Contribution ID: **100** Type: **Oral**

Making the Grid and the Virtual Observatory mutually interoperable

Tuesday, 12 February 2008 14:30 (25 minutes)

Astrophysical applications handle simulated, theoretical and observed data and the amount of data requested by a single application is not negligible. Astronomical data are usually kept in databases most of them are now federated in the VObs. Users accessing these data usually expect some key capabilities like: a) find data by specifying their characteristics; b) retrieve them whatever is their physical location; c) generate them on-the-fly if not found; d) permanently store them in some place for the benefit of future users; e) apply further processing to them; f) save the results somewhere to be subsequently exploited by the whole community. The Grid allows the sharing of resources of different nature (hardware, software, data, and so on) so its tight synergy with the VObs is of strategic importance. A set of standards, tools and services are currently in preparation to make possible the necessary interoperability of these two technologies.

3. Impact

To build the bridge between the Grid and the VObs it is necessary to make interoperable the suite of standards and web services of the VObs with tools and services of the Grid. The work in progress impacts some key aspects like: a) authentication and authorization mechanisms to gain access to VObs resources (data) and Grid resources through a single authentication transaction (single sign-on); b) access to both VObs resources and Grid resources simultaneously, in a transparent way to the final user and in both directions (from the VObs to the Grid and from the Grid to the VObs); the two approaches foresee the ability to provide "wrapped"science applications, either legacy code or new, as services in an application server (from the VObs to the Grid) or the ability to federate VObs components (astronomical databases) as embedded resources of the Grid. A standard working environment making easier the integration of applications with VObs and the Grid is in both cases mandatory.

URL for further information:

http://www.ivoa.net/
http://www.euro-vo.org/pub/

4. Conclusions / Future plans

Current plans for what concerns the deployment depend on the adopted solution. Databases federated in Grid require to be integrated in the Grid middleware properly enriched of new tools and services. The execution of "wrapped"applications in Grid do have less impact on the Grid although some integration work for what concerns the authentication mechanism and the application working environment is still necessary. It is currently foreseen to go on with both the solutions.

Provide a set of generic keywords that define your contribution (e.g. Data Management, Workflows, High Energy Physics)

Virtual Observatory, Databases, Integrated Working Environment, Astronomical Applications.

1. Short overview

The Virtual Observatory (VObs) is rapidly evolving as a fundamental tool for the astronomical community. It may be seen as a Grid of federated astronomical databases. To process the huge amount of data residing in the VObs it is necessary to provide an adequate amount of resources. The combination of the VObs and of the Grid technology is the right answer to this issue offering at the same time a complete and integrated working environment to the astrophysical community.

Primary author: Dr TAFFONI, Giuliano (INAF-OA Trieste)

Co-authors: Dr VUERLI, Claudio (INAF-OA Trieste); Dr PASIAN, Fabio (INAF-OA Trieste)

Presenter: Dr TAFFONI, Giuliano (INAF-OA Trieste)

Session Classification: Astronomy & Astrophysics

Track Classification: Existing or Prospective Grid Services