ACCESS PROTOCOL TO THE SUPERCOMPUTERS OF THE SPANISH SUPERCOMPUTING NETWORK (RES)

This document details the Access Protocol to the supercomputers of the Spanish Supercomputing Network (RES - Red Española de Supercomputación), including the MareNostrum installed in the BSC-CNS.

The guidelines are based on criteria of efficacy, efficiency and transparency.

In line with similar national plans and other public calls, a **double filter system** has been set up:

1. Initial peer review evaluation by the Spanish State Research Agency (*Agencia Estatal de Investigación*, AEI) of the general research programme, where the specific areas of the activity involving the use of RES are defined.

   The AEI will not have to give its opinion in case of that the general research programme has already been positively evaluated in a competitive public call by one of the evaluation agencies approved by the BSC-CNS.

2. Subsequent evaluation by the Access Committee, advised by a Technical Experts Panel and a Scientific Experts Panel, of the activity, which must provide detailed objectives and an approximate time line for completion.

   In the activities were access is granted, RES will provide CPU hours in the supercomputers (hardware and basic system software) and know-how of the Operations team (Systems and User Support team) to ensure the correct performance of the user applications.

BSC-CNS collects all activities applications from its website (https://www.bsc.es/res or http://www.res.es) and forwards them electronically, including any additional documentation, to the Access Committee, the Expert Panels, and to the AEI, if required.

Activity call is continuously open and the evaluation is every four months. Those activities whose computing needs require access to resources during more than a period, can request access for up to two periods, reporting to the Access Committee the intermediate results obtained and then, so the Committee could confirm the access the second period.

Researchers working in Spanish institutions and leading European projects proposals may request access for two years to use from one year of the application (**pre-reserve hours**). It is only possible to use the allocated time if the European project proposal (under any programme of the main Framework Programme) is funded. If not funded, the hours are returned to the normal competitive call. A maximum of 60 million hours per project is established for the two years, and an aggregate limit of 90 million hours for all projects in each call. In case the requested hours exceed the available capacity, the best scientific projects will be prioritized or adequate amounts of hours will be distributed among the applicant projects, at the discretion of the Access Committee. Pre-reserve and normal competitive hours may be accumulated, up to the limit of hours available in normal activities in each period.

The request for access to the RES resources must be in English, and should

include the following **information**:

- A description of the global scientific project which frames the activity proposal (maximum 1 page) including the reference number of the overall scientific project if financed by a public call.
- A description and justification of the concrete activity that requires access to the RES resources (maximum 2 pages).
- A short CV of the PI (Principal Investigator) of the applicant group that must necessarily include reference to the most relevant publications (maximum of 5 references) of the last 5 years.
- Technical description of the software to use and the resources requested in the supercomputing equipment offered by the RES.

An established procedure for immediate acknowledgment for all submitted applications has been established and the response time to the request meets quarterly assessment.

The **basic criteria** for the award of projects using the RES resources are:

1. The relevance of the global scientific project that includes the activity proposal (20%).
2. The justification for the proposed activity and the calculations to be developed in the RES to complete the global scientific project (30%).
3. The scientific credentials of the applicant research group (10%).
4. Experience and training in high performance computing (10%).
5. The real need for a supercomputer to perform the computation (20%).
6. The technical appropriateness of the project to the RES resources architecture (10%).

In the case of **unexperienced HPC users** or research groups, during one-year period, criterion no. 4 will not apply. In these cases, the weight of criterion no. 3 will be 20%.

After receiving the initial evaluation of the AEI, the Access Committee proceeds to evaluate all activities and prioritize them.

The **Access Committee** is composed of 4 members, appointed for a period of 4 years with a 25% annual renewal. This appointment may be revoked by the Executive Committee when there are reasons which justify it. Its composition is:
- a BSC-CNS external manager with wide experience in Innovation Management,
- an AEI representative,
- a supercomputing expert, external to BSC-CNS, but part of the RES, and
- a supercomputing expert, member of BSC-CNS.

The Access Committee receives advice from two Experts Panels: a Scientific Expert Panel composed of renowned scientists, external to BSC-CNS, of Spanish or other nationalities, and a Technical Expert Panel, composed of one representative of each of the institutions associated with the RES. These Experts Panels are appointed for a period of 3 years with partial annual renewals of 1/3 of its members. The appointment of experts may be revoked by the Executive

Committee when there are reasons that justify.

The components of the Technical Experts Panel are nominated by the centres affiliated to the RES, and are responsible for conducting the evaluation from the technical point of view. Their assessment will be used by the Expert Scientific Panel.

The Scientific Expert Panel is divided into **6 thematic groups**:

1. Astronomy, Space and Earth Sciences
2. Life and Health Sciences
3. Physics
4. Engineering and Mathematics
5. Solid State Chemistry
6. Chemistry of Biological Systems

The Scientific Experts Panel is composed by scientists of outstanding career and experience in the management of research projects, mainly managers of National Programs or of the AEI.

Each of the above areas represented by the Scientific Experts Panel is chaired by a group leader, who acts as a coordinator, an assistant, and up to a maximum of 16 members representing the specific subareas of knowledge. Only 8 of them may participate in each call.

The components of the Access Committee and the Scientific Experts Panel are nominated by representatives of MINCIU (*Ministerio de Ciencia, Innovación y Universidades*) in the Access Committee.

The Scientific Experts Panel can request the remote peer review mechanism of the AEI.

The Scientific Experts Panel prioritizes the activities of its respective areas and sends its recommendations to the Access Committee who publishes the final report.

The report prioritizes the allocation of resources to activities. A consequence of this prioritization and limited resources available, a high-quality activities can be left out. The Access Committee can allocate resources for the next period for these activities as it deems appropriate, so as to ensure access in the next period without having to reapply for access. The Access Committee will try to allocate maximum resources to the best activities assessed to ensure that they benefit from supercomputing capabilities of RES in a short period of time.

Furthermore, this report justifies the reasons for gaining or refusing access to the RES for each submitted activity.

There is no objection procedure for technical or scientific reviews, although objection is possible if there has been an erroneous interpretation of the information presented. For these infrequent cases, there is a limited amount of computing time reserved in every call. This amount is determined by the Core

Team at the beginning of the evaluation session and could be 0.1% of the total available resources. To simplify the process, these hours will be reserved in the machine that contributes more computing time in the evaluation period.

Any user who considers that the Access Committee has not correctly interpreted his/her proposal can directly address to the RES Manager through a brief objection text.

The RES Manager will send the request to the coordinator of the corresponding panel, who will check if there has been a misinterpretation. The coordinator may contact the experts of the panel who evaluated the activity.

If the objection is positively evaluated, the coordinator will present the case to the Core Team, which will manage the grant of computing time to the proposed activity up to the maximum of hours reserved to this end. It is possible that the granted hours are less than the requested or insufficient to carry out the specified activity. However, this is a palliative (not corrective) measure, and the objective is to allow the applicant to work in his/her research and to avoid a severe penalisation caused by a misunderstanding.

If the reserved hours are not assigned, they will be used by users who have been granted hours without priority (not guaranteed).

It is possible that some of the accepted activities might lead to a scientific collaboration between the external research group and BSC-CNS or either of the institutions belonging to the RES, especially in the area of optimization or development of parallel applications.

The use of the RES resources is given according to the criteria of excellence. Universities (public or private) do not need to pay for the use of RES resources.

Any industrial activities are subject to similar quality standards as the public projects. Those activities involving private business participation, included in publicly funded open research and development (open R&D) projects will have free access to HPC resources. If this is not the case, the private institutions that access to the RES resources must pay to the institution that manages the resources allocated a financial contribution that is calculated in a case-by-case basis and depends on the resources needed (human and technical) and the scientific and/or economic interest of the project.

For mixed University-Company activities, the fee for each institution depends on the amount established in the memorandum of agreement.

Spin-offs of public centres are treated as public research centres for the first three years to encourage their development.

The Executive Committee, at the request of one of the consortium administrations, may declare the strategic nature of specific projects that require BSC-CNS computing resources and are of special interest for the R&D&I policy of the proposing Administration, by example, for its international impact. The project so declared, which will be called "Large Program", once it has passed the first evaluation of the Access Committee, it may receive supercomputing resources for

several periods without the need to be re-evaluated by the Committee in the following periods, with the limits that may be established by the Executive Committee. The Executive Committee will be periodically informed of the use of BSC-CNS resources for such projects.

Users of RES resources automatically accept the following commitments:

- To send RES an electronic copy of any scientific publications in which the use of the resources of RES has proved decisive.
- To explicitly quote in the scientific publications the support RES provided to their project.
- To follow the RES usage rules and security and confidential policies determined by the RES.
- To guarantee not to use the obtained results using RES resources, for any profit purposes but only under the terms of "Public Research".
- To provide information and documents annually, including videos, presentations, and any other material to be used as dissemination material by the RES.