

Call for Large-Scale Projects

Supercomputing at the leading edge

The three German national supercomputing centres, the [Jülich Supercomputing Centre](#) (JSC), the [Leibniz Supercomputing Centre](#) (LRZ) in Garching, , the [High Performance Computing Center Stuttgart](#) (HLRS) have joined forces and created the [Gauss Centre for Supercomputing](#) (GCS). The mission of the GCS is to provide world-class supercomputing power for computational sciences and engineering in Germany and Europe. Another major focus of the GCS is world-leading user support, education, and dissemination of best practices and methods in simulation science. To reach this goal, HLRS, JSC, and LRZ will synchronise and optimise their existing successful support structures within the GCS, particularly for large scale projects.

State-of-the-art systems

The GCS offers a state-of-the-art high-performance computing and networking infrastructure. At the JSC the first European PetaFlop Supercomputer, a 72 rack IBM Blue Gene/P system is available; LRZ offers its SGI Altix 4700 system with 62.3 TeraFlop/s; finally, HLRS brings in a hybrid computing system from NEC consisting out of SX-9 vector nodes, Intel Nehalem nodes, and GPGPUS. The architectures of these machines are complementary and can accommodate a broad spectrum of applications: For example, the SX-9 nodes are highly efficient for vectorized codes, the Altix can offer a huge shared memory, and the Blue Gene boosts applications which scale to extreme processor numbers. The systems within the GCS will be continuously upgraded in a round robin fashion.

Large-Scale Projects

Large-scale projects and highly scalable parallel applications are characterised by large computing time requirements, not only for short time frames, but frequently for longer time periods. The GCS centres will guarantee that large-scale projects can fully utilise the assigned resources, if necessary at the expense of normal or smaller projects.

Projects are classified as "Large-Scale", if they require more than 5% of the potentially available CPU cycles on a member centre's high-end system, i.e.

- more than 70 Mill. CPU-hours at JSC (corresponding to 24 rack months IBM BG/P)
- more than 4 Mill. CPU-hours at LRZ (SGI Altix 4700)
- more than 75000 Vector-CPU-hours at HLRS (NEC SX series)

For these large-scale projects a competitive review and resource allocation process is established by the GCS. Requests for resources below these limits will be accepted by the individual member centres. Requests above these limits will be handed over to GCS, handled according to the joint procedures, and will be reviewed in the national context. Projects of smaller scale will be still handled by the local GCS member site.

Call for Large-Scale Projects

A "Call for Large-Scale Projects" is published by the Gauss Centre twice a year. Dates for closure of calls are usually at the end of February and at the end of August of each year. The deadline for this particular call is

- **March 1st 2010**

Eligible are applications from publicly funded academic and research institutions, e.g., universities, Max-Planck Society, and Helmholtz Association.

Answering the Call

Leading, ground-breaking projects should deal with complex, demanding, innovative simulations that would not be possible without the GCS infrastructure, and which can benefit from the exceptional resources provided by GCS.

Application for a large-scale project should be performed by filling in the appropriate electronic application form that can be accessed from the GCS web page

- <http://www.gauss-centre.eu/computing-time>

Note that also the regular application forms of the GCS member centres can be reached from there, and users are encouraged to choose a centre that provides the architecture and software most appropriate for their programs.

The proposals for large-scale projects will be first reviewed with respect to their technical feasibility. Afterwards, they will be peer-reviewed for a comparative scientific evaluation. On the basis of this evaluation by a GCS committee the projects will be approved for a period of one year and given their allocations.

Criteria for decision

Applications for compute resources are evaluated only according to their scientific excellence.

- The proposed scientific tasks must be scientifically challenging, and their treatment must be of substantial interest.
- Clear scientific goals and verifiable milestones on the way to reach these goals.
- The implementation must be technically feasible on the available computing system, and must be in proportion to the performance characteristics of these systems.
- The Principal Investigator must have a proven scientific record, and she/he must be able to successfully accomplish the proposed tasks. In particular, applicants must possess the necessary specialized know-how for the effective use of high-end computing systems. This has to be proven in the application for compute resources, e.g. by presenting work done on smaller computing system, scaling studies etc.
- The specific features of the high-end computers should be optimally exploited by the program implementations. This will be checked regularly during the course of the project.

Further help:

For further help please contact the member centers via <http://www.gauss-centre.eu/contacts>.