gLite Certification, Deployment, and Operations Process

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Information Society

Introduction

- **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**

Current Procedure

- 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

Roles

SA1 EGEE European Grid Support, Operation and Management activity

SA2 EGEE Network Resource Provision Activity

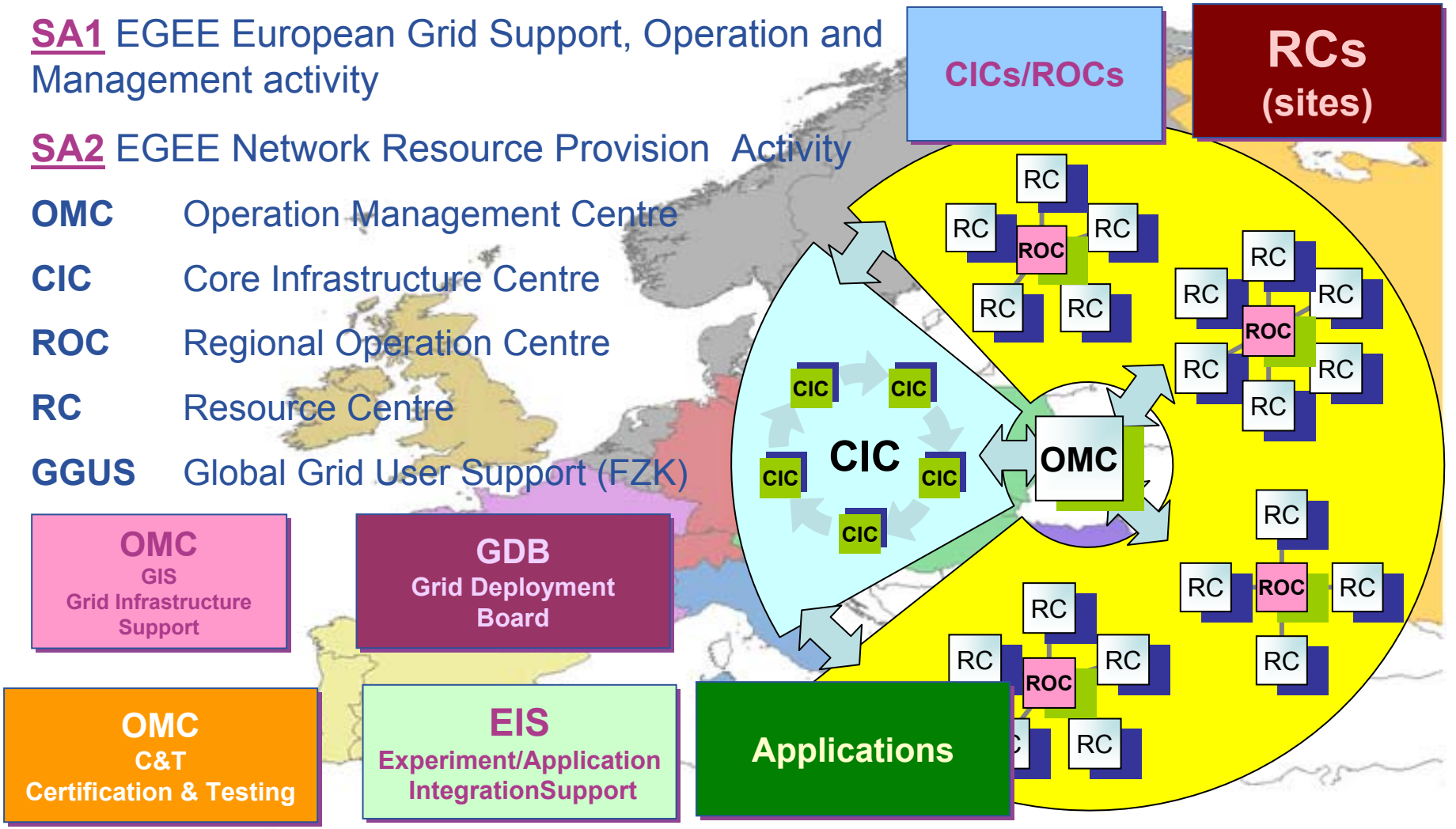
OMC Operation Management Centre

CIC Core Infrastructure Centre

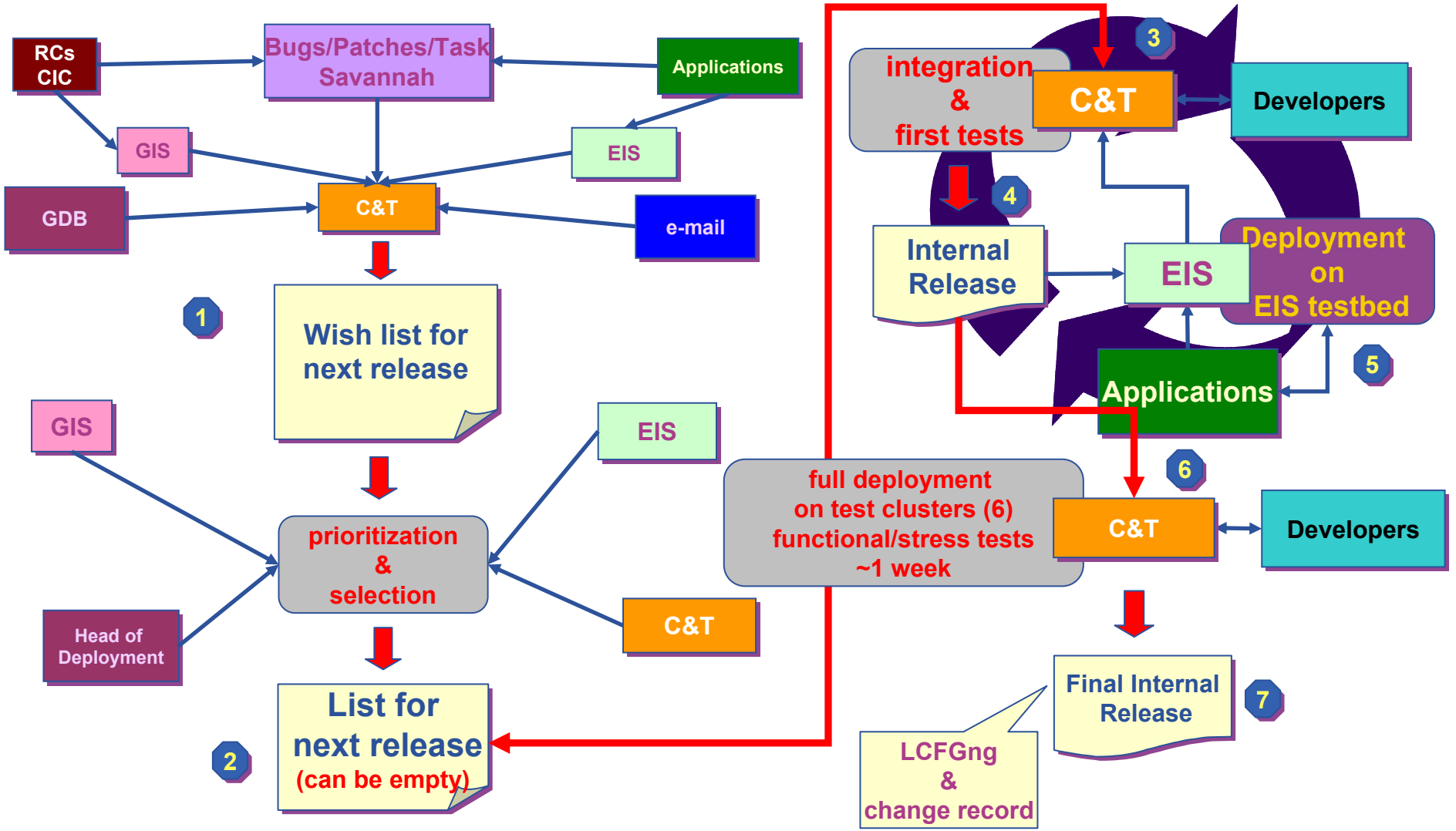
ROC Regional Operation Centre

RC Resource Centre

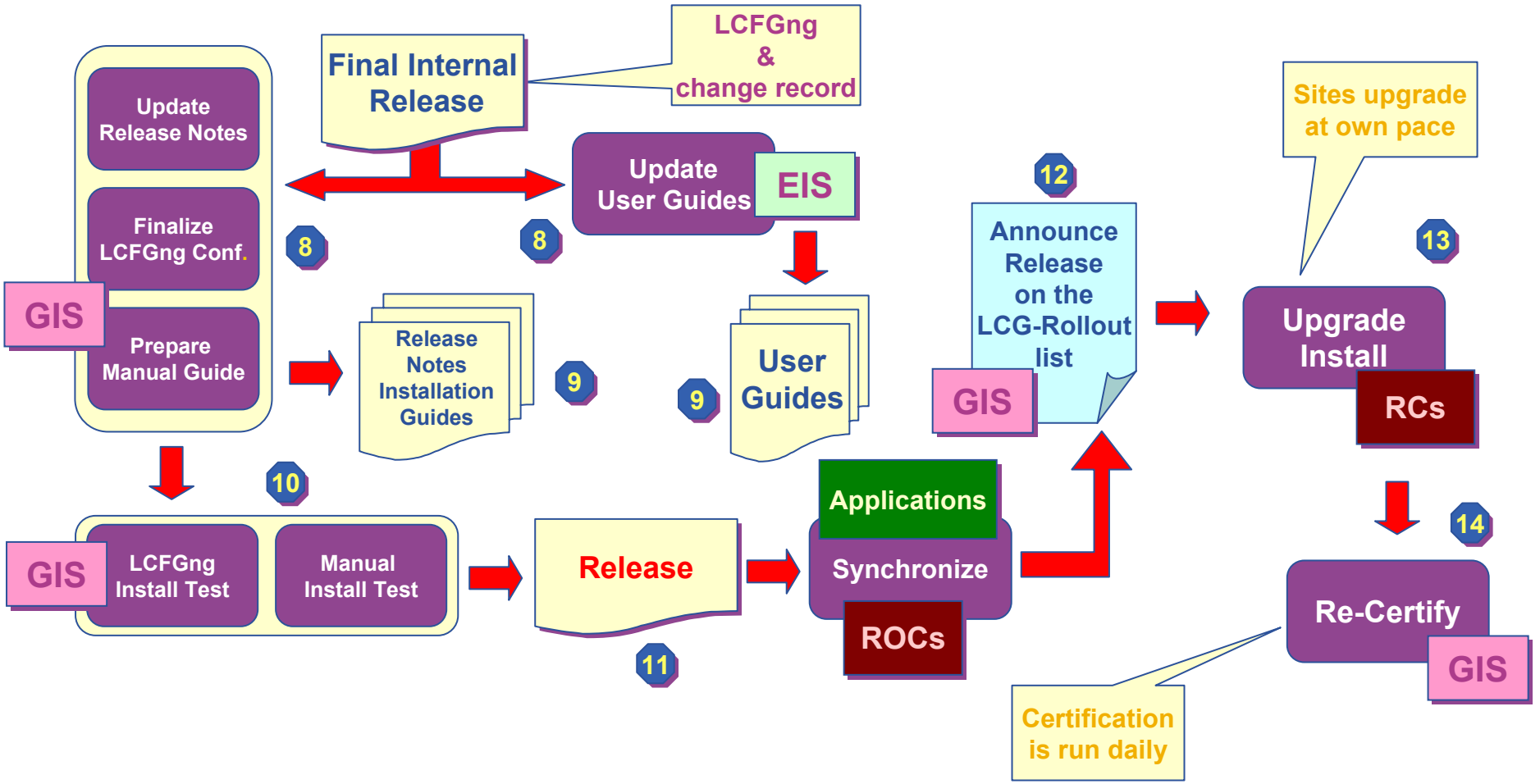
GGUS Global Grid User Support (FZK)



Release Preparation



Deployment


Update Release Notes
Finalize LCFGng Conf.
Prepare Manual Guide
GIS
Final Internal Release
LCFGng & change record
Update User Guides
EIS
8
8
Release Notes Installation Guides
9
User Guides
9
12
Announce Release on the LCG-Rollout list
GIS
Sites upgrade at own pace
13
Upgrade Install
RCs
10
GIS
LCFGng Install Test
Manual Install Test
Release
11
Applications
Synchronize
ROCs
14
Re-Certify
GIS
Certification is run daily

Experience

- **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

Additional Input

- **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 months
  - 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)

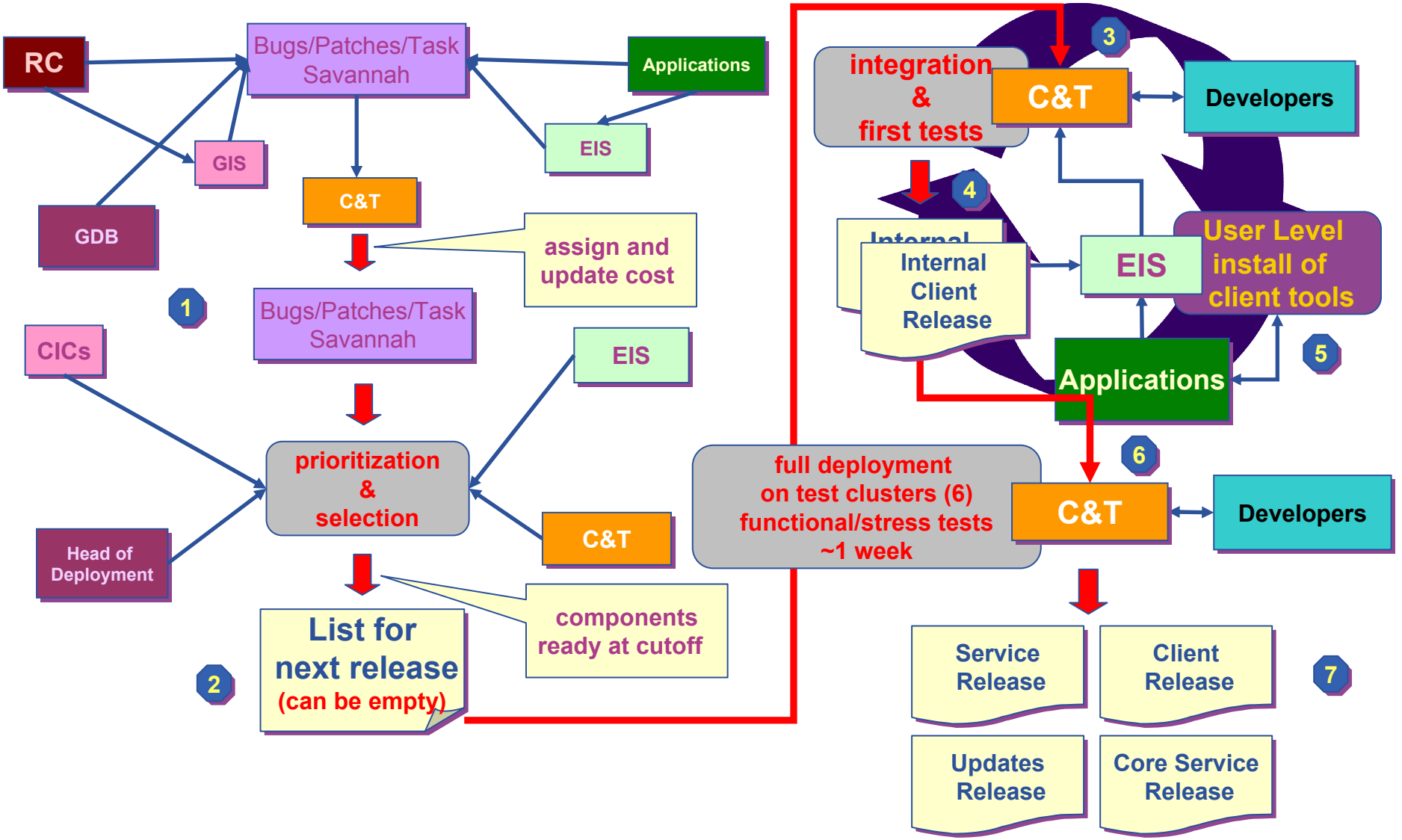
Changes I

- **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)

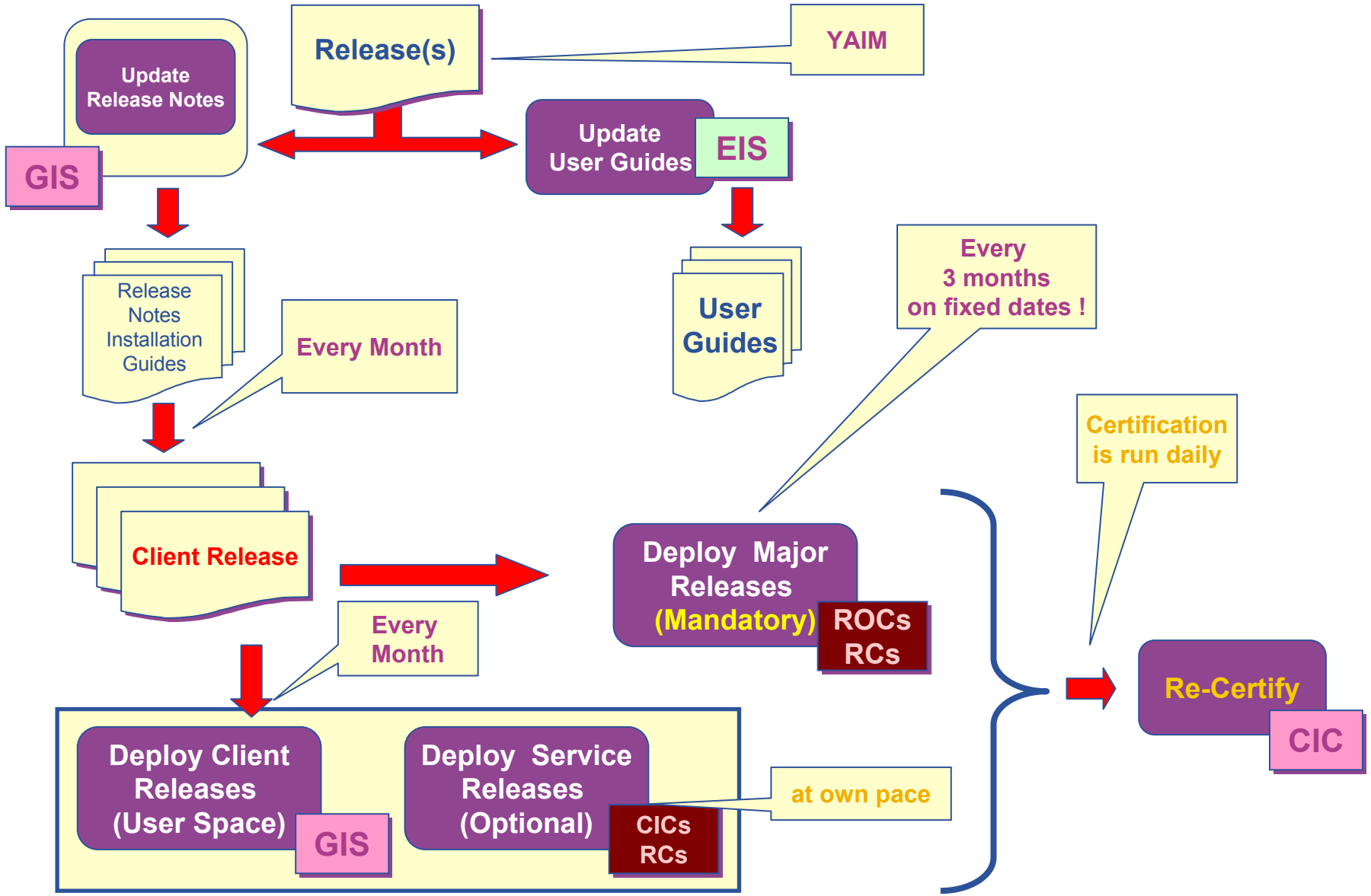
Changes II

- **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**

New Process (simplified)



New Deployment



- **Differences**
  - Unit and functional testing 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

Lessons Learned

- **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

Operati : Roles

SA1 EGEE European Grid Support, Operation and
Management activity

SA2 EGEE Network Resource Provision

OMC Operation Management Cen

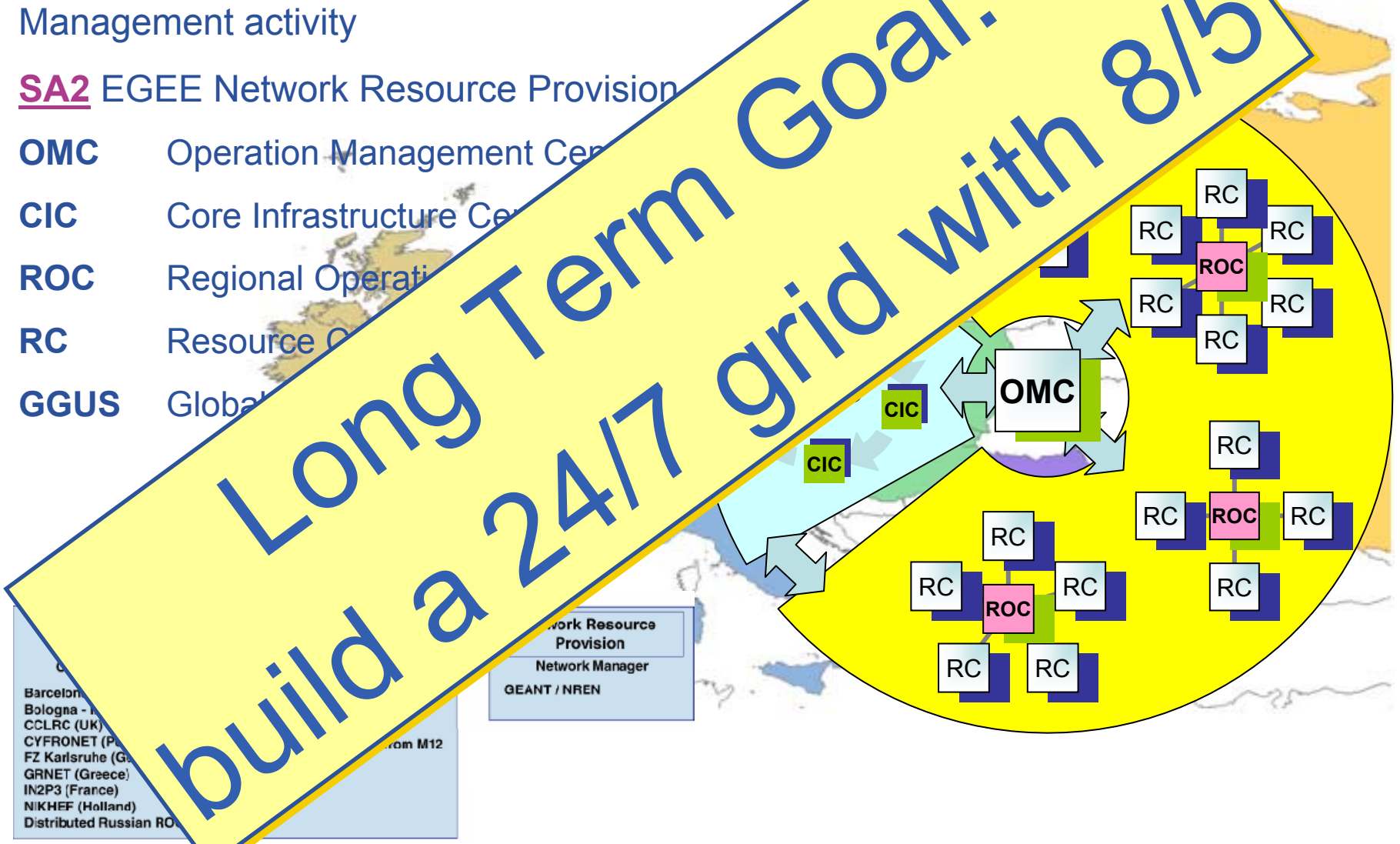
CIC Core Infrastructure Ce

ROC Regional Operati

RC Resource C

GGUS Global

Long Term Goal:
build a 24/7 grid with 8/5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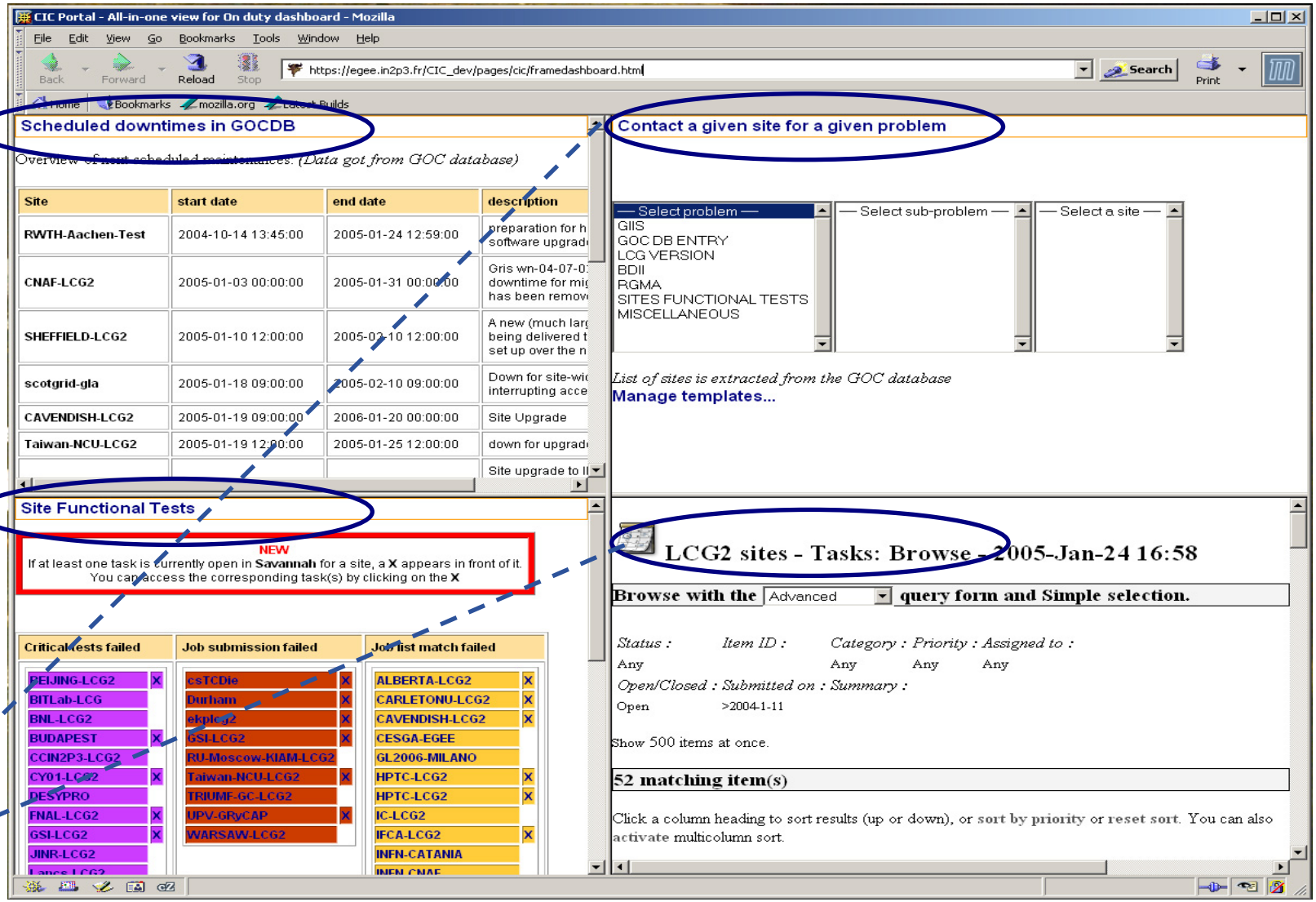
Procedures

- **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

Implementation

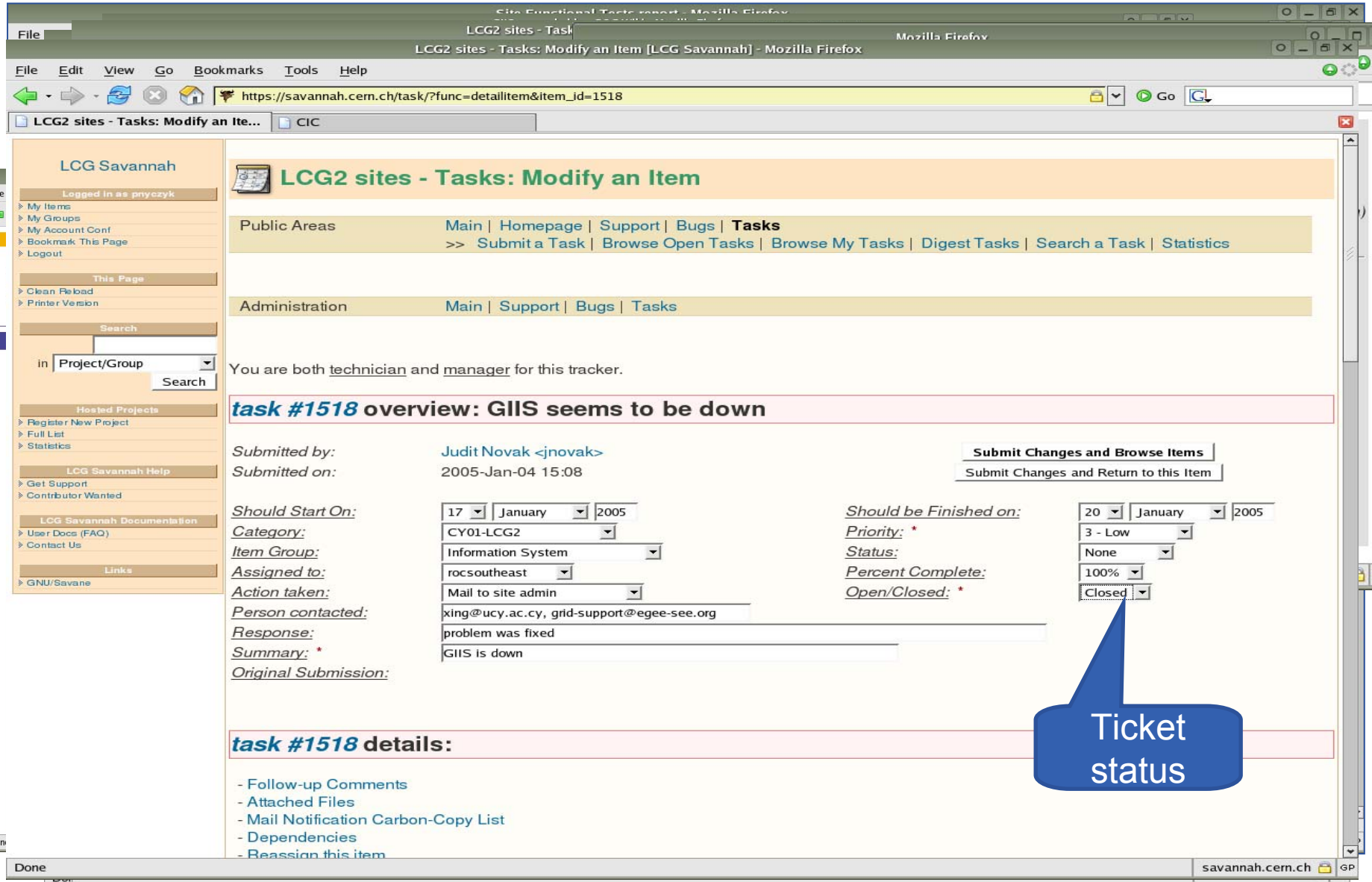
- **Evolutionary Development**
  - Procedures
    - documented (constantly adapted)
      - *available at the CIC portal http://cic.in2p3.fr/*
      - *in use by the shift crews*
  - Portal http://cic.in2p3.fr
    - access to tools and process documentation
    - repository for logs and FAQs
    - provides 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

A day in an operator's life



All in One Dashboard

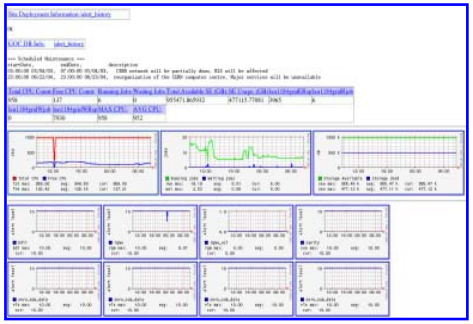
A day in an operator's life goes on



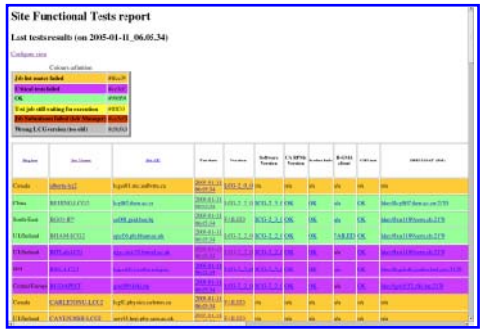
A day in an operator's life goes on and on

By watching the EGEE Monitoring tools, here are a selection:

GIIS Monitor

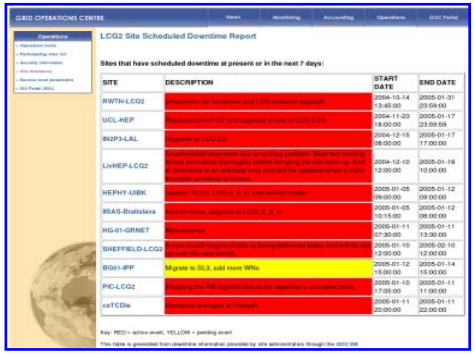


GIIS Monitor graphs

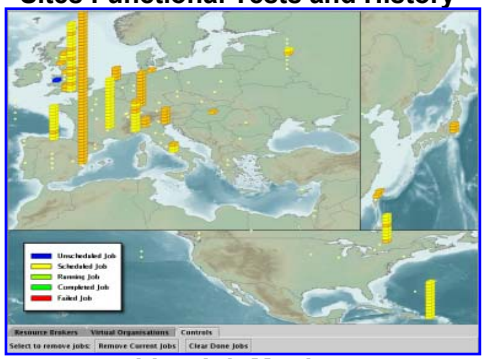


Sites Functional Tests and History

GOC Data Base

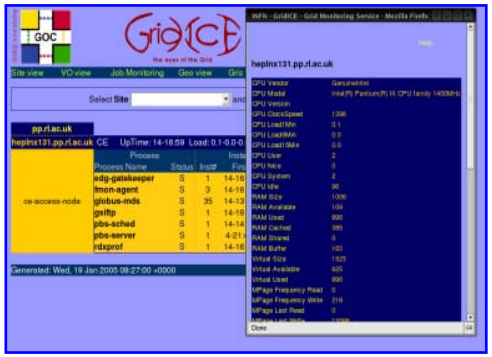


Scheduled Downtimes

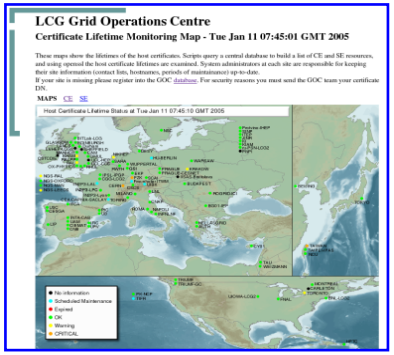


Live Job Monitor

GridIce – VO view



GridIce – fabric view



Certificate Lifetime Monitor

Summary

- **Initial set of operations procedures are available and implemented**
  - based on experience during 2004 and Operations Workshop
- **No long-term 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)