



# Helmholtz Federated IT services

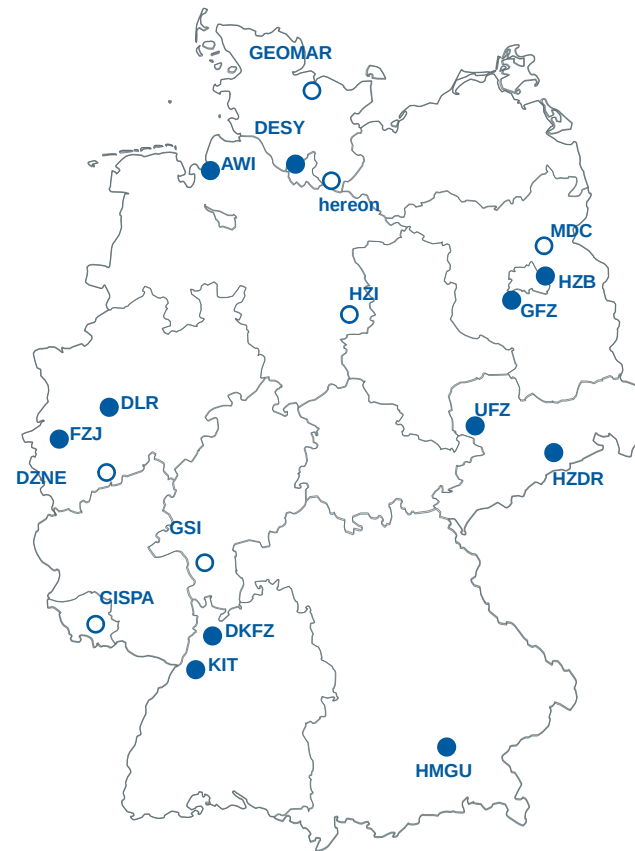
Uwe Jandt  
for the HIFIS-Team

Workshop on  
Opportunities for Artificial Intelligence with real world patient data  
Berlin, 2023-11-02



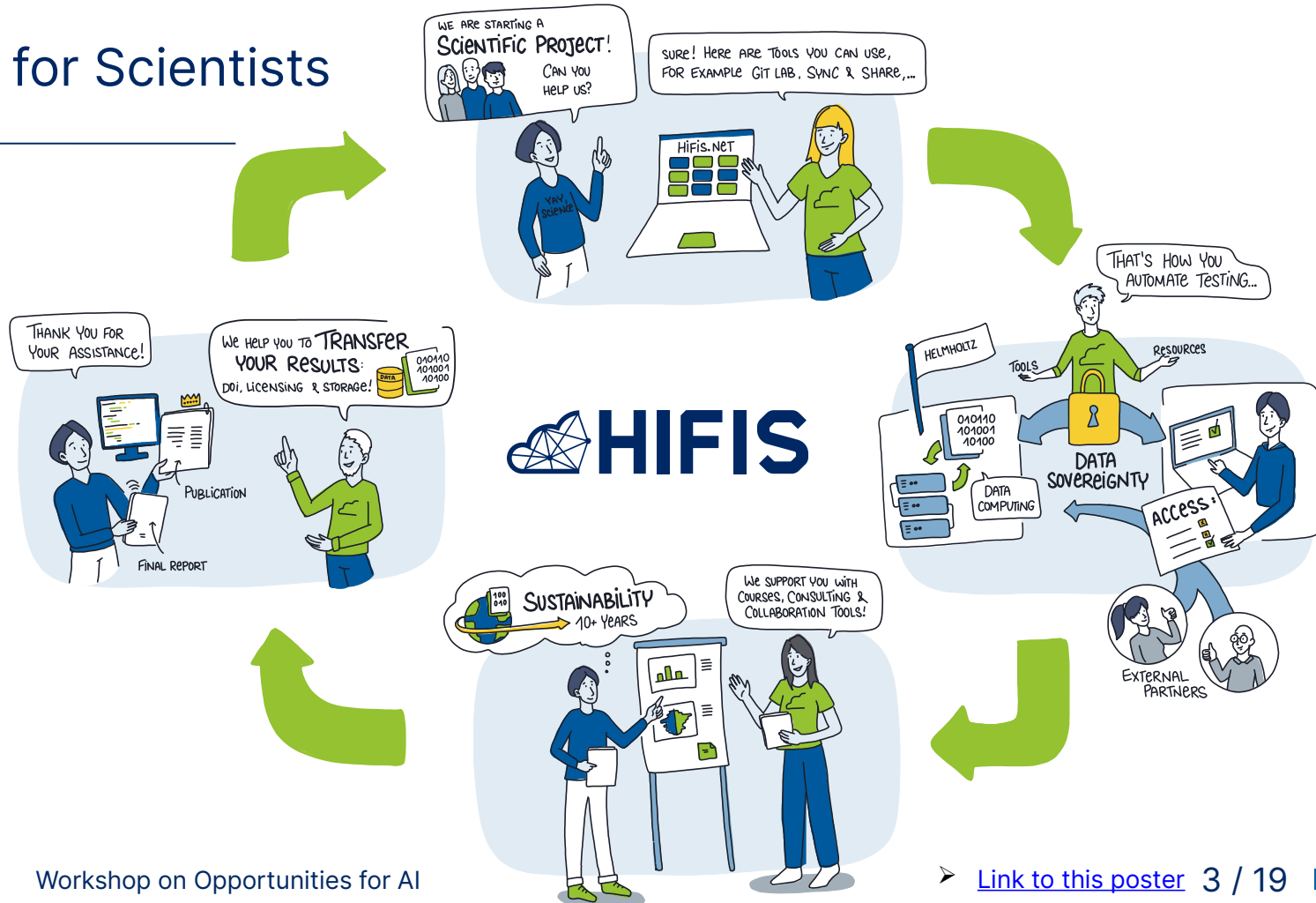
# HIFIS Team

- 11 Centres for all-Helmholtz & Partners
- 3 Clusters: Backbone, Cloud, Software
- Permanent infrastructure platform; aligned with: Helmholtz AI, Helmholtz Imaging, HMC, HIDA



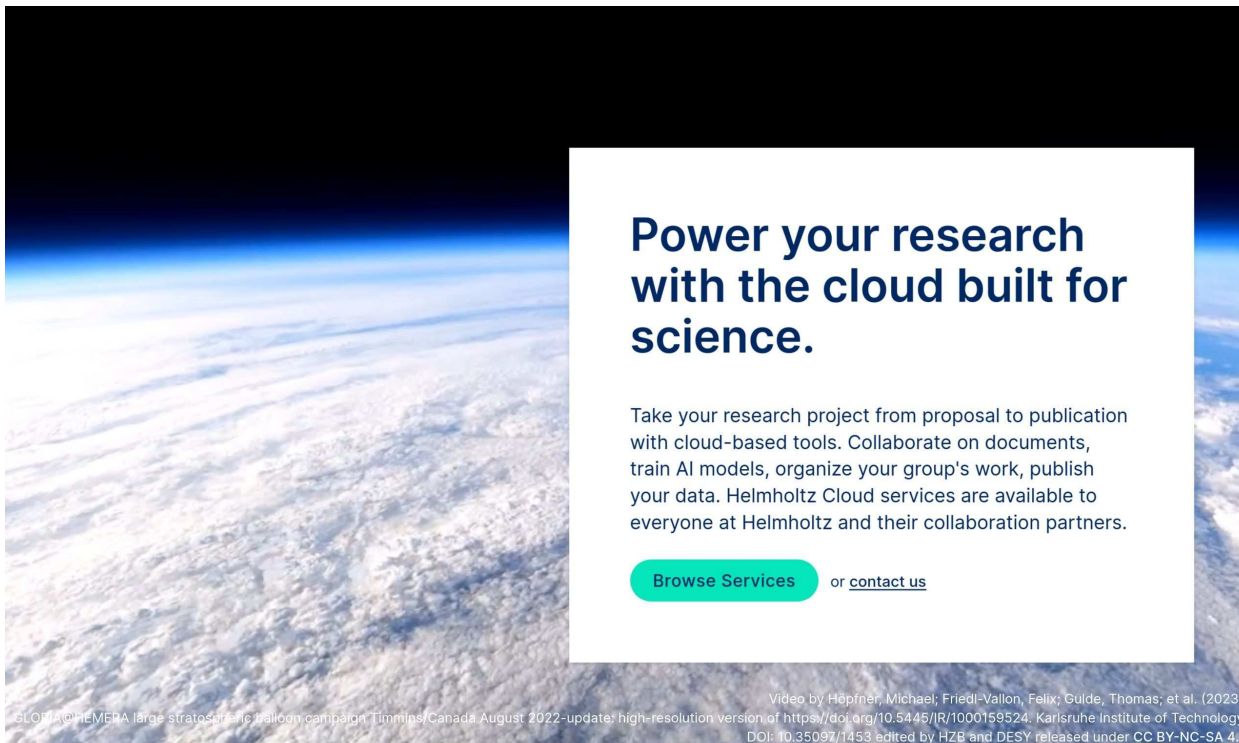


# HIFIS for Scientists





# 1.) Infrastructure & Cloud Services

A background image showing a view of Earth from space, with the blue horizon of the planet and white clouds over a brownish landmass.

**Power your research with the cloud built for science.**


















Take your research project from proposal to publication with cloud-based tools. Collaborate on documents, train AI models, organize your group's work, publish your data. Helmholtz Cloud services are available to everyone at Helmholtz and their collaboration partners.

[Browse Services](#) or [contact us](#)

Video by Höpfner, Michael; Friedl-Vallon, Felix; Gulde, Thomas; et al. (2023): GLOFAS-HEMERA large stratospheric balloon campaign, Timmins, Canada August 2022-update: high-resolution version of <https://doi.org/10.5445/IR/1000159524>. Karlsruhe Institute of Technology. DOI: 10.35097/1453 edited by HZB and DESY released under CC BY-NC-SA 4.0


























# 1.) Infrastructure & Cloud Services

|  |   |  |                              |   |                                 |
|--|---|--|------------------------------|---|---------------------------------|
| <b>Sensor Management System</b><br> Sensor Management System<br>Manage metadata for devices, platforms & measurement configurations.<br><br>: Description<br>→ Go to service | Collaboration<br>Database<br>Earth and Environment (Earth)<br>Science | <b>Helmholtz RSD</b><br>• RSD Research Software Directory<br>Promote and discover research software developed in the Helmholtz Association.<br><br>: Description<br>→ Go to service   | Database<br>Science          | <b>LimeSurvey</b><br> LimeSurvey CE<br>An Open source on-line statistical survey web application.<br><br>: Description<br>→ Go to service                 | Collaboration<br>Survey         |
| <b>nubes</b><br> Nextcloud<br>Sync&Share based on Nextcloud with Office for Web and Calendar function.<br><br>: Description<br>→ Go to service                               | Collaboration<br>Sync & Share   | <b>Mattermost</b><br> Mattermost<br>A hosted chat service for everyone within Helmholtz based on Mattermost.<br><br>: Description<br>→ Go to service | Chat<br>Collaboration        | <b>Helmholtz Codebase</b><br> GitLab<br>A web-based DevOps lifecycle tool that provides a Git-repository manager.<br><br>: Description<br>→ Go to service | Collaboration<br>Infrastructure |
| <b>HIFIS Helpdesk</b><br> Zammad<br>HIFIS Helpdesk Ticketing System based on Zammad.<br><br>: Description<br>→ Go to service   | Collaboration   | <b>Collabtex</b><br> Overleaf<br>Collaborative document writing with LaTeX<br><br>: Description<br>→ Go to service                                   | Collaboration<br>Information | <b>Singularity on HAICORE</b><br> Singularity<br>Container runtime environment on KIT HAICORE HPC systems.<br><br>: Description<br>→ Go to service        | Infrastructure                  |

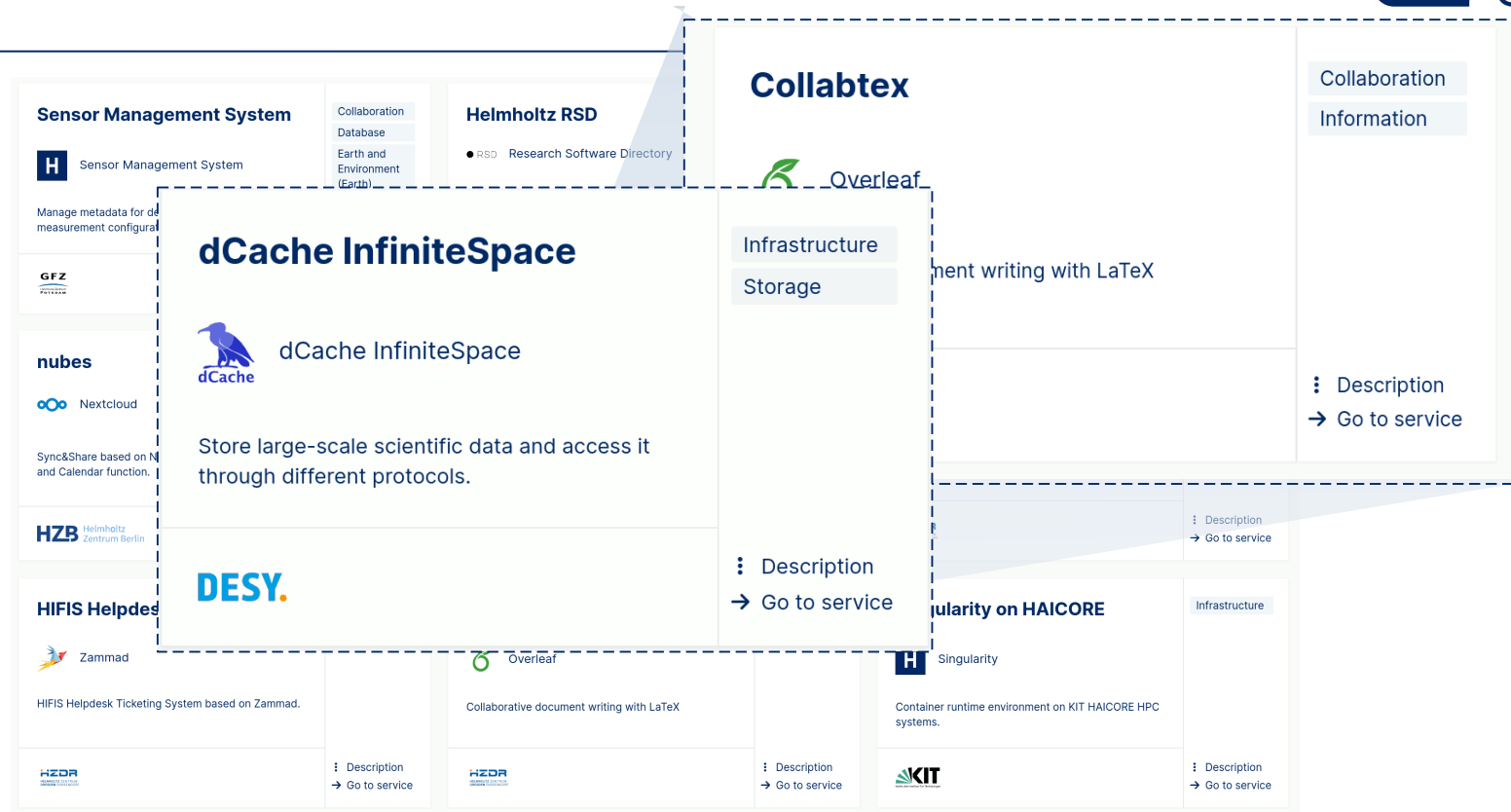


# 1.) Infrastructure & Cloud Services

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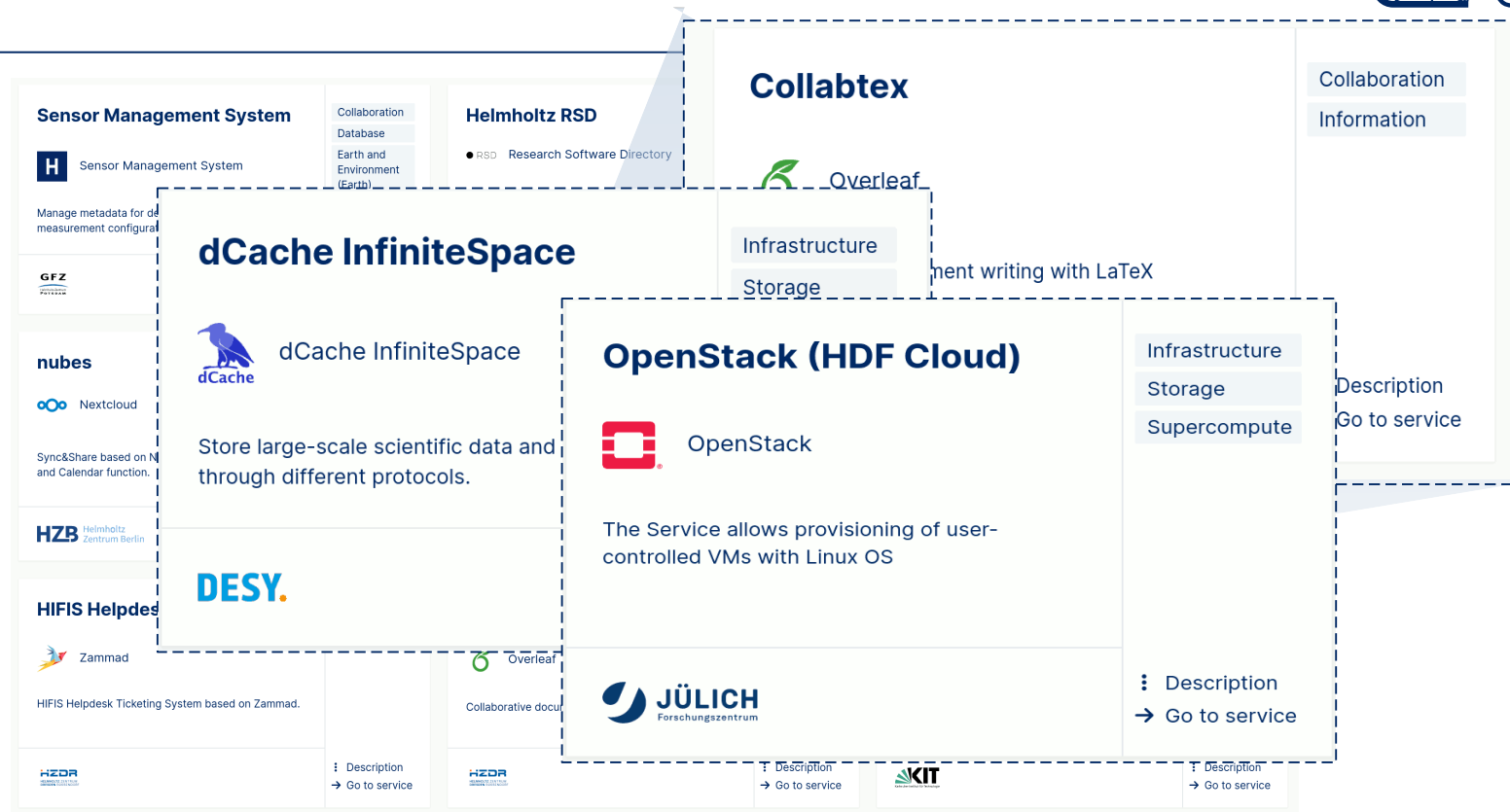


# 1.) Infrastructure & Cloud Services



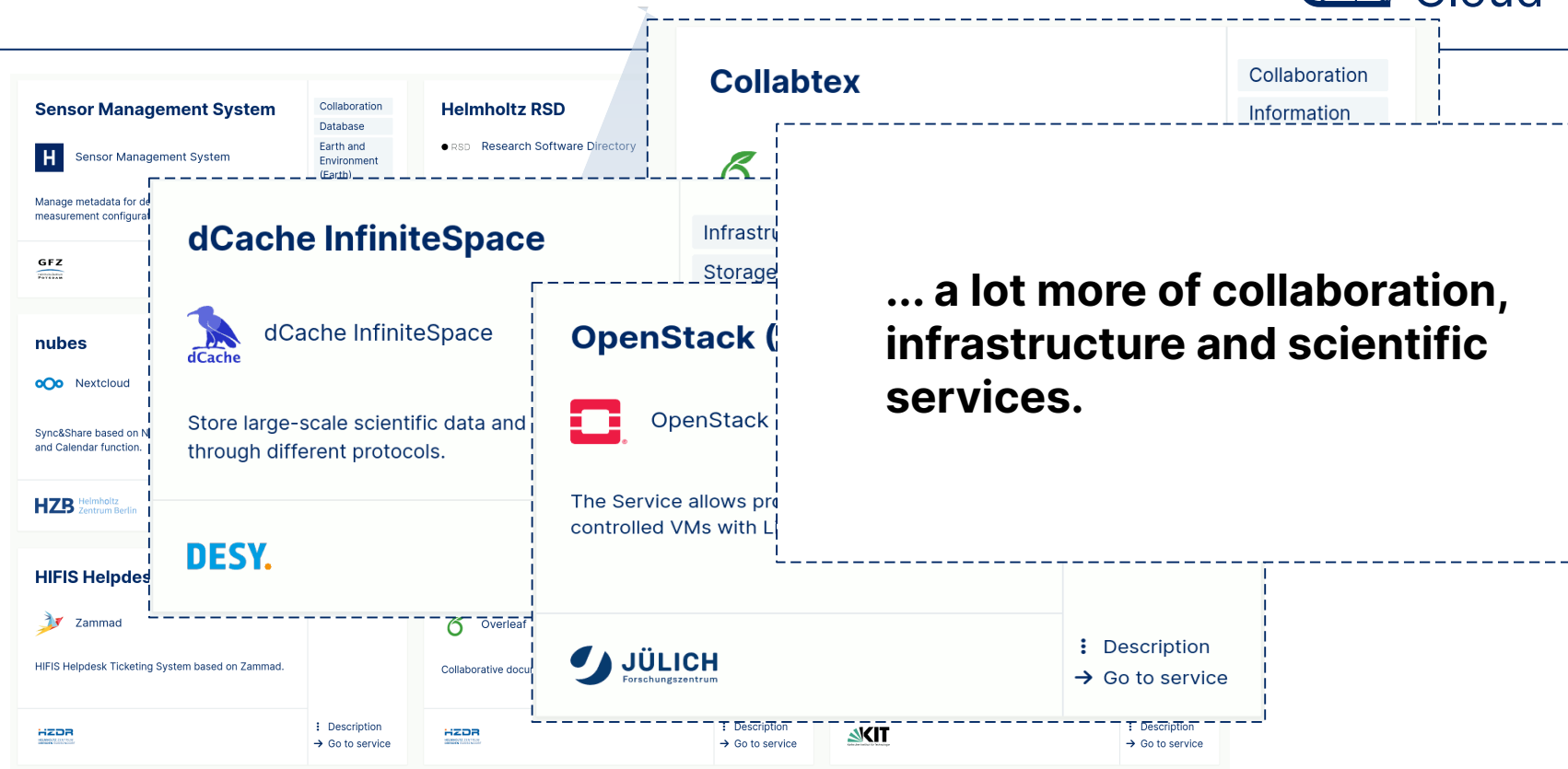


# 1.) Infrastructure & Cloud Services



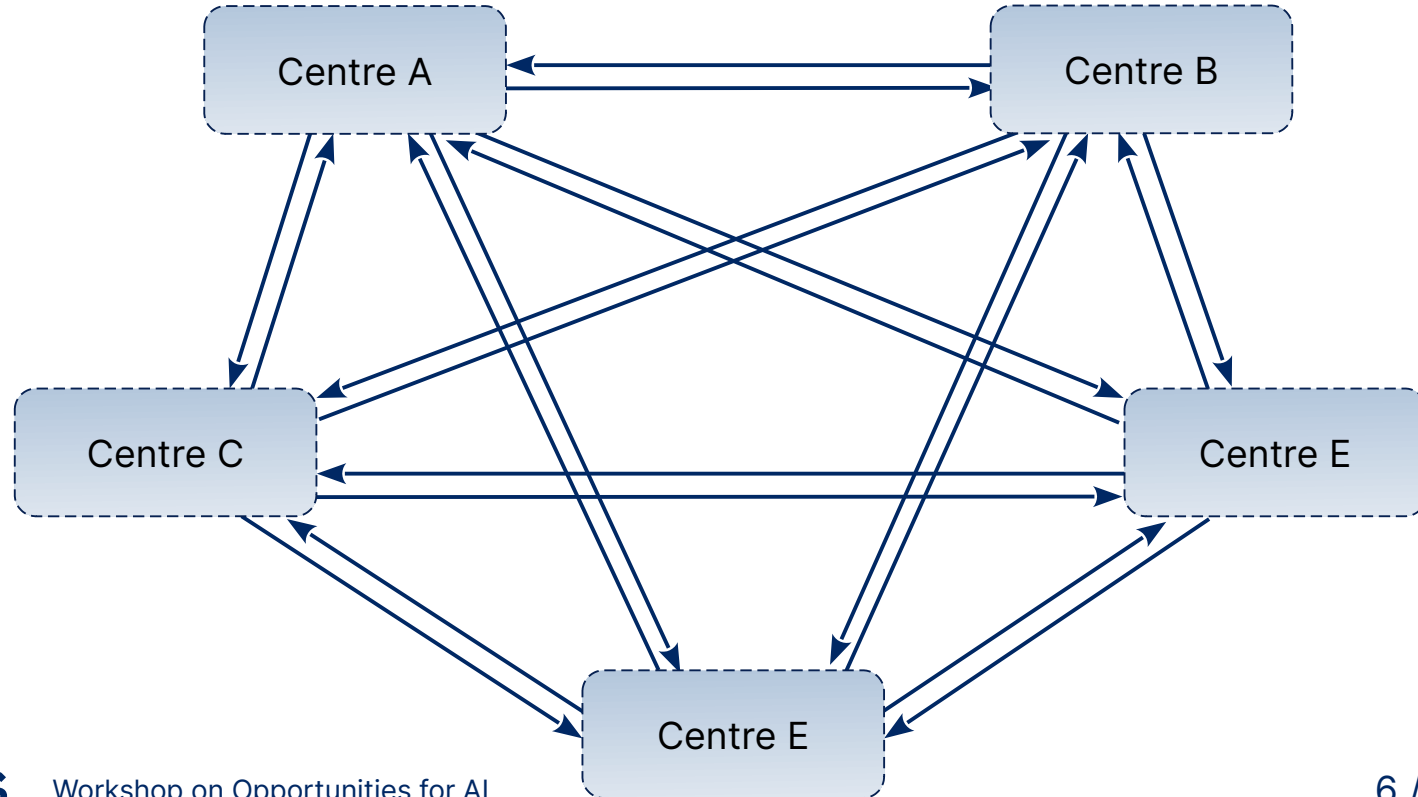


# 1.) Infrastructure & Cloud Services



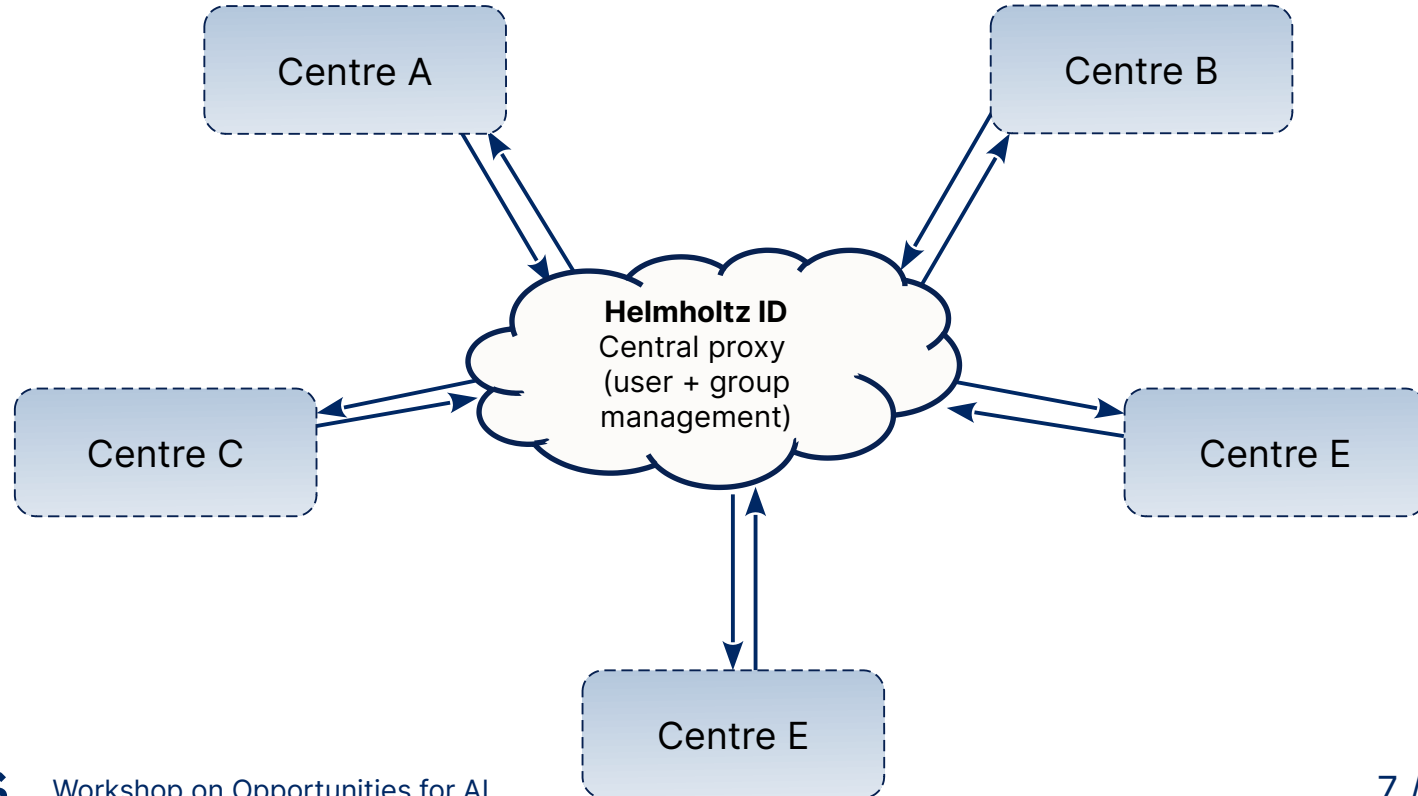


# 1.) Infrastructure: Unified User Management





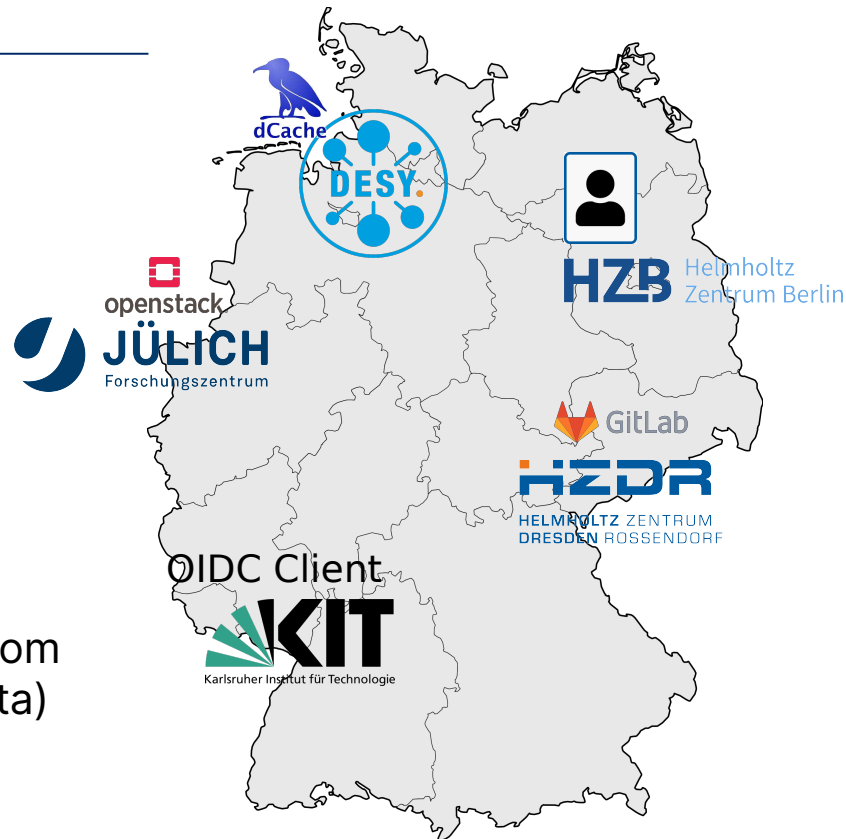
# 1.) Infrastructure: Unified User Management





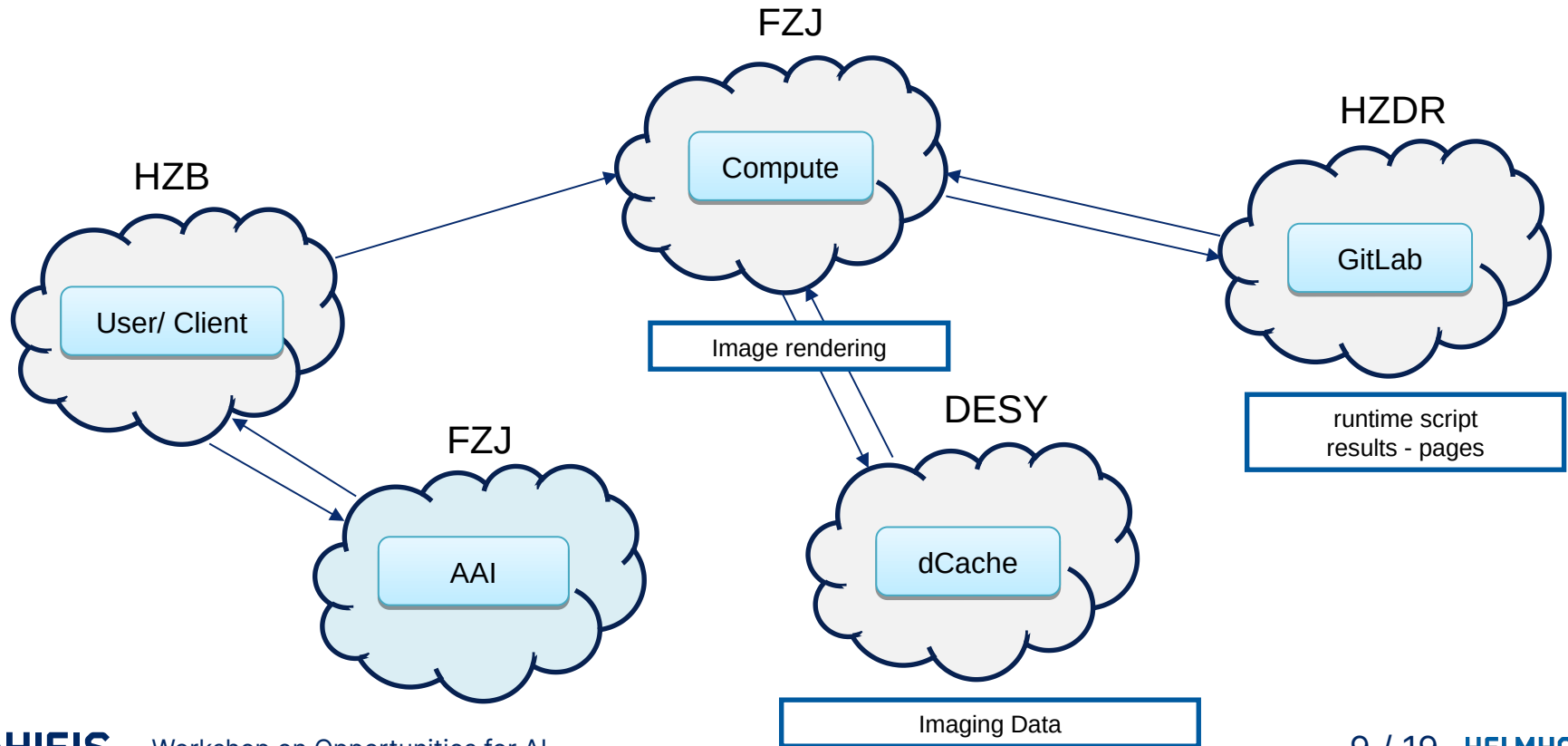
# Example: Distributed Cloud Services 4 Science

- **5 Sites involved:**
  - 3 Cloud Services Sites,
  - 1 Component provider,
  - 1 using centre
- **Thanks to AAI, transparent access possible:**
  - After first login, no further credentials required
  - Efficient and transparent transfer of data from service to service between sites (Code, data)





# Example: Distributed Cloud Services 4 Science





# 1.) Infrastructure for good scientific practices in RSE

Supporting the whole software development lifecycle



**Dependabot**

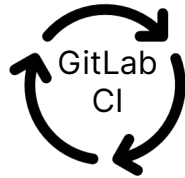
Security: Automate dependency updates

Deployed and made available with

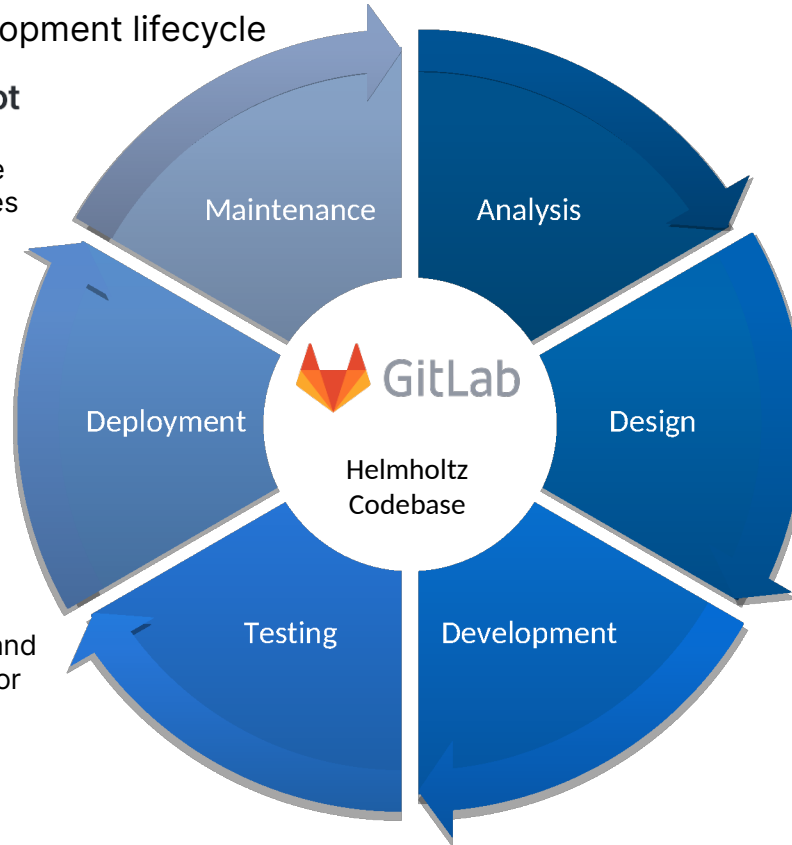


ANSIBLE

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



Continuous Integration and Deployment available for everyone by default



**Kroki**  
Diagram creation



Team communication



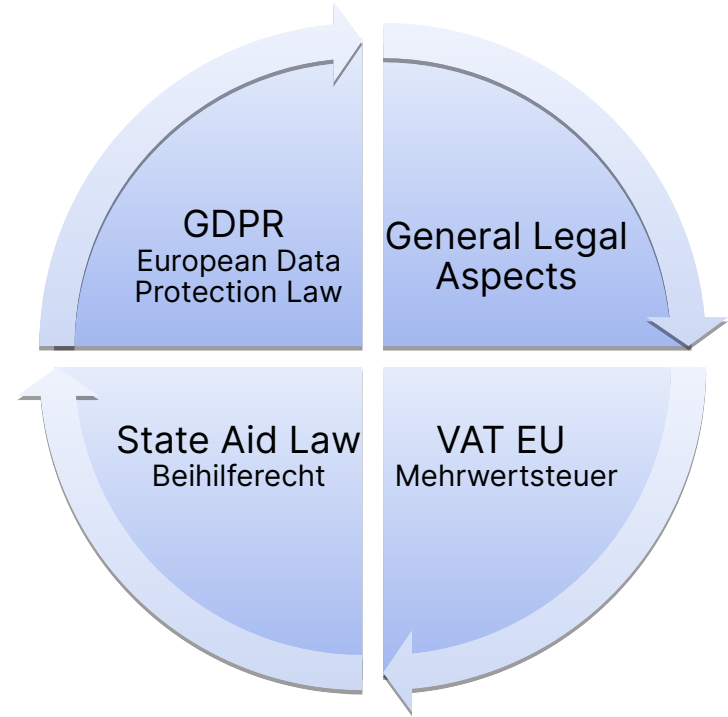
# 1.) Infrastructure: Procedures & Legal Aspects

## Processes

- Management of the service portfolio
- Brokering of (cloud) services
- Coordination and partial operation of User Support

## Finance

- HIFIS funding by Helmholtz Association
- Use of services is free of charge
- Provision of services by the centres





## 2.) Helmholtz Software

Best-practices for sustainable Research Software Engineering on multiple levels:

### 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

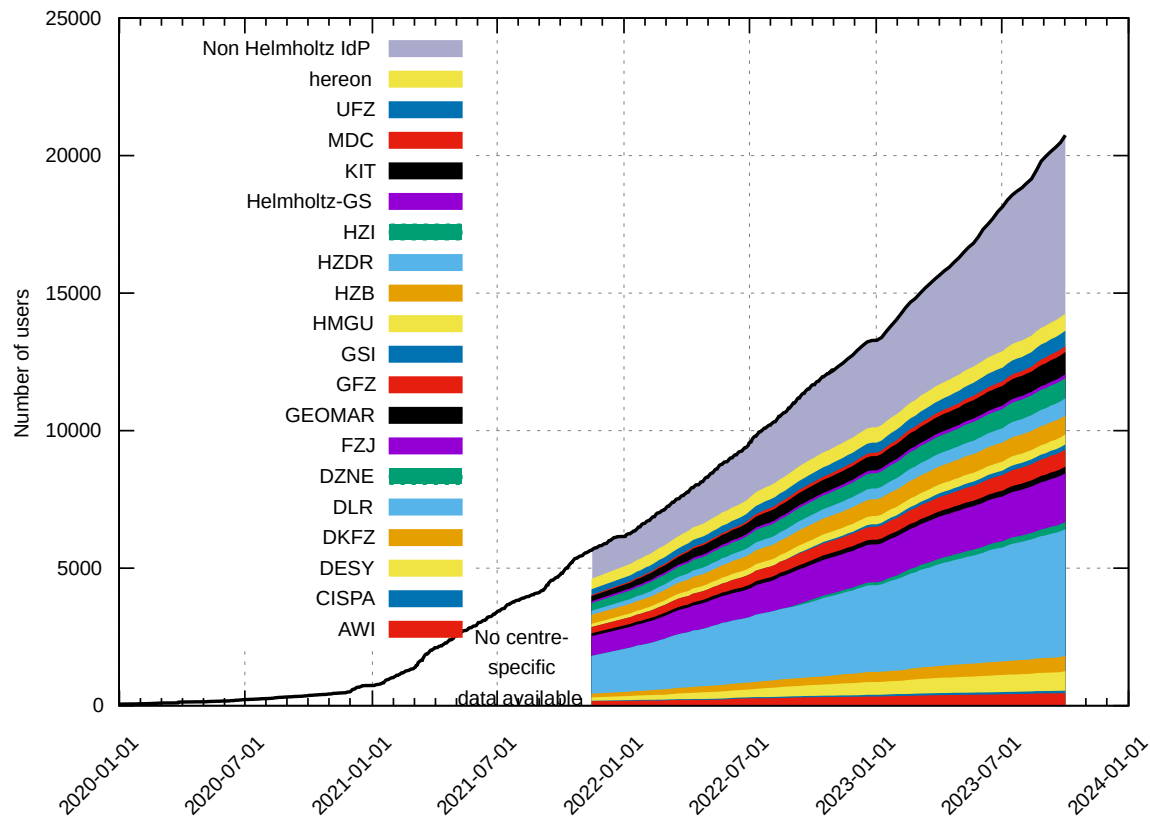
**Contact points** for researchers for questions and problems in the context of RSE.

### Technology

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



# Some Numbers





# Some Numbers

~20k users

of which are ~5k non-Helmholtz

18 Centres

One Login

~190

Institutions with  
users in AAI

33

Helmholtz Cloud Services  
from 9 centres

>75

Cross-centre  
Collaborating groups  
(VO)

>1.000

Support tickets in  
2022

>1.800

Software course  
participants

>950

Monthly active projects in  
the Helmholtz Codebase

~ 15

Crossover Events, incl HIDA:  
Hackathons, Summer Academy...



# Overall Benefits for Science & Helmholtz

## HIFIS



### Added value for Science

- Facilitate **scientific research**
- Enable modern **Research Software Engineering**
- Intensify and expand **partnerships**
- **Single Point of Contact** for Helmholtz Digital Services

### Collaboration made easy

- **Connecting Helmholtz**: AAI, Backbone
- Trusted **Collaboration** Platform
- Consistent **Communication** Forums
- **Simple Access**, minimal formalities

### Sustainable Services

- **Digital Sovereignty**
- **Resilience** and Cyber Security by Redundancy
- **Standards** for Federated Services
- **Synergy** by Consolidation of Services



# Evaluation



- **Excellent progress** setting up initial structures and services in all clusters
- **Uptake** of services good and **increasing**
- **Enthusiastic, well working team**, full of motivation and engagement.
- **Building trust** among all 18 centres: HIFIS is a **catalyst** here
- Now turning from build-up to operation phase: **Adapt!**
- HIFIS can be a **role-model** for similar activities elsewhere
- **Strongly recommend to continue the platform!**



# Ongoing Works & Plans

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- **Awareness:** Branding of HIFIS services to make researchers aware what they are using, even beyond Helmholtz.
- **Coverage:** Make HIFIS services commonly accepted and practically used by all Helmholtz centres.
- **Interaction with users:** Increase where possible interaction with end users.
- **Cyber security:** Coordination and increased resilience of core components
- **International collaboration:** Further promote federated technologies and cooperation on resource sharing.
- **Scale Effects:** Exploit increased weight of all Helmholtz vs single centres; improved specialization and consolidated use cases



# Helmholtz Digital Services for Science — Collaboration made easy.

## I. Just try it!

- Most Software and Cloud Services readily available for Helmholtz + Partners
- User-oriented workflows will be integrated continuously

## II. See what's there & Spread the word!

- <https://hifis.net/media>
- <https://helmholtz.cloud>
- <https://hifis.net/newsletter>

## III. Consult us:

- [support@hifis.net](mailto:support@hifis.net)







Thank you!





Thank you!



Questions?