

# RINGrid: conceptual design of the remote instrumentation systems

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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.

## 3. Impact

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.

## URL for further information:

<http://www.ringrid.eu>

## 4. Conclusions / Future plans

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.

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

remote instrumentation, virtual laboratories, expensive instruments, instrument virtualization,

## 1. Short overview

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.

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