

HET Peer Review Process Proposal

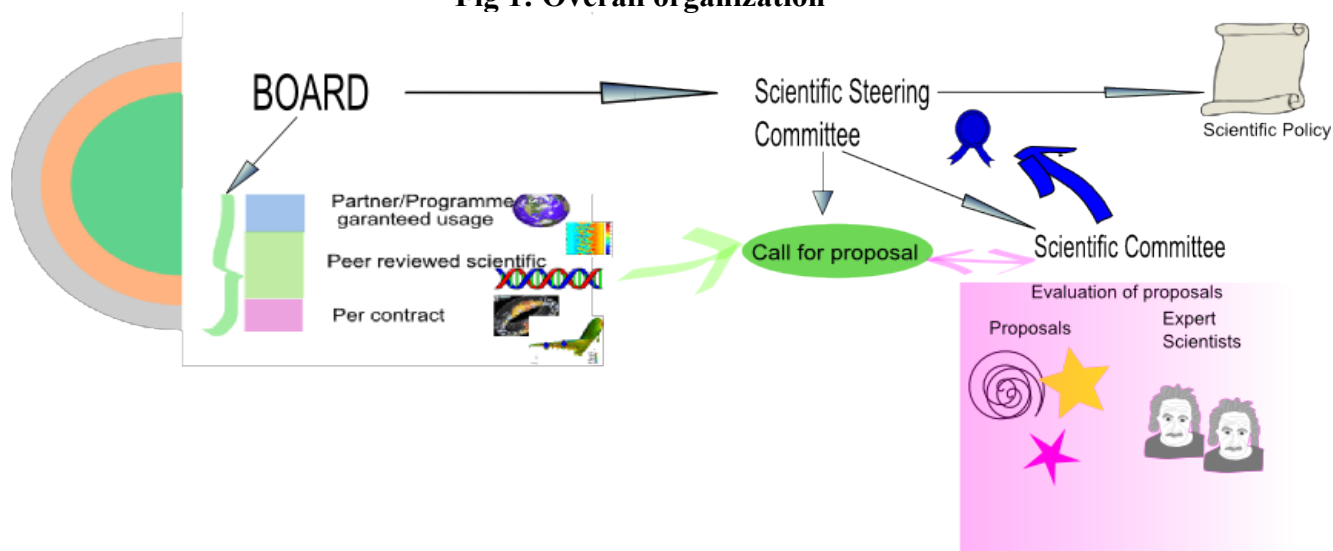
for Tier 0 applications

Vocabulary

In the sequel several items are designated in a symbolic fashion, either because they will be defined by other HET tasks, or because they represent entities which will be selected through a competitive process or through consortia agreements:

1. The HPC ORGANISATION (HO) is a consortium with the mission to procure, operate one or more supercomputers. The HET Business Case may describe it in more details.
2. The HO BOARD is the executive board of the HPC ORGANISATION. It may delegate some of its responsibilities to the EXECUTIVE DIRECTOR. Defining its role and responsibilities is outside the scope of this proposal.
3. The SCIENTIFIC STEERING COMMITTEE is defined below.
4. The SCIENTIFIC COMMITTEE is defined below.

Fig 1: Overall organization



Context

The HET has been setup with the objective to contribute towards the improvement of the European Research Infrastructure in the area of scientific computing and data handling. It has clarified the requirement to make competitive world class supercomputers available for researchers involved in large size simulation and modeling, and has put forward a scientific case for such.

The requirements for the top-of-the-pyramid resources have been defined taken into account the principles of subsidiarity with existing national and thematic resources, and ensuring the most relevant scientific contribution. It is expected that scientists using the top-of-the-pyramid resource are expected to contribute in advancing science through numerical simulation. This calls for an evaluation process based on peer review to allocate computer resources. Another aspect of the requirement calls for a responsive organization capable of making good use of opportunities which may arise in competitive contexts.

The HET taskforce does recognize that a unified infrastructure with a single review process would have the best impact on the development of computer simulation pertaining to scientific and industrial challenges. This implies a readable and unified framework for application and project evaluation which provides scientists interaction through a single office and thereby avoids unnecessary paperwork. However, since the mandate of HET is limited to defining the requirements for the European Tier 0 HPC infrastructure, it is clear that the fulfillment of such objectives is the responsibility of project promoters and therefore outside the scope of this paper.

Design objectives (not prioritized)

- have scientists make scientific decisions
- transparency of decision making
- ensure fairness of access between disciplines
- avoid conflicts of interest
- keep evaluation separate from decision
- efficiency of resource utilization
- responsiveness of allocation process

Scope

The peer review process applies to the portion of the computer resources and time which has been allocated to peer reviewed proposal by the HO BOARD.

The HO BOARD may

1. choose a single channel,
2. or decide to have multiple channels (for instance separate calls for selected scientific domains, separate calls for different machines,...).

Each of the channel has a separate SCIENTIFIC STEERING COMMITTEE and uses this Peer Review Process (PRP).

Roles

Only aspects relevant to the PRP are described.

HO BOARD (HOB)

- Define scope for proposals and overall resource allocation, possibly including priorities or shares between disciplines and rules for applications by industries.
- Approve SSC documents: calls, resource allocation, reports.
- Monitor the application of rules concerning conflicts of interest, confidentiality and protection of scientific or industrial property rights.

SCIENTIFIC STEERING COMMITTEE (SSC)

- Finalize and propose call for proposals.
- Finalize and approve (SC) ranking and resource allocation.
- Review resource usage, compliance with resource allocation.
- Finalize scientific reports to HOB and funding agencies on resource utilization, scientific achievements.
- Propose elements of scientific policy to HOB

SCIENTIFIC COMMITTEE (SC)

- Dispatch evaluation of projects to referees, in particular by selecting referees.
- Establish ranking of proposals, propose feedback to proposers. This is based on reports from referees, which need to be reconciled.

Process

On a regular¹ basis:

1. HOB defines channel and bulk resource allocation outline
2. SSC prepares call for proposal (CP). This includes some process decisions: 2 step process with short proposal or not, letter of intent.
3. HOB validates CP, publishes .
4. SC organize refereeing, proposes ranking of proposals
5. SSC finalizes resource allocation.
6. HOB approves and publishes results. At this step some legal aspects are approved, especially in the case of industrial partners: property of results, confidentiality requirements and implementation of such.

It is expected that after a decision is made HOB will:

- make public the list of projects that have received allocation, with project summary, list of participants
- communicate to the national HPC organization member of the HOB, project summaries and details. This is intended to verify the subsidiarity requirement.

Eligibility of applications

- Scientific excellence.
- Proven feasibility of computation, data collection and result analysis. Code must have been validated on suitable equipment available to proposer on a national, thematic or local basis. Criteria will define requirements regarding the efficiency of computation or general operation on the target platform, balancing scientific requirements and the achievement of an efficiency level coherent with the state of the art for the application at hand.

¹ Whole process could be performed once a year or up to 3 times a year. This needs to be confirmed once the time required for the process flow is better understood (number of applications and of allocations, size of allocations).

- In the case of industrial partners further examination of benefits is warranted, as examination of property of results, confidentiality etc... ⁽²⁾

Applicants will have code applications ready, and will agree to make reasonable efforts to use the equipment within a schedule that will be proposed by the operation management of the center, under supervision by HOB. In order to guarantee optimal use of the resources, overallocation is permitted:

- Project may receive conditional part of allocation, to be used in case of machine availability, at short notice. If not used the conditional allocation is lost at the end of period.
- Projects may be offered the option to postpone resource utilization, at a premium (more machine time on next period, higher priority of jobs,...).

Exceptions to general process

- preparation and experimentation
 - o Computer time may be allocated prior to application, in order to perfect the application and its efficiency on the target resource. The total amount of time for such use to be decided by the HOB.
 - o Candidates are expected to have validated³ code on national, thematic or local resource.
- “opportunity allocations”
 - o In such a case, the SSC (or a subgroup of SSC) determines, based on scientific judgment, that an exceptional allocation is needed mid year. The major reason would be to permit European science to compete in fast moving areas. The allocation is proposed by the SSC, put in place after HOB approval, and an a posteriori scientific evaluation conducted by SC.
 - o Such may cause overallocation resolved by mechanisms above.
 - o It is expected that applicants will already have used the facilities.

Members of scientific boards

1. SCIENTIFIC STEERING COMMITTEE

- Members are appointed on a personal basis for scientific competence and achievement, demonstrated skills in scientific management.
- Appointment for 2 years, renewable once. Former members may be appointed again after 4 years of absence from SSC and SC.

2. SCIENTIFIC COMMITTEE

- Members are appointed on a personal basis for scientific competence and achievement.
- Appointment for 3 years maximum, renewable once. However this rule is overruled by the committee continuous renewal process below.
- Committee continuous renewal process: 20% of committee members are renewed each year. This should make average stay in committee to 5 years, some flexibility is allowed to deal with special competence.
- Former members may be appointed again after 4 years of absence from SSC and SC.

Committees

² It is expected that the HOB will rule on such, issue guidelines, etc...

³ Scientific relevance, efficiency and scalability.

1. Each year, the SC competence is completely accomplished once it has ranked proposals.
2. The SSC president organizes work with respects to all tasks, including scientific reports as described above. The SSC may meet with an agenda consisting of HOB requests, usually pertaining to scientific policy or scientific prospective studies.
3. Committee work is confidential. Documents made public or available for administrative review are described above and defined by the HOB.

Nominations for committees

1. Designation of SSC members to be performed by the HOB, based on lists proposed by:
 - the relevant national bodies, preferably research councils or equivalent,
 - the relevant European bodies, including the ERC,
 2. Designation of the SC members to be performed by the HOB based on lists proposed by the SSC.
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