FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

FIPA ACL Message Representation in XML Specification

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Contact	fab@fipa.org		
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Geneva, Switzerland

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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: 2000/03/072/05/10
-->

<!-- 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
                                        |_user-defined">

<!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~~Mark-up Language (XML) 1.0 Recommendation. World Wide Web Consortium, 1998. http://www.w3c.org/TR/REC-xml

4 Informative Annex A — ChangeLog

4.1 2002/05/10 - version D by FIPA Architecture Board

Page 2, line 63: Improved readability of the XML.

Page 2, line 86: **Extended `msg-params` definition to allow user-defined fields.**

Page 2, line 104: Changed the cardinality of `receiver` to one or more (+).

Page 3, line 166: Changed the cardinality of `reply-to` to one or more (+).

~~Page <x>, line <y>: <blah>~~