# Helmholtz Digital Services for Science

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for the HIFIS-Team

Data and Software Seminar, DESY
Zeuthen, 2024-02-13

# Incubator Platforms

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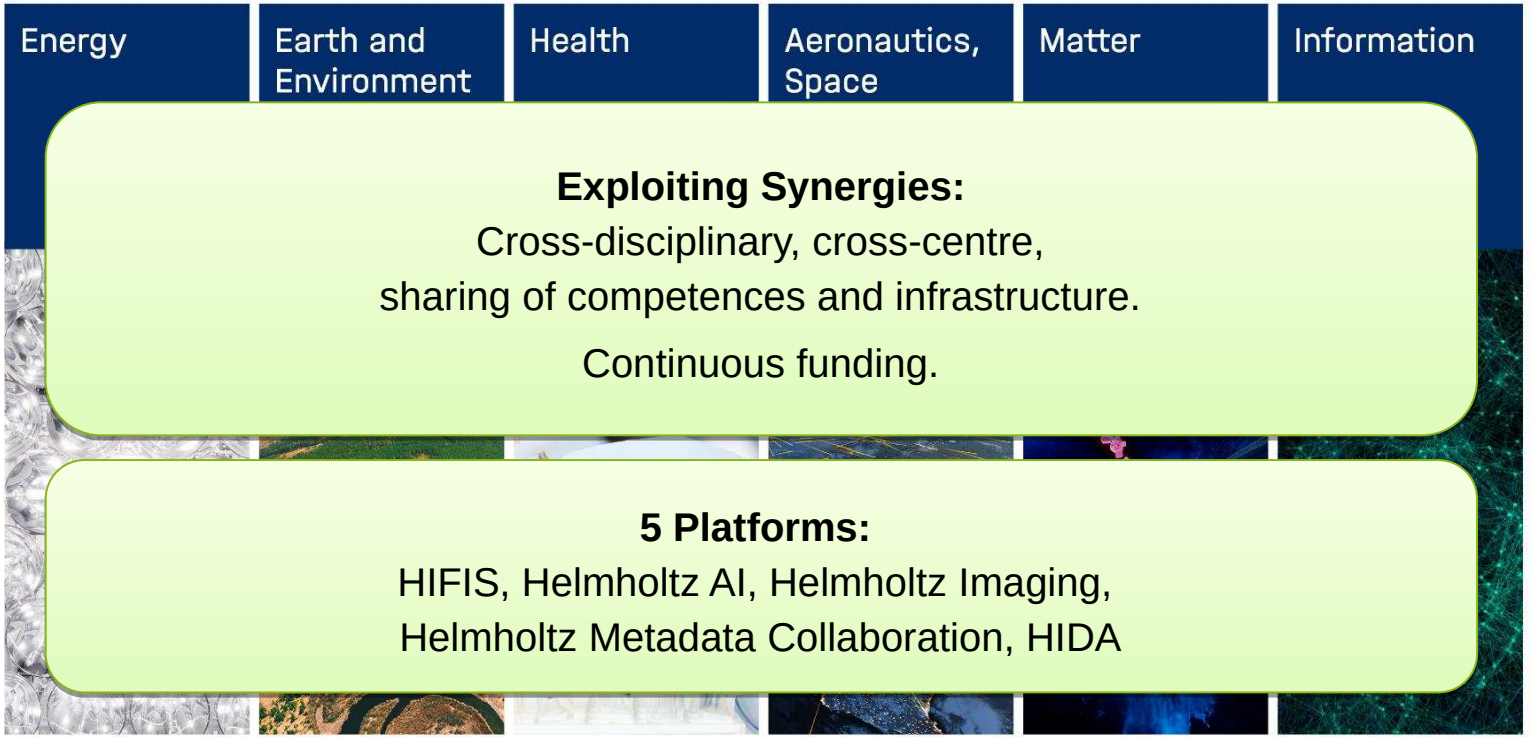
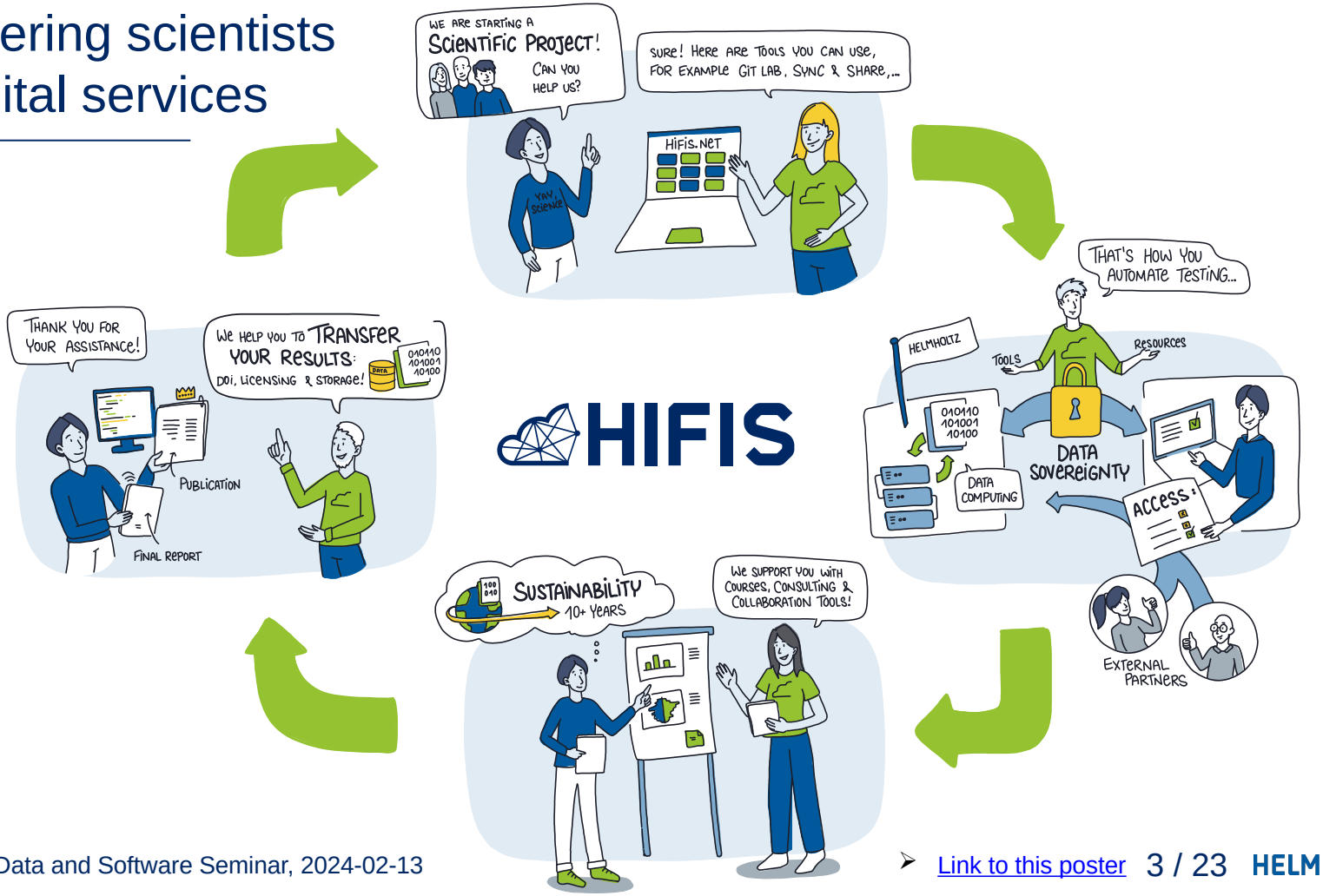
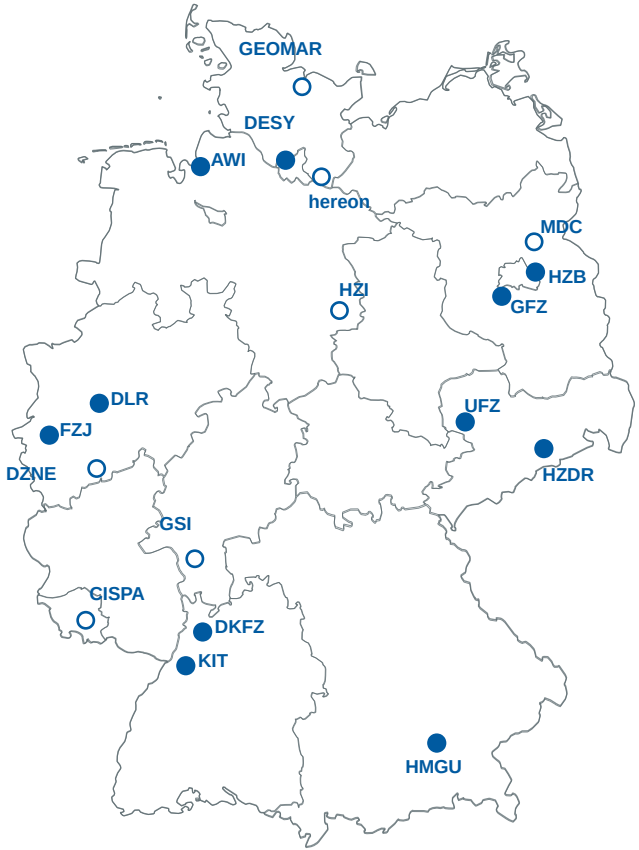


# Empowering scientists with digital services



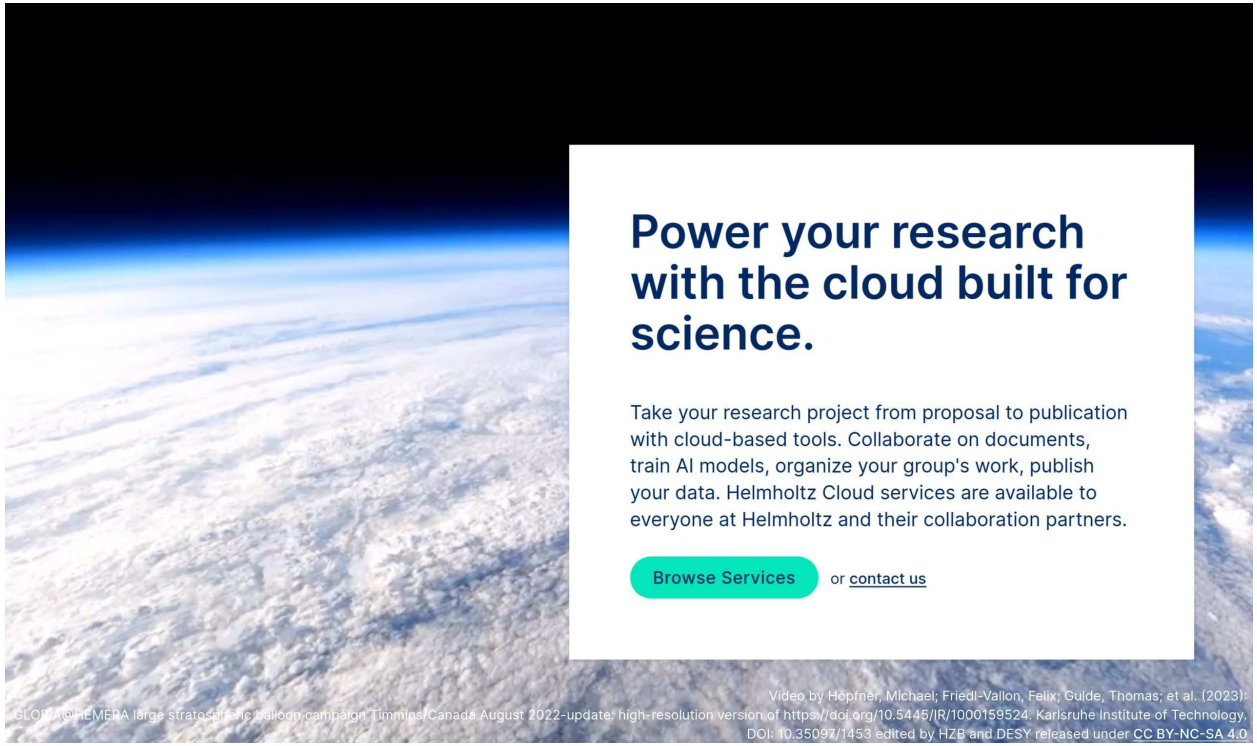
# HIFIS Team

- 11 Centres for all-Helmholtz & Partners
- 3 Organisational Clusters: Backbone, Cloud, Software



# Infrastructure & Cloud Services

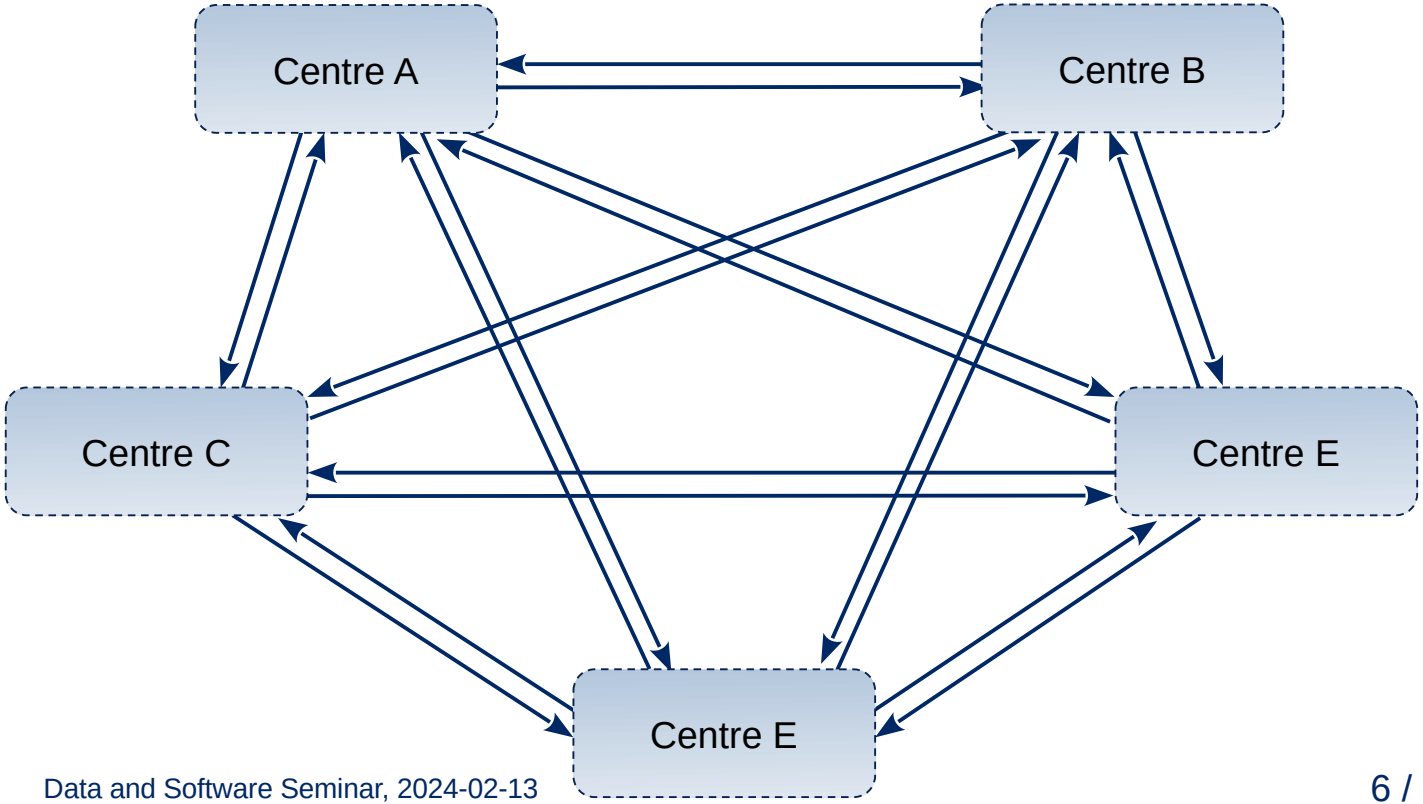
HELMHOLTZ Cloud



# Helmholtz ID: Unified User & Group Management

HELMHOLTZ ID

AARC Blueprint



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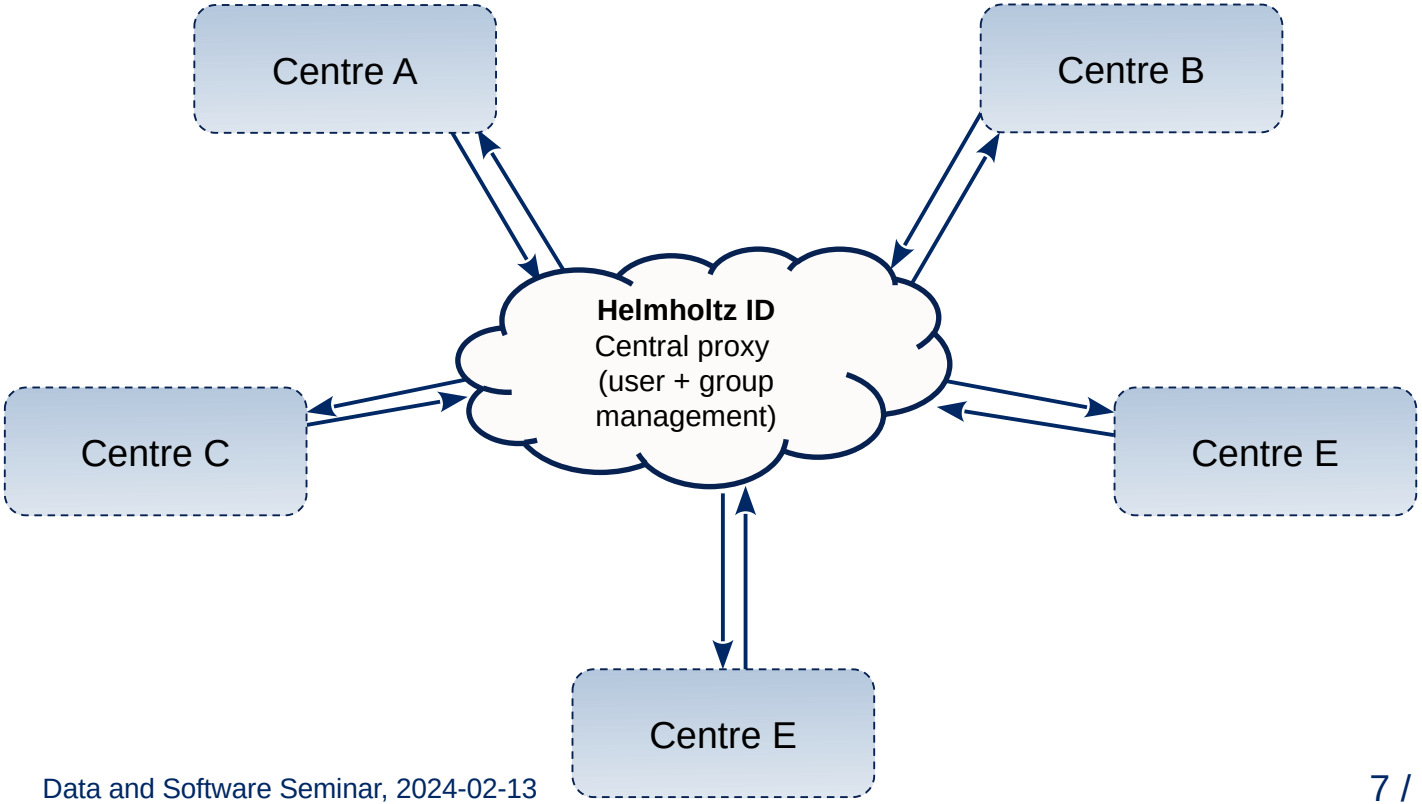



AARC Blueprint

# Helmholtz ID: Unified User & Group Management

HELMHOLTZ ID

AARC Blueprint

# Infrastructure & Cloud Services

HELMHOLTZ Cloud

### Sensor Management System

Collaboration
Database
Earth and Environment (Earth)
Science

Sensor Management System

Manage metadata for devices, platforms & measurement configurations.

GFZ

Description
Go to service

### Helmholtz RSD

Database
Science

RSD Research Software Directory

Promote and discover research software developed in the Helmholtz Association.

GFZ

Description
Go to service

### LimeSurvey

Collaboration
Survey

LimeSurvey CE

An Open source on-line statistical survey web application.

HELMHOLTZ MUNICH

Description
Go to service

### nubes

Collaboration
Sync & Share

Nextcloud

Sync&Share based on Nextcloud with Office for Web and Calendar function.

HZB Helmholtz Zentrum Berlin

Description
Go to service

### Mattermost

Chat
Collaboration

Mattermost

A hosted chat service for everyone within Helmholtz based on Mattermost.

HZDR

Description
Go to service

### Helmholtz Codebase

Collaboration
Infrastructure

GitLab

A web-based DevOps lifecycle tool that provides a Git-repository manager.

HZDR

Description
Go to service

### HIFIS Helpdesk

Collaboration

Zammad

HIFIS Helpdesk Ticketing System based on Zammad.

HZDR

Description
Go to service

### Collabtex

Collaboration
Information

Overleaf

Collaborative document writing with LaTeX

HZDR

Description
Go to service

### Singularity on HAICORE

Infrastructure

Singularity

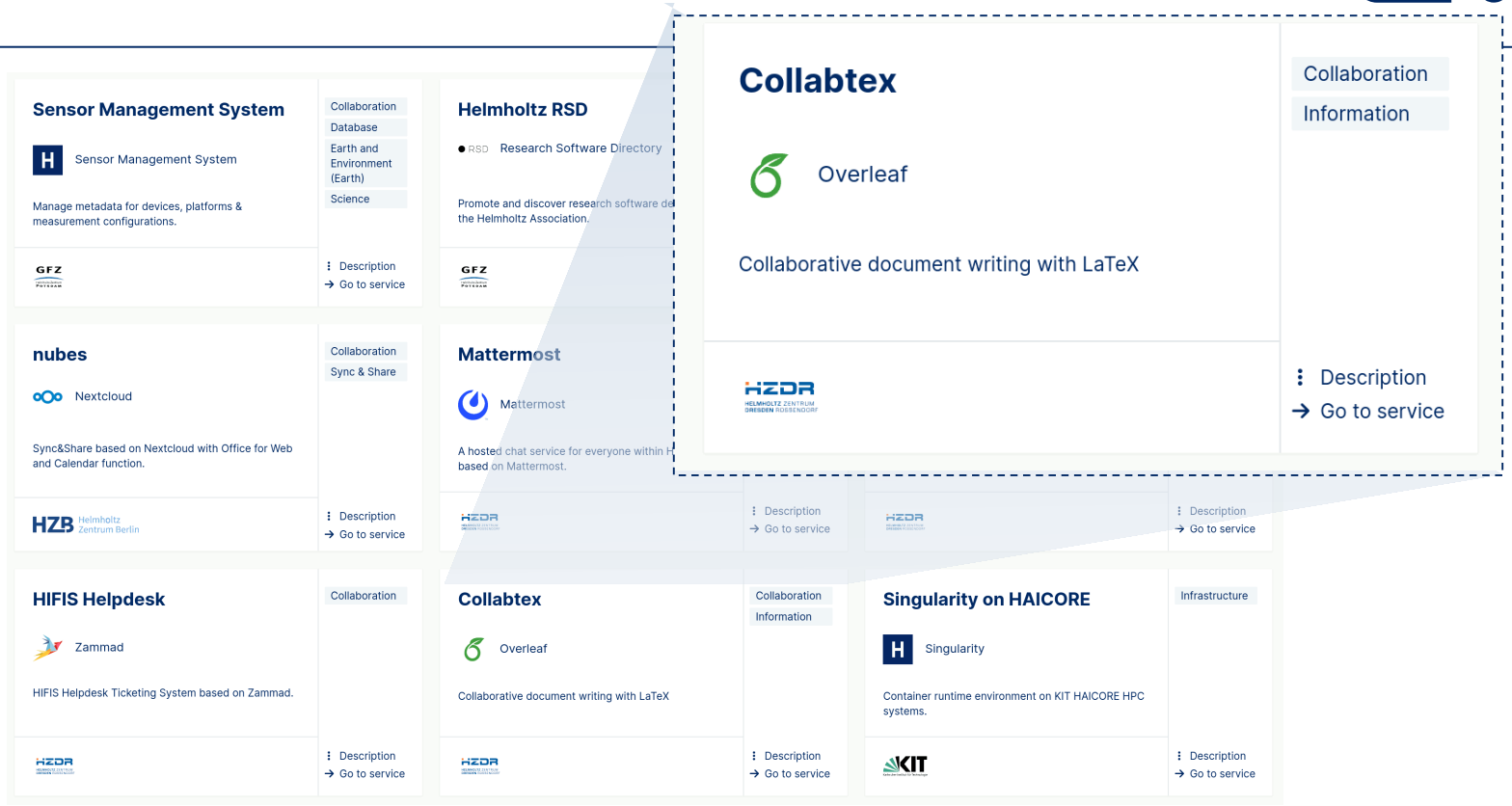
Container runtime environment on KIT HAICORE HPC systems.

KIT

Description
Go to service

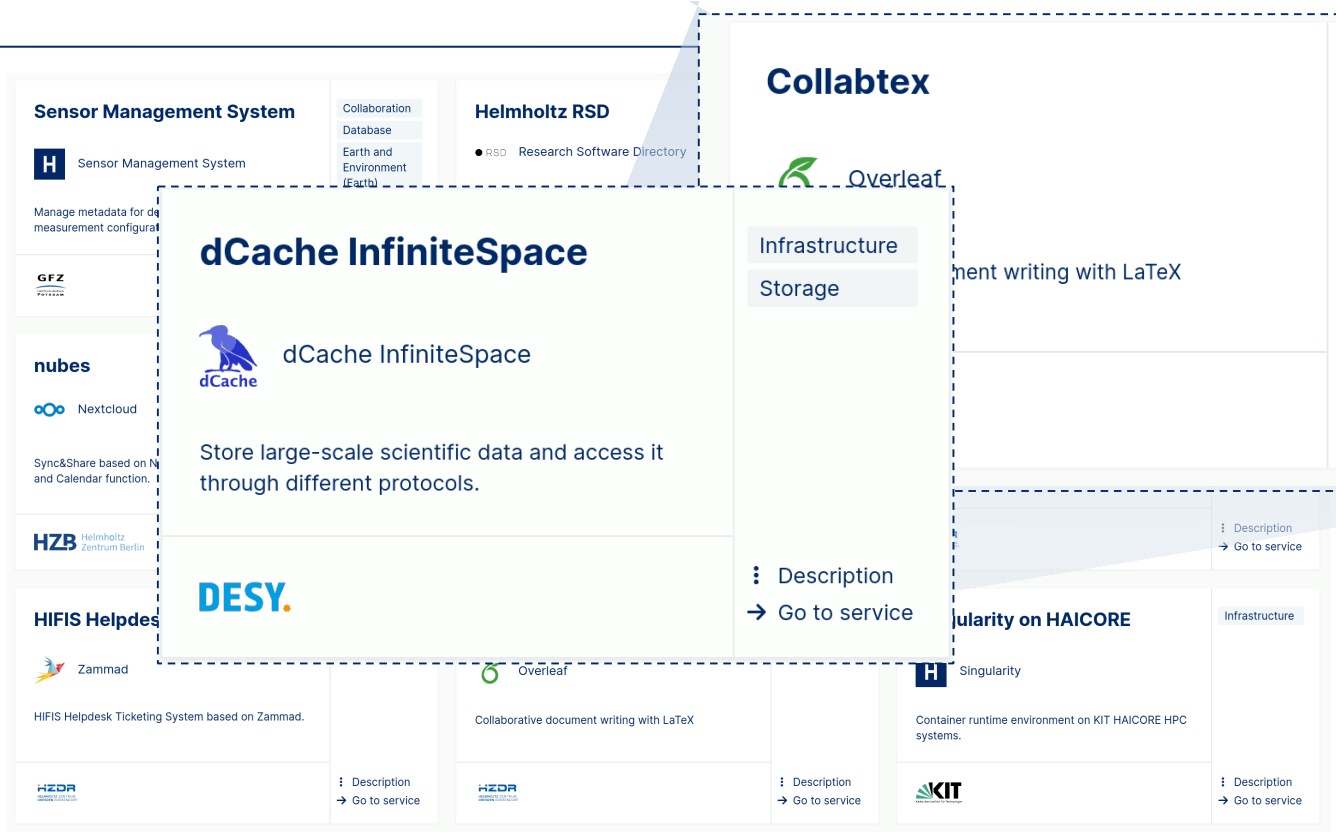
# Infrastructure & Cloud Services

HELMHOLTZ Cloud



# Infrastructure & Cloud Services

HELMHOLTZ Cloud



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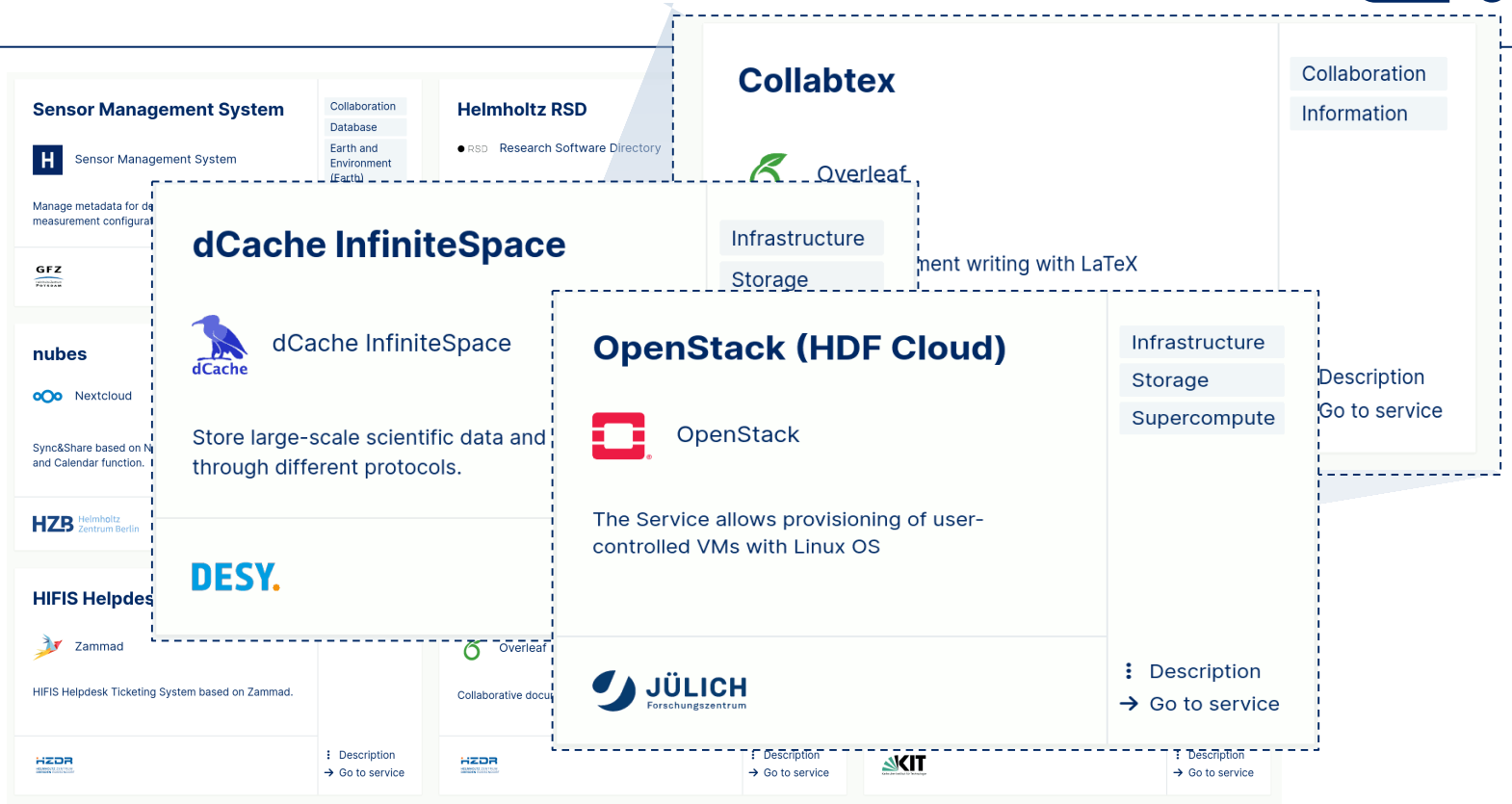
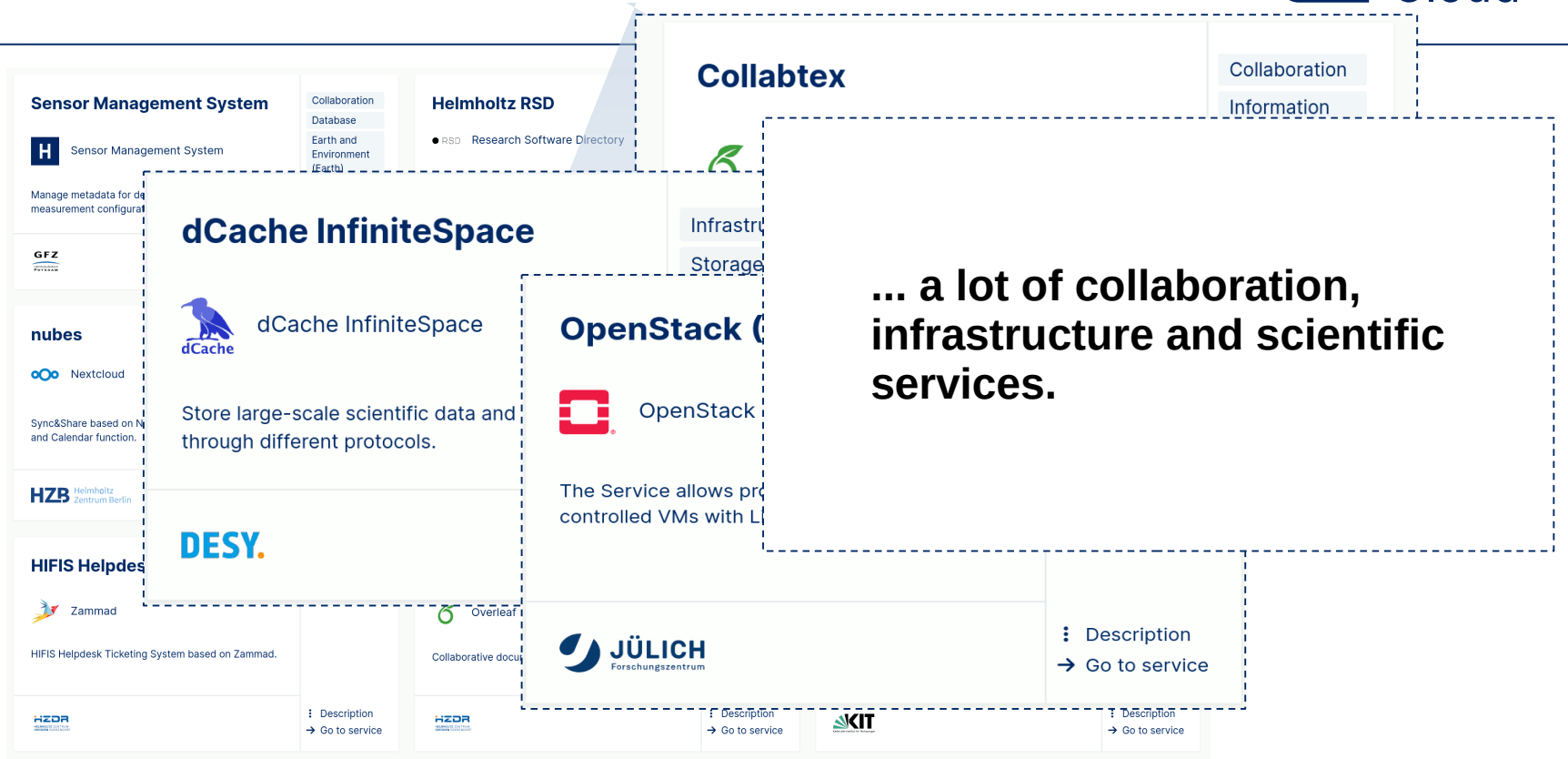
HELMHOLTZ Cloud



# Infrastructure & Cloud Services

HELMHOLTZ Cloud



# Infrastructure for good scientific practices in RSE

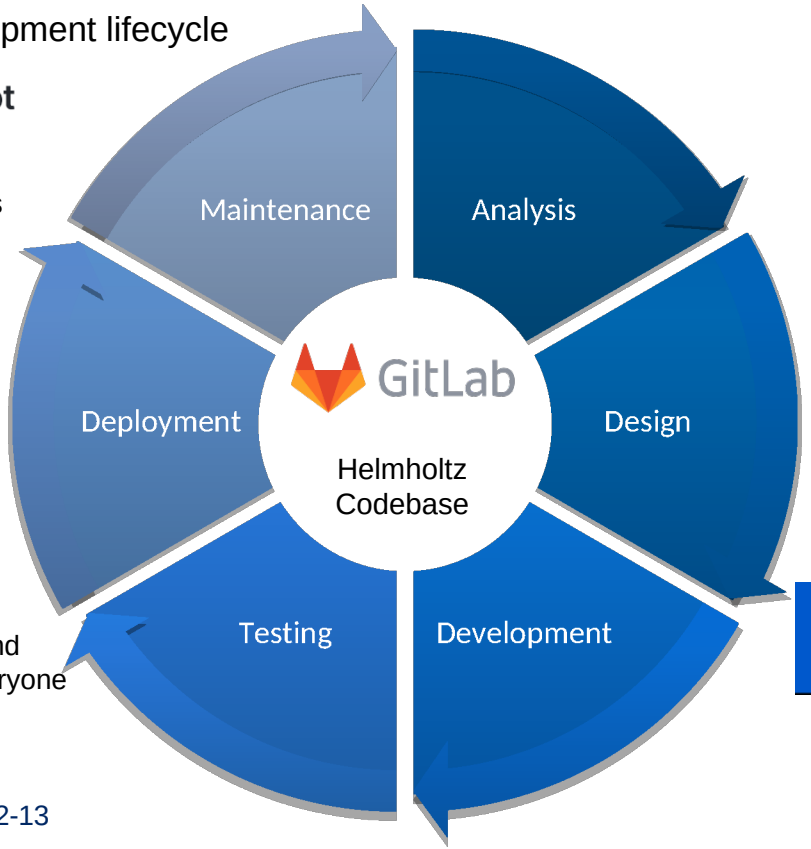
Supporting the whole software development lifecycle

Dependabot

Security: Automate dependency updates

Kroki

Diagram creation




Deployed and made available with

ANSIBLE

https://github.com/hifis-net

GitLab CI

Continuous Integration and Deployment available for everyone by default

Mattermost

Team communication

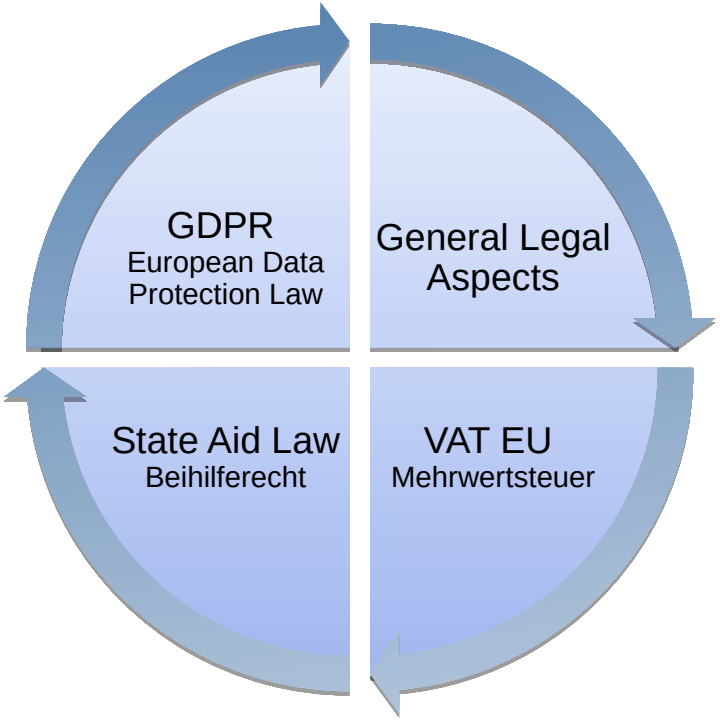
# Procedures & Legal Aspects

**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



# Helmholtz Software

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

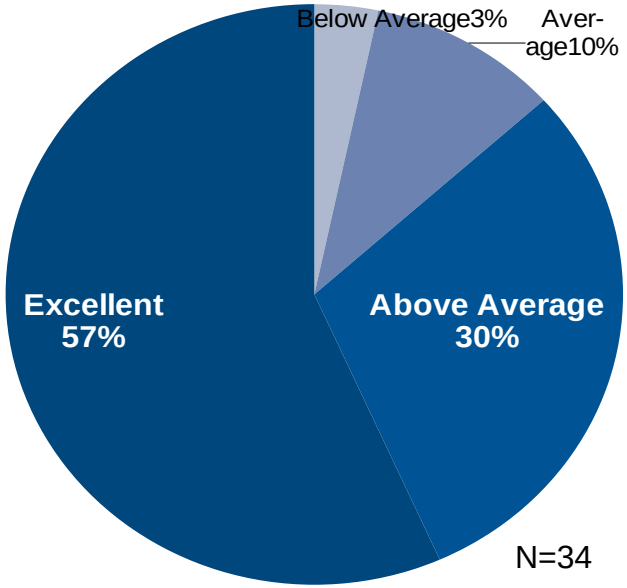
| Education & Training | Community | Consulting | Technology |
| --- | --- | --- | --- |
| **Courses, material** and **workshops** for getting you started or boosting your software engineering practice. | Build and foster communities to support the **cultural change** when dealing with research software. Maintain a SW Directory | **Contact points** for researchers for questions and problems in the context of RSE. | Provide a sustainable, well integrated and easy to use **technology infrastructure** for research software development. |

# Helmholtz Software: Consulting

> Great idea and a great support especially since there is no other person programming in my research group. Very happy that you came up with this!

> For us, it would be perfect to have such a consulting service over a longer period of time, e.g. for 6-12 months with regular meetings.

Impact of the consultation on your project or work

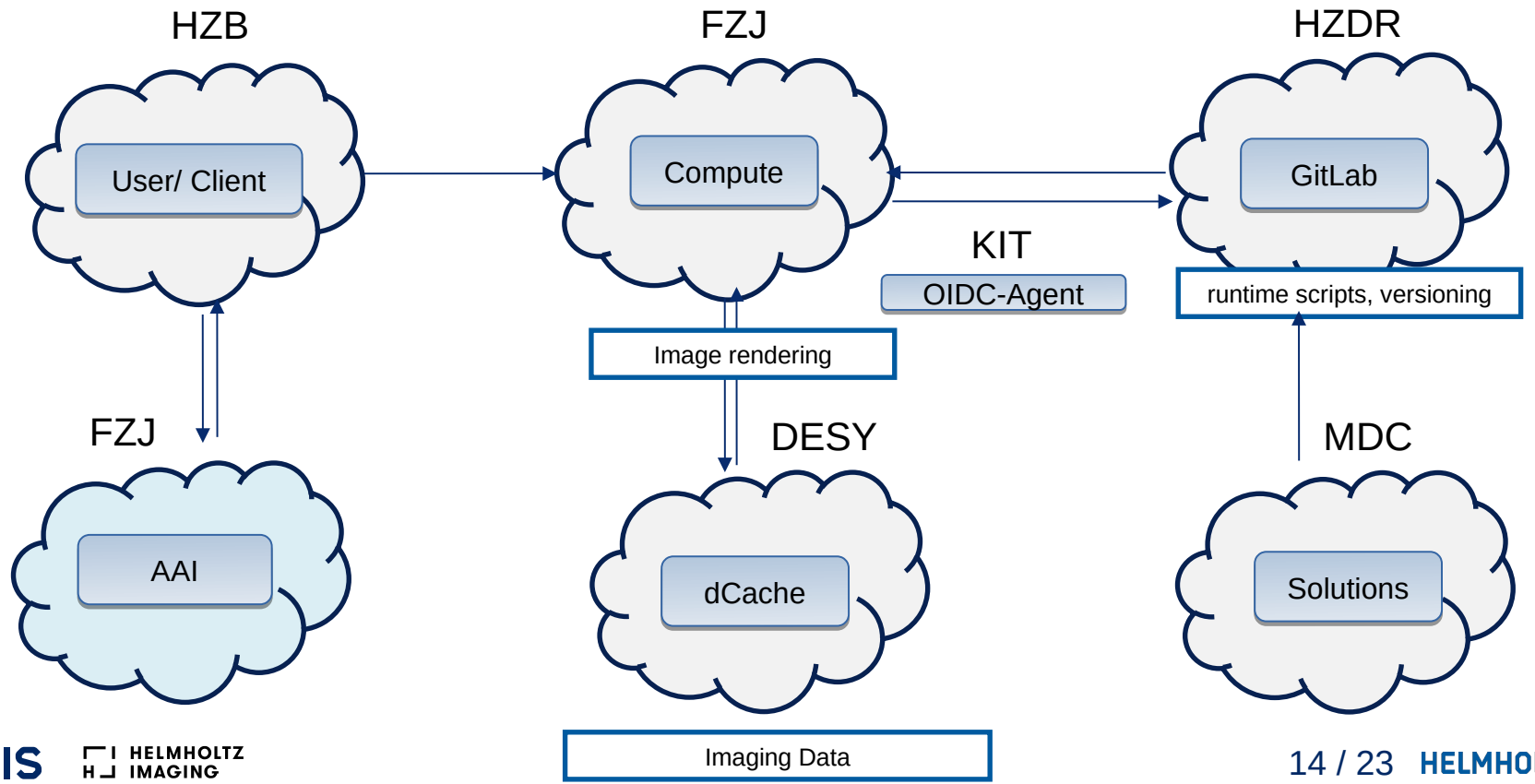


# Distributed Service Orchestration (Example)

- **Demo – 6 Sites involved:**
  - 3 Cloud Services Sites,
  - 2 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)

# Distributed Service Orchestration (Example)



# Distributed Service Orchestration (Example)

HZB

FZJ

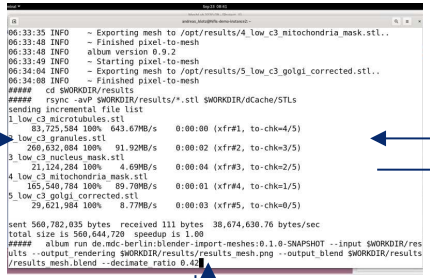
HZDR

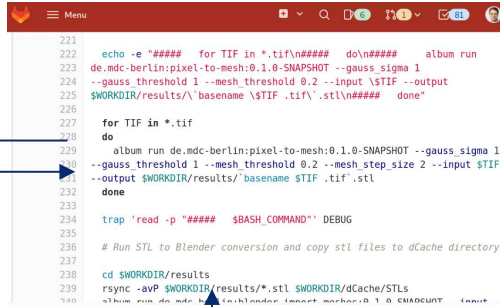
KIT

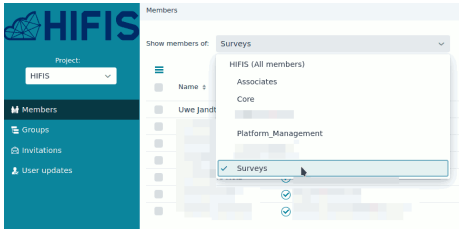
FZJ

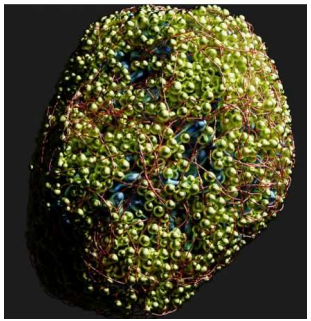
DESY

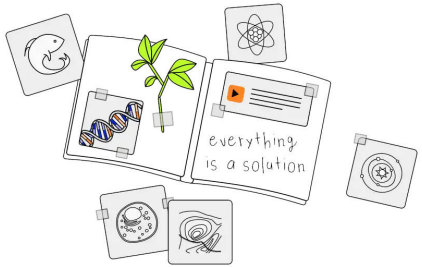
MDC





# Some Numbers

**>7000**
Active users; total >20k accounts, of which are ~5k non-Helmholtz

**>95**
Cross-centre Collaborating groups (VO)

**>2.000**
Software course participants

**~290**
Institutions with users in AAI

**>1.200**
Support tickets in 2023

**~1.000**
Monthly active projects in the Helmholtz Codebase

**33**
Helmholtz Cloud Services from 9 centres

**~ 15**
Crossover Events, incl HIDA: Hackathons, Summer Academy...

# 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 → "HIFIS 2.0"

- **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

HIFIS

Thank you!

HIFIS

Thank you!

Questions?

# Spare slides

# Our mission and vision

- **“Empowering scientists with digital services”**

# Our mission and vision

- **“Empowering scientists with digital services”**
- → HIFIS is concentrating its efforts on...
  - facilitating cooperation across scientific disciplines and institutions,
  - building the best cloud platform for science,
  - providing federated sovereign digital infrastructures, advocating and developing them,
  - promoting awareness for scientific software as a driver of scientific progress, and
  - enabling all people creating software at Helmholtz to apply modern software engineering principles that serve good scientific practice.

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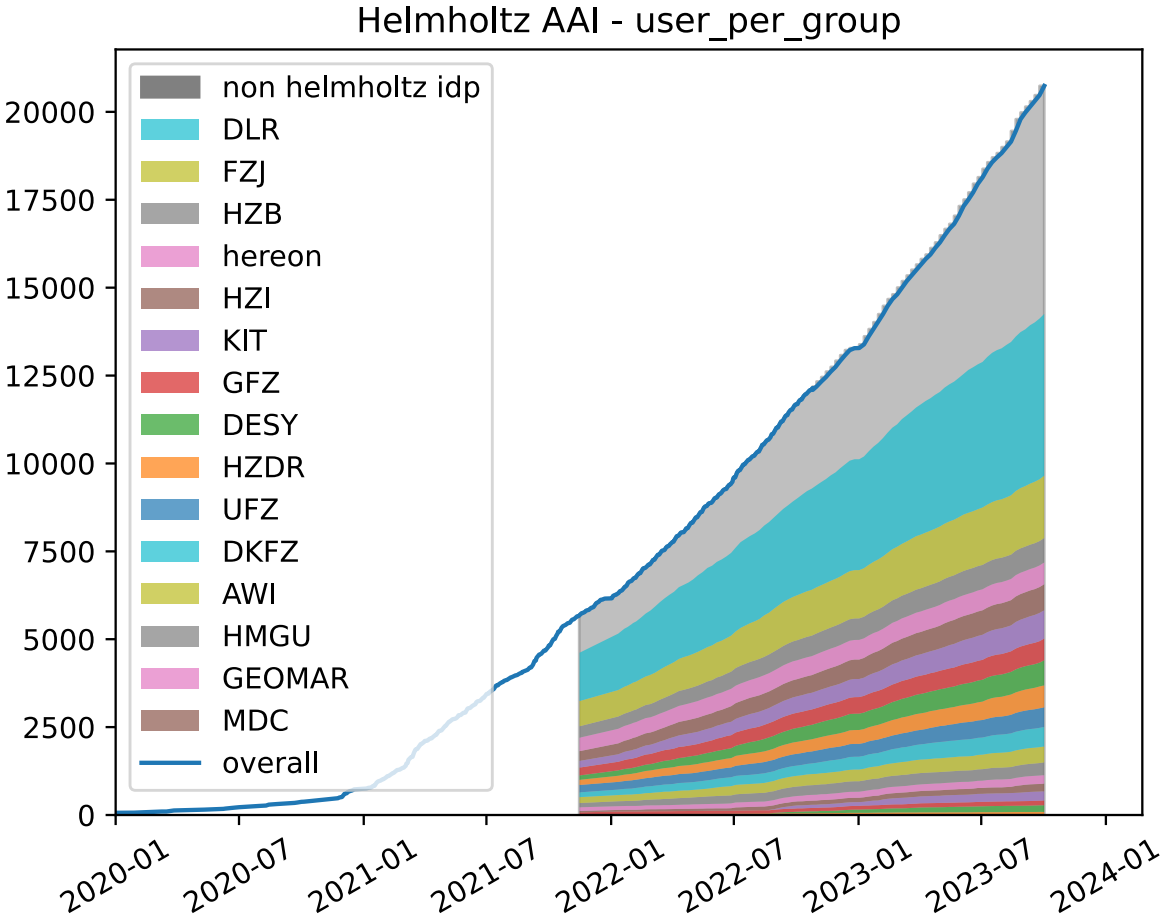




➢ https://hifis.net/doc/cloud-service-kpi/