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Title: **Why experimental sciences require e-Infrastructure**

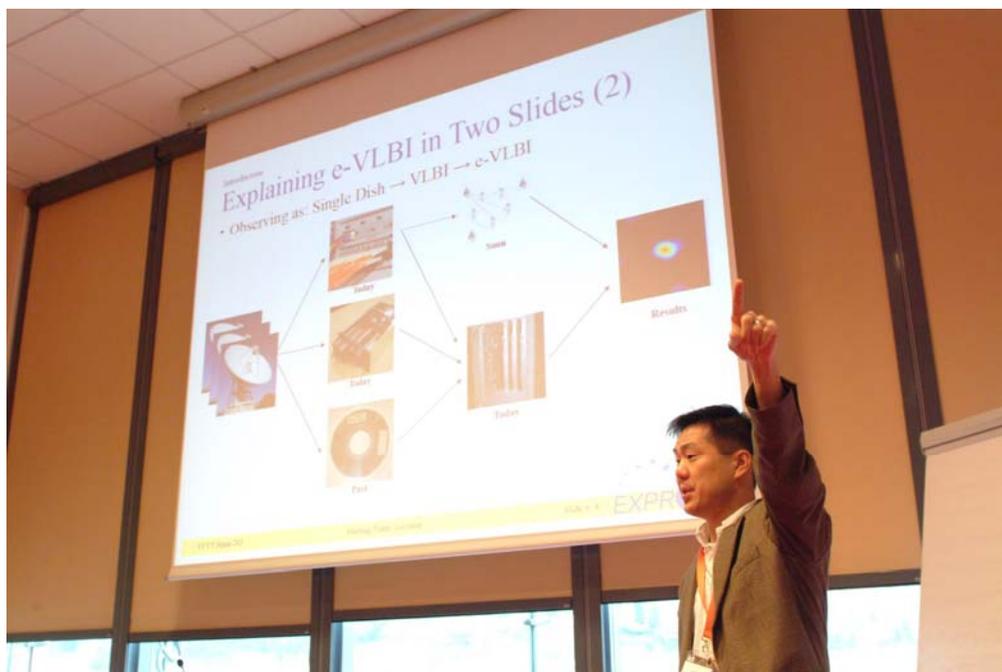
When: Wednesday, Nov. 26th, 2008, Lyon (France)

No. 25

The networking session explored the e-infrastructure requirements of experimental scientists and provided best practices of current projects involved in this field. In addition we had the opportunity to see plans for future development and policies. Cases and topics proposed for the session included: the DORII project (<http://www.dorii.eu>), examining the deployment of remote instrumentation infrastructure; the Open Grid Forum research group (http://www.ogf.org/gf/group_info/charter.php?review&group=riscge-rq), presenting the latest grid instrument integration news; the RINGrid project (<http://www.ringrid.eu/>), discussing future developments and policies for next-generation, remote-instrument grids; the EXPReS project (<http://www.expres-eu.org/>), examining real-time e-VLBI services.

The session included following presentations:

1. EXPReS: Operationalizing e-VLBI, T. Charles Yun
2. RINGrid: Remote Instrumentation in Next Generation Grids: future developments and policies, Norbert Meyer
3. The DORII project: integrating Instruments and Sensors in the e-Infrastructure, Roberto Pugliese,
4. Remote Instrumentation Services in Grid Environment – Open Grid Forum Research Group, Marcin Płóciennik



T. Charles Yun (JIVE) presenting the e-VLBI requirements

The first presentation gave us the opportunity to see the requirements of e-VLBI users. e-VLBI is a technique in which radio telescopes located around the world are connected and synchronizing so that they can simultaneously observe the same region of the sky. Data from each telescope are sampled and sent via high-speed communication networks so that they can be analyzed in real time by a central processor.

The second presentation provided information how an integration of remote instrumentation and e-Infrastructure should look like, based on requirements from 20+ scientific disciplines collected by Ringrid project. The third presentation about DORII described the remote instrumentation infrastructure which is being set up in Europe to support different communities and their specific applications. The presentator described in some detail the concepts of general architecture incl. Instrument Element and Virtual Control Room used respectively to virtualize instruments and simplify access to instruments like we have it for similar elements which we can observe in the Grid environment, e.g. computing and storage elements.

The term *instrumentation* is widely used for laboratory equipment which is necessary for daily use in experimental sciences, e.g. chemistry, biochemistry, physics, astronomy, but also by industry solutions. Instrumentation is, however, not only limited to laboratory equipment but may also cover various sensors which can be remotely controlled and monitored. Implementation of Remote Instrumentation Services (RIS) allows us to perform instrumentation remotely, by means of the location of the end user and the equipment. The necessity of using interactively advanced, unique and expensive equipment infrastructure, which is often locally unavailable, as well as the advantages of broad international cooperation are the key issues for the success of a great number of scientific disciplines.

The last presentation provided information about goals and activities of the RISGE (Remote Instrumentation Services in Grid Environment) research group established at Open Grid Forum in 2007.



Roberto Pugliese (ELETTRA) – DORII project and Marcin Płóciennik (PSNC) – RISGE RG group

After each presentation the audience had an opportunity to ask about more details, e.g.

- What is required bandwidth necessary to send data during an e-VLBI experiments
- What was the final outcome of RINGRID
- What middleware is required to run the DORII software.

We have had a very fruitful discussion at the panel part with active participation of the audience.

Useful links:

1) White paper on remote instrumentation

http://www.ringrid.eu/public/White_Paper_on_Remote_Instrumentation_ver1-1.pdf

2) Conference proceedings from the INGRID2007 conference (Grid Enabled Remote Instrumentation):

<http://www.springer.com/engineering/signals/book/978-0-387-09662-9>

3) e-Infrastructure Reflection Group

<http://www.e-irg.eu/>

Minutes written by N.Meyer (PSNC)