Contribution ID: **164** Type: **not specified**

CTACG - Cherenkov Telescope Array Computing Grid

Thursday, 29 March 2012 16:00 (15 minutes)

Description of the Work

In the field of very high energy gamma-ray astronomy, Europe holds a clear leading position with the current Cherenkov instruments (e.g. H.E.S.S. and MAGIC) and CTA will allow the European scientific community to remain at the forefront of research with the first Very High Energy (VHE) gamma-ray Cherenkov open Observatory.
The high data rate of CTA together with the large computing power requirements for Monte Carlo simulations, fundamental tool for data selection and calibration, demand dedicated computer resources which can be well handled through the Grid approach.
A massive production of CTA Monte Carlo simulations for the investigation of physics of atmospheric cosmic-ray showers as well as for the investigation of the Cherenkov telescope response and performance as a function of detectors and lay-out configurations is taking place since 2008 within a dedicated EGI CTA Virtual Organization (VO). Simulations have been provided to the full CTA consortium making available the extensive CTA-VO computing resources (thousands of CPU equivalents and more than 500 TB data storage).
EGI-Grid infrastructures and EGI-Grid middleware for distributed data storage and data access are considered one of the most efficient potential solutions for the CTA e-infrastructure in three main contexts: 1) Data management system and data pipelines; 2) Data management facilities for any major logical unit of the observatory. 3) Data access: developing services for data and computing sharing and public openness. This talk presents the tools developed in this framework, the performance achieved and the lessons learned.

Conclusions

In conclusion this communication reports about the experience of the international CTA consortium about the application of the Grid infrastructure for massive Monte Carlo simulations and data analysis. Further developments in the context of data management and related infrastructures are potential opportunity for structuring the international VHE gamma-ray virtual research community.

Impact

The astroparticle community committed in CTA demonstrates to merge the experiences from
the particle physics (e.g. EGI and WLCG), astrophysics (e.g. Virtual Observatory), and major European e-infrastructures (e.g. GEANT, EGI and Euro-VO) and to explore frontier Information and Computing Technology (ICT) developments.
The developments in the context of the CTACG project, namely the CTA data management system and a scientific analysis system to fulfill the requirements of the CTA observatory have an important impact structuring the concerned scientists in a large virtual research community.

URL

http://www.cta-observatory.org/

Overview (For the conference guide)

The Cherenkov Telescope Array (CTA) is an array of many tens of Cherenkov telescopes deployed on an unprecedented scale. One of the challenges to design the CTA observatory is to handle the large amount of data generated by the instrument and to provide simple and efficient user access at any level and according to astrophysical standards in order to serve the data and the software for data analysis to the physics community. This project is driven by
the CTA consortium comprising 25 countries. The CTA Computing Grid (CTACG) project uses Grid Technology to perform heavy Monte Carlo simulations and investigates the potential of Grid computing for the future CTA data management aiming to serve a large world-wide scientific virtual research community.

Primary author: Dr LAMANNA, Giovanni (LAPP (CNRS/IN2P3))

Presenter: Dr LAMANNA, Giovanni (LAPP (CNRS/IN2P3))

Session Classification: Virtual Research Communities (VRCs)