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Remote access to NMR spectrometer using the Virtual Laboratory

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Abstract

Virtual laboratories are now in the scope of activities of research groups and companies, which are working on new solutions for remote access to very expensive laboratory devices. The Virtual Laboratory (VLab) project is developed by Poznań Supercomputing and Networking Center in collaboration with the Institute of Bioorganic Chemistry. The main goal of the VLab is to create a framework for building many different types of laboratory. Another purpose is defining all accessible remote facilities treated as simple resources in the Grid infrastructure. It is possible thanks to the VLab broker which is connected with the Grid resource broker. Each job directed to the real laboratory facilities is treated as any other Grid task. Another issue concerns a conception of dynamic measurement scenarios. It allows defining the process of experiment in any way, from pre-processing, through executing the experiment, to the post-processing and visualization tasks. Users are also allowed to add their own module as a part of the scenario.

The Virtual Laboratory is not only 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. A digital library allows users to store and share experiment results and bibliography concerning a given scientific discipline. Thanks to the communication systems, scientists from geographically different places can work together without moving from their mother institute. The e-Learning system is very useful as it gives users necessary knowledge about theory, terminology and using specific laboratory device (e.g. spectrometer).

As an exemplary implementation it is planned to make NMR Spectrometer (Bruker Avance 600) and radiotelescope available to the Grid users.

Contact us at vlab@man.poznan.pl or see the Web page at: <http://vlab.man.poznan.pl/>.