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Approach to the remote instrumentation idea in the RINGrid project

Friday 11 May 2007 15:00 (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).

A number of problems in science, industry and commerce may be addressed by using sophisticated equipment and top-level expertise, which is often locally unavailable. The answer for some of these problems is conception of Remote Instrumentation Services (RIS). RIS supports activities related with using rare equipment remotely e.g. workflows, post-processing, visualization, data management. This idea is especially attractive for: radio astronomy, chemistry, physics and medicine.

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.

All RINGrid effects will be practically verified in the last stage of the project. Prototype installations will be set up, by taking into consideration user communities and instruments as well as used software. One of the systems which will be used in validation process is PSNC Virtual Laboratory (VLab). VLab (vlab.psnc.pl) project is developed by Poznań Supercomputing and Networking Center in collaboration with the Institute of Bioorganic Chemistry since 2002.
The main research goal of the VLab is definition of a framework for building many different types of laboratory. It will facilitate and automate building new laboratories using existing modules with their functionality. The PSNC Virtual Laboratory system should not be comprehended solely as a set of mechanisms to submit, monitor and execute jobs. It is also a possibility to give access to the resources of the digital library, communication, and e-Learning systems.

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)

Basing on the demands and requirements and taking into account the state of the art, future needs and trends will be analyzed in respect of RIS. Guidelines concerning the design, development and use of next-generation RIS will be provided. Special attention will be paid to present and on-going research activities (e.g. EGEE, gLite), enabling a cooperative and integrated use of Grid technologies and self-organizing, self-configuring, self-optimizing, self-healing networks with QoS support.

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

The analysis of the wide implied RIS aspects are under of interest of the RINGrid (Remote Instrumentation in Next-generation Grids) project. This activity is part of 6th European Framework Programme and has been launched in October 2006. Briefly, the RINGrid project will provide systematically identification of instruments and corresponding user communities, the definition of their requirements as well as careful analysis of the remote instrumentation synergy with next-generation high-speed communications networks and grid infrastructure. These results will be the basis for the definition of recommendations for designing next-generation RIS. RINGrid associates partners coming from Europe and Latin America from 10 institutions. On the one hand it allows to achieve required level of generality and on the other hand gives desired impact by gathering scientists from different research domains. User communities are related with unique laboratory devices e.g. NMR spectrometers.

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