FIPA-OS

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FIPA-OS

- What is FIPA-OS
- Who is FIPA-OS
- Who is using FIPA-OS
- FIPA-OS Tools
- FIPA-OS Features
- Extras

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What is FIPA-OS

- FIPA-OS is a component-based toolkit enabling rapid development of FIPA compliant agents. FIPA-OS supports the majority of the FIPA Experimental specifications and is being continuously improved as a managed Open Source project, making it an ideal choice for any FIPA compliant agent development activity.

- Developed using sound software engineering principals enabling developers to develop agent solutions based on these principals.

- FIPA compliant platform but not constrained by FIPA

- FIPA-OS is **Open Source**. It is **Royalty Free** for commercial use. Emorphia is committed to keep it Open Source and Royalty Free.

- ~3,000 downloads of current release

- > 40,000

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Who is FIPA-OS

- Open source community managed by

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- emorphia was founded by members of the Agents Group at Nortel Networks for the purpose of commercialising agent technology, network services, mobile technology and building solutions.

- Many contributions to the project have been received and can be accessed from

  http://fipa-os.sourceforge.net/contributions.htm
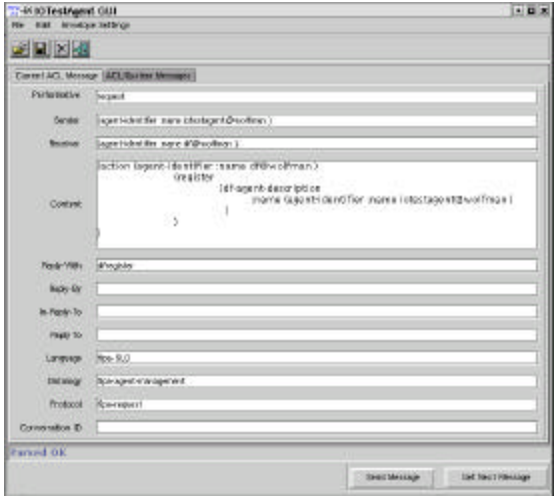
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Who is using FIPA-OS

- European projects
  - CRUMPET
  - SHUFFLE
  - PATTERNS
  - NGNi - SMONET
  - ONTOWEB
  - Agent Link II
    - Liaison role between ONTOWEB and AgentLink II (WP Leaders)
  - AgentCities
- Universities
  - UHe
  - NTU
  - QM-UL
  - Czech Technical University
  - Etc.......
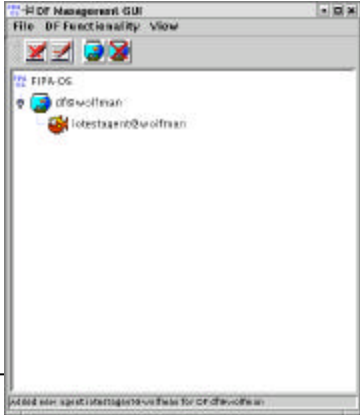- Commercial
  - MITRE
  - Jefferson labs
  - ???

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FIPA-OS Tools

IOTestAgent

DFGUI

FIPA-OS

Agent Loader
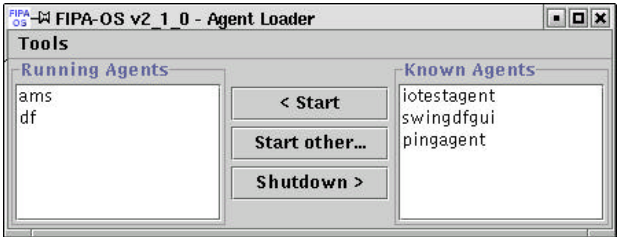
Task Generator
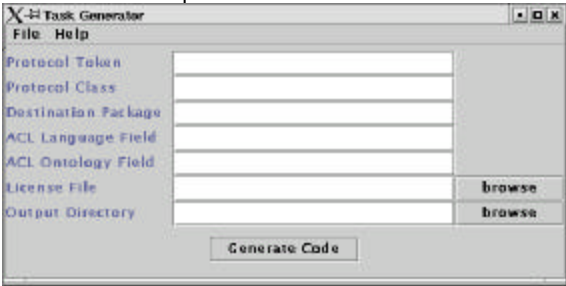
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High Level Architecture of FIPA-OS Agent Shell

Key

☐	component
🟨 🟦	vapourwear / prototype component

x → y	y **implements** x
x → y	x **depends on** y
x → y	y **superceeds** x

Concrete Implementation

Abstract Architecture

- Session Management
- Database Interface
- Tasks
- Task Manager
- Intelligence Manager
- Conversation Manager
- MTS
- MTS Services

- Data Mapping → XML / Java Properties / Scripts
- Serialization / Memory
- FaCT
- FIPA AMS & DF → DAML-S Support
- FIPA Agent Management Tasks
- Generic Task Manager
- FIPA Compliant CM
- FIPA ACC / Services / MTP's
- Proprietary / FIPA Parsers
- Proprietary MTP's → JMS

- MySQL
- JDBC
- Postgres
- CBR
- BDI / JESS
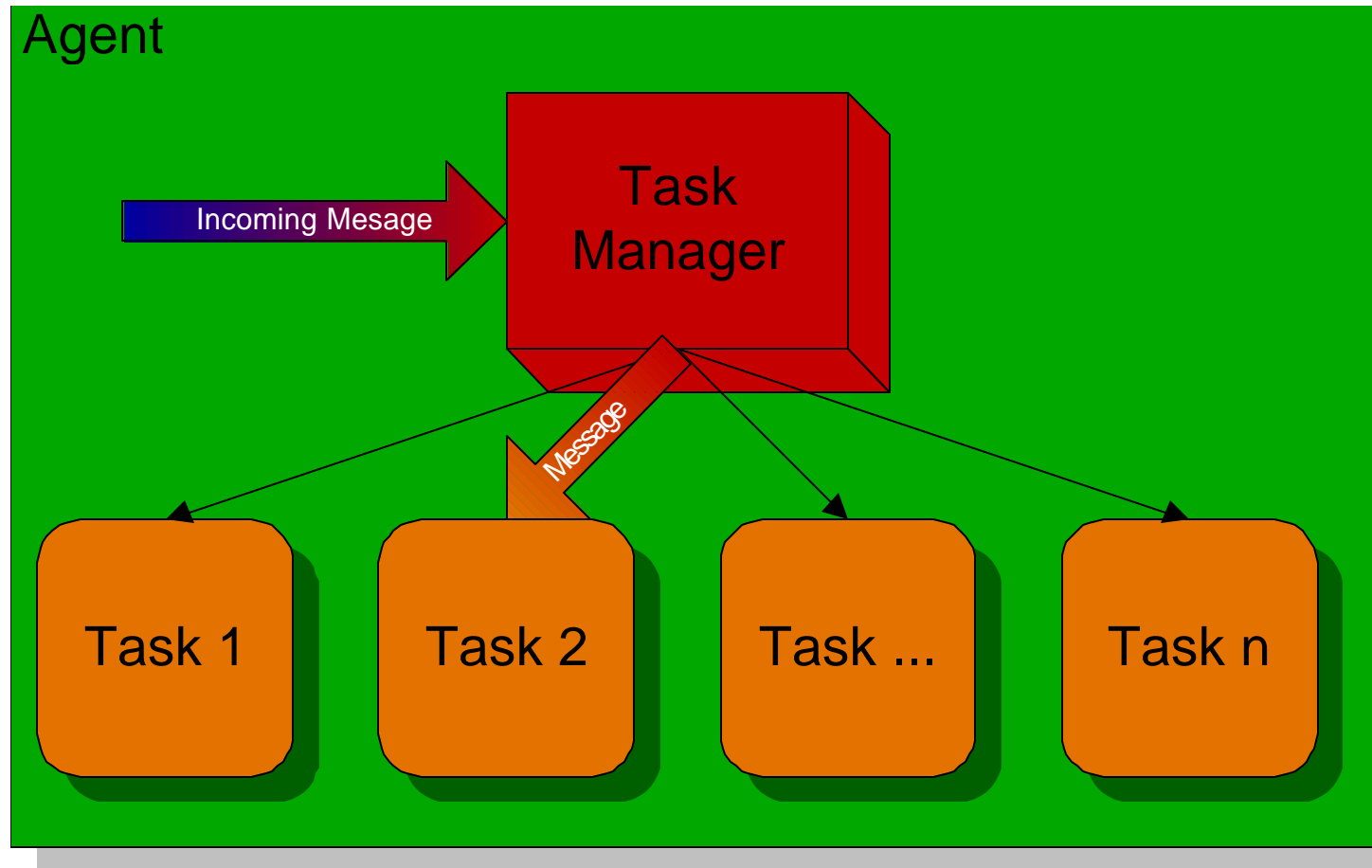- Data Core
- Dynamic Platform Discovery

Components

FIPA-OS (fipaos.*)

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Task Manager

- Separates agent 'tasks' into distinct objects
- Messages are automatically routed to the correct state
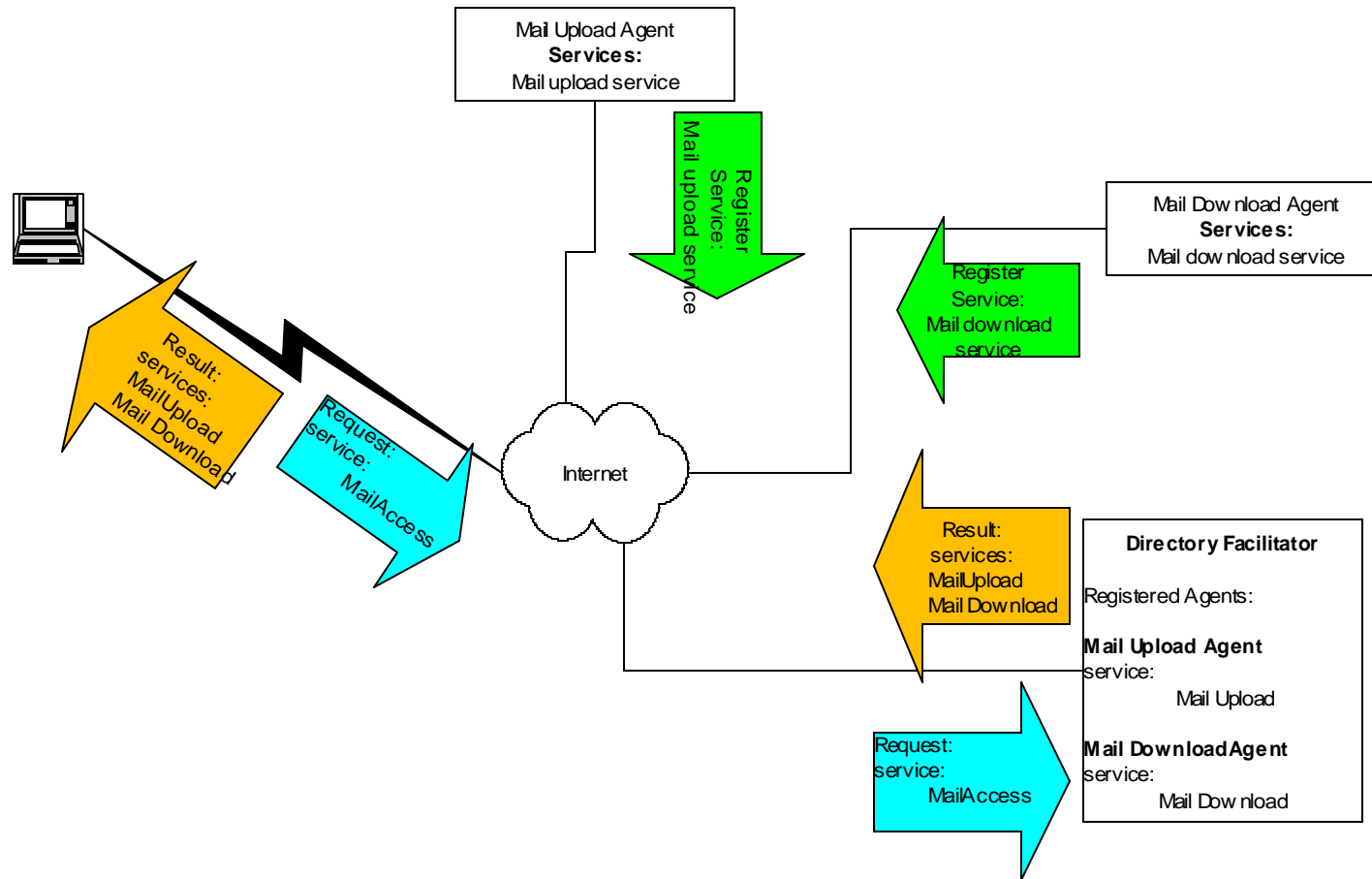
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Additional Agent Functionality

- Ontology (A classification of what exists, and how it exists, in a domain)
  - Domain Modelling (Description of a domain so it can be reasoned over)
    - Tool Independent (Architectural design will remain so)
      - OIL, DAML, DAML+OIL, DAML-S (Committed to supporting these languages)
  - Domain Querying (Interrogating the domain model to classify entities)
    - FaCT (Relational inference over D-Logic encoding)
      - DAML+OIL
    - JENA (Inference over explicitly defined subsumption of ? properties)
      - DAML-S

- Reasoning

  - Belief-Desire-Intention

  - Case Based Reasoning

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Knowledge Bases

- FIPA-OS Knowledge Base integration
  - Part of the Agent Shell
  - Allows adaptive behaviour
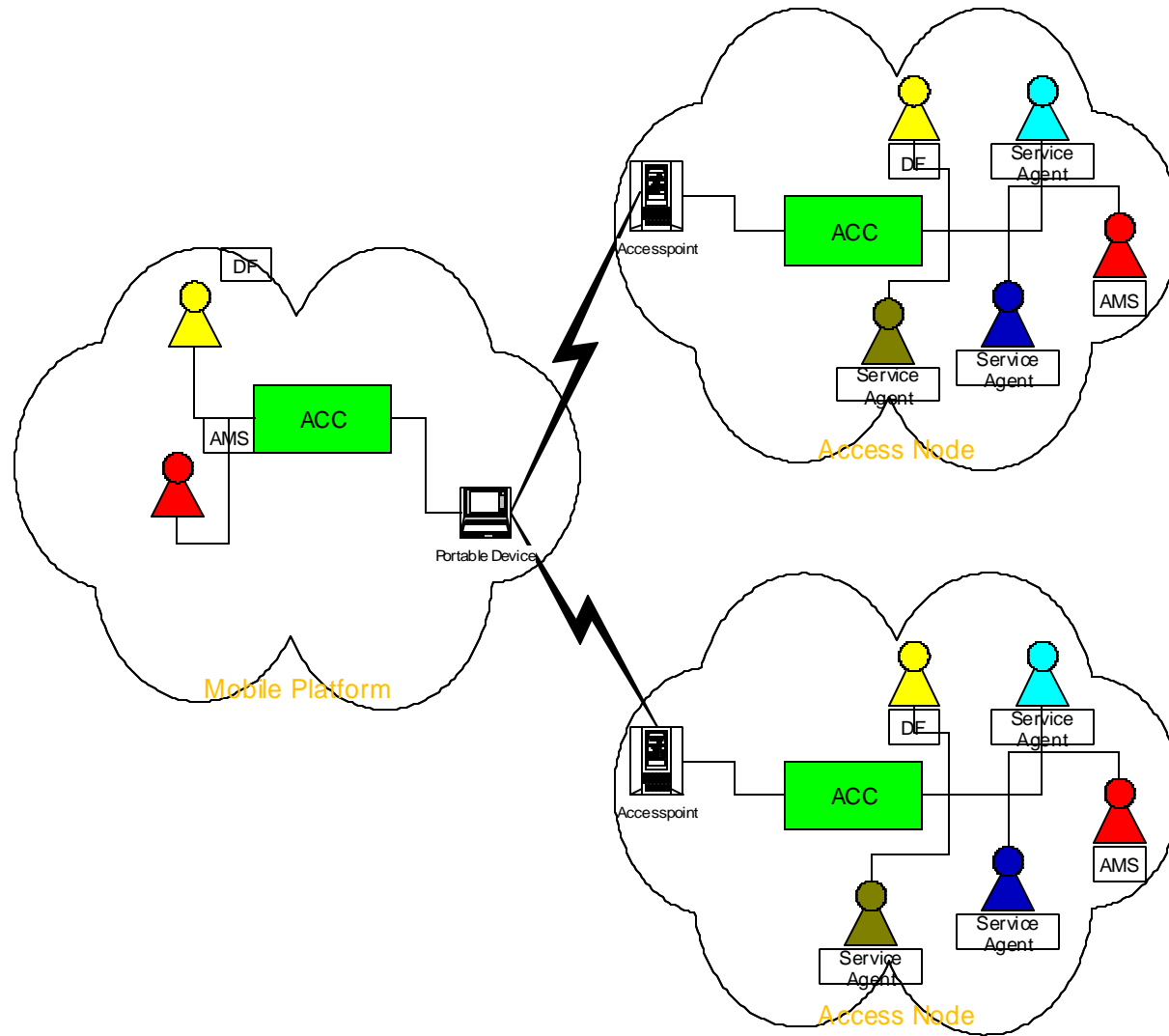   - Model modification
    - Model querying

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Service Composition

Mail Upload Agent
Services:
Mail upload service

Register
Service:
Mail upload service

Mail Download Agent
Services:
Mail download service

Register
Service:
Mail download
service

Result:
services:
MailUpload
Mail Download

Request:
service:
MailAccess

Internet

Result:
services:
MailUpload
Mail Download

Directory Facilitator

Registered Agents:

Mail Upload Agent
service:
Mail Upload

Mail Download Agent
service:
Mail Download

Request:
service:
MailAccess

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Platform Discovery

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Extras cont..

- Ad-hoc platform discovery
  - Uses features of IP
  - Useful for wireless roaming
    - ACC detects remote ACC
    - ACC requests remote platform MTP profile
    - Local ACC forwards platform name to local DF
    - DF registers remote DF

    - When wireless link is lost
    - ACC informs DF
    - DF deregisters remote DF

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