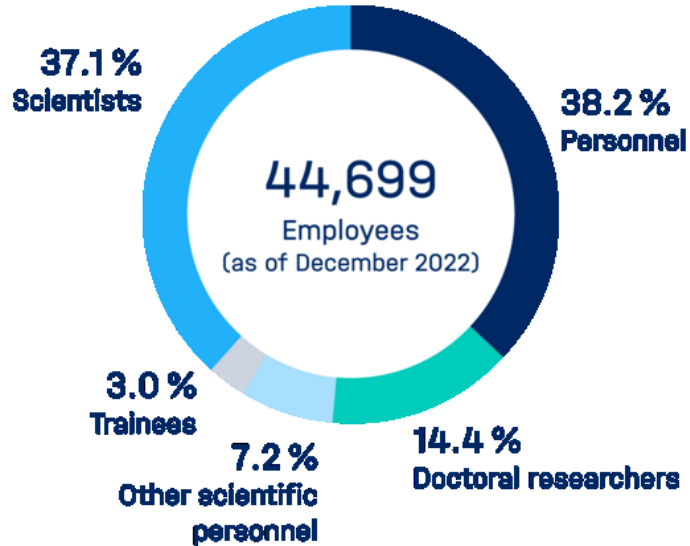


Workshop Material Creation and Maintenance – An Experience Report from the HIFIS Team

Tobias Schlauch <Tobias.Schlauch@DLR.de>
German Aerospace Center (DLR)

TEACH 4
HIDA Hub, Berlin, 22.11.2024

The Helmholtz Association



<https://www.helmholtz.de/en/about-us/helmholtz-centers/>



HIFIS in a Nutshell

- [Helmholtz Federated IT Services](#) (HIFIS) is one of [the 5 Helmholtz Incubator Platforms](#) aiming to establish a common information and data science framework for Helmholtz
- **Mission:** HIFIS builds and sustains an excellent IT infrastructure connecting all Helmholtz research fields and centers.
- **Goals:**
 - Make IT services of centers easily available to all in Helmholtz
 - Support the RSE communities within Helmholtz

HIFIS Software

**Integrated
Software
Development
Infrastructure**

**Education &
Training**

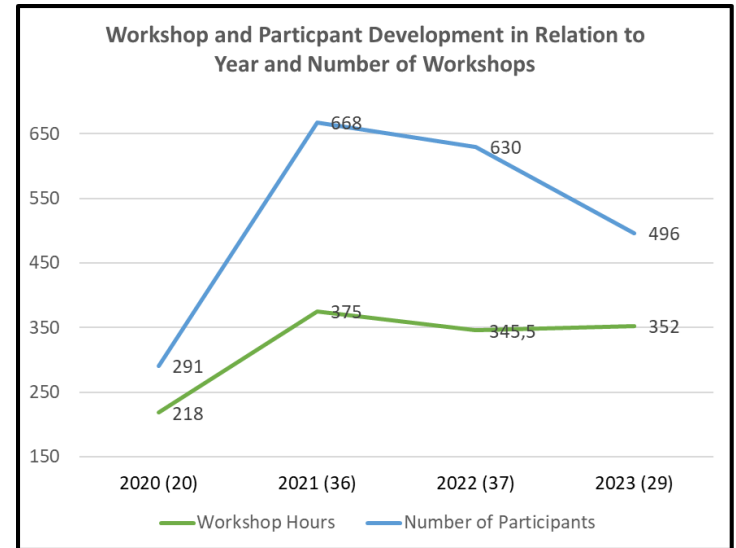
Consulting

**Community:
Software Award
& Research
Software
Directory**

For more information, please see: <https://hifis.net/services/software-overview.html>

HIFIS Education & Training

- [HIFIS Education & Training](#) offers courses, materials, and workshops to help you in getting started, or to boost your research software engineering practices.
- The big picture:
 - Offering regular standard workshops focusing on the topics Git, GitLab, Python, Good RSE practices
 - Fulfilling special workshop requests if possible
 - Most workshops are interactive online courses offering a mix of presentation, live coding and exercises
 - Personnel: Two full-time trainer (DLR, HZDR) + many instructors and helpers
 - Publication of workshop materials as OER



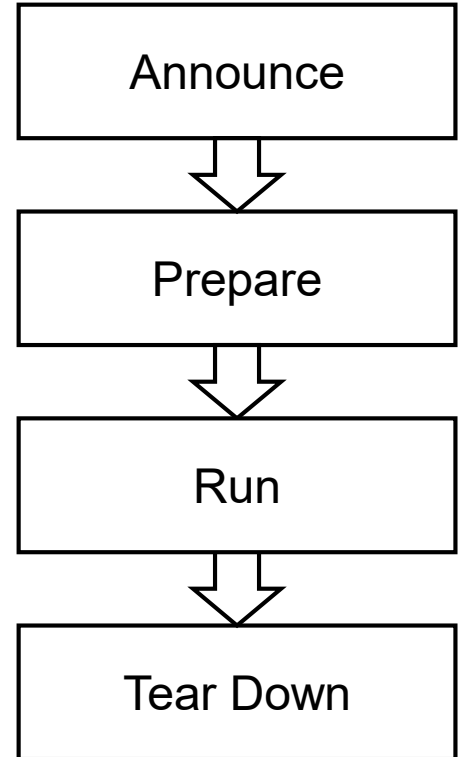
Typical Tools Used Across the Workshop Lifecycle

- **Announcement and advertisement:**

- [Indico \(HIFIS\)](#) for main announcement of workshop + many more aspects of its management such as registration, surveys, ...
- [HIDA Course Catalog](#) and [HIFIS Website](#) to support advertisement

- **During the workshop:**

- [Gather Town](#) for video conferencing, screen sharing, chat, group work, ...
- [HedgeDoc Notes \(HIFIS\)](#) for sharing information, presentation, interactive exercises, ...
- [Mattermost \(HIFIS\)](#) for instructor chat



The Road to a Common HIFIS Workshop Materials Template

- Every workshop has its *dedicated maintainer* which has a high degree of freedom determining further development of the workshop including its materials
- Early agreement on applying a [Docs as Code approach](#) and a [the Carpentries](#) style lesson structure for maintaining the workshop materials
- Over time, a more structured template-based approach was needed:
 - HIFIS website as new main publication target
 - Better starting point for new workshops
 - Improving collaboration through more recognizable structure and more standardized technology stack
 - Avoiding solving problems multiple times

Common Technology Stack and Template Details

- **Common Technology Stack:**

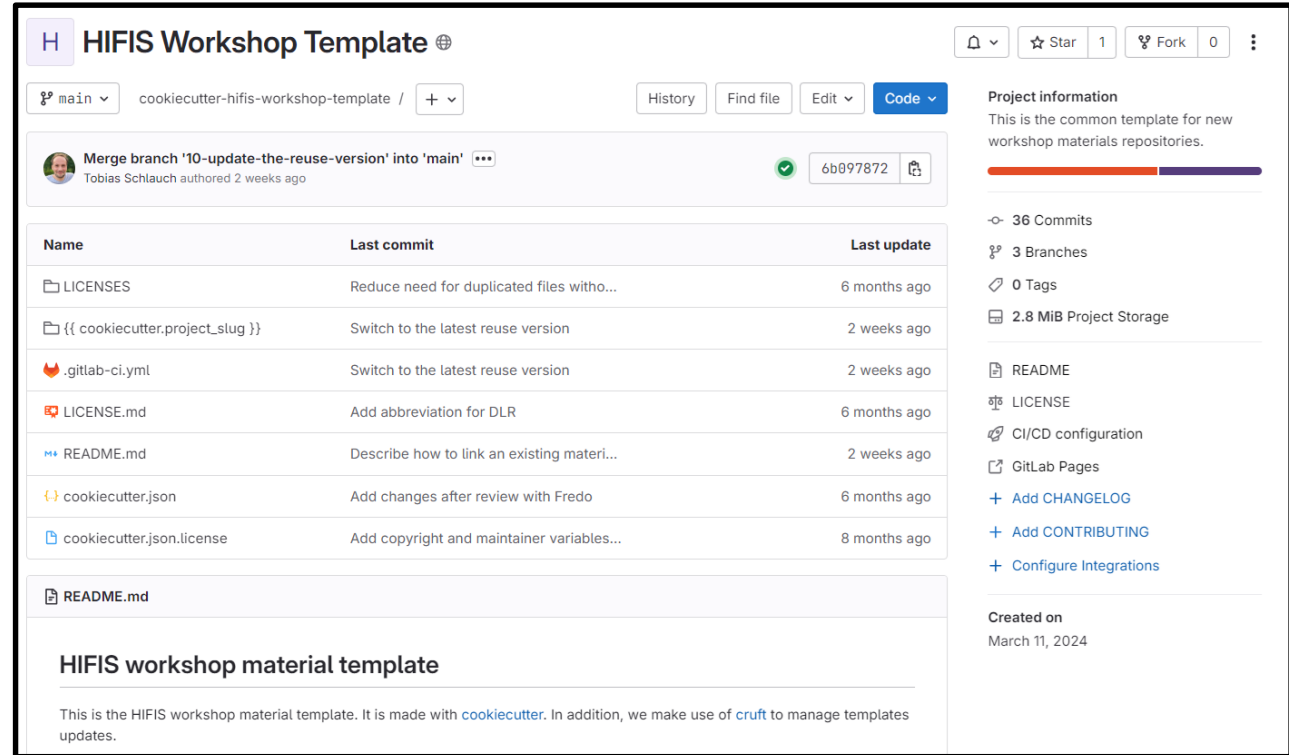
- [Markdown](#) for writing content
- [MkDocs](#) for website generation
- [Helmholtz Codebase \(GitLab\)](#) for version control, collaboration and build automation

- **[HIFIS Workshop Template:](#)**

- Powered by [cookiecutter](#) (actual template engine) and [cruft](#) (synchronization of template changes)
- Provides common MkDocs website template and workshop material structure
- Reusable README and contribution guidelines
- GitLab CI/CD build pipeline for validation and website deployment

Live Demo: The HIFIS Workshop Template

- Overview
- Getting started
- Experiences



The screenshot shows the GitLab interface for the repository 'HIFIS Workshop Template'. At the top, there's a navigation bar with the repository name, a search icon, and buttons for 'Star' (1), 'Fork' (0), and a menu icon. Below the navigation bar, there's a breadcrumb trail: 'main' > 'cookiecutter-hifis-workshop-template' > '+'. There are also buttons for 'History', 'Find file', 'Edit', and 'Code'. A recent commit is shown: 'Merge branch '10-update-the-reuse-version' into 'main'' by Tobias Schlauch, authored 2 weeks ago, with a commit hash of 6b097872. Below the commit, there's a table of files and their last commit information.

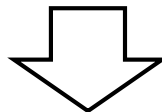
Name	Last commit	Last update
LICENSES	Reduce need for duplicated files witho...	6 months ago
{{ cookiecutter.project_slug }}	Switch to the latest reuse version	2 weeks ago
.gitlab-ci.yml	Switch to the latest reuse version	2 weeks ago
LICENSE.md	Add abbreviation for DLR	6 months ago
README.md	Describe how to link an existing materi...	2 weeks ago
cookiecutter.json	Add changes after review with Fredo	6 months ago
cookiecutter.json.license	Add copyright and maintainer variables...	8 months ago

Below the table, there's a section for 'README.md' with the title 'HIFIS workshop material template'. The text below the title reads: 'This is the HIFIS workshop material template. It is made with [cookiecutter](#). In addition, we make use of [cruft](#) to manage templates updates.'

On the right side of the repository page, there's a 'Project information' section. It contains a description: 'This is the common template for new workshop materials repositories.' Below the description, there's a progress bar. Further down, there are statistics: '36 Commits', '3 Branches', '0 Tags', and '2.8 MiB Project Storage'. There are also links for 'README', 'LICENSE', 'CI/CD configuration', and 'GitLab Pages'. At the bottom of the right sidebar, there's a 'Created on' section with the date 'March 11, 2024'.

Specific Challenges: Optimize Rendering for MkDocs and HedgeDoc

```
{% filter warning_block(title="Configure ...", ...) %}  
...  
{% endfilter %}
```



+ Python Filter Function

Configure username and email consistently

Your username and email address are part of the version history of your repository. Please make sure that you configured them consistently across your (client) systems. Usually, you do not want to change this information later because changing it potentially breaks the version history for your collaborators.

MkDocs

Configure username and email consistently

Your username and email address are part of the version history of your repository. Please make sure that you configured them consistently across your (client) systems. Usually, you do not want to change this information later because changing it potentially breaks the version history for your collaborators.

HedgeDoc

Specific Challenges: Development Process

- Docs as Code approach using GitLab
- Pipeline performs basic validation
- “Visual check” via directly attached artefacts and GitLab pages

☰ ... / Merge requests / !20

Draft: Resolve "Rework episode 10"

Open Tobias Schlauch requested to merge 34-rework-episode-10 into main 8 minutes ago

Add a to do << Expand

Overview 0 Commits 1 Pipelines 2 Changes 1

Closes #34

👍 0 🗨️ 0 😊

✅ Pipeline #462986 passed
Pipeline passed for 50944e4f on 34-rework-episode-10 just now

Download artifacts
check_website:archive
check_pad:archive

Specific Challenges: Managing Copyright and License Information

- Challenging due to various copyright holders and different license types
- [REUSE SOFTWARE](#) for (standardized) annotation and validation of copyright and license information

```
1 {% if not is_pad %}
2 <!--
3 SPDX-FileCopyrightText: 2019 The Software Carpentries
4 SPDX-FileCopyrightText: 2020 German Aerospace Center (DLR)
5
6 SPDX-License-Identifier: CC-BY-4.0
7 -->
```

Copyright and License Metadata per File

License

The copyright of this work is owned by different legal entities:

- The original `swcarpentry/git-novice: Software Carpentry: Version Control with Git, June 2019` lesson has been created by the [Software Carpentries](#) and was released under [CC-BY-4.0](#).
- The German Aerospace Center reworked the lesson and extended it with GitLab-specific episodes.
- The Helmholtz-Zentrum Dresden-Rossendorf (HZDR) contributed further GitLab-specific episodes.

This work is licensed under multiple licenses:

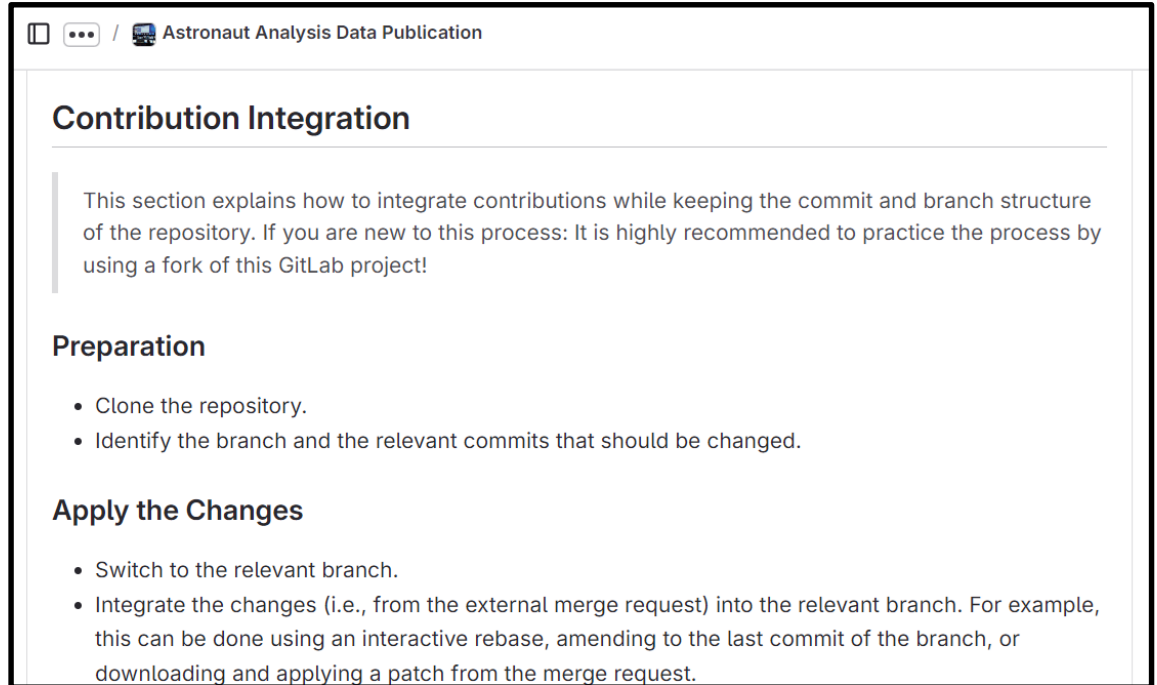
- The episodes are licensed under [CC-BY-4.0](#).

Copyright and License Summary

Name
📁 LICENSES
📁 custom_theme
📁 setup
📁 workshop_materials
🔗 .cruft.json
📄 .cruft.json.license
📄 .gitignore
🔗 .gitlab-ci.yml
📄 CONTRIBUTING.md
📄 LICENSE.md

Specific Challenges: Maintaining Code Examples

- *Smaller examples* are managed directly in the workshop materials
- *Larger example projects* demonstrating specific development steps require much more effort and are managed in their own repository
- Example: [Astronaut Analysis](#)



The screenshot shows a web browser window with the address bar displaying 'Astronaut Analysis Data Publication'. The main content area is titled 'Contribution Integration' and contains the following text: 'This section explains how to integrate contributions while keeping the commit and branch structure of the repository. If you are new to this process: It is highly recommended to practice the process by using a fork of this GitLab project!'. Below this text are two sections: 'Preparation' and 'Apply the Changes', each with a bulleted list of instructions.

Contribution Integration

This section explains how to integrate contributions while keeping the commit and branch structure of the repository. If you are new to this process: It is highly recommended to practice the process by using a fork of this GitLab project!

Preparation

- Clone the repository.
- Identify the branch and the relevant commits that should be changed.

Apply the Changes

- Switch to the relevant branch.
- Integrate the changes (i.e., from the external merge request) into the relevant branch. For example, this can be done using an interactive rebase, amending to the last commit of the branch, or downloading and applying a patch from the merge request.

Summary

- [HIFIS Education & Training](#) regularly offers interactive online workshops focusing on various RSE topics
- Maintaining workshop materials is challenging and required a much more structured, standardized approach over time
- First results of the [cookiecutter](#) and [cruft](#) based template look promising but there is still some way to go:
 - Migration of the standard workshop materials is not finished yet
 - More experience with updating existing template projects is needed
 - More optional template features are planned

Thank you!



What are your Questions?

Email: Tobias.Schlauch@dlr.de

Mastodon: <https://norden.social/@schlauch>

HIFIS Mattermost: [@schlauch](#)

Copyright and License Information

All content is © German Aerospace Center and licensed under [CC-BY-4.0](#) with the following exceptions:

- HIFIS logo, slide layout © HIFIS, [CC-BY-4.0](#).
- DLR logo, slide 1, © German Aerospace Center. All rights reserved.
- Employee statistics, slide 2, © Helmholtz Association of German Research Centres. All rights reserved.
- Helmholtz overview map, slide 2, © Helmholtz Association of German Research Centres. All rights reserved.
- Philae landing on comet 67 P/Churyumov-Gerasimenko, slide 15, © German Aerospace Center. [CC-BY-3.0](#).