US CMS Milestone Achievement Report

Next Steps for the U.S. Grid Environment

The U.S. Grid common environment was sustained through the operation of Grid3 through 2004 in support of the US CMS DC04 and US ATLAS DC02 activities. During the year planning was done and agreements were reached on the next steps towards meeting the capabilities, scale and performance necessary for US LHC data processing and analysis on the grid.

The basic agreement on how to move forward was made at a joint steering meeting in May 2004. Participants included the US LHC software and computing management, heads of Fermilab, BNL and SLAC Computing Divisions and the Trillium computing project steering committees.
http://www.ppdg.net/mtgs/20may04-joint-steering/

The agreement is to evolve the Grid3 environment into the Open Science Grid deployment in Spring 2005, to maintain the Open Science Grid as a production infrastructure and to then incrementally further extend and evolve the services offered. The integration and testing infrastructure is provided by an evolution of the current "Grid3Dev" grid operated as part of the iVDGL Grid Laboratory.

The US CMS software and computing management has been a lead contributor to the ongoing discussions, planning of the technical program of work, and negotiation of the agreements. We are presenting our resources to the common infrastructure and we are aligning our program of work to develop and deploy Grid interfaces and services for the US CMS Tier-1 and Tier-2 centers with those of the Open Science Grid. We are contributing effort to ensure the services not only meet the capability and performance requirements for US CMS, but also meet the common interfaces and specifications for a common, consistent infrastructure for the stakeholders of the Open Science Grid Consortium.

At the May meeting a set of joint projects was agreed proposed to address the immediate "lessons learned from Grid2003" and to evolve the underlying Grid infrastructure:

- Maintain and operate the current infrastructure
- Add Storage Services – managed interfaces to storage resources, space management etc.

- To engage in a data movement "challenge" to provide the robustness and performance of the infrastructure for the sustained distribution of data.
- Evolve from the "single account per VO" site account mapping model to extend the account mapping, authorization and access control to provide role based, and a multi-user more dynamic account based infrastructure.
- To add planning and policy services for resource management and usage control.

In addition, the following principles were agreed to on how to move forward with the OSG Consortium:

- Has a process for partnership
- Respects site autonomy
- Open is defined, does not modify science
- Multiple grid environments
- No central model
- Process for projects

Following this agreement work has proceeded on various fronts towards the requirements and workplan for the evolution of the common Grid infrastructure and services.

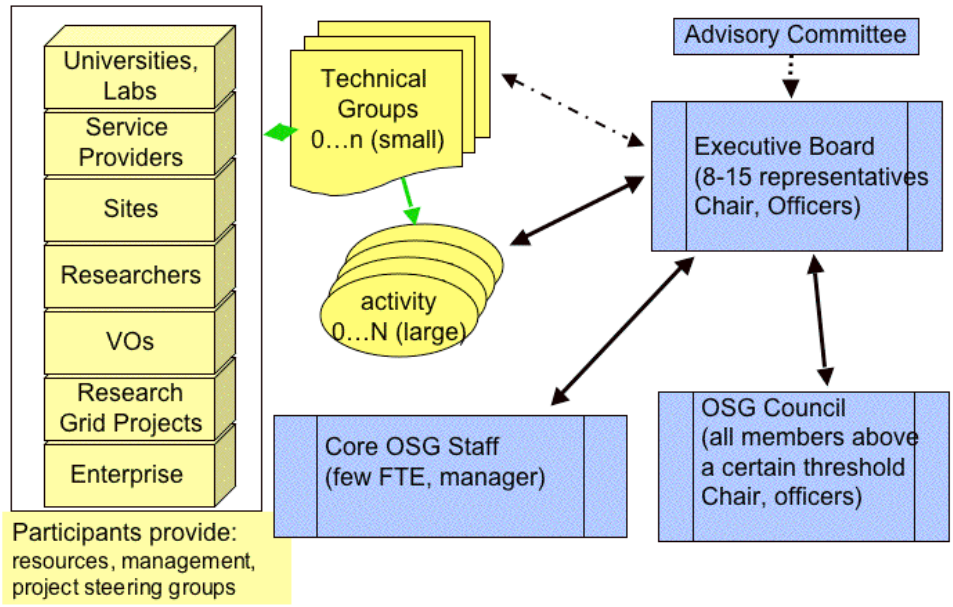
1) An OSG Blueprint has been written to define the core principles, best practices and requirements of the OSG. These principles are being applied to the architectures and designs of services and interfaces for the common infrastructure. The process of reaching agreement on these core principles illuminated architectural requirements for usability, scalability and maintainability of the infrastructure. The process gives us a basis for commenting and giving feedback to the EGEE middleware architecture and design documents without duplicating the effort that has gone into these very useful documents.

2) The OSG workshop in September in Boston resulted in agreement on the schedule for deployment of the next phase of the US Grid infrastructure in Spring 2005. Other outcomes included:

- Further specification of the development -> integration -> production process model, introducing the "Readiness Plan" for validation and testing of new services;
- Engagement of non-HEP communities in the idea of an "open" grid infrastructure and interest from the TeraGrid in interoperation; and

- An agreement to the following organizational infrastructure under which the groups contributing to the OSG are doing their work:

OSG Organizational Framework



3) The Security Technical Group collaboration with the EGEE has resulted in a joint Security Incident Handling and Response Plan.

4) The OSG Operations Workshop in December 2004 resulted in a draft of an Operations Model and plans for extension of the current Grid3 operating model to a more distributed model for OSG. Attendance by 2 members of the LCG Grid Deployment Area in the workshop, and equivalent attendance by the iGOC in the LCG operations workshop, are leading to increased collaboration.

4) The OSG Technical Meeting in UCSD in December 2004 further solidified the scope and program of work for OSG deployment.

5) The US CMS Tier-1 robust data transfer challenge with CERN from Aug to Dec resulted in hardening of the general data transfer and storage management interfaces and services.