CS3 MESH4 EOSC

Connecting European Data

ScienceMesh: an interoperable federation of EFSS services

Pedro Ferreira (CERN), Jakub Moscicki (CERN)

CS3 2023

CS3MESH4EOSC has received funding from the European Union's Horizon 2020 Research and Innovation programme under **Grant Agreement No. 863353**.

Partners

CERN

Joint Research Centre JRC

aarnet
Australia's Academic and Research Network

Cubbit

Trust-IT Services
Communicating ICT to markets

cesnet

esade

PSNC

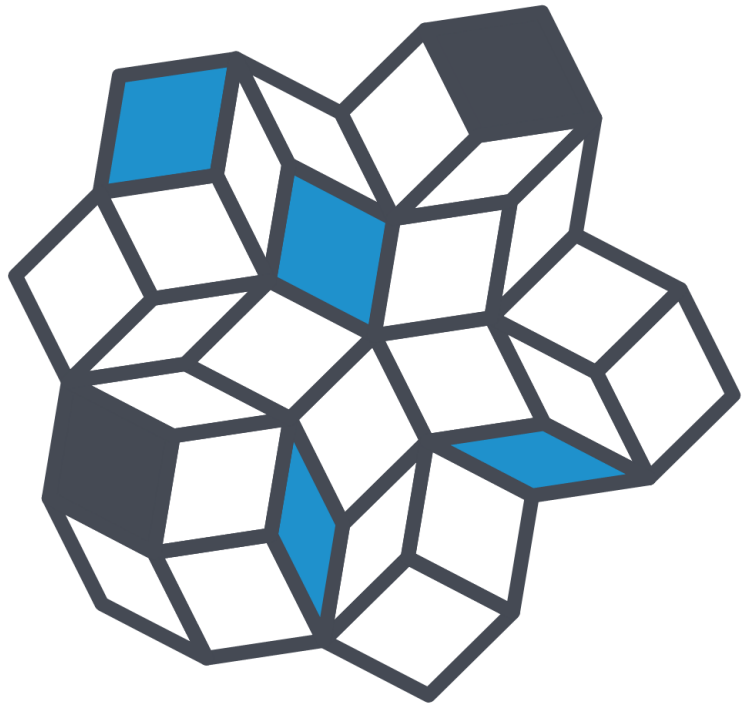
SURF SARA

DeiC

WWU MÜNSTER

SWITCH

ailleron



Science Mesh

What is ScienceMesh?

- Born out of 3.5-year EU Project
- Decentralized **Mesh of EFSS nodes**
  - *From **our community**!*
- Based on **Open Standards** and **Open Source Software**
- **Federated** research space for Europe`
- **Interoperability Platform** to develop and connect new applications

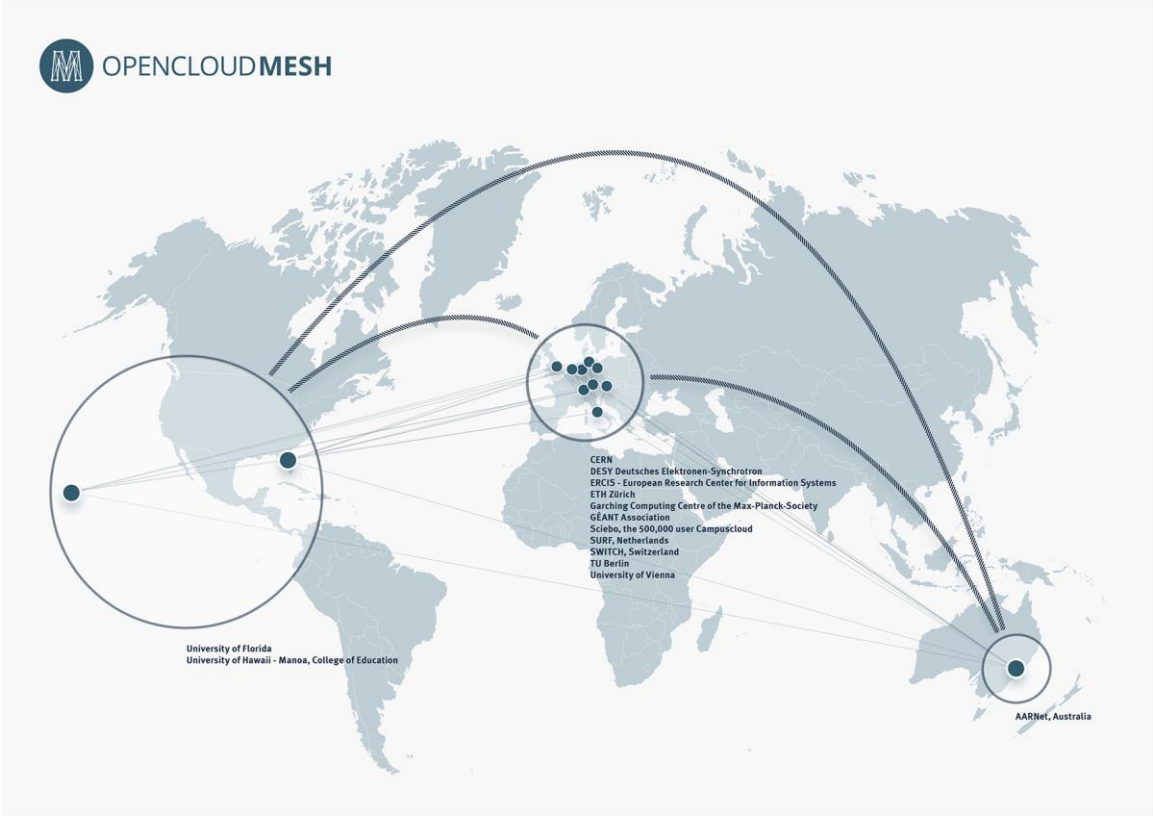
3 Dimensions

A trust-based federation

OCM

- OpenCloudMesh – common file access layer across organizations
- Implemented by ownCloud, Nextcloud and Seafile
- Perfect for 1:1 communication between nodes

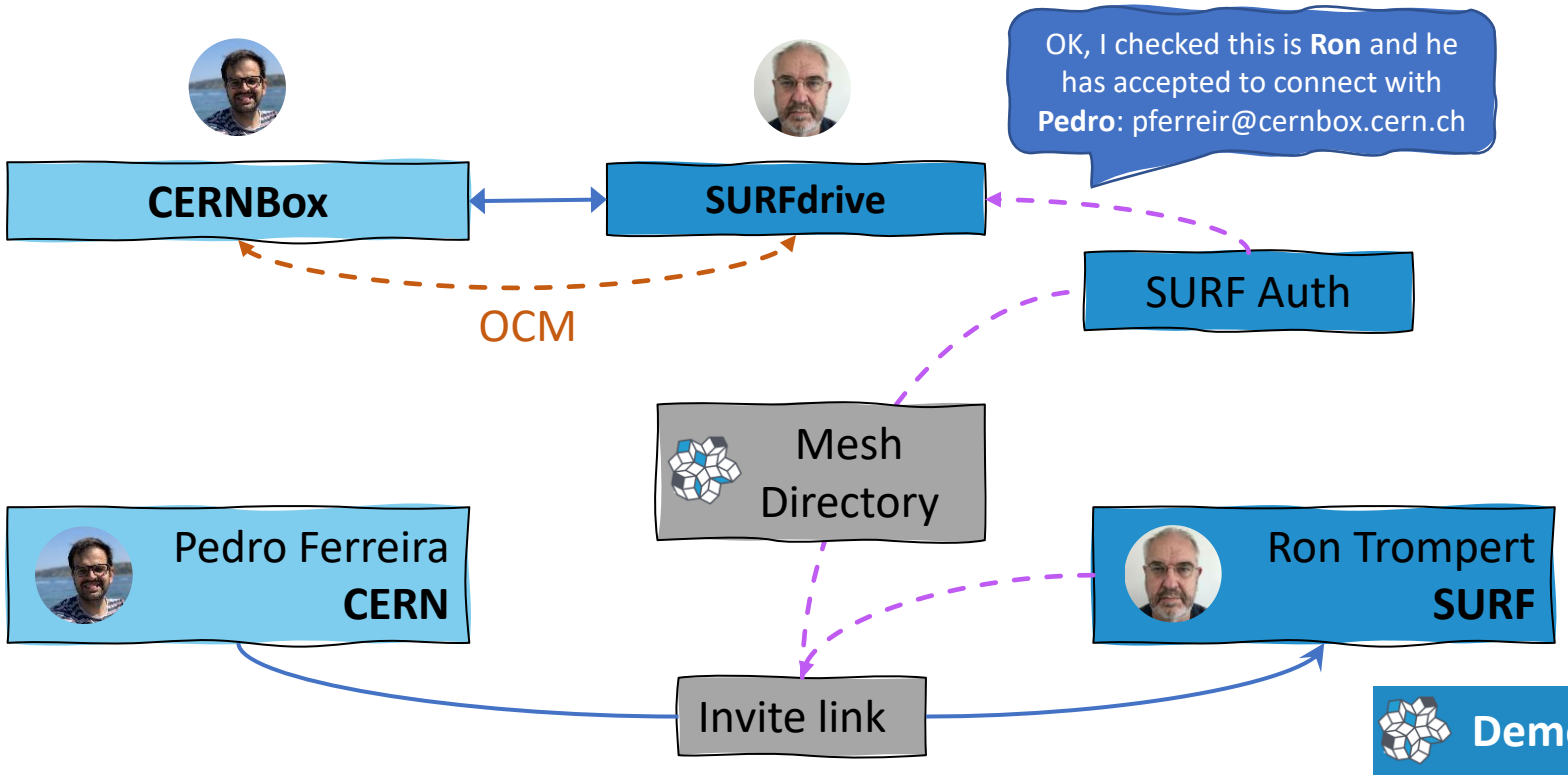
- **We ”just” need to know the other person’s user name on the target system**



Trust-based federation

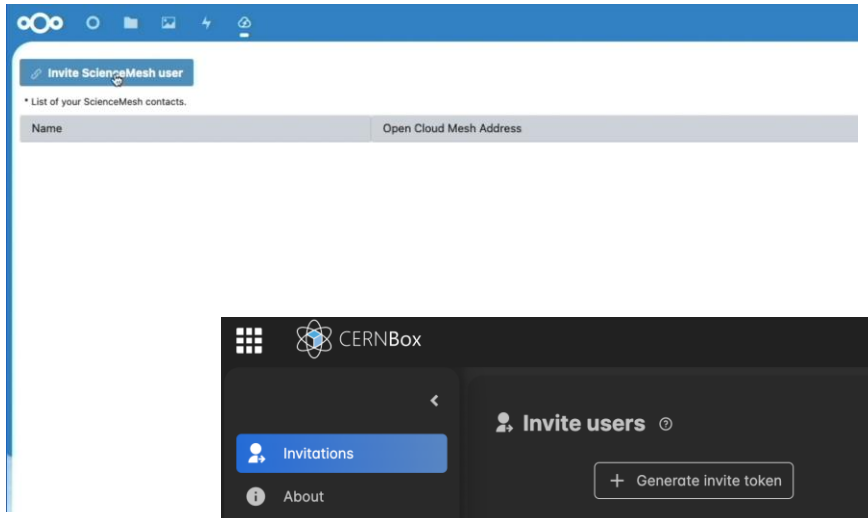
- ScienceMesh = OCM + discovery mechanism
  - *… and a few other things, actually*

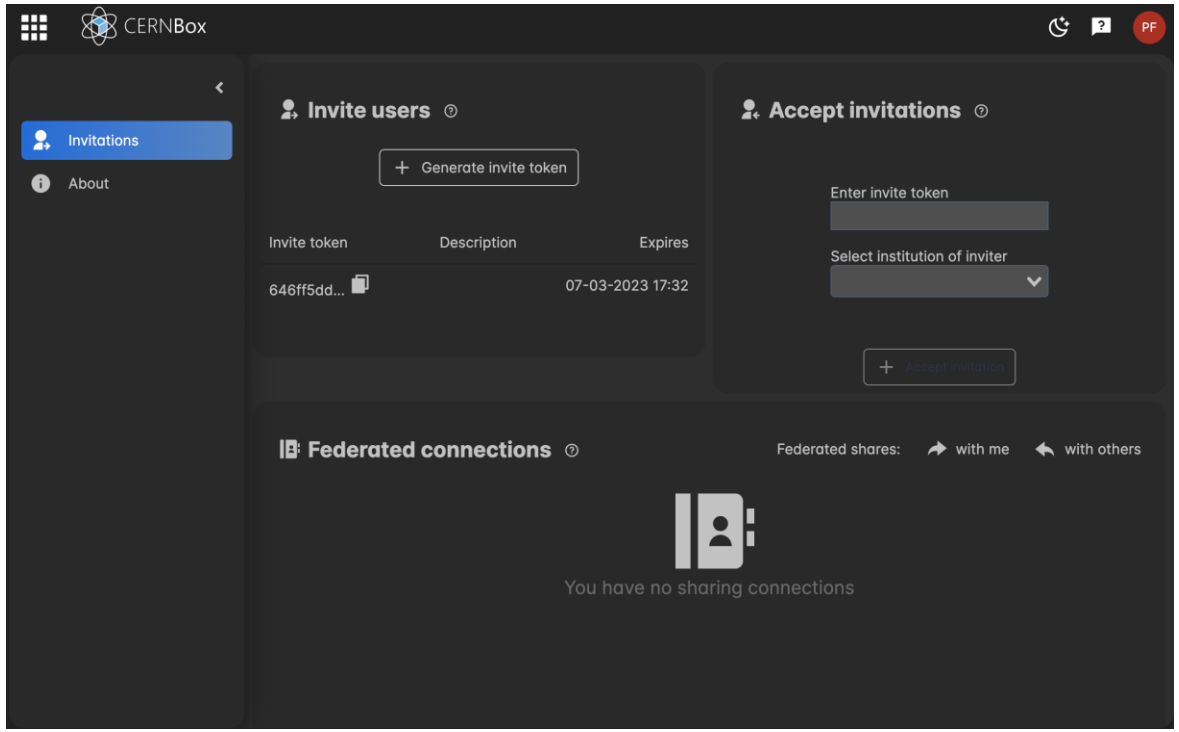
Nextcloud
ownCloud 10
OCIS

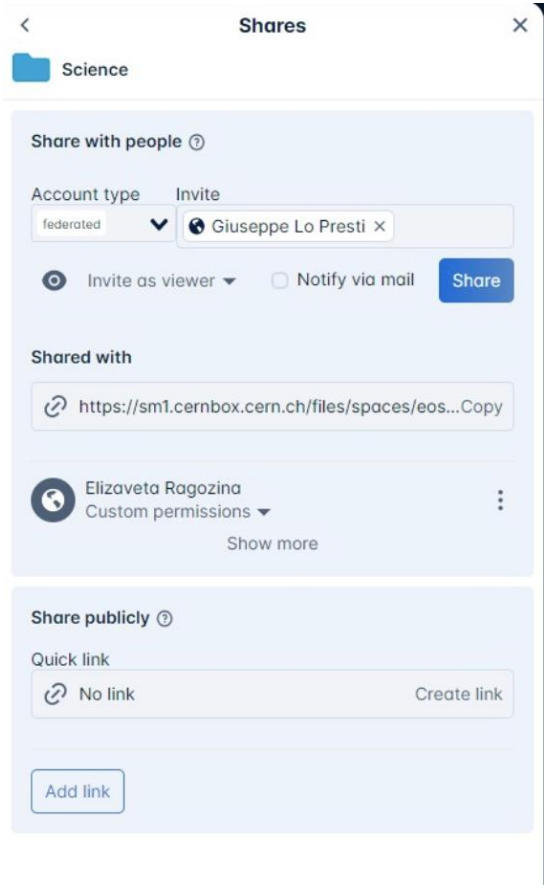


Demo: Michiel, Milan, Lisa

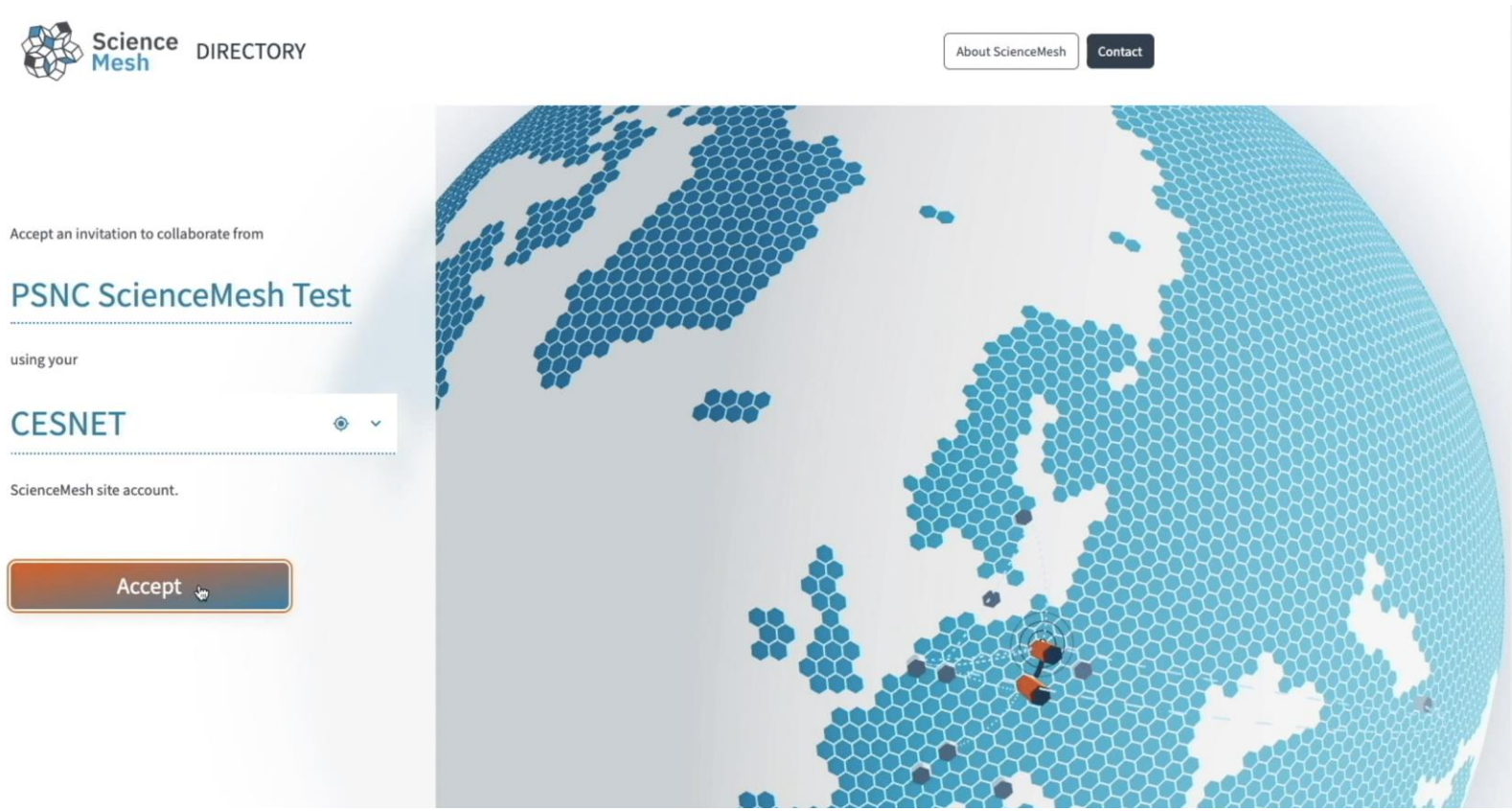
Platform Support







Mesh Directory

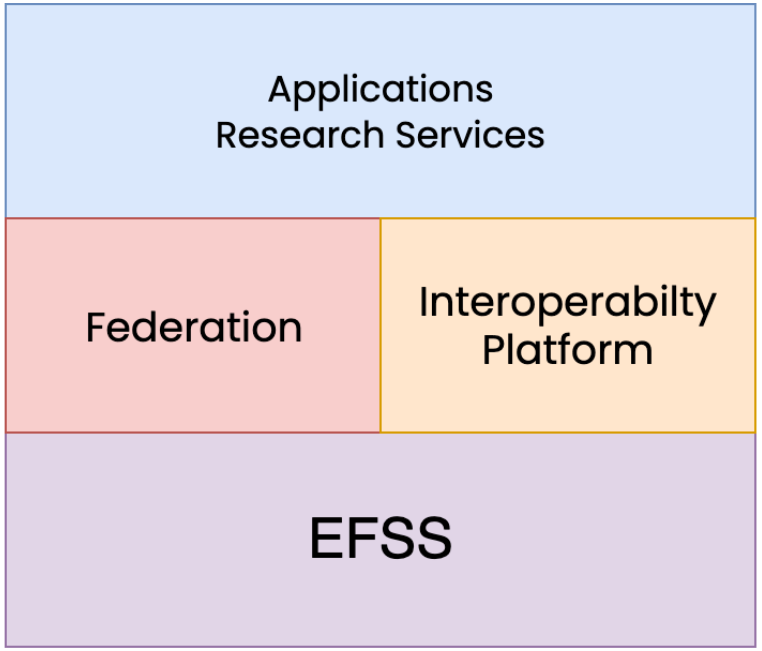


An application platform

Science Mesh

New domain-specific applications developed in the community

Build upon existing infrastructure and long-term efforts



OCM, CS3APIs
REVA

ownCloud,
Nextcloud,
Seafile
...

Lightweight add-on
Easy to deploy and
install new functionality

Connect to already deployed and commercially supported products

Increase service value for users...

Science Mesh

Data Science Environments

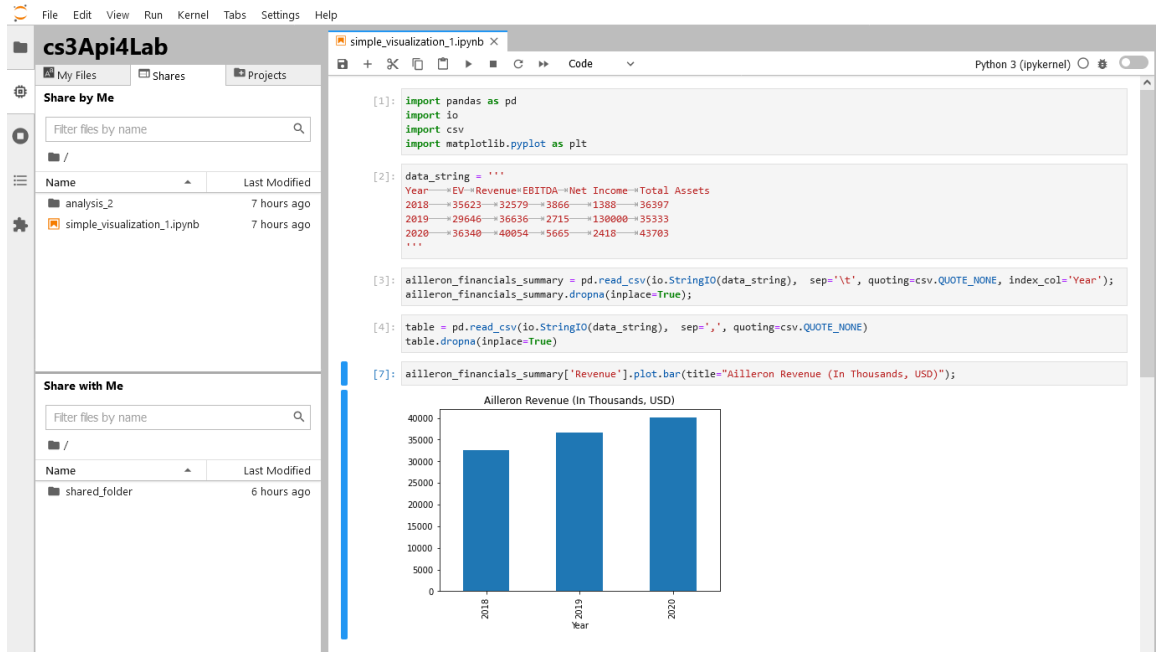
Open Data Systems

Collaborative Documents

On demand large dataset transfer

Data Science Environment

- Share notebooks across users
- Collaborate in data analysis
- Import federated resources
- Concurrent editing



Demo: Marcin

Open Data Workflow

- Integrated workflow, from creation to publishing
- Create, collaborate, annotate and publish
- Generate FAIR data
- Based on battle-tested tools

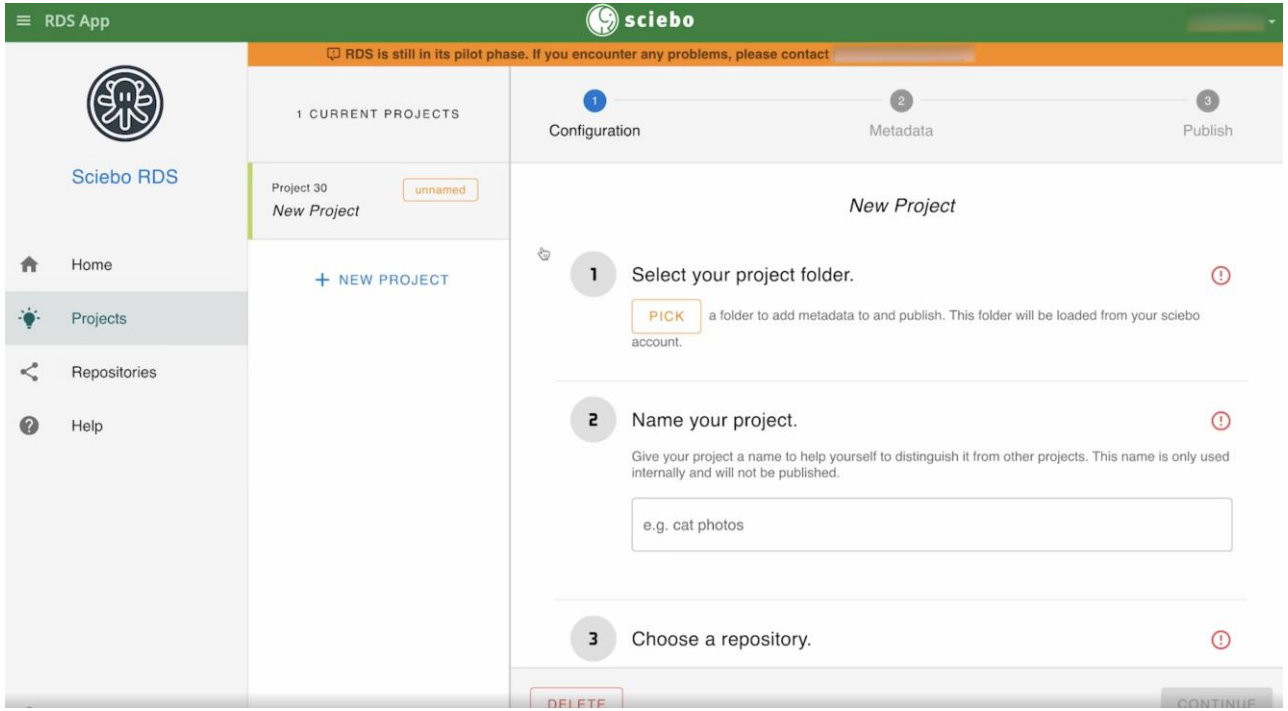
Researcher

Describo

zenodo

Open Data Workflow

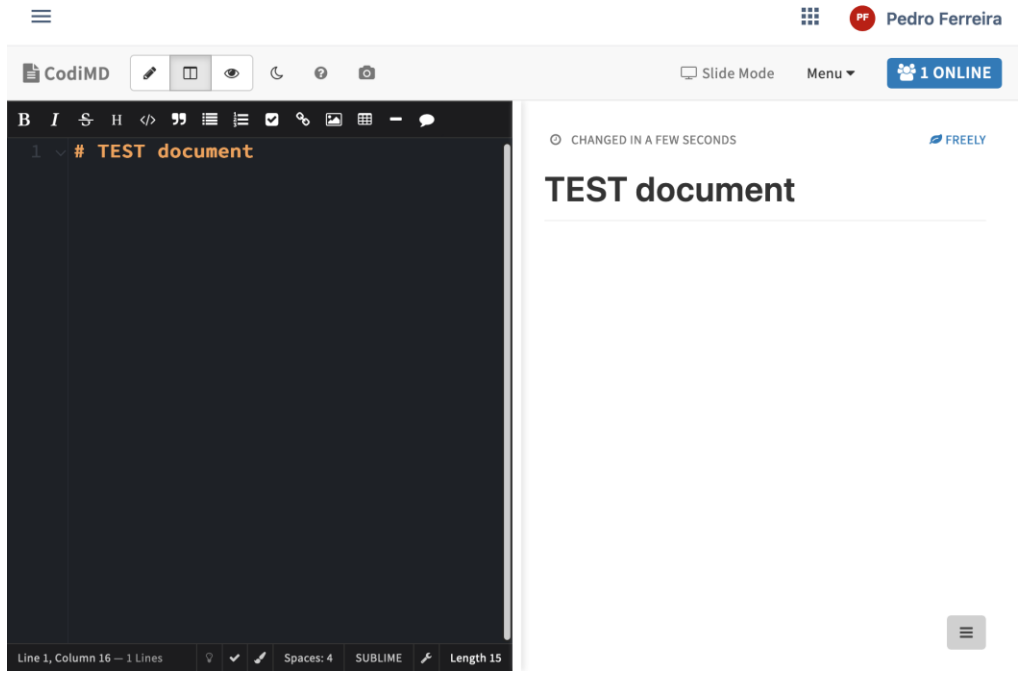
- Based on ROCrate
- Integration with Zenodo, OSF
- Deployed at WWU, SURF and SUNet



Presentation: Juri, Richard (earlier)

Markdown Editor

- Open-source product (CodiMD)
- Collaborative editing within teams
- EFSS-centric storage of notes
- Deployed at CERN



Presentation: Giuseppe (16:30)

Dataset transfer between research groups

Data Transfers

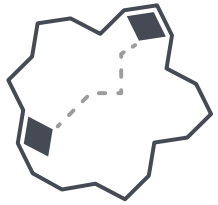
Data stored at SURF and FZJ.
Initially processing (64x reduction).

LOFAR

On demand large dataset transfer

Science Mesh

Data shipped to Kraków
for creating science quality images



Data Transfers

- Point to point (Rclone)
  - PoC successful
  - User Interface: WIP
- Between VOs
  - FTS ⟷ Reva: working
  - Rucio ⟷ Reva: WIP

RCLONE

FTS

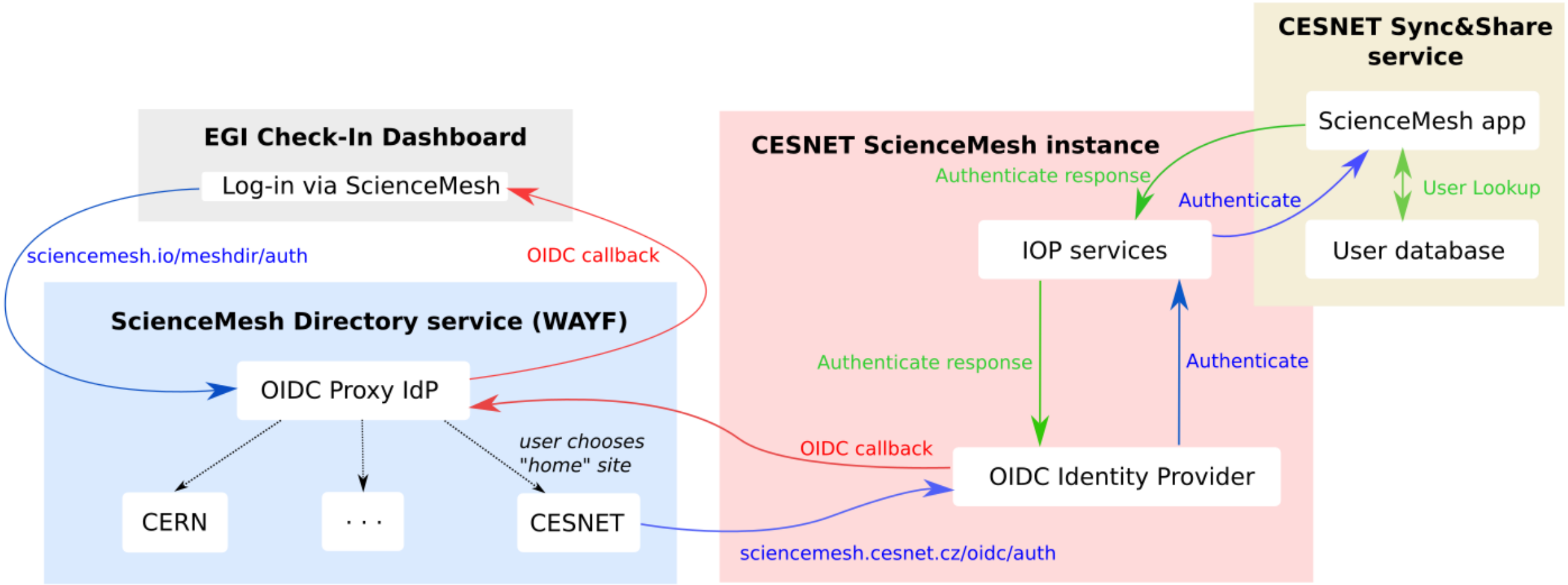
RUCIO

Reva

Demo: Ron

A connector of federations

Expanding the Federation



- Looking into ways of bringing the federated layer into EOSC
- Providing a service node to researchers with no institutional access
- Representatives in several TFs
  - Interoperability: CS3 standards and protocols
  - Long-term preservation of data
  - Quality Infrastructure for Research

Where are we?

The Mesh right now

- Testbed (8 sites)
  - Cubbit
  - DTU
  - PonderSource
  - PSNC
  - SoftwareMind
  - SUNet
  - SWITCH
  - WWU

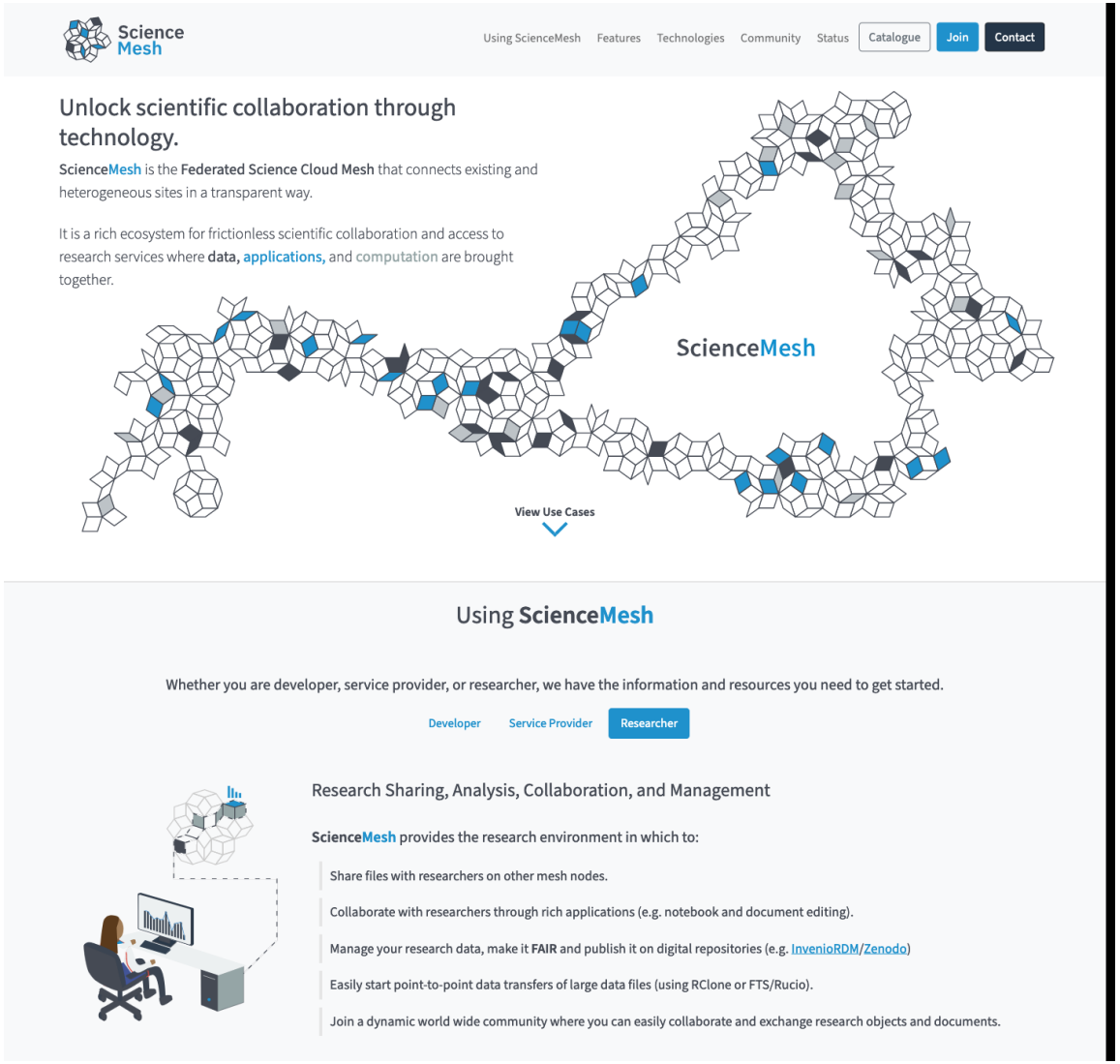
- Pre-production (3 sites)
  - **CERN**
  - **CESNET**
  - **SURF**
  - **…**

What now?

- Establishing official mesh bodies
- Perfecting documentation
- Polishing user interfaces
- Onboarding more nodes
- Moving from testbed to QA for remaining nodes
- **Move to production in Summer**

https://sciencemesh.io

- General information about platform
  - *for different audiences*
- Application Catalogue
- Documentation resources
  - *e.g. how to set up?*



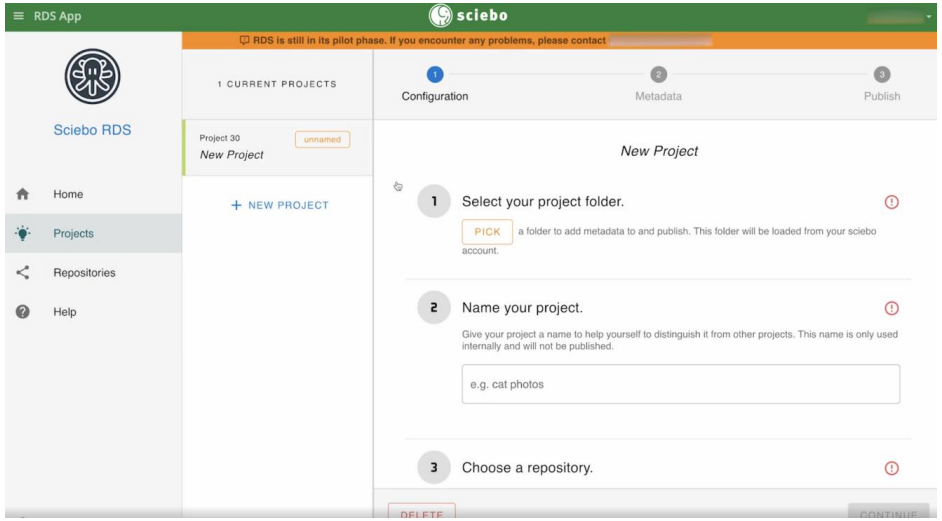
Summary

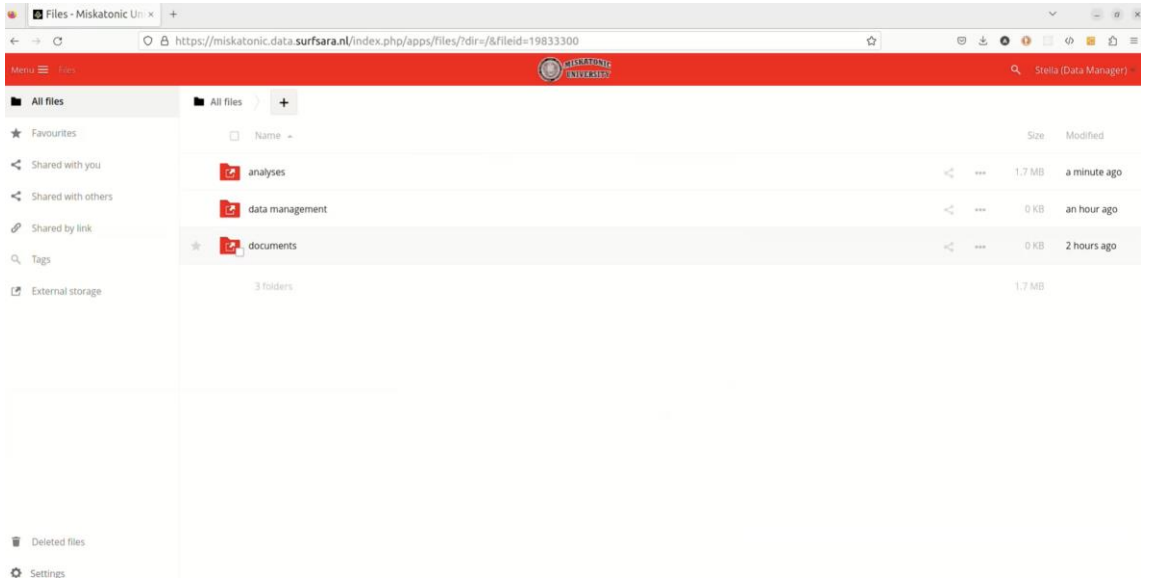
- 3.5 years of Project now reaching the end
- Lots of new developments – usable interfaces, deployable applications…
- Applications for Nextcloud and ownCloud (10 and OCIS)
- 11 nodes (2 outside the consortium), more on the way!
- Already usable through some of the QA setups
- Aiming at production by Summer (end of Project)
- **Join the session in the afternoon for more information!**

Later Today!

Science Mesh demos

14:50 - 16:10





https://sciencemesh.io

https://gitter.im/sciencemesh/community

https://github.com/sciencemesh

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Thank you!

Discover more on...

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CS3MESH4EOSC has received funding from the European Union's Horizon 2020 Research and Innovation programme under **Grant Agreement No. 863353**.

Acknowledgements

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