CS3 MESH4 EOSC

Connecting European Data

ScienceMesh: An Interoperable Federation of EFFS services for EOSC

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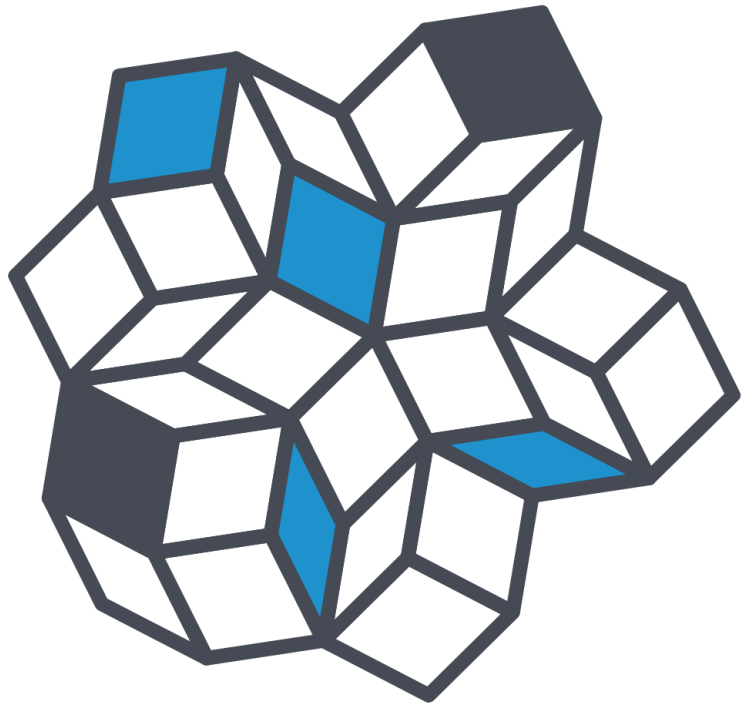
CS3 2022

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



Science Mesh

What is ScienceMesh?

- Decentralized **Mesh of EFSS nodes**
  - *Years of successful operation and established services. > 300K users*
- Based on **Open Standards** and **Open Source Software**
- **Federated** research space for Europe
  - *Promote Open Science, Collaborative Research and support Full Research Lifecycle*
- **Interoperability Platform** to develop and connect new applications
  - *Close collaboration with EFSS industry and other commercial partners*

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

SWITCH

ailleron

WWU MÜNSTER

- M18 Project Review successful
  - Slight delay in vendor support
- Participation in several conferences
  - TNC21
  - SciDataCon (full session)
  - ownCloud Conference 2021
  - OpenScienceFair
  - EGI Conference
  - RDA plenary 18
  - …
- Press release on platform support

ownCloud, a well-known, free and open-source software platform, is widely deployed in the European research and education networks. ownCloud has been one of the key technology contributors to provide a secure, federated data platform for more interconnectivity and productivity across the scientific community, and the proponent of the OpenCloudMesh. The new ownCloud Infinite Scale product natively integrates Reva IOP, offering high performance and cloud-native scaling. Sites deploying ownCloud Infinite Scale will have the built-in capability to connect to the Science Mesh federation and other research services.

"We at ownCloud are very excited to both support and be part of the CS3MESH4EOSC initiative! Research networking is a key part of our DNA and our mission", says Christian Schmitz, Chief Strategy and Innovation Officer at ownCloud.

Nextcloud integration with IOP is being implemented in partnership with the Dutch development companies Ponder Source and Muze. A plugin for Reva, the software package behind Science Mesh's IOP, is being developed using Nextcloud's internal file access APIs and being made available through the platform's Web User Interface. An easy-to-install app allows a Nextcloud site administrator to connect their service node with the rest of the Science Mesh federation.

"All institutes using Nextcloud now have the opportunity to join the fast-growing Science Mesh. This represents the possibility to connect seamlessly with researchers from any other institute across Europe, but at the same time maintain the sovereignty of your existing Nextcloud system!" - Michiel de Jong, Founder of Ponder Source.

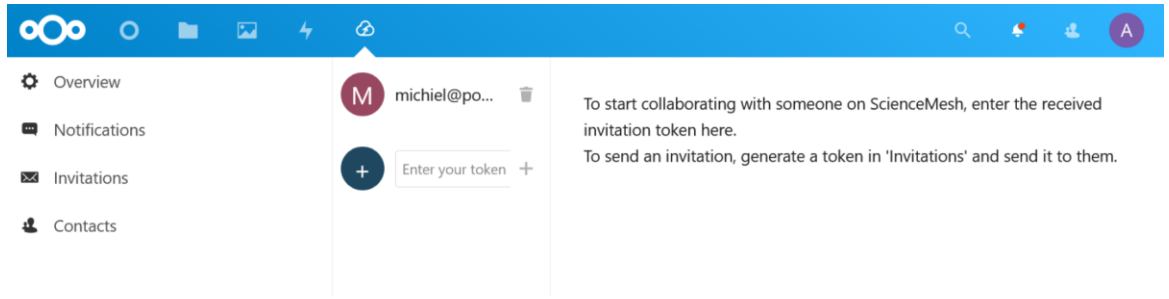
Seafile is an open source file sync&share solution designed for high reliability, performance and productivity with more than 2 million users worldwide. Seafile offers a highly efficient synchronisation protocol with block deduplication. A Seafile plugin for Reva is in the prototyping stage.

"Integration with ScienceMesh helps Seafile users in the European research community to better collaborate with other EFSS services. This is important for our users and the success of Seafile. The integration also brings us integration with many third-party applications with no extra effort, which makes Seafile more attractive to users. We're happy to be part of it.", says Jonathan Xu, Founder and Chief Technology Officer at Seafile.

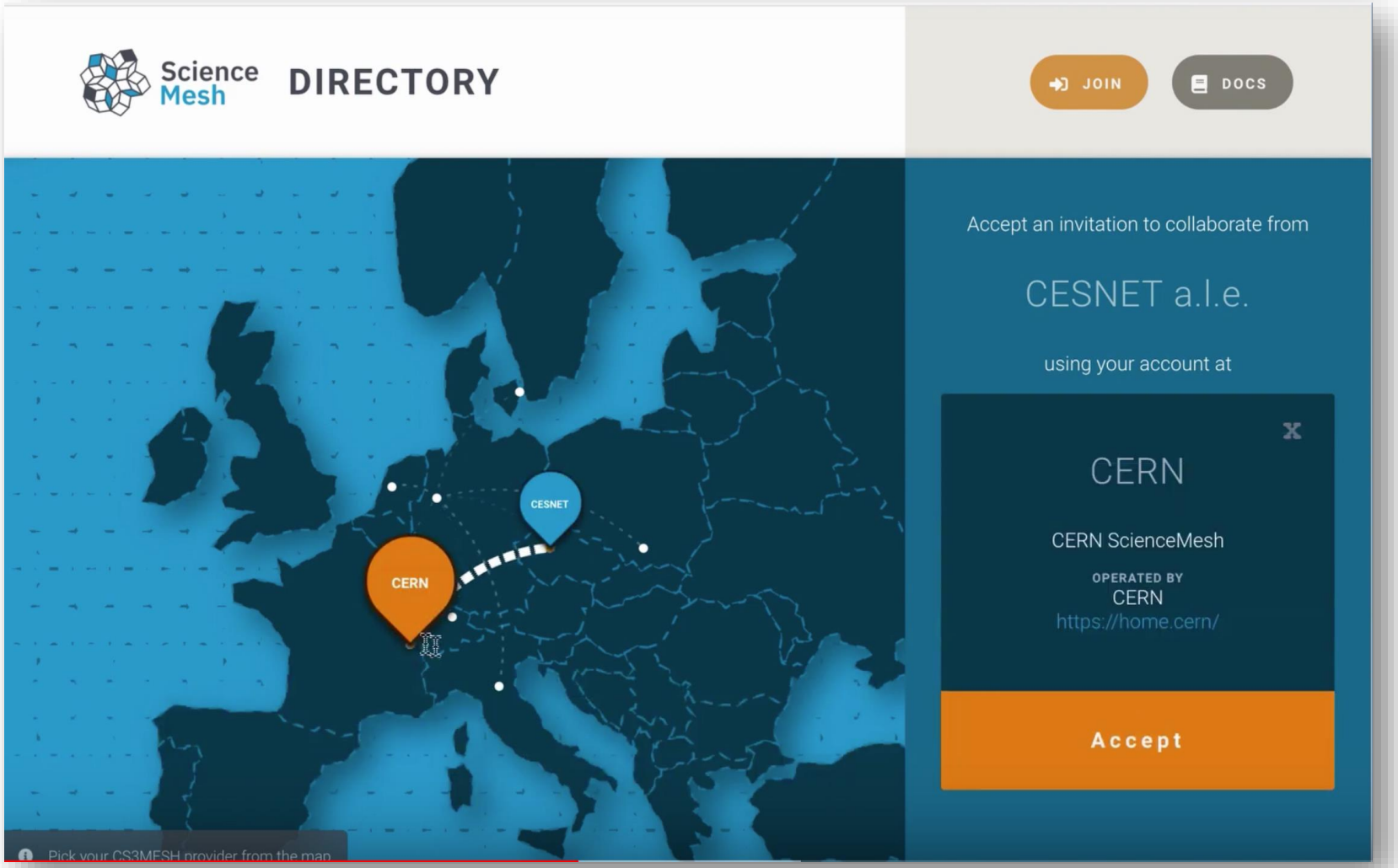
- Partnerships
  - PonderSource / Muze (outsourcing)
  - Describo Online
  - Rclone
  - ScieboRDS
  - EGI
  - HIFIS
- Refreshed *sciencemesh.io* website
- New version of *cs3mesh4eosc.eu* website

Platform Support

- Nextcloud
  - outsourced to PonderSource (alpha stage);
  - UI and backend;
- ownCloud
  - OCIS - using REVA, still UI work to do;
  - version 10 - backport by PonderSource (March 2022);
- Seafile
  - *under discussion*



Invitation Workflow for new sites and users



Applications

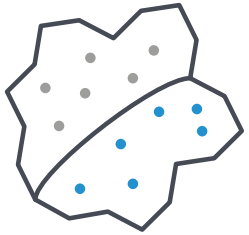
Data Science Environments

Open Data Systems

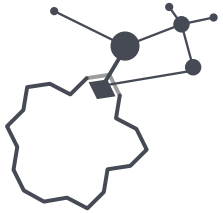
Collaborative Documents

On demand large dataset transfer

Prototypes

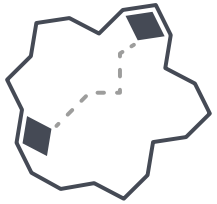


Data Science Environment



ScieboRDS

Markdown editor

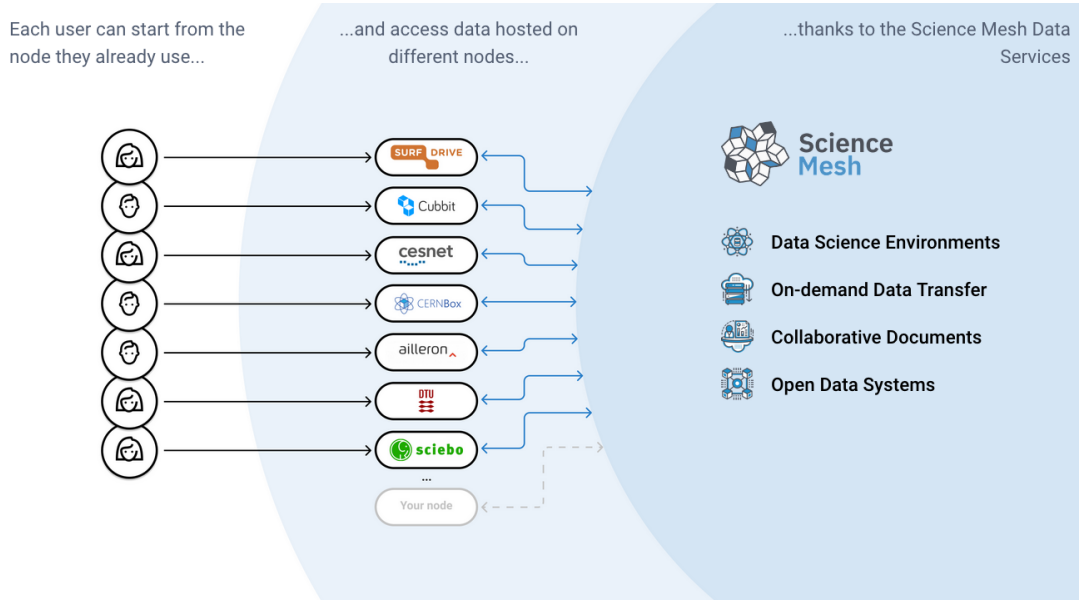


Data Transfers

What now?

- Beta/MVP versions of prototypes landing
- Bringing applications to user groups
  - Some identification work done, more to be done
- Onboarding of first “early adopters”

- ScienceMesh as a federated data + application layer for EOSC



- 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

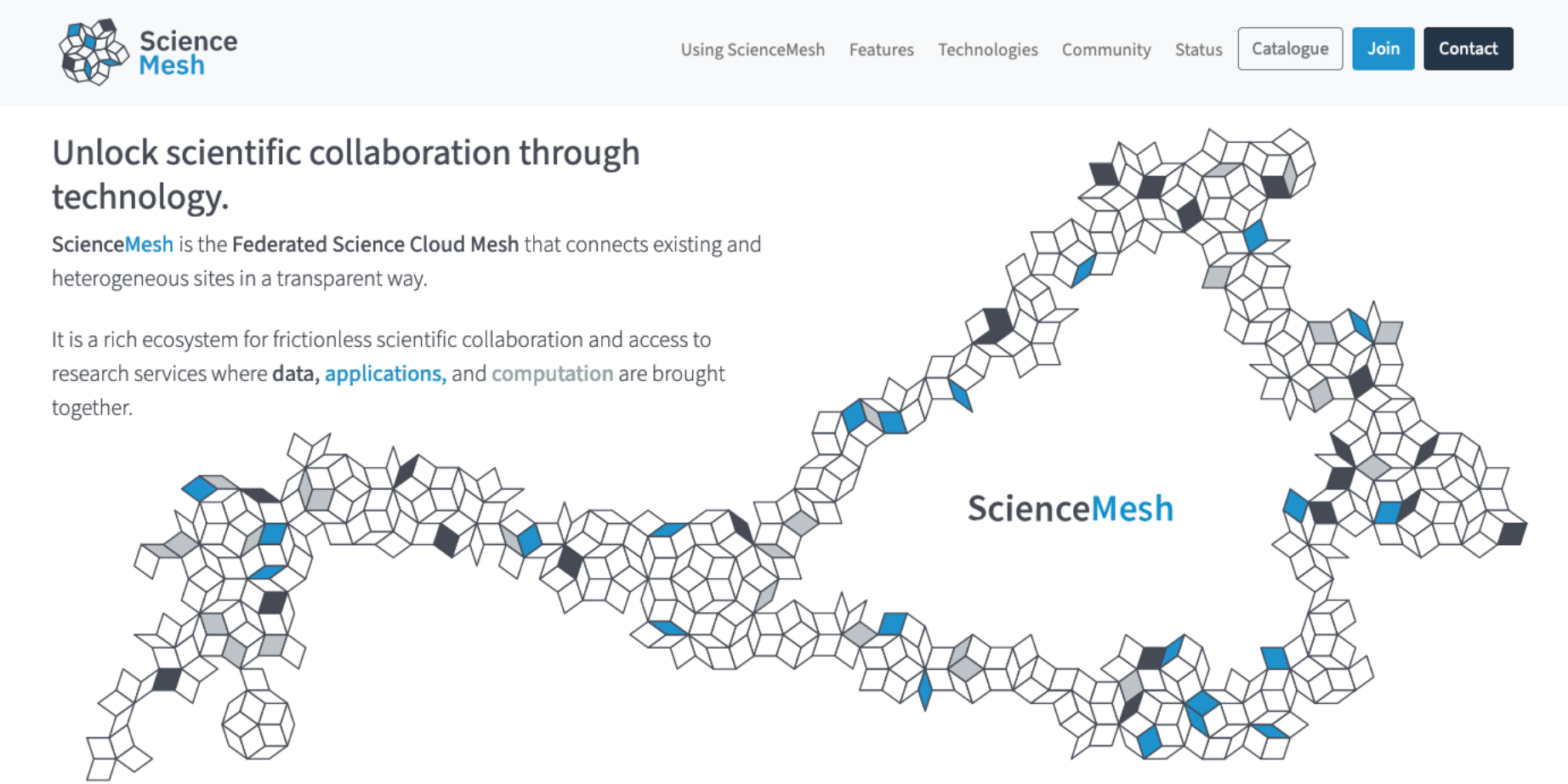
EUROPEAN OPEN SCIENCE CLOUD

Building Bridges

- EGI-ACE – integration of compute resources on ScienceMesh nodes
- Discussions with Research Infrastructures
  - ENVRI-FAIR, SSHOC, PANOSC, EOSC-Life, …
- HIFIS – bridging the two federations

CS3 Community

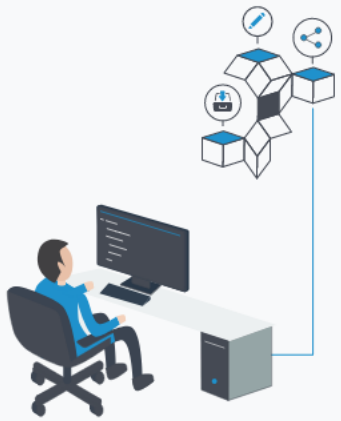
- Essential part of the **CS3MESH4EOSC** initiative
- **Leveraging on the community**
- **Everyone** is welcome to join this collective effort!
- For the **CS3 community**: a **gateway** to EOSC
- For **EOSC**: new tools for Research Infrastructures, new and existing communities


Science Mesh
Using ScienceMesh
Features
Technologies
Community
Status
Catalogue
Join
Contact
Unlock scientific collaboration through technology.
ScienceMesh is the Federated Science Cloud Mesh that connects existing and heterogeneous sites in a transparent way.
It is a rich ecosystem for frictionless scientific collaboration and access to research services where data, applications, and computation are brought together.
ScienceMesh

Using ScienceMesh

Whether you are developer, service provider, or researcher, we have the information and resources you need to get started.

Developer | Service Provider | Researcher

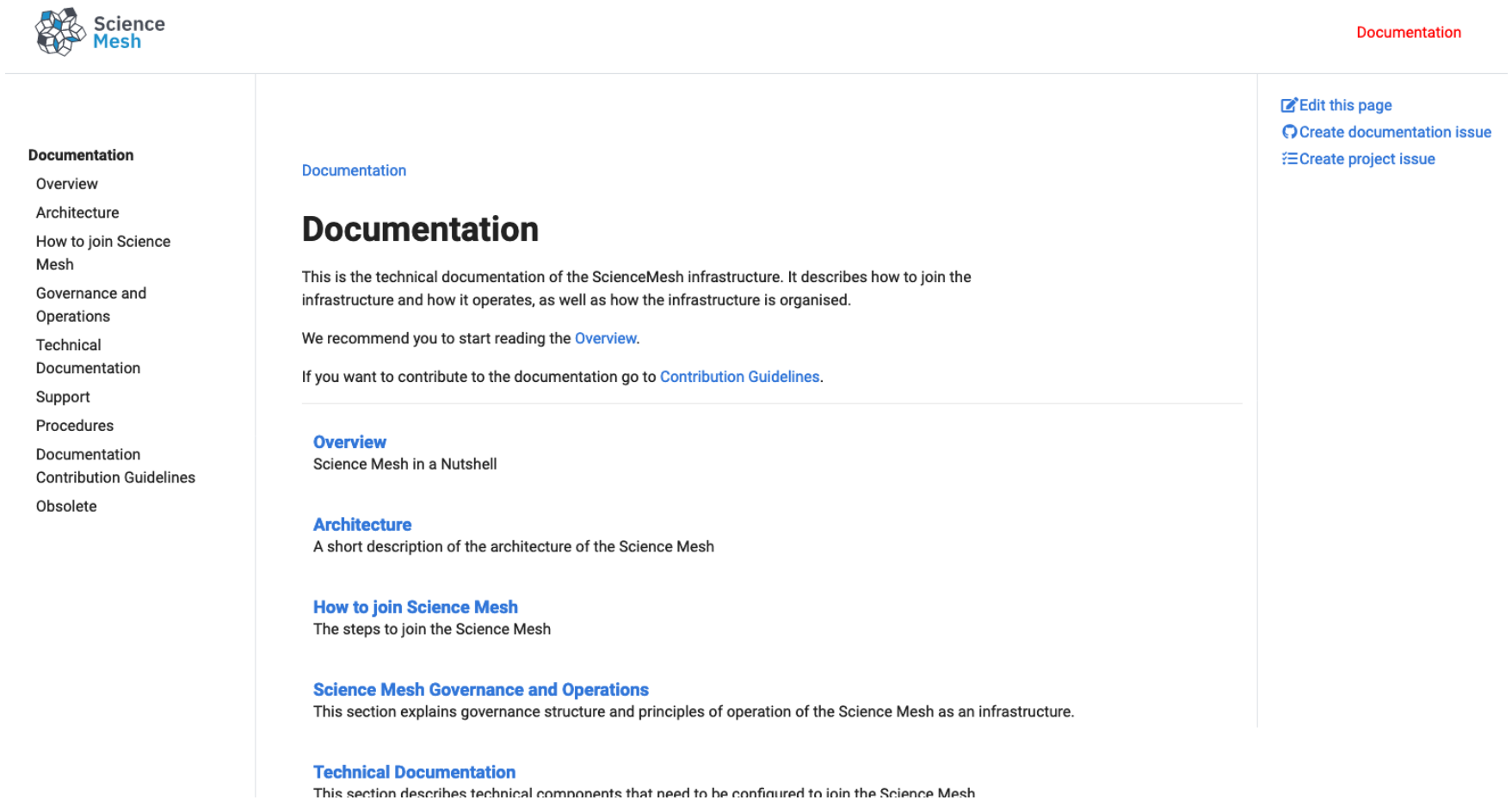


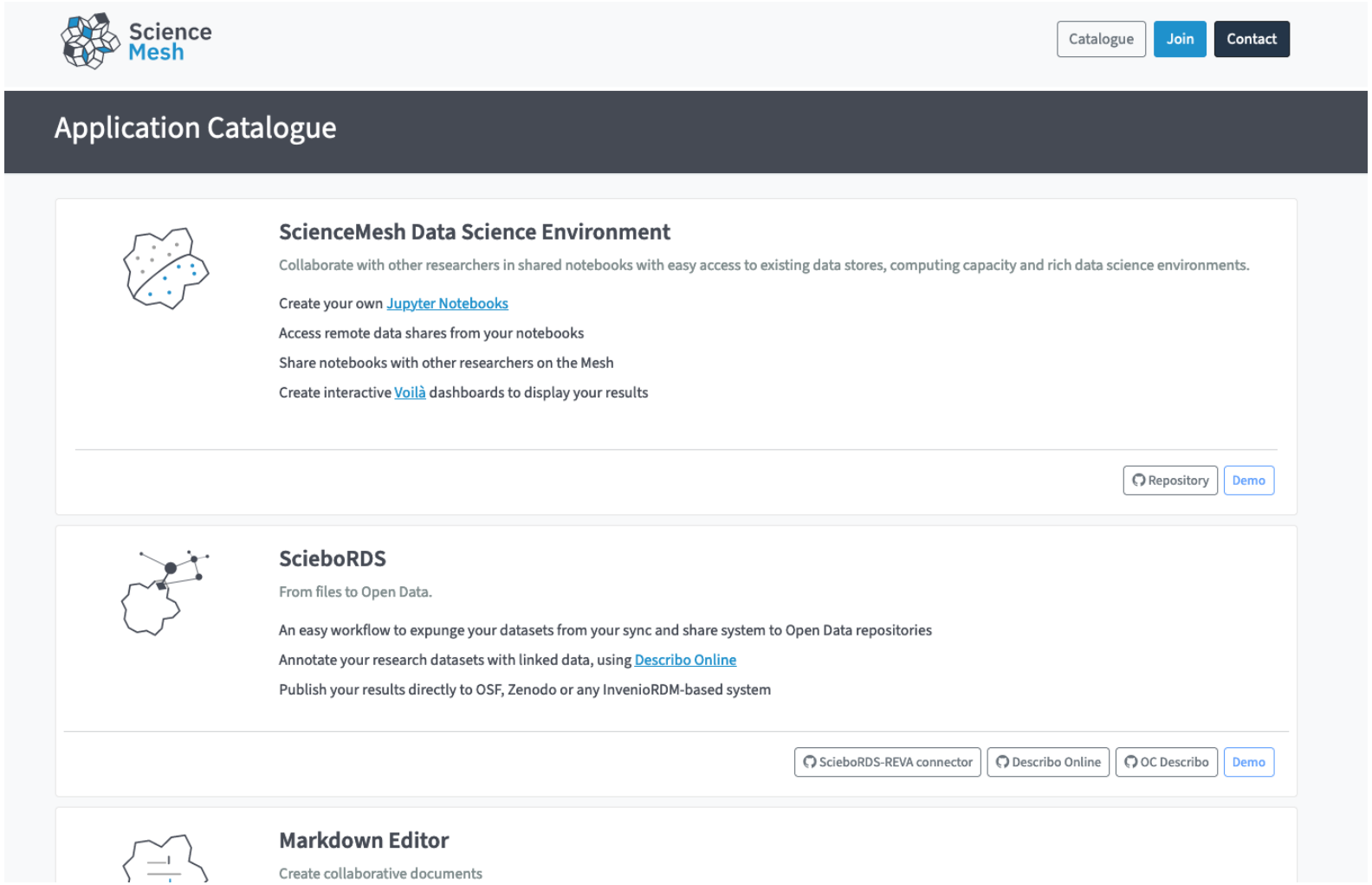
Develop once, Deploy anywhere

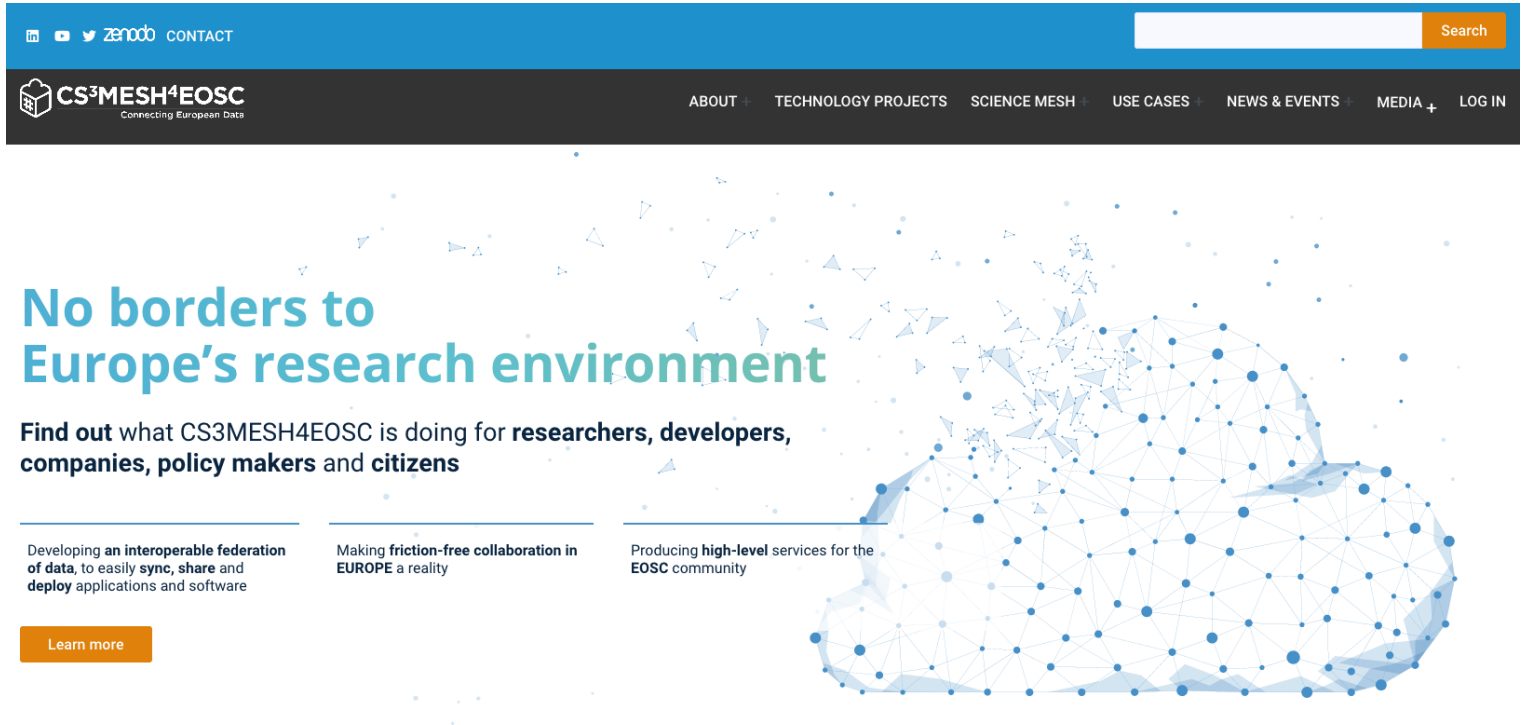
Thanks to the **ScienceMesh** Interoperability Platform, you will be able to develop productivity and research applications which can be deployed on mesh nodes regardless of the vendor backend they are using

- Expose your applications to a virtually limitless and diverse user base
- Join a vibrant community of research-oriented applications aimed at unlocking the full potential of world wide collaboration

View/Contribute to the Code Base | Join in the Discussion | Integrate Your Application

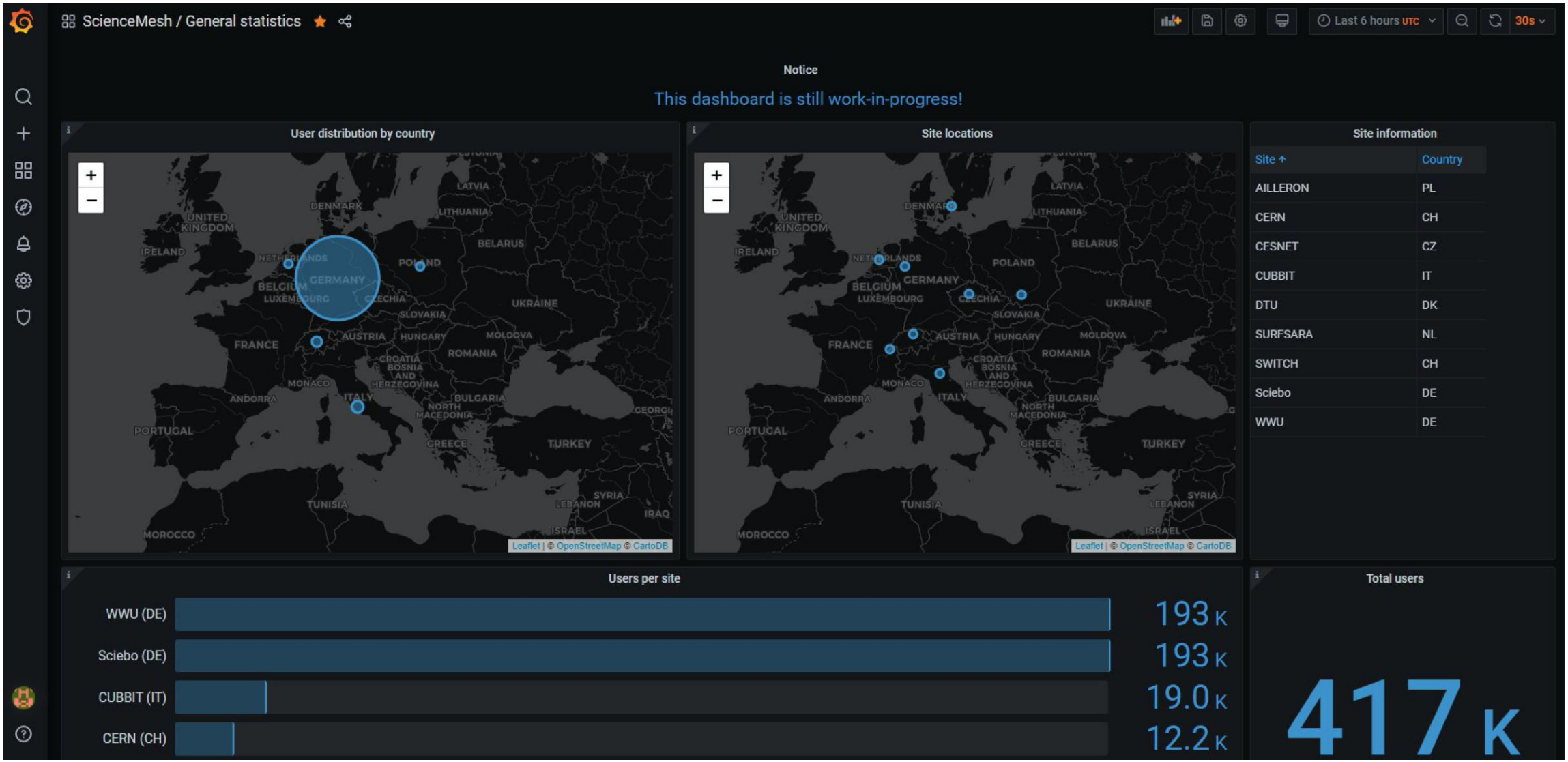

Science Mesh
Documentation
Documentation
Overview
Architecture
How to join Science Mesh
Governance and Operations
Technical Documentation
Support
Procedures
Documentation Contribution Guidelines
Obsolete
Documentation
Documentation
This is the technical documentation of the ScienceMesh infrastructure. It describes how to join the infrastructure and how it operates, as well as how the infrastructure is organised.
We recommend you to start reading the Overview.
If you want to contribute to the documentation go to Contribution Guidelines.
Overview
Science Mesh in a Nutshell
Architecture
A short description of the architecture of the Science Mesh
How to join Science Mesh
The steps to join the Science Mesh
Science Mesh Governance and Operations
This section explains governance structure and principles of operation of the Science Mesh as an infrastructure.
Technical Documentation
This section describes technical components that need to be configured to join the Science Mesh
Edit this page
Create documentation issue
Create project issue


Science Mesh
Catalogue
Join
Contact
Application Catalogue
ScienceMesh Data Science Environment
Collaborate with other researchers in shared notebooks with easy access to existing data stores, computing capacity and rich data science environments.
Create your own Jupyter Notebooks
Access remote data shares from your notebooks
Share notebooks with other researchers on the Mesh
Create interactive Voilà dashboards to display your results
Repository
Demo
ScieboRDS
From files to Open Data.
An easy workflow to expunge your datasets from your sync and share system to Open Data repositories
Annotate your research datasets with linked data, using Describo Online
Publish your results directly to OSF, Zenodo or any InvenioRDM-based system
ScieboRDS-REVA connector
Describo Online
OC Describo
Demo
Markdown Editor
Create collaborative documents



THE SCIENCE MESH DATA SERVICES

ScienceMesh Dashboard (beta)



https://sciencemesh.io

https://gitter.im/sciencemesh/community

https://github.com/sciencemesh

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Connecting European Data

Thank you!

Discover more on...

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Acknowledgements

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