LHC Computing Grid Project – LCG

LHCC Comprehensive Review

Key Points & Issues

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Multiple Grids

- The LCG project has a double role –
  - Operating the LCG-2/EGEE grid (middleware certification, integration, distribution, operation management, ..)
  - Coordinating the wider set of resources available to LHC
- Interoperability/co-existence of grids is a reality
  - Issues must be addressed at all levels – management/technical

- LCG-2 is reviewed/monitored by all parties
- OSG, NorduGrid deployment plans are not discussed with the LCG project, but their decisions impact the project through their effect on the experiments
- Some Risk is that interoperability is not possible in that situation

- The formal mechanisms for coordination are –
  - Grid Deployment Board – but weak participation from
    - Nordic countries (improved at last two meetings)
    - US (time-zone/vid-conf technology)
- Grid Deployment Area steering group – Tier-1 managers
  - Will try to coordinate technical issues
- MoU will formalise the situation at the Tier-1 level – and the Service Challenges may help to give a practical focus for resolving the problems

Grid Operation

- This is just beginning to be tackled
- Workshop indicated lots of interest and enthusiasm and sufficient (EGEE-assisted) resources
- Maybe a possibility of a joint effort with Grid3 (joint security team works well, overseen by GDB)

- I am at present optimistic that we will see good progress

  -- and that solutions will be largely middleware-neutral

Fixing the Middleware

Key problems

- **data management functionality**
  - first implementations poor
  - there is general agreement on the **basic** functionality (SRM storage management at all centres), reliable data transfer service, distributed grid file catalog (though the interpretation of "distributed" is no longer clear)
  - Not at all clear that there is an agreement about collections, metadata
- **workload management**
  - current resource broker is complicated, tries to do a lot, but falls short of handling complicated job mixes, interfacing to complex local schedulers, and has performance and recovery issues
  - Alien task queue has a simpler model, that works well for Monte Carlo and ALICE analysis

- worries that we do not yet have our hands on gLite --
  -- but we should really not fix this by skipping the test and certification process

Moving Targets

- While there are difficulties in getting the basic middleware out and into production ..
- .. the requirements of the experiments for "grid" support is in a state of flux, particularly in the area of data management
- As soon as the initial computing models are available (at the end of the year) we have to think hard about
  - what experiments really want "from the grid"
  - what "the grid" can realistically deliver
  - what could or should be implemented/acquired as common (apps or GDA) tools
  - and what experiments want to or will have to implement themselves

Analysis – things are a bit fuzzy

- LCG is providing good support
  - for ROOT and for frameworks

- LCG participates in prototyping analysis in experiments through ARDA

  with the experiments deciding which analysis team ARDA works with

  but the applications area is not (by decision) closely involved in this

- ARDA is intended to provide a common forum for agreeing interfaces, functionality with gLite

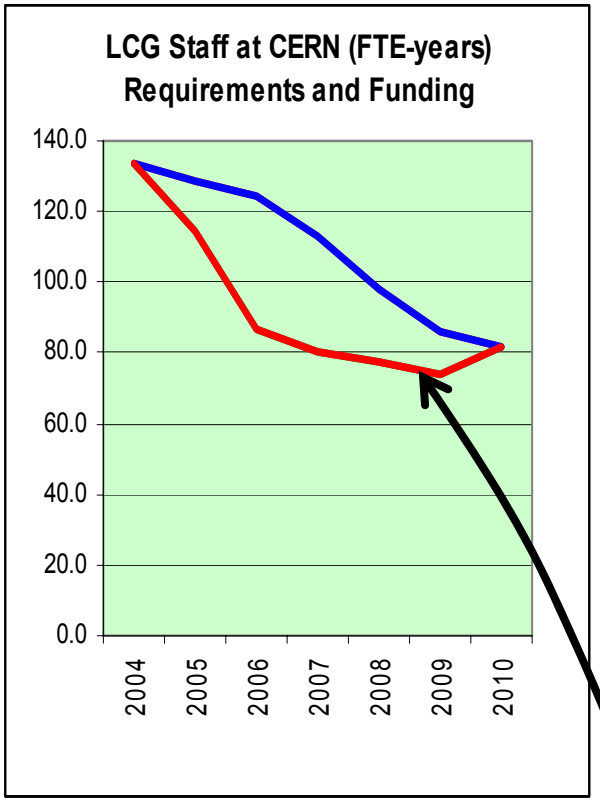
  but it does **not** have a role of developing common solutions

Staffing at CERN and in Apps Area

Phase 2 Human Resource Planning Summary

All figures are FTE-years

year	*2004*	*2005*	*2006*	*2007*	*2008*
REQUIREMENTS					
Applications	51.1	43.8	41.1	32.6	28.7
Physics Services	46.5	48.1	46.6	45.9	42.6
Grid	30.8	30.6	32.5	30.9	23.4
LCG Project Management	5.8	5.7	4.9	3.6	2.9
TOTAL REQUIREMENTS	**134**	**128**	**125**	**113**	**98**



- **profile is within original planning budget**
- **but the plan was under-funded – assumption that external funding would materialise – and indeed we are expecting ~4M of external funding**
- **right statements from CERN - and supporting action from CERN management**
- **right statements from experiments – and commitments assumed in graphic**

EGEE – Phase 2

- Phase 2 planning Task Force Membership –
  - Neil Geddes – RAL, UK e-Science
  - Olof Barring – CERN
  - Giorgio Maggi – INFN/Bari
  - Anders Ynnerman – Linköping - Manager of the Swedish National Infrastructure for Computing (SNIC)
  - Fotis Karayannis – Greek Research Network (GRNET)
  - Dieter Kranzlmueller – University Linz (parallel computing)
  - Christian Saguez – Ecole Centrale Paris (director of the Applied Math and Systems Lab)
- First report to the Management Board this week
- Reasonably comfortable that EGEE phase 2 will continue to fund the operation at the current level
  - where it is often essential seed funding
- The question is what happens after EGEE
  -- what happens to operations centres if the seed funding is withdrawn?
  -- who will support the middleware developed by gLite?