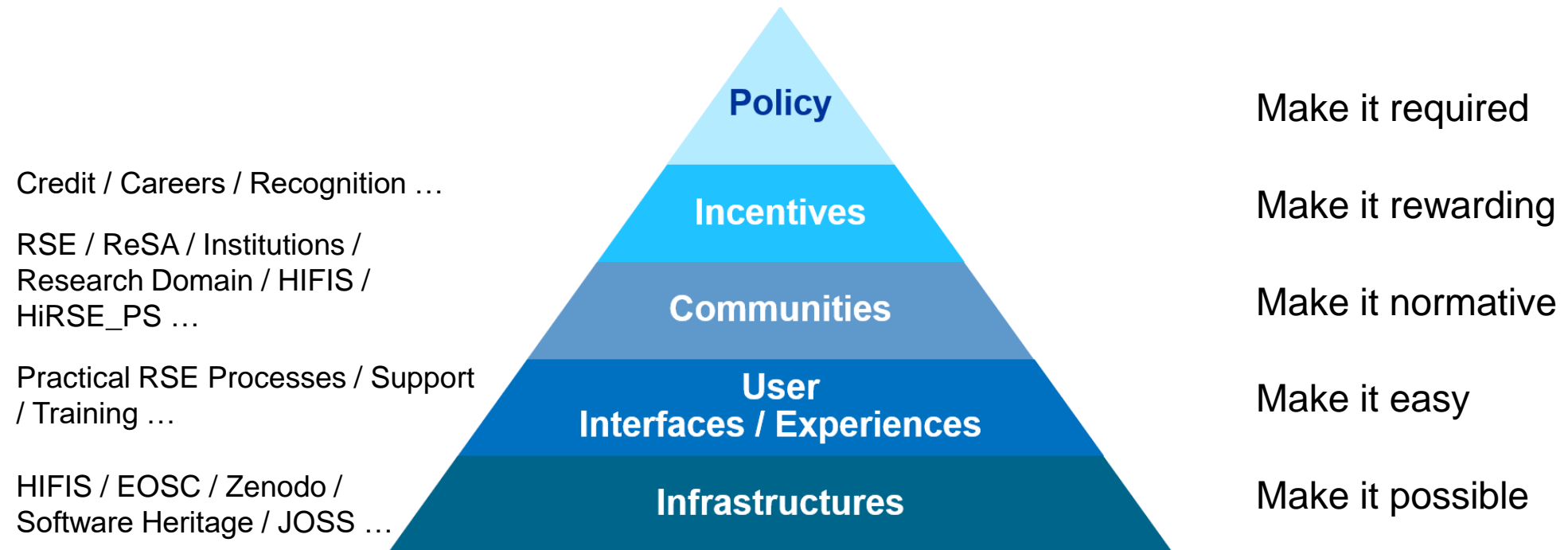


Software Policy and Good Practices in Research Software Engineering at HZDR

Tobias Huste, Christian Hüser

The Role of Software Policies

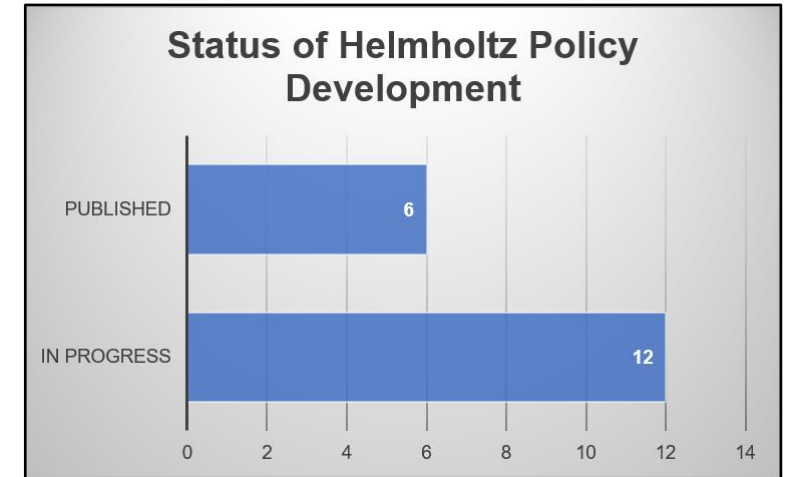
Goal: Make software a first class research output!



Based on: Gruenpeter, M., Mastering the Art of Research Software Metadata and Metrics, RDA 21st, Salzburg 23.10.2023
and [COS's Theory of Change Infographic](#) created by Center of Open Science, licensed under [CC BY 4.0](#).

Current Status and Challenges

- Goal: Establishment of research software policies in all Helmholtz centers by 2025!
- Challenges:
 - Different culture and starting conditions regarding research software at the Helmholtz centers
 - Practical implementation of processes and support offerings
 - Driving cultural change up to the concrete research group
- How is the topic organized at Helmholtz?
 - [Task Group Research Software](#) drives the research software policy establishment
 - For more information: Pampel, H. & Bertelmann, R.: [Policies and networking for the sustainable handling of research software at Helmholtz](#), deRSE23

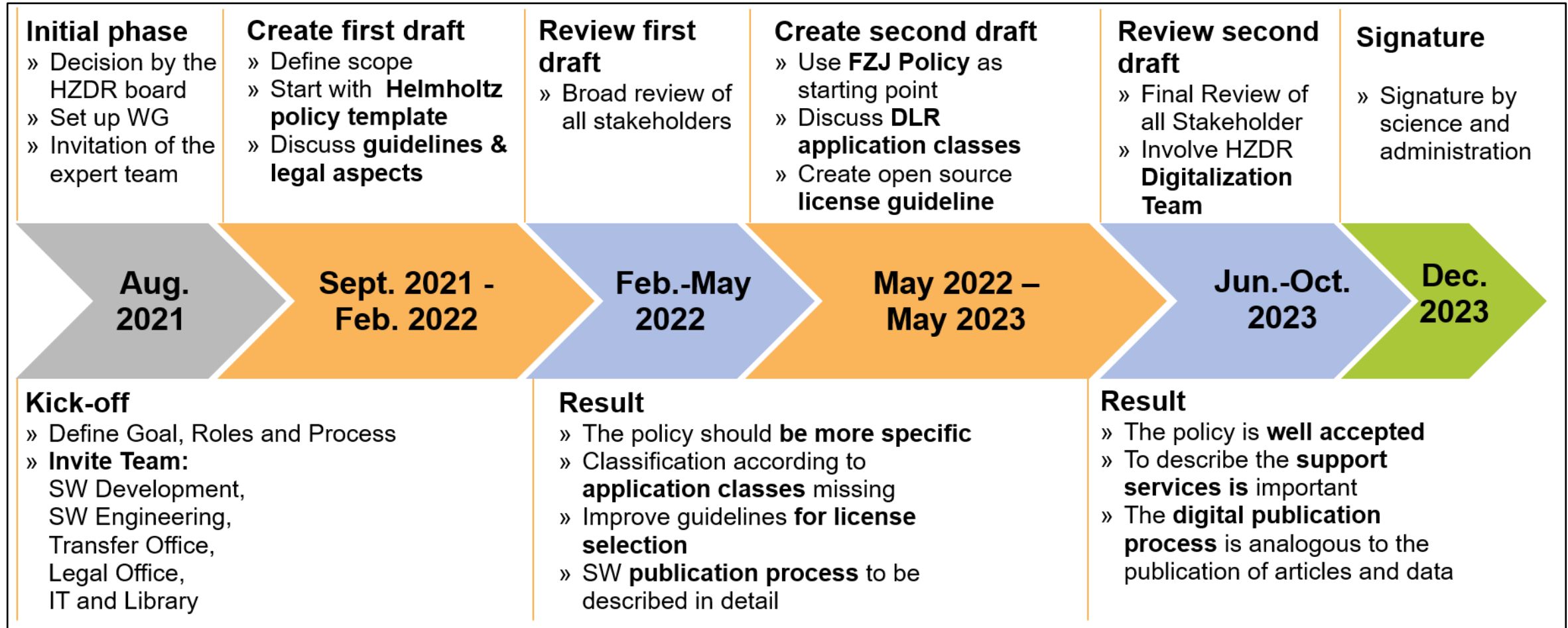


Research Software Model Policy

Goal: The Research Software Model Policy sets the framework and guides the entire process!



Timeline of the Policy Establishment at the HZDR



Software Application Classes

- Goals:
 - Support identification of relevant practices concerning development, quality assurance and maintenance of research software
 - Involve decision-makers at an early stage
 - Support selection of suitable licenses in early development phases

Application Class	Development Team	Utilization	Transfer	SE Standards
0	institute	in local team	not planned	low
1	institute	at institute	within a limited framework	medium
2	institute and partners	by partners or customers	distribution with license	high
3	distributed	product or SaaS	commercial or (large) OS software	professional

Software Quality Assurance Measures Based on Application Classes

AC	Leg./ licen. com.	VCS	Docs and Con. Gui.	Cit. and masc.- read. Meta.	Docs of Proc., Stds., and Tools	Rel. Strat.	Pers. IDs	Publ. Metad. (if appl.)	User- and Appl. Docs	SW Tests	Licen. and Copyr.	Trans. Appro. Proc. (if appl.)	Export Contr. Regul. (if appl.)	Test Auto.	Maint. and Troubl.
0	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
1	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Leg./ licen. com. = Legal / license compliance

VCS = Version Control System

Docs and Con. Gui. = Documentation and Contribution Guide

Cit. and masc.-read. Meta. = Citation and machine-readable metadata

Docs of Proc., Stds., and Tools = Documentation of Processes, Standards, and Tools

Rel. Strat. = Release Strategy

Pers. IDs = Persistent Identifiers

Publ. Metad. = Publication Metadata

User- and Appl. Docs = User- and Application Documentation

SW Tests = Software Tests

Licen. and Copyr. = License and Copyright

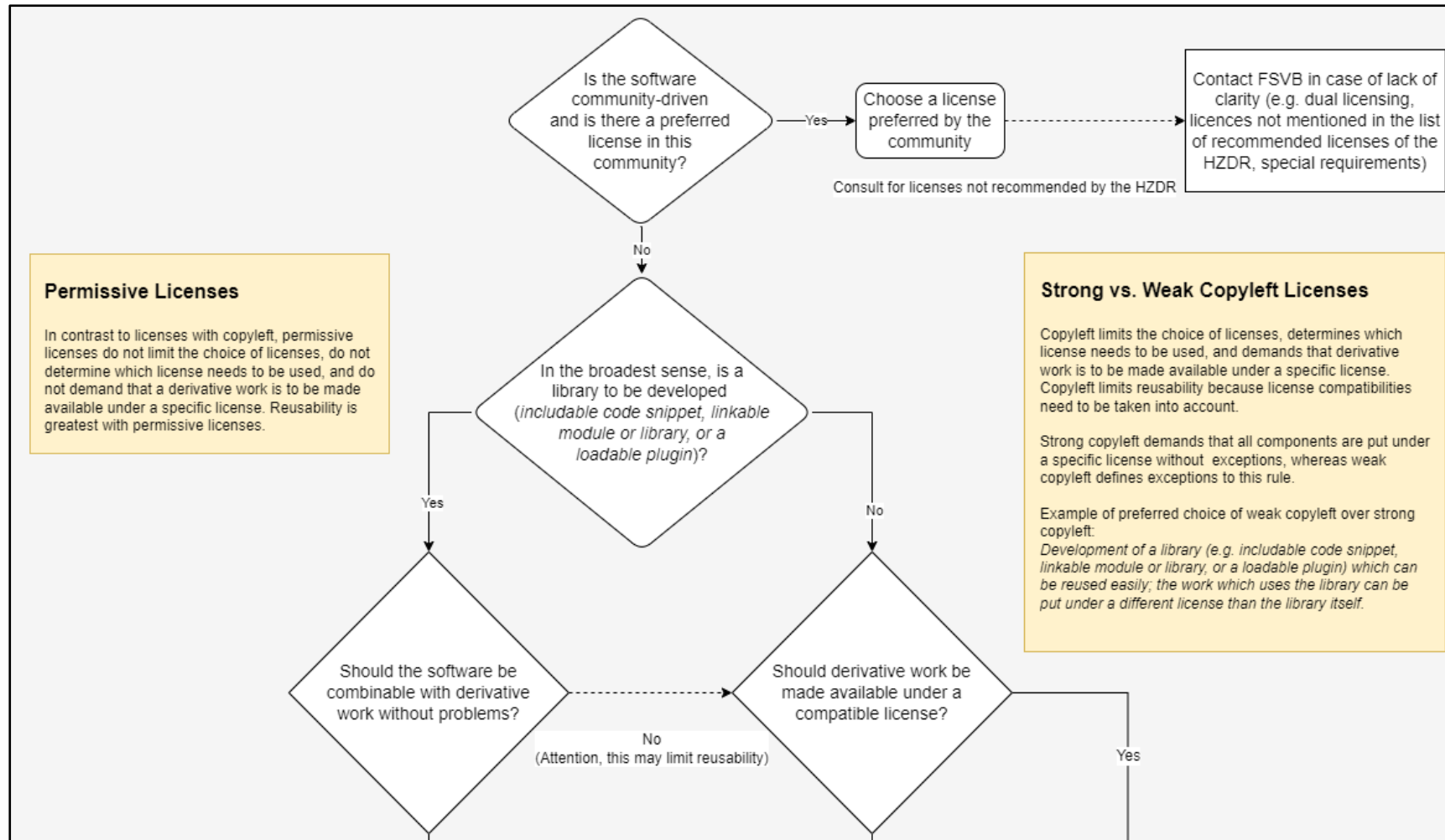
Trans. Appro. Proc. = Transfer Approval Process

Export Contr. Regul. = Export Control Regulations

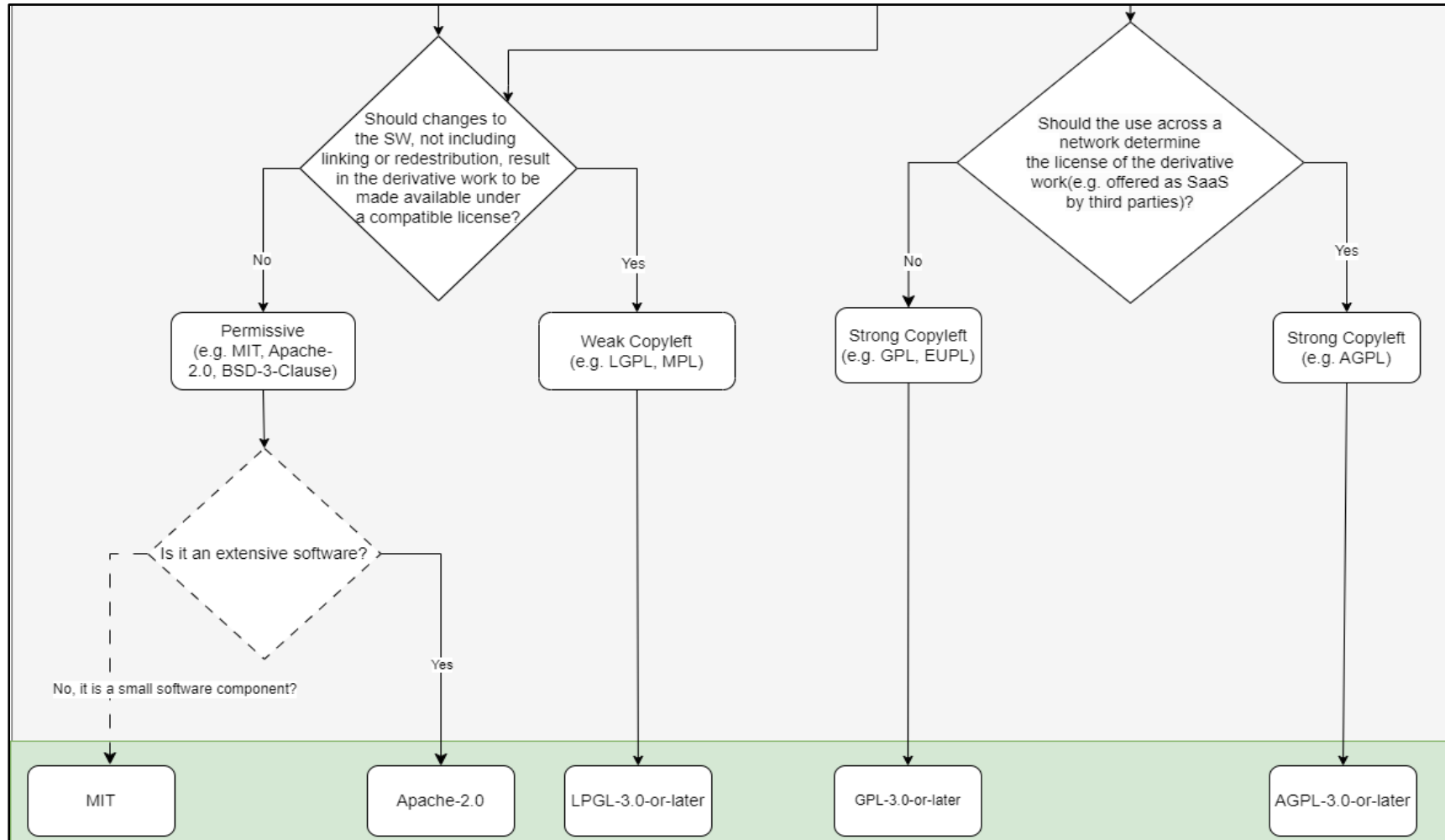
Test Auto. = Test Automation

Maint. and Troubl. = Maintenance and Troubleshooting

Guidance for the Open-Source Software License Selection



Guidance for the Open-Source Software License Selection



Research Software Engineering Support in Helmholtz and HZDR



<https://hifis.net/services/software>

- Education & Training
- Community Building and Research Software Directory
- Research Software Engineering Infrastructure
- RSE Consulting and Support



Your colleagues from FWCC.

Drop us a mail, use coding channels in Mattermost or visit us in building 270!

Education & Training

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Browse data science related trainings throughout the Helmholtz Association and add your own Helmholtz events

TAGS

- Programming (10)
- Statistics (5)
- Software (4)
- Generative AI (2)
- Regression (2)
- Data Mining (1)
- Git (1)
- Machine Learning (1)
- Testing (1)
- Trustworthy AI (1)

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HZDR HELMHOLTZ-ZENTRUM DRESDEN-ROSSENDORF HZDR Learn

Magazin

Willkommen auf der E-Learning Plattform des Helmholtz-Zentrum Dresden - Rossendorf (HZDR)

Sie finden alle verfügbaren Angebote in den entsprechenden Kategorien des Magazins. Dieses ist in die Bereiche bereichsübergreifende Schulungen, Pflichtunterweisungen sowie nach den jeweiligen Instituten und Abteilungen sortiert. Als HZDR-Mitarbeiter werden Sie vom System automatisch in anstehende Pflichtunterweisungen zugewiesen.

Kategorien

- Pflichtunterweisungen
- HZDR ILIAS Onlinehilfe
- HZDR intern
- Schulungsbereich
- Spielwiese

2025 course
program will be
finalized soon.

Stay tuned and
register for our
HIFIS courses!

HIFIS

General

Topic	Materials	Repository
Research Software Publication	(In preparation)	Repository
Container Virtualization in Science	Material	Repository
Event Management with Indico	Material	Repository
Getting started with Markdown Flavours	(In preparation)	Repository

Python

Topic	Materials	Repository
First Steps in Python	Material	Repository
Object-Oriented Programming	Material	Repository
Data Processing with Pandas (legacy)	Material	Repository
Data Visualization with Matplotlib (legacy)	Material	Repository
Introduction to Pandas and Matplotlib	Material	Repository
Test Automation	(In preparation)	Repository

Git and GitLab

Topic	Materials	Repository
Introduction to Git and GitLab	Material	Repository
Project Management in GitLab	(In preparation)	Repository
GitLab for Software Development in Teams	(In preparation)	Repository
Continuous Integration with GitLab CI	Material	Repository

The Helmholtz Research Software Directory

The screenshot displays the Helmholtz Research Software Directory website. The browser address bar shows the URL https://helmholtz.software/organisations/hzdr?order=mention_cnt&page=1&rows=12. The page header includes the text "Research Software Directory" and navigation links for "Software", "Projects", and "Organisations". The main content area features the HZDR logo and the text "Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany". Below this, there are tabs for "Software (19)", "Projects (2)", "Releases (122)", and "About". A sidebar on the left contains filter options for "Order by Mentions", "Keywords", "Program languages", and "Licenses". The main list of software projects includes:

- MIRP**: MIRP is a python package for quantitative analysis of medical images. It focuses on processing images for integration with radiomics workflows. These... 3 mentions, 201 downloads.
- alpaka**: The alpaka library is a header-only C++17 abstraction framework designed for computing accelerator development. It enables developers to implement... 34 mentions, 74 downloads.
- TetraX**: TetraX is a package for finite-element-method (FEM) micromagnetic modeling with the aim of providing user-friendly and versatile micromagnetic... 4 mentions, 24 downloads.
- Multiphase Code Repository by HZDR for OpenFOAM Foundation Software**: This software publication is released by Helmholtz-Zentrum Dresden-Rossendorf according to FAIR principles. It contains experimental research work... 15 mentions, 19 downloads.
- HELIPORT**: The guidance system HELIPORT aims to make the entire life cycle of a scientific project according to the FAIR principles. In particular, our data... 9 mentions, 9 downloads.

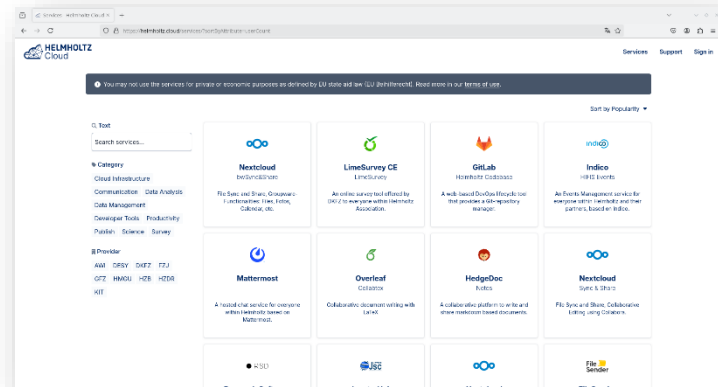
Add Your Software Now –
<https://helmholtz.software>

The Helmholtz Incubator Software Award

- A yearly prize awarded by the President of the Helmholtz Association since 2023
- Promote the development of professional and high-quality research software
- Give incentives, reward, credits, and appreciation
- The prize has three categories:
 - **Scientific Originality** (innovation contribution & scientific results achieved with the software)
 - **Sustainability** (sustainability of software engineering practices according to the FAIR principles as well as extensive support and participation in the scientific community)
 - **Newcomer** (young software with great potential and a visible growth rate in its application, particularly interesting for doctoral students or junior research groups)



Software Engineering Infrastructure



<https://helmholtz.cloud>

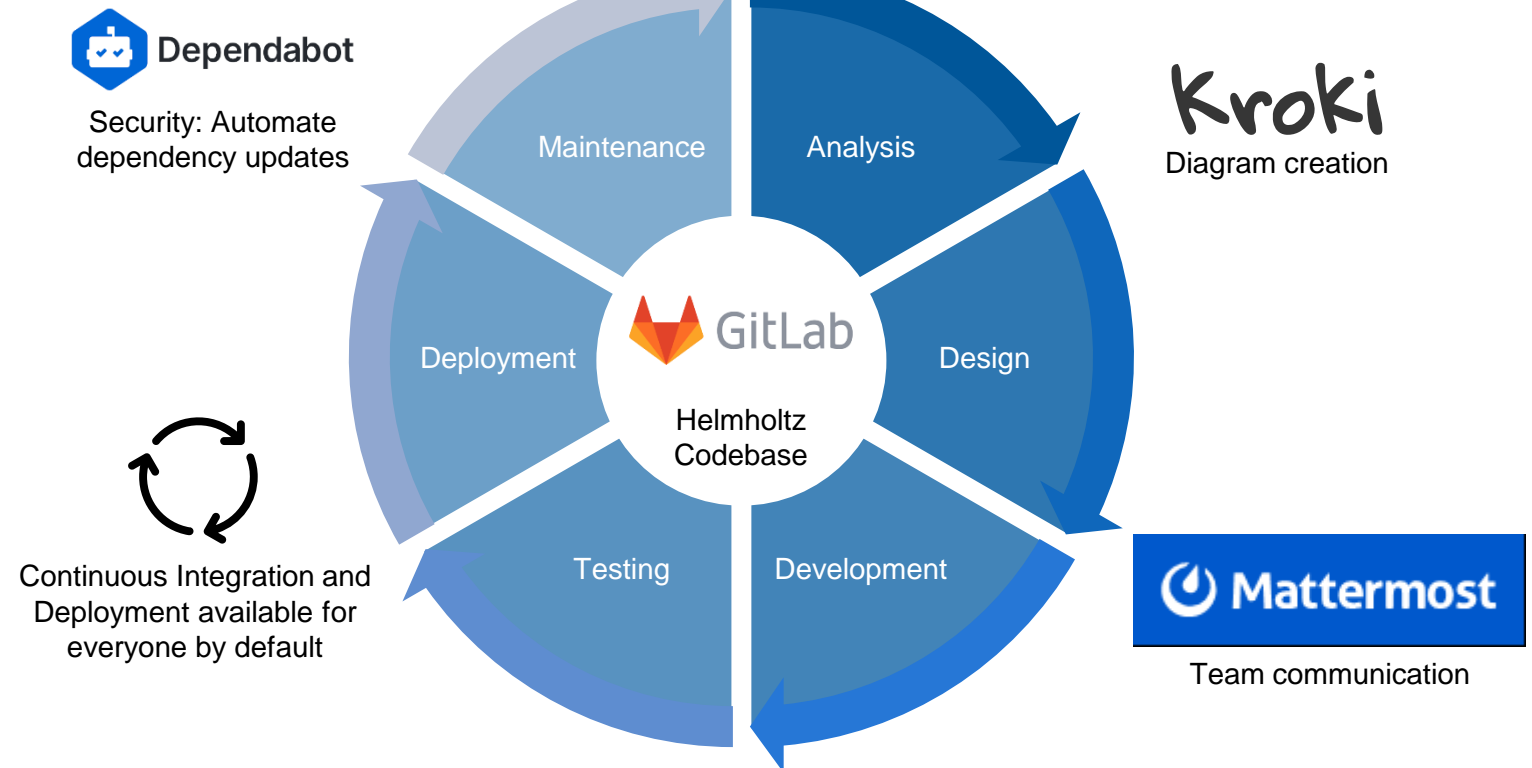
Deployed and made available with



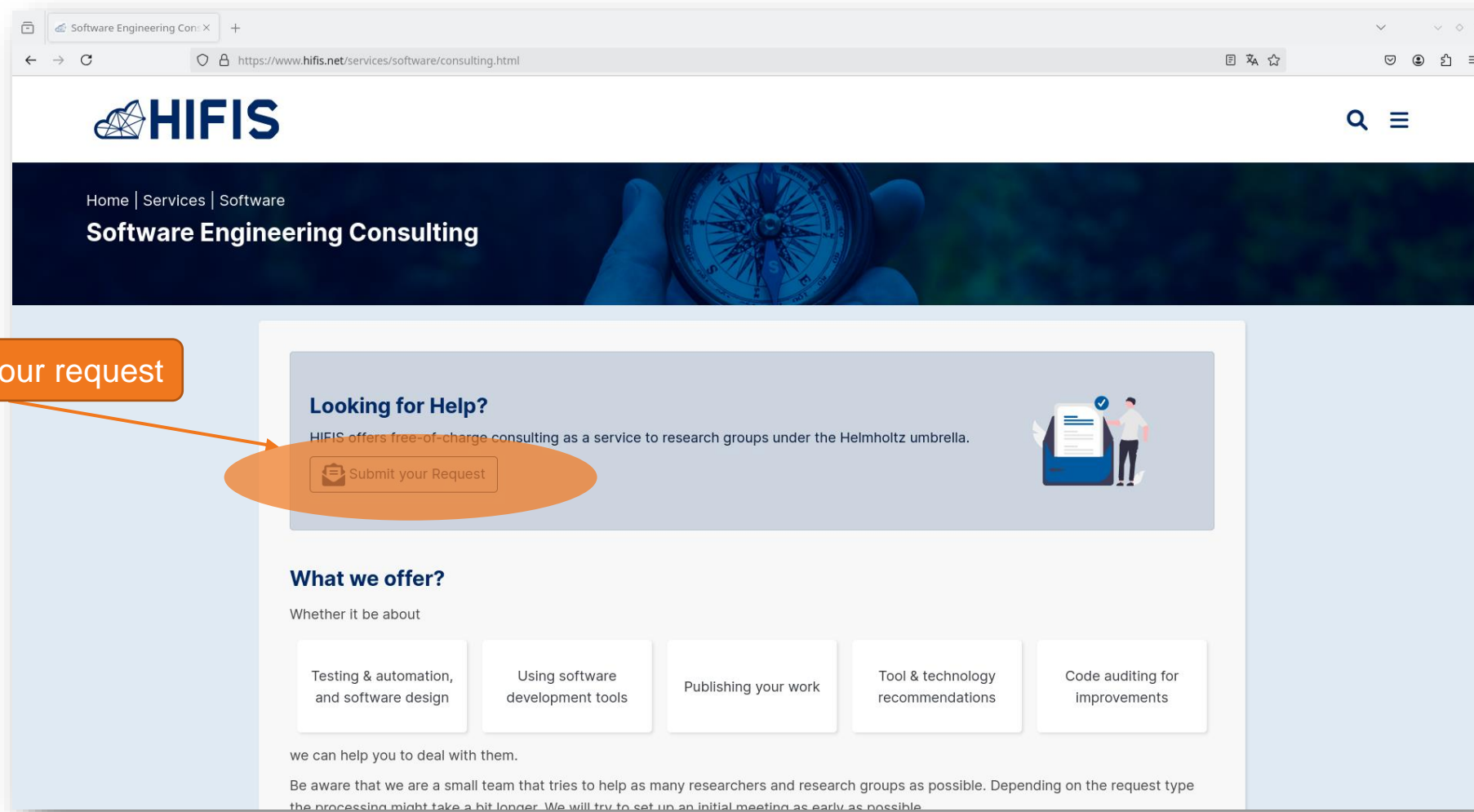
ANSIBLE

<https://github.com/hifis-net>

Supporting the whole software development lifecycle



Research Software Engineering Consulting and Support



Give It a Try and Reach Out To Us

- HIFIS Helpdesk – <https://support.hifis.net> or support@hifis.net
- HIDA Course Catalog – <https://www.helmholtz-hida.de/course-catalog>
- RSE Consulting – <https://hifis.net/services/software/consulting>
- Helmholtz Cloud – <https://helmholtz.cloud>
- Helmholtz Codebase – <https://codebase.helmholtz.cloud>
- Helmholtz Research Software Directory – <https://helmholtz.software>
- Mattermost Coding Channels - <https://mattermost.hzdr.de/codinghzdr>