

CERN is the place 'where the Web was born'.
Now, it is leading some of the most ambitious
Grid projects in the world.



The LHC Computing Grid (LCG), which was launched in 2002, integrates thousands of computers worldwide into a global computing resource to store and analyse the huge amounts of data, about 15 million Gigabytes per year, that the experiments at CERN's Large Hadron Collider (LHC) will be collecting from 2007. CERN's computer centre will be the Tier-0 centre at the heart of the LHC Computing Grid. Starting in 2007 CERN will have to filter raw data, reconstruct event summary data, record and distribute both raw and summary data to Tier-1 centres. It will also provide an analysis facility to physicists at CERN.



CERN is leading the pan-European consortium Enabling Grids for E-science (EGEE). This project aims to integrate current national, regional and thematic Grid efforts in order to create a seamless Grid infrastructure for the support of scientific research. EGEE provides researchers in academia and industry with round-the-clock access to major computing resources, independent of geographical location. LCG and EGEE are tightly coupled and provide complementary functions.



The impact of cutting-edge IT technologies on the Grid is assessed in the CERN openlab for DataGrid applications. Through close collaboration with leading industrial partners, CERN acquires early access to technology that is still several years from the commodity computing market. In return CERN provides demanding data challenges to push these new technologies to their limits and provides a neutral environment for integrating solutions from different partners to test their interoperability.



The Mission of the CERN IT Department is to ensure that all CERN staff and users have access to the IT infrastructure, services and support that they need in order to accomplish their work in an efficient and effective way.

The department is investing heavily in Grid Computing through the LCG and EGEE projects, providing a world-wide Grid infrastructure for the LHC experiments, for other sciences and for industry.

www.cern.ch/it

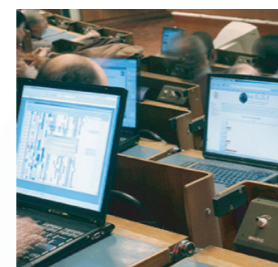
CERN - IT Department
CH-1211 Genève 23
Switzerland



The needs for Information Technology services at CERN can be grouped into several broad areas, of which the IT Department has responsibility for:

- ▶ **General-purpose computing**
- ▶ **Physics and engineering computing**
- ▶ **Administrative computing**
- ▶ **Consolidation, coordination and standardisation of computing activities**

General-purpose computing includes the hardware, software, and services needed to provide the basic computing infrastructure of the laboratory. The IT Department delivers network, voice and video communication, extended desktop services and the corresponding back-ends forming the basic platform for general and specialised computing applications.



Computing for physics dominates CERN's needs while building the LHC and when data taking starts in 2007. The LCG and EGEE projects are the main vehicles to deliver the computing needed by the LHC experiments. The foundation for these projects consists of large computer clusters, disk and tape storage, and numerous services (cluster automation, databases, operating systems, etc.) needed to form the Tier-0 centre. Computing for engineering supports the development, construction and installation of the LHC machine and the experiments. Computing experts with a good knowledge of the relevant disciplines provide these services, and track the technology, market trends and user needs. In collaboration with the users, they introduce new services or phase out services that are no longer needed.



The administrative computing services address the needs in the areas of human resources, finance, logistics, project planning, decision support, business processes and e-business. All access to these services is web-based, giving easy access to CERN staff, visitors, contractors on-site and numerous collaborators world-wide.



The consolidation, coordination and standardisation of computing activities represents an important and distinct aspect of the IT Department's efforts, generated by the very long duration of experiments at CERN. This effort includes breaking new ground in areas where there are no firmly established standards or where commercial solutions do not exist. Examples include: control systems for experiments and embedded systems; hardening and reengineering of grid middleware; testing and validation of new cluster and storage paradigms. IT also drives the internal standardisation by coordinating between departments and by providing global licences and applications.



To provide its infrastructure services, the IT Department relies primarily on commercial applications, but it also develops in-house solutions if adequate commercial solutions do not exist. In order to preserve the quality of its services, a key emphasis of the Department is on maintaining the technical competence of its staff. Skill-sets must be continuously adapted in this rapidly evolving technological environment.

www.cern.ch/it