



open middleware
infrastructure institute

Open Source Grid Middleware

Alistair Dunlop
a.dunlop@omii.ac.uk



Contents

- The OMII vision and operation
- Open Source Grid Middleware Today
- OMII Middleware for tomorrow
- Working with the OMII

Open Middleware Infrastructure Institute - Vision



- Established in 2004 to provide ***robust, documented and tested open source grid middleware***
 - Focus on the User Experience
 - Significant industrial contribution
- For scientists wanting to establish collaborative or ad-hoc infrastructures
 - Typical “project” sized collaborations
 - Lightweight (installation and maintenance)
 - Use standard tooling (web services)
 - Securely manage data and access to hardware resources
 - Standards compliant



OMII Operations

- Based initially at Southampton University
- Operations focus on Integration, Testing and Documenting “product”
- Software sourced from the community
 - Open source community (Tomcat,Axis,WSS4J,...)
 - Harvesting existing UK e-science project outputs
 - Sponsoring continued development of standards compliant web services through *Managed Programme*
- Software distributions, documentation, tutorials, applications etc, available from on-line repository
 - <http://www.omii.ac.uk>



OMII for Service Providers

- **Goal:** I want others to access my resources & applications
- I want to provide secure controlled access to:
 - My applications:
 - Specify who can access which applications
 - My computational resources:
 - I can limit external usage of my resources
- Provides an interface that allows remote users to access my resources
- Enable collaboration with other partners



OMII for clients/resource users

- **Goal:** I want to use other resources & applications
- Through a network of service providers I can....:
 - Gain access to applications that I do not have installed locally
 - Use remote machines with more CPU, memory or storage
 - Process larger problems sizes
 - Transparently switch between different service providers
 - No exposure to underlying OS, queuing policy, disk layout etc.
- Install minimum amount of software

OMII Grid Middleware today – Release 2.1.0



- Includes file/compute capabilities from release 1.x
- Base open source technology
 - Tomcat 5.0.25, Axis 1.2RC3 & WSS4J
- New capabilities from the managed programme
 - OGSA-DAI WS-I for data access (OGSADAIS)
 - GridSAM for job submission and job monitoring (OGSA JSDL & BES)
 - GRIMOIRES provides a UDDIv2 compliant registry
- 4 Basic services from release 2.0
 - Data and application execution
 - Account and resource management
- New features:
 - Install all components through a single installer (5 minute client/server Install)
 - Support for multiple JVMs (1.4.2_04 up to 1.5.0_04)
 - Relocatable non-root installs
 - Databases & services can be installed on different machines
 - Updated documentation, tutorials, sample applications

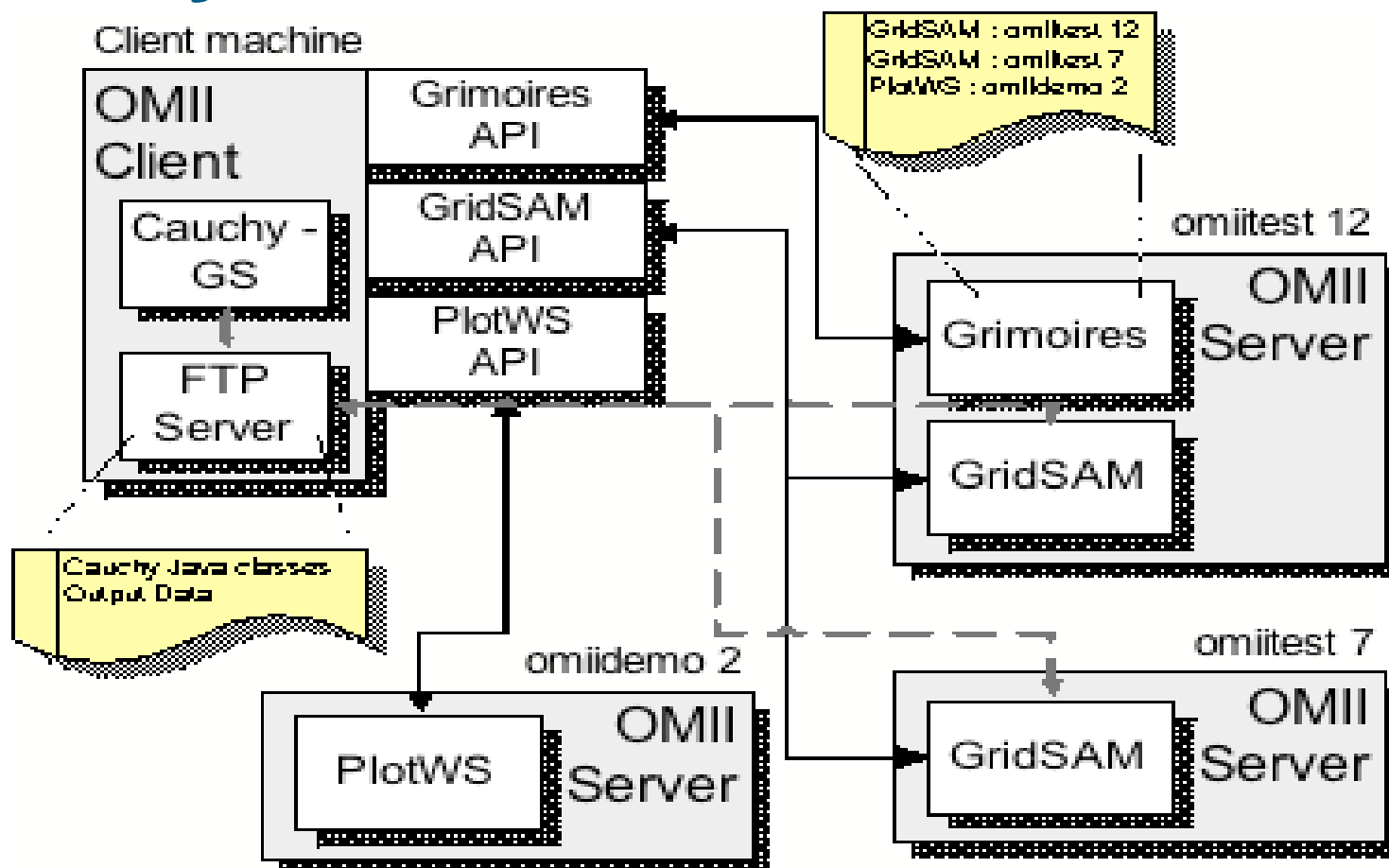
Sample Application using OMII Release 2.1.0



- Cauchy Horizons
 - Simple Java application
 - Transforms a surface (list of 3D points)
- Contents:
 - Server side installer (Application)
 - Client side installer
- Client may distribute work between different service providers



Cauchy within OMII 2.1.0



OMII Release 2.1.0 Demo Application



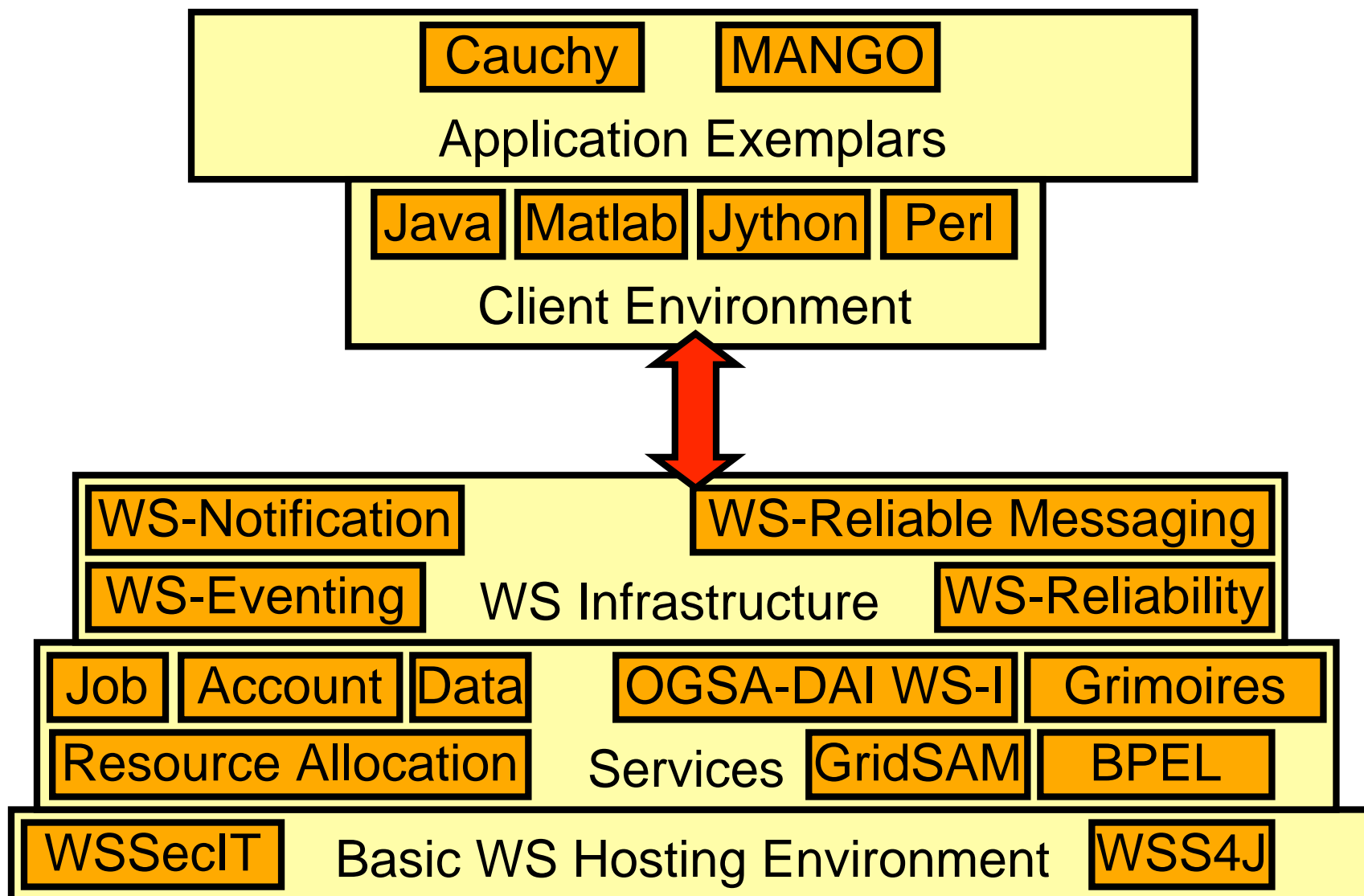


OMII future releases

- OMII Release 2.3.0 - November 2005 (2.1.0+)
 - Matlab, Jython & Perl client environments
 - Further portability work
- OMII Release 3.0 – December 2005 (2.3.0 +)
 - Notification service (WS-Eventing + WS-Notification)
 - Allows workflow style application programming with service discovery through Registry service
- OMII Release 4.0 – April 2006 (3.0 +)
 - BPEL service
- Subsequent releases to include
 - Reliable messaging (WS-Reliability and WS-reliable messaging)
- Ultimately supply both stand-alone and integrated standards-conforming web services



OMII Roadmap





OMII future

- OMII-UK proposal
 - Federation of 3 major UK centres (Southampton, Edinburgh, Manchester)
 - Integrate activities of MyGrid, OGSA-DAI with OMII and sign up to agreed software practices and standards
 - Requested funding for a further 3 years including extending “Managed Programme”
- OMII-Europe proposal
 - Worldwide federation of all major grid activities leading to common standards compliant services and infrastructure integration



Working with the OMII

- Obtain software, tutorials, documentation from repository
 - <http://www.omii.ac.uk>
 - On-line and telephone support available
- OMII can assist with professional services to deliver end-user solutions on high value projects
 - contact a.dunlop@omii.ac.uk or s.newhouse@omii.ac.uk