

Call for Large-Scale Projects

Supercomputing at the leading edge

It is the mission of the [Gauss Centre for Supercomputing](#) (GCS) to offer computing power of the highest performance class for computational sciences and engineering at its three member sites in Garching ([Leibniz Supercomputing Centre, LRZ](#)), Jülich ([Jülich Supercomputing Centre, JSC](#)), and Stuttgart ([High Performance Computing Center Stuttgart, HLRS](#)). To ensure a most efficient utilisation of these highly valuable resources, GCS provides its users with world-leading support, education, and dissemination of best practices and methods in simulation science. GCS aims, in particular, at innovative and scientifically challenging large-scale projects that cannot be carried out within smaller infrastructures. Such projects will also benefit most from the existing successful support structures within the GCS and from their continuous synchronisation and optimization.

State-of-the-art systems

The GCS offers a highest-level computing and networking infrastructure. A new IBM iDataPlex system called SuperMUC with 3 PetaFlop/s peak performance is expected to be available for large-scale projects at LRZ by August 2012. HLRS recently opened the user operation on the first installation step of HERMIT based on CRAY XE6 with AMD Interlagos and Gemini Interconnect with more than 1 PetaFlop/s peak performance. At JSC a 72 rack IBM Blue Gene/P system with 1 PetaFlop/s peak performance is available for highly scalable application codes. The architectures of these machines are complementary and can accommodate a broad spectrum of applications. The systems within the GCS are 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 often for longer time periods. The GCS member sites will realize environments and policies allowing large-scale projects to fully utilize 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 core cycles of one year on a member centre's high-end system, i.e.

- more than 40 Mill. core-hours at LRZ (IBM iDataPlex, starting August 2012),
- more than 40 Mill. core-hours at HLRS (HERMIT Step 1),
- more than 70 Mill. core-hours at JSC (corresponding to 24 rack months IBM BG/P),

each for the duration of one year. 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 a national context.

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 winter and at the end of summer. The deadline for this particular call is

- **February 29th 2012 .**

Eligible are applications from German universities and publicly funded German research institutions, e.g., 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 the regular application forms of the GCS member centres can be reached from there, and users are required 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.

A project with a running large-scale grant on one of the centres or targeting multiple GCS platforms must clearly indicate and justify this as part of the application.

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 must be specified.
- The implementation of the project must be technically feasible on the available computing systems, and must be in reasonable 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 sites via <http://www.gauss-centre.eu/contacts>.