HP2C — High Performance and High Productivity Computing

Call for HPC Community Network Development Projects

Introduction

The High Performance and High-Productivity Platform (HP2C; www.hp2c.ch) is supporting 13 projects in 2009-2013 with the aim of developing new methods and software, and adapting scientific codes to next generation high performance computing architectures. These projects will end on or before 30 June 2013.

Subject to approval from the Swiss University Conference, the Platform for Advanced Scientific Computing (PASC) will be launched during the period 2013-2016. The PASC will support a small number of co-design projects in which interdisciplinary teams consisting of members from various application domains with similar algorithmic and architectural needs will cooperate with computer scientists and applied mathematicians to develop efficient simulation systems (including application codes, numerical libraries, system software and hardware solutions). The call for proposals for PASC co-design projects will be issued in late 2012 and the start of the new projects to take place in the first half of 2013.

Furthermore, PASC foresees the creation of an application support network for maintaining and developing community simulation codes for supercomputing platforms, as well as to provide user-support services. To this end, funding with the involved universities is envisaged to support a number of technical staff positions specifically devoted to these tasks.

In order to prepare these activities, the HP2C program will provide support to a small number of *community network development projects* whose main aim will be to structure user communities in different application fields of advanced scientific communities. It is envisaged that these communities will include a number of nodes in different Swiss universities and organize themselves around simulation codes critical for their respective application domain. Communities are expected to foster exchanges and cooperation among involved research groups, to drive PASC co-design project proposals, and to jointly organize support and maintenance of the software codes.

Call for proposals

This call will support preparatory activities for the establishment of community networks during the period September 2012 – June 2013 pursuing two main goals:

- First, to lay down the foundations of the future organization of the concerned community by defining the scope of its activities, identifying critical scientific codes, initiating networking and training activities.
- Second, to initiate the development of support services for users of critical software codes for the community, which could be then continued during the period 2013-2017 in PASC. This will include preparatory work, like documenting codes and preparing support materials, defining a concept for the support, transferring personnel to the support pillar from HP2C projects and negotiating with the involved universities long-term support for these positions.

These activities should be strongly oriented towards user support and maintenance related to existing scientific codes, and to a certain extent migration of codes to emerging architectures, as well as some adoption of newly established programming models. Research and development problems of methods and

algorithms, mathematical libraries, architectures and programming models are not included in this call, but should be articulated by these communities, and later submitted by interdisciplinary teams to the new co-design pillar of PASC. PhD students training activities are not included in this call either (except if closely related to user support).

Structure of the community networks

It is expected that each PASC community will organize a number of the advanced scientific computing groups in a particular application domain under the lead of one Principal Investigator (PI) with the participation of several co-PIs. Inclusion of newly developed codes is a preferential selection criterion.

The participating teams should plan community development activities jointly; support activities should be open to all participating teams; it is however expected that personnel resources for support are concentrated in a reasonably small number of places.

Funding

Funding will be provided for following items:

- Technical staff and post-doc positions (at least 50% FTEs devoted to support).
- Networking and dissemination activities to promote the usage of HP2C codes and other novel codes among the relevant communities.
- Organization of training courses and workshops (for example to prepare the future support plans in the framework of PASC).

HP2C funding will cover the period September 2012 – June 2013. The budget of a project should not exceed CHF 200'000. Up to six projects will be supported.

Prospects for the period 2013-2017

The selected community network projects will be required to prepare a detailed support plan for their community by spring 2013. On this basis, PASC project leadership will decide on providing co-funding for support position, under the condition of co-funding from the involved universities.

Additionally, it is envisaged that selected networks will be granted dedicated access to CSCS computing resources as part of the overall PASC support package.

Selection criteria

The following criteria will be taken into account in the evaluation of applications:

- The needs and size of the involved community. Proposals involving more than one HP2C team will be given the priority.
- The importance of the scientific codes for which support is foreseen and the specific needs for user support (with a priority to recent codes developed within the HP2C platform).
- The support from participating universities and the perspective for co-funding after June 2013.

Evaluation

Submitted proposals will be evaluated by an international panel; decisions on funding will be taken by the HP2C steering committee.

Further information

Potential applicants are strongly encouraged to contact Dr. Michele De Lorenzi at the Swiss Center for Scientific Computing for further details (michele.delorenzi@cscs.ch) and/or Dr. Benedetto Lepori at the University of Lugano (blepori@usi.ch).

Proposal submission

Complete project proposals must be submitted in PDF format via email to projectoffice@hp2c.ch by September 15, 2012 (23:59 PM).

The application will include following documents:

- The list of proposal partners and involved PIs and co-PIs.
- A proposal of maximum five pages providing the following information:
    o A general description of the community and its main current challenges.
    o A presentation of the codes for which support is requested and of the main support needs.
    o A detailed activity plan for the period September 2012-June 2013 describing the different activities and expected results.
    o An outline of the more long-term support needs and of how these will be addressed in the framework of PASC.
    o Indications on relationships with the partner universities and co-funding to be expected in the following years.
    o A description of international collaborations when code development crosses national boundaries.
- A detailed budget by activity and type of expenditures (personnel, travel, other costs), including the staff to be supported (main activities, percentage of employment, profile).