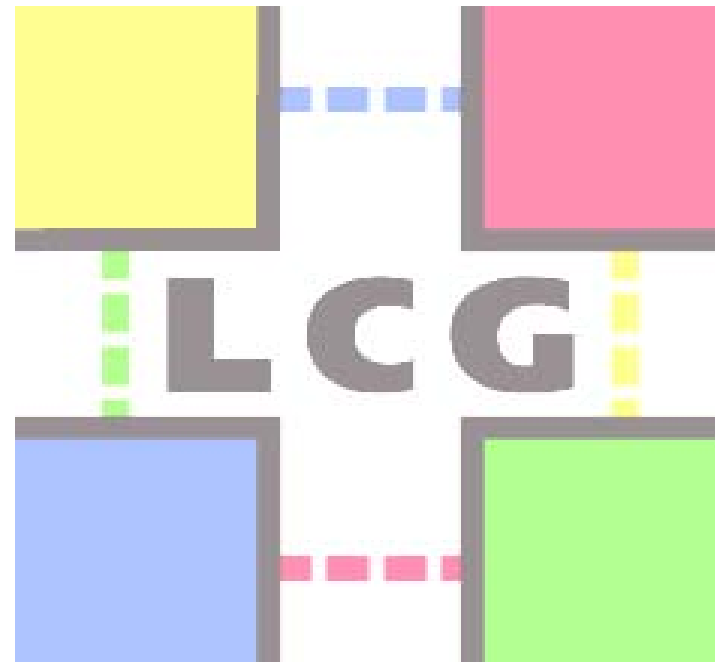


LCG Project Organisation Requirements and Monitoring

LHCC Comprehensive Review
November 24, 2003



Matthias Kasemann
Software + Computing Committee (SC2)



LCG - Goals

- The goal of the LCG project is to prototype and deploy the computing environment for the LHC experiments

- Two phases:
 - ◆ Phase 1: 2002 - 2005
 - ◆ Build a service prototype, based on existing grid middleware
 - ◆ Gain experience in running a production grid service
 - ◆ Produce the TDR for the final system

 - ◆ Phase 2: 2006 - 2008
 - ◆ Build and commission the initial LHC computing environment

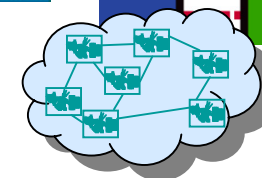
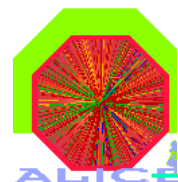
❖ LCG is not a development project - it relies on other grid projects for grid middleware development and support

LHC Computing Grid Project



- The LCG Project is a collaboration of -
 - ◆ The LHC experiments
 - ◆ The Regional Computing Centres
 - ◆ Physics institutes
- .. working together to prepare and deploy the computing environment that will be used by the experiments to analyse the LHC data
- This includes support for applications
 - ◆ provision of common tools, frameworks, environment, data persistency
- .. and the development and operation of a computing service
 - ◆ exploiting the resources available to LHC experiments in computing centres, physics institutes and universities around the world
 - ◆ presenting this as a reliable, coherent environment for the experiments
 - ◆ the goal is to enable the physicist to concentrate on science, unaware of the details and complexity of the environment they are exploiting

SC2 & PEB Roles



- SC2 includes the four experiments and Tier 1 Regional Centres
- SC2 identifies common solutions and sets requirements for the project
 - ◆ may use an RTAG - Requirements and Technical Assessment Group
 - ◆ limited scope, two-month lifetime with intermediate report
 - ◆ one member per experiment + experts
- SC2 approves the work plan and monitors progress
- PEB manages the implementation
 - ◆ organising projects, work packages
 - ◆ coordinating between the Regional Centres
 - ◆ collaborating with Grid projects
 - ◆ organising grid services



Requirements setting: RTAG status

- RTAG1 Persistency Framework; completed
- RTAG2 Managing LCG Software; completed
- RTAG3 Math Library Review; completed
- RTAG4 GRID Use Cases; completed
- RTAG5 Mass Storage; completed
- RTAG6 Regional Centres; completed
- RTAG7 Detector geometry & materials description; completed
- RTAG8 LCG blueprint; completed
- RTAG9 Monte Carlo Generators completed
- RTAG10 Detector Simulation; completed
- RTAG11 Architectural Roadmap towards Distributed Analysis; completed

- Reports of the Grid Applications Group:
 - ◆ HEPCAL I (LCG-SC2-20-2002)
Common Use Cases for a Common Application Layer
 - ◆ HEPCAL II (LCG-SC2-2003-032)
Common Use Cases for a Common Application Layer for Analysis



SC2 Monitors Project Progress

- Receives regular status report presentations
- Receives and analyses quarterly status report
 - see: <http://lcg.web.cern.ch/LCG/PEB/Planning/default.htm>
 - ◆ milestones, performance, resources
 - ◆ Result of analysis is report to Project Overview Board
- SC2 is stakeholder of internal review (20-22.10. and 17-19.10.2003)
 - ◆ Reviewers: from experiments and external experts
 - ◆ Get guidance and advice:
 - Things that are missing
 - Things that are inconsistent
 - ◆ presentations by the different components of the project
 - ◆ review of documents
 - ◆ review of planning data
 - ◆ Reports:
 - <http://lcg.web.cern.ch/LCG/PEB/PLanning/closeout.ppt>
 - http://lcgapp.cern.ch/project/mgmt/rev200310/aa_review_report_2003.doc



Evolution of Project Organisation

- The LCG Organisation was set up to split requirements definition and monitoring from the execution of the project (SC2 and PEB).
- LCG project requirements and scope is defined to a large extend
 - ◆ Last step was the completion of the HEPCAL II and ARDA
 - ◆ First products and services are delivered
- The focus now shifts:
 - ◆ from development to deployment
 - in the applications area take-up by the experiments of the common tools becomes a priority,
 - in the grid areas the goal is to establish a reliable and performant service for developing and validating the computing models
 - ◆ providing a proof of concept for the grid to be deployed in Phase 2.
 - ◆ Develop plans for Phase-2:
 - Set of products and services for LHC start-up
 - Support concepts, including staffing



New Organisation

- Include the experiment computing management (the computing coordinators) into the PEB
 - ◆ to provide closer integration of the week-by-week management of the project and the experiments,
 - ◆ to identify more rapidly conflicts between the operation of the project and the plans and needs of the experiments,
 - ◆ to improve transparency in decision making.
- This recognises the central role of experiments in this phase of the project
 - Integrating and using applications tools
 - Exercising the grid service
 - Development of computing models
- The SC2 should retain responsibility for agreeing to changes in scope (requirements) and endorsing work plans, in addition to reviewing progress and resources (the monitoring aspect).



New Project Execution Board

Membership:

- ◆ The Project Leader (chair) 1
- ◆ The LCG area leaders 4
 - Middleware Area, Grid Deployment Area, Application Area and Fabric Area 1
 - Chief Technology Officer 4
- ◆ The experiments computing coordinators 1
- ◆ The chair of the Grid Deployment Board 1
- ◆ A permanent secretary 1
- ◆ The chair of the SC2 invited 1
- ◆ Other people will be invited as required.

13+

Mandate and meetings:

- ◆ It will meet weekly to supervise the work of the project.
- ◆ Changes of scope require endorsement by the SC2.
- ◆ To change scope it will elaborate a proposal to be presented to the SC2 defining the requirements and the associated resources along with an outline work-plan.
 - If required an RTAG will be used to generate requirements specifications, reporting back its conclusions to the PEB.

The PEB reports to the POB.

- ◆ It provides quarterly progress and status reports to the SC2, and additional information as required.
- ◆ It responds to recommendations or other guidance from the SC2.

New SC2



Membership:

- ◆ The Chair appointed by the CERN Director General
- ◆ A senior representative from each experiment
- ◆ Representatives from the major stakeholders: countries or regions with major computing facilities for LHC, CERN IT and EP Divisions.
The representation will be defined by the POB.
- ◆ The project leader in attendance
- ◆ A permanent secretary
- ◆ Proposal: LHCC reviewers invited, meetings co-scheduled

1
4
4+
2
1
1
3

16+

The LHCC referees for LCG are invited to join the SC2, and hold SC2 meetings concurrent with LHCC weeks.

- ◆ The committee would then replace the regular meetings between the project and the LHCC referees, avoiding this additional level of monitoring and review.
- ◆ The annual comprehensive review of the project would continue to be organised by the LHCC.

Mandate and meetings:

- ◆ This committee will monitor the functioning of the LCG project on behalf of the POB/LHCC and will act as a standing review body.
- ◆ It will receive quarterly progress and status reports from the PEB, including summaries of the allocation and use of resources.
- ◆ Based on these reports, the SC2 will provide feedback and guidance to the PEB.
- ◆ It also receives from the PEB, for endorsement, proposals for changes in the scope of the project. The SC2 reports its findings and analyses to the POB.

EGEE-LCG Relationship



Enabling Grids for e-Science in Europe - EGEE

- EU project approved to provide partial funding for operation of a general e-Science grid in Europe, including the supply of suitable middleware
- EGEE provides funding for 70 partners, large majority of which have strong HEP ties

Agreement between LCG and EGEE management on very close integration

OPERATIONS

- LCG operates the EGEE infrastructure as a service to EGEE
 - ensures compatibility between the LCG and EGEE grids
- In practice - the EGEE grid will *grow out of* LCG
- The LCG Grid Deployment Manager (Ian Bird) serves also as the EGEE Operations Manager



EGEE-LCG Relationship (ii)

- MIDDLEWARE
- The EGEE middleware activity provides a middleware package
 - ◆ satisfying requirements agreed with LCG (..HEPCAL, ARDA, ..)
 - ◆ and equivalent requirements from other sciences
- Middleware - the tools that provide functions -
 - ◆ that are of general application ..
 - ◆ ... not HEP-special or experiment-special
 - ◆ and that we can reasonably expect to come in the long term from public or commercial sources (cf internet protocols, unix, html)
- Very tight delivery timescale dictated by LCG requirements
 - ◆ Start with LCG-2 middleware
 - ◆ Rapid prototyping of a new round of middleware. First "production" version in service by end 2004
- The EGEE Middleware Manager (Frédéric Hemmer) serves also as the LCG Middleware Manager



LCG Organisation: Summary

- The LCG project was created by Council in Sept. 2001 (CERN/2379/Rev. 5.Sept. 2001)
 - ◆ LCG Launching Workshop: March 2002
Next LCG workshop: March 22-26.2004
- The Project scope is largely defined
 - ◆ First Application products delivered
 - ◆ First Grid Software suite defined and deployed
 - ◆ First Grid production service in operation, will get stress tested by experiments data challenges in 2004
 - ◆ The roadmap for higher functionality Grid services is being defined now
 - Close collaboration and working relationship with EGEE is good starting point
- The LCG bodies are re-shaped to the changing needs