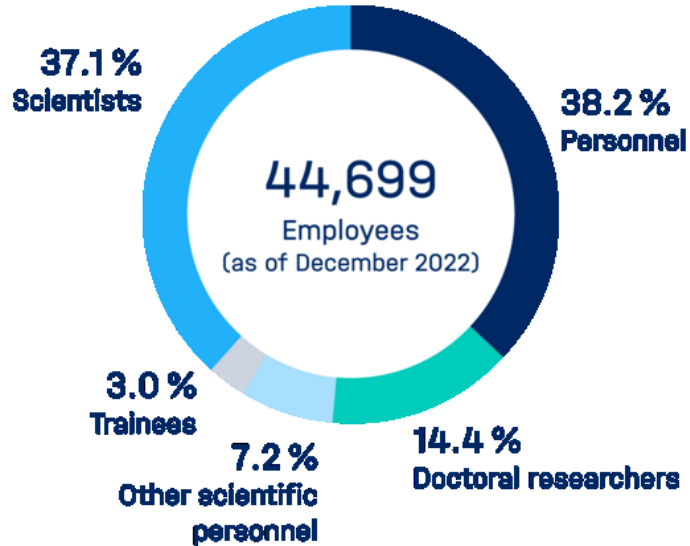# Workshop Material Creation and Maintenance – An Experience Report from the HIFIS Team

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TEACH 4
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The Helmholtz Association

37.1 % Scientists

38.2 % Personnel

44,699 Employees (as of December 2022)

3.0 % Trainees

7.2 % Other scientific personnel

14.4 % Doctoral researchers

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

GEOMAR Helmholtz Centre for Ocean Research Kiel

Deutsches Elektronen-Synchrotron DESY

Helmholtz-Zentrum Hereon

Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research

Max Delbrück Center

Helmholtz-Zentrum Berlin für Materialien und Energie

Helmholtz Centre for Infection Research

Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences

Forschungszentrum Jülich

German Aerospace Center

Helmholtz Centre for Environmental Research – UFZ

Helmholtz-Zentrum Dresden-Rossendorf

German Center for Neurodegenerative Diseases

GSI Helmholtzzentrum für Schwerionenforschung

CISPA – Helmholtz Center for Information Security

German Cancer Research Center

Karlsruhe Institute of Technology

Helmholtz Munich

HIFIS

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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

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

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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

Workshop and Particpant Development in Relation to Year and Number of Workshops

Data points — Number of Participants: 2020 (20): 291, 2021 (36): 668, 2022 (37): 630, 2023 (29): 496

Data points — Workshop Hours: 2020 (20): 218, 2021 (36): 375, 2022 (37): 345,5, 2023 (29): 352

Legend: Workshop Hours — Number of Participants

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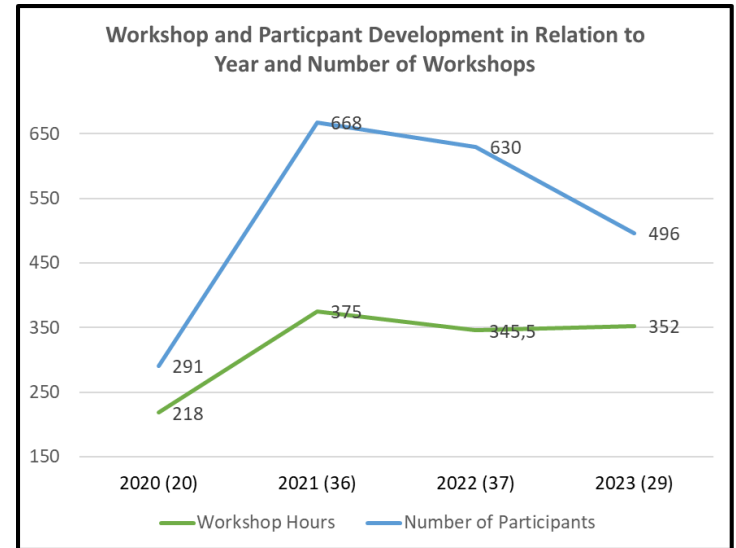
Typical Tools Used Across the Workshop Lifecycle

- **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

Announce

↓

Prepare

↓

Run

↓

Tear Down

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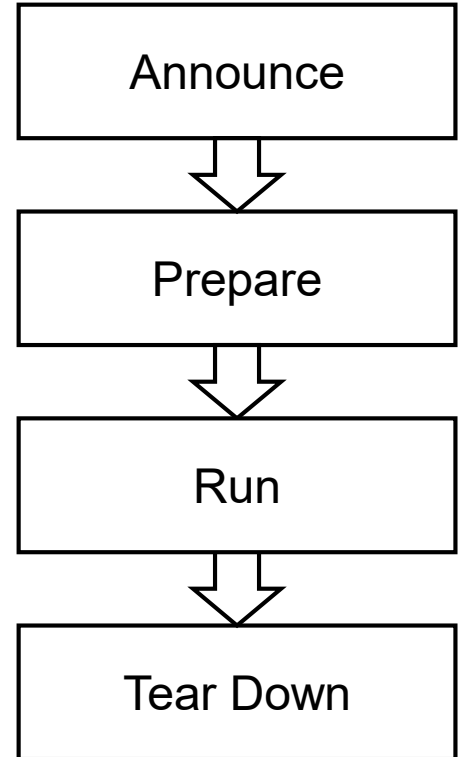
The Road to a Common HIFIS Workshop Materials Template

- 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

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Common Technology Stack and Template Details
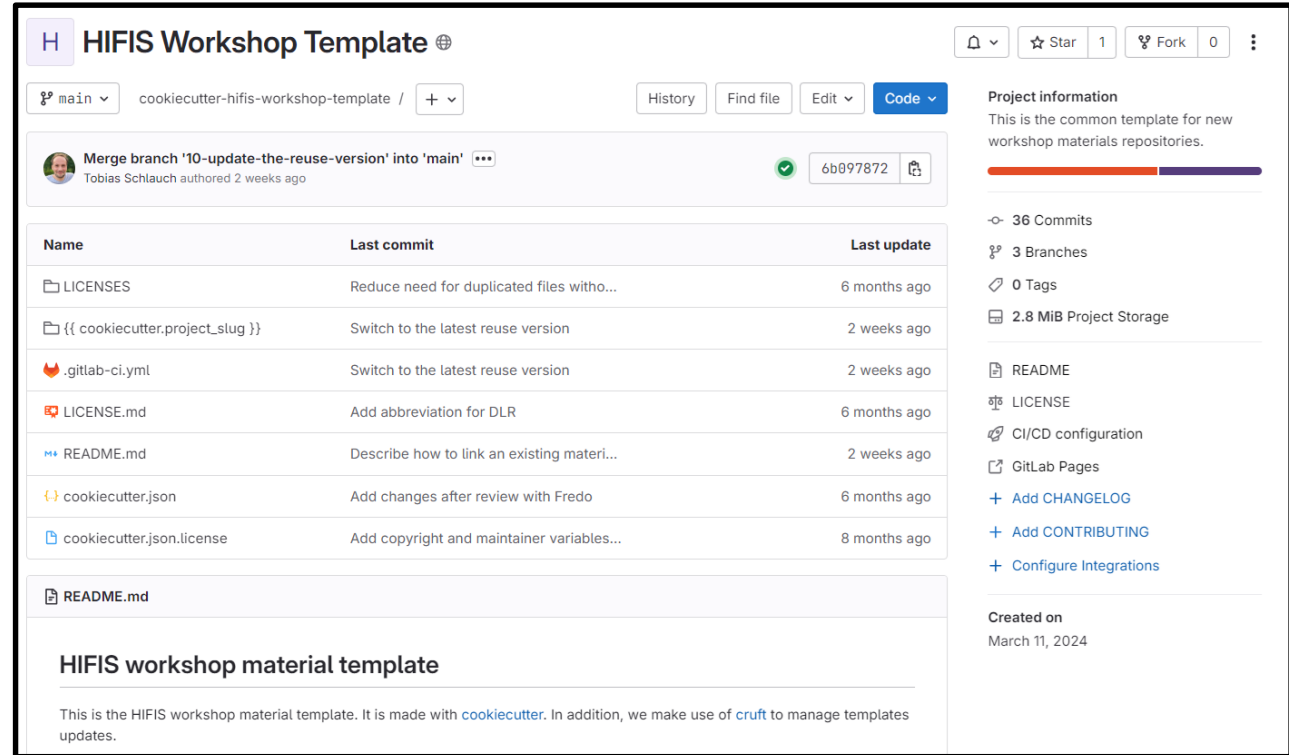
- **Common Technology Stack:**
  - Markdown for writing content
  - MkDocs for website generation
  - Helmholtz Codebase (GitLab) for version control, collaboration and build automation

- **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

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Live Demo: The HIFIS Workshop Template

- Overview
- Getting started
- Experiences

Specific Challenges: Optimize Rendering for MkDocs and HedgeDoc

```
{% filter warning_block(title="Configure …", …) %}
 …
{% endfilter %}
```
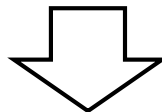
+ Python Filter
Function

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

💡 **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.

Specific Challenges: Development Process

- Docs as Code approach using GitLab

- Pipeline performs basic validation

- "Visual check" via directly attached artefacts and GitLab pages

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

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- 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.

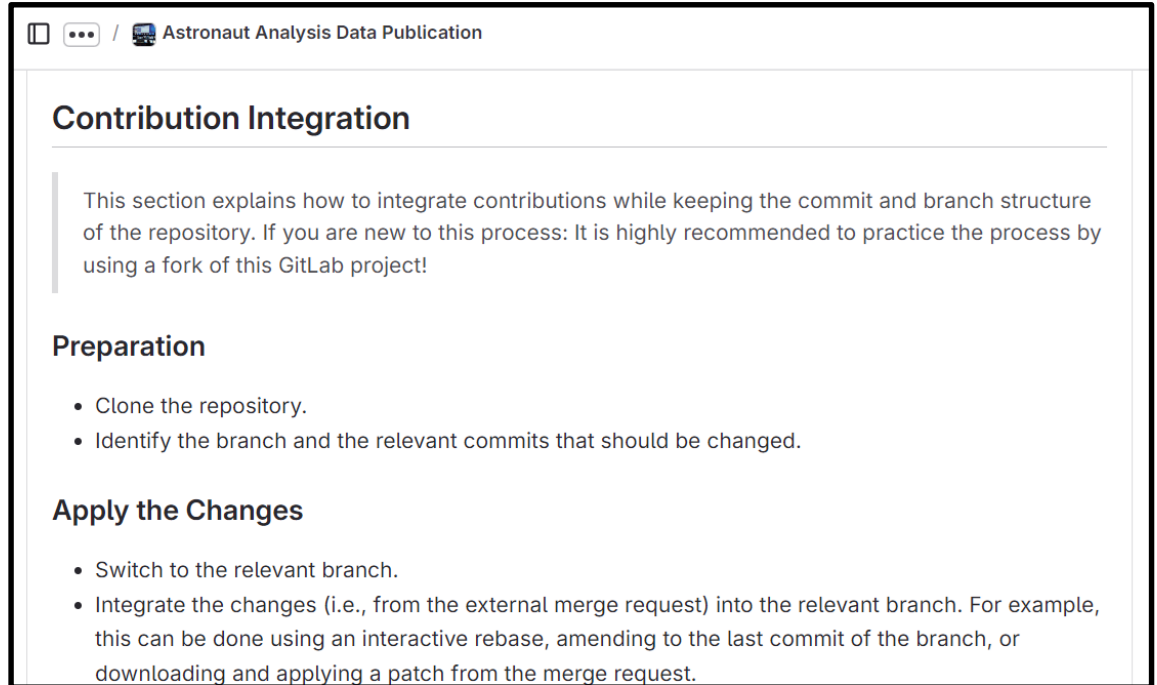This work is licensed under multiple licenses:

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Name
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🗀 workshop_materials
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🗎 .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](#)

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?

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HIFIS Mattermost: @schlauch

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