

E-Science Activities at GSI

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This article describes the work of the GSI e-science Group with the aim to enlarge and operate an ALICE tier2 centre within the global environment of the LHC Computing Grid and to prototype a distributed computing environment for FAIR.

ALICE tier2 centre at GSI and ALICE Grid in Germany

The ALICE tier2 centre at GSI provides a computing infrastructure for ALICE Grid and for the local usage of the German ALICE groups. The available disk space is distributed among an xroot cluster (300 TB) and Lustre (1.4 PB on /lustre and 2.1 PB on /hera). A new Grid Storage Element on top of /hera has been configured which is connected to the outside world via GSI's 10 Gb network interface to HEPPi net. New data-sets are being transferred to GSI continuously and are processed on the local batch farm via daily running analysis trains.

Throughout the year GSI participates in centrally managed ALICE Grid productions and data analysis activities. The overall job share of GSI, Forschungszentrum Karlsruhe (ALICE tier1 centre) and the HHLR compute cluster at Goethe University in Frankfurt has been 15% of all ALICE jobs worldwide.

Local farm management at GSI

The GSI e-science group contributes significantly to local farm management with the GSI batch farm being an integral part of the ALICE tier2 centre. One of the major projects has been the successful transition from the commercial LSF scheduler to the open source scheduler (Sun)GridEngine [1] in close collaboration with the HPC group.

PROOF on Demand

The in the context of the D-Grid project developed "PROOF on Demand (PoD) utilities" enjoy a high popularity [2]. The development is going on and new releases are being published. Most recently an interface to Slurm is being developed.

CRISP

The Cluster of Research Infrastructures for Synergies in Physics (CRISP) project is a collaboration between different institutions and facilities related to physics research. In this scope, a pan-European Federated Identity Management (FIM) system is under development [3].

LSDMA

The work of the Data Life Cycle Lab "Structure of Matter/FAIR" is being defined by the computing requests of the FAIR project. A project plan has been created and first discussions have to be done with the FAIR experiments. New positions are to be advertised.

KOSI

The KOSI programm (Kooperativer Studiengang Informatik) from Hochschule Darmstadt starts to become a very efficient way to attract good students to GSI. Within the context of this joint venture programm a new visualisation tool for accounting data at the GSI batch farm [4] came into life. Moreover in collaboration with the GSI theory group a general framework to predict and analyze hadronic final-state interactions is being prepared [5].

Preparation for FAIR

PANDA-Grid consists currently of 15 sites from 12 institutes in 10 countries. The most recent sites which joined the project are Mainz, SUT in Thailand, and Talca in Chile. Currently Northwestern University, USA, is in the process of joining. The single most defining event of 2012 [6] was the withdrawal of the Glasgow University from the PandaGrid activities. Therefore the PandaGrid Central Services had to be moved from Scotland to GSI as well as the central Grid monitoring MonaLisa service to Torino. The movement, although more challenging than anticipated, consolidated and brought experience to the GSI Grid group.

The collaboration between ALICE and PandaGrid intensified significantly. In joint workshops on regular basis (PandaGrid Workshop in conjunction with AliEn Developers Week) as well as in frequent telephone meetings the ongoing work is organised.

References

- [1] C. Preuss, K. Schwarz, "Batch Computing Support", this report.
- [2] A. Manafov, P. Malzacher, "PROOF on Demand", this report.
- [3] A. Montiel Gonzalez, K. Schwarz, P. Malzacher, "Federated Identity Management within CRISP", this report.
- [4] S. Jovanovic, C. Preuss, K. Schwarz, "A Visualisation Tool for Accounting Data", this report.
- [5] J. Knedlik, M.F.M. Lutz, K. Schwarz, "Distributed matrix computations via MPI on the GSI cluster", this report.
- [6] R. Karabowicz, A. Montiel-Gonzalez, J. Behrendt, K. Schwarz, "Annual Activities in PandaGrid", this report.