

Wim Nieuwpoort Award

Introduction and aim

It has been recognized for a long time that efficiently exploiting high-performance computing systems to their full potential is a very challenging matter. Since 1987, the Association for Computing Machinery in the US, awards the ACM Gordon Bell Prize to recognize outstanding achievements in high-performance computing. Gordon Bell has been a pioneer in high-performance and parallel computing.

Currently, the most powerful HPC systems consist of thousands to hundreds of thousand compute cores. Using such systems to their full power requires exceptional parallelism and scalability in application codes and therefore exceptional skills. In order to stimulate progress of leading-edge technical computing applied to scientific problems, the NCF-board and the SARA-directorate have devoted funding to an annual national award to recognize achievements in parallel computing on real application codes on PRACE-accessible supercomputing systems¹.

Prof. dr. Wim Nieuwpoort, professor emeritus in theoretical chemistry at the University of Groningen, has accepted the honor to give his name to this award. Professor Nieuwpoort can be viewed as the Dutch scientific pioneer to the advancement of HPC and Computational Science in the Netherlands and the establishment of the infrastructures required to support that, since the sixties of the previous century. He has served as the chairman of NCF's scientific committee for many years, and has been director ad interim of SARA during a short period.

Purpose

The purpose of the Wim Nieuwpoort Award is to advance scientific computational research through the most efficient deployment of modern massively parallel supercomputers, for which the challenge is the use of supercomputing facilities to their maximum capability for a single application code that could lead to groundbreaking results in application areas which are of interest for science and society.

Who can apply

In order to be eligible for the Wim Nieuwpoort Award, the following boundary conditions must be satisfied:

- The main applicant of the research team must be employed by a Dutch university or scientific research institute;
- The actual parallel computations must be performed on one of the Dutch national high performance computing systems. Currently, these are Huygens or Lisa. (This clause will be extended in later years to address all PRACE-accessible systems.)
- The application code has not won the Wim Nieuwpoort Award in the previous three years.

¹ For 2011 only the Dutch systems will be considered, i.e. Huygens or Lisa.

What can be applied for

The winner of the Wim Nieuwpoort Award will receive € 5,000 and will be invited to show his or her work in the Dutch Research Consortium booth at SC12 in November 2012 in the USA. Common travel, lodging and costs related to the presentation for a maximum of two persons from the research team will be paid by NCF and SARA.

When can applications be submitted

Closing date for submitting applications is 20 October 2011.

Drawing up an application

Interested applicants can submit a proposal by means of filling out a template application form, which can be found on the NCF website. When completing the template application form, the following aspects are important:

- Full contact details must be filled out;
- A clear description of the scientific problem must be provided;
- The performance and speed-up figures must be clearly shown and documented.

Specific conditions

Required Performance Achievement

The application code must demonstrate usage of the supercomputing facilities by a significant part of the maximum capacity, which will have to be demonstrated by scalability. Each application code has to fulfill at least the following criteria:

- The application must address a genuine scientific or engineering application;
- The amount of efficiently used cores must be at least 40% of the total core count in the system;
- The application code must demonstrate scalability (to be demonstrated at least at three core counts);
- The application code must involve real communication between cores on a regular basis;
- The application run must produce verifiable answers;
- The research team must be prepared to rerun the application on the core counts when requested by the review panel;
- The applicants will use the assigned number of PNUs, as granted by NCF for one of their projects. In case this is not sufficient enough, applicant will notify NCF with details on the amount of PNUs required to do the scalability experiments for the Wim Nieuwpoort Award. NCF and SARA will demonstrate flexibility to enable the amount of PNUs for the purpose of the Wim Nieuwpoort Award to the applicant.

The following additional rules apply

- NCF and SARA have no obligation to allocate the award. (This may – as an example – be the case if there are no convincing applications, or if the number of competitors falls below three.);
- NCF and SARA have the right to add additional criteria after the call deadline if so required to come to a definite conclusion in otherwise equal applications;
- In case winners end winning ex aequo the award will be split accordingly but the travel arrangements for SC12 will remain in effect for each winner;

- The decision by NCF and SARA is final and can not be disputed or corresponded on;
- By participating in the award-call one accepts all rules concerning this award, including the criteria, the procedure and special rules.

Submitting an application

Applications can only be submitted via the electronic application system Iris. To gain access to the Iris system the main applicant must request an access code via the NWO website. Further information about Iris can be found on the NWO website. For technical questions please contact the Iris helpdesk (www.iris.nwo.nl). The application form should be uploaded in Iris as a PDF document.

Procedure

In order to select the winner of the Wim Nieuwpoort Award, the following procedure for 2011 has been defined:

- The call for proposals for 2011 will be released around April 1, 2011;
- NCF and SARA need to receive proposals before October 20, 2011. A template application document will be provided for proposals. This template must be used;
- Applications must be submitted through NWO's Iris system, as "a new application for computing time";
- Proposals will be screened on eligibility;
- Achievements will be reviewed by an independent review panel;
- The review panel will make a ranked list of proposals before November 1, 2011;
- The actual application and performance numbers that have been specified in the proposal on top of the list will be verified by SARA and NCF, and may have to be demonstrated;
- The winner will be announced at the SARA Superdag, early December 2011.

Criteria

The following criteria will be used by the review panel to rank the application achievements:

- Quality of the scientific research;
- Parallel scalability achievements of the implementation;
- Usability of the implementation in other scientific areas.

Composition of committee

A panel of peers will review the proposals. The review panel will be composed of members of NCF's scientific committee (WGS) and will be assigned after receipt of the proposals, to enable a most transparent review and decision process. Both SARA and the NCF office will be advisors to the review panel. The review panel may decide to consult external experts.

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