omii europe

open middleware infrastructure institute

Grid Interoperability with OMII-Europe

Dr. Alistair Dunlop
Project Manager

Talk Outline

- **What is OMII-Europe and what do we mean about Grid Interoperability?**
- **What interoperability do we have now and what will we have later?**
- **When will interoperable solutions be available and how can we get them?**

What is OMII-Europe?

- **2 year EU funded project involving 16 partners to enable-infrastructure interoperability**
  - Comprising major grid middleware providers
  - 9 months remaining
- **Focus is on achieving interoperability through common standards**
  - Common standards long term solution
  - Significant involvement and success in OGF and Oasis
  - Implementations of standards in tandem with standards development on all middleware platforms

Who benefits from Interoperability?

"Interoperable grid middleware allows resource owners to deploy their grid management software of choice that is transparent to end users"

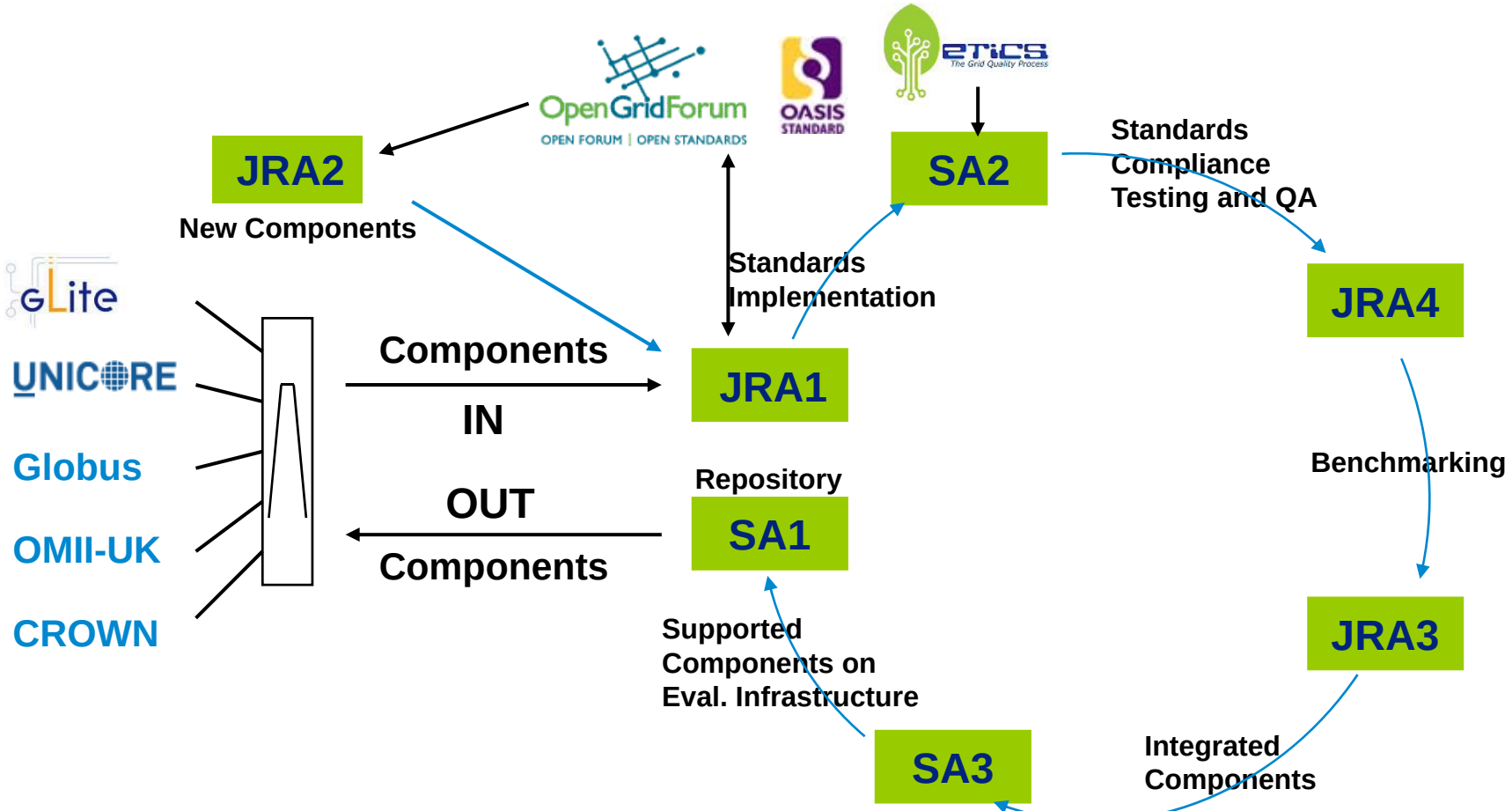
- **Grid Developers**
  - A single standard set of services on all grid middleware systems
  - Applications portable across different grid middleware systems
- **E-Science application users**
  - Common ways for accessing any e-infrastructure resources
  - Potential access to a significantly larger set of resources
- **E-resource owners**
  - Reduced management overheads as only a single grid middleware system needs deployment
  - Potential for greater resource utilisation

"***For the Grid to deliver on it's promises interoperability needs to be taken for granted like network interoperability***"

Participation in middleware standardisation

- **Most project participants involved as member/observer in many OGF WG**
- **11 project participant hold senior positions in**
  - OGSA DAIS WG (Database Access and Integration Services)
  - OGSA RUS WG (Resource Usage Server)
  - OGSA BES WG (Basic Execution Service)
  - OGSA JSDL WG (Job Submission Description Language)
  - GIN CG (Grid Interoperability Now)
  - OGSA-AuthZ-WG (Authorization)
  - GLUE WG
  - GFSG WG (Grid File System)
  - RM WG (Reference Model)
  - OGSA Naming WG
  - Technical Standards Committee
  - GSA RG (Grid Scheduling Architecture)
  - GRAAP WG (Grid Research Agreement Allocation Protocol)
  - OGSA BYTE IO WG
  - OGSA D WG (Data)
  - OGSA DMI WG (Data Movement Interface)

The OMII-Europe Standardisation process



BES/JSDL job submission and monitoring

	JRA1 job submission		
Platform	**gLite**	**UNICORE**	**Globus**
Platform version number	3.1	**6.1**	4.2
Alpha Release	M17	M17	M15
Beta Release	M18	M18	M19
Standards compliance testing	M19	M19	M19
Demonstration	M19	M19	M19
Documentation	M19	M19	M19
Training material availability	M19	M19	M19
QA process	M20	M20	M20
Final Release	M20	M20	??

VOMS – providing SAML and Integration with other platforms

	JRA1 VOMS UNICORE Support	*JRA1 VOMS - SAML Service*		
Platform		**gLite**	**Globus**	**UNICORE**
Platform version number	**6.1**	3.x+	4.x+	**6.1**
Alpha Release	M12	M12	M12	M12
Beta Release	M18	M17	M17	M17
Standards compliance testing	N/A	M18		
Demonstration	M18	M18	M18	M18
Documentation	M18	M16	M16	M16
Training material availability	M18	M16	M16	M16
QA process	M19	M18+	M18+	M18+
Final Release	M20	M20	M20	M20

OGSA-DAI 3.0 service re-engineering

	JRA1 database			
Platform	**gLite**	**UNICORE**	**Globus**	**CROWN**
Platform version number	3.1	**6.1**	4.0.x	2.5
Alpha Release	M13 - Rep. - Adv. Alpha m18	M13 - Rep. - Adv. Alpha m18		Now - M15
Beta Release	M21	M21	Now - M15	M18
Standards compliance testing	N/A	N/A	N/A	N/A
Demonstration	Post M18	Post M18	N/A	Post M18
Documentation	M15	M15	M15	M15
Training material availability	M15	M15	M15	M15
QA process	Ongoing	Ongoing	Ongoing	Ongoing
Final Release	M23	M23	M17	M23

Gridsphere portal (common Web access) integration

	JRA1 portal			
Platform	**gLite**	**UNICORE**	**Globus**	**CROWN**
Platform version number	3.1	**6.1**	4.0.x	2.5
Alpha Release	M18	M18	M18	M16+
Beta Release	M21	M21	M21	M21
Standards compliance testing	N/a	N/a	N/a	N/a
Demonstration	M18	M18	M18	M18
Documentation	M17	M17	M17	M17
Training material availability	M17	M17	M17	M17
QA process	M22	M22	M22	M22
Final Release	M23	M23	M23	M23

Provision of RUS compliant service on all platforms and multiple clients for checking use

	JRA1 accounting		
Platform	**gLite**	**UNICORE**	**Globus**
Platform version number	3.1	**6.1**	4.0.x
Alpha Release	M12 (client); M15 (server)	M12	M12 (server); M18 (client)
Beta Release	M18	M18	M18
Standards compliance testing	M19	M19	M19
Demonstration	M20-M23	M20-M23	M20-M23
Documentation	M19	M19	M19
Training material availability	M20?	M20?	M20?
QA process	M22	M22	M22
Final Release	M22	M22	M22

BES compliant meta-scheduler

	JRA1 Component Exchange		
Platform	**UNICORE - TBD**	**Globus - provisional**	**OMII-UK**
Platform version number	6.0b	4.0.5	3.4.1
Alpha Release		M18	M17
Beta Release		M19	M18
Standards compliance testing		M20	M19
Demonstration		M18	M17
Documentation		M21	M20
Training material availability		M21	M20
QA process		M22	M22
Final Release		M23	M23

Further developments

- **Common Information Model service being implemented – (OGSA GLUE WG)**
  - Initial specification being developed
  - Initial early implementations planned for M18 and revision at month 22
- **OMII-Europe II proposal0 would continue developments in:**
  - BES/JSDL extensions for data and LSF BES compliance
  - Common data storage services (Byte IO, OGSA DMI, GSM WG)
  - Service discovery
  - Grid monitoring and Management (DESHL, SIMON etc…)
  - Grid billing and pricing
  - Grid visualisation (computational steering)
  - Service Authorization (XACML support)

Some progress to date…

- **Alpha BES and JSDL implementations for UNICORE 6, gLite 3.1, Globus 4, OMII-UK, CROWNgrid available**
  - Interoperability demonstrated through use of a BES compliant meta-scheduler
- **VOMS service extended to support SAML and integrated into UNICORE**
  - SAML support available for integration into EGEE
- **Initiated development of a common security profile acceptable to all grid middleware systems**
  - gLite, Globus and UNICORE to accept x509 Proxy cert.
  - Interoperability demonstration with UNICORE and gLite using proxy cert, a common VOMS SAML service and BES/JSDL
- **Alpha versions of client and server RUS (common accounting service) for gLite (DGAS), Globus (SGAS) and UNICORE available**
- **OGSA-DAI 3.0 alpha version for UNICORE and gLite available**
- **Portal demonstrator access to gLite and UNICORE providing single sign on and access to resources**

And also available now and ongoing…

- **A number of training courses to date giving hands on experience of middleware systems, and interoperable services. See http://training.omii-europe.org**
- **Evaluation infrastructure and support available to try out different middleware systems and interoperable services. See http://support.omii-europe.org**

What can you do now… and later…

- **Now**
  - Most products at Alpha stage not publicly available
  - They provide basic interoperability of multiple grid middleware systems focusing on job execution
  - Available to early adopters working with OMII-Europe partners
- **Spring 2008 (end of current project)**
  - Further security integration work between different middleware platforms
  - Completed QA'd services and demonstrated end-to-end solutions
  - Availability of GLUE II information model service implementations
- **Late 2008/9 (anticipated new project)**
  - Addition of further data management and grid management capabilities in addition to job execution management

OMII-Europe implications for EGEE

- **gLite will additionally/optionally provide a BES interface for job submission and management using JSDL**
  - Existing users unaffected
- **gLite can use new VOMS service without change that can also provide SAML assertions**
  - This enables VO's to span gLite and UNICORE systems
- **Additional common services will be deployable on gLite**
  - OGSA-DAI, RUS, GLUE II Information model, others…

Obtaining the services

- **Primary route to deployment is through grid middleware suppliers**
  - Long term strategy
  - Bundle OMII-Europe grid middleware components with standard middleware distributions
    - **Outline plans for 2 components in UNICORE 6.1 by end 2007 (BES and VOMS)**
    - **One component already part of gLite, further discussions scheduled**
- **Secondary strategy is to provide additional interoperable components to existing e-infrastructures**
  - Short to mid term strategy
  - Integrate components into major European e-infrastructures
    - **EGEE discussions started in July**
    - **DEISA discussions after September**
- **Finally software also available from OMII-Europe repository**
  - primarily targets early adopters and those people deploying their own e-infrastructures

Summary

- **OMII-Europe is a 24 Month EU funded project with 16 partners to establish grid infrastructure interoperability through implementing a set of agreed open standards on all middleware platforms**
- **OMII-Europe is implementing a common Job submission system, Accounting service, Database service, Virtual Organisation service, Information Service and Security model for major middleware platforms. This will allow identically specified jobs to be run, managed and migrated to different middleware platforms thus enabling "the Global Grid"**
- **Initial versions of BES, VOMS and security service have already enabled UNICORE and EGEE resources to be used by the same job**
- **A complete set of fully interoperable services will be available in spring 2008 with early versions of some services available already**
- **Users can try interoperability on the OMII-Europe evaluation infrastructure, or obtain services for installation on their own resources from the OMII-Europe repository**
- **We anticipate OMII-Europe services to be integrated into standard middleware distributions as well as deployed on large scale e-infrastructures such as EGEE and DEISA**
- **OMII-Europe will request continuing funding in the September EU call to support the existing services and provide further services in the areas of data and grid management**
- ***OMII-Europe brings interoperability and standardisation to UNICORE***

Further Information

- **http://www.omii-europe.org**