Charge for Jan 2004 US LHC Computing Review

An independent peer review of the US LHC Software and Computing (S&C) projects will be conducted at FNAL on Jan 13-16, 2004. This review will continue systematic oversight of the US LHC research program.

The scope of this review is to include both the individual US ATLAS and CMS S&C Projects and the common projects which provide software resources to both experiments. The goal of this review is to assess the current understanding of the scope, cost and schedule for the US LHC S&C projects and the operation of their management structures. Both US ATLAS and US CMS should present self-consistent project plans targeted to the funding guidance received from DOE and NSF, and separately address how incremental funds could be used (as well as discussing contingency planning that could deal with possibly reduced funding). It is clear, due to the dynamic nature of the software and computing fields, that plans for the next 2 years will be much more concrete than longer term plans, but enough information should be presented to allow the reviewers to judge the adequacy of proposed long term resources.

This year's review should concentrate on understanding the scope of the US projects and the set of milestones that are to be used to assess project progress. In particular, the reviewers should examine how the US Software and Computing projects take on tasks on behalf of the international projects, how they determine their resource needs, and how their scope is matched to funding guidance. They should look at the relationship between the Software & Computing Projects and the overall LHC Research Program, and should understand how resources are allocated and how contingency is managed.

Furthermore, since the projects have been operating for roughly two years since initial baselining, it is appropriate to review achievements of the past year, in comparison with the previous set of stated objectives, and to monitor the level of technical progress.

The charge for this review is to assess:
- The overall scope of the US LHC S&C efforts and their connections to both the international LHC S&C efforts and the CERN LCG project. Is the scope well defined, and are there mechanisms in place to control “scope creep”;
- The risk to US LHC S&C schedule or scope given current funding profiles and overall LHC project schedule, and additional risks from possible reduced funding or increased M&O resource demands;
- The function, scope and structure of the national ("Tier 1") US LHC computing facilities, their relationship to smaller regional and university facilities, and how existing computing centers are being leveraged to provide resources for LHC computing. In particular, are there sufficient resources for the US Tier I centers to acquire enough hardware resources to play a major role in upcoming data challenges;
- The contributions of the US S&C projects in providing and supporting core and detector specific software components to the international efforts, and the level of leadership from US collaborators;

- The level of integration of computing infrastructure efforts (such as networking and grid computing) into the planning and execution of US LHC S&C projects, particularly the level of control project managers are able to exert. In particular, how are contributions of software from Grid R&D projects managed, and how well are US efforts integrated into overall LCG (LHC Computing Grid) Project efforts;
- The plans of the US collaborations to provide computing resources to their users and their success in integrating US physicists into the software development process;
- US contributions to recent and forthcoming data challenges, both in providing computing facilities and in developing software and managing these challenges;
- Existing and potential common projects which could benefit both ATLAS and CMS; and
- Project Management Plans, organizational structures, adequacy of personnel, contingency planning, and flexibility of each of the US LHC S&C projects.