FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS

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This work plan is intended to address the current discrepancies between the Abstract Architecture (AA) specification [FIPA00001] and the FIPA2000 group of specifications (primarily [FIPA00007, FIPA00023, FIPA00025, FIPA00061, FIPA00067]). This will be achieved by generating and agreeing upon a list of proposed modifications to the specifications involved.

Problem Statement: FIPA provides two frameworks for creating inter-operating agent systems that, while complimentary, are not fully interoperable or fully compatible (the FIPA2000 set of specifications is not a reification of the AA as originally intended). There are now two 'streams' of FIPA specifications which makes it unclear for developers which to implement and they do not interoperate. However, since they are both based upon a similar philosophy, they are very similar. FIPA should address this shortfall by identifying discrepancies and evolving the specification set towards convergence.

Objective: To propose and agree upon a number of changes to both the AA and the FIPA2000 specifications:

1. Make FIPA2000 a reification of the AA and document this mapping, and,
2. To ensure that agents in the FIPA2000 space and the AA space can routinely interoperate.

The intention is to find lightweight fixes to discrepancies highlighted and *not* to perform significant re-engineering of the specifications (see Annex A for examples).

Technology: This task is primarily concerned with the FIPA specifications themselves but will require input from the following activities:

- Implementations of the FIPA2000 platforms already developed, and,
- Reifications of the AA, in particular the Java Agent Services (JAS) effort.

Specifications Generated: No new specifications will be generated, but the outputs will be:

1. **Change List**: A list of proposed changes to the relevant specifications, including justifications.
2. **Mapping**: An overview of the mappings between the AA and the FIPA2000 specifications based on the changes.

Both documents are intended to be FIPA output documents.

Plan for Work: The work will proceed as follows:

- Establishing a list of bridging points between elements of the AA specification and the corresponding elements of the FIPA2000 specifications.

- Identifying areas that do not match perfectly and identifying possible fixes to these problems.
- Agreeing upon a list of changes and cross checking the impact of these changes on other areas of the specifications.
- Generating a final change list and generating the mapping document.

If during the work issues are identified which are too fundamental to be addressed by minor fixes in the specifications the will be highlighted but considered outside the remit of this work plan. Such issues should subsequently either generate a new activity or be considered in future major revisions of FIPA specifications.

Milestones: The work plan will proceed as follows:

- **2002/02**: Results of feasibility study complete (including a list of obvious bridging points, potential problem areas and estimate of magnitude of change required). A draft version is included in Annex A of this work plan. Finalization of problems areas and brainstorming on solutions.
- **2002/05**: First draft of mapping document and proposed change list. Discussion to reach agreement on mappings and change list.
- **2002/08**: Final version of output documents submitted to FAB.

Future Work: Implementation of changes as directed by the FAB.

Dependencies:
- [FIPA00001] FIPA Abstract Architecture Specification
- [FIAP00007] FIPA Content Languages Specification
- [FIPA00023] FIPA Agent Management Specification
- [FIPA00025] FIPA Interaction Protocol Library Specification
- [FIPA00061] FIPA ACL Message Structure Specification
- [FIPA00067] FIPA Agent Message Transport Specification

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Annex A: Draft list of Areas to Address

The following table lists bridging points between the AA and FIPA2000 specifications identified at the Pleasanton during October 2001 meeting by working through the AA specifications and finding matching elements in FIPA2000. The table states the area, the relevant aspects of the AA and FIPA2000 and finally adds notes on how convergence might be achieved.

Area	AA	FIPA2000	Notes
Agent and Service	FIPA00001, Informal definition Section 4.1, full definition Section 5.2	FIPA00023, section 2.	The definitions are rather different in structure – do the match in meaning?
Service Directory Service	FIPA00001, Section 4.2 Entity which provides information on what infrastructure services a platform provides	FIPA00023, Section 4.2, AMS AP description. Section 6.1.6 AP description FIPA00067, Section 4.1.3/4.1.4 MTP details for AP descriptions	Appear to be 2 main differences : 1. What you can express (AA much more flexible) 2. The method of delivery of information (New service in AA versus query to AMS using ACL) A relatively simple fix to 1) might be to extend FIPA's current AP description. 2) may be a simple mapping (check this mapping)
Agent Directory Service (white pages and yellow pages)	FIPA00001, Section 4.3 DS service which can function as white pages (main intent) or use additional properties to act as yellow pages)	Maps to both AMS directory and DF directory (different instances). • DF Section 3.2 • AMS Section 4.2	Identify mappings (there may be gremlins). One large gremlin may be federation.
Bootstrapping	FIPA00001, will be Section 4.4 "An agent is given a service root – a pointer to a set of services"	AP description often used for off platform bootstrapping or (1 step removed) – the AMS AID. On platform no definitions are given. NOTE: FIPA2000 requires registration with the AMS in addition. AA does not.	Check the mapping (may be relatively complex).

Agent Message Structure	FIPA00001, Section 4.4.1 message structure overview	Specification FIPA00061	Check mapping
Abstract Message Representation	FIPA00001, Section 4.4.2	Specification FIPA00061 + ACL encodings.	Check Mapping. May need to restructure FIPA2000 specs - does not seem fundamentally difficult.
Message Transport (Structure)	FIPA00001, Section 4.4.3 Envelope + Payload	Specification FIPA00067, Section 2.2 – presentation of message. Envelope 3.1	Check Mapping
Transport Service (MTS)	FIPA00001, Section 4.5, transport descriptions associated with and agent name	MTS 00024 – discussion of MTS service functionality	Check Mapping
Identity	FIPA00001, AA has three areas • Agent Name (5.5), • Transport description (), • locator (): A locator is equal to a name a number of transport description	Specification FIPA00023, Section 3. AID (includes GUID and transport information + resolvers and arbitrary slots)	Check Mapping. AID seems to map to locator.
DF/Directory Federation	A component of the DS but not mandatory	FIPA00023, Section 4.1.3	Check mapping. The AA DS would need to at least report if functionality available or not.
Agent Life Cycle	Not present	FIPA00023, Section 5.1	(would require an extension of the AA – out of scope)
Message Handling	Not present	FIPA00067, Section 3.3	(would require an extension of the AA – out of scope)

Key:
- "would require an extension of the AA – out of scope": Something the AA does not specify and hence causes not conflict - will not be dealt with in this work plan.
- "Check mapping": appears to match but this needs to be verified.