OpenCloudMesh

From concept to reality...

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GÉANT

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Interconnected Private Clouds for Universities and Researchers

Open Cloud Mesh (OCM) is a joint international initiative under the umbrella of the GÉANT Association that is built on the open Federated Cloud Sharing application programming interface (API) - first initiated and implemented by ownCloud Inc.

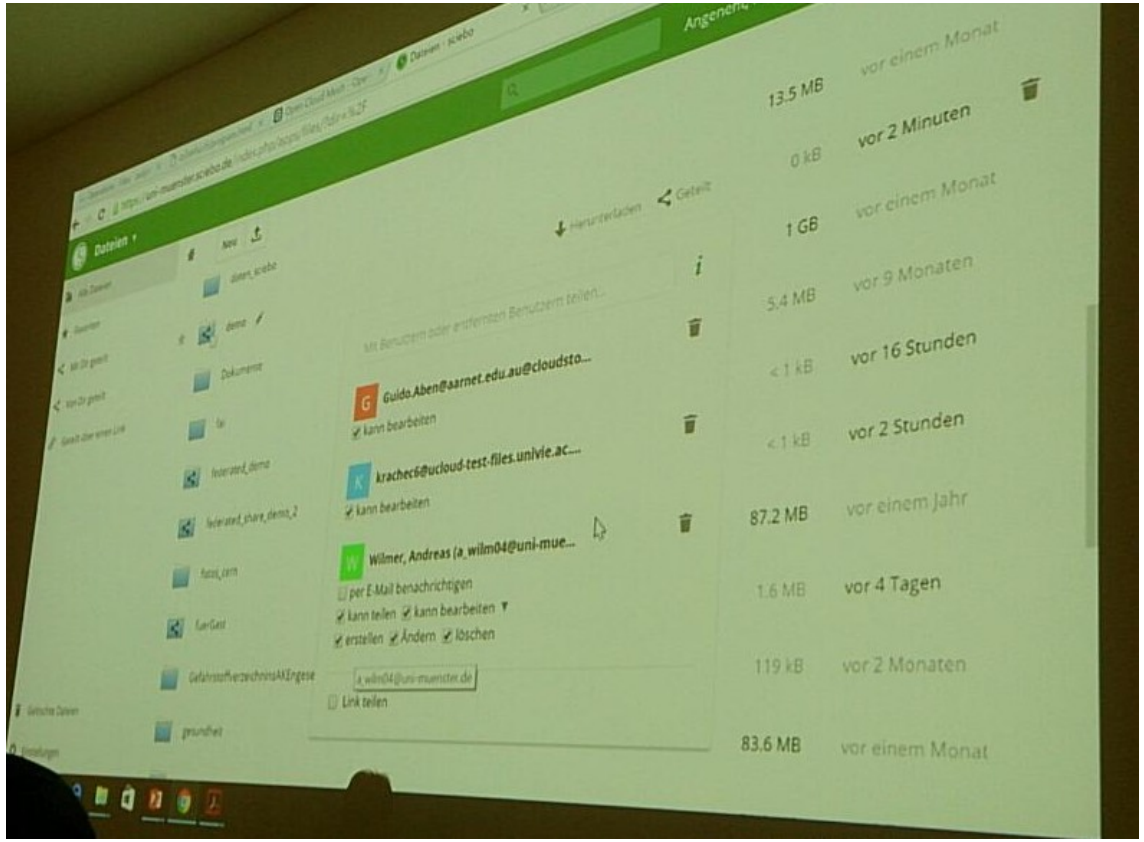
Taking Universal File Access beyond the borders of individual clouds and into a globally interconnected mesh of research clouds without sacrificing any of the advantages in privacy, control and security an on-premises cloud provides.

OCM defines a vendor-neutral, common file access layer across an organization and/or across globally interconnected organizations, regardless of the user data locations and choice of clouds.

OCM Phase I.

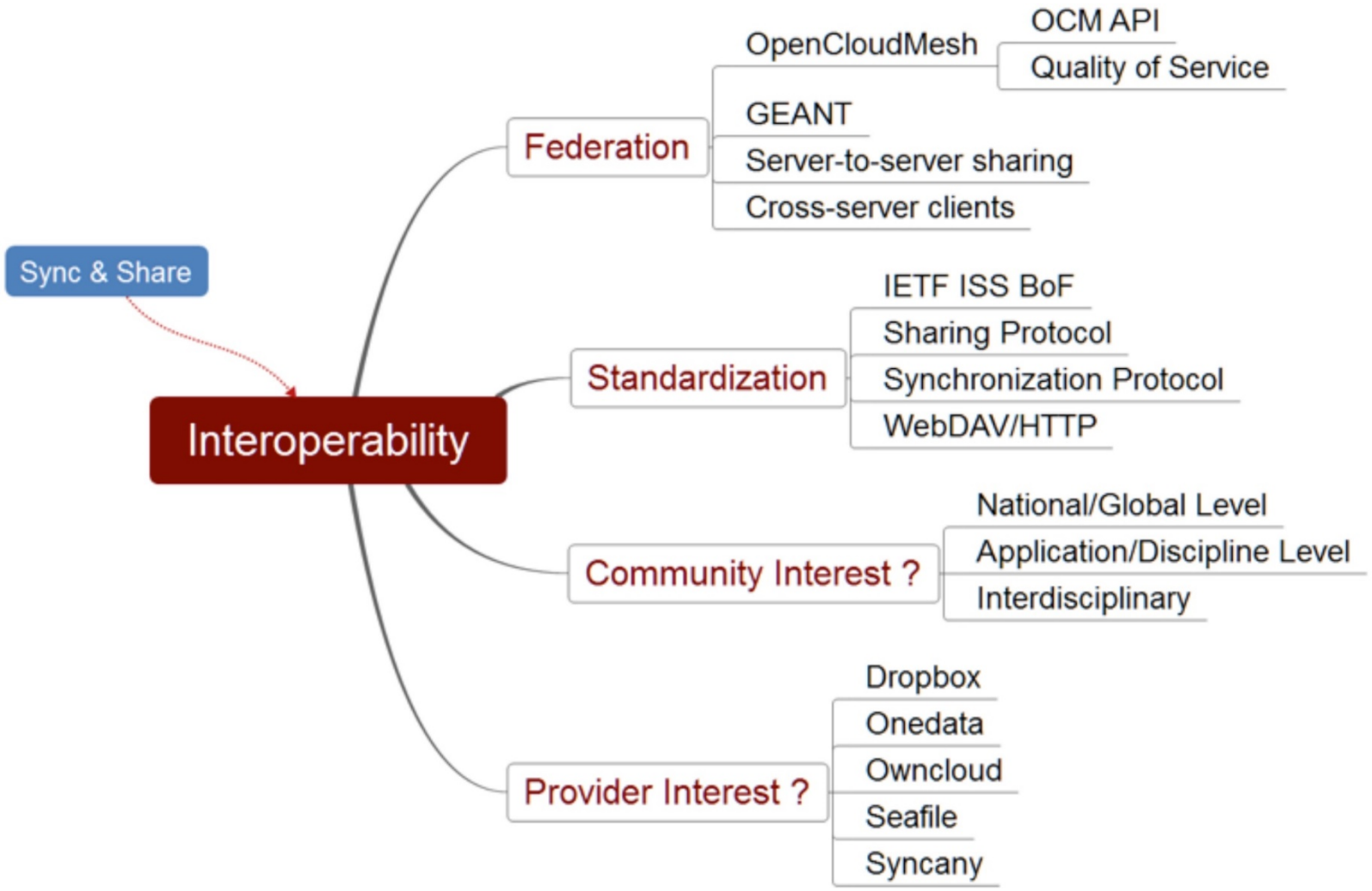
- Code v.0.002 has been released on 27 July 2015 by ownCloud Inc.
- **Kick-off meeting: 22 October, 2015 in Vienna, Austria**
- OpenCloudMesh = ownCloudMesh
- USE CASE: Uni Münster server-to-server sharing

- During the OCM demonstration, users were able to sync and share files and folders between independent service domains operated by University Münster in Germany, University Vienna in Austria, SWITCH, the national research and education networking (NREN) organisation of Switzerland and AARNet the NREN of Australia.



CS3 Workshop, 18-19 January 2016 in Zurich, Switzerland

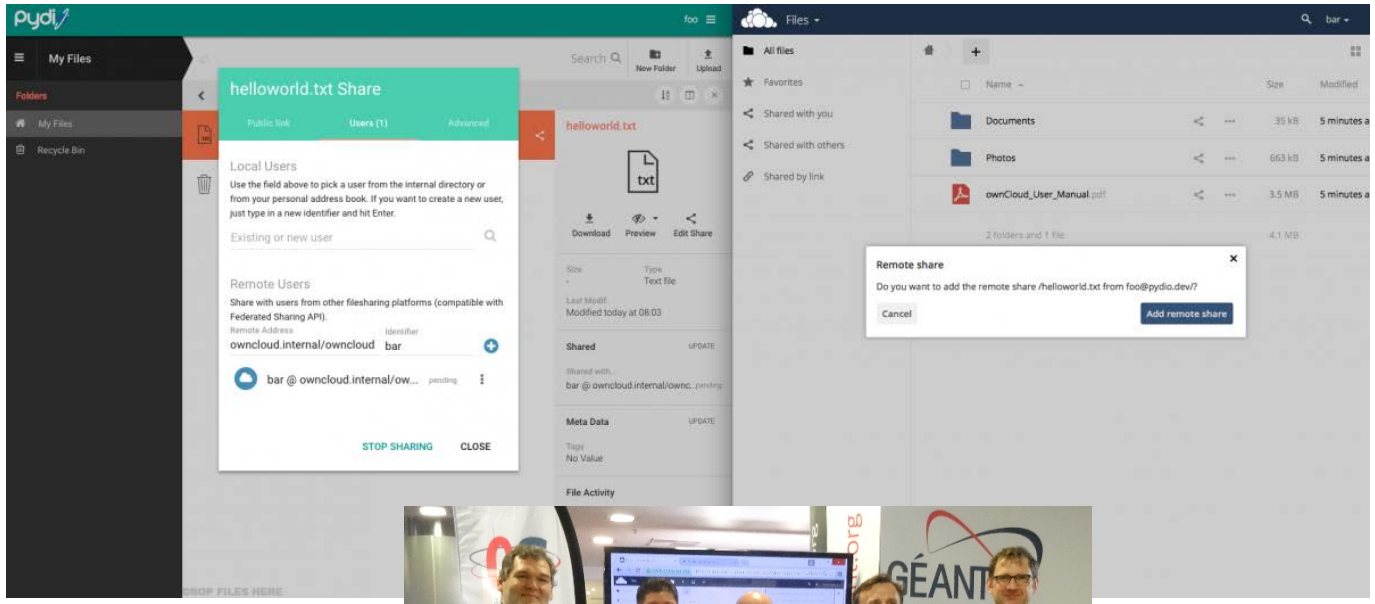
OCM Phase I.


Sync & Share
Interoperability
Federation
OpenCloudMesh
OCM API
Quality of Service
GEANT
Server-to-server sharing
Cross-server clients
Standardization
IETF ISS BoF
Sharing Protocol
Synchronization Protocol
WebDAV/HTTP
Community Interest ?
National/Global Level
Application/Discipline Level
Interdisciplinary
Provider Interest ?
Dropbox
Onedata
Owncloud
Seafile
Syncany

OCM Phase II.

- March, 2016 - Charles du Jeu and David Gillard from Pydio (https://pydio.com/) joined the OCM project.
- Discussion with others: Zettabox, PowerFolder, Nextcloud, ...
- OpenCloudMesh
- USE CASE: AARNet (Australia) uses ownCloud and ASNET-AM (Armenia) uses Pydio.

- **DEMONSTRATION ownCloud, Pydio: Interoperability demo at GÉANT booth**
- **TNC - 13 June 2016**



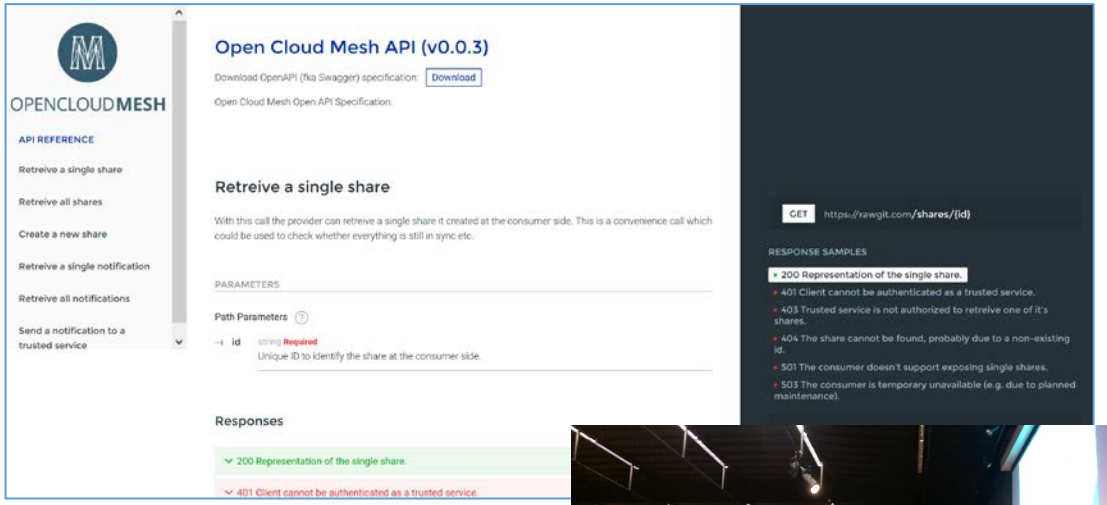
OCM Phase II.

This vision is that the OCM spec should be:

- **compliant:** with standard practices of the http world (error codes, conventions,…)
- **described:** using industry-strength documentation/testing system (e.g. swagger.io)
- **neutral:** should not have any artifacts or assumptions stemming directly from particular implementation or implementation language
- **modular**: allow providers to implement minimal functionality and add optional components of the spec as they please (or not)
- **minimal:** offload as much as possible of additional functionality to existing mechanisms in the network, especially for optional modules (e.g. lookup)
- **secure:** compliant with modern security frameworks (e.g. OAuth2, JWT, …) For the modules, I would consider at first: - auth/autz negotiation - sharing of files - synchronization of files - user discovery (optional)
- **robust:** implementations should continue to deliver their service even when interacting with a failed implementation/service or malicious intended attempts at federation as attack vector

OCM Phase III.

- We found a professional protocol designer (APIwise) who described OCM in a more formalized way (using OpenAPI/Swagger Framework).
- To establish a reference infrastructure and test environment where the implementations can be validated against.
- Implementations at ownCloud, Pydio and Nextcloud (PowerFolder in the pipeline).



Delivered by 10 February 2017
CS3 Workshop in Amsterdam

- *Meeting with Apiwise on 12/07/2016*
- **Make it happen: AARNet, Nextcloud, Sciebo, ownCloud, Uni Vienna, CESNET, GWDG and CERN**
- GitHUB: https://github.com/GEANT/OCM-API
- API reference documentation https://rawgit.com/GEANT/OCM-API/v1/docs.html

CALL FOR IMPLEMENTATIONS AND USE CASES

Up to University (Up2U) Project - Use Case

OCM Phase IV....

What's next?

1. sharing and federated sharing (this is the CORE)
2. synchronisation and accessing the file using WebDAV or other file transfer protocol (this could be only a starting point for discussion)
3. service/user discovery (next thing)
4. what to do with the files/folders after sharing... (outside of scope)

OCM Phase IV

- Need a reference implementation of the agreed API specifications
  - We made changes to the API Specs during Phase III.
  - None of the current implementations are fully compliant.
  - We need a reference to easily on-board new vendors (and convince old ones to comply)
    - PowerFolder is implementing already....
    - CERNbox needs to be OCM-compliant
    - SeaFile is interested in a proxy-approach

- Ultimate goal is the **”1st OCM Plugfest”** endorsed by SIG-CISS
  - Bring together: CERNbox developers, PowerFolder developers, SeaFile community and Up2U Project as the major use case – *This needs organisation and budget!*
  - Preparations until January - CS3 Workshop in Krakow
  - Organise the plugfest at TNC’18 (big public announcement)
  - Pave the way towards IETF/IEEE standardisation....

Thank you and any questions

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