FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

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Problem Statement: Currently, the ontology representation in FIPA is a frame structure that does not explicitly specify for an ontology domain modeled by a set of frames the relationships and structure between these frames. This means that any ontology set (particularly those specified for agent needs e.g. ACL) requires manual interpretation to understand the mapping, for example, of a particular communicative act, and the allowable content properties of that communicative act. In providing a standard structure and a representation to support such structure to have explicit relationships between different frames of the same ontology or mapping between different ontologies e.g. that of a domain and a set of communicative acts will enable high-level interoperability and re-use of domain knowledge.

Objectives:

1. To identify the requirements that the FIPA communicative acts and interaction protocols have on content languages and ontologies.
2. To define an abstract content language for representing the content of the FIPA communicative acts
3. To define a FIPA meta-ontology (which will be based on the abstract content language) in order to determine the relationships between the agent communication language and content language based on the context defined by the communicative acts and the interaction protocols.
4. To define a language that allows agents to communicate and reason about ontologies and symbols in the ontologies.

Dependencies:

The specifications of the ACL (Agent Communication Language) communicative act library, the interaction protocols, and the Ontology specifications of FIPA will be analysed as input to this activity. There are a number of developments in ontology standards, abstract content languages and meta-representations of the FIPA communicative acts and content type expressions that have relevance to these objectives, in particular, the developments and results from the EU project LEAP and the work from the University of Otago. These inputs will be analysed and this TC will recommend the most useful and appropriate for FIPA. Also, to take into account the representation requirements from the Services TC

Output generated:

1. A feasibility and analysis overview of the work to provide the initial requirements for the meta-representation of the agent communication language and content semantics.
2. A specification for supporting the meta-representation, that is, the meta-ontology and language to support this.

Plan for Work and Milestones: The plan is for a 12 month program of work and includes the following steps:

2002/07 Produce requirements feasibility paper

2002/10 Produce a Preliminary version of the meta-ontology and the representation language specification.
2003/04 Submit specifications for Experimental status.

The project plan will be reviewed and revised, if and when necessary.

Dependencies:

[FIPA00001] FIPA Abstract Architecture Specification
[FIPA00007] FIPA Content Languages Specification
[FIPA00025] FIPA Interaction Protocol Library Specification
[FIPA00037] FIPA Communicative Act Library Specification
[FIPA00061] FIPA Agent Communication Language Parameters Specification
[FIPA00086] FIPA Ontology Service Specification

Additional References:

DAML: DARPA Agent Markup Language (http://www.daml.org/)
OIL: Ontology Inference Language (http://www.ontoknowledge.org/oil/)
Common Logic Initiative (http://suo.ieee.org/email/msg08241.html)

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