

**Science
Mesh**

In a nutshell

Pedro Ferreira (CERN)

Why?



But...

- # Researchers are **isolated in service islands**, despite significant progress (e.g. OCM)
- # CS3 sites cannot benefit from **services developed elsewhere**
- # **Hard to develop for the community** when there are separate EFSS stacks
- # **Poor knowledge transfer** back to commercial and business environments

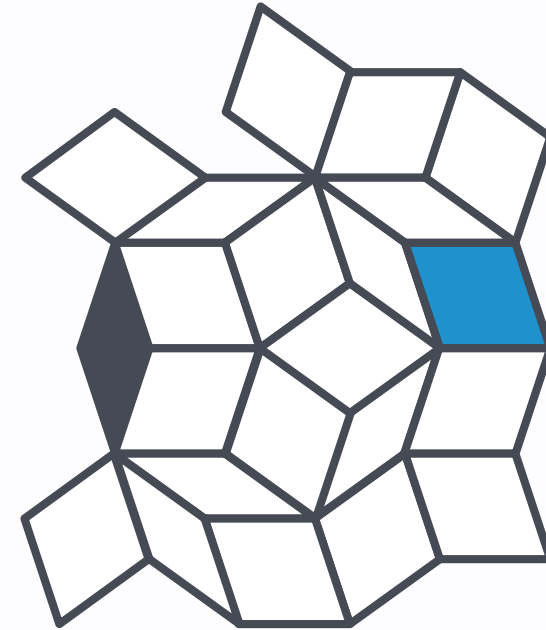
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[Link to talk](#)

The Idea

- **Decentralized** mesh of EFSS nodes
- Based on **Open Standards** and **Open Source**
- **Federated** environment for collaborative research
- **Application platform** for distributed collaboration



One year ago...

- 30-31 January 2020 -
Copenhagen 🇩🇰
- Started with 12 partners
 - **Trust-IT** joined in the meantime!
- Started engaging with the community
 - "Meet the CS3Mesh"
 - nice to see you again! 🙌
- **Very busy year** for the Project!

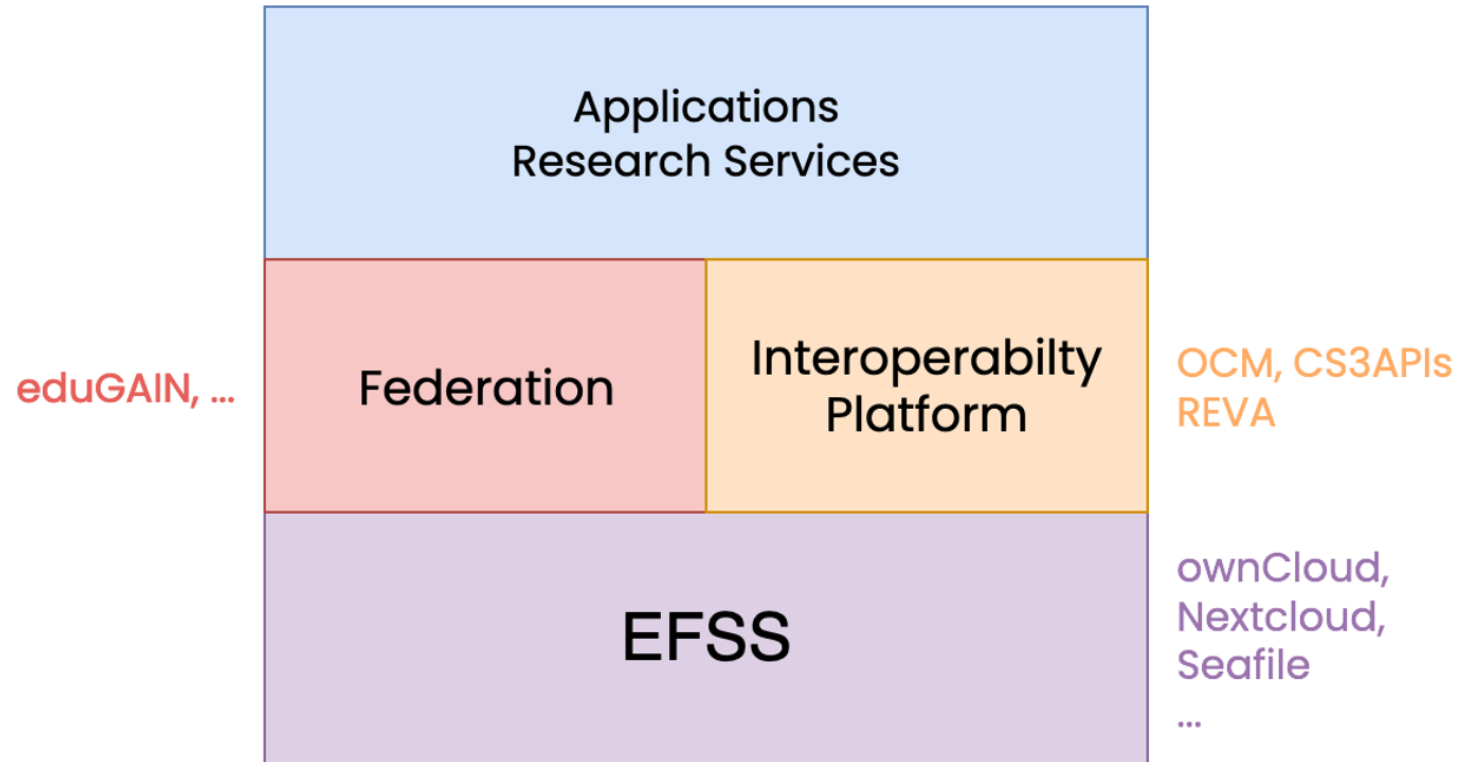


2020

(and why not everything was bad)

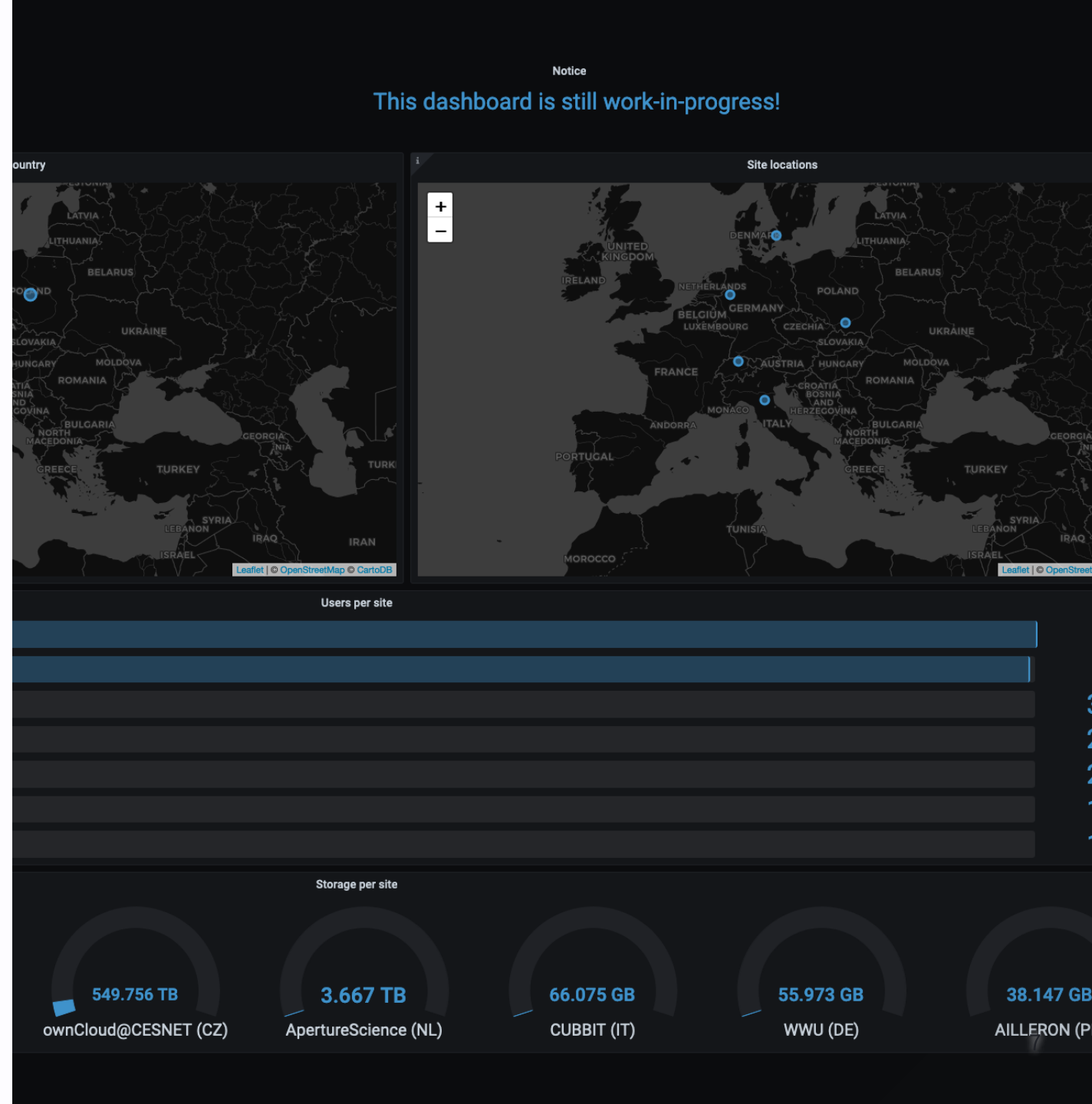


Science Mesh



Federation

- Established Roadmap for Trust
- Federated Identity
- Registry (GOCD, Mentix)
- Monitoring (Prometheus, Grafana)
- Security
- **Up and running mid-2021!**





IOP

- Established protocols and APIs
 - OCM
- Packaged distribution
- Set up at Partners (8 sites)
- Companion application for ownCloud and Nextcloud
- **You can already join the mesh!**

Applications

Photo by Markus Spiske from [Pexels](#)



FTS
RUCIO



CodiMD

Describo

RCLONE



zenodo

ONLYOFFICE

binder

indico

INVENIO RDM



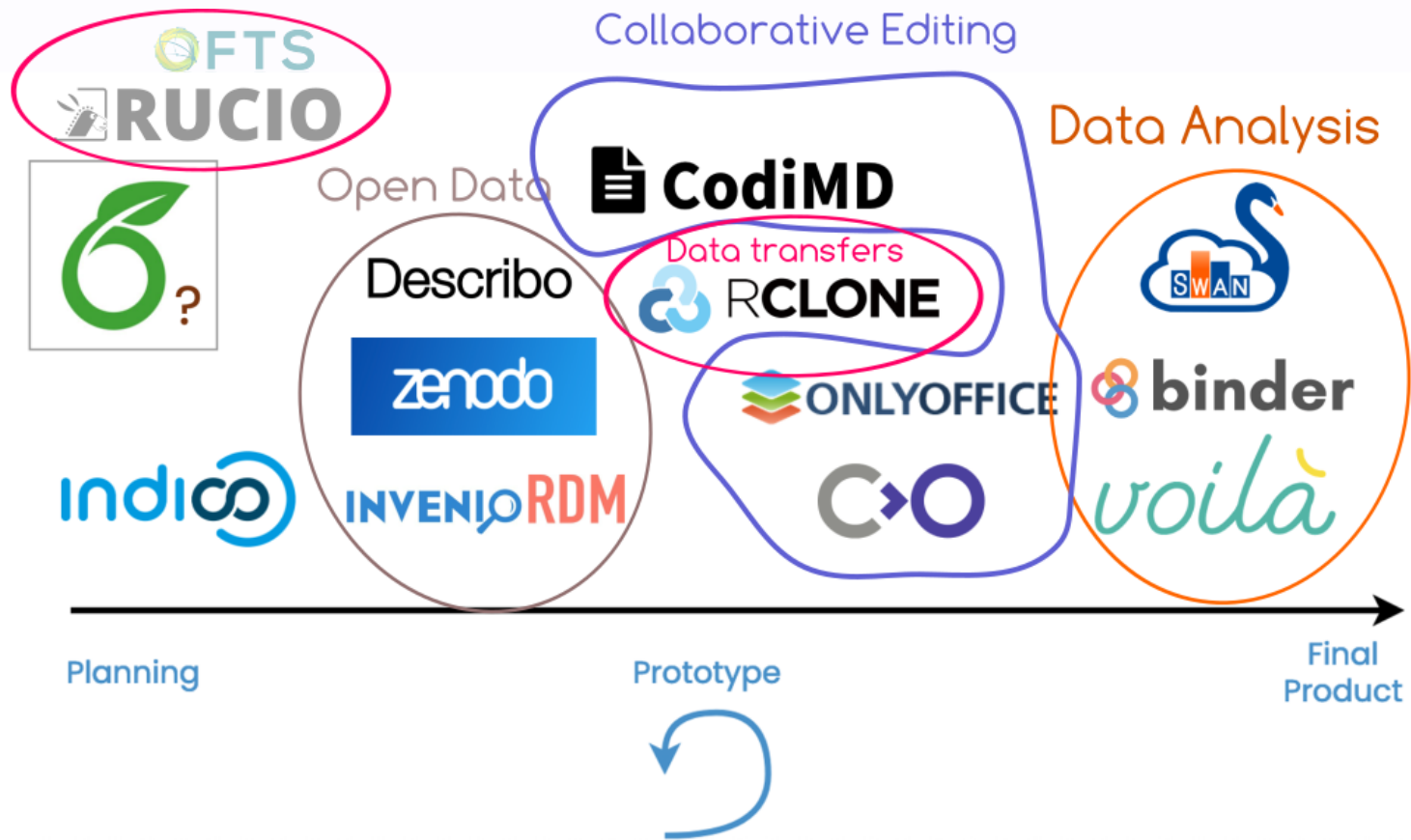
voilà

Planning

Prototype

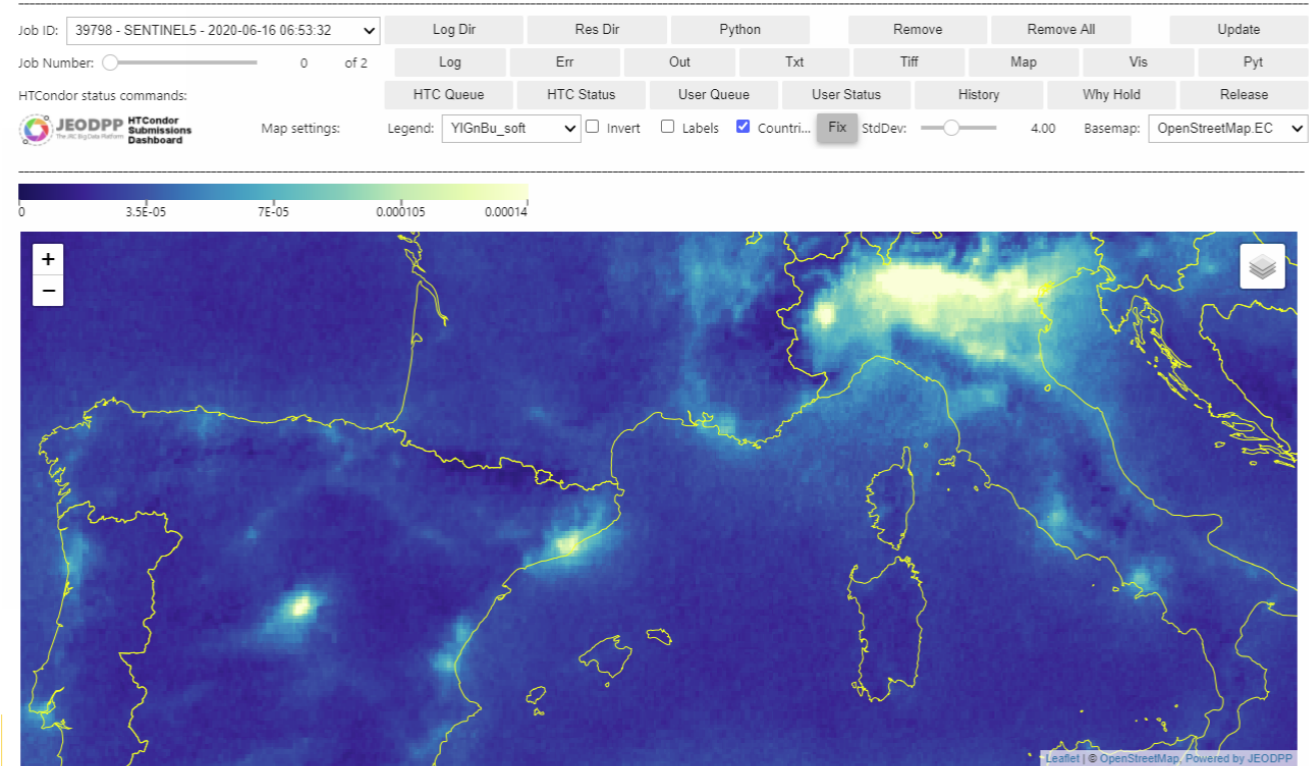
Final Product





Logos are property of the respective projects

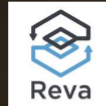
Example: effects of Covid19 lockdown measures on air quality



Davide De Marchi - JupyterLab for Earth Observation applications with HTCondor scaling and Voilà dashboarding

ScienceMesh

CS3MESH4EOSC project



Cloud inter-operability platform



cloud-native

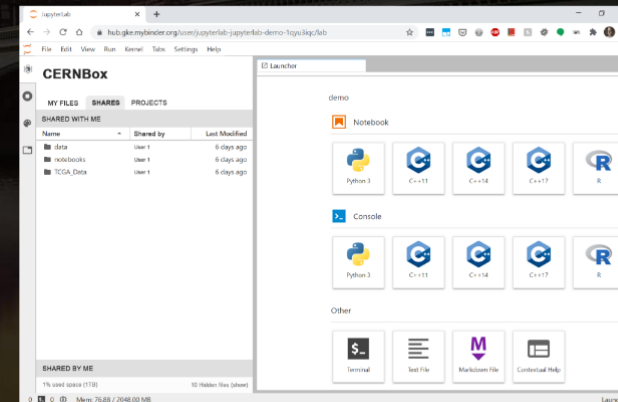


Distributed Data Science environments



JupyterLab extension (CS3 APIS)

- **Leading tasks on**
 - Reference inter-operability platform
 - Distributed Data Science environments
- **ScienceMesh Inter-operability platform**
 - make cloud storage and application providers inter-operable, via the CS3 APIS
- **JupyterLab extension (Cs3Api4Lab)**
 - Integration with ScienceMesh IOP (CS3 APIS)
 - replaces the default file manager
 - new UI elements for share functionalities



Marcin Sieprawski - Science Mesh beyond science -- perspectives for adoption in a wider business context.

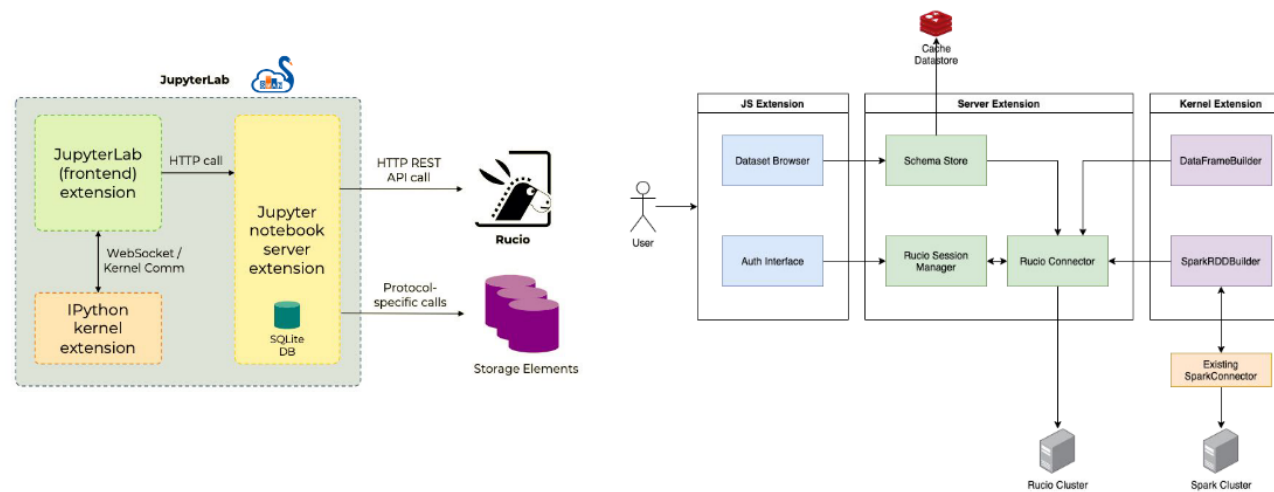
Context and motivation

- CERNBox is the central storage for user data at CERN and evolves as the Apps Hub
 - Collabora, DrawIO, MS Office, OnlyOffice, SWAN, ...
- Clear need for a proper Markdown editor in CERNBox, as well as for the **ScienceMesh** infrastructure
 - Quite a popular format, close to 1M .md files in CERNBox at CERN
 - Compares with 3.6M Office files and 2.8M LaTeX files
 - CodiMD ([HackMD.io](https://hackmd.io)'s open source edition) already piloted at CERN and well received

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Giuseppe Lo Presti - [CodiMD in CERNBox: leveraging the WOPI protocol to provide collaborative markdown editing](#)

Plugin architecture overview



Mario Lassnig - SWAN, Rucio, and Jupyter

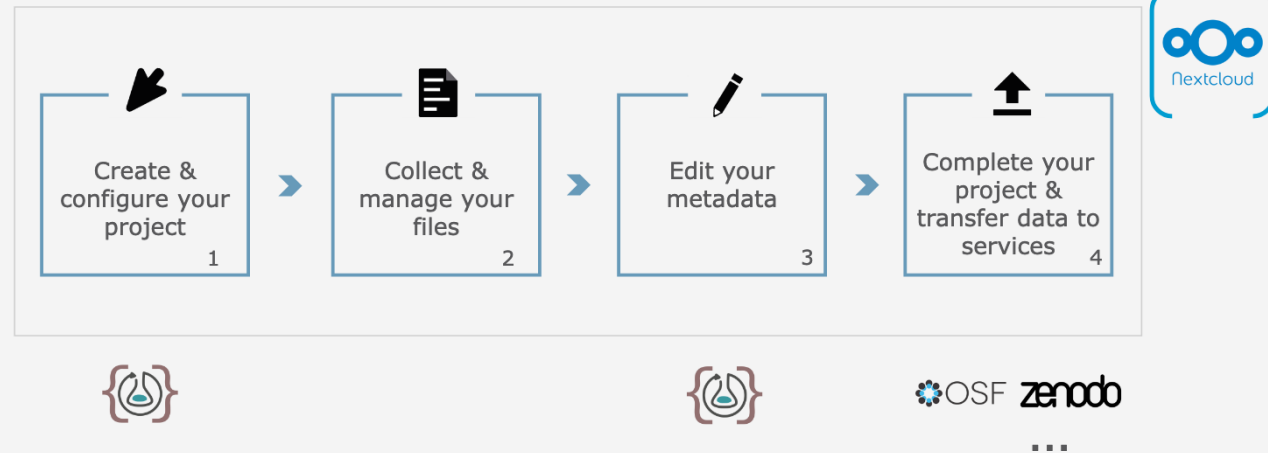
Synergies

- Conversations with several vendors about new features and integrations
 - e.g. sponsoring developments in **Rclone**
- Open Data partnership involving UTS, PARADISEC (AU), Zenodo
 - Based on WWU's **Sciebo RDS** and UTS's **Descrigo**





sciebo RDS – Our Current Workflow




Peter Heiss, Lennart Hofeditz - Progress of Sciebo Research Data Services

Describo Desktop - define and link entities


Author

+ Person + Organization


Person 

John Public


This item is connected to:

@type: RootDataset → hasPart 
name: my crate


Edit: Dataset - data

name 


data

description 



+ Textarea

license 



+ Creative Commons

hasPart 


+ Dataset + File

another level   


DT1-214-A.mp3 NT1-20003-002.jpg

File  


NT5-TokelauOf-CAT-PDSC_ADMIN.xml NT5-TokelauOf-vid.mp4

author 

+ Organization + Person

publisher 


+ Organization + Person

funder 

+ Organization + Person

Show all available properties

This item is connected to:

@type: RootDataset → hasPart 
name: my crate

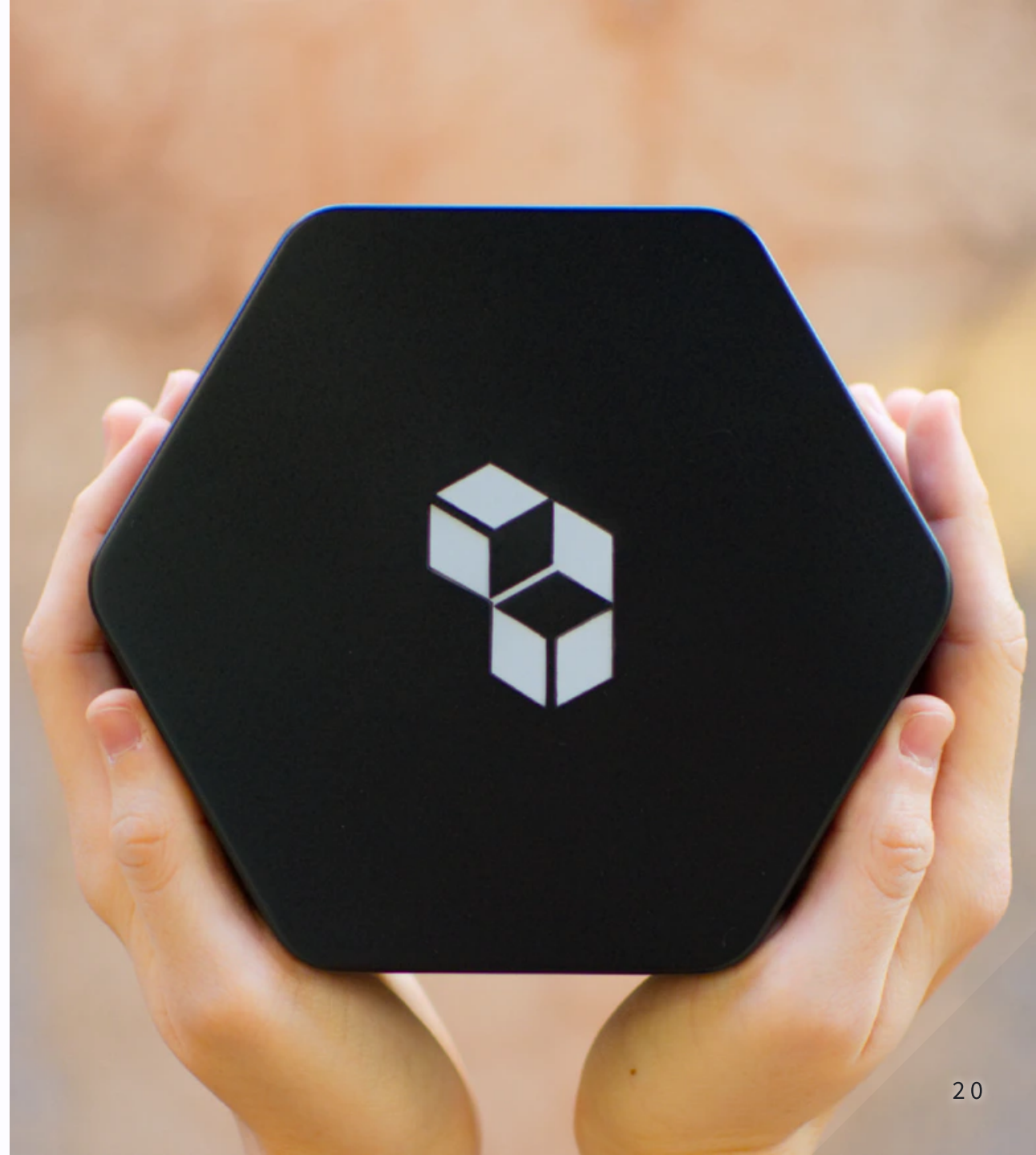
Marco La Rosa, Peter Sefton - [Describo and RO-Crate](#) - the FAIR data research helpers

You app could be the next one!

Cubbit

- CS3Mesh on a physical device!
- Integration with CS3APIs/IOP

Gianluca Granero - Cubbit Hive: the private distributed cloud



CS3MESH4EOSC

A global and rich Sync & Share Collaboration Service and Workflow of applications and software components for academic sector, data curators and analysts



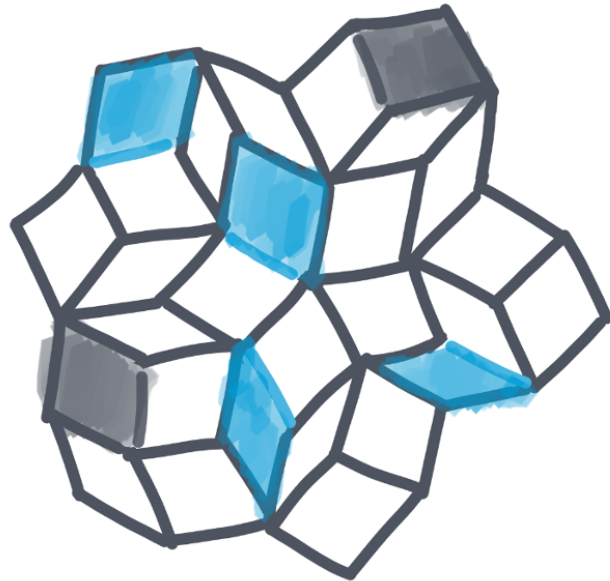
Unlock scientific collaboration through technology.

ScienceMesh is a rich ecosystem for frictionless scientific collaboration and access to research services.



Communications

- **Project website** and branding
 - Newsletters, [@cs3org](https://cs3.org) and others
- **ScienceMesh website** and branding
 - [Documentation](#) on how to join
- **Events** such as this one!



Roadmap

1. **mid-2021** - Consolidation of Proof of Concept (user sharing)
2. **early 2022** - Second prototype - sharing with groups of users
3. **late 2022** - Production infrastructure, applications fully integrated

Conclusion

- Lots of things for you to **discover**
- ... but it's also about **your** ideas
- **We hope you will like the workshop!**