

Europe's first interactive system bringing GRID technology to the final user

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GRID technology, one of the latest systems that has been developed for linking computing resources, connects hundreds of large computers so they can share not only data itself, but also data processing capability and large storage capacity. This technology has now taken an important step forward: the hardware and tools required to make the interface interactive have become available. The UAB has participated in the project, taking charge of creating software to coordinate access between the different computers in the new system.

Ever since the internet was created, it has developed and advanced as new services have been introduced that have made it easier to access and send data between remote computers. Electronic mail and the easy-to-use interactive interface known as the World Wide Web are just two of the most important services that have helped to make the internet as popular as it is today.

The most important new feature is that the system is interactive. The user works with a "virtual desktop" using commands and graphics windows that allow clear and easy access to all the resources on the GRID network, just like when someone browses through folders on a laptop computer. This system has enormous potential in many different fields.

One possible application is in those fields in which one needs to transform large quantities of information into knowledge, using simulations, analysis techniques and data mining, to make decisions. For

example, a surgeon working from a remote location who needed to suggest different configurations for a bypass operation using information obtained through a scan on the patient could compare different simulations and observe in real time the blood flow in each simulation. Thanks to the new interactive system the surgeon would be able to use the simulations to make the best possible decision.

Another type of problem for which the new system could be useful would be in procedures requiring huge data processing capabilities and access to large distributed databases. This would be the case for an engineer in a thermal power station who needed to decide upon the best time to use different fuels, taking into account the way pollution would spread based on a specific weather model for the local area around the station.

Led by Miquel Engel Senar, of the UAB's Graduate School of Engineering (ETSE), the research team at the Universitat Autònoma de Barcelona has developed the software needed to coordinate and manage interactive use of the GRID network. The software allows several processors to be used simultaneously. The task of this service developed at the UAB is to carry out automatically all the steps required so that the user applications may be run in one of the GRID resources selected in a clear way by the service itself.

The system was developed as part of CrossGRID, a European project which received a five million euro investment and the support of 21 institutions from across Europe. In Spain, in addition to those from the UAB, there are also researchers from the Higher Council for Scientific Research (CSIC) and the University of Santiago de Compostela playing a vital role in the project. The team from the CSIC was responsible for the first application of the system: a neural network to search for new elementary particles in physics; the team from the University of Santiago de Compostela adapted an application for measuring air pollution as

explained above in the example of the thermal power station.

Source: Universitat Autònoma de Barcelona

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