

The Research Software Directory in Helmholtz

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Research Software Directory Launch Event

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1) Helmholtz Zentrum Potsdam, Deutsches GeoForschungsZentrum Potsdam GFZ

2) Helmholtz-Zentrum Dresden-Rossendorf (HZDR)

18

Research Centres

43.000

Employees



Sustainability

Viewpoints

Open Science

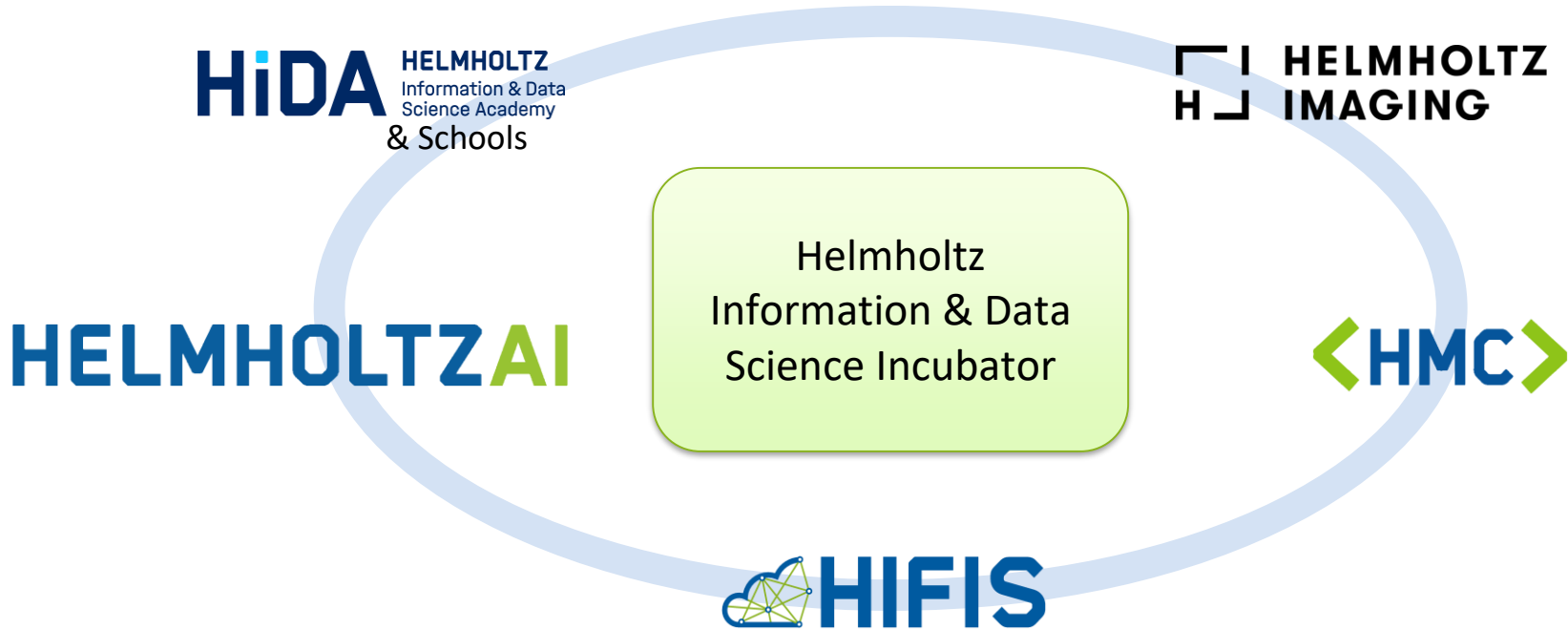
Data privacy in research

Good Scientific Practice

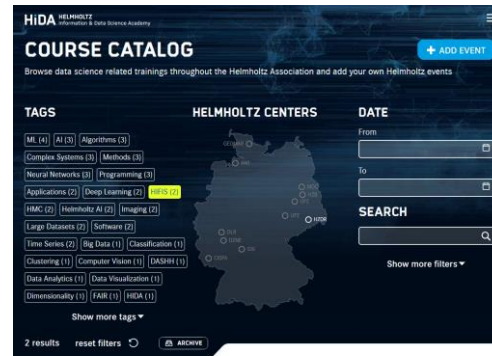
Funded initiatives

The Helmholtz Incubator

- Helmholtz strives towards a **unified environment** for research and information technology
- Incubator consists of five platforms to accelerate for the digital transformation in Helmholtz



- HIFIS Mission
 - Provide a seamless, high performance IT infrastructure
- HIFIS competence clusters
 - Cloud Services Cluster
 - Backbone Services Cluster
 - Software Services Cluster



<https://www.helmholtz-hida.de/course-catalog>



<https://helmholtz.cloud>



HIFIS Software Services Cluster

Education & Training

- **Courses, material and workshops** for getting you started or boosting your software engineering practice.

Community

- Build and foster communities to support the **cultural change** when dealing with research software.
- Maintain a SW Directory

Consulting

- **Contact points** for researchers for questions and problems in the context of RSE.

Technology

- Provide a sustainable, well integrated and easy to use **technology infrastructure** for research software development.

An example to start with

“We did this and that using the software
Someproduct (Author et al. 2011, 2019).”

A peer-reviewed publication
about *Someproduct* und it's
algorithm

A conference talk about some
more features of *Someproduct*

Research Software in the scientific community

Houston, we have a problem

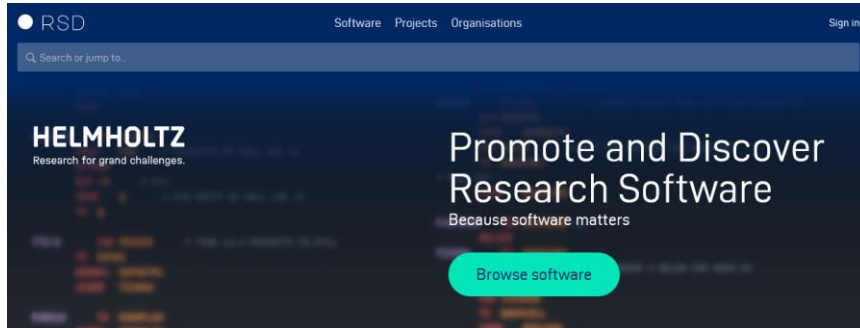
- Proper citation
- Licencing issues
- Incomplete or non-uniform metadata at DOI providers
- Poor discoverability outside of scientific literature
- Impact measurement
- Acknowledgement in academia



undraw.co

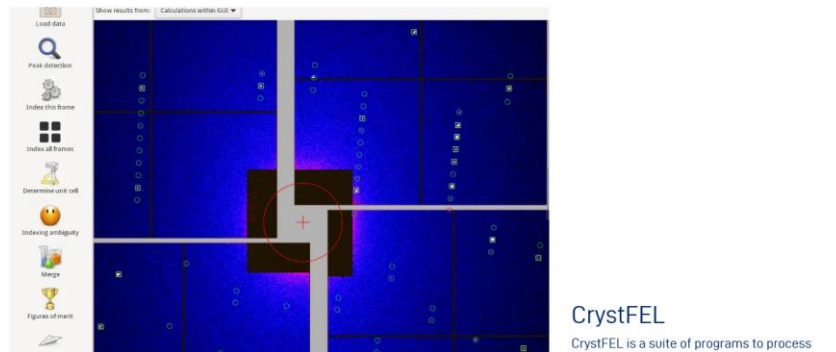
Addressing the issues

Research Software Directory



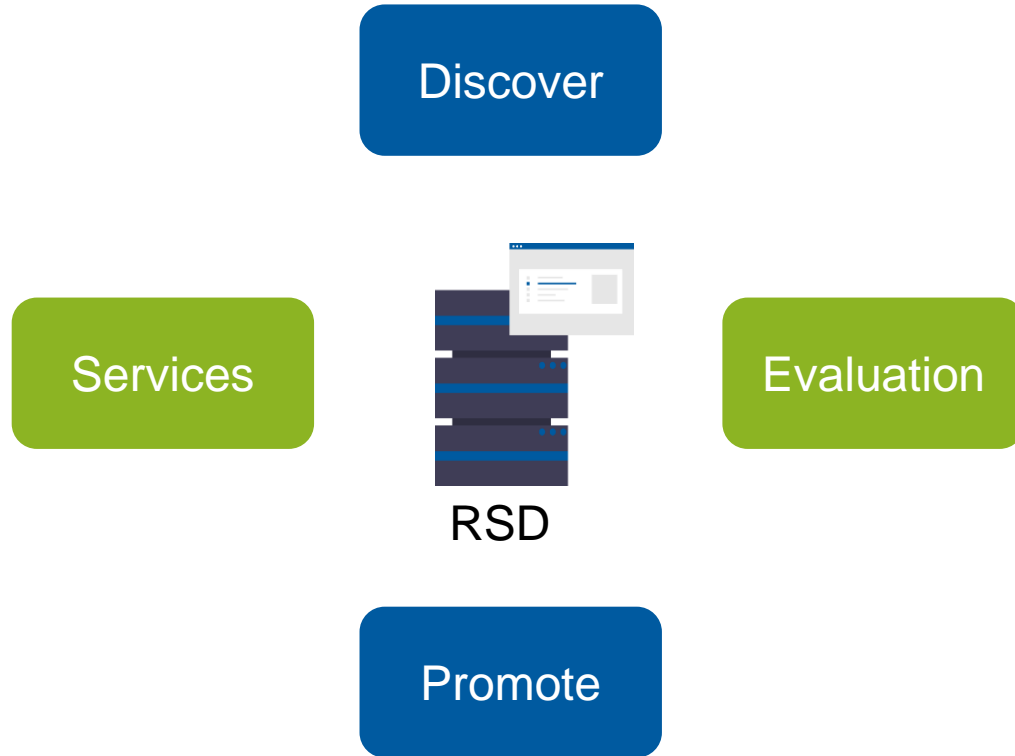
Software Spotlights

The latest outstanding software product developed in Helmholtz.



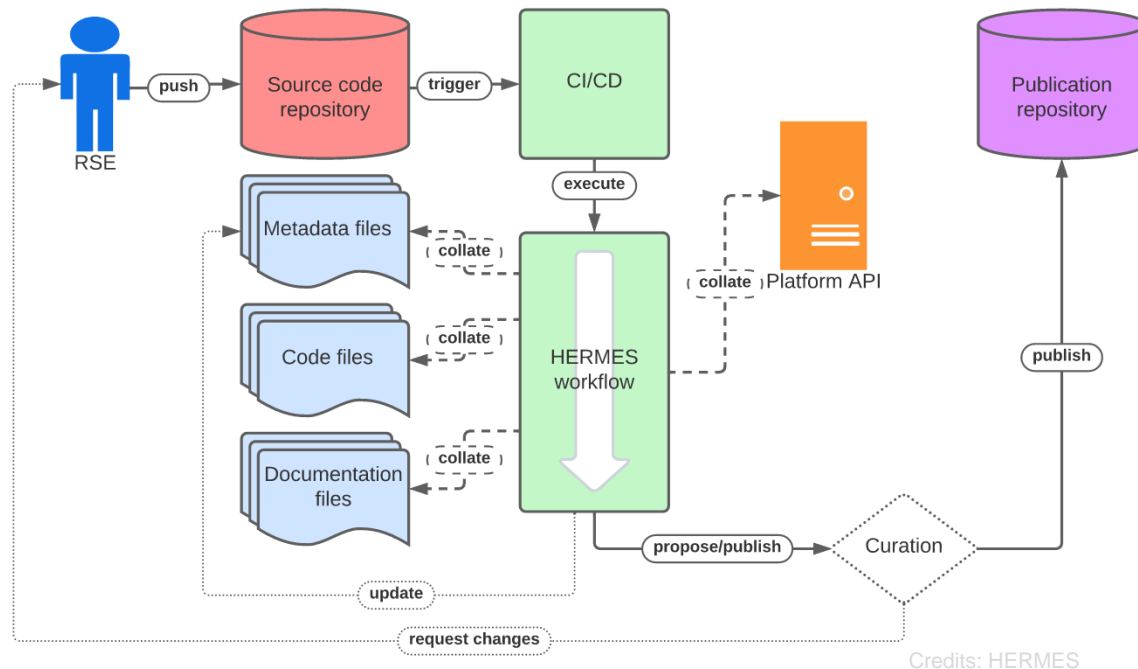
- Upstream development supported by HIFIS Software
- Helmholtz fork for corporate adjustments
- Currently in pilot stage
<https://helmholtz.software>

Vision



The RSD as a service tool for RSEs

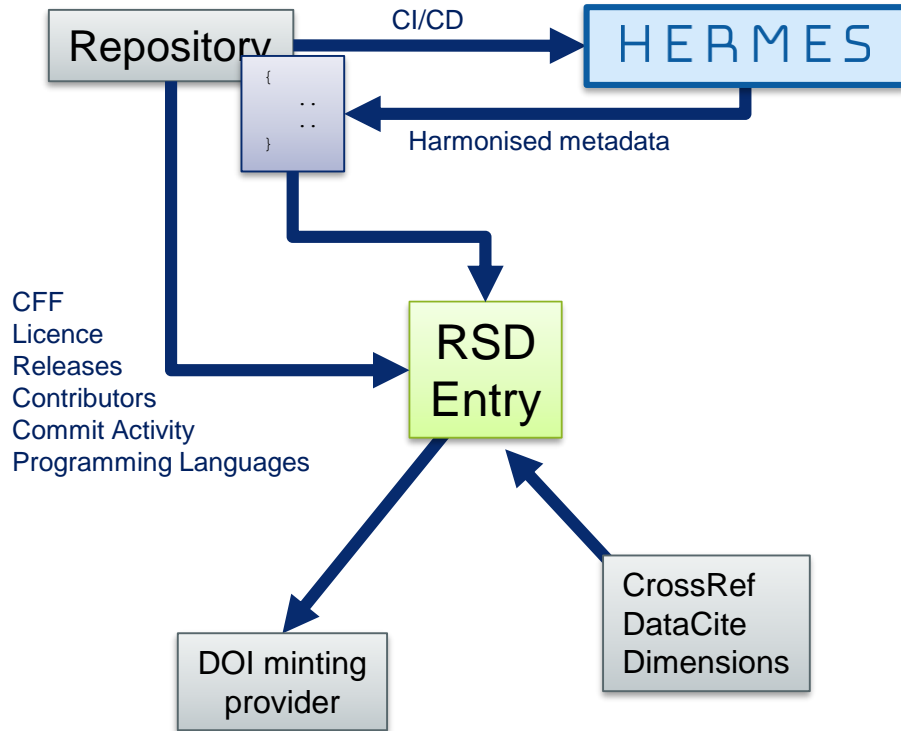
Automatic metadata aggregation: HERMES



For more info, please refer to: <https://project.software-metadata.pub>

The RSD as a service tool for RSEs

HERMES integration into the RSD



Goal

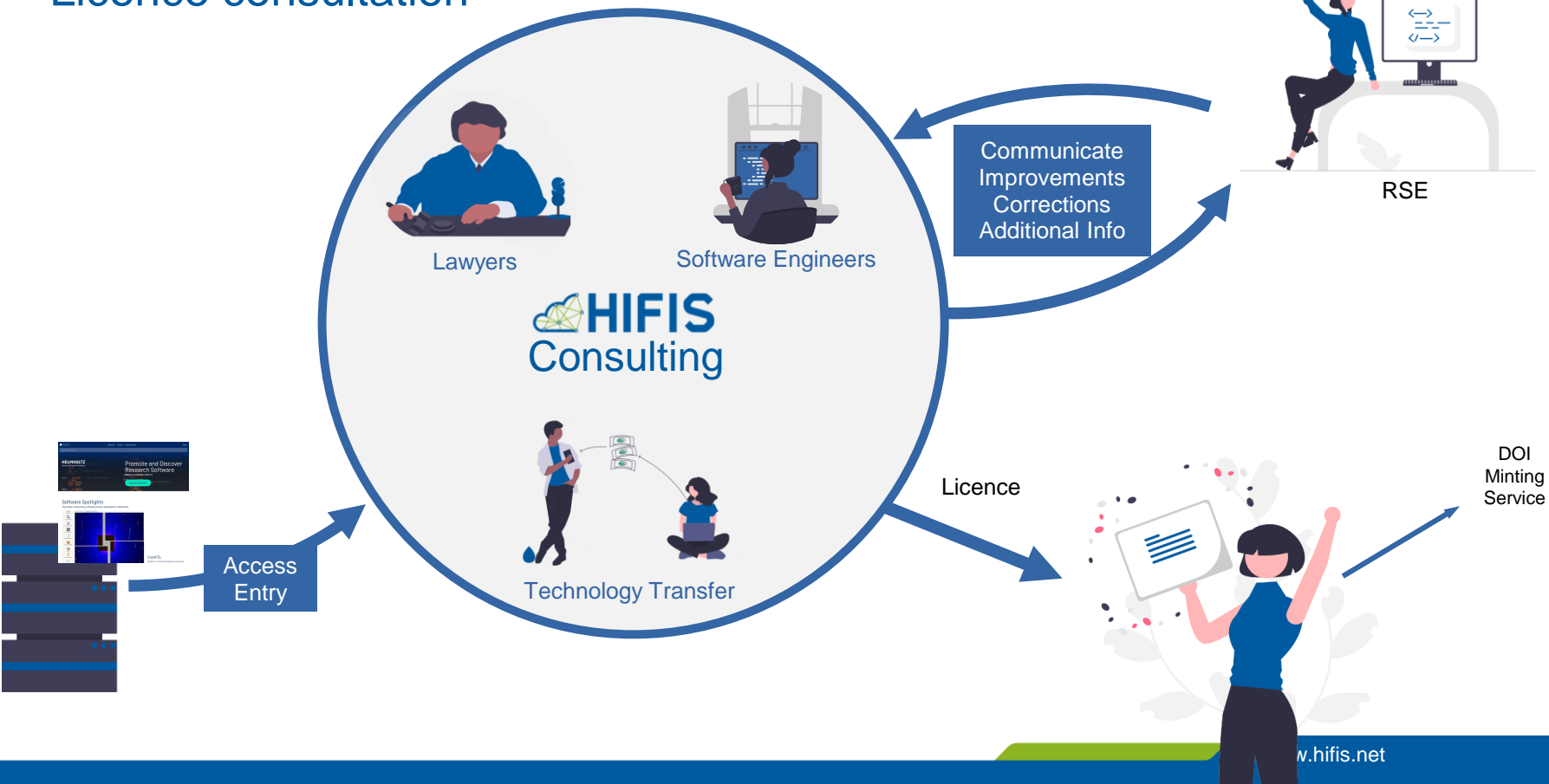
- Incorporate HERMES Pipeline
- Prepare and harmonize metadata
- Submission to DOI Minting Providers

After publication

- Foundation for impact analysis
- Auto scrape citations
- Software Heritage

The RSD as a service tool for RSEs

Licence consultation



The RSD as a service tool for RSEs

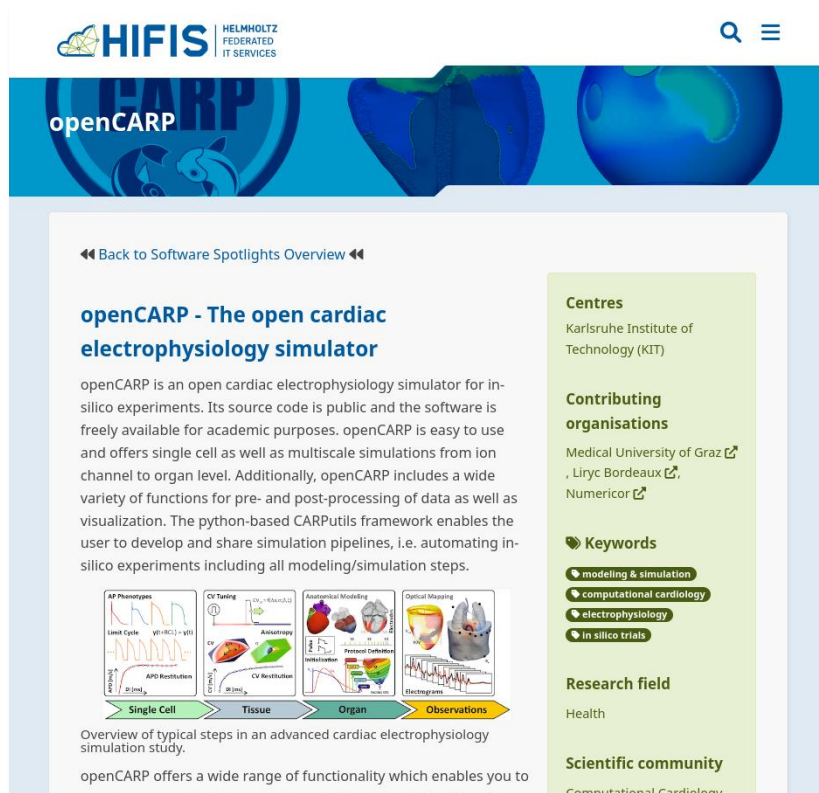
Increasing FAIRness with Software Quality Indicators

- Possible evaluation criteria
 - FAIR aspects
 - Code quality
 - Test coverage
 - REUSE specification compatibility
 - Licence type
 - Documentation
 - Citations / Mentions
 - Project / community activity (e.g. feature requests, commits, issues, PRs)
- WIP: [Software Quality Assurance Framework](#)



Increasing the visibility of Research Software

Helmholtz Software Spotlights and Awards



The screenshot shows the HIFIS website header with the logo and navigation icons. Below is a banner for openCARP. The main content area features a title, a description of the software, a diagram of simulation steps, and a sidebar with metadata.

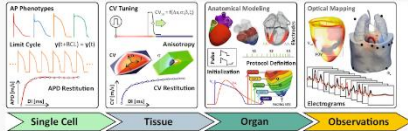
HIFIS HELMHOLTZ FEDERATED IT SERVICES

openCARP

◀ Back to Software Spotlights Overview ▶

openCARP - The open cardiac electrophysiology simulator

openCARP is an open cardiac electrophysiology simulator for in-silico experiments. Its source code is public and the software is freely available for academic purposes. openCARP is easy to use and offers single cell as well as multiscale simulations from ion channel to organ level. Additionally, openCARP includes a wide variety of functions for pre- and post-processing of data as well as visualization. The python-based CARPutils framework enables the user to develop and share simulation pipelines, i.e. automating in-silico experiments including all modeling/simulation steps.



Overview of typical steps in an advanced cardiac electrophysiology simulation study.

openCARP offers a wide range of functionality which enables you to

Centres
Karlsruhe Institute of Technology (KIT)

Contributing organisations
Medical University of Graz [↗](#)
Liryc Bordeaux [↗](#)
Numericr [↗](#)

Keywords

- modeling & simulation
- computational cardiology
- electrophysiology
- in silico trials

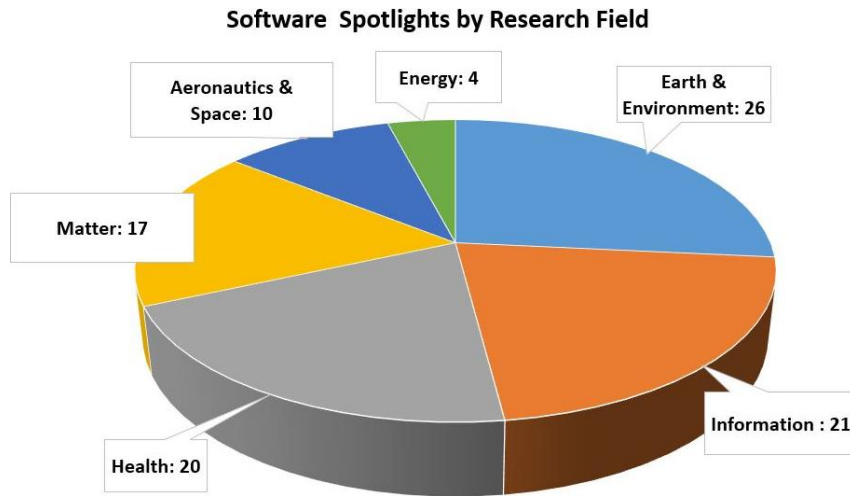
Research field
Health

Scientific community
Computational Cardiology

- Outstanding software products are presented as Software Spotlights
- Currently available on <https://hifis.net/spotlights>
 - 30 online
 - About 70 on the waiting list
- Helmholtz RSD will become home of the Spotlights
- Yearly awards to development teams for outstanding software in several categories (currently in preparation for 2023)

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Vision summarised

