Call for Proposals
Research Software Sustainability

A call for proposals under the funding programme

e-Research Technologies
**Background**

In every phase of scientific work, many disciplines use research software, for example to generate, process, analyse and visualise research data. In this sense, the term “research software” refers to the software applications and software libraries specially created for scientific knowledge gain.

Some of the research software that emerges from scientific projects has enormous potential for broad-based use that goes far beyond its original use in a single research project. Wherever this is the case, there arises a transinstitutional, (usually) discipline-specific, but no longer project-specific need for user-oriented further development, maintenance, curation, emulation, dissemination and archiving of this research software. Those services make research software sustainable and depend on appropriate technical and organisational infrastructures.

In this sense, research software sustainability requires the creation and funding of specific research infrastructures that go beyond mere storage, versioning and documentation. Services offered under such infrastructures may include provision, user support, maintenance, and quality assurance, among others.

The need to make research software available for the long term is particularly evident when research findings are to be reviewed or reproduced. This is even more important where research software is or can be used by a larger number of researchers from one or more disciplines.

**Objective of the call for proposals**

The objective of this call for proposals is the building and testing of infrastructures in order to make research software available and provide it in a sustainable manner to a larger audience. This funding initiative is designed to support the development of exemplary infrastructures, including the documentation of challenges and solutions. As best-practice examples, projects should have a positive impact on research-software development and on infrastructure facilities.

In order to make research software usable, necessary adaptations, user-oriented further developments, and quality assurance of the research software itself are also eligible for funding. The aim here is to improve the usability of software in line with discipline-specific requirements.

Projects can be proposed by researchers as well as by institutions in which research software will be developed to a significant extent (usually academic research institutions). Coordination with appropriate infrastructure facilities (e.g. data centre, library, etc.) should be sought, especially with regard to reliable provision, citation standards, long-term availability, and organisational structures.

The project should enable participating infrastructure facilities to develop generic concepts and models of information infrastructures for the sustainable provision, curation, dissemination and...
archiving of research software. The use of existing hosting services (e.g. GitHub, Sourceforge) can also be tested in this context. In particular, the project may develop business models to cover the cost of services, and elaborate the roles and responsibilities of institutions.

**Prerequisites for the funding of research software**

For the purposes of this call for proposals, research software is considered ready for broad-based use if it has reached the development status at least of a prototype or already that of a demonstrator (see table below).

Projects are not eligible for funding if they revolve around research software that has already reached the status of a product and/or research software for which infrastructures for sustainable provision, curation, dissemination and archiving have already been created. Projects that have not yet reached the development level of a prototype are also not eligible. Likewise, software for which commercial support is available cannot be funded.

Eligible projects must meet the following requirements at proposal time:

<table>
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<tr>
<th>Development status</th>
<th>Prototype</th>
<th>Demonstrator</th>
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<tr>
<td>Proof of use</td>
<td>Previous use of the software has been demonstrated in at least one research project (e.g. by a scientific publication where the relevant research software was instrumental in producing the results).</td>
<td>Previous use of the software can be demonstrated by means of numerous research projects and publications as well as by download figures. Its significance for a discipline can be confirmed by renowned researchers.</td>
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<tr>
<td>Proof of suitability</td>
<td>Description and justification of the suitability of the research software compared to already available alternative solutions (use cases and competition analysis).</td>
<td>Basic suitability of the software has been proven multiple times. Its unique features must be listed.</td>
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<td>Use potential</td>
<td>Foreseeably high demand for the research software, beyond the applicant institution, can be demonstrated, e.g. by an analysis of the research community or by written declarations of intended use.</td>
<td>Description of foreseeably substantial improvement of existing research software in terms of known user needs and scientific requirements that have already been established.</td>
</tr>
<tr>
<td>Usability</td>
<td>Not applicable</td>
<td>Description of existing barriers to use.</td>
</tr>
<tr>
<td>Cost estimate</td>
<td>Not applicable</td>
<td>Costs of rudimentary provision, curation, dissemination and archiving of the research software can already be demonstrated.</td>
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The project plan must describe the work packages towards the following objectives:

- Development objective: Use an actual-versus-target analysis to describe the necessary adjustments and quality-assured measures to the research software, starting with the development status of the research software at proposal time ("prototype" or "demonstrator").
- Usage objective: Describe which user groups will be served and how this can be achieved, starting with the usage status of the research software at proposal time.
- Suitability: Describe the further development of the unique features.
- Quality assurance: Plan suitable quality-assurance methods. Quantify necessary and appropriate expenses and specify them in the project plan.
- Only at the “demonstrator” level: Based on known usage barriers, present development plans for clear improvement of usage.
- Only at the “demonstrator” level: On the basis of a rudimentary cost estimate, describe financial planning and implementation of a sustainability concept for long-term operation after the project concludes.

Requirements for the project plan concerning the development of the infrastructural environment

In order to make the research software sustainable beyond the DFG-funded project duration, the following requirements apply to the sustainability concept to be developed and implemented in the course of the project:

- In the case of projects with previously only local use or low dissemination of the research software, an experience base with pilot users must be established during the course of the project in order to be able to reliably assess the demands and costs of long-term operation. This experience base can be used to prepare a sustainability concept to be implemented later.
- For projects starting at an advanced level of dissemination and use of the research software, the proposal must specify the expected costs of long-term operation and how long-term operation will be ensured after the project expires. In this case, implementation of the sustainability concept is expected by the end of the project.

The project plan must describe the following measures of the project:

- Measures for archiving, versioning, bug reporting / tracking and source code documentation
- Concept for explaining the software (e.g. manuals, screencasts, tutorials, etc.)
- Marketing measures to disseminate the software
- Suitable licensing model which ensures that the source code of the research software will be and remain openly available and free of charge for scientific purposes

General requirements
The challenges and solutions in the user-oriented development and curation of the research software as well as in the creation and testing of suitable infrastructures for the provision, dissemination and archiving of this research software must be documented.

The project should identify its own criteria for success and explain how these criteria will be used to measure success at the end of the project.

**Type and duration of funding**

Under this funding opportunity, all grant modules available in the e-Research Technologies Programme can be applied for (see DFG form 12.19 – 03/16). The funds must be justified on a project-specific basis. Applicants are expected to make an appropriate financial contribution of their own. This contribution is expected to be significantly greater for projects revolving around demonstrator software than for those with prototype software.

A first-time proposal may request funding for up to three years. A renewal proposal for a maximum of three additional years of funding can only be submitted if the sustainability concept developed with the first grant will be implemented and if a clear need for scientific use is demonstrable for the research software, which must have reached demonstrator status.

**Dates and proposal submission**

Interested parties are asked to submit a **short, non-binding declaration of intent (max. 3 pages)** by 1 February 2017 via e-mail to lis@dfg.de. The following information should be included:

- Brief outline of project objectives
- Name and proof of research software
- Names of participating institutions
- Brief description of previous use and suitability of the research software as well as of the demand (qualitative) and potential (quantitative) for use

**Grant proposals can be submitted until 4 April 2017 via elan.**

Proposals should be written in English.

The relevant forms and guidelines are available at:

- [www.dfg.de/foerderung/formulare](http://www.dfg.de/foerderung/formulare)

Please also refer to the Proposal Preparation Instructions – Project Proposals in the Area of Scientific Library Services and Information Systems (DFG form 12.01) as well as the guidelines on the funding programme e-Research-Technologies (DFG form 12.19).

**Contact at the DFG Head Office**
This call for proposals has been prepared in cooperation with the DFG’s Committee on Scientific Library Services and Information Systems and its Commission on IT Infrastructure, as well as the DFG divisions Scientific Library Services and Information Systems, Scientific Instrumentation and Information Technology, and Engineering Sciences 1.

For further information and advice, please contact:

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