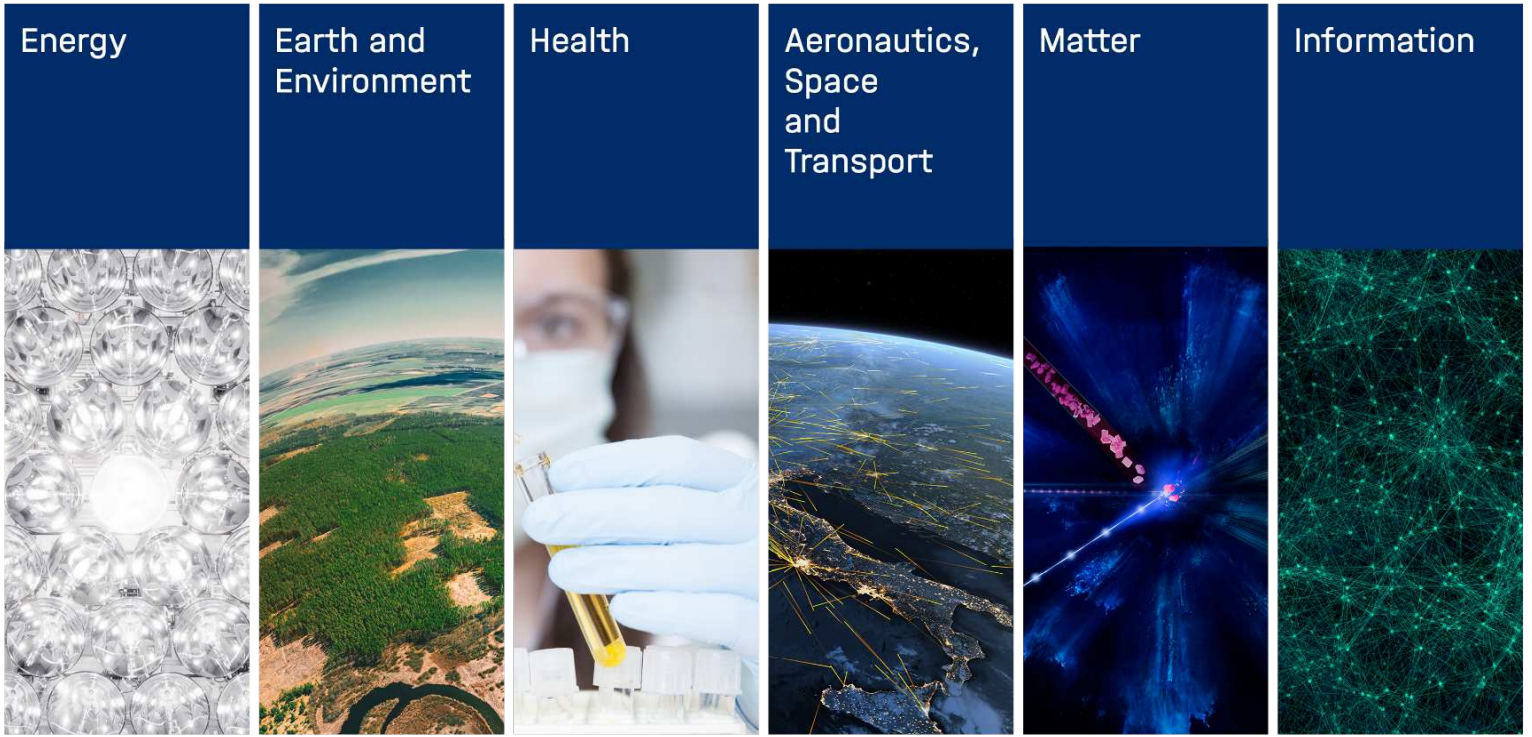
Helmholtz Digital Services for Science - Collaboration made easy.

Uwe Jandt
for the HIFIS-Team

DMA-ST1 Synergy Workshop
Hamburg, DESY, 2023-11-09

Incubator Platforms



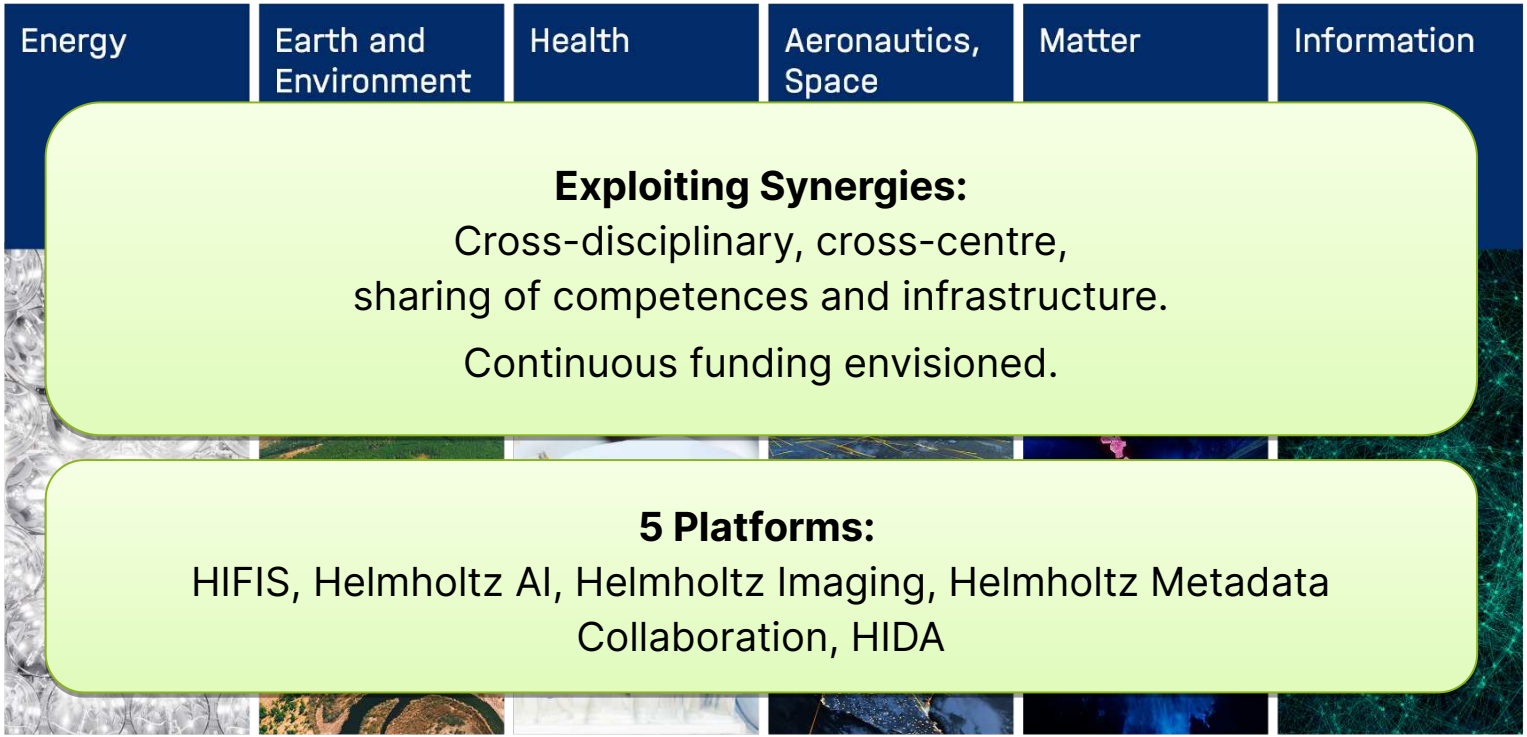
Incubator Platforms

Energy	Earth and Environment	Health	Aeronautics, Space	Matter	Information

Exploiting Synergies:
Cross-disciplinary, cross-centre,
sharing of competences and infrastructure.

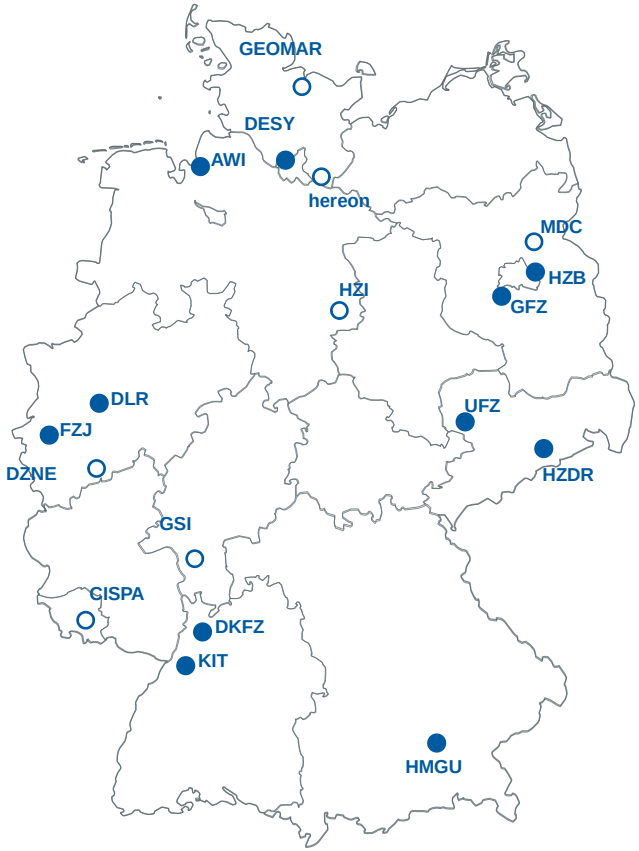
Continuous funding envisioned.

Incubator Platforms

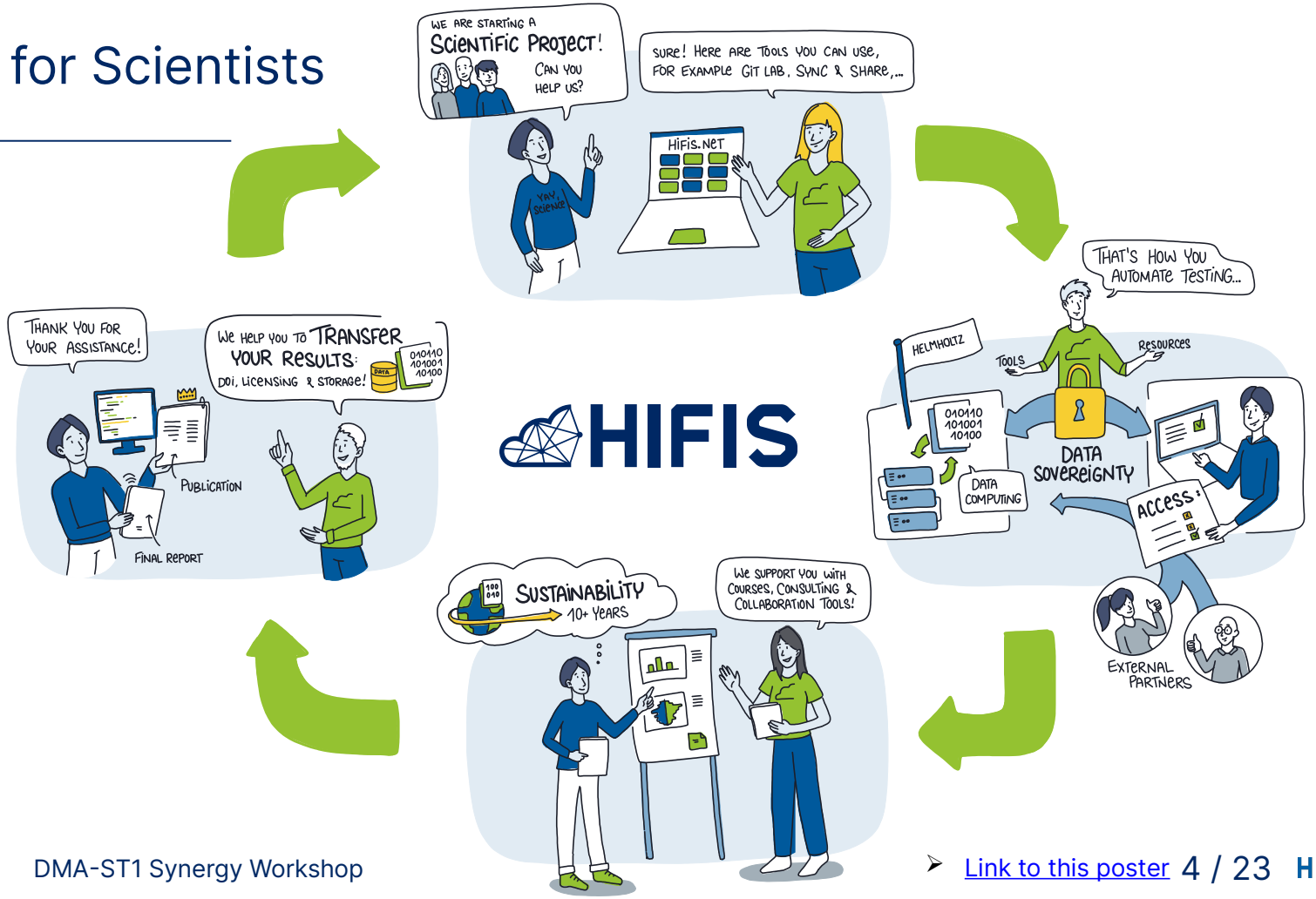


HIFIS Team

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

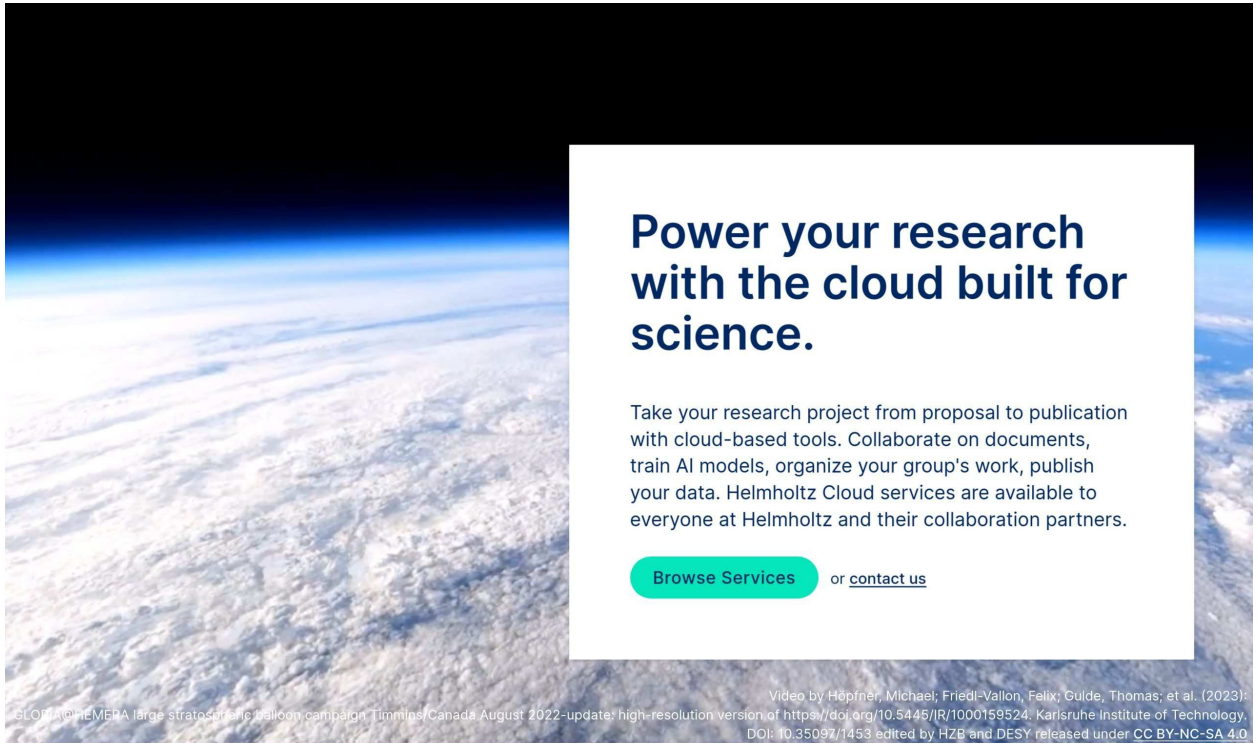


HIFIS for Scientists



1.) Infrastructure & Cloud Services

HELMHOLTZ Cloud



1.) 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

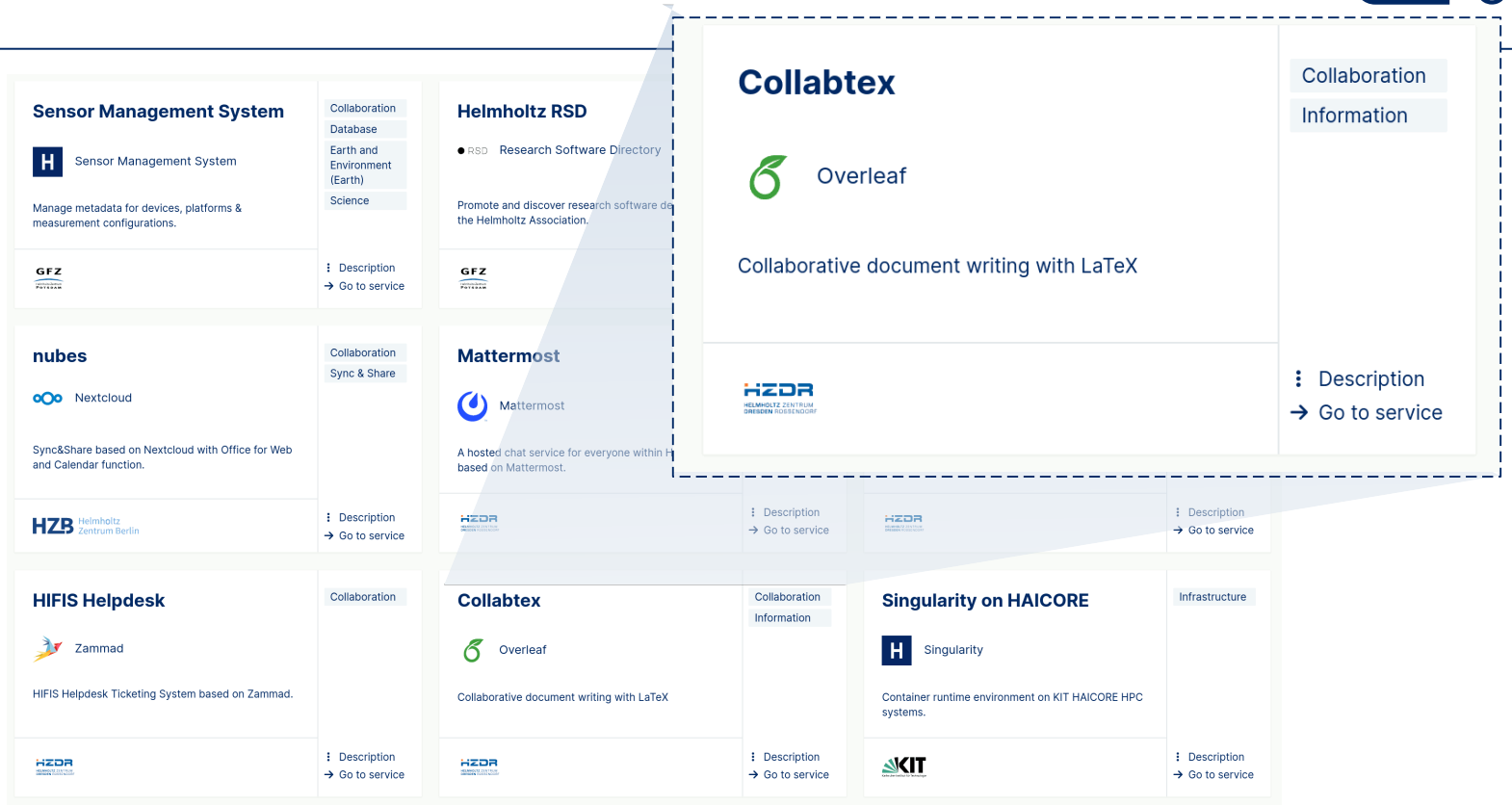
Container runtime environment on KIT HAICORE HPC systems.

KIT

Description
Go to service

1.) Infrastructure & Cloud Services

HELMHOLTZ Cloud



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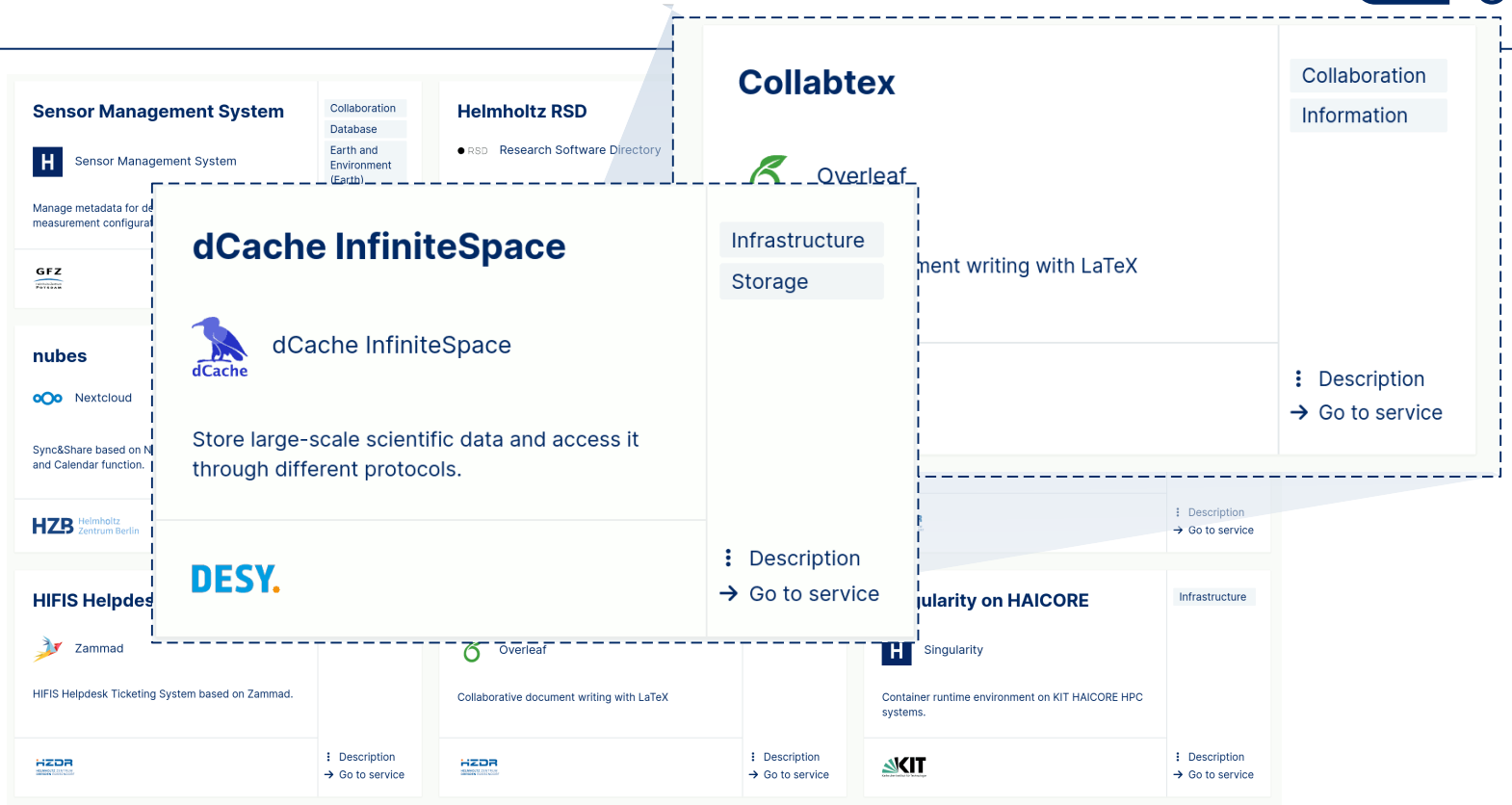

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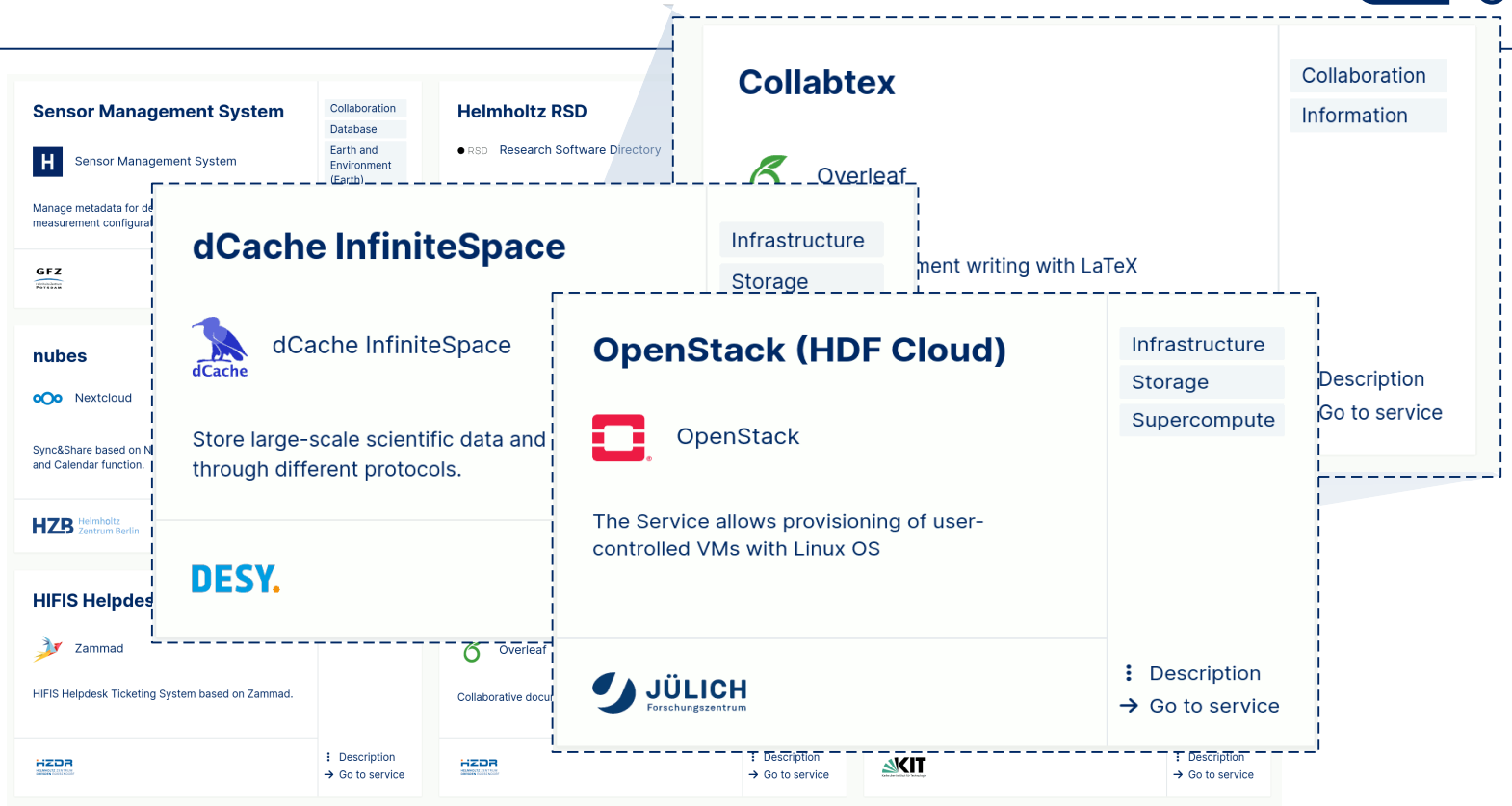

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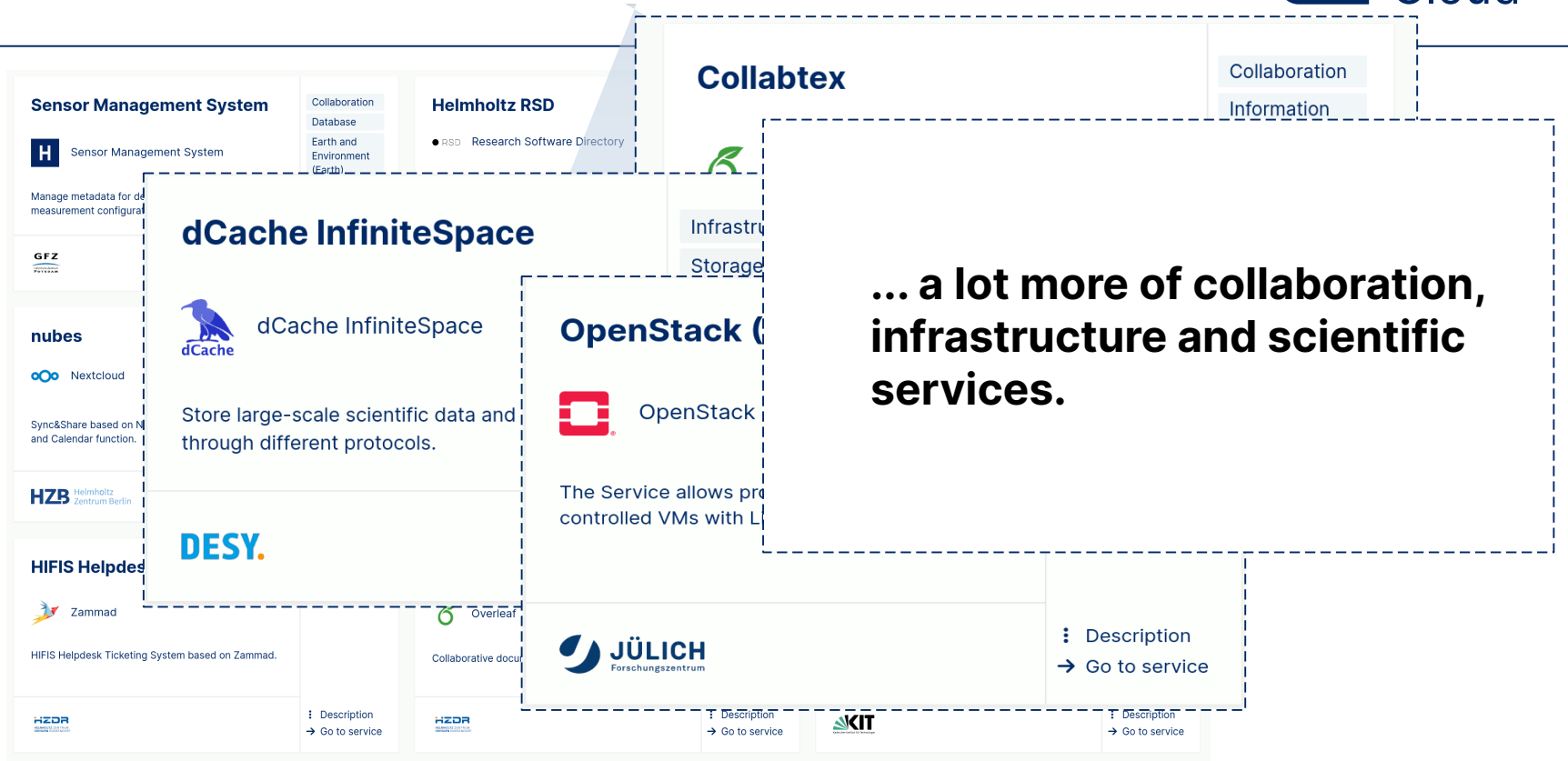
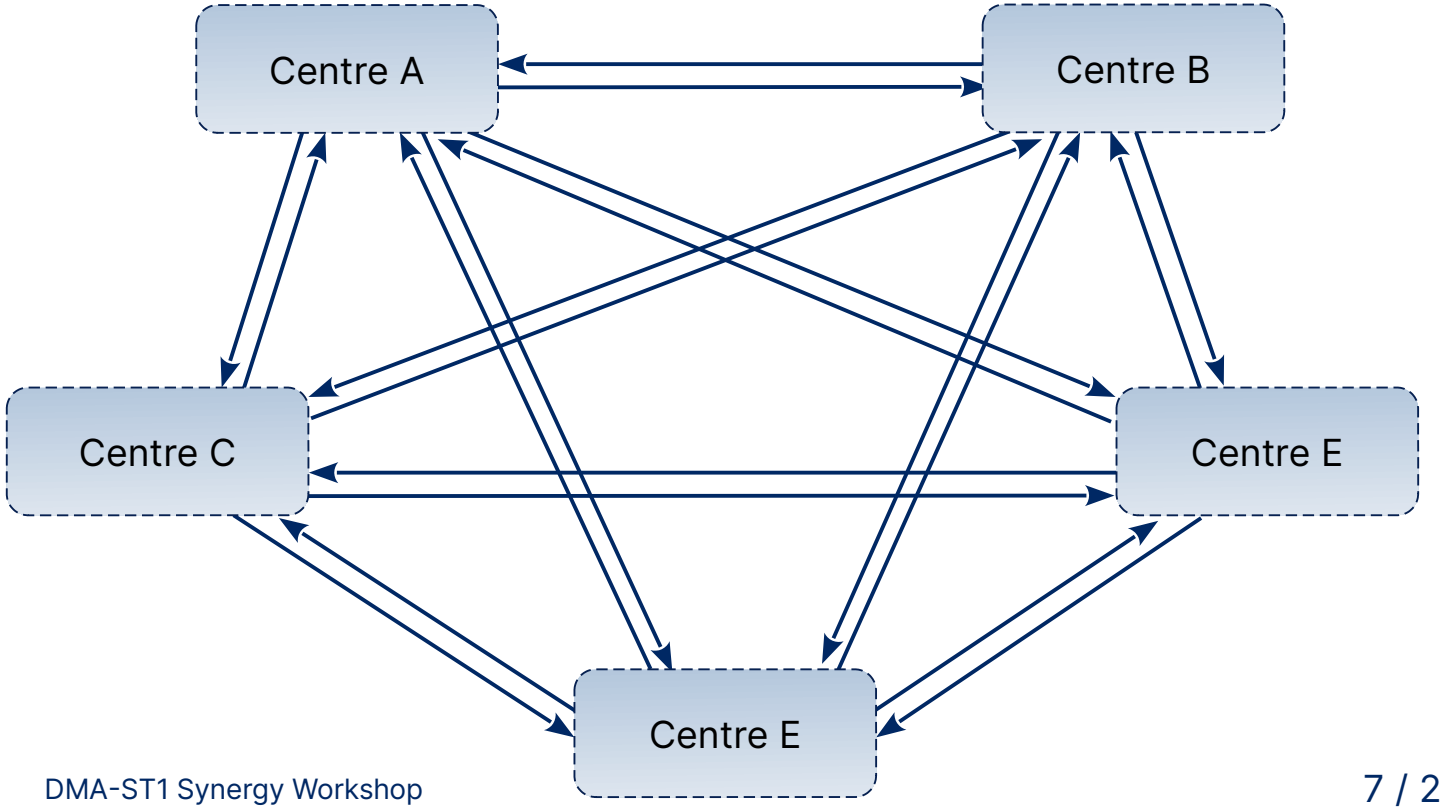


1.) AAI: Unified User & Group Management

HELMHOLTZ ID

AARC Blueprint



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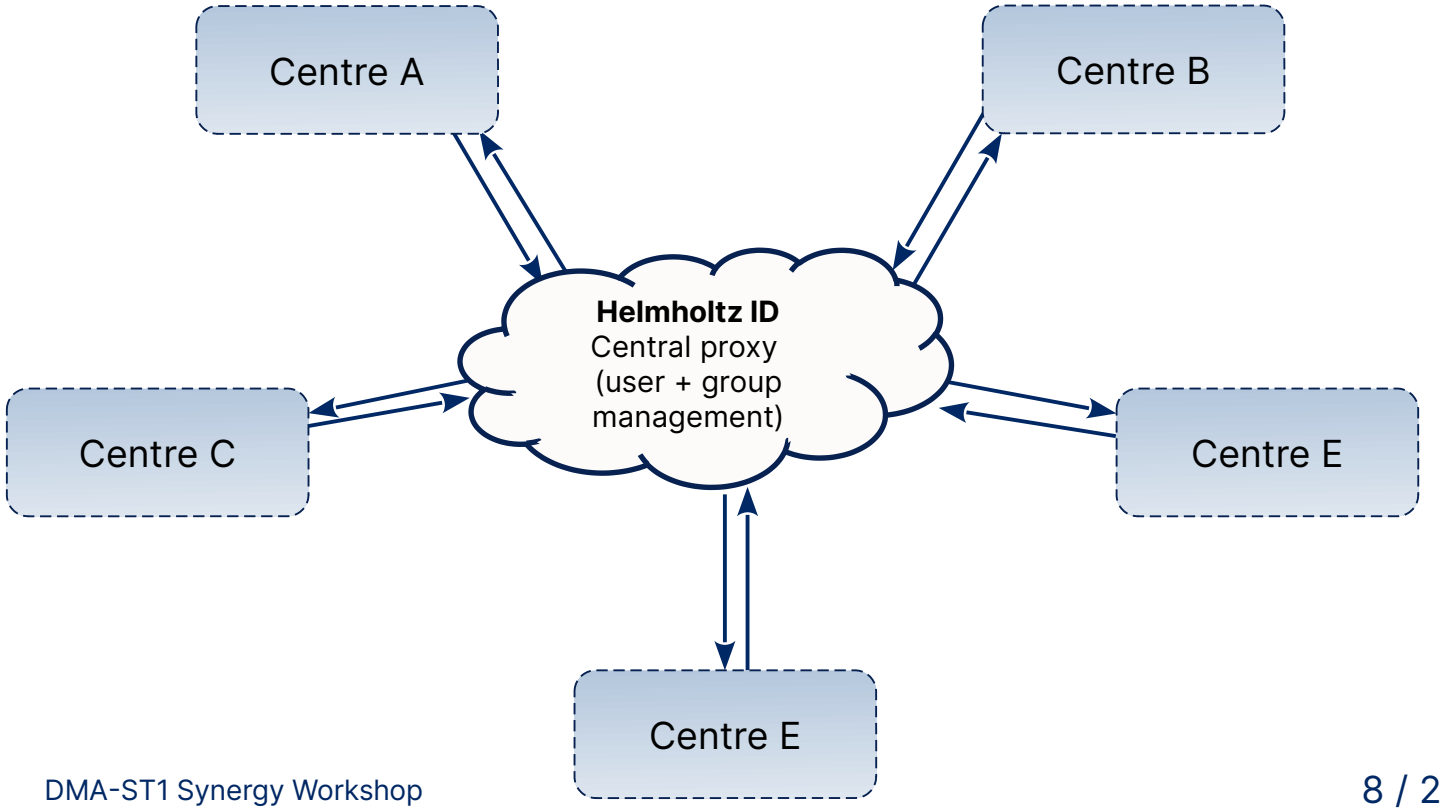

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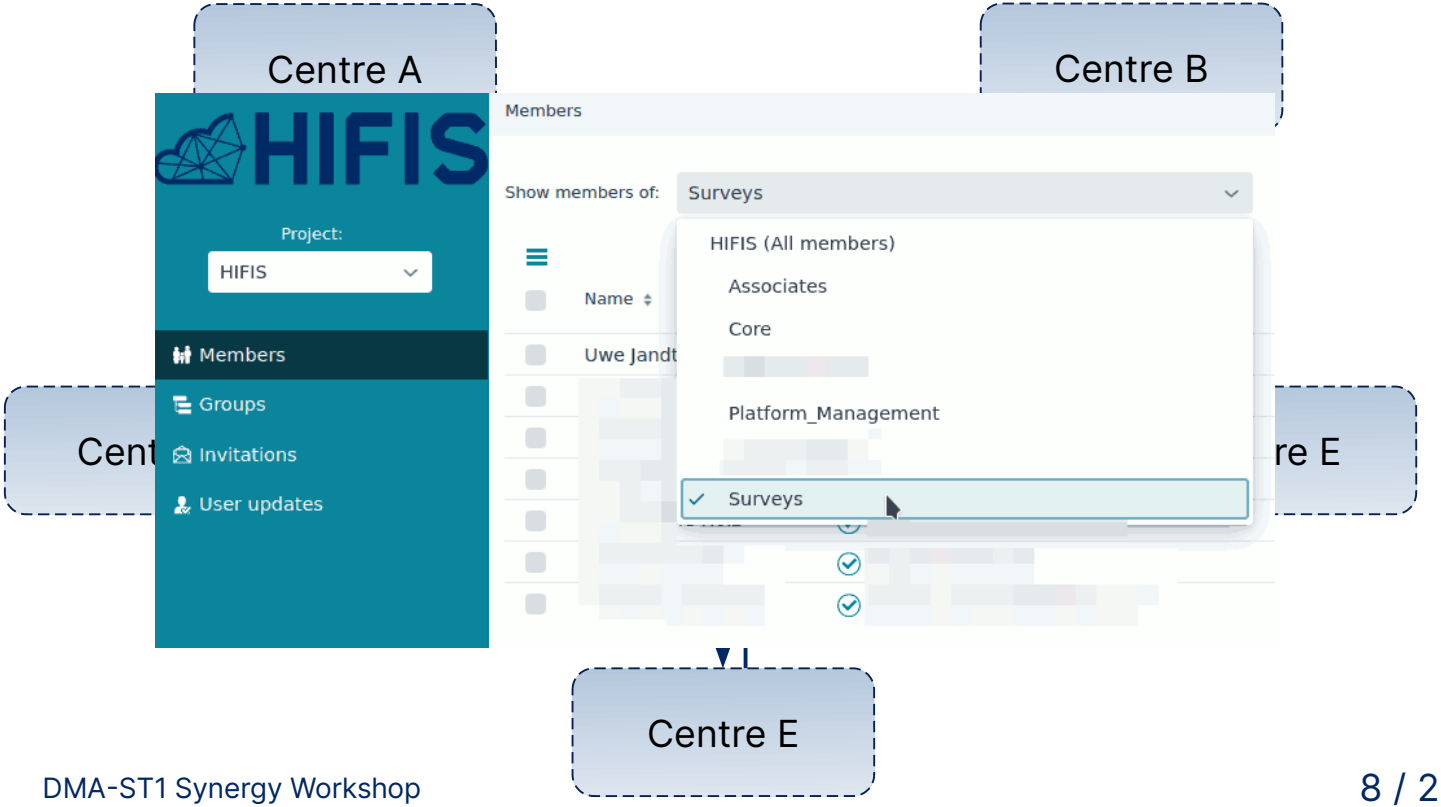
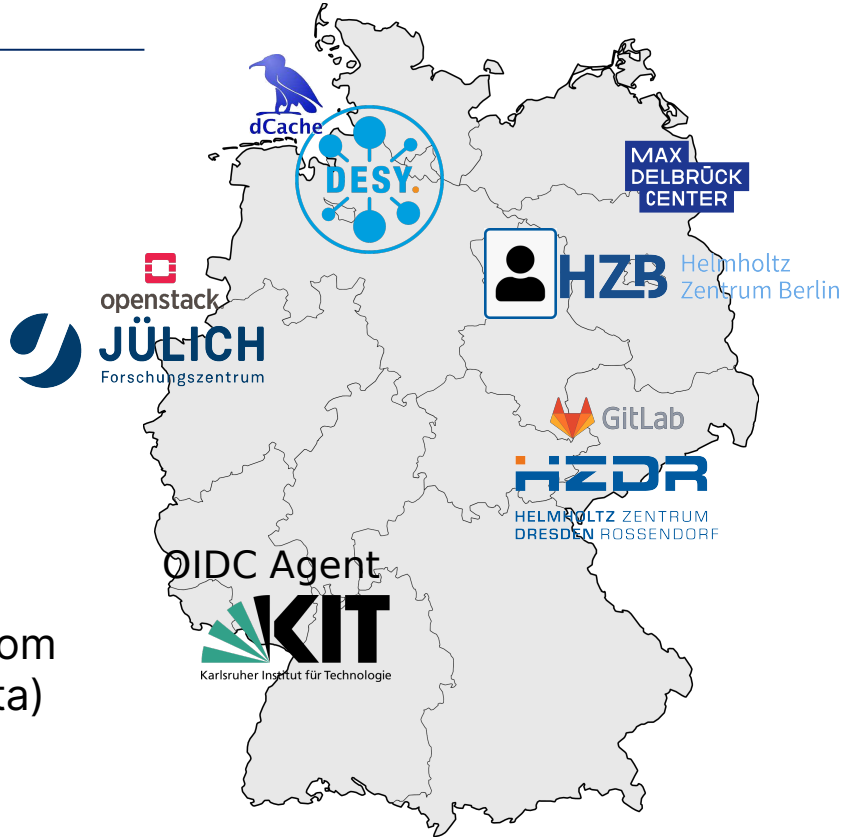


Example: Distributed Cloud Services 4 Science

- **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)



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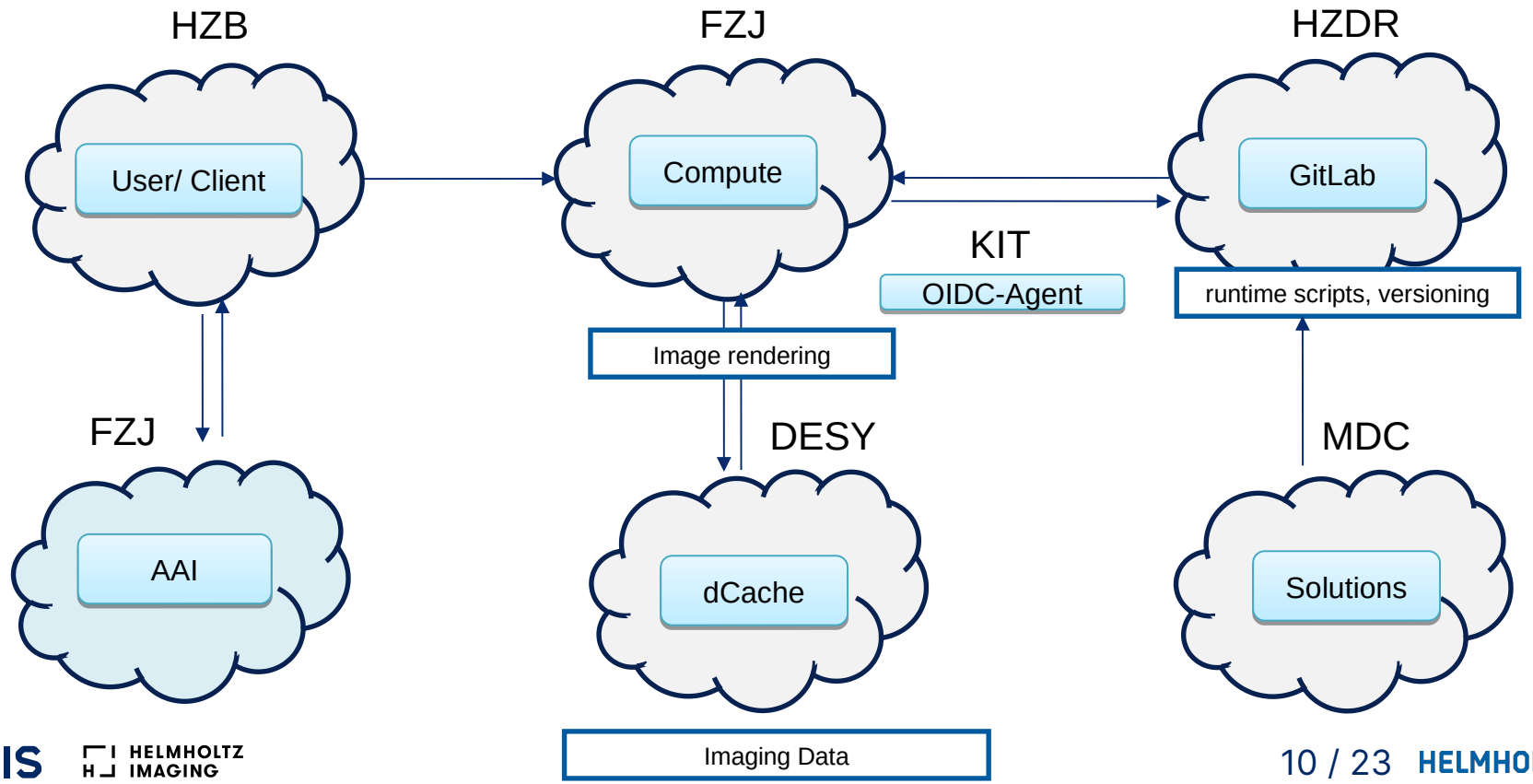


Example: Distributed Cloud Services 4 Science

HZB

FZJ

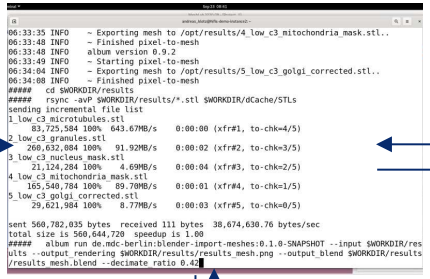
HZDR

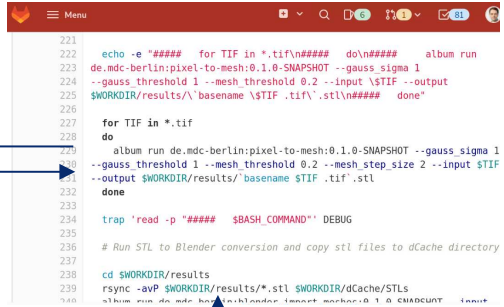
KIT

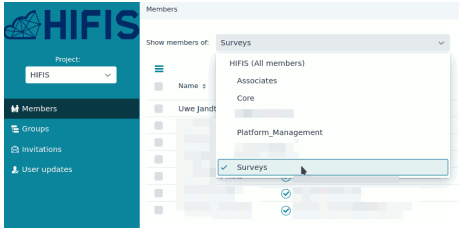
FZJ

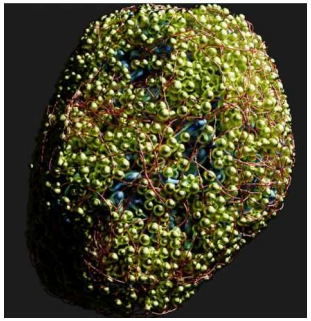
DESY

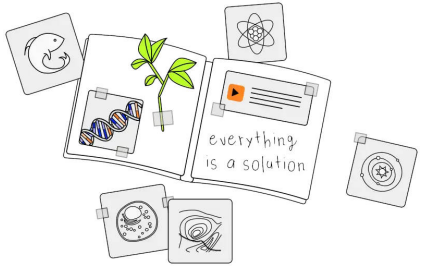
MDC











1.) Infrastructure for good scientific practices in RSE

Supporting the whole software development lifecycle

Dependabot

Security: Automate dependency updates

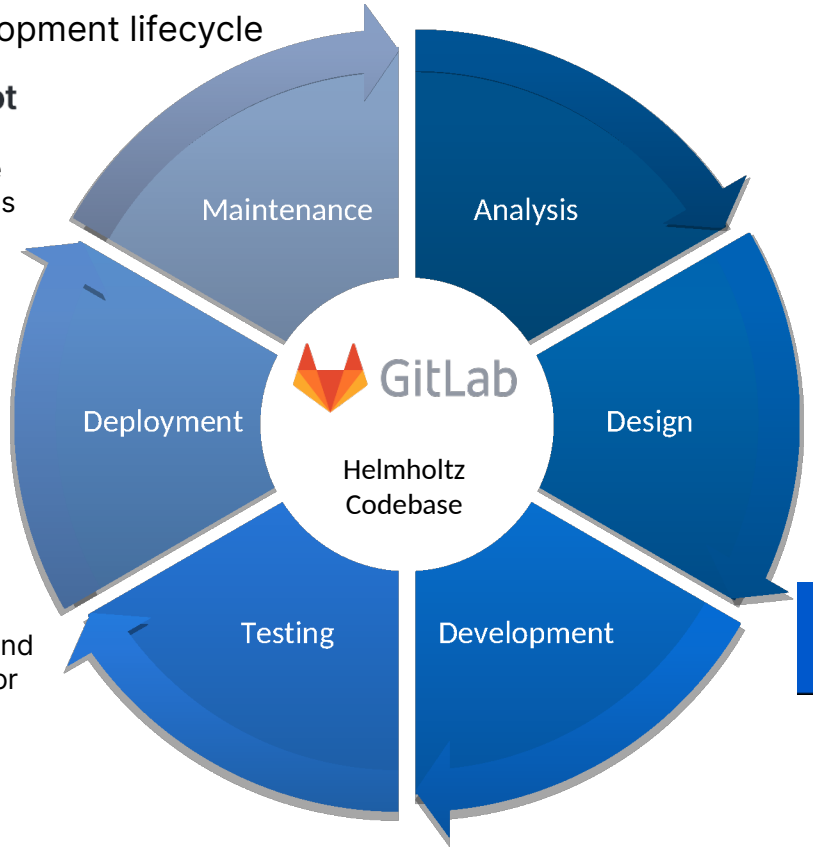
Kroki

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

1.) 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:

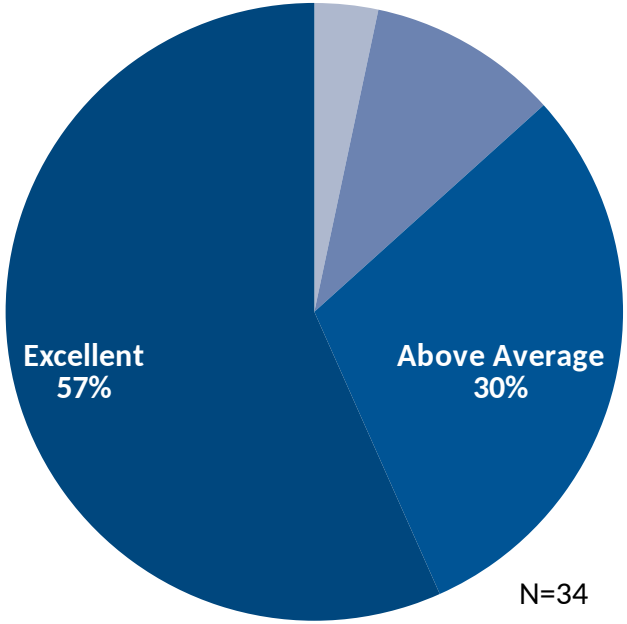
Education & Training	Community	Consulting	Technology
Courses, material and **workshops** for getting you started or boosting your software engineering practice.	Build and foster communities to support the **cultural change** when dealing with research software. Maintain a SW Directory	**Contact points** 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.

2.) Helmholtz Software: Consulting

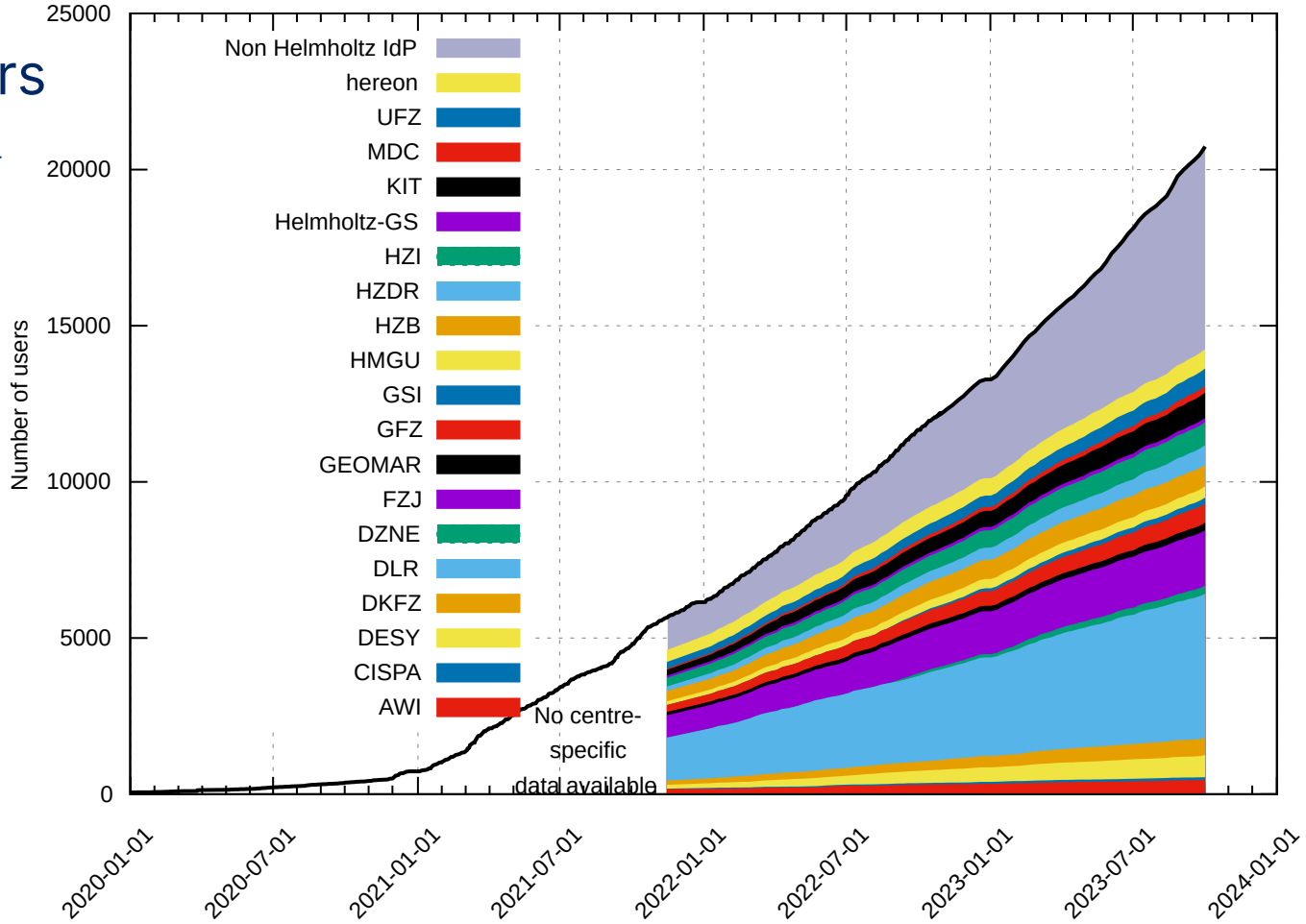
> Great idea and a great support especially since there is no other person programming in my research group.
> Very happy that you came up with this!

> 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



Some Numbers



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

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

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

>1.800
Software course participants

>950
Monthly active projects in the Helmholtz Codebase

Overall Benefits for Science & Helmholtz

Added value for Science

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

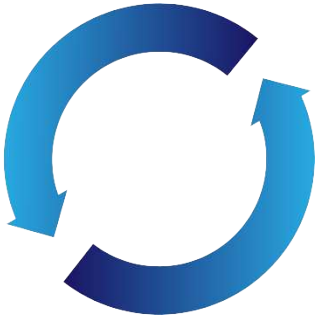
Collaboration made easy

- **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

So this goes hand in hand…



Several NFDI Consortia

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

- **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?