

Open Science Grid

# Interoperability Activity

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# Introduction

- The OSG Interoperability Activity includes working with other grids. At the moment this is
  1. LCG-2
  2. EGEE
  3. TeraGrid
- This talk will concentrate on the technical issues that we deal with in the Interoperability Activity.
- Mike Shuey (Purdue) and myself are co-chairs of the Interoperability Activity.
- About 10 people regularly attend the bi-weekly phone meetings.
- I would like to thank Shaowen Wang (Ulowa) and Ruth Pordes (FNAL) for helping with these slides.



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# LCG Interoperability



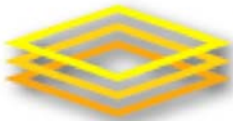
# Contacts with LCG and EGEE

- There have been several discussions with the LCG, and joint meetings in the Security, Information and Operations areas. We expect more interaction in Accounting, Workload Management and Monitoring in the next 3-6 months.
- The topics we cover include:
  - Security
  - Job Monitoring
  - Operations Monitoring
  - Accounting
  - Information Exchange
  - Job Submission
- We have also sent OSG representatives to the EGEE and LCG Operations workshops in November and May.
- There have been a number of other high-level contacts.



# Activities with LCG

- A plan for two versions of the GLUE Schema agreed to last February in meeting held at RAL.
  - Version 1.2: almost final and being used in both OSG & LCG
    - Simple, straight forward design the encompasses both Globus/VDT and LCG requirements and fully backwards compatibility.
  - Version 2.0: work will start in October.
    - True combination of VDT and LCG middleware requirements with no backwards compatibility requirement.
    - Hopefully will be compatible with NorduGrid.
- The GLUE Schema work has been reported on at the Interoperability Activity meetings but is not work begun by the Interoperability Activity.
- Marco Mambelli (UC) was the lead technical contact from the OSG side.



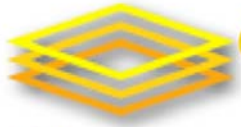
## Job Submission to LCG

- Shaowen Wang and Ransom Briggs (Ulowa) have learned how to submit US CMS MOP jobs to both LCG and OSG resources via the LCG Resource Broker (RB).
  - To that end, they have set up a small LCG site at Ulowa.
  - They even are able to return the resulting output files to the submitting site.
- Shaowen Wang, Anand Padmanabhan, and Ransom Briggs (Ulowa) have also prototyped a way to automatically configure the Generic Information Provider (GIP) in the OSG context, which supports the successful job submission.
- Ulowa and the GOC have BDII servers running to support job submission tests.
- Edward Nicolescu (BNL) has also been setting up an LCG site for the testing at BNL.



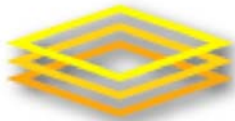
# Open Science Grid Operations between OSG & EGEE

- The last two EGEE Operations workshops have had OSG representatives present:
  - In October 2004, Doug Pearson (IU/iGOC) went to the operations workshop at CERN.
  - In May 2005, Leigh Grundhoefer (IU), Doug Olson (LBL), and Jorge Rodriguez (UFL) went to the Bologna workshop.
- GGUS in Karlsruhe Germany is the EGEE operations center and discussions on ticket interchange between GGUS and the GOC are ongoing.
  - GGUS uses Remedy (as does FNAL) while the GOC uses Footprints. Rob Quick (IU/iGOC) and Doug Olson are working on the ticket exchange issue.
  - There are many additional operation coordination issues that need to be worked out by the onset of LHC data taking.



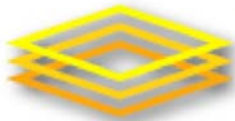
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# TeraGrid Interoperation



# Interoperation with TeraGrid

- A number OSG institutes are in TeraGrid:
  - Argonne/UC
  - Caltech
  - Indiana
  - Purdue
  - UCSD
- Use of TeraGrid resources has the potential for providing a large increase in the amount of work that can be done by the OSG collaborators.
- Vladimir Litvin (Caltech) had already used two large TeraGrid awards for CMS Monte Carlo studies before the Interoperability Activity was formed.
- Shaowen Wang (Ulowa) had already used two TeraGrid DAC awards to successfully submit OSG jobs to TeraGrid and monitor jobs execution.



# Initial Contacts with TeraGrid

- Initial contacts between TeraGrid and OSG:
  - FL (IU), Ruth Pordes (FNAL), and Mike Shuey (Purdue) went to the TeraGrid “All Hands Meeting” in Austin TX and began initial discussions with TeraGrid on interoperation.
  - Shortly after that we had a phone conference with a TeraGrid group lead by Sergiu Sanielevici who is the TeraGrid Area Director for User Support.
- As a result of this phone conference, Shaowen Wang (Iowa) & Greg Cross (UC) wrote a TeraGrid Development Allocation Committee (DAC) proposal.
- The DAC was approved by TeraGrid in May and awarded 30,000 Service Units for investigating interoperation between OSG and TeraGrid.



# TG-OSG Interoperation

- At Caltech Vladimir Litvin has been experimenting with the using the TeraGrid utility GridShell to submit large numbers of jobs to the TeraGrid.
- Vladimir is currently working on being able to do pile-up simulation for CMS using TeraGrid resources.
  - Vladimir has successfully installed the CMS simulation software on the TeraGrid.
  - Pile-up simulation is extremely CPU and storage intense so there is a need to use a large amount of resources when studying pile-up.



# OSG-TG Interoperation

- At UC, Greg Cross is working on two projects on Interoperation with TeraGrid:
  - He has installed the TeraGrid software stack on the 128 node TeraPort facility at UC and he is trying to get the Atlas Software running there.
    - The Atlas software needs tweaking to run on the AMD 64 Bit architecture of the machines making up the TeraPort facility.
  - With help from JP Navarro (ANL), Greg has gotten the Atlas software to be installed and validated on IA32 nodes at the ANL TeraGrid site.
    - Greg has made preliminary tests of running the Atlas software on these nodes.



# OSG-TG Interoperation

- At Ulowa, Shaowen Wang is working on evaluating GridShell and investigating how to enhance the CMS MOP job submitter so that it can submit CMS jobs to both OSG and TeraGrid.
  - He has successfully tested submitting jobs from the Ulowa OSG site to several TeraGrid sites recently.
    - The initial test jobs were fairly simple.
    - He is now trying to get more complex CMS jobs to run.
  - He is examining OSG information services that can be used to represent TeraGrid resources for OSG users.



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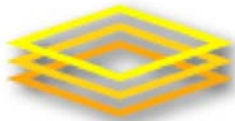
## Current OSG-TG Interoperation

- At Purdue Chris Baumbauer and Mike Shuey are working on TeraGrid interoperation using the CMS software and the CMS Tier 2 Center at Purdue.
  - They are working to use Globus to submit jobs to TeraGrid.



# Final Remarks on TeraGrid

- Here are two open items:
  - OSG has requested that TeraGrid consider supporting VO-based group local accounts. The current OSG architecture is based on having a few local accounts that are based on tasks / VO and not individuals.
    - Currently it is TeraGrid policy that every user must have an account and that every job must be run using a TeraGrid account.
    - It is our understanding that this issue is under active discussion within TeraGrid
  - We had initially planned to submit a Large Resource Allocation Committee (LRAC) request for TeraGrid usage on July 15 (grant to be awarded in October) but this has been postponed.
    - We will now use our current DAC allocation to get ready for the next time that TeraGrid accepts large-scale proposals.



# Interoperability Summary

- The Interoperability Activity is quite active. We pay attention to communicating any overlapping issues with the Monitoring and Information, and Support Centers Technical Groups, as well as the Integration and Operations Activities.
  - Close communication with most of the the OSG Working Groups and Activities will continue to be necessary for the Interoperability activities to be successful.
- As the work and interactions increase we expect the Interoperability Activity to split to address the TeraGrid and European partnerships separately - in fact at this Consortium meeting there are technical discussions in parallel tomorrow afternoon.