National centre for innovative software solutions in academic research

Information event
Call for Sustainable Software 2023
Welcome to the information event

Call for Sustainable Software 2023

“Enhancing successful research software”

https://www.esciencecenter.nl/calls-for-proposals/call-for-sustainable-software-2023-ss-2023/
Program

• 13:00 Netherlands eScience Center introduction and purpose of calls
• 13:15 Current call for proposals
• 13:30 Netherlands eScience Center expertise
• 13:45 Software management plan
• 14:00 Break
• 14:15 SURF research infrastructure
• 14:30 Q&A session
• 15:30 END
What is the eScience Center?

“The eScience Center is a research organization with the task to ensure that the Netherlands remains at the forefront of international research in applying research software to answer challenging, urgent research questions.

We fulfil this purpose by contributing to a robust national research community in which ultimately all investigators in all disciplines will be able to exploit advanced digital technologies.”

• national centre of expertise
• independent foundation (2012)
• NWO & SURF
• Research Software Engineers (RSEs)
• strategy 2021-2025: two ambitions
Which calls do we have?

Open eScience Call
- “Empowering researchers through digitally enhanced research”
- Information event 14 February
  - See recording and slides on our site

Call for Sustainable Software
- “Enhancing successful research software”
- Information event 21 February

Fellowship Programme
- “Be part of the eScience Center community”
- Information event 22 February

(we have more Calls, so subscribe to our newsletter!)
How do we work?

• we collaborate with researchers in projects of varying size
• projects are driven by research challenges faced by project partners
• we offer expertise (in-kind), not money (in-cash)
• we apply state-of-the-art solutions from computer science and digital infrastructure
• our research software, data and knowledge is reusable & open
• we encourage software sustainability, with all projects investing in communities
What are RSEs?

• specialized, high-end researchers (most have a PhD), who have
• a broad orientation + strong affinity with ICT, so that
• they understand both the research question and modern ICT solutions
  • (a) performing research focused on digital technologies and methodologies
  • (b) engineering software
• 70-80 RSEs are members of the eScience Center community
What is the objective of the SS Call?

What is the objective of the SS Call?

“This call for proposals supports communities of researchers who require their software to meet higher quality standards to ensure the continuity and advancement of their research in the longer term.”

Possible objectives:

• Make software applicable to other disciplines or research problems
• Improve accessibility (packaging, user interfaces, services)
• Enhance Technology Readiness Level
• Support formation of a community of researchers and developers
• Community building activities (governance, tutorials, hackathons)
What makes the SS Call special?

- fully in-kind (unlike NWO or Horizon Europe)
- Not research-question focused (unlike Open eScience Call)
- strong focus on community, workshops, and impact
- simplified application procedure
Current CfP: Who can apply?

• ‘Lead Applicant’
  • Affiliated to a Dutch research performing organization
  • In possession of a PhD
  • Holds a permanent contract
  • Ensure a minimal personal commitment to the project work for half a day per week on average for the duration of the project.

The LA is allowed to submit only one proposal in that capacity in this call.
Current CfP: What can be applied for?

<table>
<thead>
<tr>
<th>Requirements for LA</th>
<th>PhD</th>
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<tbody>
<tr>
<td>Permanent contract</td>
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<tr>
<td>LA commitment of on average half a day per week for the duration of the project</td>
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<tr>
<td>Software Management Plan</td>
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<table>
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<tr>
<th>Conditions projects</th>
<th>Duration: 18-24 months</th>
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<tbody>
<tr>
<td>Support from eScience Center RSEs: 2.0 PYR</td>
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<tr>
<td>Proposals supported by large research infrastructures and/or research consortia will be positively valued.</td>
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<tr>
<td>One substantial workshop</td>
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<td>Max. workshop expenses: 15.000 EUR</td>
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| Available projects                   | 2                                        |
Current CfP: Workshop

- A substantial mandatory workshop
- LAs should negotiate the format and costs of the workshops with the eScience Center.
- The eScience Center will cover the costs for the organization (up to a maximum)

Workshops are focused, participatory events with the aim of creating or fostering a community of researchers, including (potential) users, around the digital technologies and research software produced within the project.
Steps in procedure

- Information event
- Project proposition
  - No other documents needed
  - Submission via ISAAC
  - Eligibility check
  - Software and Data Health Check
  - Pre-selection of max 6 project propositions by eScience Center
- Full proposal
  - eScience Center co-author
  - Full Proposal document
    + Software Management plan
    + (Optional) Support letters
  - Submission via ISAAC
  - Eligibility check
  - Panel assessment (NWO)
    - Domain experts
    - Software sustainability experts
- Awarding
  - eScience Center Board
Software and Data Health checks

Part of the project proposition review

We check the accessibility and quality of existing data and software that the project builds on

Aims: prevent surprises, delay and disappointment after the project start
Pre-selection criteria (1/2)

• Eligibility check
  • Rules in “who can apply?”
  • Match with eScience center expertise

• Software and Data Health Check
  • Is this a good basis for the project as proposed?

• Match to call based on proposal Objectives (Call section 1.1)
  • making successful research software applicable to disciplines or research problems other than those from which the software first emerged;
  • improving the accessibility of successful research software (e.g. through packaging and release,
    • enhanced user interfaces, or research-software-as-a-service);
  • enhancing the Technology Readiness Level of successful research software;
  • further developing research software to support the formation of a community of researchers and developers;
  • engaging in community building activities (e.g. through setting up a governance model, creating tutorials,
    organizing workshops or hackathons, or improving documentation).
Call section 1.1) A competitive proposal should:

• make clear why an improvement of existing research software is demanded from the research community, and why this improvement requires the eScience Center's research software expertise

• explain the nature of, and the expected impact on, the research communities that requires the improved research software;

• include a clear strategy for the future maintenance and sustainability of the research software resulting from the project (including the involvement of relevant communities), and a realistic and concrete plan describing the measures that will be taken to ensure its usability and availability beyond the duration of the project itself.
Current CfP: Timetable

- 21 February 2023
  - information event
- **16 March 2023, 14:00 CET**
  - deadline project proposition
- March-April 2023
  - eligibility check, selection and notification
- April-May 2023
  - consultation meetings
- **8 June 2023, 14:00 CET**
  - deadline full proposal + software management plan
- June 2023
  - eligibility check
- September-October 2023
  - panel assessment
- November-December 2023
  - applicants informed of final decision
Our Technological expertise

Artificial Intelligence
- Machine Learning
- Image Processing

Analytics
- Big Data Analytics
- Text Analysis
- Visualization

Data processing
- Databases
- Real-time Data Analysis
- Interoperability and Linked Data

Computing
- Exploiting Hardware Accelerators
- High Performance Computing
  - Cloud Computing
  - Combining Simulations

Software quality
- Developing Workflow Technologies
- Improving Software Practices
- Advancing Software Sustainability
- Increasing Academic Impact
Infrastructural needs

• Infrastructural needs (if any), in terms of computing power, data storage capacity, fast data transfers, or otherwise
• Various solutions possible, including national infrastructure
• Facilities offered by SURF
All software contributed to by the eScience Center is added to the Research Software Directory

https://research-software-directory.org/
Research Software Directory

• Finding software
• Making software accessible
• Quickly judge relevance and usage
• Indicating return on investment

All software contributed to by the eScience Center is added to the Research Software Directory

www.research-software.nl
Software findability (for humans)

What is the software for?

The Earth System Model eValuation Tool (ESMValTool) is a community diagnostics and performance metrics tool for the evaluation of Earth System Models that allows for routine comparison of models and observations.

What problem does it solve?

- Facilitates the complex evaluation of ESMs and their simulations submitted to international Model Intercomparison Projects (e.g., CMIP).
- Standardized model evaluation can be performed against observations, against other models or to compare different versions of the same model.
- Test scope includes many diagnostics and performance metrics covering different aspects of the Earth System (e.g., radiation, clouds, carbon cycle, chemistry, aerosols, sea ice, etc.) and their interactions.
- Well-established analysis standard recipes reproduce specific sets of diagnostics or performance metrics that have demonstrated their importance in ESM evaluation in the peer-reviewed literature.
- High fidelity, new diagnostics, and new observational data can be easily added.
- Multi-language support: Python, OCaml, Julia... other open-source languages are possible.
- CT (CMOR compliant): data from many different projects can be handled (CMIP, observations). Other frameworks such as CDM are also non-compliant.

For which research domain?

Programming Language
- Python
- OCaml
- Julia
- Python

License
- Apache 2.0
Academic and social context

- Papers, presentations, blogs, videos ...
- Projects
- People
mcfly

Helps you find a suitable neural network configuration for deep learning on time series.

Development activity & how to cite

How to get started

Development activity

Software citation
Software Management Plans
How do we think about SMPs?
Practical guide to SMPs

• Core requirements for SMPs
• Different levels of management: **not all software is created equal!**
• **NOT** another bit of admin: software management leads to better science!

SMP core requirements

Engineering Focus
- Version control
- Packaging
- Testing
- Software Engineering quality

Project management focus
- Software licensing and compatibility
- Maintenance
- Repository
- Support/Resources (during the project)
- Citation
- Risk analysis

Figure 1. Software Management Plan requirements grouped by their focus.
What do SMPs look like?
Software Management Plan Template (Version 2023)

1. Please provide a brief description of your software, stating its purpose and intended user community.
   Some aspects to be considered:
   - What is the purpose of the software?
   - What is the software’s intended user community?
   - Why are you developing this and not reusing existing software?

5. What measures will be taken during the project to ensure the long-term sustainability of the software developed in the project? (max. 300 words)
   Some examples include:
   - A researcher or RSE from a research institute is allocated to the project to co-develop the software during the project and help maintain it afterwards.
   - A community will co-develop the software and help maintain it afterwards.
   - Organizing workshops and hands-on user training to create or extend a community around the software.
   - The software will be developed as part of an overarching software suite used in other (research) projects.
   - A commercial partner interested in exploiting the software is included as co-applicant on the basis of a concrete in-cash or in-kind investment.

6. What measures will be taken to support the software after completion of the project? (max. 300 words)
   Some examples include:
   - The software is hosted by an institute and a user support desk is made available for a certain period.
   - The software is integrated into a research infrastructure based on a large community.
   - A commercial partner or spin-off will continue the support and development of the software.

7. What resources are needed to ensure the long-term usability and availability of the software, and how will these resources be funded or obtained? (max. 300 words)
   Some examples include:
   - Storage or compute infrastructure to host the software.
   - RSEs to maintain the software and support the community that uses it.
   - A user support desk.

8. Are there other measures that will be taken to promote the software’s longevity? (max. 300 words)
   Some examples include:
   - Additional project proposals which will help to further develop the software.
   - The software is integrated into teaching in a course on the Bachelor or Master level.
   - Outreach through mainstream media such as newspaper articles, blogs, YouTube videos, tweets, etc.
We look forward to working with you!
“Empowering researchers across all disciplines through advanced research software”

Contact information

Programme Management
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NWO ISAAC helpdesk
The ISAAC helpdesk is available from Monday to Friday from 10:00 to 17:00 hours at +31 (0)20 346 7179.

You can also send your questions to isaac.helpdesk@nwo.nl. You will receive a reply within two working days.