Helmholtz IT Services for Science

January 2022
PUNCH4NFDI Management Board
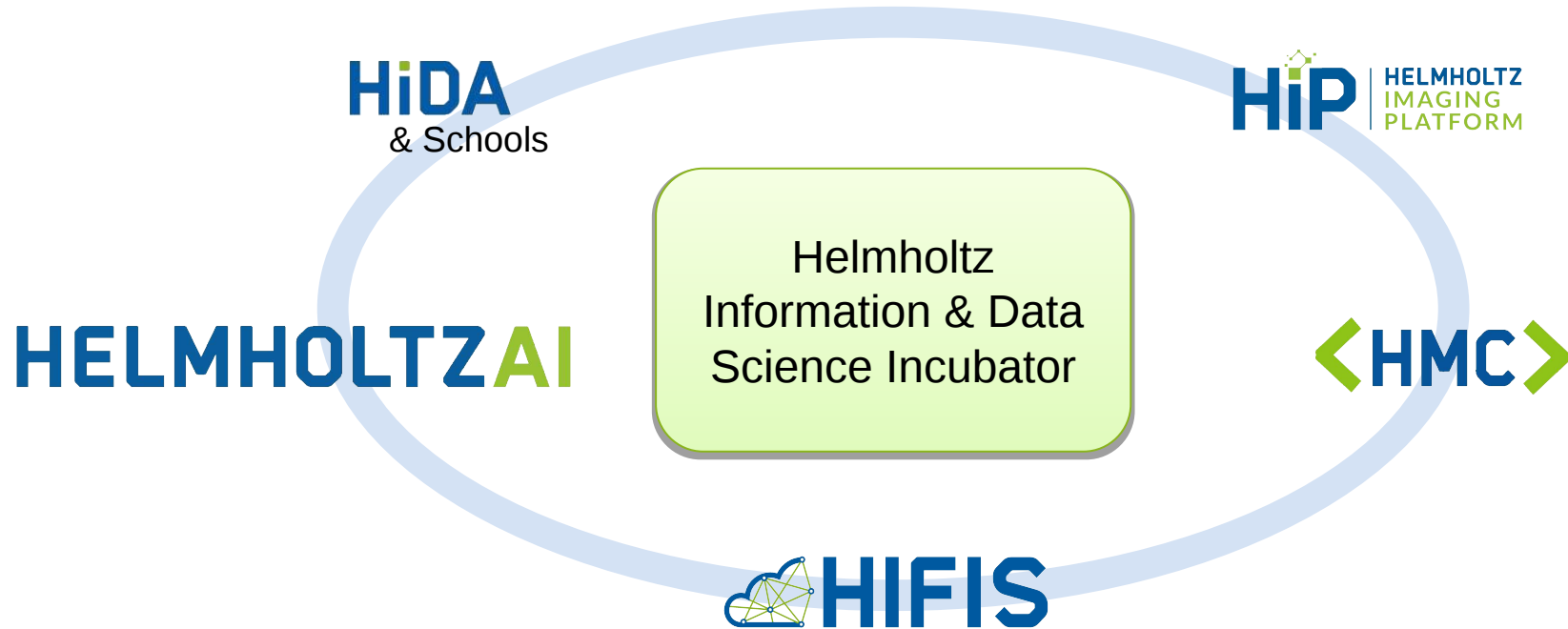
➢ https://hifis.net

Uwe Jandt (DESY / HIFIS Coordination)

HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

Helmholtz aims for **joint research & information environment** for all Research Fields:

➢ Cross-centre platforms for Education, interdisciplinary science and IT infrastructure.

HiDA & Schools

HiP HELMHOLTZ IMAGING PLATFORM

HELMHOLTZ AI

Helmholtz Information & Data Science Incubator

<HMC>

HIFIS

HIFIS offers to users in Helmholtz & Partners

I. Helmholtz Cloud + Backbone

➢ Provide high performance **collaboration and community services**

➢ **Connect all centres** and their world-wide collaboration partners!

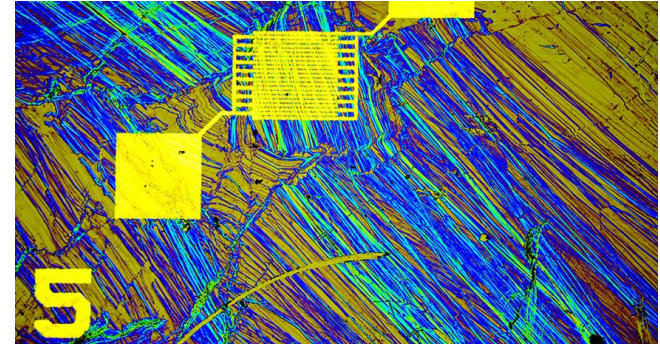➢ **Secure, simple access** and **easy-to-use**

Bild 1: Strukturen aus organischen Halbleiter-Polymeren/ Himani Arora/HZDR
Bild 2: Mosaic Expedition/Stefan Hendricks/AWI

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II. Establish **best-practices** for
Research Software Engineering:

➢ High level of knowledge, quality, visibility and sustainability
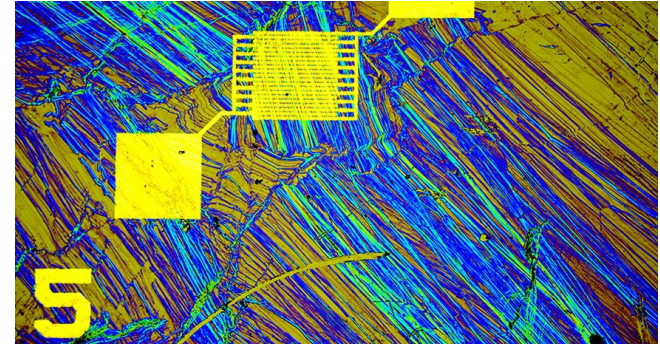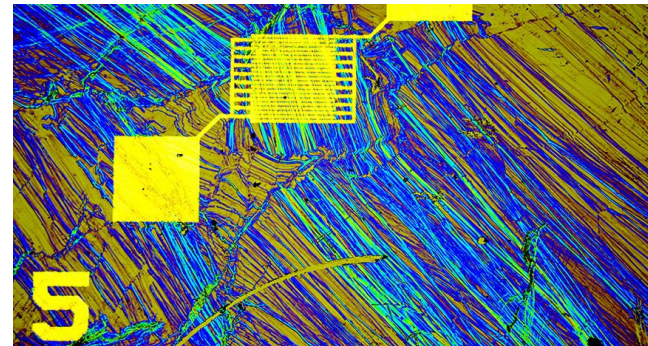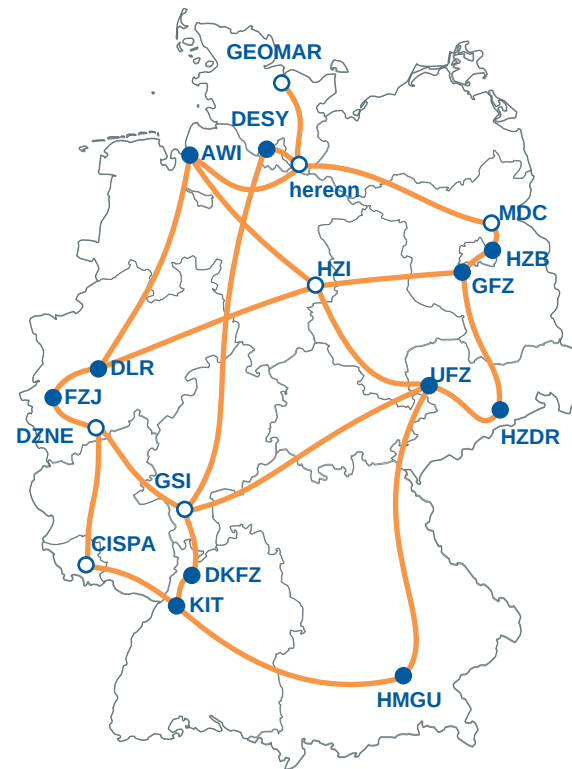
➢ State-of the-art SW development infrastructures

Bild 1: Strukturen aus organischen Halbleiter-Polymeren/ Himani Arora/HZDR
Bild 2: Mosaic Expedition/Stefan Hendricks/AWI

Free of charge!
(in Helmholtz)

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Who is HIFIS?

- **Team: 11 (out of 18) Helmholtz centres**

- Main Coordination: DESY

- Three Clusters:

  - **Backbone Cluster** (head: DESY)
    Core Services for Authentication, Authorisation,
    Large Data Transfer, etc.

  - **Cloud Cluster** (head: HZB)
    Helmholtz Cloud Platform

  - **Software Cluster** (head: HZDR)
    Platform, Training, Support for high quality,
    sustainable Research Software Engineering

- https://hifis.net/team

I. Cloud Services + Portal

➤ **cloud.helmholtz.de**

I. Cloud Services + Portal

➢ **cloud.helmholtz.de**

➢ **Collaboration Services**

➢ **Infrastructure Services**

➢ **Scientific / Community specific Services** (ramp-up)

I. Cloud Services + Portal

➢ **cloud.helmholtz.de**

Katerina Limpitsouni via undraw.co

I. Cloud Services + Portal

- **cloud.helmholtz.de**

- De-centrally provided by multiple centres for all-Helmholtz

- User self-enablement, Group Management

- Usage Details / Service Descriptions / Further Links

- Orchestrated Services to come!

I. Cloud Services + Portal

➤ **cloud.helmholtz.de**

HELMHOLTZ CLOUD

Helpdesk   About   Sign in

Search Services: [   ] Provider: [-- select an option --] Sort by: [Service Software] [Reset all filters]

B2Share
B2Share
Research Data (+ corresponding Metadata) Publishing service.
by: JÜLICH → Go to service

GitLab
GitLab
A web-based DevOps lifecycle tool that provides a Git-repository manager.
by: HZDR → Go to service

HAICORE@
Haicore
Dedicated COmputing the Helmholtz AI com
by: KIT

Jupyter-JSC
JUPYTER JSC JupyterHub
ctive supercomputing in a er.
by: JÜLICH → Go to service

LimeSurvey@DKFZ
LimeSurvey Community Edition
An online survey tool offered by DKFZ to everyone within Helmholtz group.
by: dkfz → Go to service

LimeSurvey@HMGU
LimeSurvey Community Edition
An Open source on-line statistical survey web application.
by: HELMHOLTZ MUNICH → Go to service

Mattermost
Mattermos
A hosted chat service within Helmholtz base Mattermost.
by: HZDR

Sync&Share
Nextcloud
nc and Share, Groupware- onalities: Files, Fotos, Calendar,
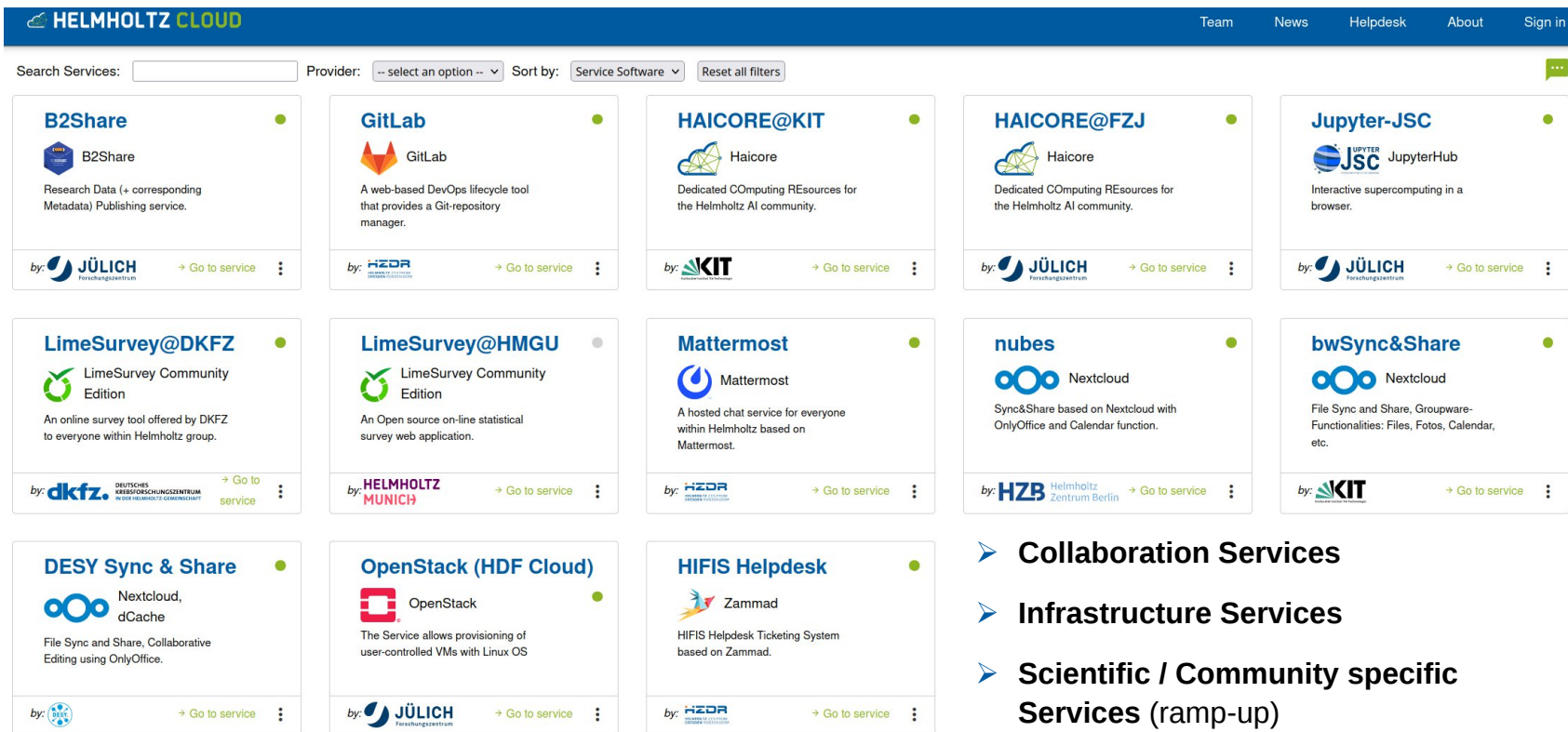by: KIT → Go to service

DESY Sync & Share
Nextcloud, dCache
File Sync and Share, Collaborative Editing using OnlyOffice.
by: → Go to service
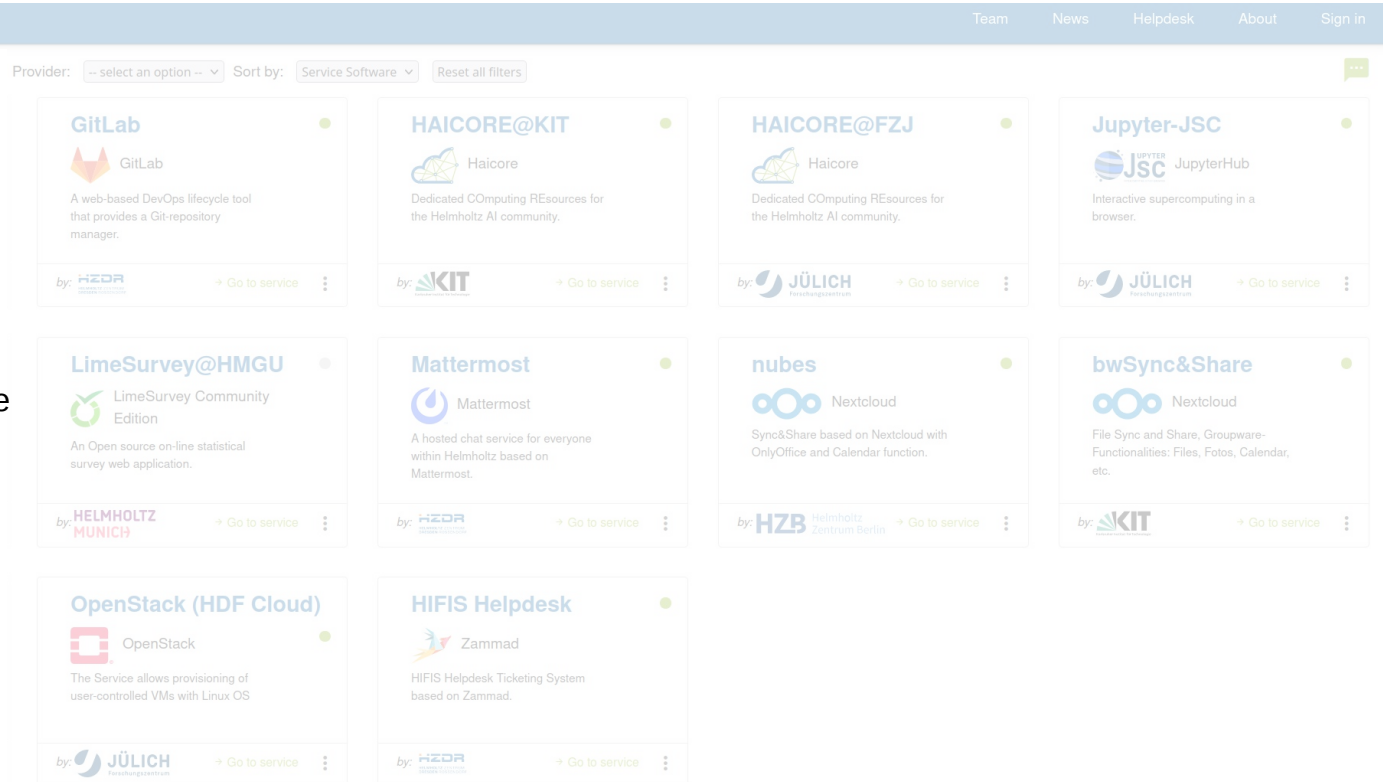
OpenStack (HDF Cloud)
OpenStack
The Service allows provisioning of user-controlled VMs with Linux OS.
by: JÜLICH → Go to service

HIFIS Help
Zammad
HIFIS Helpdesk Ticke based on Zammad.
by: HZDR

---

need help with GitLab ❓

GitLab 🔖

Description

GitLab is a complete DevOps platform supporting Development, Security, and Ops teams to collaborate and build software. This GitLab service is running the Open Source version of GitLab. It allows you to:

- Host code in repositories with Git version control
- Implement project management with an Issue Tracker, Merge Requests or Issue Boards
- Use the provided shared runners for built-in Continuous Integration
- Host your Docker images using the Container Registry
- Share your documentation or static websites with Pages
- Share private or public software packages for a variety of common package managers, e.g. Conan (C++) or PyPI (Python).

HIFIS helps you to efficiently use Gitlab:

HIFIS provides multiple level of assistance on efficient usage of the mighty functionality of Gitlab. Please have a look at:

- **Tutorials**,
- **Courses & Trainings**,
- **Consulting** on complex questions.

Centre A ←——→ Centre B

Conventional approach - 1:1 connection
- 2 partners (1 service provider, 1 service user):
- separate contract for each service

➢ https://aai.helmholtz.de/howto
➢ https://aai.helmholtz.de/concept

I. IAM&AAI - Access to distributed ressources
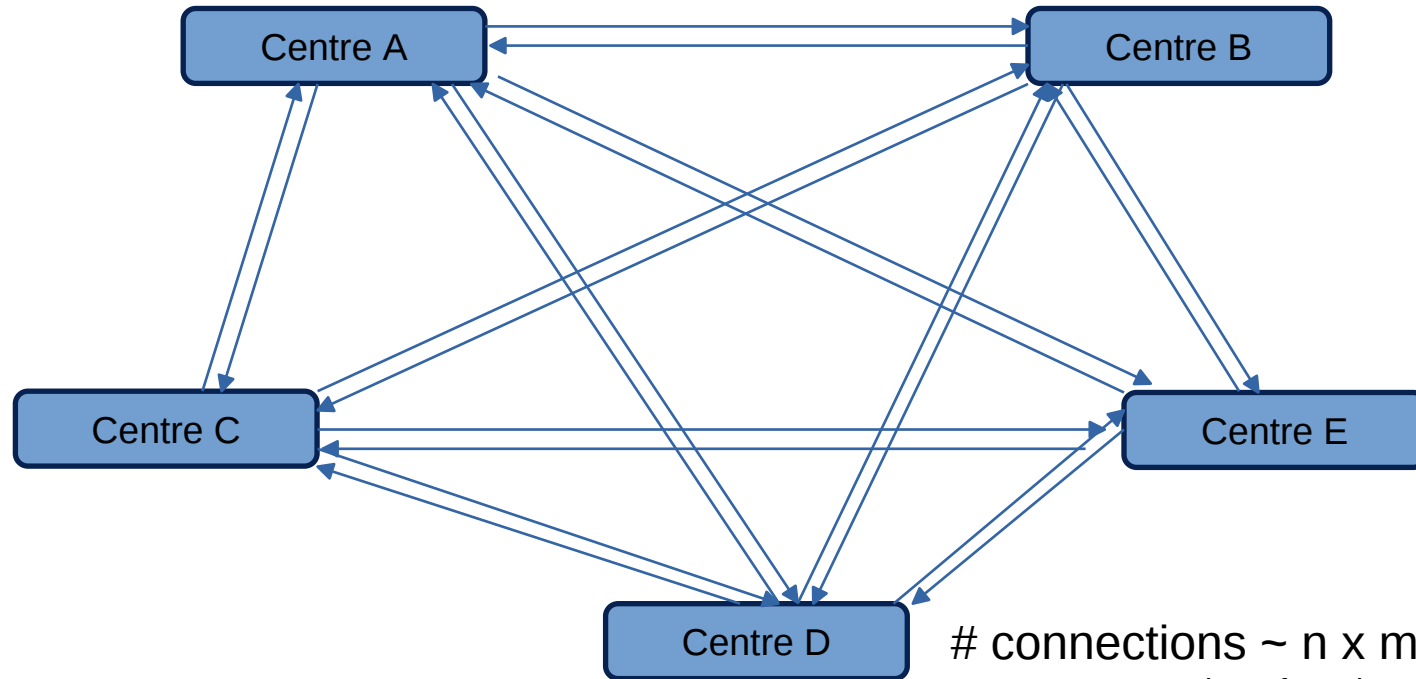
connections ~ n x m x s

n: number of service providing centres (>10)

m: numbers of using centres (19)

s: number of services

➢ https://aai.helmholtz.de/howto
➢ https://aai.helmholtz.de/concept

I. IAM&AAI - Solution, following AARC Blueprint

```
Centre A          Centre B

        Central Community AAI
          (central proxy)
         login.helmholtz.de

Centre C                    Centre E


        Centre D
```
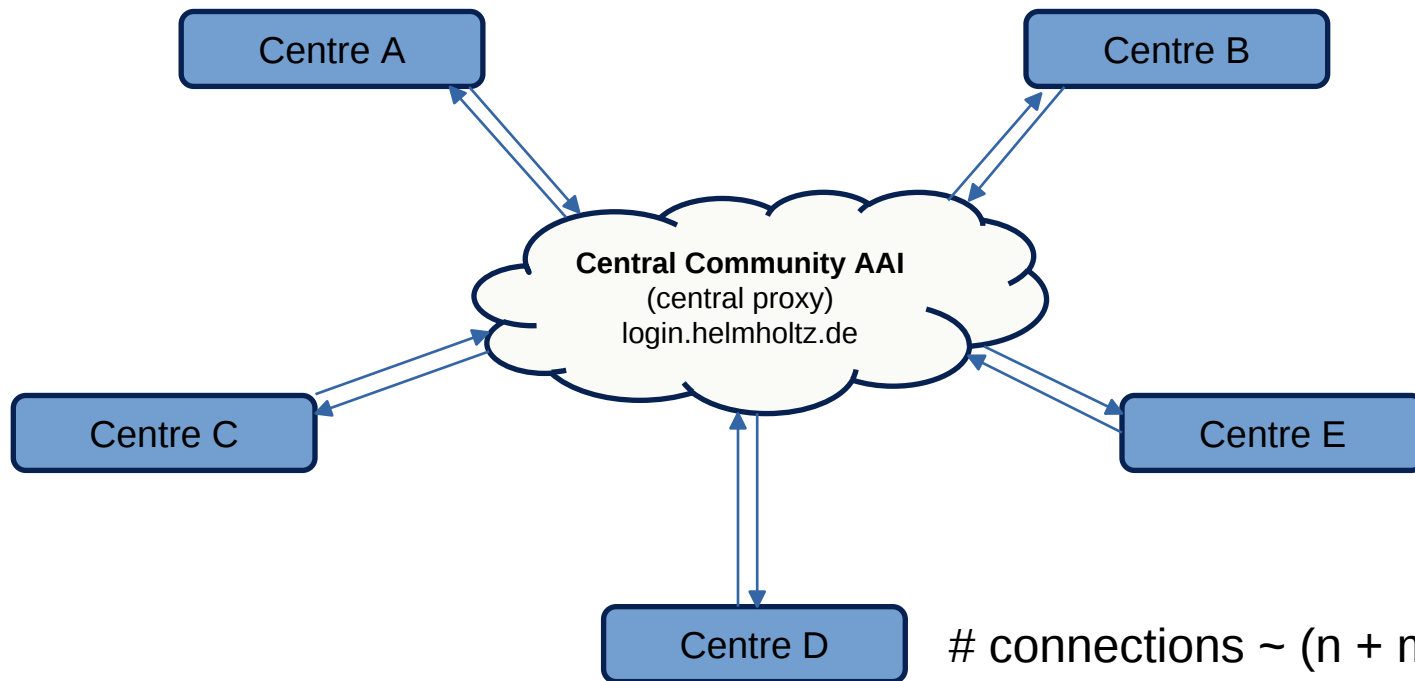
connections ~ (n + m)

n: number of service providing centres (>10)

m: numbers of using centres (19)

s: number of services

- https://aarc-project.eu/architecture/
- https://aai.helmholtz.de/howto
- https://aai.helmholtz.de/concept

II. Software Services

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 necessary **cultural change** when dealing with research software.	• **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.

II. Software Services

HIFIS

...It's even easier than one, two ...

➢ https://hifis.net/events

HIFIS

...It's even easier than one, two, three!

UPCOMING EVENTS

PROJECT MANAGEMENT WITH GITLAB
This workshop will focus on project management with the GitLab platform. A primer for the prerequisite version control system Git will be offered to those not yet familiar with it.
more...

TIME:
Fri, 15. Oct. 2021 — Mon, 18. Oct. 2021

LOCATION:
Online

ORGANIZERS:
ERXLEBEN, FREDO

LECTURERS:
ERXLEBEN, FREDO

TEST AUTOMATION WITH PYTHON
Learn to test your Python code effectively.
more...
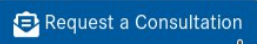
TIME:
Tue, 09. Nov. 2021, 09:00 — Wed, 10. Nov. 2021, 13:00
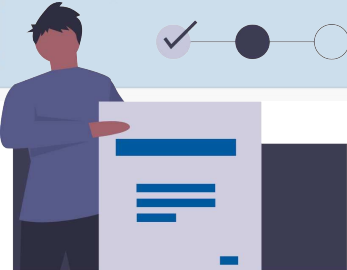
LOCATION:
Online

ORGANIZERS:
SCHLAUCH, TOBIAS

CONSULTING

TL;DR: ANSWER A FEW QUESTIONS TO REQUEST A CONSULTATION

In order to reduce the amount of emails we need to send forth and back, we kindly ask you to fill out a few questions to request a consultation.

Request a Consultation

Katerina Limpitsouni via undraw.co

- https://hifis.net/events
- https://hifis.net/consulting

HIFIS Services in a nutshell

➤ https://hifis.net

HIFIS Services in a nutshell

➤ https://hifis.net/services

HIFIS Services in a nutshell

e.g., **Helmholtz Software Spotlights**

➤ https://hifis.net/services

Temporal development of selected KPI

AAI
--> Cloud Services

Gitlab HZDR

Course participant hours

HIFIS Take home

I. Helmholtz & Friends: Try&Use anytime, anywhere!

➢ All software and most cloud services readily available.

HIFIS Take home

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II. Helmholtz IT for Science: Blueprint & Collaboration

➢ Blueprint for Community based AAI + Federated / distributed cloud services

➢ Helmholtz Cloud (Portal) as potential broker for external services ➜ Vision: Cross-federation Service Onboarding procedures

➢ Consulting on RSE for facilitated transfer

HIFIS Take home

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➢ Helmholtz Cloud (Portal) as potential broker for external services → Vision: Cross-federation Service Onboarding procedures

➢ Consulting on RSE for facilitated transfer

III. Consult us:

➢ https://hifis.net

➢ support@hifis.net

➢ Resonator Podcast

Podcast   Poster

QUESTIONS?

Katerina Limpitsouni via undraw.co

SPARE SLIDES

Why HIFIS
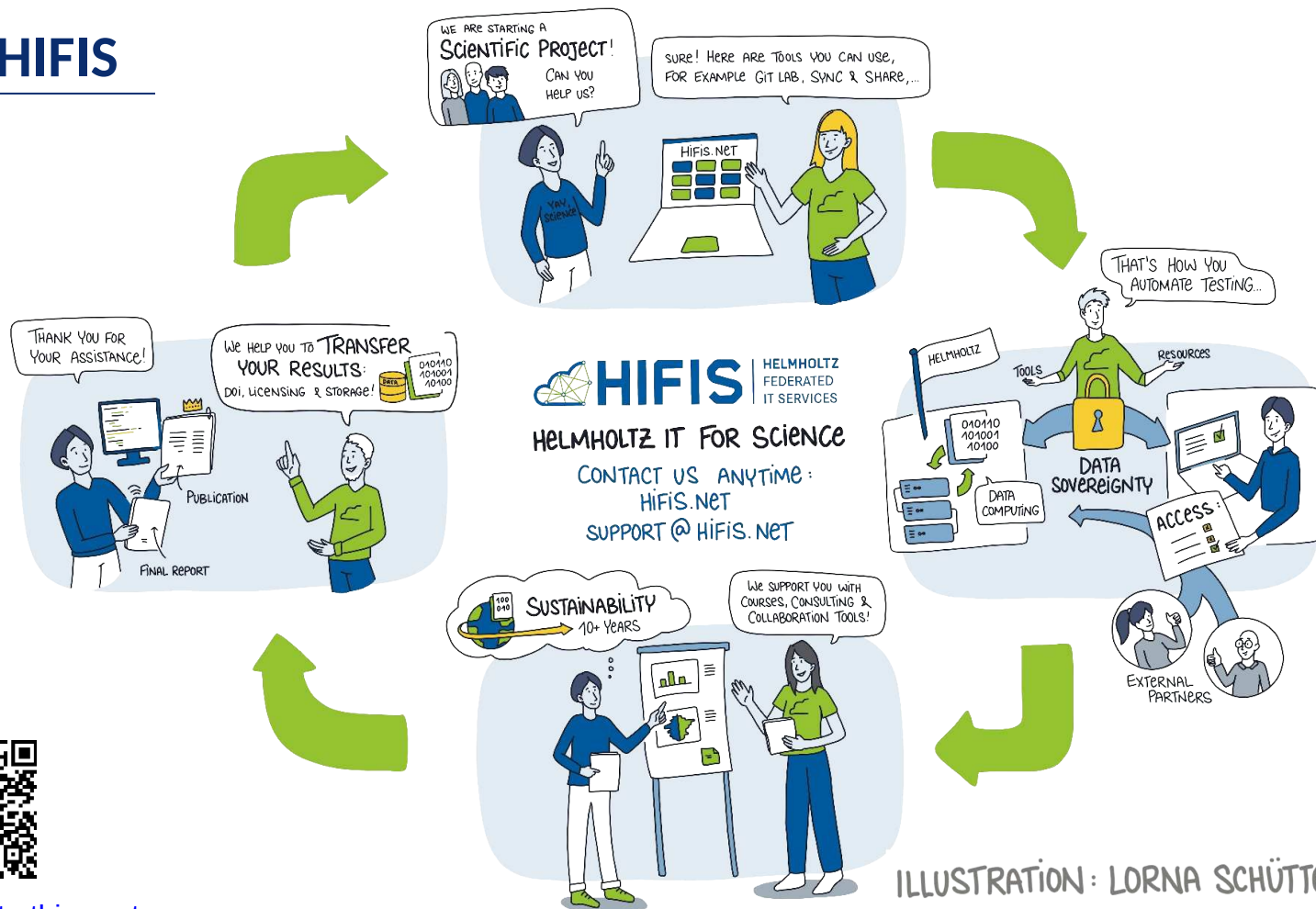
➢ Link to this poster

I. Helmholtz Services: Pipelines + Pilots

- hifis.net/doc

  - Click on
    Cloud Services

OR

- https://hifis.net/doc/cloud-services/list-of-services/

- https://hifis.net/doc/service-portfolio/service-portfolio-management/current-services-in-portfolio/

≡   List of Services   🔍

Pilot Services

- **dCache Storage Service**, provided by DESY. Instructions for gaining access are provided here.
- **RocketChat** Messaging System, provided by FZJ.
- **Rancher Managed Kubernetes Cluster**, provided by DESY. So far, manual authorisation needed.
- **LimeSurvey**, provided by DKFZ. Instructions for access can be found here.

  [...]

- **HedgeDog Notes** markdown writing and sharing platform. Open for All-Helmholtz and partners, provided by DESY.
- **HIFIS Events Management**, based on CERN's Indico. Open for All-Helmholtz and partners, provided by DESY.
- **Orpheus** OpenID Connect investigation service, provided by KIT.
- **SonarQube** platform for continuous inspection of code quality, provided by DESY.

🎗 Current Services in Service Portfolio

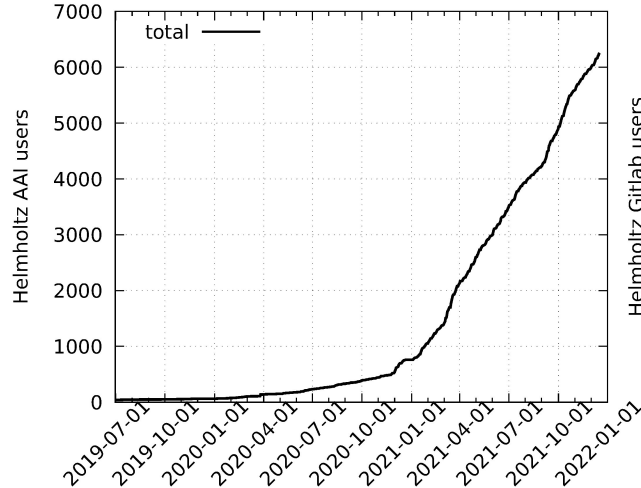| Service Pipeline	Service Catalogue
OpenStack, Jülich (JuCloud) ; KIT ; DKFZ	OpenStack (HDF Cloud), Jülich
Storage (HDF), Jülich ; DESY	Mattermost, HZDR
GitLab, Jülich ; KIT ; GEOMAR	GitLab (HIFIS Software), HZDR
JupyterHub, DESY ; DKFZ ; HMGU	JupyterHub, Jülich
HAICORE (HAICU, HIP), KIT ; Jülich	B2Share (Invenio), Jülich
Singularity, Jülich ; KIT	Zammad (HIFIS Helpdesk), HZDR
Docker, DESY	bwSync&share (NextCloud), KIT
Nextcloud (OnlyOffice), DESY	Nextcloud (OnlyOffice), HZB
AWI Marketplace, AWI	
GPU compute Service, HZDR ; Jülich	
JupyterHub notebooks on HPC, KIT	
LimeSurvey, DKFZ ; HMGU	
Ocean & climate Sensor Management, AWI	

ENPT

The Environmental Mapping and Analysis Program (EnMAP) is a German hyperspectral satellite mission that aims at monitoring and characterising Earth's environment on a global scale. EnMAP measures and models key dynamic processes of Earth's ecosystems by extracting geochemical, biochemical and biophysical parameters that provide information on the status and evolution of various terrestrial and aquatic ecosystems.

more...
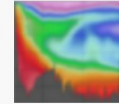
ODV

Ocean Data View (ODV) is a software package for the interactive exploration, analysis and visualization of oceanographic and other geo-referenced environmental data. ODV runs on Windows, MacOS, and Linux. ODV data and view files are platform-independent and can be exchanged between different systems.

more...

IGMAS+

Modern geophysical interpretation requires an interdisciplinary approach and software capable of handling multiple inhomogeneous data like seismic, FTG gravity, magnetic and magnetotelluric in complex geological environments.

more...

RCE

RCE is a distributed integration environment for scientists and engineers to analyze, optimize, and design complex systems like aircraft, ships, or satellites.

more...

➢ Present & Promote top success stories of Reseach Software Engineering in Helmholtz
➢ from all Helmholtz Research Communities
➢ approx. **90 Proposals** so far, to be presented in: https://hifis.net/spotlights
➢ ... more to come. Stay tuned!

Ib. Architecture (under development)

➤ hifis.net/doc/service-integration/

➤ hifis.net/doc/service-integration/hca/

- Modularity / Flexibility

- Different levels of integration possible

- Open

➤ VO Federation for File Sync&Share & beyond -- today 5:30 PM
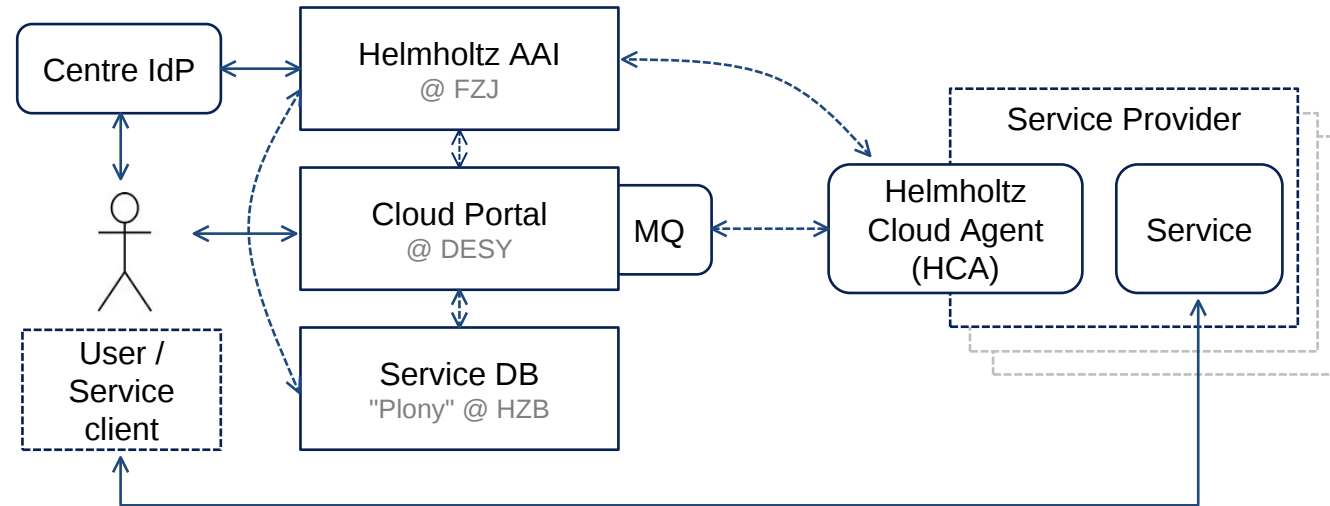
Cloud Services (including Pipeline)

Service	Pilot users	Service Providers	Service Category
OpenStack		Jülich (inkl. HDF), KIT, DKFZ DESY	Infrastructure Services
Storage (HDF)	AWI, DESY, DKFZ, GSI, HMGU	Jülich, DESY, KIT	
HAICORE	H.AI, HIP, HPC User	KIT, Jülich	
Singularity		KIT, Jülich	
Kubernetes		DESY	
GPU Compute Service		Jülich, HZDR, DESY	
AWI Marketplace		AWI	
GitLab	HIP, HMC, H.AI, HZB, DLR, FZJ, UFZ, GFZ	HZDR, KIT, Jülich, GEOMAR	Science / Community Services
JupyterHub	FZJ, DESY, DKFZ, HMGU, KIT	Jülich, DESY, DKFZ, HMGU, HZDR	
B2Share (Invenio)		Jülich	
JupyterHub Notebooks on HPC		KIT	
ODV (Ocean Data View)		AWI	
RODARE		HZDR	
Ocean and Climate Sensor Mgmt.		AWI	

➢ **>12 Services available (green)**: https://cloud.helmholtz.de/#/services
   (+associated services) https://hifis.net/doc/service-integration/pilot-services/pilot-services/