



Enabling Grids for E-science

# gLite Certification, Deployment, and Operations Process

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*EGEE 1<sup>st</sup> EU Review*

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- **Current Release and Deployment Procedures**
- **Experience**
- **Additional Input**
- **New Procedures**
  - gLite & LCG
  - preproduction service
- **Lessons Learned**
- **Operations**
- **Roles in EGEE Operations**
- **Procedures**
- **Implementation**
  - Examples
- **Status and Summary**

- **Monthly process (sequential)**
  - **Gathering of new material**
  - **Prioritization**
  - **Integration of items on list**
  - **Deployment on testbeds**
  - **First tests**
    - **feedback**
  - **Release to EIS testbed for experiment validation**
  - **Full testing (functional and stress)**
    - **feedback to patch/component providers**
    - **final list of new components**
  - **Internal release (LCFGng fabric management tool)**
- **On demand (parallel)**
  - **Preparation/Update of release notes for LCFGng**
  - **Preparation/Update of generic install documentation**
  - **Test installations on GIS testbeds**
  - **Update of user documentation**
  - **Announcement on the LCG-Rollout list**

**SA1** EGEE European Grid Support, Operation and Management activity

**SA2** EGEE Network Resource Provision Activity

**OMC** Operation Management Centre

**CIC** Core Infrastructure Centre

**ROC** Regional Operation Centre

**RC** Resource Centre

**GGUS** Global Grid User Support (FZK)

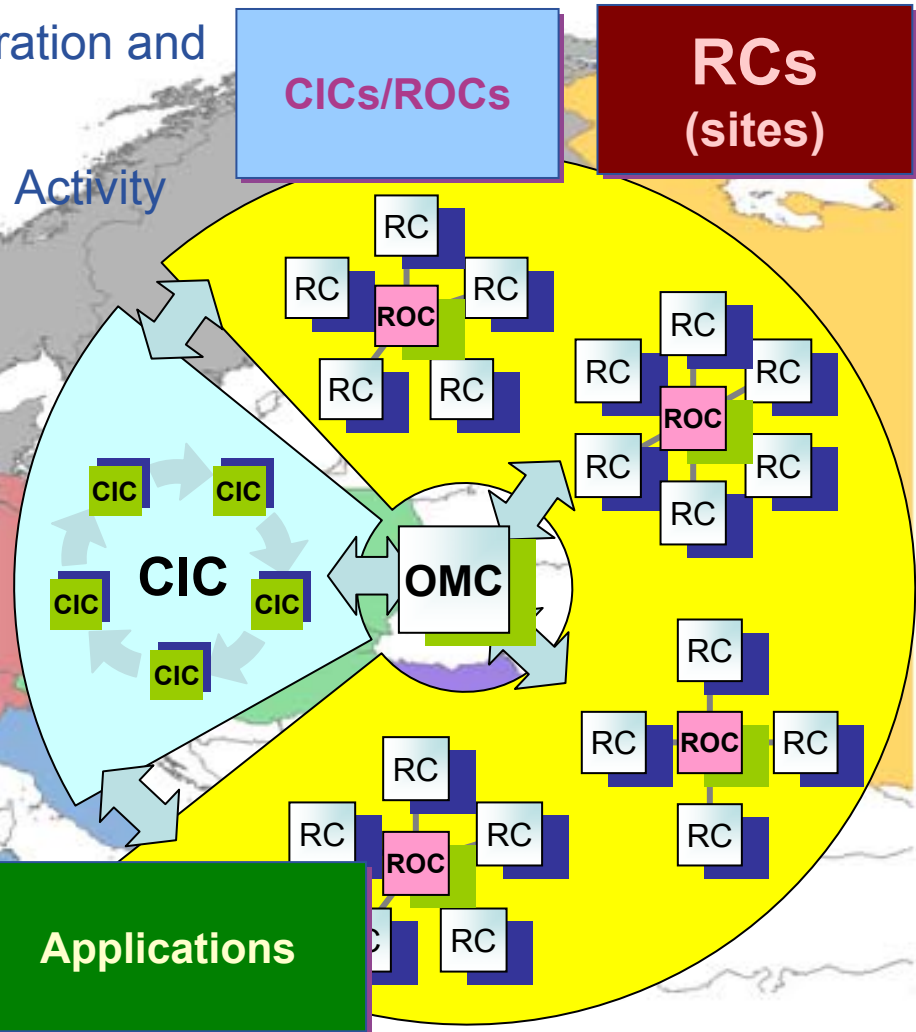
**OMC**  
GIS  
Grid Infrastructure Support

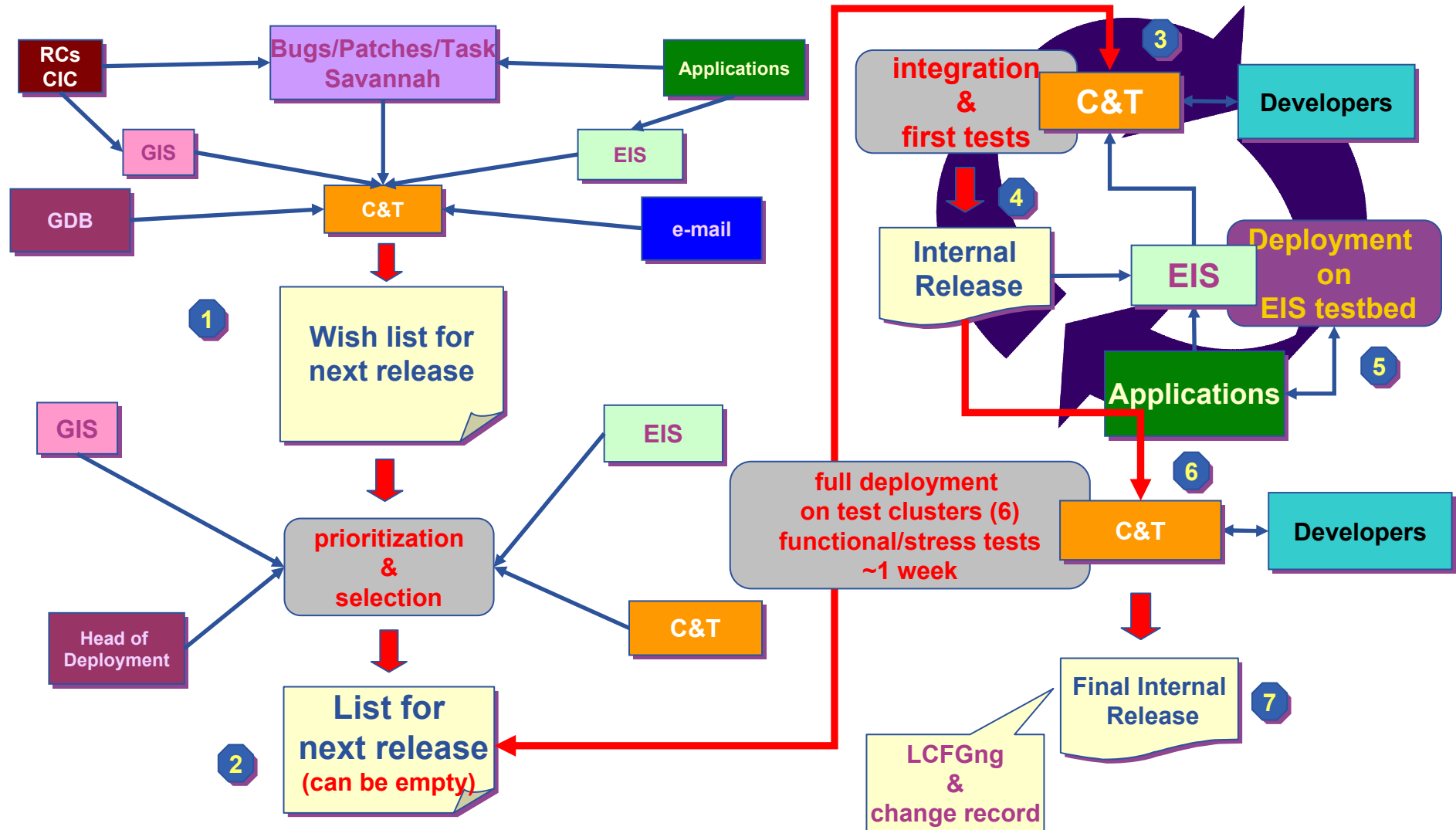
**GDB**  
Grid Deployment Board

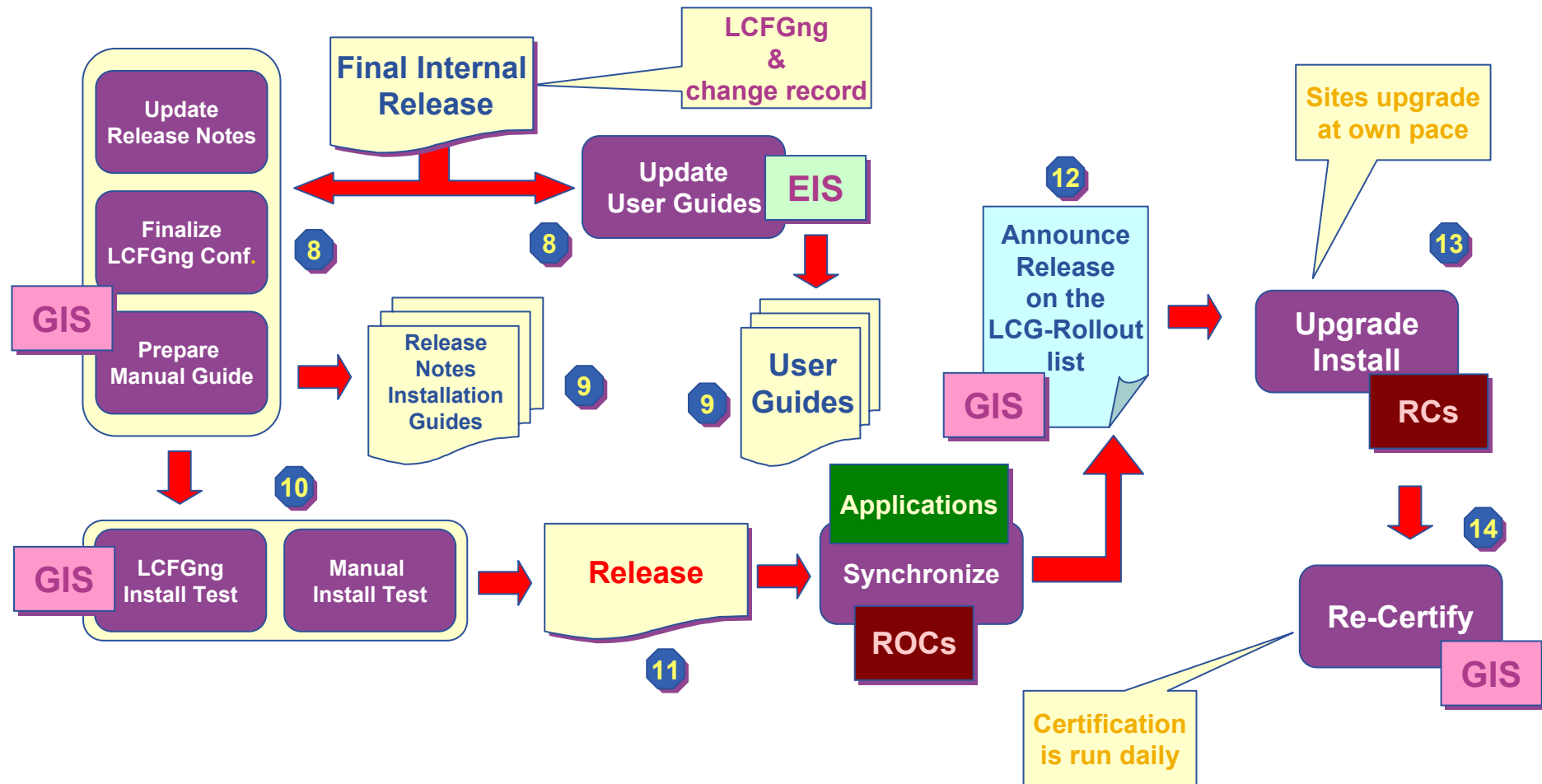
**OMC**  
C&T  
Certification & Testing

**EIS**  
Experiment/Application Integration Support

**Applications**







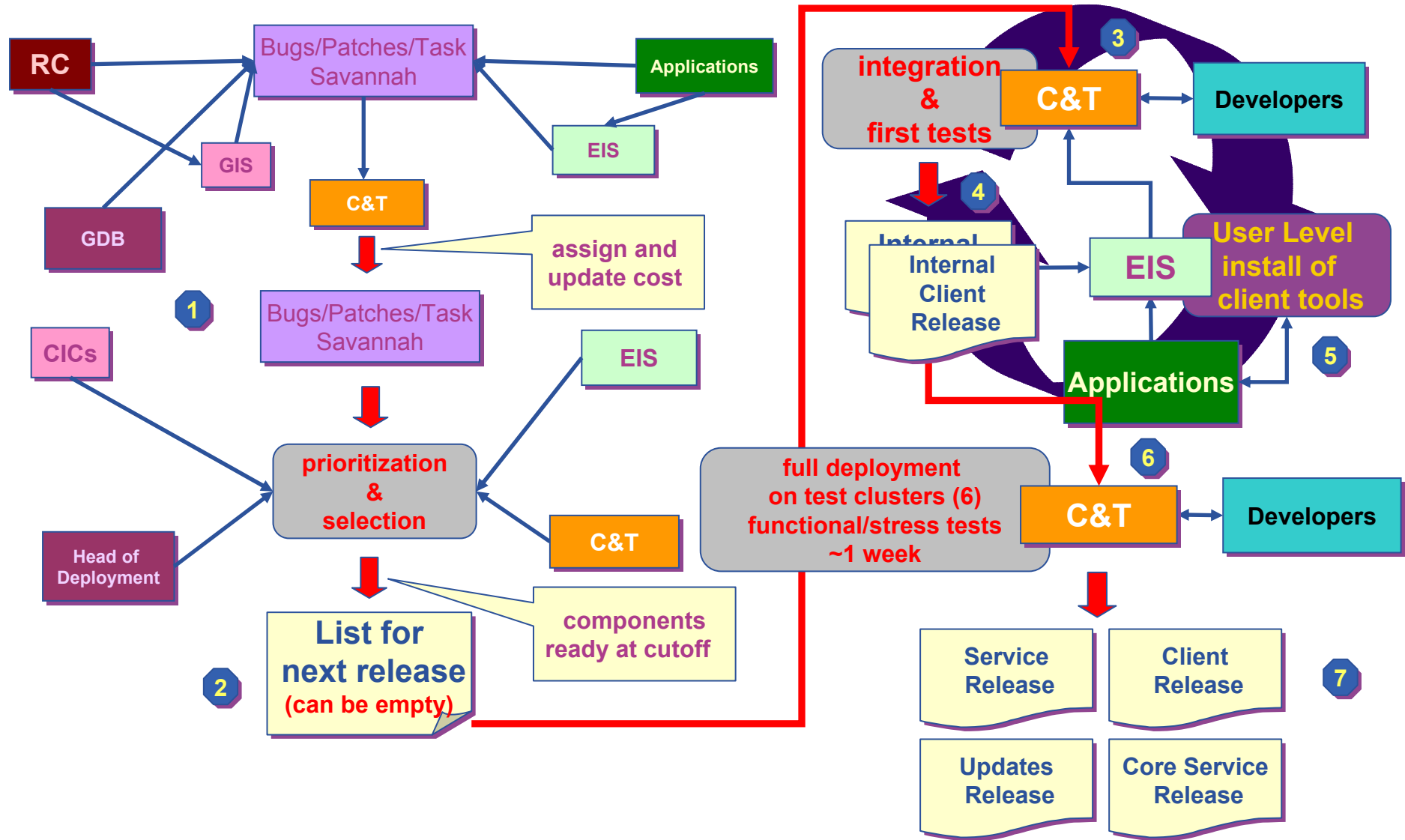
- **Process was decisive to improve the middleware**
- **The process is time consuming (5 releases 2004)**
  - Many sequential steps
  - Many different site layouts have to be tested
  - Format of internal and external releases differ
  - Multiple packaging formats (tool based, generic)
  - All components are treated equal
    - same level of testing for non vital and core components
    - new tools and tools in use by other projects are tested to the same level
- **Process to include new components is not transparent**
- **Timing for releases difficult**
  - Users: **now** sites: **scheduled**
- **Upgrades need a long time to cover all sites**
  - Some sites had problems to become functional after an upgrade

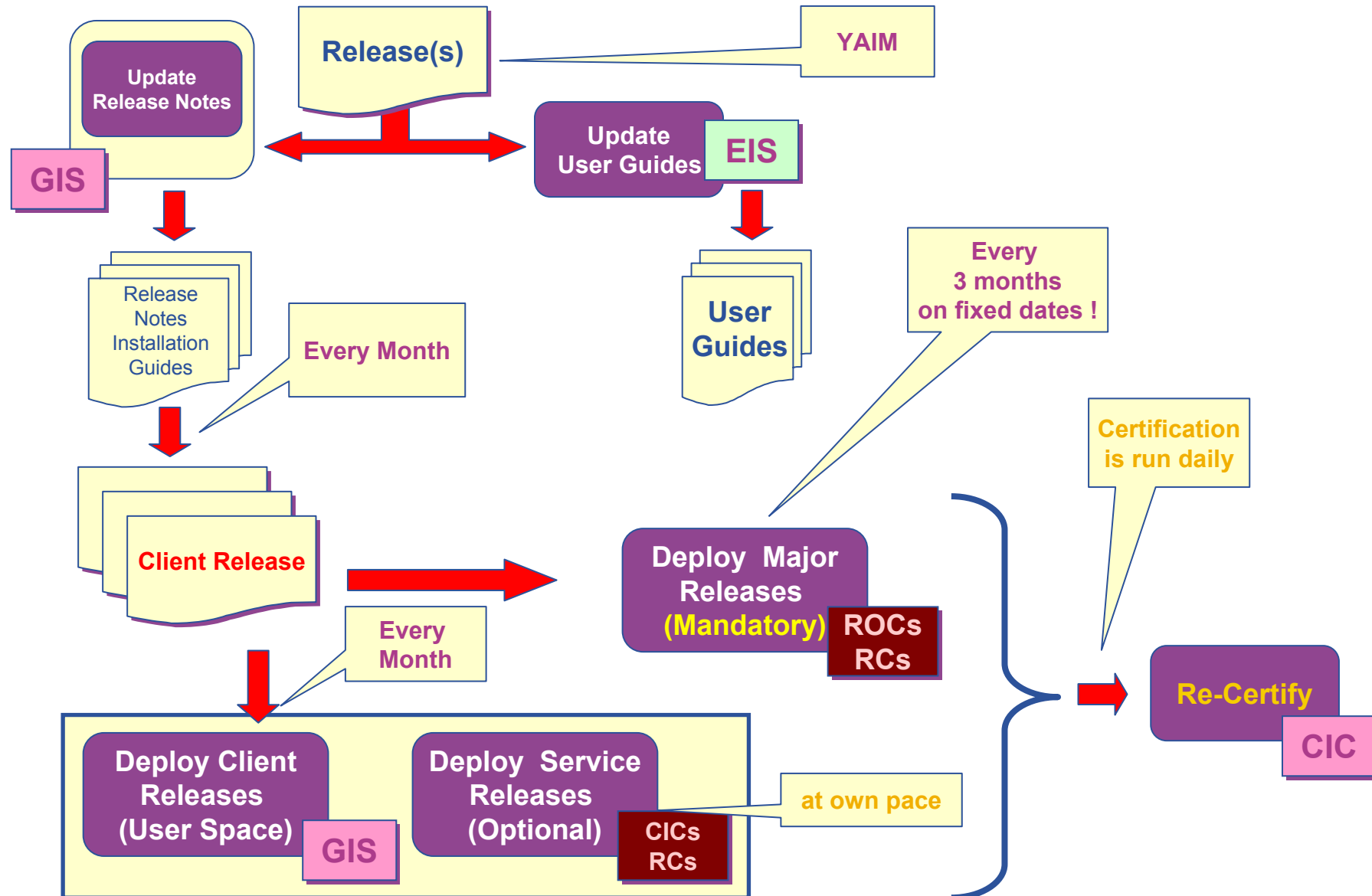
- **Data Challenges**
  - client libs need fast and frequent updates
  - core services need fast patches (functional/fixes)
  - applications need a transparent release preparation
  - many problems only become visible during full scale production
- **Installation tool is not available for new OS versions**
- **Configuration is a major problem on smaller sites**
- **Operations Workshop**
  - smaller sites can handle major upgrades only every 3 month
  - sites need to give input in the selection of new packages
    - resolve conflicts with local policies
- **gLite releases need to be deployed**
  - software already partially tested by JRA1
    - unit and functional tests
    - certification will need fewer iterations
  - preproduction service
    - replaces part of the certification process
  - LCG2 and gLite have to run side by side (coexist on same fabric)



- **Simple Installation/Configuration Scripts**
  - YAIM (YetAnotherInstallMethod)
    - semi automatic simple configuration management
    - based on scripts (easy to integrate into other frameworks)
    - all configuration for a site are kept in one file
  - APT (Advanced Package Tool) based installation of middleware RPMs
    - simple dependency management
    - updates (automatic on demand)
    - no OS installation
  - Client libs packaged in addition as user space tar-ball
    - can be installed like application software
- **Process (in development)**
  - *new process to gather and prioritize new packages*
    - formal
    - *tracking tool, priorities are assigned to the packages*
    - *cost to completion assigned (time of a **specific** individual) at cut off day*
    - selection process with participation of applications, sites and deployment
    - work will continue based on priority list between releases (rolling)

- **Different frequency of separate release types**
  - client libs (UI, WN)
  - services (CE, SE)
  - core services (RB, BDII,..)
  - major releases (configuration changes, RPMs, new services)
  - updates (bug fixes) added any time to specific releases
  - non critical components will be made available with reduced testing
- **Fixed release dates for major releases (allows planning)**
  - every 3 months, sites have to upgrade within 3 weeks
- **Minor releases every month**
  - based on ranked components available at a specific date in the month
  - not mandatory for smaller RCs to follow
    - client libs will be installed as application level software
  - early access to pre-releases of new software for applications
    - client libs. will be made available on selected sites
    - services with functional changes are installed on EIS-Applications testbed
    - **early feedback from applications**





- **Differences**
  - Unit and functional test already performed by JRA1
  - Releases have to be synchronized between JRA1, SA1 based on NA4's priorities
- **New Sequence**
  - Certification Testbed (CERN)
    - Installation/config tests
    - Rerun functional tests (to validate configuration)
    - Synthetic stress tests
  - Preproduction Service
    - Sites
      - *Krakow, FZK, IN2P3, CNAF, Padua, Bari, NIKHEF, SNIC, Protvino-IHEP, UOM, LIP, PIC, RAL*
      - *sites test installation and configuration*
    - Applications test by using their production software and give feedback on reliability and functionality
- **Status**
  - Documentation of process is in draft state
  - Certification Testbed
    - gLite pre-release installed
  - Preproduction Service
    - Sites are installing current LCG2 release as a platform for the gLite components
  - Porting of tests and collection of existing tests (JRA1, NA4, ARDA) started

- **Certification of the middleware was the essential tool to improve its quality**
- **Early access to new releases was crucial for applications**
- **Process has to undergo evolutionary changes**
  - software matures
    - certification becomes more complex (shift to applications)
  - scale (110 sites)
    - releases with radical changes become very hard to deploy
  - usage (production)
    - some uniformity and fast spread of fixes is expected by applications
- **Preproduction Service for gLite**
  - currently building up
    - new releases have to be introduced to subsets of the sites (staged)
  - feedback from applications essential to prioritize the work

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**OMC** Operation Management Center

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**ROC** Regional Operation Center

**RC** Resource Center

**GGUS** Global Grid User Support

- Barcelona
- Bologna - INFN
- CCLRC (UK)
- CYFRONET (Poland)
- FZ Karlsruhe (Germany)
- GRNET (Greece)
- IN2P3 (France)
- NIKHEF (Holland)
- Distributed Russian RO

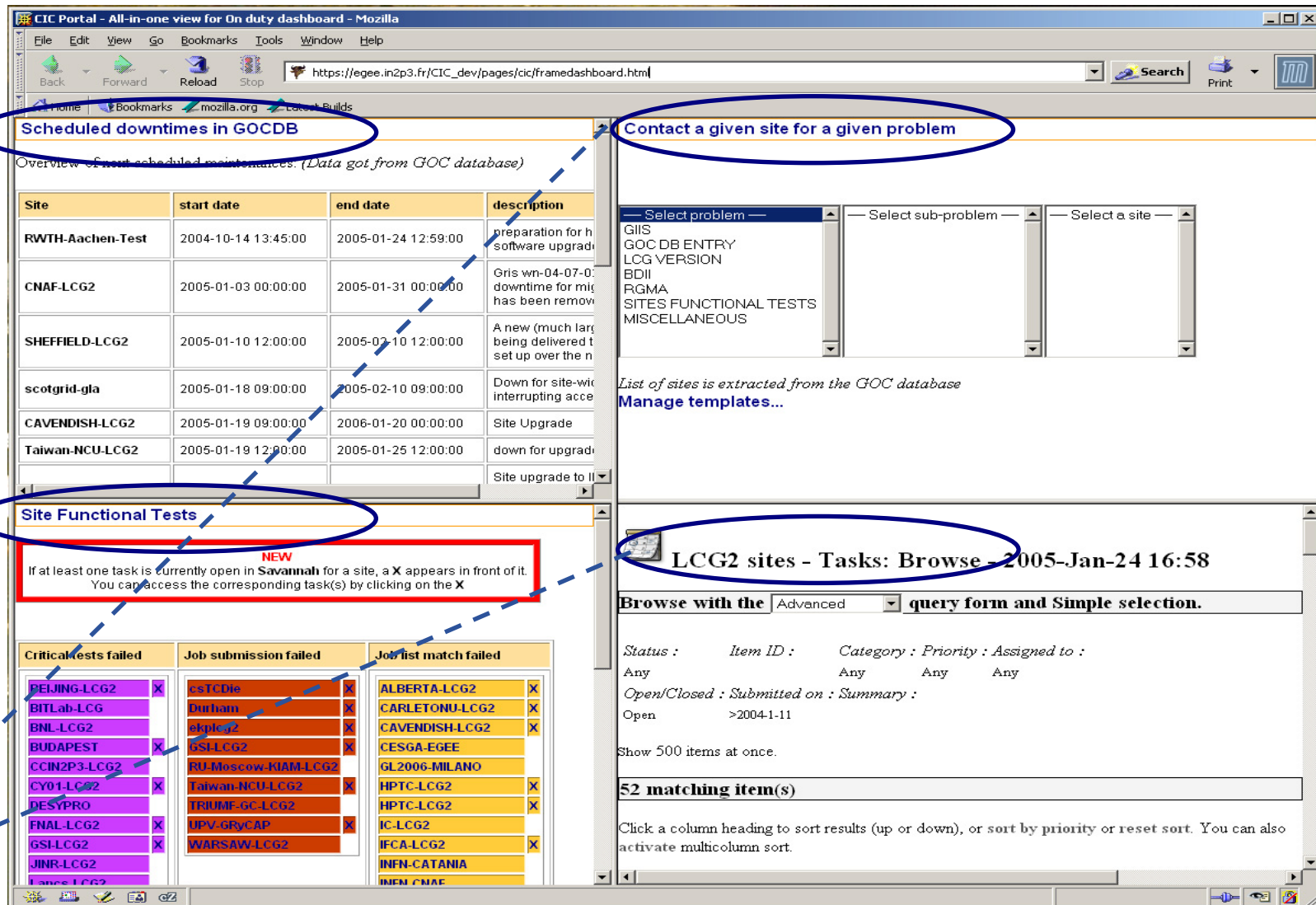
Network Resource Provision  
Network Manager  
GEANT / NREN



- **Driven by experience during 2004 Data Challenges**
- **Reflecting the outcome of the November Operations Workshop**
- **Operations Procedures**
  - roles of CICs - ROCs - RCs
  - weekly rotation of operations centre duties (CIC-on-duty)
  - daily tasks of the operations shift
    - monitoring (tools, frequency)
    - problem reporting
      - *problem tracking system*
      - *communication with ROCs & RCs*
    - escalation of unresolved problems
    - handing over the service to the next CIC



- **Evolutionary Development**
  - Procedures
    - documented (constantly adapted)
      - *available at the CIC portal <http://cic.in2p3.fr/>*
      - *in use by the shift crews*
  - Portal <http://cic.in2p3.fr>
    - access to tools and process documentation
    - repository for logs and FAQs
    - provides means of efficient communication
    - provides condensed monitoring information
  - Problem tracking system
    - currently based on Savannah at CERN
    - is moving to the GGUS at FZK
      - *exports/imports tickets to local systems used by the ROCs*
  - Weekly Phone Conferences and Quarterly Meetings



**Scheduled downtimes in GOCDB**

Overview of next scheduled maintenances. (Data got from GOC database)

| Site             | start date          | end date            | description  |
|------------------|---------------------|---------------------|--|
| RWTH-Aachen-Test | 2004-10-14 13:45:00 | 2005-01-24 12:59:00 | preparation for hardware upgrade                                     |
| CNAF-LCG2        | 2005-01-03 00:00:00 | 2005-01-31 00:00:00 | Gris wn-04-07-03 downtime for migration has been removed             |
| SHEFFIELD-LCG2   | 2005-01-10 12:00:00 | 2005-02-10 12:00:00 | A new (much larger) being delivered to set up over the next few days |
| scotgrid-gla     | 2005-01-18 09:00:00 | 2005-02-10 09:00:00 | Down for site-wide interrupting access                               |
| CAVENDISH-LCG2   | 2005-01-19 09:00:00 | 2006-01-20 00:00:00 | Site Upgrade   |
| Taiwan-NCU-LCG2  | 2005-01-19 12:00:00 | 2005-01-25 12:00:00 | down for upgrade   |
|                  |                     |                     | Site upgrade to LCG2   |

**Contact a given site for a given problem**

Select problem: GIS, GOC DB ENTRY, LCG VERSION, BDII, RGMA, SITES FUNCTIONAL TESTS, MISCELLANEOUS

Select sub-problem: [Empty]

Select a site: [Empty]

List of sites is extracted from the GOC database

**Site Functional Tests**

**NEW**

If at least one task is currently open in Savannah for a site, a X appears in front of it. You can access the corresponding task(s) by clicking on the X

| Critical tests failed | Job submission failed | Job list match failed |
|-----------------------|-----------------------|-----------------------|
| BEIJING-LCG2 X        | csTCDie X             | ALBERTA-LCG2 X        |
| BITLab-LCG X          | Durham X              | CARLETONU-LCG2 X      |
| BNL-LCG2 X            | ekple2 X              | CAVENDISH-LCG2 X      |
| BUDAPEST X            | GSI-LCG2 X            | CESGA-EGEE            |
| CCIN2P3-LCG2 X        | RU-Moscow-KIAM-LCG2 X | GL2006-MILANO         |
| CY01-LCG2 X           | Taiwan-NCU-LCG2 X     | HPTC-LCG2 X           |
| DESYPRO X             | TRIUMF-CC-LCG2 X      | HPTC-LCG2 X           |
| FNAL-LCG2 X           | UPV-GRVAP X           | IC-LCG2               |
| GSI-LCG2 X            | WARSAW-LCG2 X         | IFCA-LCG2 X           |
| JINR-LCG2 X           |                       | INFN-CATANIA          |
| Lance-LCG2 X          |                       | INFN-CNAF             |

**LCG2 sites - Tasks: Browse - 2005-Jan-24 16:58**

Browse with the **Advanced** query form and **Simple selection**.

Status: Any Item ID: Any Category: Any Priority: Any Assigned to: Any

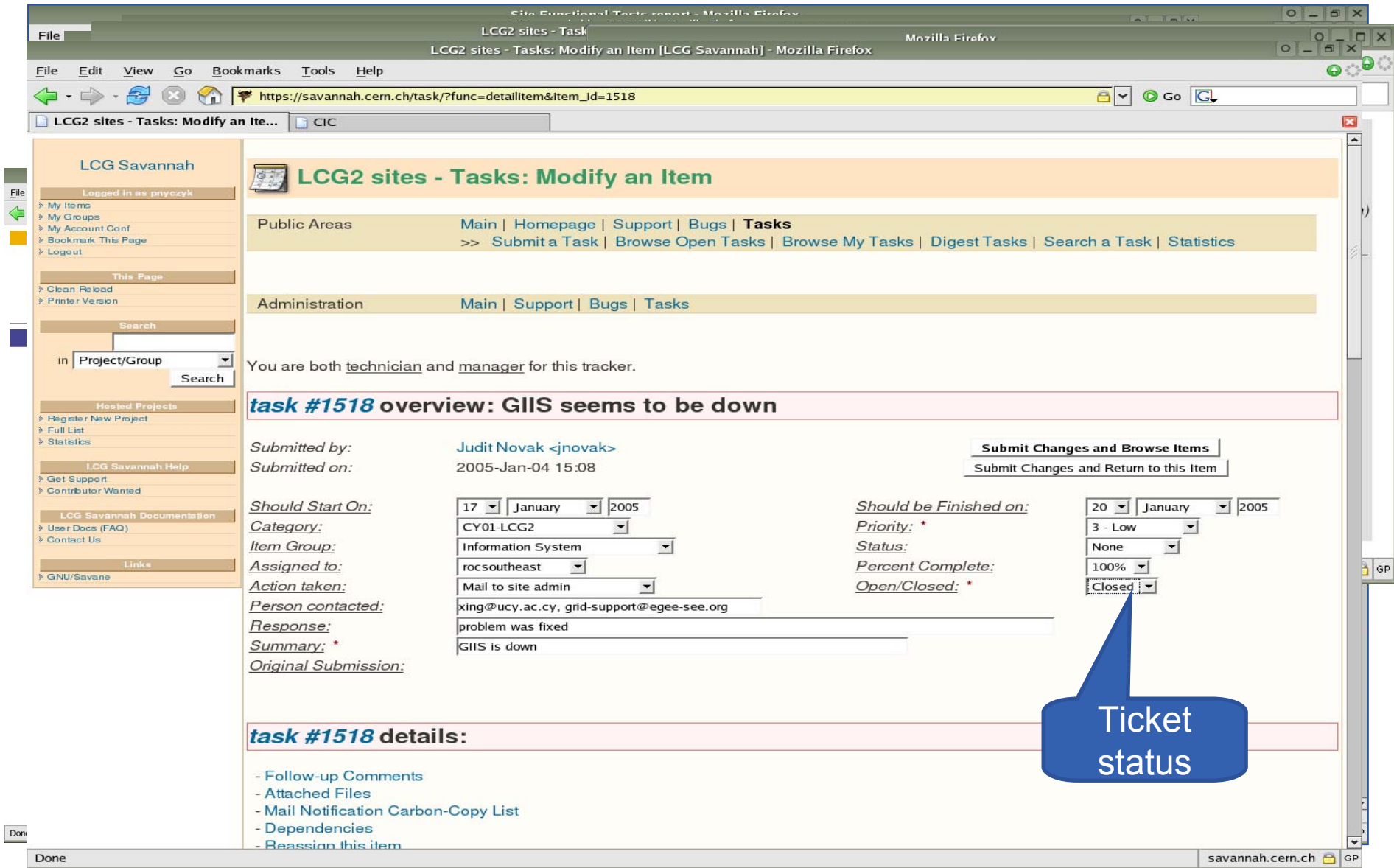
Open/Closed: Submitted on: Summary: Open >2004-1-11

Show 500 items at once.

**52 matching item(s)**

Click a column heading to sort results (up or down), or sort by priority or reset sort. You can also activate multicolumn sort.

All in One Dashboard



The screenshot shows a Mozilla Firefox browser window displaying the LCG Savannah website. The page title is "LCG2 sites - Tasks: Modify an Item [LCG Savannah] - Mozilla Firefox". The address bar shows the URL: [https://savannah.cern.ch/task/?func=detailitem&item\\_id=1518](https://savannah.cern.ch/task/?func=detailitem&item_id=1518). The page content includes a navigation menu, a search bar, and a task overview for task #1518. The task title is "task #1518 overview: GIS seems to be down". The task details include:

- Submitted by: Judit Novak <jnovak>
- Submitted on: 2005-Jan-04 15:08
- Should Start On: 17 January 2005
- Should be Finished on: 20 January 2005
- Category: CY01-LCG2
- Priority: 3 - Low
- Item Group: Information System
- Status: None
- Assigned to: rocsoutheast
- Percent Complete: 100%
- Action taken: Mail to site admin
- Open/Closed: Closed
- Person contacted: xing@ucy.ac.cy, grid-support@egee-see.org
- Response: problem was fixed
- Summary: \* GIS is down
- Original Submission:

Buttons for "Submit Changes and Browse Items" and "Submit Changes and Return to this Item" are visible. A blue callout box with the text "Ticket status" points to the "Open/Closed" dropdown menu.

Ticket status



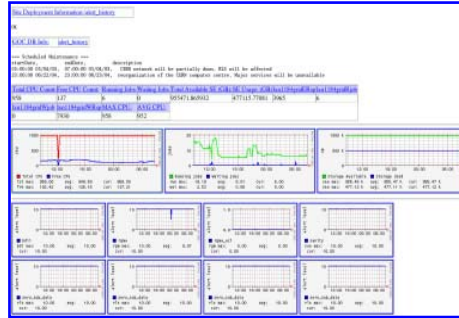
# A day in an operators life goes on and on

Enabling Grids for E-science

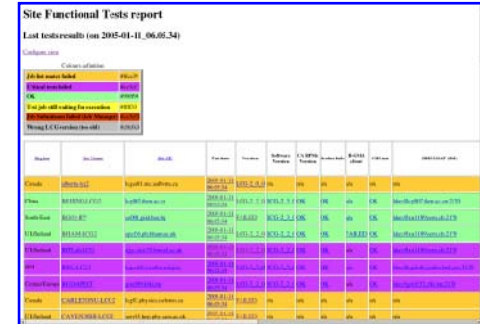
By watching the EGEE Monitoring tools, here a selection:



GIIS Monitor



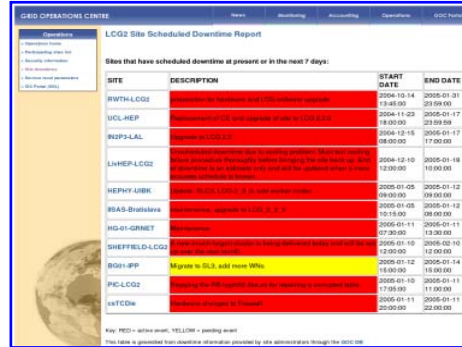
GIIS Monitor graphs



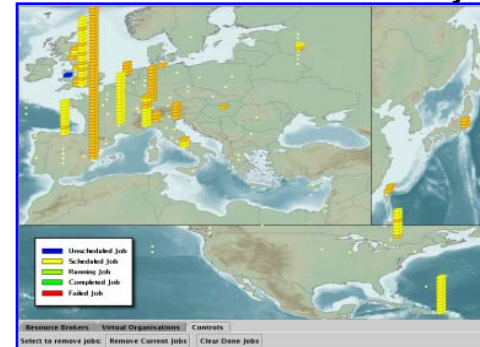
Sites Functional Tests and History



GOC Data Base



Scheduled Downtimes



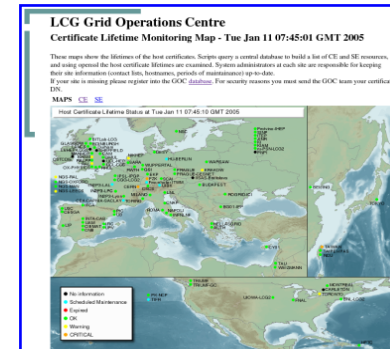
Live Job Monitor



GridIce - VO view



GridIce - fabric view



Certificate Lifetime Monitor

- **Initial set of operations procedures are available and implemented**
  - based on experience 2004 and Operations Workshop
- **No longterm experience exists**
  - have to adapt tools, roles and procedures as we learn and grow the system
- **Rotation between CICs**
  - spreads the load (~50 tickets are handled per week)
  - distributes knowledge quickly
  - first step towards 24/7 operation
    - introducing CICs in other time zones (Taipei, Vancouver)
- **Monitoring tools need to be linked to give access to all information**
  - automate creation of alarms
  - better diagnosis of problems
  - first steps taken, several monitoring tools export data into EGEE R-GMA
- **Certification and Operation are closely linked**
  - same entities involved
  - same knowledge needed (FAQs)