How to open a local electronics laboratory for remote access

A workshop on the VISIR Open Laboratory Platform and an invitation to join the VISIR Community

A local instructional laboratory for electrical experiments can be opened for remote access using the VISIR Open Laboratory Platform. A VISIR Open Laboratory is a server/client application enabling students to perform physical electrical experiments within limits set by the teacher over the internet using a web browser 24/7. Virtual front panels and a virtual breadboard displayed on the client PCs are used to control the physical equipment connected to the server. The server is an online workbench giving the students the impression that they are working in a real laboratory. Such a workbench supplements a local laboratory equipped with workbenches comprising oscilloscope, function generator, multi-meter, triple power supply, and a solderless breadboard.

Apart from Blekinge Institute of Technology in Sweden, where the platform has been created three universities, University of Deusto in Spain, FH Campus Wien in Austria, and Carinthia University of Applied Sciences in Austria have already implemented replicas of the online workbench at BTH and use them in their regular education. Other universities are ready to start. It is easy for teachers to introduce their own existing laboratory exercises. A modem connection and a web browser with Flash player are sufficient for the student.

The software required to set up such a workbench has been published under a GNU GPL licence. Apart from a standard PC the hardware required to join the VISIR Community and implement an online workbench is a PXI chassis containing instruments and a switching matrix for circuit wiring. The components to be used by the students are to be provided by the teachers and are installed in the matrix. Universities, schools and other teaching organizations are invited to participate and open their local laboratories for remote access in order to be able to produce engineers with a solid and documented laboratory experience but without significantly increased cost per student.

This workshop is divided into four parts:

- a general overview of the platform and its performance from the perspectives of the student and the teacher and a presentation of how University of Deusto in Spain uses their VISIR workbench
- a mouse-cursor-on session, where the participants are invited to perform experiments using their laptops. Only WLAN and Flash Player are required.
- course administration
- how to provide components for remote users and how to avoid damage of experimental equipment