Grid Deployment Area
Status and Perspectives
&
Work to be done for LCG-1

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GDB Meeting

Taipei

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Status of LCG-1

Middleware

- First LCG version is released!
  - LCG-0 is a "packaged" version of:
    - VDT 1.1.6 (Globus 2.2.3)
    - EDG WP1, 2
    - GLUE Schema, MDS, etc.
  - As defined by the WG1 document
- Purpose is to use this to build up processes and infrastructure
- Currently being installed on CERN Pilot system
- Release for July
  - Will be VDT 1.1.7 and EDG 2.0
  - Delivered to LCG by EDG end of April
  - This will include RLS and R-GMA as well as MDS
  - Testing and certification process will be on LCG certification testbed
    - This will begin within the next 2 weeks as soon as initial integration is done
    - Testing process will begin then

Middleware

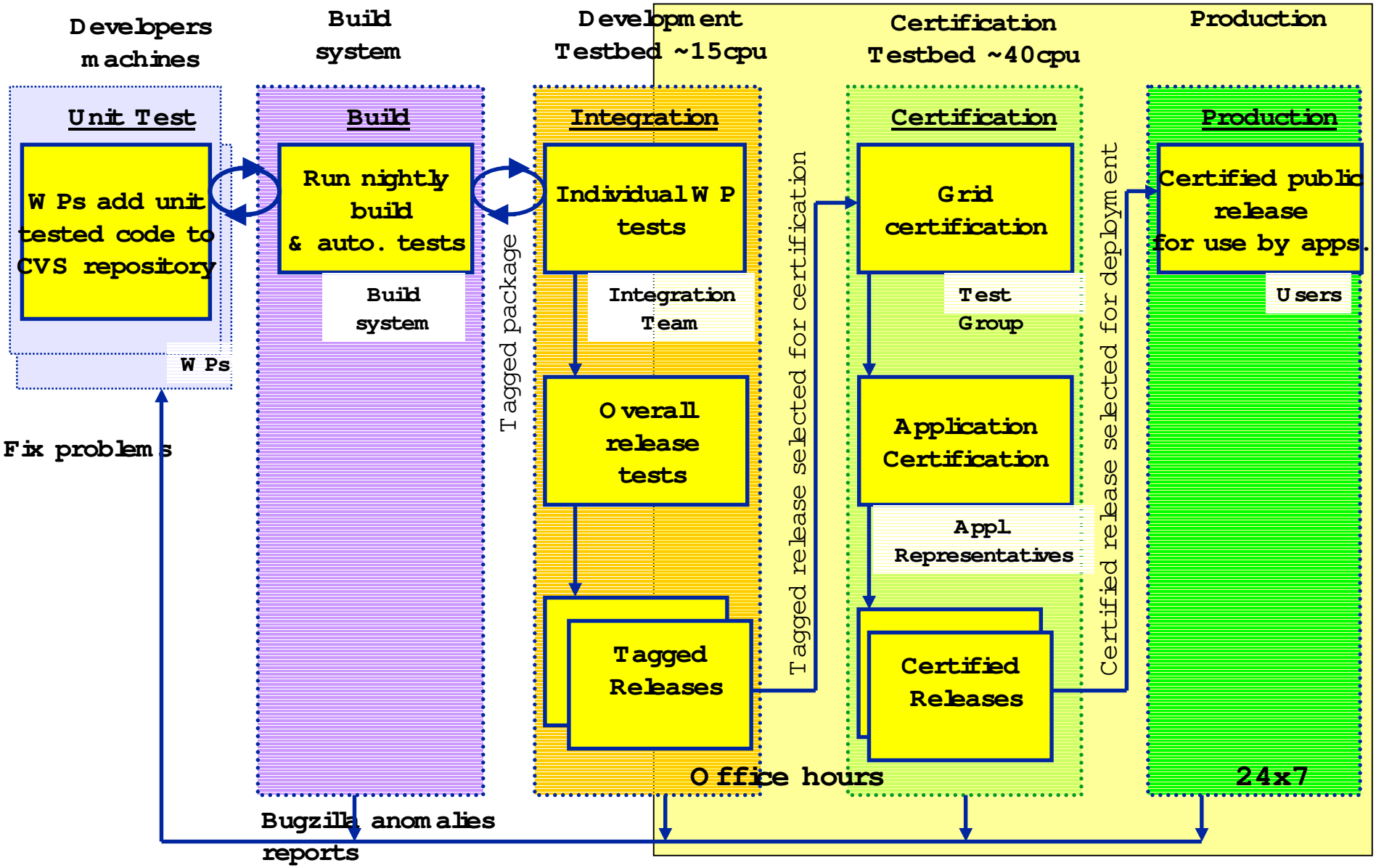
- LCG-1 will be identical to EDG release 2.0, and will be based on latest VDT release
  - This should fulfil the stated goal of a converged US/EU toolkit
  - Interest in this from non-LHC experiments e.g. Babar
- LCG will use current release to set up infrastructure and test deployment process
- Will upgrade to LCG-1 as soon as it is stable (defined by cert process)
  - Upgrade is part of the process we are building

Certification & Testing

Scope of testing for LCG

- We envisage and plan for a full range of tests and testbeds:
  - Unit (component) tests – at the level of major components
  - Globus test suite
  - Condor test suite
  - Basic grid functionality on a “local grid” (several clusters on LAN)
  - Grid functionality on test grid (several sites)
  - Test cases derived from HEPCAL use-cases (via GAG group)
  - Standard application benchmarks and experiment users testing
  - Site verification tests (configuration, services running, etc.)
- The tests will be provided from several sources
  - Joint project with US groups – VDT inc. Globus, HEPCAL
  - Standard tests from experiments (e.g. from recent CMS stress tests)
  - TSTG – and it is clear that this is where more effort is required

Test and Validation process



Certification & Testing

- The LCG/EDG testing group is developing tests for LCG-1
  - Delivered a testing framework, with basic set of tests for site verification, simple component tests, job storms
- Collaborate with VDT/iVDGL to:
  - Build basic Globus, Condor testing suites and tests
  - Become a part of the distributed certification testbed (Wisconsin)
- GAG has been created,
  - Part of it's mandate is to provide the HEPCAL test cases
- Need to pull in other expertise
  - E.g. EDG WP8/loose cannons
- Look at using common tools and frameworks (where it makes sense) NMI/VDT-LCG
  - We need to do this soon to avoid divergence
- Need much more effort on devising & writing tests
  - Real effort currently is only 2 people

Middleware system support

- European grid support centre
  - Maarten Litmaath as 1/3 of technical Globus support people (SE, UK, LCG)
  - Will participate in Globus 2.4 release process
- LCG team
  - Currently 2 people
  - Building relationships with EDG, Globus, VDT
  - Worked on RLS stress testing and debugging

Pilot system

- CERN Pilot system
  - Cluster of 20 systems – can be expanded for scalability testing by moving worker nodes in and out of lxbatch service
  - CERN production service group (FIO) working on integrating with production service –
    - there are many outstanding issues to be resolved here
- Deployments
  - RAL and CNAF are starting to test the installation procedure this week
  - Expect FNAL at the end of this month
- This is very close to our proposed schedule :

LCG-1 Ramp-up Schedule

	Date	Regional Center	Experiment
Pilot 1 start – Feb 1			
0	15/2/03	CERN	All
1	28/2/03	CNAF, RAL	All
2	30/3/03	FNAL (needs confirmation)	CMS
3	15/4/03	Tokyo	Atlas
4	30/4/03	Karlsruhe	All
5	7/5/03	IN2P3	All
6	15/5/03	BNL (needs confirmation)	Atlas
7	21/5/03	Russia(Moscow),Taiwan	All
LCG-1 Initial Public Service Start – July 1			

Test-beds and Services

- The deployed systems will be in several versions and functions:
  - Certification testbeds – both local and distributed
    - Integration of middleware components, Controlled changes, in-depth application testing
    - Prepare for release
  - Production service – deployed at Regional Centres
  - Development service – deployed at Regional Centres
  - Certification testbeds parallel Production and Development services – i.e. need to debug and stabilise production release in parallel with development

Test-beds and services

- Agreement last week to merge EDG and LCG production services and to separate test-beds
  - The only way to share scarce resources (support)
  - NB. Do not underestimate what it takes to support this
- March – July:
  - No EDG production test-bed at CERN now (but access to Castor)
  - EDG core sites will run dev. test-beds and either EDG production or LCG pilot, unless they have resources for both
  - LCG pilot on other EDG sites and at non-EDG centres
- From July:
  - There will be a single production system – LCG-1
    - at least at CERN, hopefully at other EDG/LCG sites

Operations Support

- GDA team of 3 people (2.5 FTE)
- Core of Operations team
- Add people from each RC as we work with them during deployment
  - Expect to send people to CERN or to RC during initial deployment
- Activities include: (together with people from cert. team)
  - Support LCG pilot
  - Support EDG dev testbed (at CERN)
  - Defining LCG-1 service architecture
  - Managing CERN CA
  - LCG Security contact
- Request 2 more FTE
- Request 1 technical admin for VO management

This group managing grid services, and those managing the site fabrics should really attend the HEPiX meetings – this is where common issues can be addressed

Next is May in Amsterdam

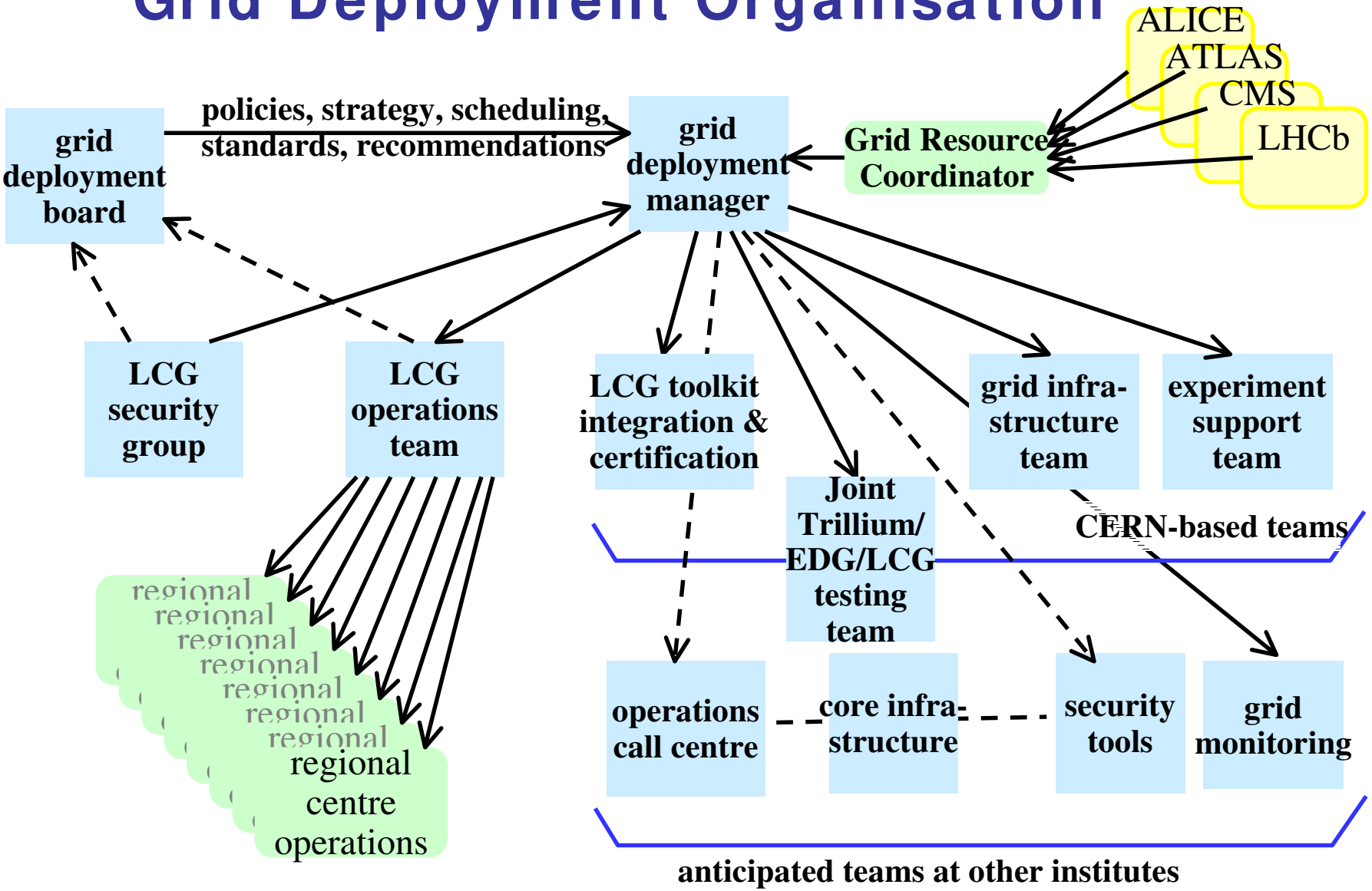
Experiment Integration Support

- Currently 2 people, requested 3 more
- Plan to have team lead + 1 FTE per experiment
- Activities just starting:
  - CMS stress tests
  - Documenting expected EDG 2.0/LCG-1 interfaces and API's
- Group will provide direct support to experiment Data Challenges

Security

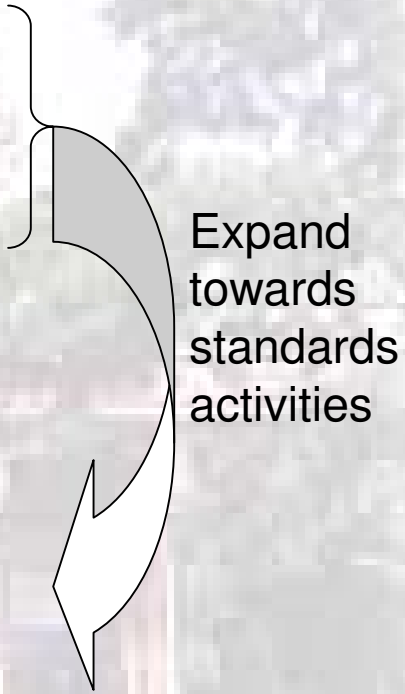
- Dave Kelsey will lead ongoing security activity
  - Policies
  - Security strategy and plan
  - This is needed urgently – as basis for operational agreements at centres
- Security operational issues:
  - Led by Dane Skow (FNAL), group of site security contacts
  - Gathering issues, constraints, etc.
  - This group will handle daily security issues
- Proposing collaboration on VO management
  - FNAL, INFN, …

Grid Deployment Organisation



Collaborative Activities

- HICB – JTB
  - GLUE Schema and evolution
  - Validation and Test Suites
  - Distribution, Meta-Packaging, Configuration
  - Monitoring tools (proposed), aspects of ops centres
  - Proposed collaboration on VO tools (led by FNAL)
- GGF
  - Production Grid Management (operations)
  - User Services (call centres)
    - Tools, trouble ticket exchange standards, etc
  - Site AAA (security)
  - Particle and Nuclear Physics Applications area
    - As a forum in GGF to present issues and get collaboration
- Other
  - HEPiX – Fabric, operations, tools, procedures
  - Security – site security contacts
  - Storage Interfaces – SRM



Outstanding Task Areas

Major activity areas - 1

- Grid Operations Centre
  - Need a site to lead this – RAL
  - Understand scope and issues
  - Build collaborations with US and AP operations
  - Build monitoring tools and frameworks
  - Resource accounting
  - GGF activity (PGM-RG), iVDGL, etc
- Support Centre
  - Need a site to lead this activity –
  - Understand scope and issues
  - Build tools etc.
  - GGF activity (GUS-WG) – protocols for trouble tickets
- These 2 activities must be coordinated together and with other projects in these areas

Major activity areas - 2

- Security
  - Write policies
  - Create a security strategy and implementation plan
  - Issues include:
    - Registration process
    - VO management tools
    - Authentication methods and procedures
    - Authorization methods and tools
    - Requirements and implementations for audit trails
    - Online credential repositories
    - Proxy renewal issues
    - KCA development – policy?
    - Firewall and connectivity issues
  - This is urgent. We need this now to avoid multiple implementations, once the strategy is clear we need implementation teams and collaborations
  - Collaborative with external activities: GGF (SAAAR), PPDG, etc

Middleware tasks - 1

- Testing group needs effective people now (≥3)
  - Need a core group of at least 3 more people (full time)
  - A core team at an institute that can also build a test-bed
  - Also welcome sites to build certification test-beds
  - Needs to drive collaboration on frameworks and tools
  - Needs to collaborate with EDG loose canons/WP8
  - Needs to collaborate with VDT
- Packaging and configuration
  - A strategy as been proposed by LCG/EDG/VDT – requires implementation effort to build and test the tools
  - Expand collaboration with VDT – need to build a joint tool kit for autobuilds, test frameworks, etc

Middleware tasks - 2

- GLUE schema development
  - Extensions (especially for experiment info), development, write information providers
    - 3 levels: Globus (major version), VDT (minor version), LCG – we write info providers For experiment info – write info providers – this should be experiment people
- Monitoring tools
  - In collaboration with the GOC – (BARC working on this)
  - This is also a joint activity with iVDGL/JTB
- Problem tracking system
  - More than just the tool – needs to drive the tool requirements
  - Tool for all areas of LCG – deployment issues, operations, call centres

Services - tasks

- Define service architecture – in progress
  - Must include e.g. POOL + other apps middleware
  - How to deploy DB-related services – RLS – Oracle vs MySQL+ Tomcat
- Specify Job execution model – depends on:
  - Define sandbox – and limitations - etc
  - Storage access model
- Storage access:
  - Propose strategy and provide implementations
  - Integration of POOL services with RLS and storage access
- Understand & document LCG-1 API's and interfaces (in progress)
  - How to integrate with experiment applications
- Develop common metrics for resource usage accounting
- Common tools for installation of experiment software and updates
- Experiments need to:
  - Specify WN disk requirements
  - Experiment software (i.e. services such as Alien gateway) that directly accesses local resources must provide audit trail
- Job chains – not possible at the moment – is it essential?

Site-specific issues

- Information publishing
  - Connection between fabric (Cluster, storage) and information service
- Batch service
  - Implement special batch systems (e.g. BQS) – mods needed in each release?
- Provide local operations support people (and on-call)
- Provide local security contact person
- Provide list of security issues, limitations, expectations
- Mapping of users to local accounts

Fabric Issues

- Worker nodes need shared home directories,
  - Currently NFS, must be made to work with AFS
- How do users access AFS?
- Worker node connectivity

- Automated account management – when, what, how –pool accounts (dhcp-like) by July
  - Account management tools

- Audit trails
  - Need to ensure end-end audit trail – within a site

Summary

- LCG deployment has started according to schedule
- Much work still remains to be done
- All of this requires LCG to be a collaboration of effort between all of the experiments and regional centres involved
- And, with other grid deployment projects, GGF, etc., etc.