



Akogrimo; a work in progress on
the delivery of a next generation
grid.

www.akogrimo.org

Outline

- The Akogrimo Project
- Mobility
- Key Architectural Components
- Testbeds
- Conclusion

The Akogrimo Project

The Project

- Akogrimo: Access to knowledge through the Grid in a mobile world.
- Aim to design a grid middleware prototype capable of supporting mobility.
- European Framework 6 Research Project.
- 3 year duration.

The Akogrimo Project

CCLRC

- Council for the Central Laboratory of the Research Councils (Oxfordshire).
- Have been working on the Akogrimo project since it began (18 months).
- Currently we have been involved in the design of:
 - VO management
 - Workflow Management
 - SLA
- In the process of creating the architecture the issues related with providing a secure reliable and mobile architecture has been important.

The Akogrimo Project

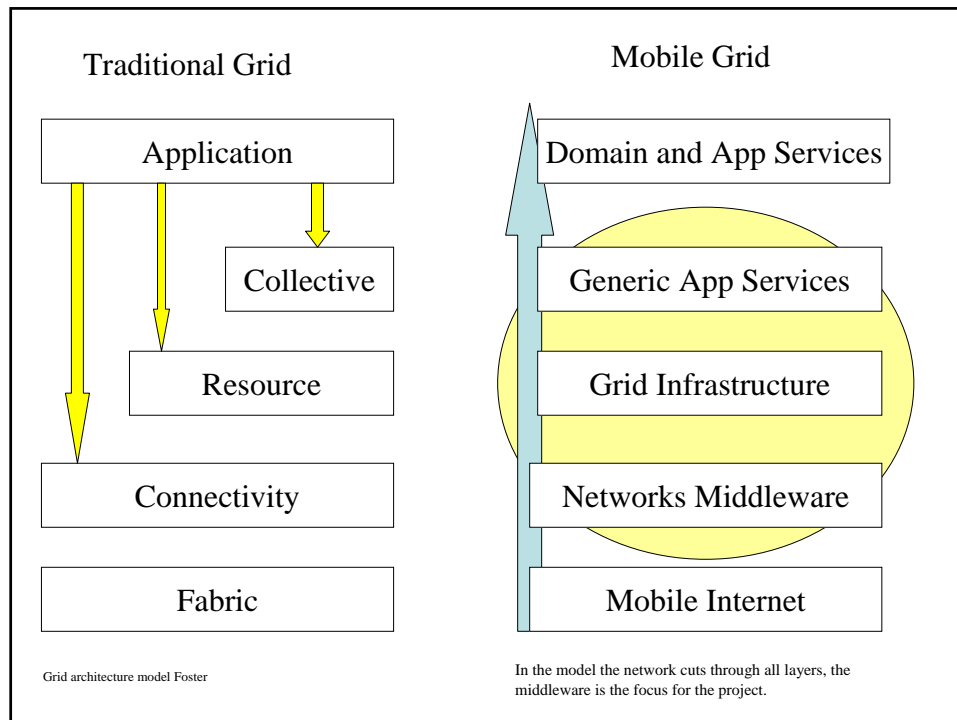
Approach

- Akogrimo's focus is on the development on technologies above and below the Grid infrastructure layer.
- Based on technologies like Mobile IPv6 existing at hardware level.
- The project aims to present a series of application test beds running that run on Akogrimo Grid Middleware, utilising technologies like Mobile IPv6.
- Akogrimo also will be OGSF and WSRF compliant.

Mobility

Motivation

- Mobility is rapidly becoming part of our lives.
- Technologies include 802.11 – UMTS -GPS
- Applications – mobile internet, vehicle tracking / navigation.
- Influencing creation of location specific services and increased levels of semantic computing.
- Fits in well with web services and application integration technologies, great potential for the application of Grid technology.

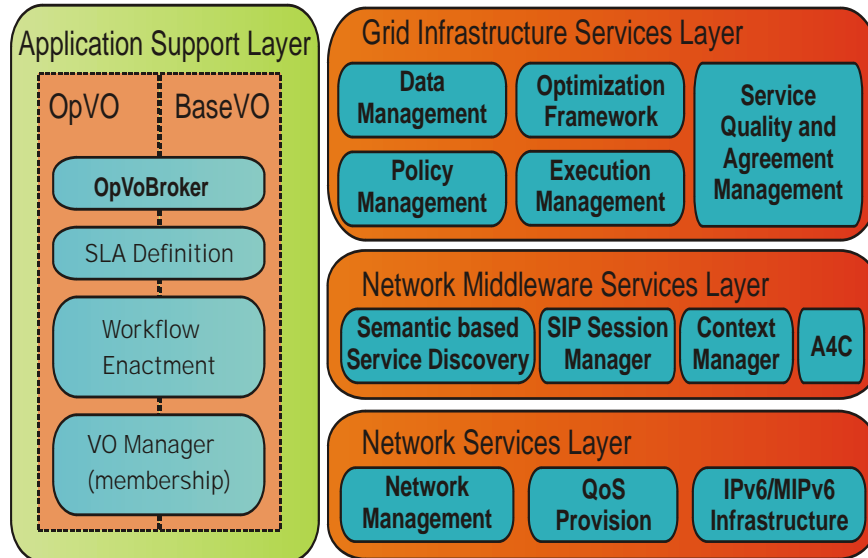


Key Architectural Components

Work Packages

- We are currently in the prototype development phase of the project.
- The project is divided up into four main areas of development to aid this:
 - Network Services Layer
 - Network Middleware
 - Grid Infrastructure
 - Application Support layer.

Akogrimo Layers



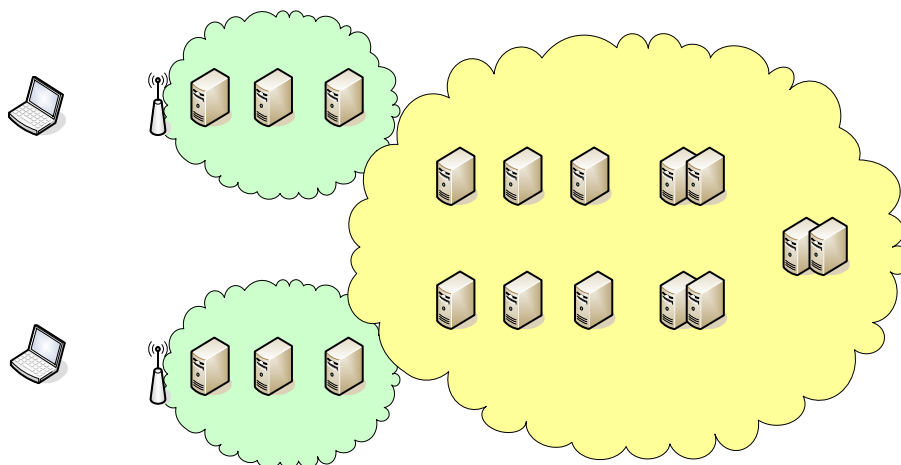
Network Services

- Initial work into Mobile IPv6 integration with Grid middleware based on Daidalos and Moby Dick projects.
- Aim to provide network authorisation and also apply QoS techniques at the network level.
- Current Status
 - Designing services to utilise Mobile IP Version 6 in Globus Toolkit 4.

Network Middleware Services

- The broad goal of this layer is to present a structure that supports seamless mobility in heterogeneous network environments.
- Divides the Akogrimo network into two areas, the core network and access network.
- The core network is managed by the core Akogrimo services.
- The access network enables mobile devices to interact with the Akogrimo core Network as either services or users.

Access and Core Networks



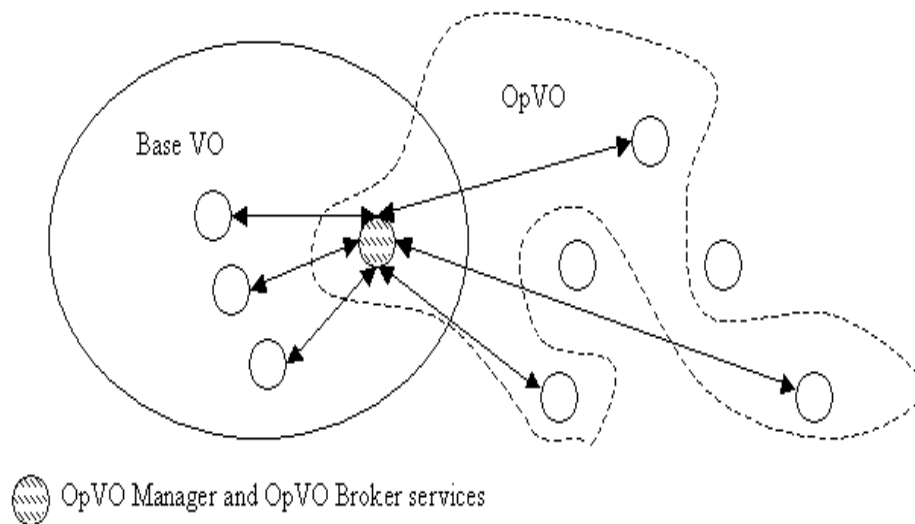
Grid Infrastructure Services

- This layer provides the Grid services / Web services infrastructure (as defined by WSRF/OGSA), execution management, data management and SLA monitoring and enforcement.
- Service Level Agreements (SLA)
- Execution Management Service (EMS)

Application Support Layer

- The Generic Application Services Layer provides Virtual Organisation (VO) management and Orchestration.
- The VO management in the application illustrates the core and access network split in action.
- Within Akogrimo we create a new type of VO to deal with services which are external to the core/base VO and often mobile in nature.
- We call this the Operative VO, an instance of the Operative VO service is created by the Base VO for each Akogrimo application that it starts.

VO Architecture



Testbeds

- Designed to illustrate the use of Akogrimo middleware in its support of mobile technology.
- There are 3 main testbeds:
 - Disaster management
 - E-learning
 - Emergency Response
- Currently implementing the E-Health prototype.

Mobile technology and the E-Health Scenario



E-Health

- We aim to demonstrate location aware services in action within the e-health scenario, ranging from mobile computing devices to location aware heart monitoring devices.
- Technologies we have been working with at the application support level include workflow management specific technologies based around BPEL.
- We have also been working with WSRF.net and GT4 technology to design our Grid Service Infrastructure, including VO and Workflow Managers.

Conclusion

- Akogrimo is currently at its halfway stage and is moving from the architectural design phase to implementation.
- In the next year we hope to have a fully implemented E-Health scenario to demonstrate Akogrimo and its support for Mobile technology within its applications.

Any Questions?

Thanks for listening

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