participant indicating that it wants the Participant to perform some action. The Participant responds by either accepting or rejecting the proposal, communicating this with the `accept-proposal` or `reject-proposal` communicative act, accordingly.

Completion of this IP with an `accept-proposal` act (see [FIPA00037]) would typically be followed by the performance of the proposed action and then the return of a status response.

Any interaction using this interaction protocol is identified by a globally unique, non-null `conversation-id`, 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, e.g. it allows an agent to identify individual conversations and to reason across historical records of conversations.

79 ### ~~1.11.2~~ Exceptions to Interaction Protocol Flow

80 At *any* point in the IP, the receiver of a communication can inform the sender that it did not understand what was
81 communicated. This is accomplished by returning a `not-understood` communication. As such, the figure above
82 does not depict a `not-understood` communication as it can occur after any communication. The communication of a
83 `not-understood` within an interaction protocol may terminate the entire IP. Termination of the interaction may imply
84 that any commitments made during the interaction are null and void.
85
86 At any point in the IP, the initiator of the IP may cancel the interaction protocol by initiating the meta-protocol shown in
87 *Figure 2*. The conversation-id of the cancel interaction is identical to the conversation-id of the interaction that the
88 Initiator intends to cancel. The semantics of the cancel should roughly be interpreted as meaning that the initiator is no
89 longer interested in continuing the interaction, and that it should be terminated in a manner acceptable to both the
90 Initiator and the Participant. The Participant either informs the Initiator that the interaction is done using an `inform-`
91 `done`, or indicates the failure of the cancellation using a `failure`.
92
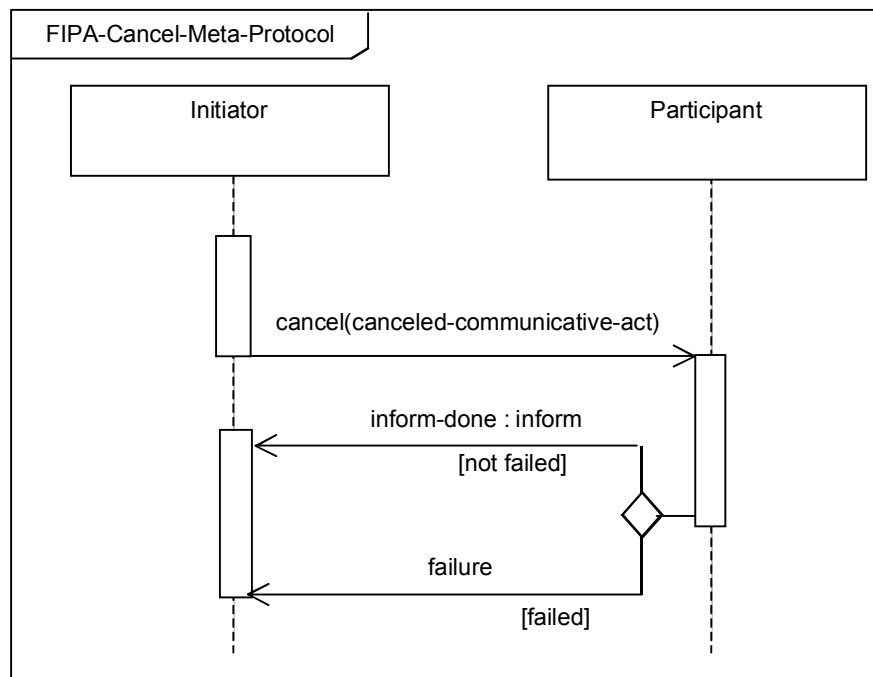
93
94 Figure 2: FIPA cancel meta-protocol
95
96 This IP is a pattern for a simple interaction type. Elaboration on this pattern will almost certainly be necessary in order
97 to specify all cases that might occur in an actual agent interaction. Real world issues such as the effects of cancelling
98 actions, asynchrony, abnormal or unexpected IP termination, nested IPs, and the like, are explicitly not addressed
99 here.
100 ~~This IP is a pattern for a simple interaction type. Elaboration on this pattern will almost certainly be necessary in order~~
101 ~~to specify all cases that might occur in an actual agent interaction. Real world issues of cancelling actions, asynchrony,~~
102 ~~abnormal or unexpected IP termination, nested IPs, and the like, are explicitly not addressed here.~~
103
104

104 ## 2   References

105   [FIPA00037]   FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.
106   `http://www.fipa.org/specs/fipa00037/`
107   [Odell2001]   Odell, James, H. Van Dyke Parunak, and Bernhard Bauer, "Representing Agent Interaction Protocols
108   in UML," *Agent-Oriented Software Engineering*, Paolo Ciancarini and Michael Wooldridge ed.,
109   Springer, Berlin, 2001, pp. 121-140. http://www.fipa.org/docs/input/f-in-00077.
110
111

111 # 3 Informative Annex A — ChangeLog

112 ## 3.1 2002/05/10 - version G by FIPA Architecture Board

113 Page 1, Figure 1 : The «not-understood» communication was removed
114 Page 1, lines 43-47: Streamlined the initial explanation
115 Page 1, line 54 : Added a new section 1.1 entitled « Explanation of the Protocol Flow »
116 Page 1, line 54 : Renumbered old section 1.1 to section 1.2. Added a paragraph explaining the not-
117 understood communication and its relationship with the IP.
118 Page iii Regenerated Table of Contents
119 Page x, line y: <blah>
120