

# High Performance Computing (HPC) Hardware

## DeIC Call for HPC Proposals

2013-04-12

The *Danish e-Infrastructure Cooperation (DeIC)* has set aside 15 MDKK (MEUR 2) in year 2013 for acquisitions of or access to High Performance Computer (HPC) hardware.

The call is part of a transition phase, phasing out the hitherto *Danish Center for Scientific Computing (DCSC)* funding model, to be replaced by a new agreement between Danish universities on funding and organisation of HPC in Denmark, yet to be decided<sup>1</sup>.

The aim of this call is to provide researchers in Denmark with access to HPC processing power or data storage for research projects with strong emphasis on high-performance large-scale computing. Funding for HPC will be awarded to individual researchers or research groups via a Primary Investigator (PI).

### Application and Grant Types

DeIC allocates two types of HPC resources in 2013:

1. Funds for setting up new or expanding existing computing or storage systems, within university computer centres. The PI must define the project in terms of HPC needs, and preferred HPC architecture, machine type, configuration and capacity. PI's must state the estimated total cost of ownership (TCO) – i.e. operation costs - related to hosting the hardware applied for. This must be done in cooperation with the university computer centre<sup>2</sup> expected to host the hardware (Appendix B).
2. Access to HPC processing time or storage capacity. This grant type is appropriate when the PI is:
  - An experienced HPC user, whom:
    - ✓ does not require a specific HPC architecture, other than what can be termed a standard Linux based HPC cluster, with standard storage.
    - ✓ does not require substantial HPC resources, or only so for limited time periods.
  - A new HPC user that needs to get acquainted with HPC and storage applications.

### Eligibility for funding

PI's employed by any public Danish research institution can apply. Applying PI's must submit individual applications based on their research project. Batched applications spanning several projects or research groups will not be considered. Funding will be awarded for specific, well-defined research activities, to be specified in the application (Appendix A). Researchers from all scientific disciplines are eligible and encouraged to apply. E.g. natural science, engineering as well as social science, the humanities, life sciences and medicine.

DeIC hardware grants can only cover HPC hardware acquisitions. I.e. grants must be transferred into HPC hardware located at a Danish university computer centre. DeIC

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<sup>1</sup> DeIC HPC dialog proces: [http://www.deic.dk/HPC\\_scenarier](http://www.deic.dk/HPC_scenarier)

<sup>2</sup> University computer centres cooperating with DeIC: <http://www.dcsc.dk/contact.html>

### DeIC Sekretariat

Danmarks Tekniske Universitet, Anker Engelunds Vej 1, Bygning 101A, 2800 Kgs. Lyngby.

Telefon 45 25 72 64 \* Mail: sekretariat@deic.dk \* website: www.deic.dk \* EAN: 5798000430723

grants do not cover user support. Grants cover a three year period, and the right to define the physical implementation of the grant during this time is given to the applying PI, presuming that operation costs for the implementation is guaranteed covered. Note that the host computer centres is required to fund *all* HPC operation costs as part of university co-funding. Thereafter hardware ownership will be transferred from the PI to the host university.

### **Granting criterion**

When allocating resources (funds or access) a research quality criterion will be applied, similar to that used by the Danish National Research Councils. Grants will therefore be awarded on the basis of scientific merit of the project as well as the recent research record of the applicants.

Applicants that already hold an active grant (e.g. awarded by DCSC) must report (in Appendix D) on already achieved results from the current grant in terms of research output. It must be justified why further HPC resources are needed, and which further scientific problems are expected to be solved.

Applications will be evaluated and prioritised by the Danish Council for Independent Research. On the basis of this ranking, DeIC aims to reject or accommodate applications without reducing the funding level applied for.

### **Terms for hardware procurement, services and user support**

Awarded funding must be invested in cooperation with, and at, the Danish university computer centre which has guaranteed operations. If HPC access (as opposed to funding) is sought and/or awarded, it will be pooled from such a universities pool of free resource owned by DeIC. I.e. a prior agreement must be made between the computer centre and the PI expressing the universities commitment to co-fund operations. This commitment is to be submitted together with the application (Appendix B). It is up to the university together with the PI's and the computer centre to define terms for services (Service Level Agreement). The amount of available HPC resources in the DeIC pool of free resources (PFR), for any given PI, varies over time as well as among the different computer centre. Extent of available resources to PI's which are granted access is administered by the computer centre.

### **Overheads**

Overheads cannot be deducted from DeIC grants.

### **Application Content**

Applications must consist of the following parts in the given order, with the given titles:

#### **DeIC APPLICATION FORM:**

- Application form<sup>3</sup>:

#### **Appendix A** (Maximum 5 page): Project description:

- The objectives and contents of the research to be pursued.
- An explanation of why scientific computing is needed or is an advantage for carrying out the research project, with emphasis on the scientific merit of the project.
- If specific HPC hardware is applied for (e.g. set-up/architecture, machine type, configuration and capacity etc.), then argumentation for this should be included.

#### **Appendix B** (Maximum 1 page): Statement of commitment to provide operations:

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<sup>3</sup> Application form: <http://www.deic.dk/en/Call2013>

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- A statement from a host university computer centre:
  - ✓ Affirming that hardware can and will be procured for the full sum of any granted funds, in accordance with the PI's needs and marked procurement conditions.
  - ✓ Guaranteeing HPC operations for the full three year duration of the grant.
  - ✓ Estimating the total cost of ownership (TCO) of the applied for HPC hardware.

**Appendix C** (maximum 1 pages per researcher, possibly including links to further information): CV's and publication lists:

- For all senior researchers in the research team, including publication lists covering the last five years.

**Appendix D** (Maximum 1 page): **For applicants that already hold a DCSC grant:**

- A report on already achieved results from the current grants (e.g. DCSC) in terms of utilisation of HPC and research output. It must be justified why further HPC resources are needed, and which further scientific problems are expected to be solved.
- Usage statistics from the hosting computer centre, showing to what extent previously resources have been utilised during the past year.

### **Application deadline and forwarding**

All applications must be sent electronically as one single document (in any standardised format) to the DeIC at e-mail address [belso@deic.dk](mailto:belso@deic.dk), with subject line "*DeIC Call 2013*". The application must be received by DeIC no later than 24 May 2013 at 12:00 noon. An e-mail confirming that DeIC has received the application will be sent to all applicants on the call closing day.

Further questions can be addressed to the DeIC secretariat; attention Rene Belsø.

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