



Enabling Grids for E-scienceE

gLite Status

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INFN

NA4 Generic Applications Meeting

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www.eu-egee.org
www.glite.org



- **gLite software Processes and Releases**
- **Status of Subsystems**
- **Testing Status**
- **Deployment Status**
- **Short Term Plans**

- **Design Team**
 - Architecture Definition
 - design description of Service presented in the Architecture document
 - Implementation work plan
 - Progress tracked monthly at the EMT

- **EMT defines release contents**
 - Based on work plan progress
 - Based on essential items needed
 - so far mainly for the HEP experiments, BioMed and Operations needs
 - Decide on target dates for tags
 - Taking into account enough time for integration & testing

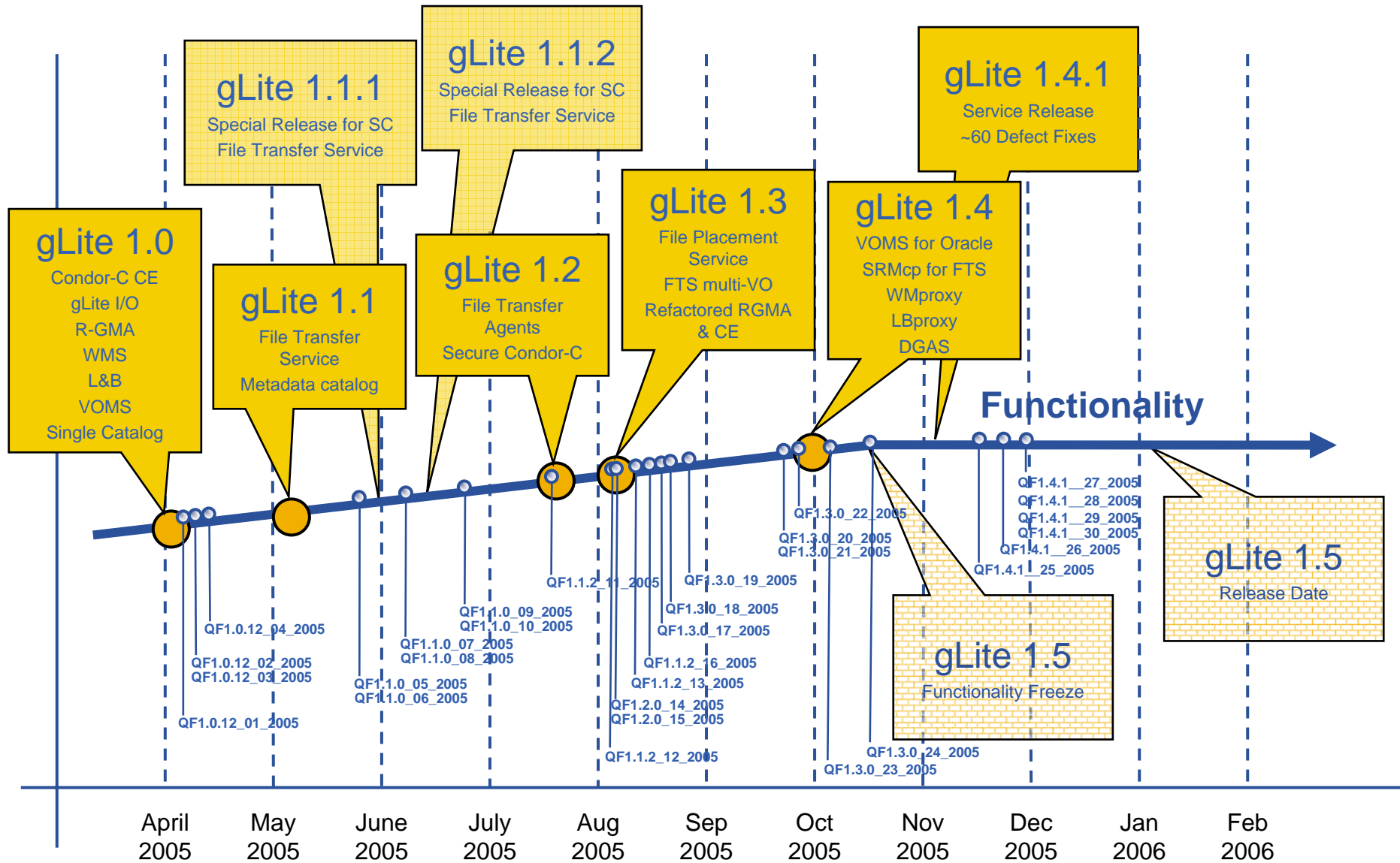
- **Integration Team**
 - produces Release Candidates
 - based on received tags
 - Performs
 - Build, Smoke Test, Deployment Modules
 - Iterate with developers
 - Once Release Candidate passed functional tests
 - produces documentation, release notes and final packaging
 - announce the release on the glite Web site and the glite-discussion mailing list.

- **Testing Team**
 - Test Release candidates on a distributed testbed
 - CERN, RRZN Uni Hannover, Imperial College
 - Raise bugs as needed
 - Iterate with Integrators & Developers

- **Deployment on Pre-production**
 - Service Challenge
 - Feedback from larger number of sites and different level of competence
 - Raise Critical bugs as needed
 - Critical bugs fixed with Quick Fixes when possible

- **Deployment on Production**
 - Selected set of Services
 - Based on applications needs
 - FTS, R-GMA, VOMS

gLite Releases and Planning



- **Most Services rely on GSI and MyProxy**
 - Still using well understood GT2 implementation
 - Authentication can be expensive
 - Several subsystems provide bulk operations
- **VOMS**
 - Manages VO Membership
 - Provides support for Groups and Roles
 - Support for MySQL and Oracle DB backend
 - Included in the VDT
- **VOMS Admin**
 - Support for Oracle and MySQL back ends
 - VOMS ADMIN (Oracle) still problematic
- **Deployed on the Production Infrastructure**
 - Interfaced with OSG's VOMSRS

- **Logging and Bookkeeping (L&B)**
 - Tracks jobs during their lifetime (in terms of events)
 - LB Proxy
 - Provides faster, synchronous and more efficient access to LB services
 - Support for “CE reputability ranking”
 - Maintains recent statistics of job failures at CE’s
 - Working on inclusion of L&B in the VDT

- **Computing Element (CE)**
 - Service representing a computing resource
 - CE moving towards a VO based local scheduler
 - Batch Local ASCII Helper (BLAH)
 - More efficient parsing of log files (these can be left residing on a remote machine)
 - Support for hold and resume in BLAH
 - *Usefull e.g. to put a job on hold, waiting the staging of the input data*
 - Condor-C GSI enabled
 - CE Monitor (CEMon)
 - Better support for the pull mode
 - Security support
 - GridIce plugin for CEMon implemented
 - Included in VDT and used in OSG for resource selection

- **GPbox**
 - XACML-based policy maintainer, parser and enforcer.
 - Can be used for authorizations checks at various levels.

- **Workload Management System (WMS)**
 - Backward compatibility with LCG-2
 - WMPProxy
 - Web service interface to the WMS
 - Allows support of bulk submissions and jobs with shared sandboxes
 - Support for MPI job even if the file system is not shared between CE and Worker Nodes (WN)
 - Support of R-GMA as resource information repository to be used in the matchmaking besides BDII and CEMon
 - Support for Data management interfaces (DLI and StorageIndex)
 - Support for shallow resubmission
 - Resubmission happens in case of failure only when the job didn't start running
 - Support for execution of all DAG nodes within a single CE
 - chosen by user or by the WMS matchmaker
 - Support for file peeking to access files during the execution of the job
 - Integration with G-Pbox - considering simple AuthZ policies
 - Support for pilot job

- **DGAS Accounting**
 - Accumulates Grid accounting information about the usage of Grid resources by users / groups (e.g. VOs) for billing and scheduling policies
 - CEs can be instrumented with proper sensors to measure the resources used

- **Job provenance**
 - Long term job information storage
 - Useful for
 - *debugging, post-mortem analysis, comparison of job executions in different environments*
 - *statistical analysis*

- **WMS, CE, LB are considered for inclusion in the next LCG-2.7.0 release**
 - Currently deployed on the Pre-production service and DILIGENT testbed
 - Tested on many private instances

- **FiReMan catalog**
 - Resolves logical filenames (LFN) to physical location of files (URL understood by SRM) and storage elements
 - Oracle and MySQL versions available
 - Secure services, using VOMS groups, ACL support
 - Full set of Command Line tools
 - Simple API for C/C++ wrapping a lot of the complexity for easy usage
 - Attribute support
 - Symbolic link support
 - Exposing interfaces suitable for matchmaking (StorageIndex and DLI)
 - Separate catalog available as a keystore for data encryption ('Hydra')
 - Deployed on the Pre-Production Service and DILIGENT testbed

- **gLite I/O**
 - POSIX-like access to Grid files
 - Interfaced to Castor, dCache and DPM Storage Resource Managers
 - Added a remove method to be able to delete files
 - Configuration using the common Service Discovery interfaces
 - Improved error reporting
 - Has been used for the BioMedical Demo in Pisa (Oct'05)
 - Deployed on the Pre-Production Service and the DILIGENT testbed

- **AMGA MetaData Catalog**
 - NA4 contribution
 - Result of JRA1 & NA4 prototyping together with PTF assessment
 - Used by the LHCb experiment
 - Has been used for the BioMedical Demo in Pisa (Oct'05)

- **Reliable file transfer**
- **Full scalable implementation**
 - Java Web Service front-end, C++ Agents, Oracle or MySQL database support
 - Support for
 - Channel, Site and VO management
 - Gsift and Storage Resource Management (SRM) interfaces
 - Interfaces for management and statistics monitoring
 - Has been in use by the Service Challenges for the last 6 months.
- **FTS evolved to include**
 - Support for MySQL and Oracle
 - Multi-VO support
 - SRM copy support
 - MyProxy server as a CLI argument
 - Many small changes/optimizations revealed by Service Challenges usage

- **R-GMA**
 - Essentially bug fixes & consolidation
 - Merging LCG & gLite code base
 - Secure version
 - Used in production as monitoring data aggregator
 - Job status published from Logging & Bookkeeping every 5 minutes
 - Interfaced from the Workload Management System

- **Service Discovery**
 - An interface has been defined and implemented for 3 back-ends
 - R-GMA
 - BDII
 - Configuration File
 - Command Line tool for end users
 - Used by WMS and Data Management clients

- **Production Services still using BDII as the Information System**
 - Pre-Production Service has started to use R-GMA

- **Computing Element**
 - Gatekeeper, WSS
 - Globus
 - Condor-C
 - Condor
 - BLAH, CE Monitor
 - EGEE
 - Local batch system
 - PBS, LSF, Condor, SGE, BQS
 - DGAS Accounting
 - EDG/EGEE
- **Workload Management**
 - WMS, Logging and bookkeeping
 - EDG/EGEE
 - Condor-C
 - Condor
 - Job Provenance
 - EGEE
- **Storage Element**
 - File Transfer/Placement
 - EGEE
 - glite-I/O
 - AliEn
 - GridFTP
 - Globus
 - Castor, DPM
 - CERN
 - dCache
 - FNAL, DESY
- **Catalog**
 - File and Replica Catalog
 - EGEE
 - Metadata Catalog
 - EGEE/NA4
- **Information and Monitoring**
 - R-GMA
 - EDG/EGEE
 - Service Discovery
 - EGEE
 - BDII
 - EDG/LCG
- **Security**
 - VOMS
 - DataTAG, EDG/EGEE
 - GSI, WSS
 - Globus
 - LCAS/LCMAPS
 - EDG/EGEE
 - Authorization for C and Java based (web) services
 - EDG/EGEE/Globus
 - GPBox
 - EGEE
- **User Interface**
 - EDG/EGEE

- **Production**
 - File Transfer Service (FTS)
 - R-GMA (Monitoring & Accounting Data Aggregation)
 - VOMS/VOMS Admin
- **Preproduction Service**
 - 14 sites
 - CERN, CNAF, PIC Computing Elements are connected to the production worker nodes
 - ~ 1.5M Jobs submitted
 - FTS, WMS/LB/CE, FireMan, gLite I/O (DPM, Castor), R-GMA
- **Others**
 - DILIGENT (Digital Library Project) has deployed a number of those services as well

| | Deployment | Test suite | | | Test report |
|---------|------------|------------------|---------------|-------------------|-------------|
| | | <i>Automated</i> | <i>Stress</i> | <i>Regression</i> | |
| CE | ✓ | ✓ | ✓ | ✓ | ✓ |
| DGAS | ✓ | ✗ | ✗ | ✗ | ✓ |
| Fireman | ✓ | ✓ | ✗ | ✗ | ✓ |
| FTS | ✓ | ✓ | ✗ | ✗ | ✓ |
| I/O | ✓ | ✓ | ✓ | ✓ | ✓ |
| LB | ✓ | in preparation | ✗ | ✗ | ✗ |
| R-GMA | ✓ | ✓ | ✓ | ✗ | ✓ |
| SD | ✓ | ✗ | ✗ | ✗ | ✗ |
| VOMS | ✓ | ✓ | ✓ | ✗ | ✓ |
| WMS | ✓ | ✓ | ✓ | ✗ | ✓ |

- **Revision of the Architecture, Design and Work plan documents**
 - <https://edms.cern.ch/document/594698/>
 - <https://edms.cern.ch/document/573493/>
 - <https://edms.cern.ch/document/606574/>

- **Advanced Reservation**
 - Architecture proposed
 - <https://edms.cern.ch/file/508055/2-2/EGEE-JRA1-AR-508055-v2-2.pdf>
 - Integration with WMS prototyped
 - <http://agenda.cern.ch/askArchive.php?base=agenda&categ=a052420&id=a052420s3t5/transparencies>
 - **Work presented at the 1st IEEE International Conference on e-Science and Grid Computing in Melbourne December 2005**

- **OMII & GT4 evaluations**
 - <https://edms.cern.ch/document/683456/>
 - <https://edms.cern.ch/document/672123/>

- **Interfacing of ProActive to gLite**
 - **Demonstrated at the 2nd Grid PlugTests event**
 - **Hands on with gLite tutorial**

- **Development of a new Web Services based CE**
 - **CREAM:** <http://grid.pd.infn.it/cream/field.php>

- **Workspace Services (WSS)**
 - Prototype of the integration of the Globus [Work Space Services](#)
 - Joint Globus/Condor/EGEE paper submitted at the IEEE International Parallel & Distributed Processing Symposium 2006

- **glogin**
 - [CrossGrid's glogin](#) has been demonstrated with gLite
 - Providing interactive access to Computing Elements and Worker Nodes

- **PGrade Portal ([SZTAKI](#), Budapest)**
 - [PGrade Portal](#) interfaced to gLite

- **Continue Defect fixing as required**
- **Complete gLite 1.5 release**
 - Including Documentation, Installation Guide, Release Notes, Testing reports
 - Forming DJRA1.6 deliverable
- **Converge with SA1 the LCG and gLite middleware releases to a single distribution called gLite**
 - Being discussed with Operations
 - Tentatively named gLite 3.0