

A Statement of Interest by the **Solenoid Tracker At RHIC (STAR)** collaboration.

The STAR collaboration is composed, to date, of 50 institutions from 12 countries with a total of 479 collaborators. The STAR experiment records each year massive amount of data: up to a Petabytes of data a year is being accumulated as well as 3 million files spanning over 4.5 million replicas distributed over 2 major processing centers. The projection for the ongoing RHIC run (Run4) has showed however that a successful run would lead data sets so large that production cycles would be stretched to year's long production and this, even if all current and projected resources would be allocated to data mining. With such constraint, a traditional computing model where first pass data mining are being done at one primary site may very well be broken this year leaving us with a widely accepted multiple Tier-1 center model. Additionally, the STAR Physics program planning for the next decade (which includes RHIC-II upgrades), written upon request by the Associate Laboratory Director B.W. Kirk for BNL in late 2003, has clearly identified that to satisfy some of the most the exciting proposed Physics topics, it is necessary to implement further orders of magnitude higher data throughput and this, as early as 2006. The questions we must address are simple: how to provide the computing power to cover for the data mining while simultaneously offering some resources to our users for carrying their scientific research.

While the immediacy of the above scenario may impact the STAR user's ability to deliver science, for the past years, the STAR core Software and Computing team has (1) actively participated in Grid middleware development, testing and higher level design under the hospice of the Particle Physics Data Grid (PPDG) with the vision of providing its scientific community with means to optimally access data and computing resources spread across collaborative institutions and across the world. Such Grid kernel includes data transfer and management, cataloging and registration, job scheduling and brokering and monitoring; (2) collaborates and/or approached other consortium and Grid projects within and outside the US; (3) encouraged our US and European remote institutions to independently and pro-actively pursue avenues aimed at the creation or consolidation of local farms and resources and by then, be prepared for the user end analysis challenge we will be facing.

While we believe that our efforts are approaching maturity, much is still to be done to achieve a production quality Grid environment and we also recognize that participating, accessing and testing a federation of US Grid aimed to provide a fully functional and Peta scale production quality grid is a fundamental and key component to our long term success. We share the vision that such initiative is essential to provide (1) a large Grid test bed where local grid can be extended to full scalability stress testing; (2) a common work plan and environment ensuring infrastructure and service consistency and cohesion across participating sites; (3) a base for helping our remote (and international) institutions and resources to interoperate within a common Grid and further propel our participants to Grid awareness; (4) a corner stone for a strong, reliable and efficient Grid under US leading banner. Little of the work implied currently being the focus of our core software and computing team, we believe the Open Science Grid to offer the opportunity to be part of a unique project where our past year expertise and can also be put to a larger practical use and by then, fully asses the practicality of a needed approach for computing.

Additionally, we believe the community we present, with its large amount of active users ready to put such production Grid environment under fire and to the test of scalability and usability, to be a key element in identifying a vast range of possible early problems. This is clearly a major strength as it provides a mean to rectify issues before they are put into operation in a larger context such as the coming of the LCG.

