Italian SuperComputing Resource Allocation - ISCRA
2010 CINECA Call for Proposals

Established in 1969, CINECA is the most important computing center in Italy and one of the major centers worldwide.
The Statutory mission is to support research through supercomputing and its applications. To perform this important task, CINECA operates a supercomputing environment equipped with cutting-edge technology, the most advanced hardware resources and qualified personnel who cooperates with researchers in the use of the technological infrastructure, in both academic and industrial fields.
The present call invites proposals for large-scale, computationally intensive research. It is intended to award sizeable allocations on the Italian most powerful supercomputers operated by CINECA to address grand challenges in science and engineering.

Scope
In 2010, CINECA will directly award in excess of 13 millions core processor hours, and indirectly, by mean of the participation of the European funded project HCP-Europa, DEISA and PRACE, in excess of 6 millions core processors hours, for a total amount in the order of 20 millions core processors hours, driving transformational research in diverse fields. The topics that are currently investigated through supercomputing at Cineca e.g. include fundamental physics, computational chemistry, astrophysics, nanotechnology, energy, environment, engineering, mathematic and life science, as well as emerging application domains in the context of multidisciplinary, social and economical science and humanities.

Trends
In the years 2000's the awarding programs have been directly managed by governmental organisations under bilateral agreements signed between CINECA and the National Institute for Astrophysics (INAF), the National Institute for the Physics of Matter (INFM) and the INFM Institute of the National Research Council (INFM-CNR), the National Consortium for Materials Science and Technology (INSTM), the International School for Advanced Studies (ISAS), the National Institute of Oceanography and the Experimental Geophysics (OGS). In 2009 15 millions of core processors hours have been provided to the national research community in the framework of the service provision agreement defined with the previous mentioned agencies. In 2010 the average allocation is expected to increase and to be directly managed by the CINECA Scientific Committee.

Resources
Scientists may request allocations on high-performance computing (HPC) systems operated by CINECA IBM SP Power6 and Blue Gene/P.
A full description of the systems available under this call can be found at http://www.cineca.it/bdp/r/sezioni/risorse_it/hardware/tipologia?CODICE=hpc

Eligibility
The CINECA program is open to all scientific researchers affiliated to an Italian research organization needing large allocations of computer time, supporting resources and data storage to pursue transformational advances in science. Projects' Principal Investigators are expected to be affiliated to an Italian institution, while no restriction is applied for the Co-PI and collaborators. It is expected that the research will be performed at Italian institutions.

The objective of CINECA supercomputing programs is to support large-scale, computationally intensive projects that would not be possible or productive without terascale, and in future petascale, computing. Applicants must present evidence that their computational applications can make effective use of the high-performance computing systems available. Awards will be based on the suitability of the proposed simulations for the requested resource, in addition to research quality and impact

Selection of proposals and Scientific Committee
Proposals are externally peer-reviewed, for scientific merit, and technically assessed, by CINECA experts, for suitability to perform well on the available HPC architectures. In addition applications and programs codes are evaluated for their computational readiness to make effective use of available computational service. Successful proposals describe research in terms of fitting both peer review and technical evaluation.

The CINECA Scientific Board is currently composed by the following scientist:
- Filippo Giorgi (Physics of Weather and Climate Section - ICTP);
- Tommaso Maccacaro (National Institute for Astrophysics);
- Elisa Molinari (University of Modena and Reggio E. & S3-Istituto Nanoscienze CNR);
- Michele Parrinello (Department of Chemistry and Applied Biosciences, ETH Zurich);
- Valeria Ruggiero (Department of Mathematics, University of Ferrara);
- Claudio Zannoni (Department of Physics Chemistry, University of Bologna).

The Scientific Committee selects the reviewers in the different domains and arranges the proposals for the peer review process.
Once collected all the evaluation forms, the Scientific Committee defines, based on the reviewers' evaluations and on its own arbitration, the ranking list of received proposals to be HPC resources awarded.

Proprietary and non-proprietary use
Proposers who wish to engage in scientific research with the intent to publish meaningful results in open, peer-reviewed literature ("nonproprietary users") are eligible. Moreover, proposers who wish additional protection for their proprietary data loaded onto the CINECA computers and/or who wish to keep the results of their computations proprietary ("proprietary users") are also eligible.
Non-proprietary use is conditional upon acceptance, by each proposing institution, of a non-proprietary user agreement provided by CINECA. The proposer's and any participating institution's authorized agents (who have the authority to sign the user agreement on behalf of the institutions) should be prepared to review and sign the agreement once an award of time is granted.

Security
CINECA implemented security programs in compliance with the standard ISO 27001:2005. Project-specific security requirements can also be discussed and potentially addressed; contact the CINECA staff directly for details. All non-temporary user data resides on centralized file and archival storage systems that are regularly backed up. This data is protected and segmented from other users using standard access controls. Requests for processing sensitive data must be clearly identified in the proposal. Prospective users should work with CINECA to

identify appropriate levels of data protection. Greater levels of protection not typically offered may be provided at a cost borne by the project.

Deadlines
Applications will be accepted only electronically starting on Thursday April 1, 2010, and in accordance with the instructions provided.

Proposals for "Class A - Large" and "Class B - Standard" projects will be accepted until a call deadline of 23:59 pm CET, on Friday May 15, 2010. Awards are expected to be announced in early July 2010. Access to a computing system, granted over the 2010 calendar year, will be established upon completion of the appropriate agreements and CINECA HPC allocation procedures.

Proposals for "Class C – Test and Development" projects may be submitted at any time of the year, basing on a system of continuous submission. The evaluation for such proposals will be performed quarterly and resources will be allocated immediately after the selection.

Please direct questions about the application procedure to iscra@cineca.it.

Evaluation Criteria
All project types will be evaluated both technically and scientifically.

The technical evaluation is performed by CINECA's experts in order to evaluate whether the proposal is technically feasible with CINECA's HPC infrastructure, by considering the hardware available (number of processors, memory per processor, parallel architecture, available storage, system performance), the software required (parallel libraries, scientific libraries, other specific libraries, compilers and development tools) and the applications to be used (stability and maturity of the codes, scalability and efficiency, etc). The project can be approved ONLY if the technical evaluation is successful.

The scientific evaluation for each Class A or Class B project is performed by anonymous referees nominated by the Scientific Committee. The evaluation is based on the following criteria:

- Scientific merit (Originality, Innovation potential, International and national relevance)
- Qualification and competence of the PI track records, if applicable
- Computational aspects (Proper use of HPC resources, Feasibility of the project, Suitability of the requested resources for the objectives of the proposal)

Based on the evaluations received by the referees, the Scientific Committee produces on its own arbitration a ranking of the proposals and assigns the resources based on availability.

The Scientific Committee will define appropriate procedures in order to avoid conflicts of interest in the evaluation.

The Class C projects are approved or rejected by the HPC Team in CINECA, based on the suitability of the computational requirements and the quality of the scientific problem, on a continuous calls basis.

Obligations

The projects must be completed within the timescale specified in the call. Resources not used cannot be used after the project expiring date.
At the end of the project the PI is requested to provide CINECA with a brief report of the activities carried out and the results obtained using the template provided.
All publications arising from the results obtained with the assigned resources must contain the following acknowledgement: "We acknowledge the CINECA Award N. XXXXX,YEAR for the availability of high performance computing resources and support". The corresponding references should be communicated to CINECA.