

Messaggi

Agent Communication

FIPA-Agent Communication Language (ACL)

Basato sulla *Speech Act Theory* [Searle]: i messaggi sono azioni - *atti comunicativi* - che permettono di stabilire una conversazione tra agenti.

Performative (1)

FIPA communicative act	Description
Accept Proposal	The action of accepting a previously submitted proposal to perform an action
Agree	The action of agreeing to perform some action, possibly in the future
Cancel	The action of one agent informing another agent that the first agent no longer has the intention that the second agent performs some action
Call for Proposal	The action of calling for proposals to perform a given action
Confirm	The sender informs the receiver that a given proposition is true, where the receiver is known to be uncertain about the proposition
Disconfirm	The sender informs the receiver that a given proposition is false, where the receiver is known to believe, or believe it likely that, the proposition is true
Failure	The action of telling another agent that an action was attempted but the attempt failed
Inform	The sender informs the receiver that a given proposition is true

Performative (2)

Inform If	A macro action for the agent of the action to inform the recipient whether or not a proposition is true
Inform Ref	A macro action allowing the sender to inform the receiver of some object believed by the sender to correspond to a specific descriptor, for example a name
Not Understood	The sender of the act (for example, <i>i</i>) informs the receiver (for example, <i>j</i>) that it perceived that <i>j</i> performed some action, but that <i>i</i> did not understand what <i>j</i> just did. A particular common case is that <i>i</i> tells <i>j</i> that <i>i</i> did not understand the message that <i>j</i> has just sent to <i>i</i>
Propagate	The sender intends that the receiver treat the embedded message as sent directly to the receiver, and wants the receiver to identify the agents denoted by the given descriptor and send the received <i>propagate</i> message to them
Propose	The action of submitting a proposal to perform a certain action, given certain preconditions
Proxy	The sender wants the receiver to select target agents denoted by a given description and to send an embedded message to them

Performative (3)

Query If	The action of asking another agent whether or not a given proposition is true
Query Ref	The action of asking another agent for the object referred to by a referential expression
Refuse	The action of refusing to perform a given action, and explaining the reason for the refusal
Reject Proposal	The action of rejecting a proposal to perform some action during a negotiation
Request	The sender requests the receiver to perform some action One important class of uses of the request act is to request the receiver to perform another communicative act
Request When	The sender wants the receiver to perform some action when some given proposition becomes true
Request Whenever	The sender wants the receiver to perform some action as soon as some proposition becomes true and thereafter each time the proposition becomes true again
Subscribe	The act of requesting a persistent intention to notify the sender of the value of a reference, and to notify again whenever the object identified by the reference changes

Parametri Messaggi ACL

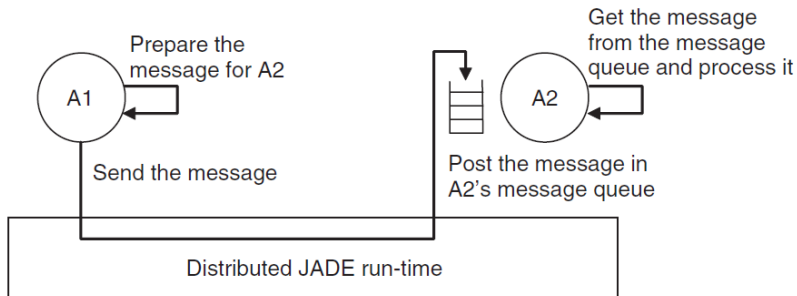
Parameter	Description
Performative	Type of the communicative act of the message
sender	Identity of the sender of the message
receiver	Identity of the intended recipients of the message
reply-to	Which agent to direct subsequent messages to within a conversation thread
content	Content of the message
language	Language in which the content parameter is expressed
encoding	Specific encoding of the message content
ontology	Reference to an ontology to give meaning to symbols in the message content
protocol	Interaction protocol used to structure a conversation
conversation-id	Unique identity of a conversation thread
reply-with	An expression to be used by a responding agent to identify the message
in-reply-to	Reference to an earlier action to which the message is a reply
reply-by	A time/date indicating by when a reply should be received

L'unico obbligatorio è *performative*.

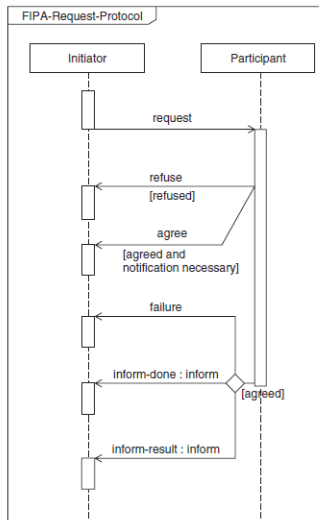
Messaggio FIPA-ACL - Esempio

```
(request
  :sender (agent-identifier :name alice@mydomain.com)
  :receiver (agent-identifier :name bob@yourdomain.com)
  :ontology travel-assistant
  :language FIPA-SL
  :protocol fipa-request
  :content
    ""( (action
      (agent-identifier :name bob@yourdomain.com)
      (book-hotel :arrival 15/10/2006
                  :departure 05/07/2002 ... )
    ) ) ""
)
```

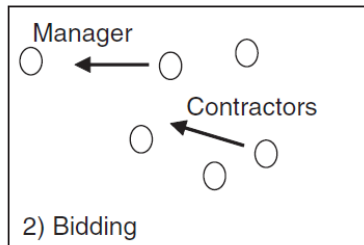
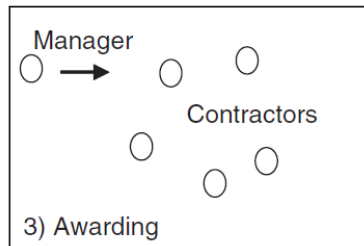
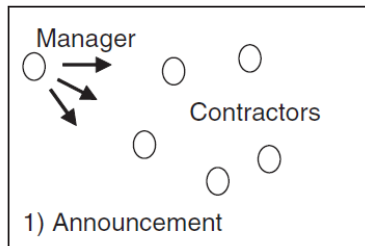
Messaggi in JADE



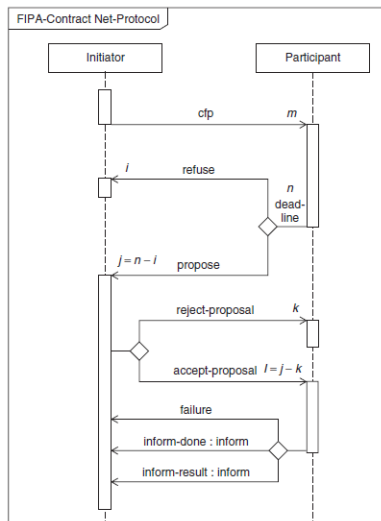
FIPA Request Interaction Protocol



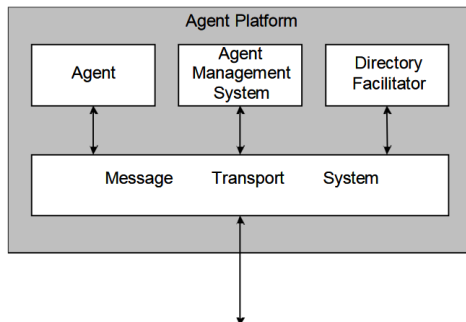
FIPA Contract Net Interaction Protocol



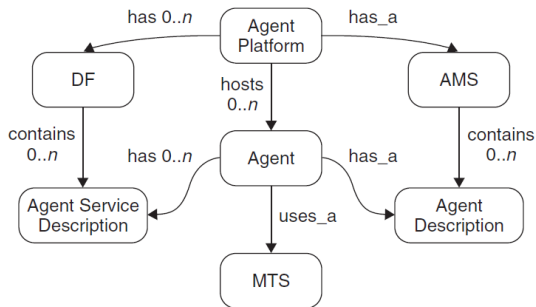
FIPA Contract Net Interaction Protocol



FIPA Agent Platform



FIPA Agent Management

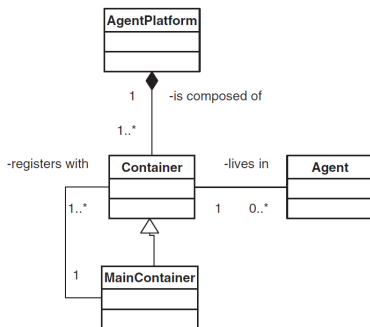


Modello logico di riferimento per la gestione di creazione, registrazione, posizione, comunicazione, migrazione di agenti.

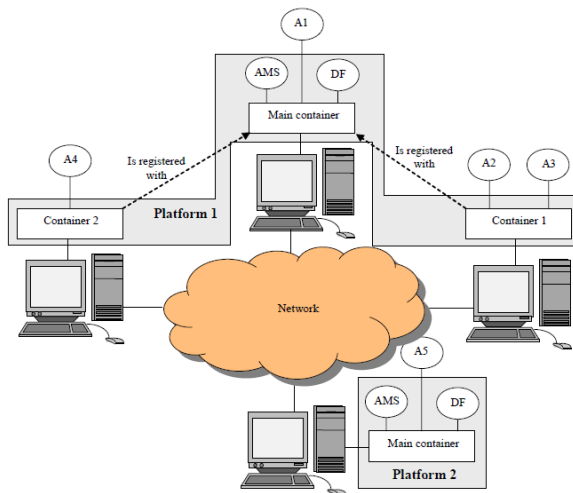
Jade: architettura(1)

Container

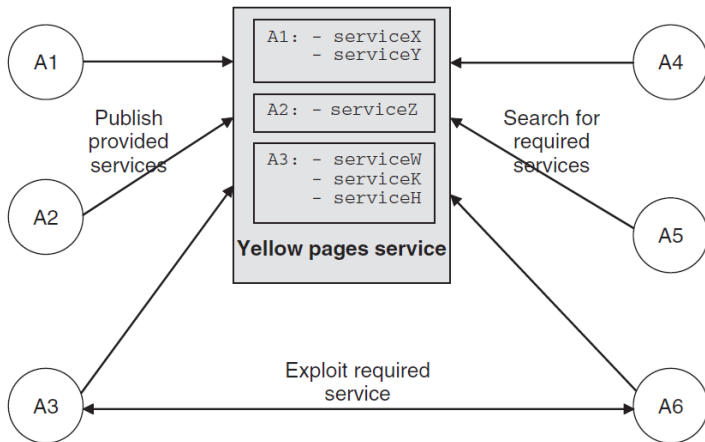
Processi Java che forniscono i servizi per ospitare ed eseguire gli agenti.



Jade: architettura(2)



Directory Facilitator



FIPA Subscribe Protocol

