



Physical Sciences

i-Science for Astronomy (IsFast)

Collaboration track that brings together computer science and astronomy

Call for pre-proposals and proposals within the i-science research cluster

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1 Introduction

1.1 Invitation

The Board of the NWO Division for Physical Sciences invites researchers with an interest in the fields of computer science and astronomy to participate in the 2008 collaboration track IsFast. Guidelines for applicants are available in the appendix of this call.

NOTE: Submission of preliminary research proposals is possible only for participants of the "I-science for astronomy" workshop on data mining, distributed computing and visualization, hosted by the Lorentz Center in October 2008.

1.2 What is IsFast?

The IsFast collaboration track is an activity within the i-science research cluster. Innovative research at the interface of computer science and astronomy is in the core of this programme. Astronomy offers big challenges to computer science, which require fundamentally new methods or even abstractions.

I-science is focussed on empowering of the computer science discipline in the Netherlands and creation of synergy between involved research groups. This programme cultivates the research in the field of e-science aiming to bring up e-science in the Netherlands to a prominent position. The i-science programme text can be downloaded from the following link:

[http://www.nwo.nl/nwohome.nsf/pages/NWOP_6H3CD4_Eng/\\$file/I-science%20totaal.pdf](http://www.nwo.nl/nwohome.nsf/pages/NWOP_6H3CD4_Eng/$file/I-science%20totaal.pdf).

I-science is a cluster of three NWO research programmes focused on the following research areas:

- large scale distributed and parallel systems (research programme GLANCE),
- visualization (research programme VIEW) and
- collaborative projects between astronomy and computer science (research programme STARE).

Track description The IsFast collaboration track assumes the following activities:

- Step 1: "I-science for astronomy" workshop on data mining, distributed computing and visualization, hosted by the Lorentz Center;
- Step 2: preparing and submitting a preliminary research proposal (pre-proposal) for a personal research grant, supported by a team of senior researchers;
- Step 3: if invited, after qualifying through the pre-selection process, attending "Write it right" workshop (organized by NWO);
- Step 4: if invited, after qualifying through the pre-selection process, submitting a full proposal for a personal research grant.

It is required that participation in the IsFast collaboration track starts with attending the "I-science for astronomy" workshop (step 1). Only participants of this workshop are invited to submit pre-proposals for personal research grants, by means of this call. Pre-proposals must be supported by teams of the senior researchers (step 2). A committee will judge the quality of the pre-proposals after the workshop. The most promising pre-proposals will be selected. The selected candidates will be offered the opportunity to take part in the workshop "Write it right" (step 3) and to submit full proposals (step 4).

Budget

The IsFast collaboration track has at its disposal a budget of approximately 500,000 euros with which three personal PhD or postdoc grants can be awarded.

2 Aim

The aim of the IsFast collaboration track is twofold: (1) to promote the collaboration between computer science and astronomy, specifically in the area of advanced data mining, powerful distributed computing, data visualization and the virtual observatory; (2) to provide opportunities for young talented researchers.

IsFast aims to enhance collaborations between astronomy and computer science by nurturing cross disciplinary initiatives, with a particular focus on motivating students, PhDs and postdocs for innovative i-science developments. By means of group discussions during the "I-science for astronomy" workshop new original ideas for collaborative research projects will be mutually interchanged between the participants. The participants will further formulate these ideas into research pre-proposals. The most promising pre-proposals will be selected and the applicants will be invited to develop them into full proposals. The writing process will be monitored and nurtured. Full proposals will compete for three personal research grants. In this way young talented researchers will be given the chance to discover their talents for original and creative scientific work.

Example research issues

IsFast will connect and integrate the perhaps apparently dissociated fields: visualization, streaming and grid processing and database modelling of astronomical data, fundamental physical limits and the information theory such as encountered in the astronomical setting and the astronomical virtual observatory in action.

Some example issues, meant to provide the source of inspiration for fundamental cross bordering research subjects, are:

- visualization of multi-dimensional parameter space of very large data sets;
- pattern recognition using wavelets in astronomical images;
- image reconstruction for optical and infrared data for deriving very accurate photometric redshifts of billions of galaxies;
- extreme data modelling, using linking and backward chaining leading advanced reference systems;
- cosmological model simulation on supercomputers across the globe coupled by high speed networks;
- work flows for the astronomical Virtual observatory;
- eVLBI (European Very Long Baseline Interferometry).

3 Guidelines for applicants

3.1 Who can apply?

The preliminary research proposals (pre-proposals) and the full proposals can be submitted by master students, PhD students or postdocs working at universities or NWO or KNAW institutes. The (pre-)proposal is submitted by the main applicant, who is supported by a team consisting of senior researchers from at least one computer science and one astronomy research group.

Master students who want to submit proposals should either have obtained their Master's degree recently or be due to complete it before 1 May 2009.

PhD students who want to submit proposals should either have obtained their PhD degree recently or be due to complete it before May 2009.

Within the context of the collaboration track, IsFast strongly stimulates the use of available expertise of two scientific fields, computer science and astronomy. A combination of competencies can bring advantages to the given (pre-)proposal during the assessment process.

3.2 What can be applied for?

The applicants can apply for a personal PhD or postdoc research grant. The postdoc appointment is for two years. The primary conditions of NWO research grants are set out by the Collective Labour Agreement for Research Centres 2008-2010. The project grant further includes one personal bench-fee of 5000 euros for the future PhD student or postdoc, as a supplement that can be used to cover costs such as travel expenses, participation at (inter)national conferences and, if applicable, printing of the doctoral thesis.

For purchasing of a laptop or a PC an extra material budget of 2000 euros is available. In case that another type of computer equipment is necessary for the research, it can be applied for, within the same budget.

3.3 When can applications be submitted?

Participation in the workshop I-science for astronomy

Registration for participation in the "I-science for astronomy" workshop is open until 17 September 2008 (midday). The organizing committee assesses the applications and invites not more than 25 eligible candidates who can then take part in the workshop and consequently in the following steps. The invitation for the workshop is at the same time also an invitation for submission of preliminary proposals. Candidates who are eligible for the workshop will be invited not later than 22 September 2008.

Application of preliminary proposals

In the week of 13 to 17 October 2008, the "I-science for astronomy" workshop on data mining, distributed computing and visualization takes place at the Lorentz Center. During this workshop, new innovative collaborative research projects will be explored. The workshop participants are invited at the end of the workshop to

submit their pre-proposals. Deadline for submission of the pre-proposals is Monday 20 October 2008 (end of the day).

Subsequently, the organizing committee will select ten most promising pre-proposals, which will be nurtured into full proposals. Not later than 24 October 2008 the applicants will be informed whether they are invited to submit a full proposal or not.

Nurturing and application of full proposals

The nurturing process assumes mentoring by the aimed university collaborator(s), and participation in the workshop "Write it right" organized by NWO. This workshop is scheduled for 4 November 2008. For more information:

<http://itsaio.chem.uva.nl/wir/wirworkshop/index.php>

Full proposals must be submitted by **24 November 2008** midday.

3.4 Drawing up an application

All proposals (both the preliminary and the full proposals) must be written in English. The proposal must be comprehensible on its own. Further information about how to write an application is enclosed (see Appendices).

3.5 Specific conditions

It is required that the applicant during his project actively collaborates with both astronomical and computer science researchers.

3.6 Submitting an application

Applicants must use **Iris**, NWO's electronic grant application system. Please see <https://www.iris.nwo.nl> for instructions on how to use the system. For any technical problem please contact the Iris helpdesk (iris@nwo.nl).

An application must consist of two parts: a **fact sheet** listing key data on both the applicant and the proposal¹ and the **research proposal** itself. The fact sheet must be completed and submitted electronically using Iris. The research proposal must be sent at the same time as a PDF attachment.

The proposal should be a self-contained document, and reference to any internal documents should therefore be avoided. Only references to "open literature" are permitted. Should reference to a preprint prove unavoidable, applicants are requested to enclose a copy (in electronic form) so that the assessors can refer to it. Further information on how proposals should be structured is enclosed.

Guidelines for drawing and submitting an application can be found in the appendix.

¹ The **fact sheet** must be completed using only ASCII symbols (plain text). It will therefore not be possible to use formulae, italics etc. Though these can be used in the **research proposal**.

4 Assessment procedure

4.1 Procedure

As introduced in Chapter 1, there are four distinct steps in the IsFast collaboration track. For each of the steps a corresponding assessment procedure is identified. The assessment of pre-proposals and full proposals will be explained in the following paragraphs.

4.1.1 Assessment of pre-proposals

During the workshop participants will work on short research pre-proposals for personal research grants. These pre-proposals will be submitted to the I-science programme office. The IsFast assessment committee will rank the pre-proposals, based on the advice of the organizing committee. This ranking results in an invitation to submit a full proposal or a denial to enter the subsequent selection procedure.

A maximum of ten pre-proposals will be selected to be developed into full proposals.

4.1.2 Assessment of full proposals

Interview

Applicants will be invited for an interview, which gives an impression of the candidate and the research proposal. The interview round will be carried out by the assessment committee. The committee ranks the research proposals, and produces a written report. There will be no external reviewers involved in this process.

Final assessment by the Board of the NWO Physical Sciences Division

The Physical Sciences Board will decide on the allocation of grants, on the basis of the assessment committee's recommendations. The Board is authorised to reduce the available budget, on the advice of the assessment committee or otherwise, depending on the quality of the proposals received.

4.1.3 Follow-up action

If a grant is awarded, the university/institute will offer the candidate a PhD or a postdoc appointment as soon as possible (in any event by 1 June 2009). Any project that does not commence by this deadline will forfeit its grant. Arrangements will be agreed on for the submission of progress and final reports for funding.

4.2 Criteria

The following criteria will be used to assess the (pre-)proposals.

1. The merits of the candidate:
 - good previous performance
 - indications of a talent for academic research
 - motivation and persuasiveness
2. The merits of the detailed research proposal:
 - potential to make a significant contribution to the advancement of computer science in astronomical research

- feasibility in the light of:
 - available research time
 - availability and adequacy of the research infrastructure
 - merit of the research unit
 - available staff and financial resources
- originality of the topic
- innovative elements

3. Confirmation of the embedding.

4.3 Composition of committee

The pre-proposals will be assessed by the IsFast assessment committee with the advice of the organizing committee. The names of the organizing committee members are available at the i-science website www.nwo.nl/i-science. Members of the organizing committee may be involved in the preparation of pre-proposals by means of supporting candidates. Even more, during the workshop “I-science for astronomy” members of the organizing committee will have discussions with each potential candidate.

The assessment committee will be assigned for assessment of the pre-proposals and full proposals. The names of the assessment committee members will be published as soon as possible at the i-science website.

5 Other information

5.1 Contact

For further information please contact the i-science programme office:

- Dr. ir. Natasa Golo
- Phone: +31 (0)70 344 09 15
- Email: golo@nwo.nl

- Dr.ir. Christiane Klöditz
- Phone: +31 (0)70 344 05 61
- Email: kloditz@nwo.nl

5.2 Documentation

This call and other relevant documents can be downloaded from the i-science website www.nwo.nl/i-science.

6 Appendix 1: Guidelines for drawing up a preliminary proposal

Before you start to write your research pre-proposal, we ask you to carefully note the guidelines listed below.

Submitting the preliminary proposal

The preliminary proposal (as PDF-file only) must be in possession of the i-science programme office on Monday **20 October 2008** (end of the day). To submit your pre-proposals you must use Iris, the electronic grant application system of NWO. See <https://www.iris.nwo.nl>, where you will also find the Iris operating procedures and manual.

Submitting a preliminary proposal consists of four steps. In the first step you are asked, amongst other things, to provide a summary. This is a layman's summary, that:

- summarizes your research proposal in Dutch
- does not exceed 250 words
- is aimed at colleague-scientists from other disciplines
- can be published, if necessary.

In the second step you check your details. In the third step you add your collaborator(s). In the fourth step you add your pre-proposal in PDF-format as an attachment.

The pre-proposal must be written in English and it must be comprehensible by itself. Reference to any internal document must, therefore, be avoided. The proposal must contain the following:

1 Project details

1a Project title

As short as possible but nevertheless a specific title for the research for which the grant is requested (must be the same as entered in the project information screen).

1b Project acronym

Only if applicable (must be the same as entered in the project information screen).

1c Principle investigator

The name of the applicant.

2 Classification

You are requested to state the i-science research programme under which, in your opinion, your research falls. You can choose from the following three key research lines:

- large scale distributed and parallel systems (research programme GLANCE),
- visualization (VIEW research programme) and
- collaborative projects between astronomy and computer science (STARE research programme).

3 Composition of the research team

A short curriculum vitae of the applicant is required.

The name(s) of the additional person(s) who will be supporting and/or supervising the research, plus a description of their exact role in the project. Please state, if possible, their names, titles, expertise and university or institute.

4 Description of the proposed research

The maximum length of this section is 1,000 words.

Discuss the following aspects:

- research question(s) and the envisaged research outcomes
- research method
- scientific importance of the proposed research
- concrete applications at which the research is aimed and the relevance of these for astronomy
- relationship of the proposed research with similar research elsewhere.

Use the following categorization in this section (see the assessment criteria in 4.5).

4a Scientific aspects

4b Relation with astronomy

4c Relevance

5 Bibliography

A brief list of the references used in the pre-proposal.

7 Appendix 2: Guidelines for drawing up a detailed full proposal

Before you start to write your full proposal, we ask you to carefully note the following guidelines.

Drawing up the research proposals

All research proposals must be written in English. The research proposal may not be longer than 5,000 words, excluding the literature references, the budget and the summary.

The proposal must be a self-contained document, and reference to any internal documents must therefore be avoided. Only references to the "open literature" are permitted. Should reference to a preprint prove unavoidable, applicants are requested to enclose a copy (in electronic form) so that the assessors can refer to it.

Submitting the research proposal

The research proposals (as PDF-files only) must be in the possession of the i-science programme office not later than **24 November 2008 (midday)**. You must use Iris, the electronic grant application system of NWO, to submit your proposal. See <https://www.iris.nwo.nl>, where you will also find the Iris operating procedures and manual.

Submitting a proposal consists of five steps. In the first step you are asked, amongst other things, to provide a summary. For this you may use the summary of the pre-proposal in Dutch, with adjustments when necessary. In the second step you check your details. In the third step you add the final list of your collaborators.

In the fourth step you add your research proposal in PDF-format as an attachment.

Maximum length: 5.000 words for sections 6, 7 and 8.

Reference to any internal documents should therefore be avoided. Only references to the "open literature" are permitted. Should reference to a preprint prove unavoidable, applicants are requested to enclose a copy (in electronic form) so that the assessors can refer to it.

The structure of the proposal is as follows:

1 Project details

1a Project title

As short as possible but nevertheless a specific title of the research for which the grant is requested (must be the same as entered in the project information screen).

1b Project acronym

Only if applicable (must be the same as entered in the project information screen).

1c Principle investigator

The name of the applicant.

2 Project summary

A brief summary of the research proposal (250 words maximum), written in English. This is the scientific summary that is submitted to the reviewers.

3 Classification

You are requested to state the i-science research programme under which, in your opinion, your research falls. You can choose from the following three key research lines:

- large scale distributed and parallel systems (research programme GLANCE),
- visualization (VIEW research programme) and
- collaborative projects between astronomy and computer science (STARE research programme).

4 Composition of the research team

For this question you are requested to name the persons who are or will be involved in supporting and/or supervising the research, including a description of their exact role in the project. State for these persons the names with initials, titles, expertise and university or institution. You are requested to present this information in tabular form.

5 Embedding

In which research group will the applicant carry out the research? A written letter of support from the host university/institute senior researcher is required.

6 Description of the proposed research

Discuss the following aspects:

- scientifically formulated questions and the envisaged research outcomes
- research method
- scientific importance of the proposed research
- concrete applications at which the research is aimed and the relevance of these for astronomy
- relationship of the proposed research with similar research elsewhere.

Use the following categorization in this section (see the assessment criteria in 4.5).

6a Scientific aspects

6b Relation with astronomy

6c Relevance

7 Description of the proposed work plan

Note that a very detailed description of the research is required.

Planning

You are requested to indicate the planning of the entire research in periods. Which tasks can be differentiated and according to what time schedule will these be carried out?

Activities

You must provide a more detailed account of the activities that are expected to be carried out during the first two years within the framework of the proposed research

8 Bibliography

A brief list of the references used for preparing the proposal.

9 Requested budget

The primary conditions of NWO research grants are set out by the Collective Labour Agreement for Research Centres 2008-2010. This document is available at the following link: <http://www.wvo.nl/default.asp?cid=92&pid=76>.

Use the standard amount according to the NWO-VSNU contract agreements concerning grants starting from 1 April 2001. On 26 May 2008 these standard amounts (excluding the personal benchfee), in €, based on 1.0 fte, were

Position	PhD	Postdoc
Duration of appointment		
1 year	Not applicable	Not possible
2 years	Not applicable	122,843
3 years	Not applicable	Not possible
4 years	190,424	Not possible

The personal bench fee depends on the position requested. Both PhD's and postdocs, according to the NWO-VSNU contract agreements will be given a bench fee of 5,000 euros, based on 1,0 fte.

The material budget of 2,000 euros, intended for extra computer equipment, is applicable.

8 Appendix 3: Timetable

Activity	Date
Application for participation in this i-science programme activity	17 September 2008, midday
Pre-selection of the applicants	22 September 2008
Lorentz Center workshop	13-17 October 2008
Pre-proposals submission	20 October 2008, end of the day
Selection of pre-proposals	24 October 2008
Announcement of the selection	24 October 2008 (by phone)
"Write it right" workshop	4 November 2008
Deadline for proposal submission	24 November 2008, 12:00 pm
Assessment committee formulates advice	3 December 2008
Decision on allocation of the grants	5 December 2008
Announcement of the allocation	8 December 2008 (www.parallelwerelden.nl)
Granted projects start	January 2009 – June 2009