



Enabling Grids for E-science

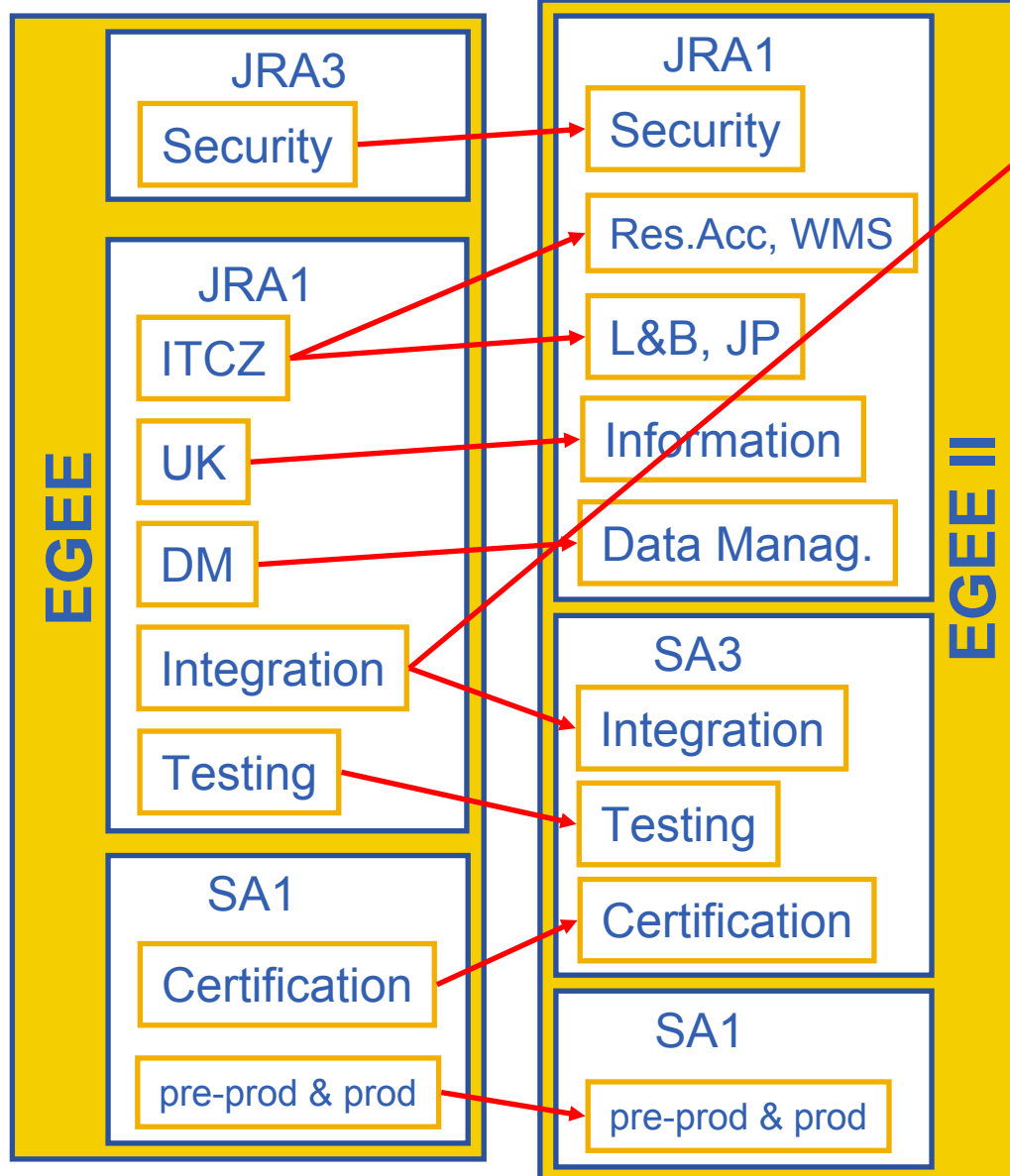
## JRA1 in EGEE II

*Claudio Grandi  
(INFN and CERN)*

*EGEE II Transition Meeting  
April 12-13, 2006  
CERN, Switzerland*

[www.eu-egee.org](http://www.eu-egee.org)  
[www.glite.org](http://www.glite.org)





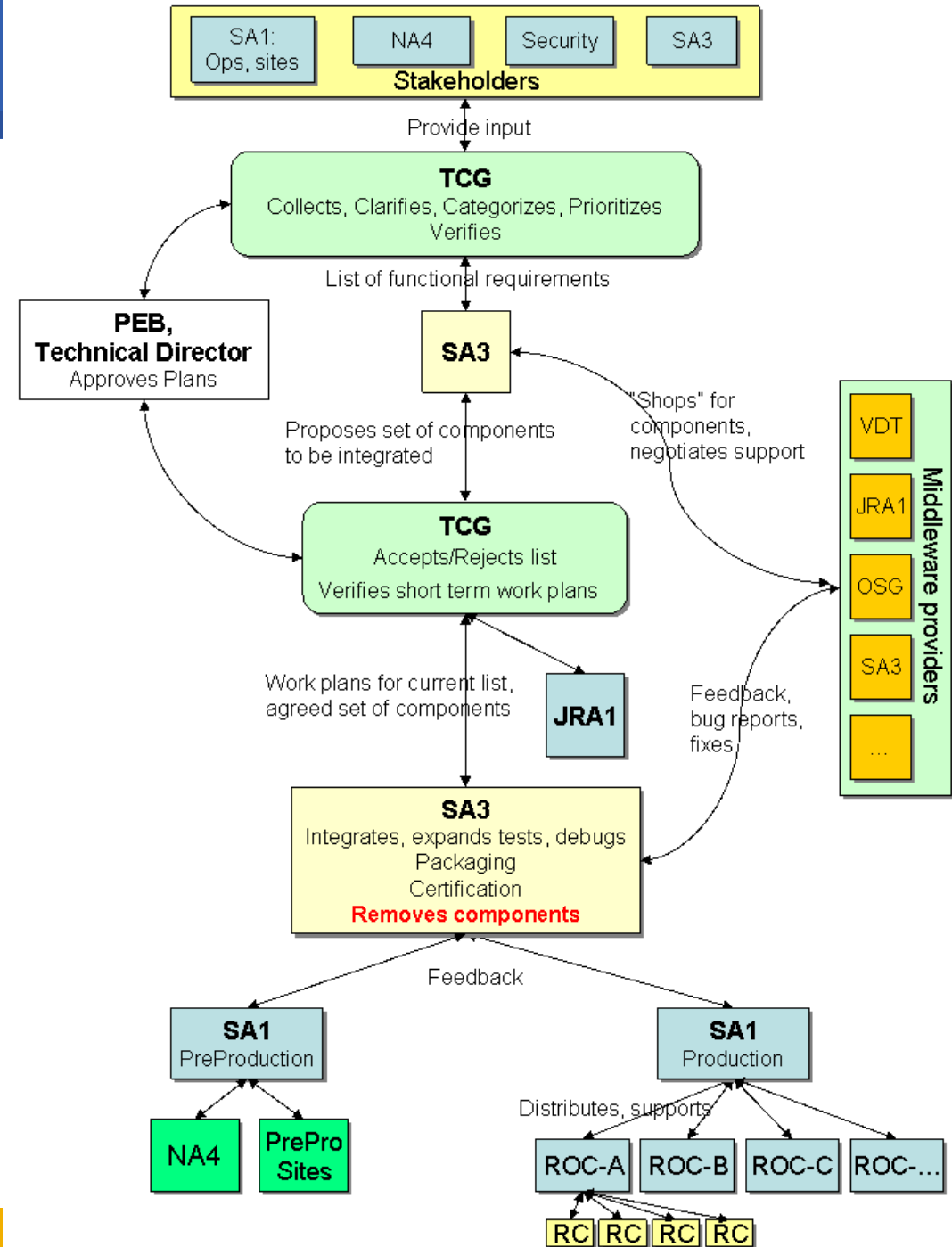
- **JRA1 will be responsible for developing the middleware**
- **SA3 will be responsible for integration, testing and certification, i.e. to produce the release**
- **SA1 will continue to run the PPS and PS systems**
- **ETICS will provide the tools for building and testing used by JRA1 and SA3**

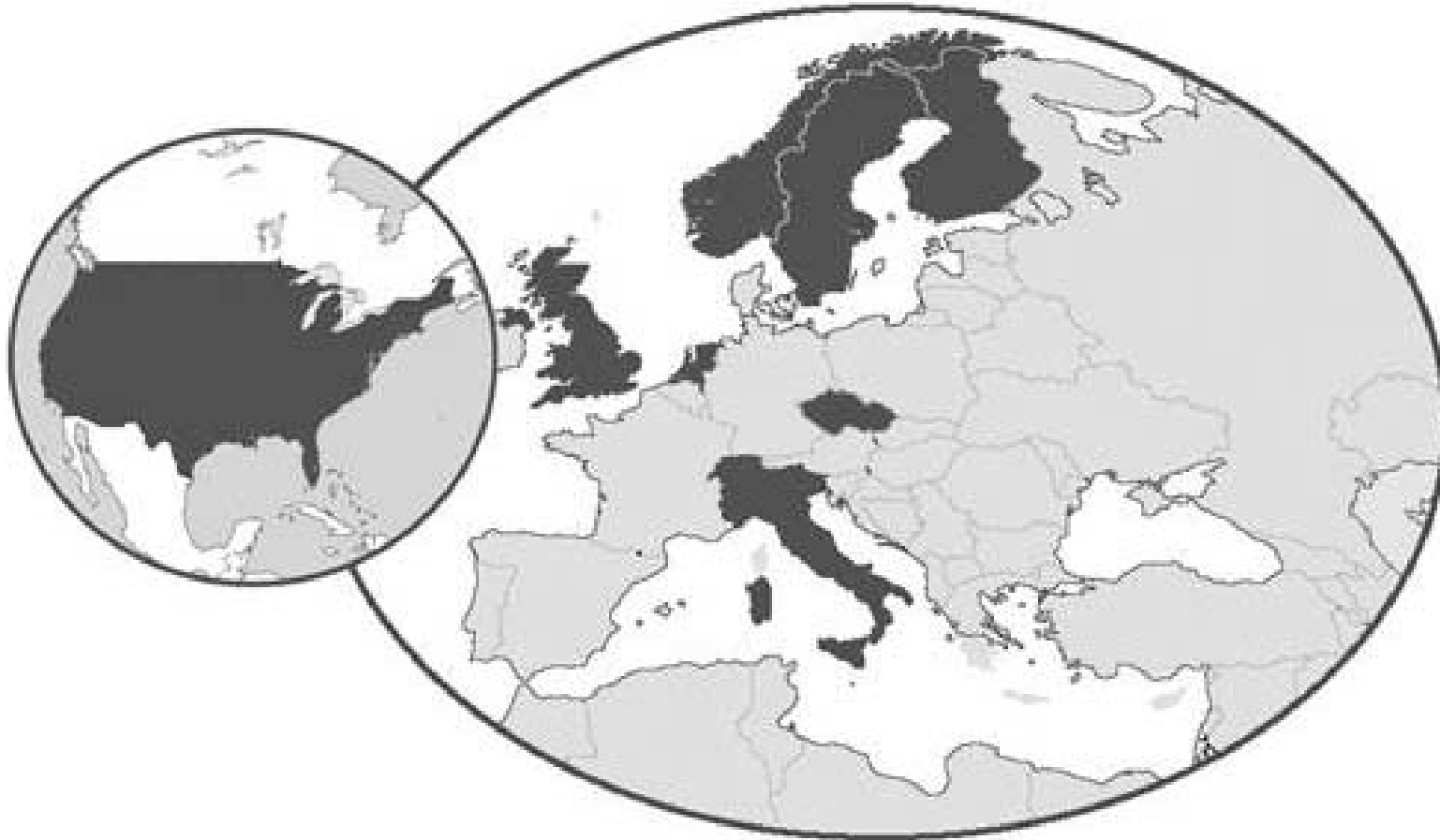
- **With the convergence to gLite 3.0 there will not be independent releases of EGEE and LCG middleware**
- **The process to define what components go into a release is defined.**
  - The decision body is the Technical Coordination Group (TCG)
- **JRA1 doesn't have the integration and testing groups any more**
  - Automatic builds via ETICS tools
  - Real integration and testing is done by SA3



**JRA1 is not independent in deciding what to develop!**  
**Any component developed outside the process will not find its path to a fully integrated and tested product**

- **Note that SA3 will produce the release using not only JRA1 software**
  - this is actually recommended by the EU
  - The EU is also pushing for producing components in collaborations with other projects
- **All requests from applications and sites via the TCG**
  - but again the EU is asking for standardization
  - also security issues enter independently from applications





## Security

INFN	Grid Foundation: VO membership
SWITCH	Grid Foundation: Shibboleth interoperability
UH.HIP	Grid Foundation: Authentication, Delegation, Security in Authentication and Accounting
FOM	Grid Foundation: Authorisation, Authentication, Connectivity
UvA	Grid Foundation: Authorisation, Authentication, Connectivity
UiB	Grid Foundation: Security in Data Management
KTH	Grid Foundation: Security Architecture

## Resource Access, Accounting, and Brokering

INFN	Grid Foundation: CE, Grid Foundation: Accounting, Grid Service: Workload Management
Datamat S.p.A.	Grid Service: Workload Management

## Logging, bookkeeping, and provenance

CESNET                      Grid Service: Logging and bookkeeping, Grid Service: Job provenance

## Data Management

CERN                         Grid Foundation: SE, Grid Service: Replica Management

## Information

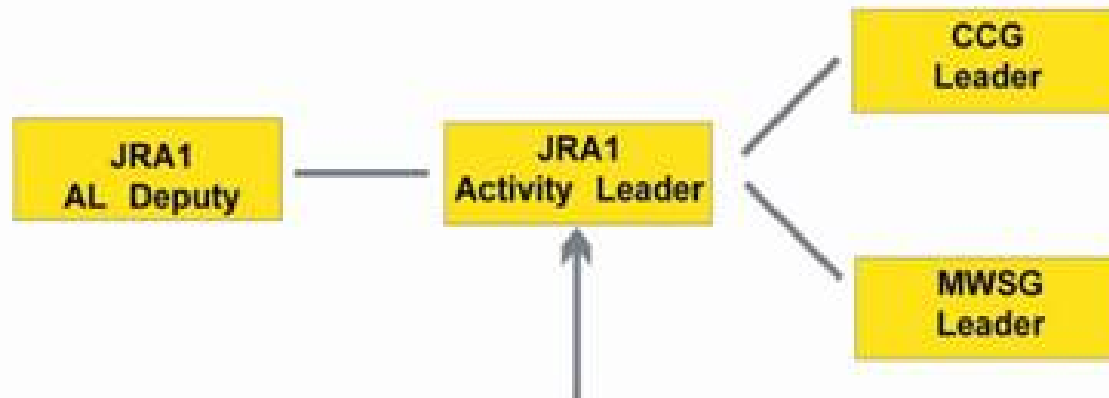
CCLRC                        Grid Foundation: Information and Monitoring

## US

Univ. Chicago                Support for Globus and contribution to the design of Grid Foundation Services

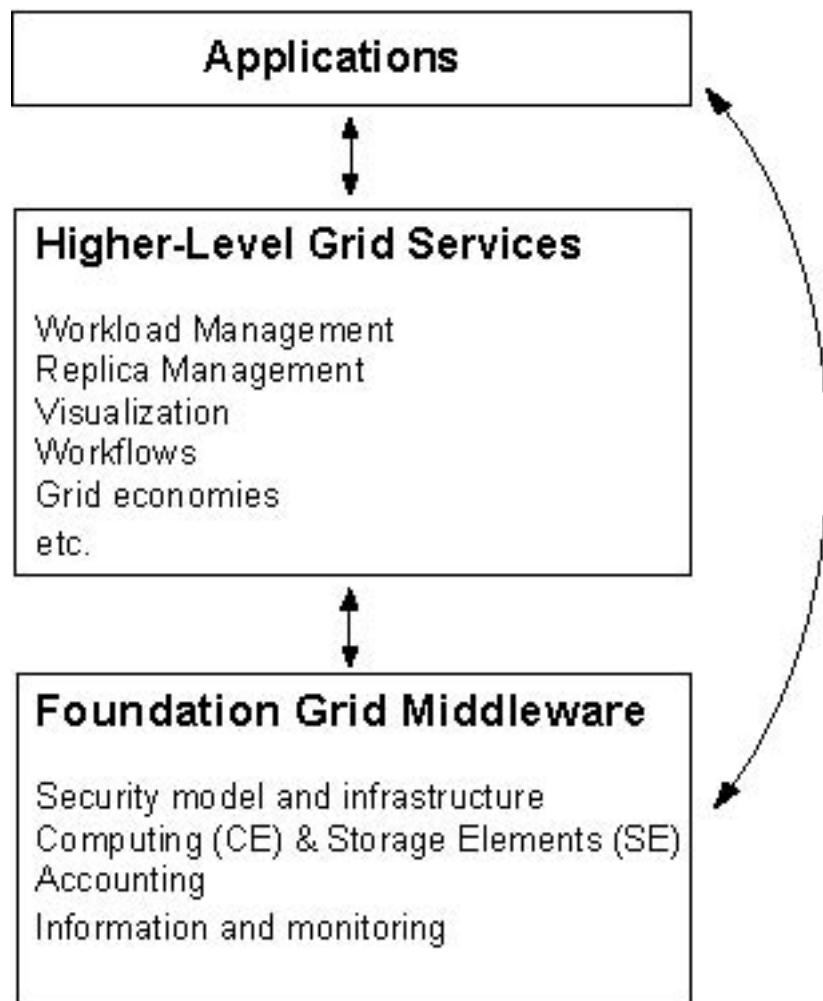
Univ. Southern California    Support for Globus and contribution to the design of Grid Foundation Services

Wisconsin Madison Univ.    Support for Condor and VDT and contribution to the design of Grid Foundation Services



1 Cluster Mgr	1 Cluster Mgr	1 Cluster Mgr	1 Cluster Mgr	1 Cluster Mgr	EMT
1 Sys Admin	1 Sys Admin	1 Sys Admin	1 Sys Admin	1 Sys Admin	
1 Comm Comp	1 Comm Comp	2 Comm Comp	1 Comm Comp	1 Comm Comp	CCG Group
1 Security	1 Security	1 Security	1 Security	1 Security	MWSG
Developers and Testers	Developers and Testers	Developers and Testers	Developers and Testers	Developers and Testers	
Security	Res Access + Res Brokering + Accounting	Data Mgmt	Logging & Bookkeeping	Information	





- **Foundation Grid Middleware is going to be deployed on the infrastructure**
  - should not assume the use of Higher-Level Grid Services
  - must be complete and robust
  - should allow interoperation with other major grid infrastructures
- **Higher-Level Grid Services may or may not be used by the applications**
  - should help them but not be mandatory

- **Authentication based on X.509 PKI infrastructure**
  - Grid Security Infrastructure (from Globus 2.4.3, as in VDT-1.2.2)
- **Trusted Third Parties (TTPs)**
  - Regional Certificate Authorities (CA)
  - Federations of CAs exists
    - Europe EUGridPMA, Asia-Pacific Region APGridPMA, Americas TAGPMA
    - International Grid Trust Federation (IGTF) established in October 2005
- **Short-Lived Credential Services (SLCS) → proxies**
- **Site-integrated credential services (SICS)**
  - issue short-lived credentials to its local users
  - Add support for Shibboleth (new activity in EGEE II)
- **Proxy store: MyProxy (Version 1.14) from VDT 1.2.2**
  - Allows clean proxy renewal
  - working with VDT to provide VOMS-aware access to MyProxy

- **VO-specific attributes: VOMS**
  - VOMS issues Attribute Certificates that are attached to proxies and provide users with additional capabilities
  - are the base for Authorization process
- **Web services for delegation**
  - using portType (Java, for axis) and GridSite (C for Apache)
  - need to define a standard for interoperation
- **Authorization framework**
  - gLite Authorization Framework (compatible with XACML policies)
    - mainly used for Java-based applications
  - LCAS/LCMAPS
    - mainly used for C-based applications (e.g. GT2-GRAM, GridFTP server)
  - support for VOMS, blacklists, gridmap files

- **gLite CE**
  - Condor-C GSI enabled
- **CREAM CE**
  - Lightweight web service Computing Element
- **BLAH (Batch Local ASCII Helper)**
  - Interface to the Local Batch System (LSF, PBS, Condor, (SGE))
- **CEMon**
  - publish information
  - support synchronous queries and asynchronous notifications
- **GPBOX**
  - Distributed VO policy management tool
  - Interface to define and propagate fine-grained VO policies
- **DGAS**
  - Collects Grid accounting information (*User, JobId, user VO, VOMS FQAN(role,capabilities), system usage (cpuTime, ...), ...*)
  - Secure storage and transfer of accounting records

- **Workload Management System (WMS)**
  - Helps the user accessing computing resources
    - resource brokering
    - management of input and output
  - WMPProxy: web service interface to WMS
  - Support for complex workflows and compound jobs
    - one shot submission and consistent management of a group of jobs
  - Job specification in JDL (based on Condor classad)
    - Building a JDL ↔ JSDL translator
  - Support for MPI jobs
  - Collects information from many sources (CEMon, bdII, R-GMA)
  - Support for Data management interfaces (DLI and StorageIndex)
  - Support for file peeking during job execution (Job File Perusal)
  - Condor-G: submits to LCG CE and gLite CE
  - ICE: interface for submissions to CREAM

- **Logging and Bookkeeping service**
  - Tracks jobs during their lifetime (in terms of events)
  - L&B Proxy provides faster, synchronous and more efficient access to L&B services to Workload Management Services
  - Support for “CE reputability ranking”
    - Maintains recent statistics of job failures at CE’s
    - Feeds back to WMS to aid planning
  - Working on inclusion of L&B in the VDT
- **Job Provenance**
  - Long term job information storage
  - Useful for debugging, post-mortem analysis, comparison of job executions in different environments
  - Useful for statistical analysis

- **Storage Element**
  - Common interface: SRMv1, migrating to SRMv2
  - Various implementation from LCG and other external projects
    - disk-based: **DPM**, dCache
    - tape-based: Castor, dCache
  - Support for ACLs in DPM, in future in Castor and dCache
- **Posix-like file access:**
  - Grid File Access Layer (**GFAL**) by LCG
    - Support for ACL in the SRM layer
  - **gLite I/O** (to be dismissed when Biomed are fine with GFAL)
    - Support for ACLs from Fireman
- **Data Catalogs**
  - **LFC** from LCG
  - **Fireman** (to be dismissed when Biomed are fine with LFC)

- **AMGA**
  - Metadata Catalog (developed in collaboration with NA4)
    - Support for ACLs (on full entries)
    - Support for different replication schemas
- **Hydra**
  - key-store to support data encryption
  - Demonstrated with the SRM-DICOM demo at EGEE Pisa conference (Oct'05)
- **FTS**
  - Reliable, scalable and customizable file transfer
  - Manages transfers through channels
    - Represent a mono-directional network pipe between two sites
  - Web service interface
  - Support for different user and administrative roles
  - Sustained file transfer record at SC3 rerun in Jan 2006 (1 GB/s)



- **R-GMA (Relational Grid Monitoring Architecture)**
  - uniform method to access and publish both information and monitoring data.
  - From a user's perspective, an R-GMA installation currently appears similar to a single relational database.
- **bdll (from LCG)**
  - information system of the production infrastructure
- **Service Discovery**
  - standard set of methods for locating Grid services
  - hides underlying information system (R-GMA, BDII, XML files)
- **APEL**
  - propagate and display accounting information for infrastructure monitoring

Body	Area	Working Group	Role of EGEE members	Details of standards
GGF	Architecture	OGSA-WG	External contributor	Information Services, GLUE
			Member	Information System, R-GMA
	Management	UR-WG and GESA-WG	External contributors	Accounting System, DGAS
	Security	OGSA-AUTH	External contributor	Security Infrastructure, VOMS
	Data	GSM-WG	Chair	Data Storage, Storage Element, FTS
			Member	Data Management, FTS, Fireman
			External contributor	Data Replication, FTS, Fireman
			Member	Information System, R-GMA
			Secretary	Information System, R-GMA
	DMTF	Resource Information Modeling	Core and Devices WG	External contributor
		CRM	Members	Workload Management, Computing Element, Job Description Language

- **JRA1 is providing second line support to GGUS**
  - specialized support unit on middleware
- **Mailing lists have been provided to GGUS for the main gLite components**
  - Will have developers in the GGUS system so that the reply may be quicker
- **JRA1 is participating to Task Forces**
  - direct support to applications
  - on specific issues
  - controlled by the TCG

DJRA1.1

*Report on  
Middleware  
Service  
Reengineering*

PM 10

Report on progress of reengineering, services delivered to SA3, compliance with TCG requirements, standardisation and cooperation results.

DJRA1.2

*Final report on  
progress of  
middleware  
reengineering*

PM 23

Final report on progress of reengineering, services delivered to SA3, compliance with TCG requirements, standardisation and international cooperation results.

<u>MJRA1.1.1</u>	<i>Support plan, definition of common components and tools, strategy for multiple platform support</i>	PM 1	Support plan for deployed components (as defined in MSA3.1.1), definition of common components and tools, their support responsibilities and strategy for multi-platform support.
<u>MJRA1.2</u>	<i>Functional Description of Grid Components</i>	PM 3	Functional description of services reengineered by JRA1 in response to TCG requirements including initial design
<u>MJRA1.3</u>	<i>Grid Components Reengineering Workplan</i>	PM 4	Work plan for reengineered Grid Foundation and Grid Services
<u>MJRA1.4</u>	<i>Shibboleth interoperability through dedicated SICS</i>	PM 6	Shibboleth interoperability through dedicated SICS. This includes development and operation of a testbed operated by the SWITCH partner.
<u>MJRA1.5</u>	<i>Shibboleth interoperability with attribute retrieval through VOMS</i>	PM 9	Shibboleth interoperability with attribute retrieval through VOMS. This includes development and operation of a testbed operated by the SWITCH partner.

<u>MJRA1.6</u>	<i>Update of Functional Description of Grid Components and associated Workplan</i>	PM 11	Update of Grid Components functional description and associated Work plan
<u>MJRA1.1.2</u>	<i>Update of Support plan, definition of common components and tools, strategy for multiple platform support</i>	PM 14	Update of support plan for deployed components, common components and tools, and multi-platform support
<u>MJRA1.7</u>	<i>Shibboleth interoperability with SAML support</i>	PM 21	Shibboleth interoperability with SAML support at the resource. This includes development and operation of a testbed operated by the SWITCH partner.