CS3 MESH4 EOSC

Connecting European Data

Creating a Mesh For Open Science

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CS3 2021 – Cloud Storage Synchronization and Sharing

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

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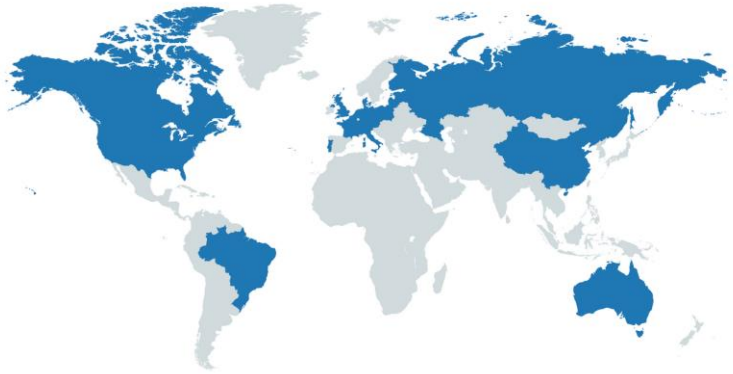
Status quo

- Several EFSS nodes providing valuable **services** to the community
- **Mostly Sync and Share**, but not limited to that
- User environments, higher level **applications** (e.g. editors, data analysis…)
- Basic **file sharing** possible



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SWITCHdrive
polybox
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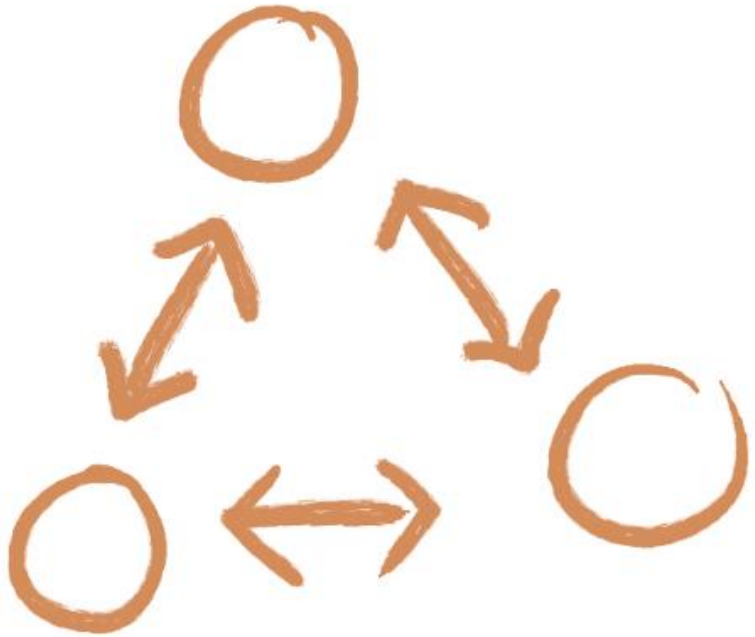
CERNBox

- **CS3 Site Reports:**
- **~16 PB** of data
- **> 20 nodes**
- **> 400.000 users**
- **> 3.5 billion files/directories**

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



Opportunities

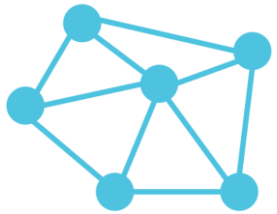
- **European Open Science Cloud (EOSC)**
  - Creating an "*environment for **hosting** and **processing** research data to support EU science*"
  - *"Cuts across borders and scientific disciplines to store, share, process and re-use research digital objects"*
  - **FAIR** principles (Find, Access, Interoperate, Reuse)

- **Digital Sovereignty**
  - of governments, companies and individuals alike
  - **GAIA-X** anyone?

CS3MESH4EOSC

CS3

- Sync and Share services
- User environments
- Higher-level application services



- Federation of nodes
- Seamless exchange of data
- Groups of (remote) users
- Higher-level distributed applications

EUROPEAN OPEN SCIENCE CLOUD

”[…] trusted, virtual, federated environment in Europe to store, share and re-use research data across borders and scientific disciplines.”

FAIR Data

- **3-year** Project
  - Started **January 2020** (kick-off meeting in Copenhagen)
- **Objectives**
  - Delivering a **Global Collaboration Servi**ce for researchers, educators, data curators, analysts…
  - Providing an **interoperable platform** to easily share and deploy applications and software components
  - Leveraging the potential of the **CS3 Community** and expanding it
- Split in **5 Work Packages**
- Led by **CERN**

Partners

- AARNET
- Ailleron/Software Mind
- CERN
- CESNET
- Cubbit
- DeiC/DTU
- ESADE
- JRC
- PSNC
- SURFsara
- SWITCH
- Trust-IT
- WWU Münster

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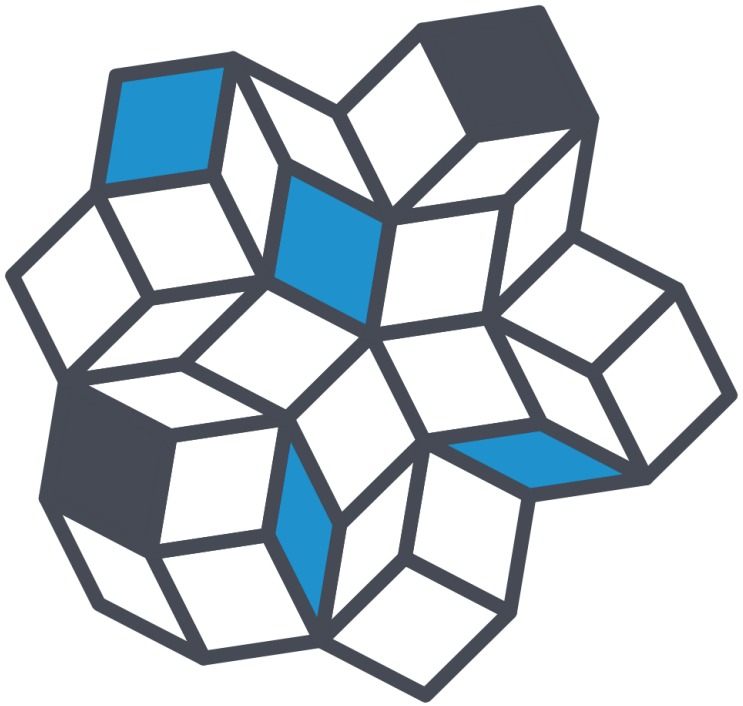
CS3

- Nextcloud
- ownCloud
- Seafile
- Cubbit

Early Engagement

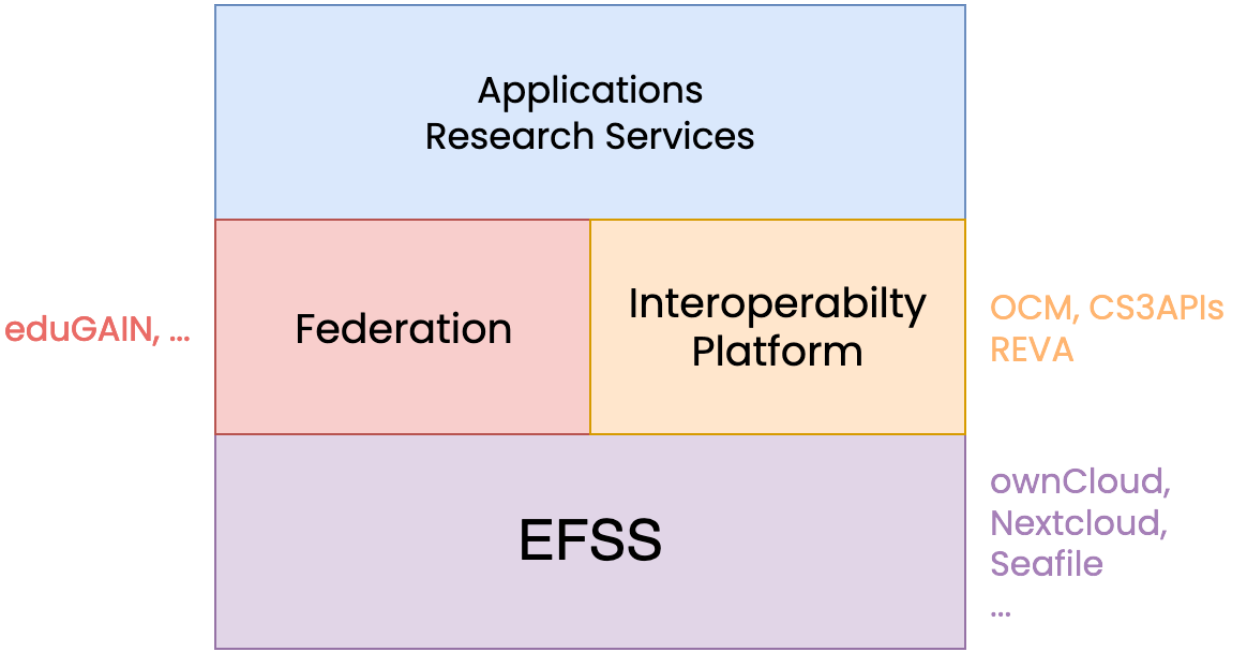


Science Mesh

What is ScienceMesh?

- Decentralized **Mesh of EFSS nodes**
- Based on **Open Standards** and **Open Source Software**
- **Federated** environment where researchers can collaborate
- **Application Platform** for distributed collaborative tools

Science Mesh



Applications

Interoperability

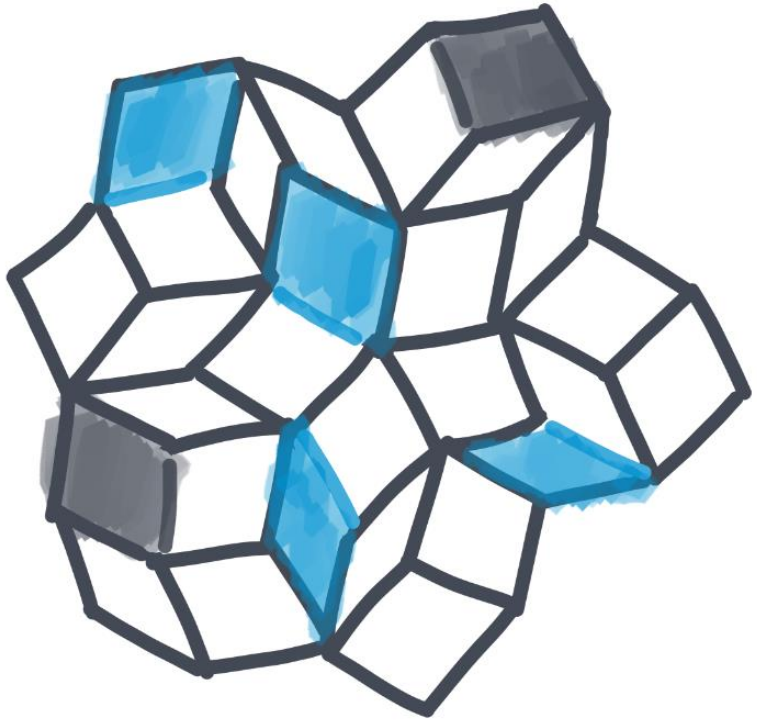
- OCM
  - Main server-to-server communication mechanism
  - Version 1.0 published in July
  - New proposal from CS3MES4EOSC: Invitation Workflow
  - Last meeting in June, another one tomorrow (Wednesday)!

cs3org/OCM-API

- CS3APIs
  - Storage-to-application communication
  - Common “language” for integration
  - REVA IOP – bridges existing protocols with CS3APIs

cs3org/cs3apis

Prototype Phases

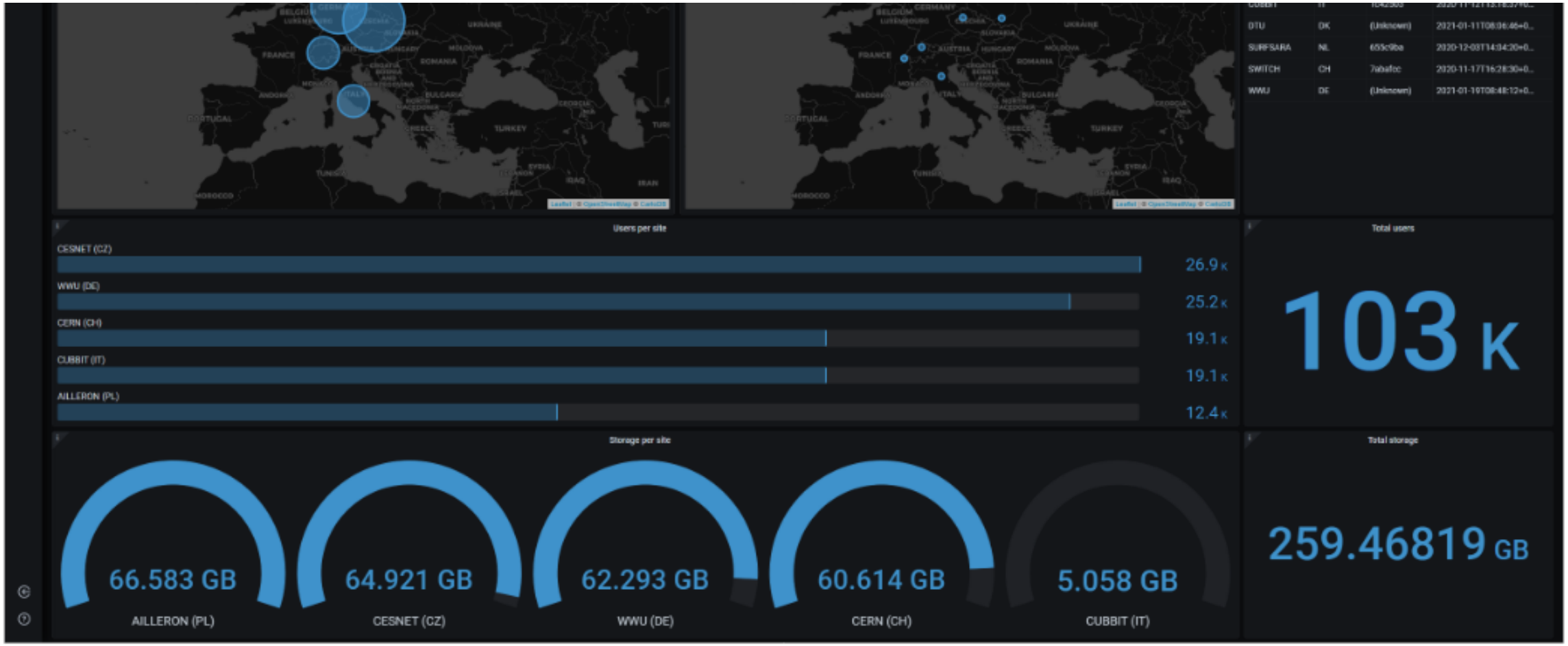


1. Sharing files between individuals (M18)
2. Sharing files with groups of users (M24)
3. Collaborative applications and research services (M1-M36)

Challenges

- **Federation** – consistent quality of service, availability, …
  - Clear rules for onboarding
  - Minimizing maintenance effort
- **Technology** – interoperability across vendors/platforms
  - Focus on existing Open Standards
  - Keep close contact with vendors, invite them to participate
- **Sustainability** – support services, development
  - Create a lean infrastructure with as few “central components” as possible
  - Build on existing CS3 Community
- **Privacy** – bringing users and data together while respecting it
  - “Privacy by design” from the beginning
  - Core functionality should not require concessions

Join the mesh!



Science Mesh
1st Workshop

Thursday 28 January at **09:00 CET** (08:00 UTC)

Same Zoom Room

Everyone is invited!

https://sciencemesh.io

https://gitter.im/sciencemesh/community

https://github.com/sciencemesh

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Thank you!

Discover more on...

cs3mesh4eosc.eu

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Acknowledgements

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