



FIPA standards for promoting interoperability of industrial agent systems

Foundation for Intelligent Physical Agents

<http://www.fipa.org>

The FIPA Board of Directors


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FIPA

FIPA mission:

The promotion of technologies and interoperability specifications that facilitate the end-to-end interworking of intelligent agent systems in modern commercial and industrial settings.

-  In an open and distributed agent-based environment such as Agentcities the need of standard mechanisms and specifications is crucial for ensuring interoperability of heterogeneous autonomous systems



FIPA's Scope


- ✍ Development of standard specifications
- ✍ Guidelines for industrial development of agent platforms and agent-based applications
- ✍ Discussion forum:
 - ✍ FIPA meetings: next 10-11-12 February 2003, Palermo, Italy (kindly hosted by Engineering Ingegneria Informatica Spa Palermo)
 - ✍ On line (www.fipa.org): chat@fipa.org
- ✍ Strong liaison with universities, projects, standards, and implementations
- ✍ Sponsoring of relevant events in the agent world and dissemination of FIPA standards and artifacts in several ways (newsletter, web site, white papers, etc.)



Specifications of what?

Some major current FIPA's areas of activity:

- ✍ **Binding web services and agents and vice versa:** what is needed to effectively link the two worlds, are they really distinct? What agents can bring into the web services world? Is the current FIPA service model enough for effective binding? How to relate to W3C community?
- ✍ **Agent methodologies and agent modeling:** a meta-model to facilitate the adoption of specific agent methodologies, a standard modeling language to support agent software engineering and guarantee high quality development process to build multi-agent systems. Many different approaches have been proposed: how to choose? How to eventually combine them?



Specifications of what? (cont)

- ✍ **Securing agents:** to develop a FIPA-based abstract security specification for MAMD (Multi-Agent Multi-Domain) systems that explicitly describes security, that can be mapped to configurable levels of security safeguards and to one or more agent security representations. How does this impact existing agent architectures and services? What security mechanisms and technologies need to be adopted? What should be left to the application level?
- ✍ **Ontologies and semantic interoperability:** standardising methods for knowledge sharing and filtering through ontological representation that allow interoperating systems to automate message processing with respect to cross-referenced semantic classification. What FIPA needs to care about? How this relates with WebOnt work and Semantic Web activities?



Why FIPA is important?

Agent community needs and FIPA challenges

- ✍ Specifications for standardising agent communication and interoperability: only FIPA does this, but we need to better clarify how other standard activities and technologies relate to our work
- ✍ Deployed specifications such as software implementations: FIPA specs are the basis of many agent platforms and applications
- ✍ Enable and facilitate the integration of agents within current existing IT contexts: FIPA has stronger industrial basis for this to be possible, but more can be done
- ✍ A software maturity process - FIPA has IETF-like process, has many implementations, done tests, many deployments



FIPA's main achievements

- ✍ Set of standard specifications massively deployed
 - ✍ **Architecture** to support agent-to-agent communication (agent management, message transport, directory services, etc.)
 - ✍ **Communication languages** and content languages for expressing those messages (FIPA ACL)
 - ✍ **Interaction protocols** which expand the scope from single messages to complete transactions
- ✍ Recently (December 2002) **23 experimental specifications were promoted to standard status**
-www.fipa.org/resources/pr0004.html –
 - ✍ Important milestone reconfirming the importance and the need for standard mechanisms to ensure agent deployment
 - ✍ See Agentlink newsletter 11 and FIPA Inform! Newsletter vol3 issue 4



...and much more

- ✍ FIPA specifications are the basis for industrial development of various agent platforms
 - ✍ Around 15 different FIPA compliant platforms exist
- ✍ 127 FIPA compliant platforms registered within the Agentcities.NET network:
 - ✍ 87% up and running - <http://www.agentcities.net/globalapd.jsp>
- ✍ FIPA major contribution in increasing visibility, credibility and feasibility of agents in real markets:
 - ✍ FIPA standards for adaptive agents, N. Radjou, Forrester Research, 2002
 - ✍ Agent technology and FIPA standards as one of the key enablers for adaptive supply chain networks, SAP 2002



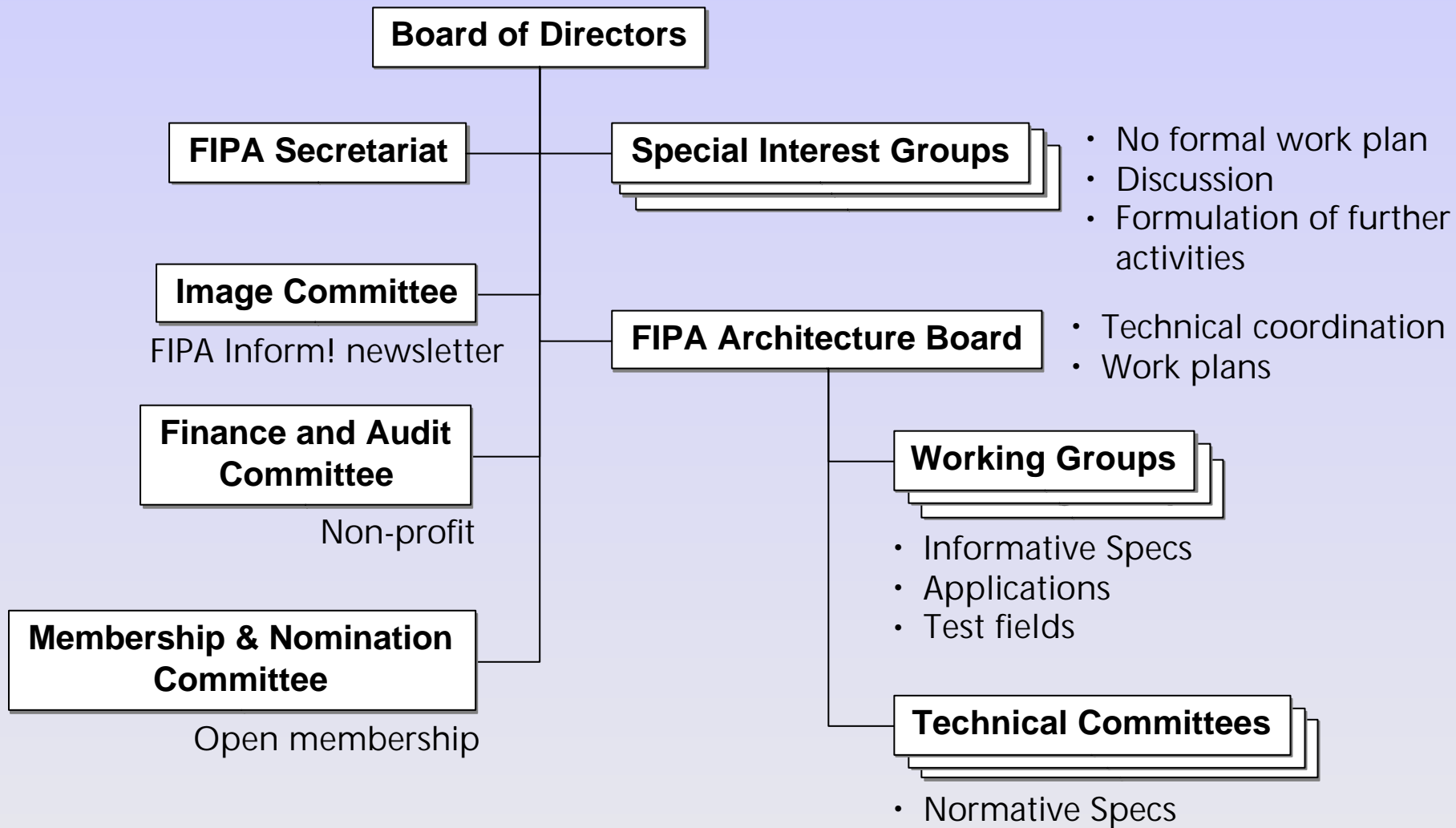
Why your contribution is important ?

FIPA needs

- ✍ To be more inclusive and less exclusive: to facilitate take-up into mainstream computing - FIPA has good abstractions, it can slot in and map to reuse different underlying technologies -
 - ✍ Stronger liaison with other communities (W3C, semantic Web, WebOnt, etc.), related projects (Agentcities, AgentLink II, etc.) and important research and development contexts (6th EU framework program, DARPA, etc.)
 - ✍ Facilitating proposers to become FIPA members, introduce new members (low participation costs) and contribute to the work
- ✍ A stronger software engineering methodology for developing agent solutions - FIPA members have done some work here - need to expand this
 - ✍ Recent creation of a working group on agent modeling and agent methodology: first meeting next week in Italy



FIPA Organization





How to contribute to FIPA

- ✍ Everybody can contribute to FIPA:
 - ✍ Make use of the specifications and report back to the FIPA community: **open, free and easy!**
 - ✍ chat@fipa.org
- ✍ Participate in the FIPA meetings, **(open and free!)**
 - ✍ 3 official meetings per year (3 days per meeting)
 - ✍ Participants can attend technical discussions, present new ideas, discuss relevant work and results
- ✍ Participate in the mail discussions (various mailing list for different topics exist)
- ✍ Make an active contribution to the work and to the creation of FIPA specs



Contributing to FIPA Specs

✍ Phase 1:

- ✍ An idea for FIPA work is formed, elaborated, discussed either inside the FIPA community (at any time by e-mail discussion or during FIPA meetings) or outside (e.g., within an Agentcities working group, an ongoing project, an Agentlink SIG, etc.)
- ✍ The specific idea has to be structured in the form of a work plan (concrete objectives, timeline, committed participants) and submitted to the FIPA Architecture Board (FAB) fab@fipa.org
- ✍ The FAB together with the Board of Directors (BoD) evaluates the proposal (relevance, feasibility, support, etc.) and eventually promotes the creation of an official FIPA activity – it can happen in few weeks!



Contributing to FIPA Specs (cont)

✍ Phase 2:

- ✍ An approved work plan can be carried out by:
 - Technical Committee (TC) for normative specifications
 - Working Group (WG) for informative specs, applications, field trials, etc.
 - Off-line contributions and FIPA meeting work
- ✍ Specifications are created
 - Preliminary (P): Draft under discussion (TC)
 - Experimental (X): Stable, suitable for implementation (FAB)
 - Standard (S): Stable, successfully implemented (FAB, Membership)
 - Deprecated (D): Potentially unnecessary (FAB, Membership)
 - Obsolete (O): Rendered unnecessary



Facilitating contributions

IMPORTANT!

- ✍ Off-line work and coordination: e-mail, audio-conference, video-conference, on-line chat, etc.
- ✍ FIPA meetings discussion forum and ad hoc interim meetings (possibly co-located with other relevant events):
 - ✍ From 4 to 3 meetings per year, from 5 to 3 days each meeting
 - ✍ Not all members of each TC need to attend each FIPA meeting but each active TC should send at least one member, not all TCs need to be present at all meetings
 - ✍ Most important: commitment to propose a relevant and valuable idea & to see it through into practice.

If you have in mind something more that can facilitate participation and contribution, please let us know:

secretariat@fipa.org

Current Activity

- ✍ TC services:
 - ✍ Building a service model for representing, modelling, discovering and using services: stronger and concrete binding with web services
- ✍ TC semantics:
 - ✍ Developing a new semantic framework to reflect the needs of verifiability and conformance
- ✍ TC ontologies:
 - ✍ Standardising ontology modelling, representations and use within agent systems: stronger liaison with WebOnto and Semantic Web
- ✍ TC ad Hoc:
 - ✍ Specifications to facilitate interoperability between agents operating on different platforms in ad hoc environments.

Current Activities (cont)

✍ TC security:

- ✍ Develop security guidelines for FIPA and agents in general
- ✍ A new work plan has been recently approved

✍ Agent Methodology and Modelling WG:

- ✍ Identify a standard methodology for multi-agent systems design and modelling
- ✍ First meeting in Italy next week

✍ Planning and Scheduling WG:

- ✍ To promote and support the development of agent applications that require coordination of task execution

✍ FIPA for business applications SIG (f4ba@fipa.org)

- ✍ Created to ensure and demonstrate the business relevance of FIPA: a white paper will be out soon!



Conclusion

- ✍ Come to Palermo (Italy), 10-11-12 February 2003
- ✍ IMPORTANT NEWS:
 - ✍ FIPA standard specs will be published by FIPA in the form of books (more details after the next FIPA meeting)
 - ✍ [FIPA Inform! Newsletter Vol 3 Issue 4](#) is now available on-line (or I can send you the electronic version, just e-mail me: mca@whitestein.com)
- ✍ Stay tuned on the FIPA web site:
www.fipa.org
- ✍ Thanks to the whole FIPA community and in particular to Stefan Poslad and the BoD
- ✍ [Many thanks to the Agentcities community to promote agent technology and the FIPA's work!](#)