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German Reproducibility Network
A new platform for Open Science in Germany

Under the heading of Open Science, a variety of activities can be observed in recent years, all of which are dedicated to the **cultural change** in scientific methods, communication, and career building. With an increasingly unrestricted access to publications, research data and research software, the process of generating knowledge should be made transparent as possible so that its quality can be ensured. **Replicability and reproducibility are the core of science.** Even if different communities use these terms differently, the recognition that these aspects need more attention is commonly shared and individual communities can learn a lot from each other. **Networking** is therefore of great importance. The newly founded initiative **German Reproducibility Network** (GRN) wants to be a platform for such networking and targets all of the above initiatives.

GRN's MISSION: *promote quality, robustness and transparency of research in Germany.*

Connect local or topic centred open science groups and initiatives

Support scientists in open science practise by education and training

Advise institutions how to embed open science in their work

Representing the open science community toward other *stakeholders*

Cultivate contacts to *funding organizations, publishers* and other *actors in the scientific landscape*

GRN is embedded in a growing network of reproducibility networks.

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The software developed and used in the research process plays an increasingly important role in scientific work. Therefore, **software quality directly influences the quality of the research results**, which can only be traced if the code used to create or analyze data are available and developed in an open and sustainable way. A growing number of national and international communities of Research Software Engineers (**RSE**), such as **de-RSE in Germany**, make an important contribution to reproducibility by

- Ensuring and increasing the **recognition** of software and developers of scientific software
- Spreading practice and improving the tools for **publication and citation** of software
- **Education and training** of the scientists to improve quality and reuse of research software

Different disciplines face different challenges when it comes to ensuring reproducibility of workflows. Furthermore, they are at different stages of development when it comes to availability and usage of good practices regarding computational workflows. Therefore, **discipline and community-specific initiatives** are important to answer the specific needs of communities of practices. Such initiatives and projects can ensure appropriate communication and leverage existing networks. They are potential members of GRN and multipliers of its mission. The following project and initiative are advancing the state of reproducibility in their fields and will be evaluating a membership with GRN.

Opening Reproducible Research (**o2r**) works on exploiting technological advances for more reproducible scholarly communication beyond PDFs in geography and geosciences. Tools such as *containerisation* are often inaccessible to domain experts who are not programmers. o2r makes the creation of research compendia, which capture data, software, text, and interactive figures and maps, much easier and works with publishers to improve scholarly communication.

Reproducible AGILE established a reproducibility review for accepted papers at the community-driven annual conference of the Association of Geographic Information Laboratories in Europe in the area of GIScience. Based on *Reproducibility Guidelines*, authors and reproducibility reviewers collaborate to increase understandability, transparency, and reusability of computational workflows and to provide proper credit and incentives.