

## The New FIPA Web Site @ [www.fipa.org](http://www.fipa.org)

After months of planning and hard work on the part of various FIPA members, the new FIPA web site has gone live. You can find it at <http://www.fipa.org> and notice the overhaul it has been given in terms of content and style in comparison with the former site.

The site is now split into five main sections; About, Specifications, Activities, Resources and the Member's Lounge.

The About section gives a description of the mission of FIPA, an overview of its structure (including descriptions, membership and contact information of the main organisational groups in FIPA), a list of other standards bodies and affiliations, and the current membership list.

The Specifications section is the area of the web site where the main focus has been directed since there has been a growing need to make FIPA specifications not only available to the membership, but also to the agent community and developers. There are two sections which describe the life cycle process of the specifications and how FIPA documents are numbered and titled. The final section is the Repository which currently contains three 'views' of FIPA specifications; specifications organised by life cycle status (Preliminary, Experimental, etc.), specifications organised by subject (Agent Management, ACL, etc.) and specifications organised by

year (FIPA 97, FIPA 98 and FIPA 2000). Most importantly, the FIPA 2000 specifications in the latter section represent all of those specifications that are of Experimental status, and are thus ready for implementation.



### The 19th FIPA meeting was in Sydney, Australia.

The Activities section describes the internal workings of FIPA, from a description of Technical Committees and Working Groups, meeting descriptions and a list of all of the mailing lists that are available.

The Resources section is designed to serve as a repository for all information and documentation pertaining to FIPA as an organisation, such as available implementations of agent platforms, publicly available agent systems, issues and back issues of FIPA Inform! (this newsletter!), and conference and journal papers relating to FIPA.

Finally, the Member's Lounge, is a private area reserved for the FIPA membership only. Future directions for the web site will include a press release section for the publica-

tion of FIPA promotional material and the dynamic generation of the specification Repository from a database. This will allow us to present specifications in more flexible and dynamic ways, for example, a search

facility for meta information of the specifications is also planned. Everyone is encouraged to check out the new FIPA web site at <http://www.fipa.org> and to direct any comments or suggestions to the FIPA Image Committee at [image@fipa.org](mailto:image@fipa.org).  
*Jonathan Dale*

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## Editorial

Welcome to the third issue of Inform! The theme for this issue is 'FIPA platform implementations'. Future themes will include wireless and peer-to-peer. All contributions gratefully accepted.

One of the items in the 'mailbag' since the last issue was to do with the cost of membership. For clarification purposes, FIPA is a **non-profit organization** and this newsletter is published on a purely voluntary basis. Membership fees pay for things like a secretariat, legal and accounting, the website and the physical costs of meetings - although often these are sponsored by the hosting organizations; all other labor is voluntary.

For details on the different classes and costs of membership please visit [www.fipa.org](http://www.fipa.org) - and remember that you can attend your first three consecutive meetings without joining.

As you can see from the main picture, FIPA finally managed to visit Australia. The meeting was hosted by Motorola and included a local workshop panel from Agent Oriented Software, RMIT, and the University of Melbourne. A g'day was had by all!

Finally, your guest Editor this month is Steve Robertshaw. The reason for the small delays since the last issue of Inform! is linked to the departure of the Agent Technology Group from Nortel Networks to form the start-up, Emorphia, more on this in the future. The next issue will be more timely... I promise!  
*Rob Hadingham*

Send in details of your own platform for inclusion in future issues of FIPA Inform!



“...provides support for generic agent functionality”



“...the precursor of the second generation of FIPA compliant platforms”



“...simplifies the development of multi agent applications”

## FIPA Implementation Update

### ZEUS

ZEUS is an Open Source agent system entirely implemented in Java, developed by BT Labs (see <http://www.labs.bt.com/projects/agents/zeus/>) and can be considered a toolkit for constructing collaborative multi-agent applications. Zeus provides support for generic agent functionality and has sophisticated support for the planning and scheduling of an

agent's actions. Moreover, Zeus provides facilities for supporting agent communication using FIPA ACL as the message transport and TCP/IP sockets as the delivery mechanism. Zeus also provides facilities for building agents in a visual environment and support for directing agent behaviour. The Zeus approach to planning and scheduling involves representing goals

and actions using descriptions that include the resources they require and the pre-conditions they need to be met in order to function. This allows goals to be represented using a chain of actions that have to be fulfilled before the goal can be met. This action chain is built up using a process of backwards chaining.

*John Shepherdson*

### LEAP

LEAP (Lightweight Extensible Agent Platform (IST-1999-10211)), is a development and run-time environment for Intelligent Agents, is the precursor of the second generation of FIPA-compliant platforms. It represents a major technical challenge - it aims to become the first integrated agent development environment capable of generating agent applications in the ZEUS environment and

executing them on run-time environments derived from JADE, implemented over a large family of devices (computers, PDA and mobile `phones...) and communication mechanisms (TCP/IP, WAP...). In this way LEAP benefits from the advanced design-time features of Zeus and the lightweight and extensible properties of JADE. The first version of LEAP is planned for January 2001.

LEAP Version 2.0 (which will physically run on small devices such as PDA's and mobile `phones) will be ready in September 2001. LEAP Version 2.0 will be released under an Open Source licence agreement and distributed as part of the JADE package. For additional information and contact details, please consult the LEAP website.

<http://leap.crm-paris.com/>  
*Bernard Burg*

### JADE

JADE™ simplifies the development of multi-agent applications, which comply with the latest FIPA 2000 specifications. While appearing as a single entity to the outside world, a JADE™ agent platform can be distributed over several hosts. Agents can also migrate or clone themselves to other hosts of the platform, regardless of the OS. The life cycle of agents can

be remotely controlled via a GUI, which also allows debugging tools to be started. The communication architecture tries to offer (agent transparent) flexible and efficient messaging by choosing, on an as needed basis, the best of the FIPA-compliant Message Transport Protocols (MTP) that are activated at platform run time. JADE™ successfully participated at

the interoperability tests organized by FIPA in 1999. It is implemented in version 1.2 of JAVA™ and has no further dependency on third-party software. JADE™ 1.4 counted about 800 downloads and version 2.0 is coming soon. JADE™ is available at <http://sharon.csel.it/projects/jade>.  
*the JADE Team*

...Read about TIIRA in the next issue of FIPA Inform

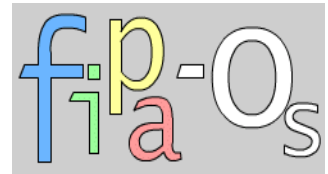
## FIPA-OS

FIPA-OS (<http://fipa-os.sourceforge.net/>) was the first Open Source implementation of the FIPA standard and has now recorded thousands of downloads. Dedicated developers from around the world have contributed to numerous bug fixes and updates, leading to over 10 formal new releases. In the latest release, 1.3.3, which has been downloaded by over 2,000 users, FIPA-OS has undergone a number of major architectural updates and has addressed resource optimisation issues enabling support for the new experimental FIPA specifications, as well as a new and improved Message

Transport System (MTS) layer with support for plug-gable messaging components and transport protocols. FIPA-OS now supports most of the FIPA Experimental specifications currently under development. With the new in depth developers' guides, it is an ideal starting point for any agent developer wishing to benefit from FIPA technology.

Due to the high-level of interest in FIPA-OS a formal training course was prepared and delivered to the participants of the IST project SHUFFLE (<http://www.ist-shuffle.org/>) in December 2000.

Work is progressing on support for small footprint devices and agents implementing the Nomadic Application Support FIPA specifications through work undertaken on the IST project CRUMPET (<http://www.ist-crumpet.org/>). In fact an initial release has been made available that functions in a restricted Java VM that is found in many small footprint devices. The continuing commitment to open design, development and re-implementation of core components has helped considerably in enabling these changes to happen in the shortest possible time-scales.



*"latest release downloaded by over 2000 users"*

The royalty-free FIPA-OS agent framework continues 'under new management' from the start-up Emorpha, in the same spirit of openness started by Nortel Networks in 1999.

*Alan Treadway*

*Phil Buckle*

## Sociological Aspects OfThe Internet Revolution

Perhaps the most significant shift that was signalled by the Industrial Revolution was not technological but social. In the Agrarian era most people talked only with people that they already knew: their neighbours and nearby relatives. The Industrial Revolution introduced a new phenomenon: the railway clerk and the government official -- people started interacting with people that they did not know beforehand and were often unlikely to meet again. This required learning a whole new trust model in order to cope with evolving society.

The Internet Revolution promises a similar shift -- software systems will increasingly be interacting with other software systems on a one-off ad hoc basis; again there is the significant likelihood of

"never seeing the same system again". FIPA has the potential to play an important role in facilitating this new world. The basic model adopted by FIPA is based on a combination of speech act theory and predicate logic -- the communicative act indicates the force or intention behind a particular message and the logic gives us a framework for expressing, clearly, the matter of the message. In particular, the three-way combination of performatives, logically grounded grammar, inference and a publicly shared ontology (which is likely to evolve from several independently generated sub-ontologies) gives FIPA agents a handle on how to interact with 'foreign' agents in a simple and predictable manner.

However, in order to fully support the world of agents interacting in a public arena, it is also necessary to put some additional elements in place. For example, the logical foundation for messages needs to be extended into a logical foundation for agreements. We also need to have simple and coherent stories for trust and accountability between agents. Some of this represents research that is yet to be done; but mostly it is a matter of careful analysis and codifying obvious best practice in the context of agents.

This then is the message for the community: agents must be able to say 'no' certainly but they must also be able to say 'yes'. It is up to us to put into place the framework that makes this possible.

*Frank M' Cabe*



*"...agents must be able to say 'no' certainly but they must also be able to say 'yes'"*



## Start-Up Corner :Web V2 Spins out of Siemens

WebV2 is a new company that will enable the commercial use of peer-to-peer networking with a new technology platform for complex interactions and negotiations. The new platform goes well beyond simple file searching and sharing that ventures like Napster and Gnutella focus on. Instead higher value B2B collaboration between peers, or direct knowledge exchange within enterprises, will be supported.

The innovative architecture is based on networked intelligent agents, capable of being scaled up for commercial use. WebV2 spun out of Siemens' R&D organization and draws

on technology developed during a decade of research with the parent company. WebV2 was founded by Donald Steiner, the President of FIPA and Michael Kolb, previously of John Wiley & Sons.

So far, content and commerce on the Web have revolved around the established web server-centric model, WebV1. The next generation Internet will have applications, appliances, and PCs interacting and accomplishing work directly with one another, bypassing central servers.

In recent months, WebV2 has completed a robust architec-

ture needed to cope with the inherent complexity of commercially viable peer-to-peer solutions. It is compliant to the FIPA architecture and draws from the team's experience in years of applied research and development within Siemens German and European projects as well as with FIPA.

The start-up will announce its first commercial peer-to-peer applications shortly, addressing distributed interactions in B2B and the extended enterprise. The management is currently talking to investors to close Series A financing.

*Donald Steiner*



*"...will enable the commercial use of peer-to-peer networking"*

The Newsletter of the  
Foundation for Intelligent  
Physical Agents

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## Java Agent Services

The Java Agent Services project is an initiative to define an industry standard specification and API for the development of network agent and service architectures.

There is of course no doubt that the most pervasive technology in use today for creating FIPA agent systems is Java. However, to date there exists no standard Java API for creating them, an omission that must be rectified if agents are to penetrate the business applications world. The JAS initiative intends to answer this requirement by developing an API, in the 'javax.agent' namespace, that instantiates the architectural features of the FIPA Abstract Architecture. This not only acts as a validation of the Abstract Architecture, but also forms the basis for creating commercial applications based on FIPA specifications.

Hence, a proposal was put forward in September 2000 to the Java Community Process (JCP), version 2, that outlined a Java Agent Services (JAS) API. The JCP was created by Sun Microsystems as a means of involving the Java user community in the design and creation of new extensions to the language core. Details may be found at the JCP website, <http://java.sun.com/aboutJava/communityprocess/>.

The JCP program identifies three primary commitments that the proposing parties must make when undertaking a project; a specification document describing the API and underlying technology, a reference implementation and a compatibility test suite. Development of the first two of these is now underway. As mentioned, at the core of the proposal is the FIPA Abstract Architec-

ture, of which the JAS is essentially a reification. Consequently, the JAS will define a set of objects and service interfaces that support agent deployment and operation. Specifically this implies three primary entities; Java classes describing the various components of message element, Java classes defining agent names and descriptions and Java interfaces corresponding to agent services for messaging, directories and naming. The intention is that the service interfaces may be implemented in terms of a number of different technologies, including both existing Java standards and proprietary systems. This implies that the base messaging service employed will be JMS, but with API extensions to allow for other transport mechanisms such as HTTP, SMTP and SOAP. Similarly the base for directory services will be JNDI

due to its inherent LDAP extensions. Implementations built using the JAS API are likely to find a strong foundation in the B2B application space, enabling activities such as e-commerce, business process management and trading partner integration. This may imply that the JAS will find itself in the same space as other technologies such as the UDDI initiative and Hewlett-Packard's E-Speak, albeit from a more abstract perspective. As such the JAS will focus on creating an API flexible enough to be adapted to diverse applications by combining the knowledge and experience of the expert group membership and other contributing parties. Additional material and the evolving specification may be found on the JAS website at <http://www.java-agent.org/>.  
*Dominic Greenwood*