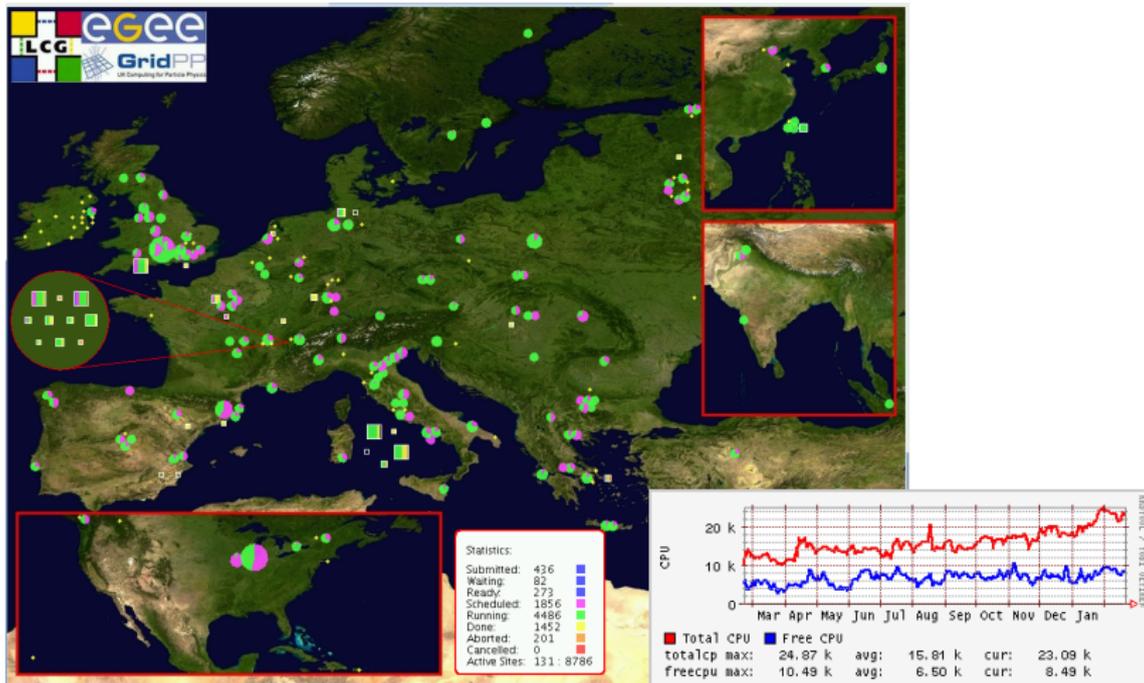


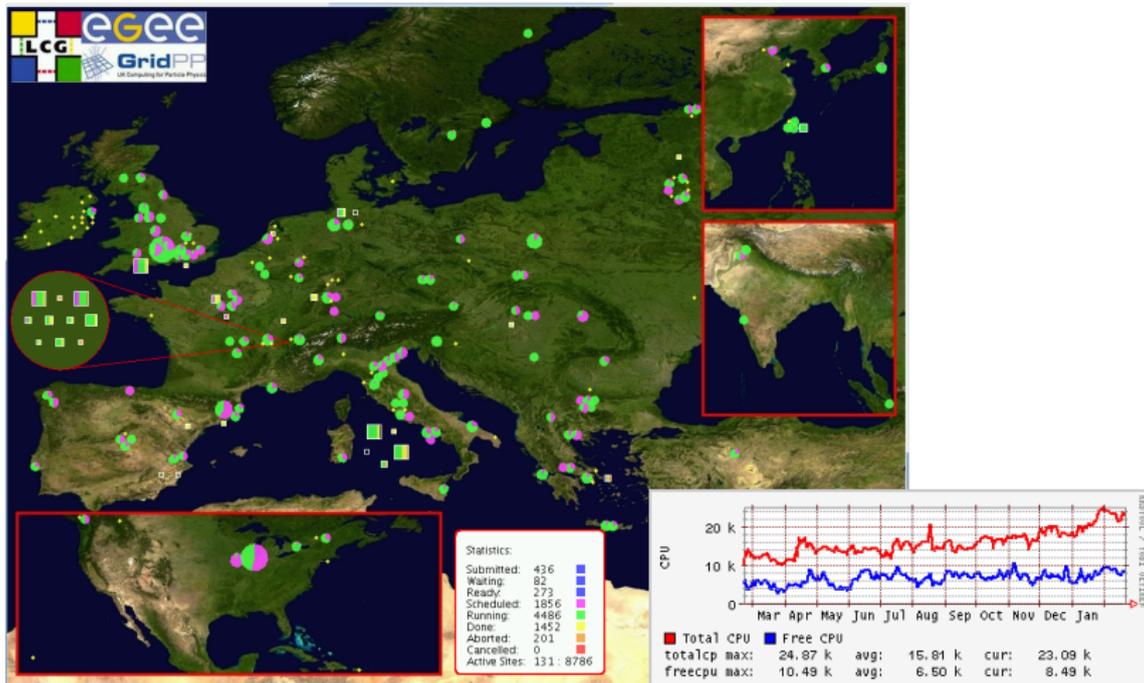
## gLite and Condor Present and Future.

*John White, Helsinki Institute of Physics.  
EGEE JRA1 Deputy Middleware Manager.*

- **gLite overview.**
  - Resources, EGEE-II.
  - Middleware, Integration, Testing.
  - Development.
- **gLite and Condor.**
  - Collaboration.
  - WMS, CE..
  - CREAM, glexec, accounting
- **Future.**

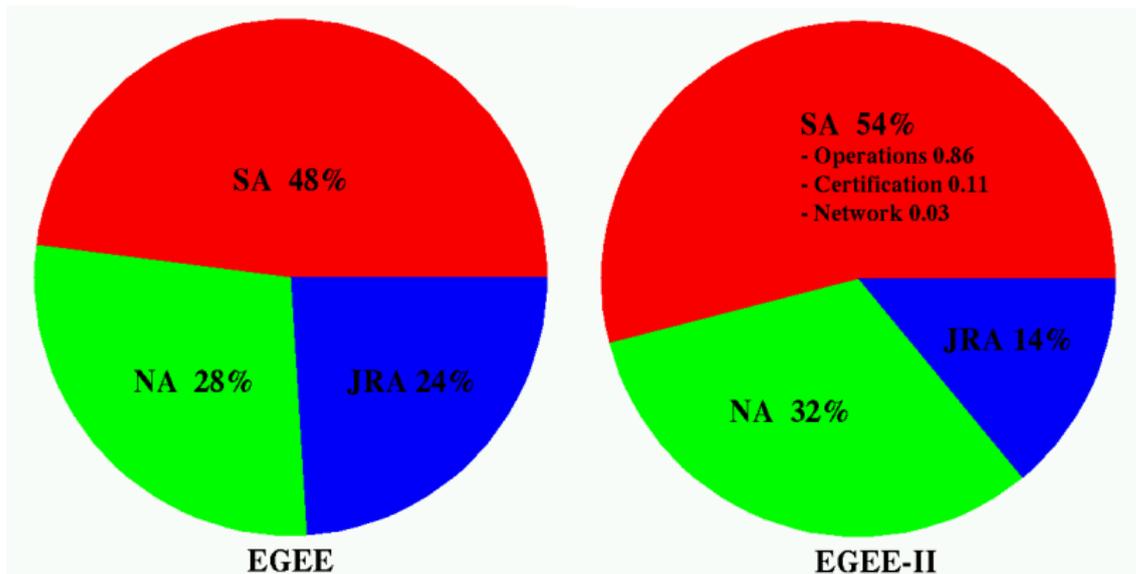
Enabling Grids for E-science





- 42 Countries, 187 Sites, 25k CPUs 3.5PB Storage.
- <http://gridportal.hep.ph.ic.ac.uk/rtm/>

- EGEE phase 2.
- EU-Funded for 2 years (until March 2008).
- EGEE offers the largest production grid facility in the world open to many applications (HEP, BioMedical, generic).
- **Pre-production** service based on gLite 3.0 (LCG/gLite).
- Existing **production** service based on LCG.
- Middleware Activity
  - Re-engineer and harden Grid middleware.
  - Provide production quality middleware.



- **We follow a service-oriented approach.**
  - Lightweight services.
  - Allow for multiple interoperable implementations.
  - Easily and quickly deployable.
- Use existing services where possible.
  - Condor, EDG, Globus, LCG, ?
- Portable(?)
  - Builds on Scientific Linux and (working) on ia64.
- Security.
  - Considered for both applications and deployment sites.
- Performance/Scalability & Resilience/Fault Tolerance.
  - Comparable to deployed infrastructure.
- Co-existence with other deployed infrastructure
  - eg. Interoperability with OSG and NAREGI.
- Site autonomy to reduce dependence on “global” services
- Open source (Apache?) license.

Integration and nightly build as usual.

- 224 modules, build in “n” to “m” hours.
- Work underway to port to ia64 architecture.
- Deployment Modules implemented high-level gLite node types (WMS, CE, R-GMA Server, VOMS Server, FTS, etc).
  - An XML configuration file with all required parameters.
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Build system now spun off into the **ETICS** project.

- **Started on Jan 20th 2006.**
- **Univ. Wisc part of the project.**
- **Will provide a single build system for gLite software.**

- Three well-defined areas:
- **Testbed infrastructure:** procedures for installation, configuration and maintenance.
  - Dedicated testbed: CERN, Imperial College, Hannover.
  - Installation of self-consistent RPM sets, weekly phone meeting.
- **Test development:** functional, regression and scalability tests.
  - Followed the TestManager suite.
- **Testing of release candidates** from the integration team.
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- **Certification, gLite 3.0 on, now a Service activity.**

- Development uses a fast prototyping approach
  - Distributed development test beds.
- EGEE-II Technical Coordination Group made up of activity/client reps.
  - TCG gathers/prioritizes requirements.
  - From CERN HEP experiments, BioMed and “others”.
- Components selected by Integration & Testing activity (SA3).
  - Ensures components are deployable and work.
- Deployed by European Grid Support, Operation and Management activity (SA1).
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**EGEE-II software development is client-driven.**

- gLite 3.0 now on the PPS. Open to applications on the 20/03/06.
  - Usable, still some problems, testing ongoing.
- gLite 3.1 should be released to the Production Service in **September 2006**.
- Once components are on the PPS they can be evaluated (case-by-case) and see how much (and when) work is needed for the next release (gLite 3.1).
 

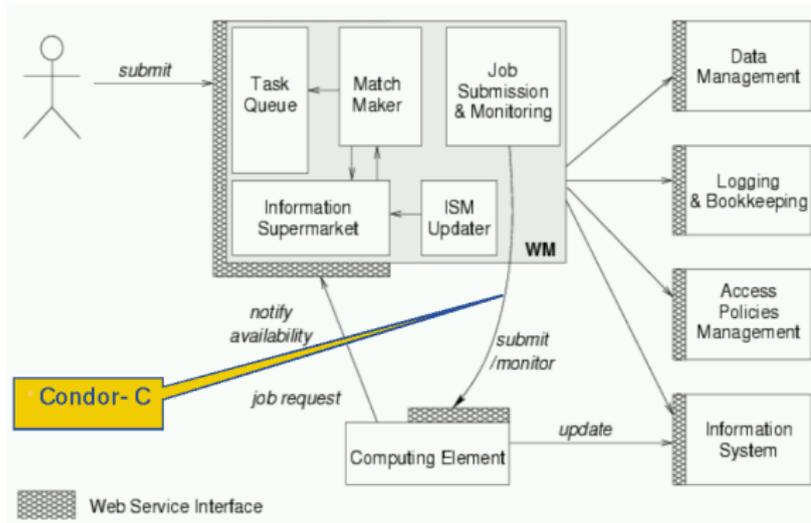
July and August	PPS runs	Holidays!
June	PPS deployment	Experience
May	Certification	Experience
April	Integration	ETICS/YAIM
- Integrated RC must be available end of April.
- → **Functionality must be (have been) frozen end of March.**
- **Fixes can be introduced at any time following problems found in the integration/certification/pre-production**

- History stretches to DataGrid WP1 and Condor-G.
  - Provided language for expressing job description.
  - Proper framework for match-making (“new” classads).
  - Execute jobs on GRAM-accessible resources, via Condor-G..
  - Provide L&B (or accounting) information about jobs..
  - Be ‘community’ match-making, local job information ‘database’.

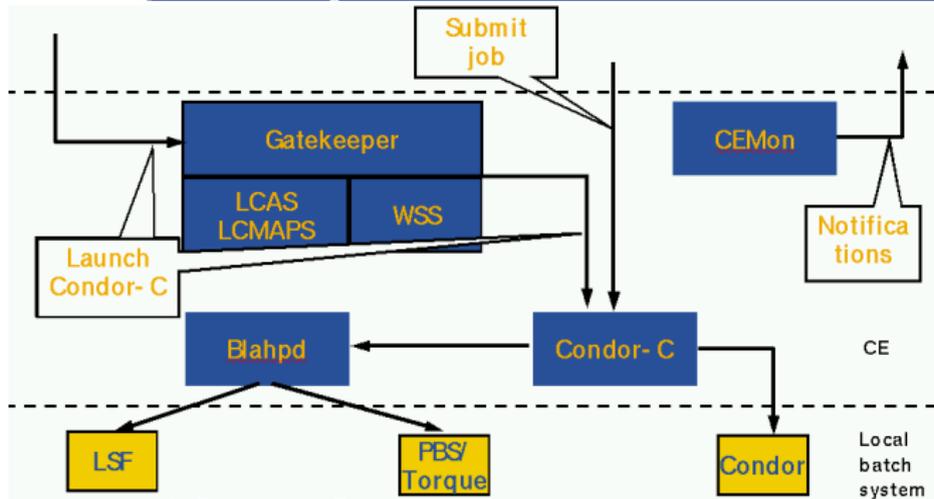
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  - EGEE Design Team includes reps from MW providers (AliEn, Condor, Globus...)
  - Wisconsin is one of the development prototype sites.  
Uses: Condor pool as backend; Globus RLS.
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**The Collaboration Continues**



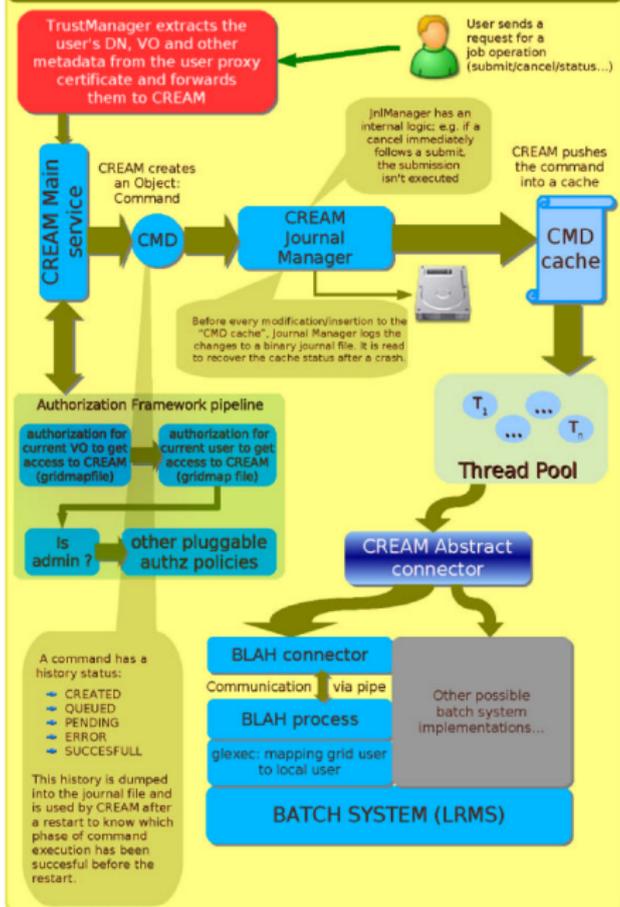
- Extend the practice of reliable job transfer.
- Extend the guarantees of once and only once execution.



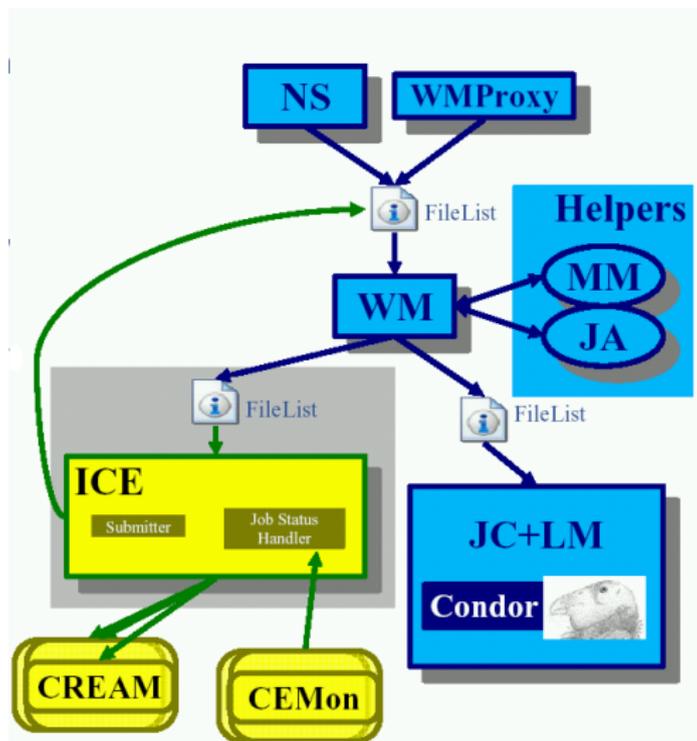
- Need set of Condor-C daemons per {submitting node/user DN/user VO} triplet.
- Run as VO user, submit jobs via sudo service to batch system.
- One set of daemons switching UID via glexec/LCMAPS.
- BLAH scripts for Condor planned. Link to Condor accounting.
- Apart from that, it's (on-going at a steady rate) bugfixing..

- CREAM (Computing Resource Execution And Management) Service. (<http://grid.pd.infn.it/cream/field.php>)
- Simple, lightweight service implements all operations at the CE.
- WS-based interface, extension of the Java-Axis servlet.
  - Implies interoperability through WSDL (C/C++,Java,Perl).
- Runs inside an Apache Tomcat container.
- CREAM can be invoked through.
  - WMS, through ICE (gSOAP/C++ intermediate layer).
  - Direct submission from C++/Java CLI.
- ICE layer subscribes to CEMon to receive notifications about job status.

# CREAM Architecture



- Job Submission.
  - Possibility of direct staging of input sandbox files GLITE WMS JDL compliance (with CREAM-specific extensions).
  - Support for batch and MPI jobs.
  - Support for bulk jobs being integrated.
- Manual and automatic proxy delegation.
- Job Cancellation.
- Job Info with configurable level of verbosity and filtering based on submission time and/or job status.
- Job List.
- Job Suspension and Resume.
- GSI-based authentication.
- VOMS-based authorization.
- Job Purge for terminated jobs.
- Possibility (for admin) to disable new submissions.
- Uses BLAH interface to the underlying LRMS.



- WS Interface on CE.
- DAGs go to Condor.
- WMProxy writes bulk submission to DAGS → Condor.
- (WM/JC. Direct bulk submission to ICE).
- **CREAM API will be released after gLite verification.**
- **Planned for gLite 3.n (n ≥ 1).**

- **Some experiments (already) want to optimize Grid usage (get more jobs in).**
- Start a pilot job on a batch system and accept/launch sub-jobs (Condor Glide-in).
- Need a scheme to switch ID(s) on the worker node.
- glexec is the “front end” to LCAS/LCMAPS plugin framework.
- OSG uses GUMS. Interest in glexec... Planned work:
  - **Write LCMAPS plugin to GUMS**
  - **Implement an interface to the GT4 WS AuthZ.**
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- **This should allow VDT packaging of glexec/LCMAPS.**

- Contributions from Condor team to EGEE effort.
  - Through design team, prototyping, product (and ETICS).
- Condor link to OSG is very important to EGEE.
- Grid middleware cannot be developed separately.
  - Open communication channels.
  - Effective exchange of ideas, requirements, solutions and technologies.
  - Early detection of differences and disagreements.
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**More info:** <http://www.glite.org>