



# OPENCLOUD MESH

NEWS AND PLANS FOR OCM'S 10TH ANNIVERSARY

MICKE NORDIN, SUNET

GIUSEPPE LO PRESTI, CERN

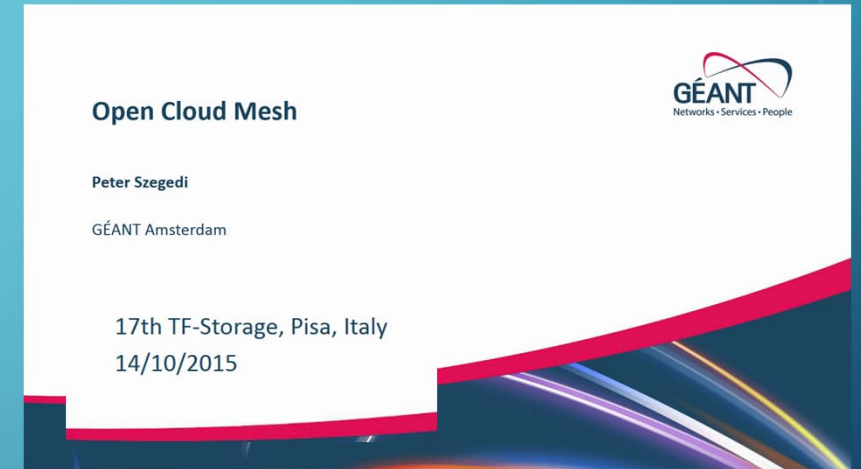
16<sup>th</sup> SIG-CISS Meeting on Federated Storage, Bologna, 4 Dec 2025

# OUTLINE

- History
- Core use cases
- Recent activity
- Current funding and planned developments
- What's coming up in 2026

# A BRIEF HISTORY

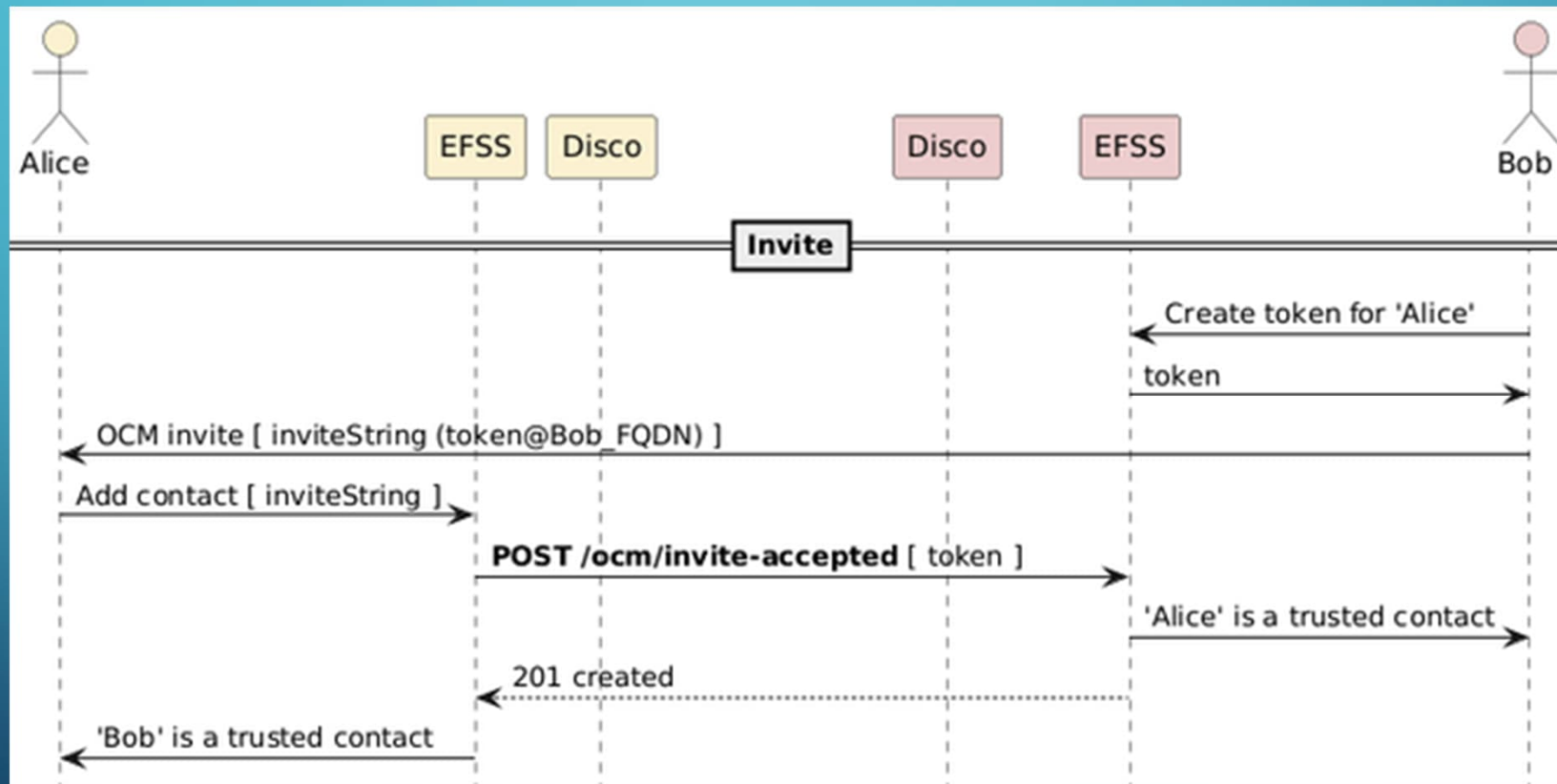
- Project initiated 10 years ago in GÉANT to establish a federation of cloud storage sites
- **Enables users to share their institutional data and collaborate with others**
- Implementations include CERNBox, OpenCloud, ownCloud, Nextcloud and Seafiler
- Implemented in the EOSC EU Node
- Funded by different programs throughout the years
  - Currently, SovereignTech and (partially) EOSC Data Commons



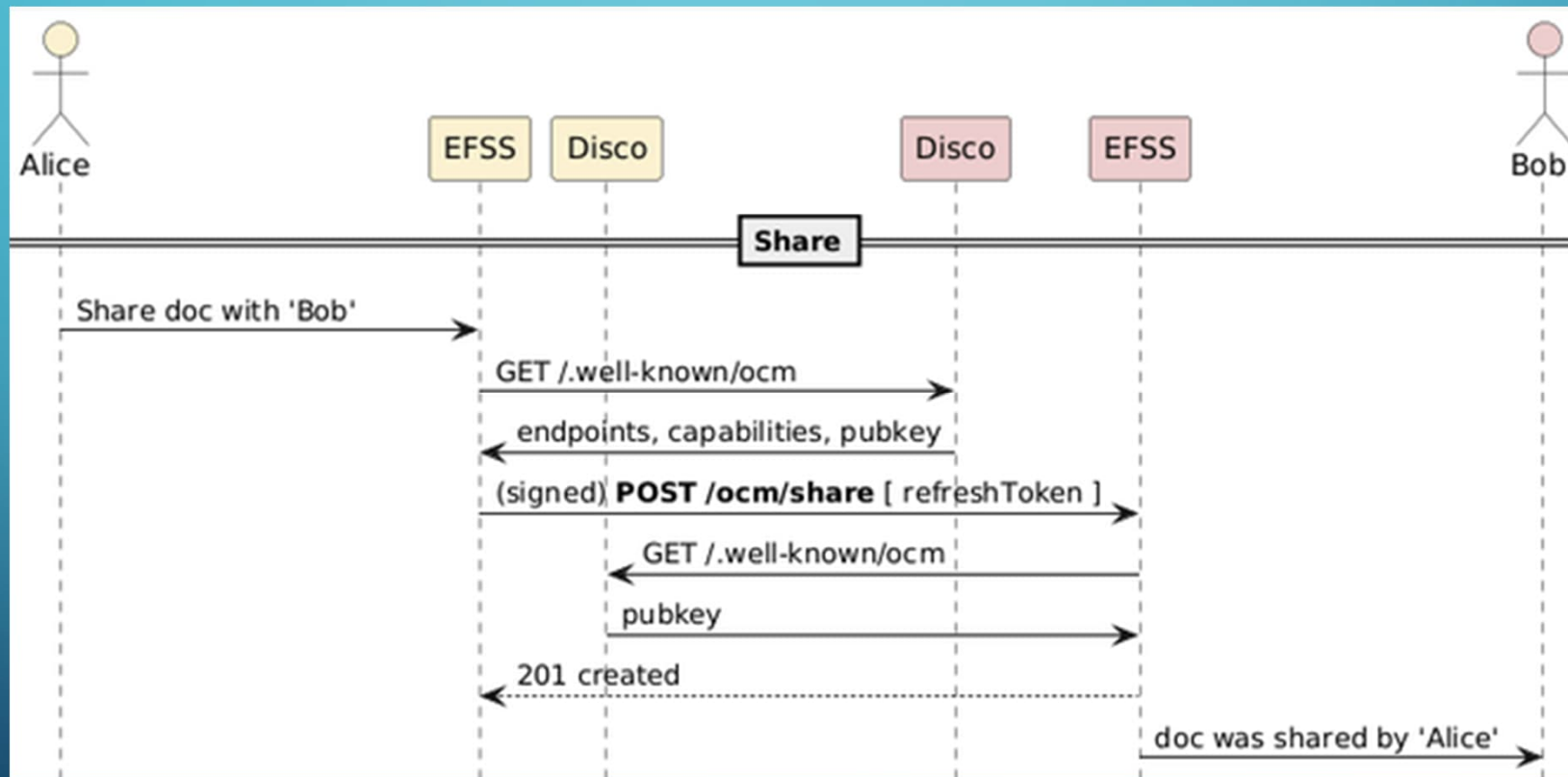
Sovereign Tech  
Agency



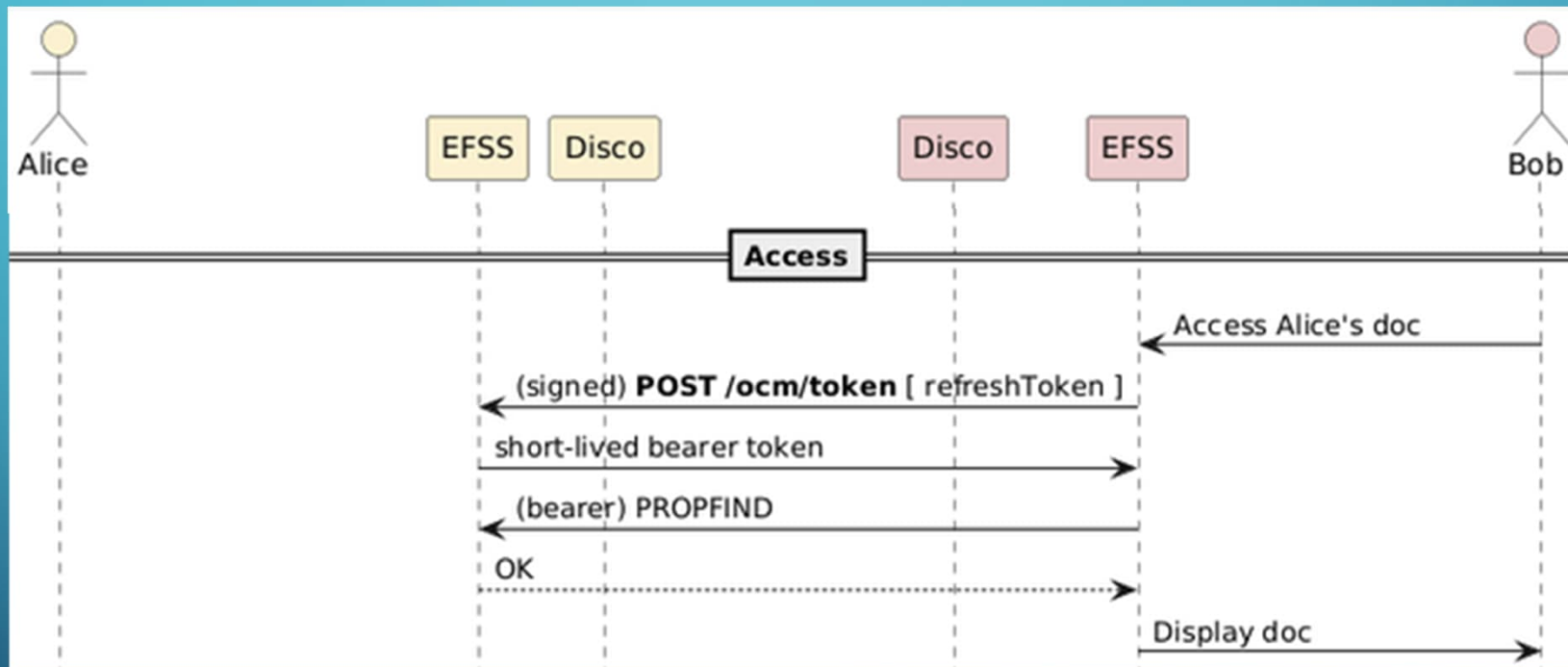
# TYPICAL SCENARIO: INVITE + SHARE



# TYPICAL SCENARIO: INVITE + SHARE



# TYPICAL SCENARIO: INVITE + SHARE





# ENGAGING WITH THE IETF

- 2024 H2: rewrote the OCM Spec as an Internet-Draft Document
- 2024/11: published as <https://datatracker.ietf.org/doc/draft-lopresti-open-cloud-mesh>
- 2025/07: successful "Dispatch" at IETF 123
- 2025/11: first IETF Working Group meeting, attended by 13 participants

# EOSC SYMPOSIUM 2025

- Opportunity to demonstrate the potential of the EOSC Federation
- Very successful demo, yet some work is needed for full production services

## Federated File Sync & Share via standard protocol 10 years from piloting to standardization

1<sup>st</sup> demonstration at the GÉANT TNC'16  
Conference in Prague, Czech Republic  
13 June 2016



IETF Standardization Working Group  
Open Cloud Mesh  
23 October 2025



<https://datatracker.ietf.org/group/ocm/about/>

Open Cloud Mesh (OCM) is a server-to-server protocol designed to enable federation between Enterprise File Sync and Share (EFSS) platforms. Initially conceived of in 2015 and deployed since 2016, OCM has been implemented by several platforms. This working group seeks to formally specify OCM.

### Node Candidates

- EU Node
- CERN Node
- SURF Node
- Finland Node
- EUDAT Node

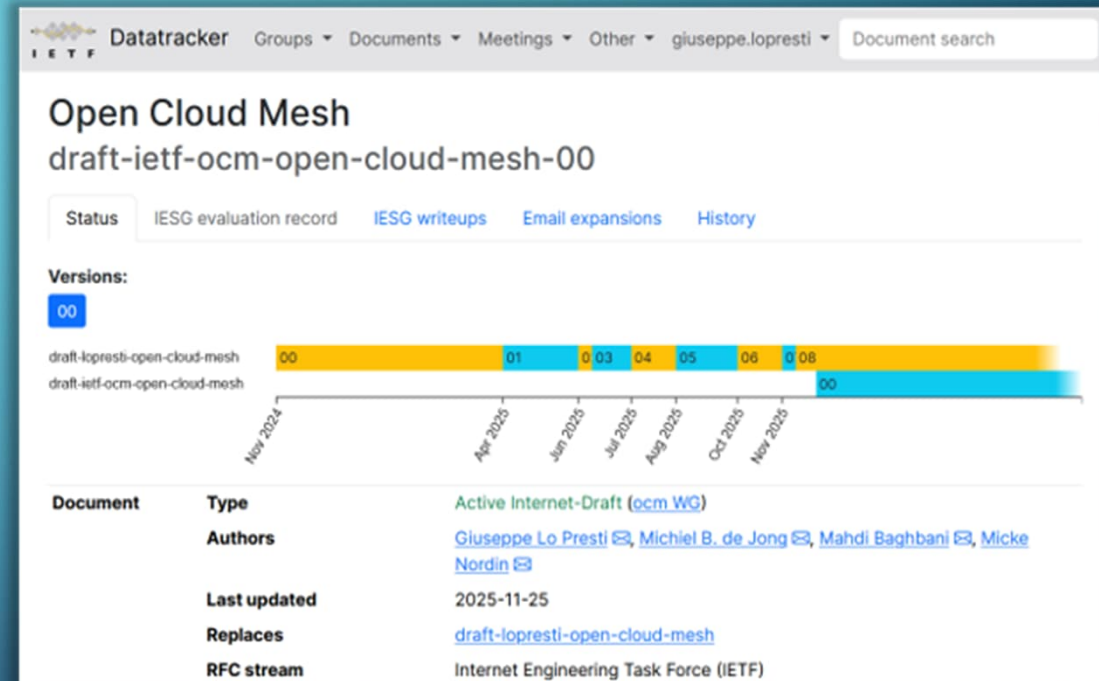
### Technologies

- *ownCloud*
- *Nextcloud*
- *CERNbox*
- *OpenCloud*



# CURRENT STATUS OF THE SPEC

- The current Draft was tagged as v1.2.2 and officially adopted by the IETF WG: URL is now <https://datatracker.ietf.org/doc/draft-ietf-ocm-open-cloud-mesh>
- Semantically very close to v1.2
- Multiple implementations exist



# 2025: SPEC CHANGES IN VERSION 1.2.2

- New InviteAcceptDialog and tokenEndPoint keys added to discovery
- No longer need to support file resources
- Directory service for federations added
- IANA and Security considerations sections added to I-D
- OCM Address and URL for OCM server properly specified
- Token Exchange Flow (a.k.a. Code Flow) properly specified



# COMPLETED DEVELOPMENTS IN 2025

- Nextcloud
  - Accept Multi protocol (if it can be down converted)
  - WAYF and directory service
  - Full support for invites (Merged in core, under review in contacts)
  - Support for folder shares
- CERNBox (cf. Giuseppe's presentation)
  - Two way support for legacy shares (basic auth)
  - Bug fixes for invites
- OpenCloud
  - Bug fixes for invites
  - WAYF
- OwnCloud - oCis
  - Bug fixes to invites
  - WAYF
- OpenGeoMesh
  - General OCM Rust library started

# PLANNED DEVELOPMENTS

## 2025

- Nextcloud
  - Bearer auth + Code flow
- Test Suite
  - Run in vendor's CI
  - CERNBOX share-flow test
- CERNBox
  - WAYF and directory service

## 2026

- OCM Stub
  - Rewrite in compiled language
  - Full spec coverage
  - Docker
- Test Suite
  - Use the stub
  - Structured logging/Log viewer in CI
  - App sharing CERNBox <-> Nextcloud
  - Web-based federation validator
- Nextcloud
  - App sharing

# PLANNED DEVELOPMENTS

Follow along on GitHub: <https://github.com/orgs/cs3org/OCM-STA>

The screenshot shows a GitHub project board for 'SovereignTech Funded Activities'. The board is organized into four columns: Backlog (18/5 items), Ready (8 items), In progress (4/3 items), and In review (0/5 items). Each item is a card with a title, description, and assignee.

Column	Item ID	Description	Assignee
Backlog	OCM-STA #27	Get all standardization-related documents in shape according to IETF deadlines in the course of 2026 and prepare for IETF 126 in Vienna	
	OCM-STA #26	Attend the meetings of the WG being formed within IETF, follow their work and provide feedback	
	OCM-STA #25	Incorporate in the IETF Internet Draft all suggested changes following implementations from all other Milestones	
Ready	OCM-STA #2	Conformance tests: extend Test Suite to validate that sharing between CERNBox and Nextcloud works also when a Directory Service lookup and a Where-are-you-from UI page is involved.	
	OCM-STA #30	Implement refresh of tokens and code capability	
	OCM-STA #3	Produce and submit a PR upstream to Nextcloud and CERNBox, such that they can validate their compliance to the OCM spec	
	OCM-STA #4		
In progress	OCM-STA #9	Implement any necessary fix for the sharing phase to pass the OCM Test Suite	
	OCM-STA #28	Make it possible for storage backend to find newer OCM Providers	
	OCM-STA #1	Implement WAYF UI with integration of one or more Directory Services, following the current Nextcloud developments	
In review	OCM-STA #29		

# ONGOING DISCUSSIONS ON SPEC CHANGES

- Sharing to groups or federations
- Signatures for Directory service
- Object models and schemas
- Resource discovery and request share
- Journaling
- ...Contributions more than welcome!

# WHAT'S NEXT

The spec work with IETF will take a substantial part of 2026, we are just at the beginning of the journey

This is (y)our opportunity to shape OCM in the direction we want: please do contact us if interested!

OpenCloudMesh repository: <https://github.com/cs3org/OCM-API>

Matrix channel: [https://app.element.io/#/room/#cs3org\\_OCM:gitter.im](https://app.element.io/#/room/#cs3org_OCM:gitter.im)



# OPENCLOUD MESH

QUESTIONS?

MICKE NORDIN, SUNET

GIUSEPPE LO PRESTI, CERN