FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA ACL Message Representation
in XML Specification

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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.

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

The FIPA specifications are developed through direct involvement of the FIPA membership. The status of a specification can be either Preliminary, Experimental, Standard, Deprecated or Obsolete. More detail about the process of specification may be found in the FIPA Procedures for Technical Work. A complete overview of the FIPA specifications and their current status may be found in the FIPA List of Specifications. A list of terms and abbreviations used in the FIPA specifications may be found in the FIPA Glossary.

FIPA is a non-profit association registered in Geneva, Switzerland. As of January 2000, the 56 members of FIPA represented 17 countries worldwide. Further information about FIPA as an organization, membership information, FIPA specifications and upcoming meetings may be found at http://www.fipa.org/.

Contents

1   Scope

This document is part of the FIPA specifications and deals with message transportation between inter-operating agents. This document also forms part of the FIPA Agent Management Specification [FIPA00023] and contains specifications for:

- Syntactic representation of ACL in XML form (see [W3Cxml]).

2   XML ACL Representation

This document defines the message transport syntax for an XML based representation of ACL. It should be noted that some grammatical information is expressed in the comments of the DTD. These additions are normative aspects of the definition even though they are not checked by the XML parser.

2.1   Component Name

The name assigned to this component is:

```
fipa.acl.rep.xml.std
```

2.2   Syntax

```
<!-- Document Type: XML DTD
     Document Purpose: Encoding of FIPA ACL messages in XML
     (see [FIPA00067]) and http://www.fipa.org/)
     Last Revised: 2000/03/07
-->

<!-- Possible FIPA Communicative Acts. See [FIPA00037] for a
     full list of valid performatives.
-->
<!ENTITY % communicative-acts
                 "accept-proposal|agree|cancel|cfp|confirm
                 |disconfirm|failure|inform|not-understood
                 |propose|query-if|query-ref|refuse
                 |reject-proposal|request|request-when
                 |request-whenever|subscribe|inform-if
                 |inform-ref|proxy|propagate">

<!-- The FIPA message root element, the communicative act is
     an attribute - see below and the message itself is a list
     of parameters. The list is unordered. None of the elements
     should occur more than once except receiver.
-->
<!ENTITY %msg-param
          "receiver|sender|content|language|content-language-encoding|ontology|
           protocol|reply-with|in-reply-to|reply-by|reply-to|conversation-id">

<!ELEMENT fipa-message (%msg-param;)*>

<!-- Attribute for the fipa-message - the communicative act itself and
     the conversation id (which is here so an ID value can be used).
-->
<!ATTLIST fipa-message act (%communicative-acts;) #REQUIRED
                       conversation-id ID #IMPLIED>

<!-- The agent identifier of the sender.
-->
<!ELEMENT sender (agent-identifier)>

<!-- The agent identifier(s) of the receiver.
-->
```

```
<!ELEMENT receiver (agent-identifier)>

<!-- The message content.
     One can choose to embed the actual content in the message,
     or alternatively refer to a URI which represents this content
-->
<!ELEMENT content (#PCDATA)>
<!ATTLIST content href CDATA #IMPLIED>

<!-- The content language used for the content.
     The linking attribute href associated with language can be used
     to refer in an unambiguous way to the (formal) definition of the
     standard/fipa content language.
-->
<!ELEMENT language (#PCDATA)>
<!ATTLIST language href CDATA #IMPLIED>

<!-- The encoding used for the content language.
     The linking attribute href associated with encoding can be used
     to refer in an unambiguous way to the (formal) definition of the
     language encoding.
-->
<!ELEMENT content-language-encoding (#PCDATA)>
<!ATTLIST content-language-encoding href CDATA #IMPLIED>

<!-- The ontology used in the content.
     The linking attribute href associated with ontology can be used
     to refer in an unambiguous way to the (formal) definition of the
     ontology.
-->
<!ELEMENT ontology (#PCDATA)>
<!ATTLIST ontology href CDATA #IMPLIED>

<!-- The protocol element.
     The linking attribute href associated with protocol can be used
     to refer in an unambiguous way to the (formal) definition of the
     protocol.
-->
<!ELEMENT protocol (#PCDATA)>
<!ATTLIST protocol href CDATA #IMPLIED>

<!-- The reply-with parameter.
-->
<!ELEMENT reply-with (#PCDATA)>
<!ATTLIST reply-with href CDATA #IMPLIED>

<!-- The in-reply-to parameter.
-->
<!ELEMENT in-reply-to (#PCDATA)>
<!ATTLIST in-reply-to href CDATA #IMPLIED>

<!-- The reply-by parameter.
-->
<!ELEMENT reply-by EMPTY>

<!-- See [FIPA00071] for the definition of time.
```

```
-->
<!ATTLIST reply-by time CDATA #REQUIRED
          href CDATA #IMPLIED>


<!-- The reply-to parameter.
-->
<!ELEMENT reply-to (agent-identifier)>


<!-- The conversation-id parameter.
-->
<!ELEMENT conversation-id (#PCDATA)>
<!ATTLIST conversation-id href CDATA #IMPLIED>


<!ELEMENT agent-identifier (name, addresses?, resolvers?, user-defined*)>


<!ELEMENT name EMPTY>


<!-- An id can be used to uniquely identify the name of the agent.
     The refid attribute can be used to refer to an already defined
     agent name, avoiding unnecessary repetition. Either the id
     OR refid should be specified, (both should not be present at the
     same time)
-->
<!ATTLIST name id ID #IMPLIED
          refid IDREF #IMPLIED>


<!ELEMENT addresses (url+)>
<!ELEMENT url EMPTY>
<!ATTLIST url href CDATA #IMPLIED>


<!ELEMENT resolvers (agent-identifier+)>


<!ELEMENT user-defined (#PCDATA)>
<!ATTLIST user-defined href CDATA #IMPLIED>
```

3   References

[FIPA00023]   FIPA Agent Management Specification. Foundation for Intelligent Physical Agents, 2000.
`http://www.fipa.org/specs/fipa00023/`
[FIPA00037]   FIPA Communicative Act Library Specification. Foundation for Intelligent Physical Agents, 2000.
`http://www.fipa.org/specs/fipa00037/`
[FIPA00067]   FIPA Agent Message Transport Service Specification. Foundation for Intelligent Physical Agents, 2000.
`http://www.fipa.org/specs/fipa00067/`
[W3Cxml]   Extensible Markup Language (XML) 1.0 Recommendation. World Wide Web Consortium, 1998.
`http://www.w3c.org/TR/REC-xml`