Services Roadshow by

A central JupyterHub

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Tim Kreuzer, Björn Hagemeier

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What is Jupyter4NFDI?
Jupyter Notebook

Core tool for data science

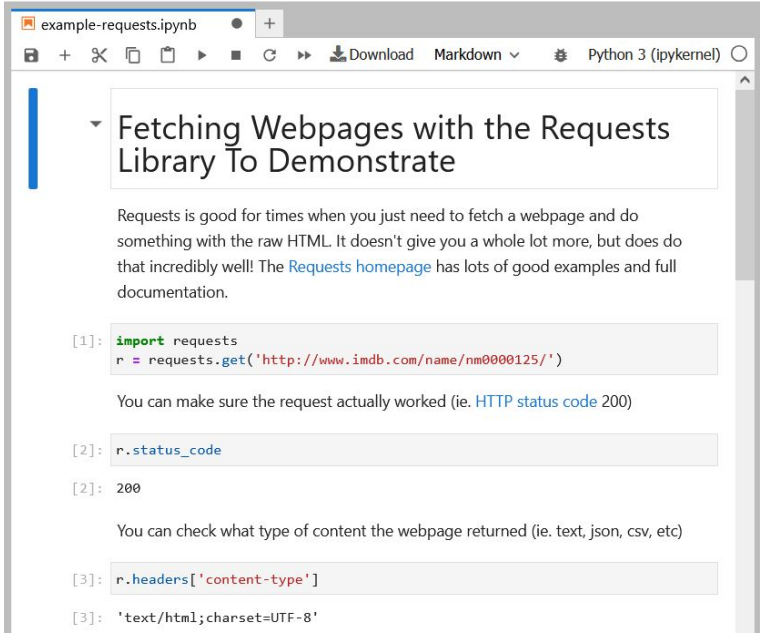
- Widely used for data analysis, machine learning, visualization, and prototyping

Interactive environment

- Each document is divided into cells that can hold code, text, equations, or visualizations

Supports reproducibility & sharing

- Documents are self-contained and can be shared, enabling reproducible workflows in science and education



What is Jupyter4NFDI?
Jupyter Notebook + JupyterLab

Backend for notebooks

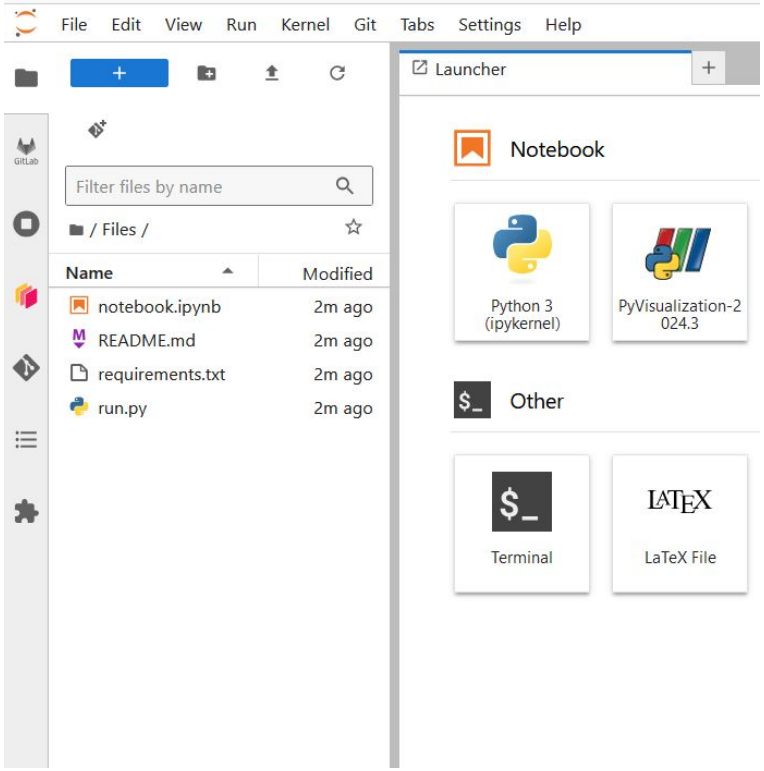
- Executes code and serves the notebook interface in a browser

Web interface

- Provides a browser based web interface

JupyterLab

- Next-gen Interface
- Extensible (Terminal, Text Editor, File Browser)
- Endless Customization



What is Jupyter4NFDI?
JupyterHub

Multi-user platform

- Run JupyterLabs in isolated environments

Remote resource management

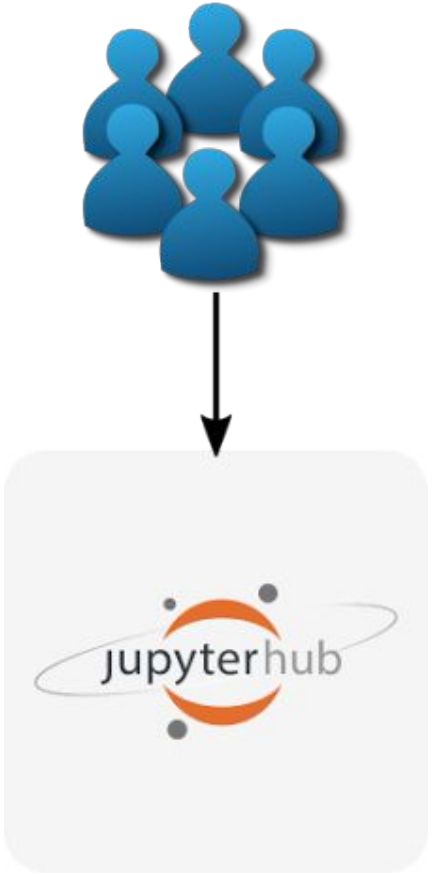
- Users don’t have to install software locally
- Benefit from pre-installed environments

Centralized control

- Provides access management for resources

Customizable

- Configurable authentication
- Start JupyterLabs on different systems



Why Jupyter4NFDI?

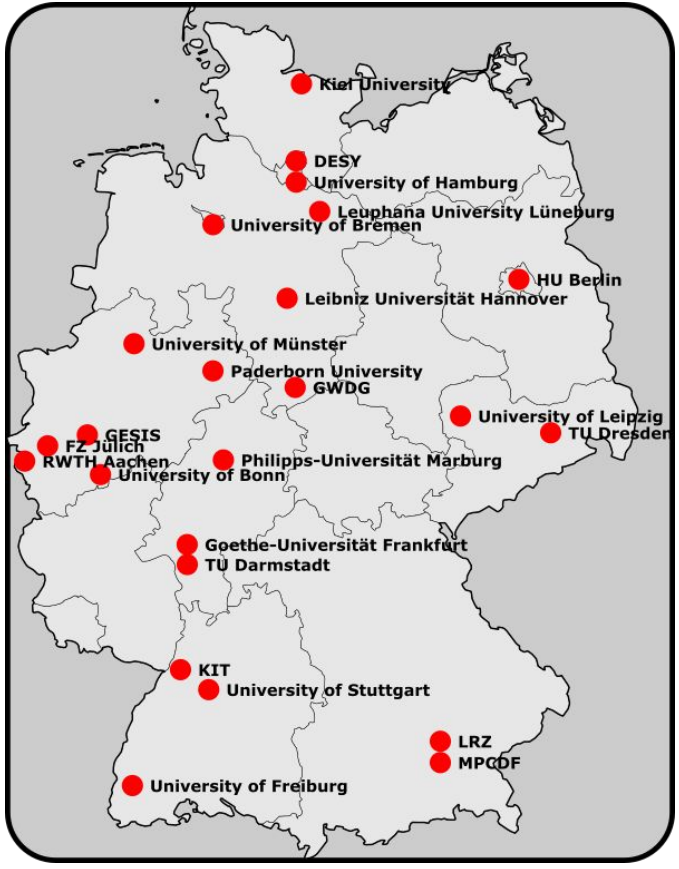
Dozens of JupyterHubs in Germany

Challenges

- Out of 24, 20 are not accessible to external users
- Which JupyterHubs are available to me?
- What are the differences?

Proposed solution

- Centralized “default” JupyterHub
- Combining resources of providers
- Not a replacement, but **complementary service** to enhance access and usability for all users



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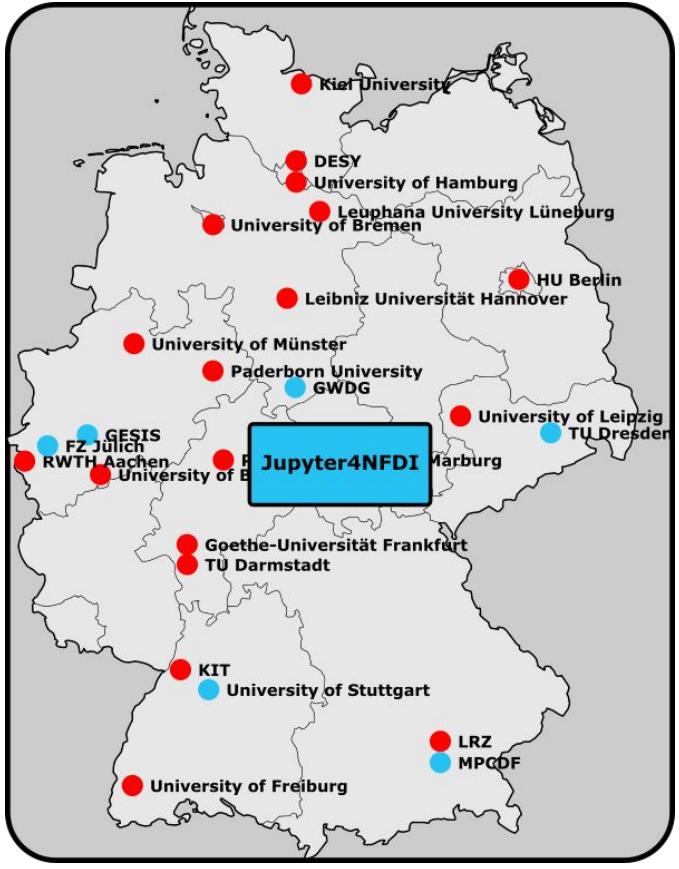


Why use Jupyter4NFDI?

Easy access to resources

- Login with your Home IdP or social IdPs

Pre-installed environments

- Ready-to-use with popular libraries and tools

Exclusive features

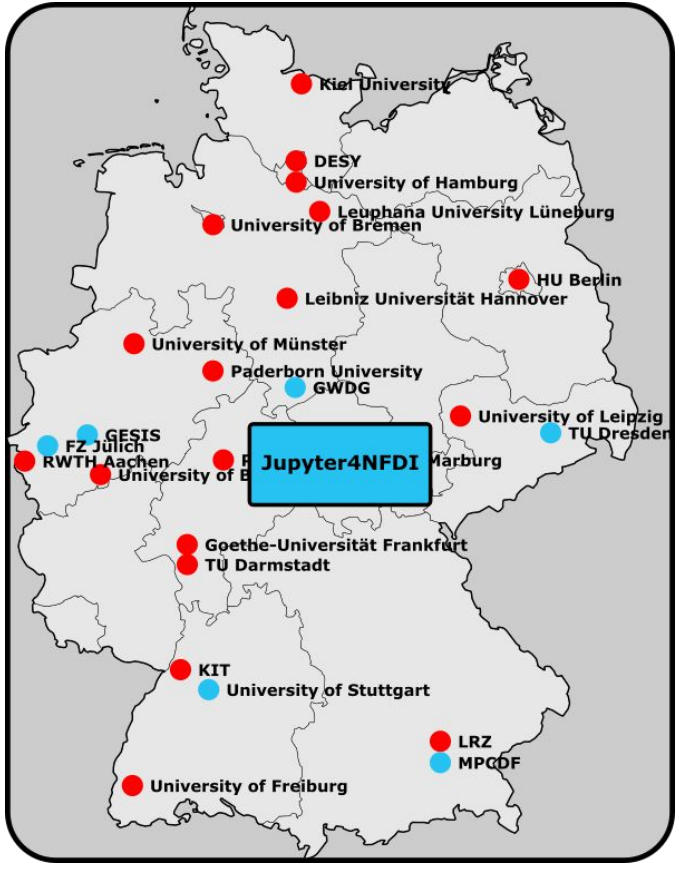
- Repo2Docker (Binder) integration into JupyterHub
- Shareable links support FAIR digital objects

Highly customizable

- Run your own Docker images
- Create your environment

Persistent storage

- Varies by provider
- Centralized storage is planned for the future



Jupyter4NFDI
Project phases and outlook

Initialisation

- Establish the central JupyterHub
- Provide a foundational set of resources
- Enhance the integration of external resources

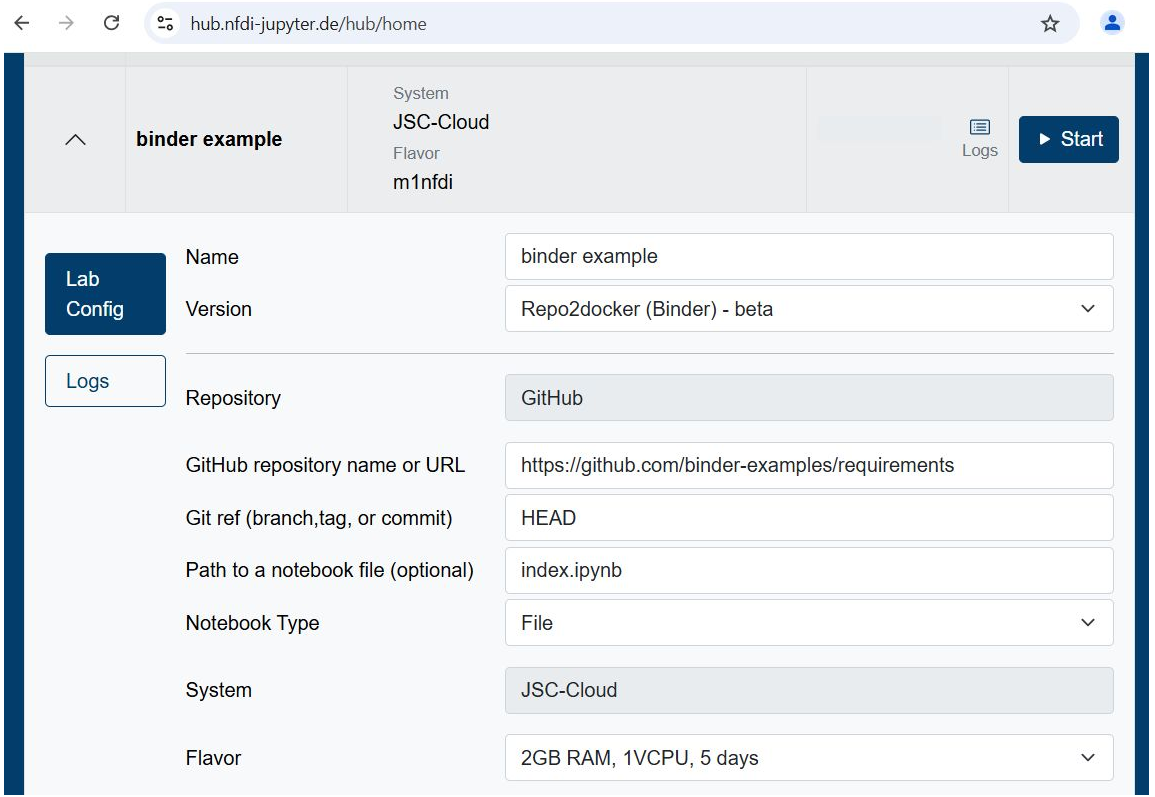
Integration

- Integrate external resources seamlessly
- Provide resources tailored for training courses
- Utilize feedback to continuously improve the web service
- Promote the service to attract more users

Ramp-Up

- A mature web service accessible to all within NFDI
- Built to last

Jupyter4NFDI
https://hub.nfdi-jupyter.de/



base4 nfdi

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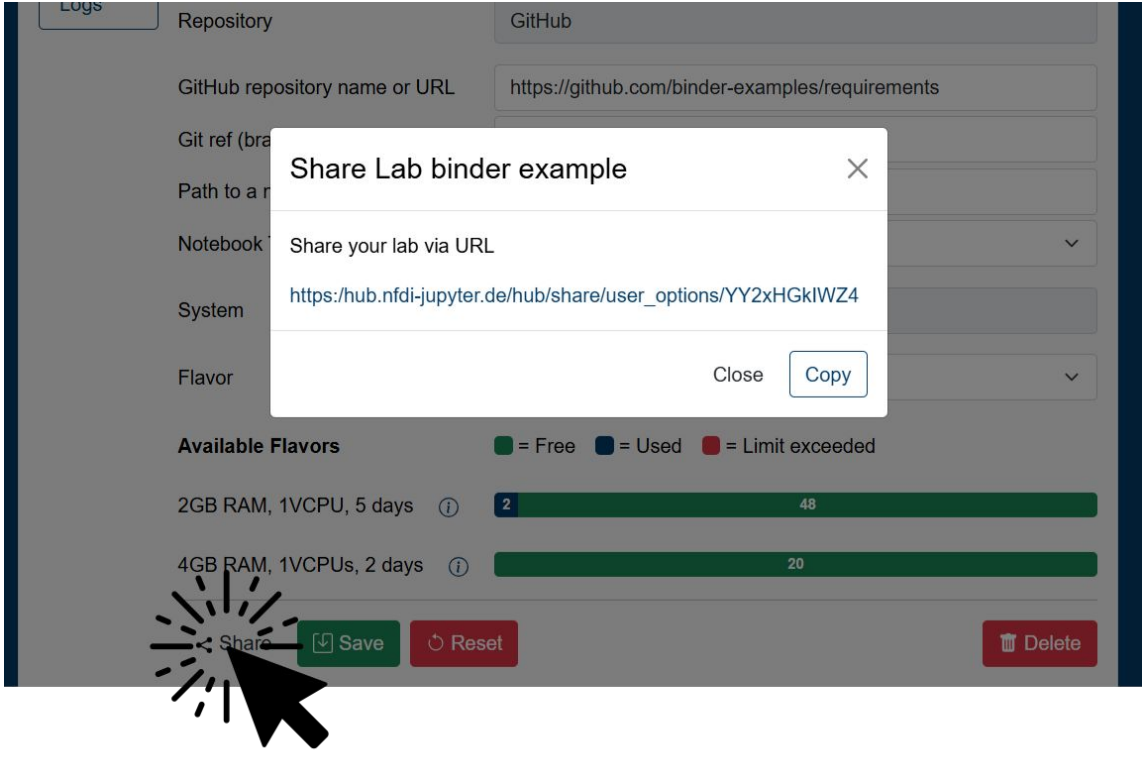

Instructions:
Write down the letters in front of each correct answer! In the end, these letters will form a solution phrase.

How many of the existing JupyterHubs did we find inaccessible to a general audience?

I) 20
TW) 24
ME) 4

base4nfdi Basic Services for NFDI

Funded by **DFG** as part of **NFDI**.
Grant Numbers: 521453681, 521460392, 521462155, 521463400, 521466146, 521471126, 521473512, 521474032, 521475185, 521476232

Participate in our Survey

https://survey.hifis.dkfz.de/882875

Thank you!

Questions?

Jupyter®4nfdi

jupyter4nfdi@lists.nfdi.de

base4nfdi-servicestewards@lists.nfdi.de for general inquiries

https://nfdi-jupyter.de

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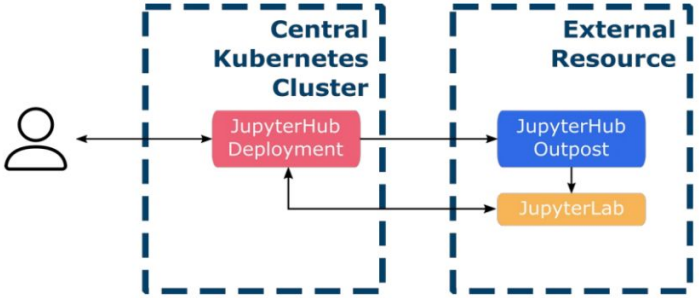
Jupyter4NFDI
Technical concept

- The central JupyterHub acts as an access point to multiple resources in the background
- Resource providers can install a "JupyterHub Outpost" to integrate their resources with the central JupyterHub following general standards
- Throughout the project, additional resource providers will be integrated into the central service, expanding the available resources, environments, features, and capabilities
- Partners and Resources: Text+ (FZ Jülich, GWDG), NFDI4DS (GESIS, TU Dresden, Univ. of Stuttgart), FAIRmat (MPCDF)



Jupyter4NFDI
Technical concept

- **Landscape**: Low access barrier to distributed resources and flexible configuration options for Jupyter users and reduced maintenance for providers and users expected
- **Interoperability**: Team is active participant in JupyterHub ecosystem. Import of Binder based FAIR Digital Objects (FDOs) planned
- **Support**: Documentation, guides and monthly open team meetings for onboarding new users and for integration of further compute and data resources
- **Governance**: Business model in the long run to ensure coordination between consortia, resource and service providers
- **Networking**: Connection with international Jupyter community. Flexibility of Jupyter4NFDI's JupyterHub version to connect external resources is not standard.