

Policy on Use and Licensing of Research Software

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Policy on the use and licensing of research software

The development and use of research software¹ is a core activity at the GFZ German Research Centre for Geosciences. The high output of software at different levels of development is a particular characteristic of the GFZ's ensuing productivity. It is, therefore, an important strategic goal of the GFZ to capture the value of this software for the benefit of the centre and to secure its sustainable use. In doing so, the GFZ also fulfils its statutory task with respect to the exploitation of developed software. This policy specifies strategic measures and binding principles with regard to the use and licensing of research software at the GFZ.

1. Strategic measures for the valorisation of software

In order to increase transparency, quality, usability, and appreciation as well as to allow for the exploitation of added value in the field of software development, appropriate framework conditions will be created with the entering into force of this policy. In this respect, the following measures, which shall be concretized and implemented step by step, are planned:

- a) A systematic recording of all activities in the field of software development within the sections will be conducted and the collected information will be transferred to the internal recording systems of the GFZ (software index, QUIBS). Software of particular relevance for external users will be highlighted.
- b) The available software will be pooled in a software repository and made accessible to internal and external users via a portal created for this purpose. The portal serves as a showcase for significant software products of the GFZ and complements the existing publication procedure. Software developments of particular importance for research pertaining to System Earth and the geosciences in general will, in this way, become visible as GFZ products, increase application and use, and shall, in turn, result in a highly relevant contribution to knowledge and technology transfer.
- c) Based on section-internal resource planning, the resources necessary for the upkeep, maintenance and user-support of the relevant software developments at the GFZ will be taken into account, in order to enable the desired sustainability.
- d) Monetary incentives will be introduced to promote the registering and the further development of proprietary and commercially usable software.
- e) Non-monetary incentives shall be strengthened at all levels. In particular, this applies to the recognition of performance associated with software development. The aim is to increase appreciation of high-quality research software and to ensure sustainable use.
- f) DOIs will be minted for certain versions (releases) of software developments so that these can be accounted for in the evaluation of performance.

¹ Research software comprises software developed and / or used for research purposes. If it is referred to „software“ in this document, it means research software.

2. Principles for the development, use, exploitation and licensing of research software

With regard to the development and use of software at the GFZ and for the exploitation and licensing for use by external third parties, the following principles must be taken into account:

2.1 Development of Research Software at the GFZ

Already during the development of research software at the GFZ or on behalf of the GFZ, highest care must be taken to ensure that all necessary rights are granted to the GFZ in a clear and comprehensive manner. When integrating or modifying Free and Open Source Software (FOSS), third party software is to be used preferably under so-called "permissive licenses" without a copyleft effect such as Apache, MIT and BSD. In this way further, future application options shall be kept open for the GFZ e.g. in projects with third parties or in the case of possible commercial exploitation. For this reason, the involvement of the relevant contact persons (see 3.1) should be considered at an early stage.

2.2 Use of Research Software at the GFZ

For each research software used at the GFZ it must be clarified if all necessary rights of use (licences) exist i.e. corresponding rights must be granted with respect to both purpose and scope (number of user licences, the right to reproduce, distribute and modify, etc.). The general conditions of the underlying licensing must also be clarified, e.g. if special obligations are associated with use. Missing rights of use have to be obtained from the software developers and –if the development took place within the scope of an employment relationship with another employer– from the respective employer. For new employees at the GFZ this implies that they may only use the software and source code brought with them in the course of their work at the GFZ if the GFZ itself has been granted all the necessary rights of use. This also applies to the transfer of software which is passed on to the GFZ by third parties, e.g. for the purpose of further support and maintenance.

2.3 Exploitation of research software

Exploitation, in the context of technology transfer, is a task established in the foundation statutes of the GFZ. For reasons of budgetary law, the GFZ must also ensure that potentially economically interesting software products are commercially exploited as assets of the GFZ. Before software developed at the GFZ is published as FOSS or made available to external third parties for use, the GFZ must examine the potential of commercial exploitation. This assessment should be carried out as early as possible by the developers together with the department Transfer & Innovation. If research software is to be published and distributed, the process described in the Research Software Guidelines (see 3.2) must be followed in order to ensure the involvement of other relevant contact persons in good time (see 3.1). Important evaluation criteria relating to potential for commercial exploitation:

- Market, competition, customer needs and innovation level
- Technological maturity and professionalism of software development
- Protection and business model
- Exploitation channel.

A prerequisite for commercial use is the protection of the software through appropriate licenses, patents if applicable, and –if appropriate– protection as a trade secret. Accordingly, the spectrum of variants of commercial exploitation ranges from commercial license agreements for software patents to service offers such as Software as a Service (SaaS) based on FOSS. At the GFZ, the following exploitation strategies have been established and have already been successfully pursued:

- Individual commercial license agreement for software patent/copyright and/or know-how,
- Licensing of proprietary software via standardized general terms and conditions
- Licensing of commercial use without maintenance or further development on the part of the GFZ,
- Licensing and maintenance of the software within the framework of a "license and use agreement" including a provision for further co-development,
- Professional further development of software and adaptation to customer needs as a service of the GFZ, associated institutions or partners,
- Licensing or transfer of previously unpublished software rights to a spin-off,
- dissemination of a combination of FOSS and proprietary software in the context of a spin-off,
- Business models based on *freemium/premium offerings* for FOSS in the context of a spin-off,
- Business models with services (e.g. training offers, installation, maintenance, adaptation) as *SaaS* based on FOSS.

2.4 Licensing - granting of rights of use to third parties

Any research software developed at the GFZ which is used beyond a purely GFZ-internal application must be licensed for use by external third parties, i.e. corresponding rights of use must be granted to these third parties. Exclusions of liability and warranty, obligations of third parties and additional agreements have to be covered in addition to other relevant aspects.

The granting of rights of use can in principle take place as a FOSS license for the general scientific community or as a classic license agreement with individual third parties for closed source or proprietary software.

In the ideal case, no licensing requirements or license dependencies result from the development of software, so that GFZ's own software can be protected with a suitable license in coordination with the respective contact persons. If there are license dependencies, it may be necessary to revise software, e.g. by using a suitable Open-Source solution or by implementing the respective software components as in-house development.

The following applies if software is to be distributed or made available under FOSS licenses:

- In principle, it is recommended to license software under the **European Union Public License (EURL)** using the latest version according to the specifications stated in the GFZ Research Software Guidelines.
- Should it not be possible to use the EURL due to licensing requirements or license dependencies, the following FOSS licenses in their latest versions are recommended:
 - **Strict Copyleft Licenses** (according to which all works derived from the original software are conditional upon the terms of the original license):
 - **GNU Affero General Public License (AGPL)**
 - **GNU General Public License (GPL)**
 - **Licenses with restricted Copyleft** (this generally requires the transfer of the modified, derived or subsequent software under the original FOSS license; under certain conditions, however, modified program parts can be placed under proprietary license conditions):
 - **GNU Lesser General Public License (LGPL)**
 - **Eclipse Public License (EPL)**
 - **Licenses without copyleft effect/missive** (according to this, there are no specifications regarding the licensing of derived software):
 - *Apache License*

- c) For joint software development with colleagues from other Helmholtz centers in the Research Field Earth and Environment, there is a license provided specifically for this purpose:

The application of the **Helmholtz Earth and Environment Software Infrastructure License (HEESIL)** enables the sharing and joint development of software within the Research Field Earth and Environment. The license allows an uncomplicated collaboration with colleagues from other Helmholtz centers within the research field while maintaining the software protection and for a later joint clarification on the application of a suitable license. A use by other Helmholtz centers outside the Research Field Earth and Environment as well as a transfer to other third parties is still possible at a later time and at any time after agreement of the centers involved in the development.

If and which actual licenses are to be selected depends on the license dependencies of the third-party software used and the chosen exploitation strategy and must be identified using the process specified in the Research Software Guidelines (see 3.2).

3. Support and further information

In general, the Working Group "Software Development at the GFZ", as an expert group at the GFZ, is available for consultation on all questions regarding the utilization, licensing and exploitation of research software. Information on the members of the working group can be found on the intranet (<http://intranet.gfz-potsdam.de/organisationseinheiten/arbeitskreise/softwareentwicklung-am-gfz/>).

3.1 Contact persons for support

In the case of clarification of license dependencies and contractual regulations within projects and partnerships, confidentiality agreements, the granting of limited rights of use, exclusion of liability and warranty or similar issues, it is necessary to consult with the Legal Department and the eScience Center before passing on any software (e-mail to softwarelegal@gfz-potsdam.de)

For questions regarding property rights (e.g. software patents), the establishment of market maturity, suitable business models and general possibilities for commercial dissemination, the GFZ Transfer & Innovation Department should be contacted (e-mail to ti@gfz-potsdam.de).

For development of a suitable licensing model, the Technology Transfer, Legal Department and eScience Center coordinate their efforts and jointly issue recommendations for further action. In principle, the three contacts mentioned above should be involved as early as possible in order to determine the most fitting licensing strategy with respect to the planned application

3.2 Further information

This policy is supplemented by further documents which must also be carefully considered before research software is distributed and made available. Specific information and a list of additional materials can be found in the following document:

- *Guidelines on Research Software - Development, use and dissemination*²

² <https://doi.org/10.48440/gfz.5.2.2023.004>