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Subject: Cooperation between Nuclear Physics Experiments – STAR, Glue-X, US Alice –  
and the Open Science Grid.  
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We are pleased to let you know the status of our plans for increased cooperation between the STAR, Glue-X and ALICE collaborations and the Open Science Grid. Our goal is to define a common program of work of benefit to the Nuclear Physics and OSG programs, delivering to the data distribution and analysis needs of the experiments, extensions to the distributed facility and an intellectual contribution to the broader community in OSG. Our goals are to deliver services through the OSG to support data analysis for the increased luminosity run of STAR, start of data taking and operations for ALICE, and the ramp up of preparations for Glue-X.

#### **STAR - OSG**

STAR currently has several sites that on the OSG: BNL and NERSC/PDSF (Tier1), Wayne State, Sao Paulo, and the University of Illinois at Chicago (Tier2), and Birmingham University in the United Kingdom (Tier 2 but likely a new Tier1 center by the end 2007). There will be two more sites joining OSG in 2007 in line with the STAR computing model to build a Grid based network of sites to address the data distribution and challenges ahead.

In the immediate term there is now focused work between STAR and the OSG Troubleshooting activity to address inefficiencies in the performance, percentage of job errors of STAR applications. The target is to meet the agreed upon STAR milestone in the OSG Year 1 Project Plan: “STAR: Migration of >80% of simulation to OSG” which is due 6/15/07.

A longer term milestone is to be able to support all STAR analysis on OSG, 10,000 jobs/day in time for the next STAR run in the second quarter of 2009, to meet the increased CPU demands and job throughput needs induced by a factor of two increase in luminosity at RHIC.

STAR analysis relies on ROOT being installed on each Grid Storage Resources (local storage element) as well as XROOTD for the management and interface of storage local to each Grid processing element (compute/worker nodes). The OSG distributed facility (as well as the European EGEE grid infrastructure) provides grid interfaces to storage through the common Storage Resource Manager (SRM) interface, A second prototype of the XROOTD-Storage Resource Manager (SRM) interface, written by STAR (in collaboration partners from Berkeley and SLAC), is currently in test at BNL.

OSG would propose collaboration with STAR on the technical and support impact and benefit of including ROOT (including XROOTD) as part of the Virtual Data Toolkit (VDT). This could be a potential project in Year 2 of the OSG project – which would be an extension of the current plans.

This project will need extended support in both STAR and OSG to ensure meeting the STAR schedule and functionality needs. STAR has agreed to write up their user analysis milestones and requirements for further discussion in March 2007.

### **ALICE - OSG**

ALICE will have resources at four sites in the US: Ohio Supercomputer Center, LBNL, LLNL, Texas Learning and Computation Center at the University of Houston. All these facilities have local mass storage systems (HPSS) as well as processing clusters. ALICE goals in the US are to provide the hardware and software resources to allow US ALICE to fully partner in the science of the experiment. The goal of collaboration with OSG is to interface the ALICE distributed analysis system, Alien, to the OSG infrastructure. Alien is based on the ROOT data model and analysis services.

Concrete plans for collaborating with OSG will follow the results of the Physics at the Information Frontier (PIF) proposal to NSF in Spring 2007. The results of this proposal will affect the specific activities but not the intent of the collaboration. The LBNL NERSC facility is already a member of the OSG. OSG will approach the other three facilities above to see if they are interested in participating in OSG as a means to leverage their support for ALICE itself (in a similar fashion to the US ATLAS/CMS Tier-3 centers).

### **Glue-X - OSG**

JLAB will provide remote access to mass storage for Glue-X and at the moment it is being discussed what other grid services will be provided. Concrete plans for the first activities with OSG will follow the results of the Glue-X PIF proposal and the hiring of post-docs. In the meantime we will continue discussions specific plans for the support of simulation applications that would use local clusters and evaluate the impact of the support for using remote sites.

In summary we are making progress in identifying future technical areas of collaboration with STAR, which also appear to be useful for other applications (both nuclear physics and broader science communities) and making progress in the definition and startup of activities with ALICE and Glue-X.