FAIR DATA THROUGH A FEDERATED CLOUD INFRASTRUCTURE: EXPLORING THE SCIENCE MESH

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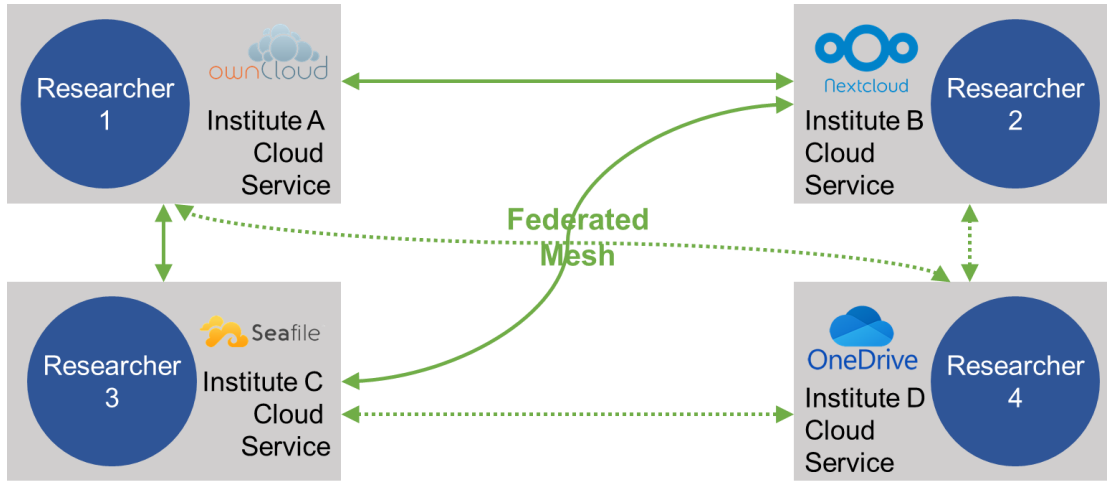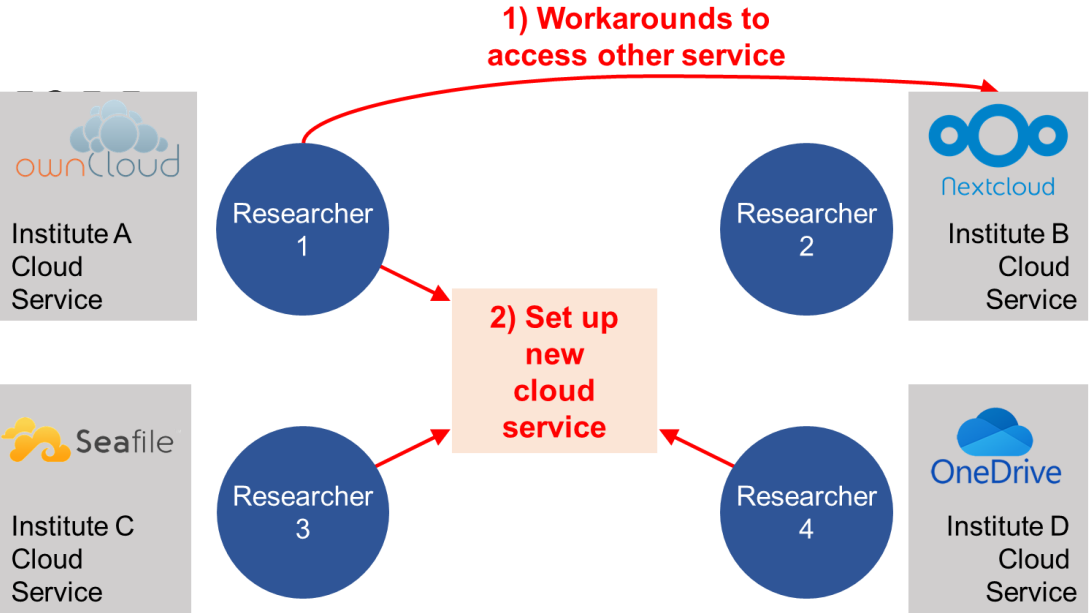
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Motivation and Theo...

Principle	Description
Findable	Metadata and data are easy to find for both humans and computers.
Accessible	Once data is found, they can be accessed with authorisation and authentication
Interoperable	Data can be readily used by applications for analysis, storage, and processing.
Reusable	Metadata and data are well-described for replication and integration

Research Question
- What are the challenges in the pursuit of FAIR data?
- What is the potential of FAIR data in unlocking new collaborative workflows?

1) Workarounds to access other service

2) Set up new cloud service

Researcher 1 — Institute A Cloud Service (ownCloud)
Researcher 2 — Institute B Cloud Service (Nextcloud)
Researcher 3 — Institute C Cloud Service (Seafile)
Researcher 4 — Institute D Cloud Service (OneDrive)

Federated Mesh

SCIENCE MESH: 300,000+ users

- SURFdrive (NL)
- Sciebo (NRW - DE)
- CERNBox (CERN)
- PSNCBox (PL)
- SWITCHdrive (CH)
- ScienceData (DK)
- CloudStor (AU)
- CESNET (CZ)

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Science Mesh

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Method and Analysis Results

Data sources:
Interviews
Workshops
Documents
Reports
Progress meetings

Application	Description	User Community	Use Case
Frictionless Sync and Share	Easily share and transfer data across institutional and geographical boundaries	Low-Frequency Array (LOFAR) – **Astrophysics**	User friendly transfer of data from storage site to compute site
Remote data analysis	Analyse large datasets located at a remote site	EU Joint Research Center (EU JRC) - **Earth Observation**	Enable local partners to analyze satellite images without transferring data
		European Organization for Nuclear Research (CERN) –**Particle physics**	Enable researchers to use CERN's compute facilities to analyze data remotely
Collaborative applications	Edit documents collaboratively	Social Media Analytics for Society and Crisis Communication (RISE SMA) – **Social Sciences**	Collaboratively write articles across groups in a secure manner
	Open data systems	Pacific Regional Archive for Digital Sources in Endangered Cultures	Conveniently label and package data for

Contributions and Impact

- Explored challenges and opportunities in FAIR data through the lens of a digital infrastructure

- Next steps:
  - Refining theoretical aspect
  - Case studies with early adopters
  - Comparison with similar initiatives