

## G-DSE: Grid –Data Source Engine

*Thursday 10 May 2007 10:00 (20 minutes)*

**Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).**

The G-DSE was developed to allow astrophysical applications running in Grid to access data in astronomical databases, so it was mainly thought to meet a specific problem of the astrophysical community. On G-DSE enabled Grids astronomers are able to discover astronomical databases as any other Grid resource, access them and also use abstract database machines to process data. Thanks to the G-DSE two basic tools for astronomers (the Grid and the Virtual Observatory) can be naturally integrated.

**Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.**

The G-DSE was thought and developed in the framework of GRID.IT, a multidisciplinary project for an Italian Grid infrastructure. The first experiments with the G-DSE took place on the INFN Grid infrastructure. Because the development of the G-DSE was resumed only recently, an effort was firstly made to guarantee the compatibility with the current production Grid infrastructure. The next step is to produce a gLite-compatible version of the G-DSE. Tests carried out with the first versions were extremely encouraging. A test campaign is now in progress between INAF, INFN and SPACI for a comparison of different technologies, namely OGSA-DAI, GRelC and G-DSE, aiming at integrating the Grid and Databases.

**With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)**

The G-DSE is the low-level middleware component of a Grid Query Element. In practice, it involves modifications on the basic components of a Grid resource (GRAM and GIS) so that the new "Database" Grid resource can be discovered and used as any other resource. On the basis of the G-DSE design no modification on the high level services is required. We don't expect technical problems in replicating this also in gLite.

**Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications**

Astronomical applications (often related to large scale projects like the simulations of the ESA Planck mission) are both computing intensive and data intensive. The usage of the Grid is the right answer to overcome the shortage

of computing power resources paying each institution/consortium participating to such projects. The G-DSE makes possible to use the same technology (the Grid) to access computing power and astronomical databases. The IVO (International Virtual Observatory) is a world-wide effort of the astronomical community to define standards for the federation of astronomical databases. The IVO is a Grid of databases devoid of computational resources. The G-DSE is able to bridge the Grid and the IVO, so a new, large community, can benefit of the Grid technology. Although the G-DSE was thought to solve an issue related to astronomical applications, it can be used to access generic databases via Grid, so other scientific communities can benefit of it.

**Primary authors:** Dr VUERLI, Claudio (INAF-OA Trieste); Dr TAFFONI, Giuliano (INAF-OA Trieste)

**Co-authors:** Mr BARISANI, Andrea (INAF-OA Trieste); Dr PASIAN, Fabio (INAF-OA Trieste); Dr MANNA, Valeria (INAF-OA Trieste)

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

**Session Classification:** Data Management

**Track Classification:** Data Management