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How to achieve FAIR software publications with HERMES

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RSEs are required to publish reproducible software to satisfy the FAIR for Research Software Principles. To save RSEs the arduous labor of manual publication of each version, they can use the tools developed in the HERMES project. HERMES (HElmholtz Rich MEtadata Software Publication) is an open source project funded by the Helmholtz Metadata Collaboration. The HERMES tools help users automate the publication of their software projects and versions together with rich metadata. They can automatically harvest and process quality metadata, and submit them to tool-based curation, approval and reporting processes. Software versions can be deposited on publication repositories that provide PIDs (e.g. DOIs).

In this SkillUp, we explore the publication workflow. We will guide through the requirements of FAIR software with an example and best practices. We demonstrate HERMES as a tool to simplify these processes. We teach RSE participants to set up the HERMES publication workflow for their own software projects. During the deRSE24 we already held a workshop to introduce HERMES and its possibilities. This time we can present the new feature "hermes init" that reduces the workload and the proneness to errors. Therefore participants can easily follow and independently integrate HERMES for their own projects in the future.

The workflow follows a push-based model and runs in continuous integration (CI) infrastructures such as GitHub Actions or GitLab CI. This gives users more control over the publication workflow compared to pull-based workflows (e.g. the Zenodo-GitHub integration). It also makes them less dependent on third-party services. Rich descriptive metadata is the key element to useful software publications. The workflow harvests existing metadata from source code repos and connected platforms. Structured metadata could for example come from a Citation File Format file or a CodeMeta file. Unstructured data could be found everywhere, especially in the code or the README file. HERMES processes, collates and optionally presents the gathered data for curation to keep a human in the loop. In curation, output can be controlled and errors reduced. After approval, HERMES prepares the metadata and software artifacts for automatic submission to FAIR publication repositories.

In the course of the SkillUp, RSEs are enabled to employ HERMES for their own projects through following a live coding session on an example project. We will address any problems that arise along the way and help participants solve them. Finally, we will discuss potential improvements of the HERMES workflow based on the hands-on experience participants made.

The SkillUp should last about 60 min. The target audience is everyone who deals with research software. Researchers, developers, curators and supervisors are welcome as well as everyone interested. No specific expertise or previous experience is needed. We work with GitHub or GitLab, and use their continuous integration tools, so some previous experience with these platforms may be helpful.

I want to participate in the youngRSE prize

no

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