Contribution ID: **65** Type: **Demonstration**

fMRI analysis on EGEE with the VBrowser and MOTEUR

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- Data management requirements

The data has to be handled directly by end-users. It is thus mandatory to set up a high-level data management tool providing a uniform view of distributed storage. A user-level file access control is also required to prevent users from ruining someone else's experiment because of wrong data manipulations.

Although the Logical File Catalog provides a uniform view of the SEs, a layer is missing to make them usable by end-users. In an experiment, several file transfers need to be performed between local and Grid storage, which must be hidden. Moreover, file access control is based on the VO membership and not sufficiently fine-grained.

- Jobs management requirements

The needs of the application in this area are:
- Intuitive parameter sweep specification
- Intermediate status check-pointing
- Fault tolerance mechanisms
The first point is addressed by a dedicated GUI. The two last points are expected to benefit from the use of a workflow management system.

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

Medical image analysis, data management, parameter sweep, workflow.

3. Impact

Our deployment is based on the VBrowser for data management and on MOTEUR for workflow management.

The VBrowser (2) is an interactive tool that enables browsing local and remote resources from a single application. User-level file access control is yielded by the use of the Storage Resource Broker (3) through the VBrowser. A plug-in allows to easily manage parameter sweep experiments for fMRI data.

The workflow description relies on the Scufl language used in Taverna (4). The interface between Taverna and EGEE is done using the MOTEUR engine (5). In addition to a command-line wrapper that handles basic application-level errors, it allows to exploit service parallelism, which is particularly important on variable platforms such as EGEE.

An interface between MOTEUR and the VBrowser has been implemented to enable:
- Executing workflows processing files managed by the VBrowser
- Easily accessing results through the VBrowser

If demonstration is requested please explain what visual or interactive aspects of the contribution necessitate a demonstration rather than a presentation or poster?

The contribution of this work is to enhance the usability of the EGEE grid for non Grid-experts. A lot of effort has thus been put in the development of graphical user interfaces, which can truly be apprehended only by a demonstration.

URL for further information:

http://www.vl-e.nl

4. Conclusions / Future plans

This software architecture is a step towards an autonomous usage of the EGEE infrastructure by medical image analysts. In our future work, we plan to study the integration of solutions such as the Medical Data Manager or the Globus MEDICUS in this architecture to enable the use of EGEE Storage Elements in a secure way.

References:
(1) staff.science.uva.nl/~silvia/vlfmri/
(2) www.science.uva.nl/~ptdeboer/vlet
(3) www.sdsc.edu/srb/
(4) taverna.sourceforge.net/
(5) egee1.unice.fr/MOTEUR

1. Short overview

The application aims at analyzing fMRI data to compute brain activation maps . Such an analysis is well-known for healthy subjects but performing it on pathological brains (e.g for neurosurgery planning) is challenging because the optimal software parameters are still unknown. The Grid has already been used to address this parameter search problem (1). Yet, it is still hardly possible for end-users to be autonomous with it. We demonstrate here our current solutions to enhance usability.

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Session Classification: Demonstrations

Track Classification: Application Porting and Deployment