cern.ch/cernbox

Collaboration hubs built on EOS

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On behalf of the CERNBox team

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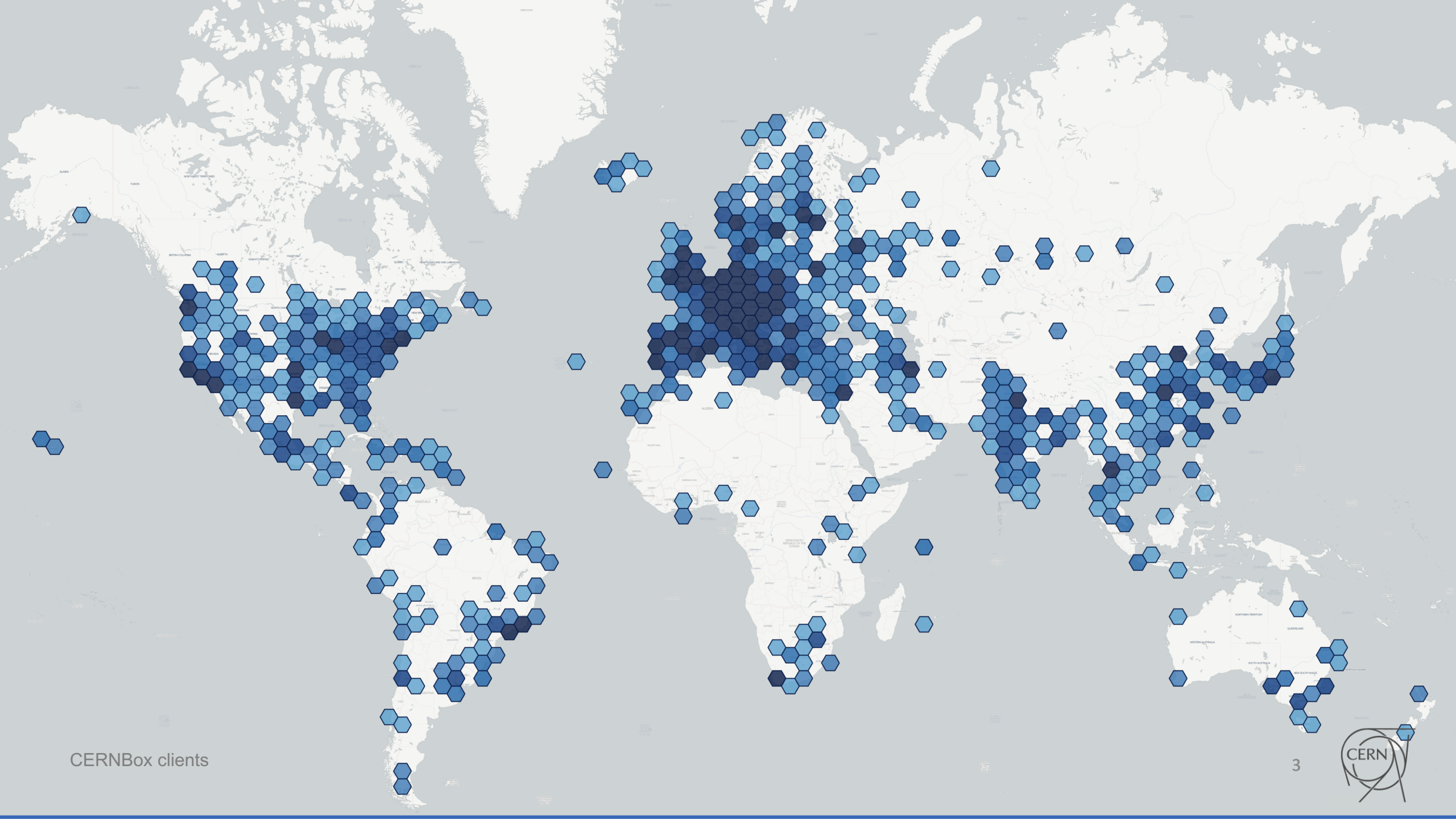
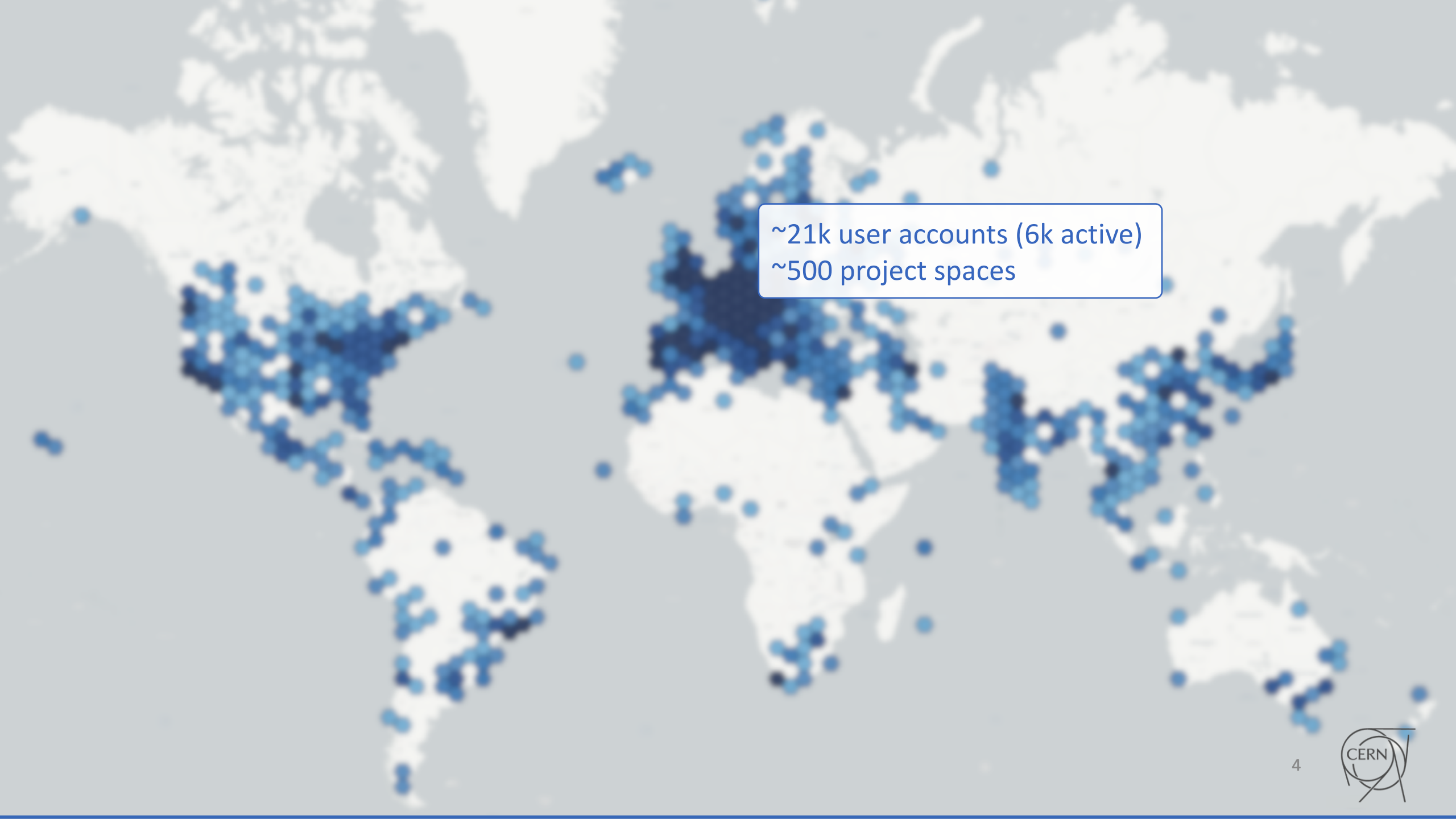
EOS Workshop

Introduction



CERNBox clients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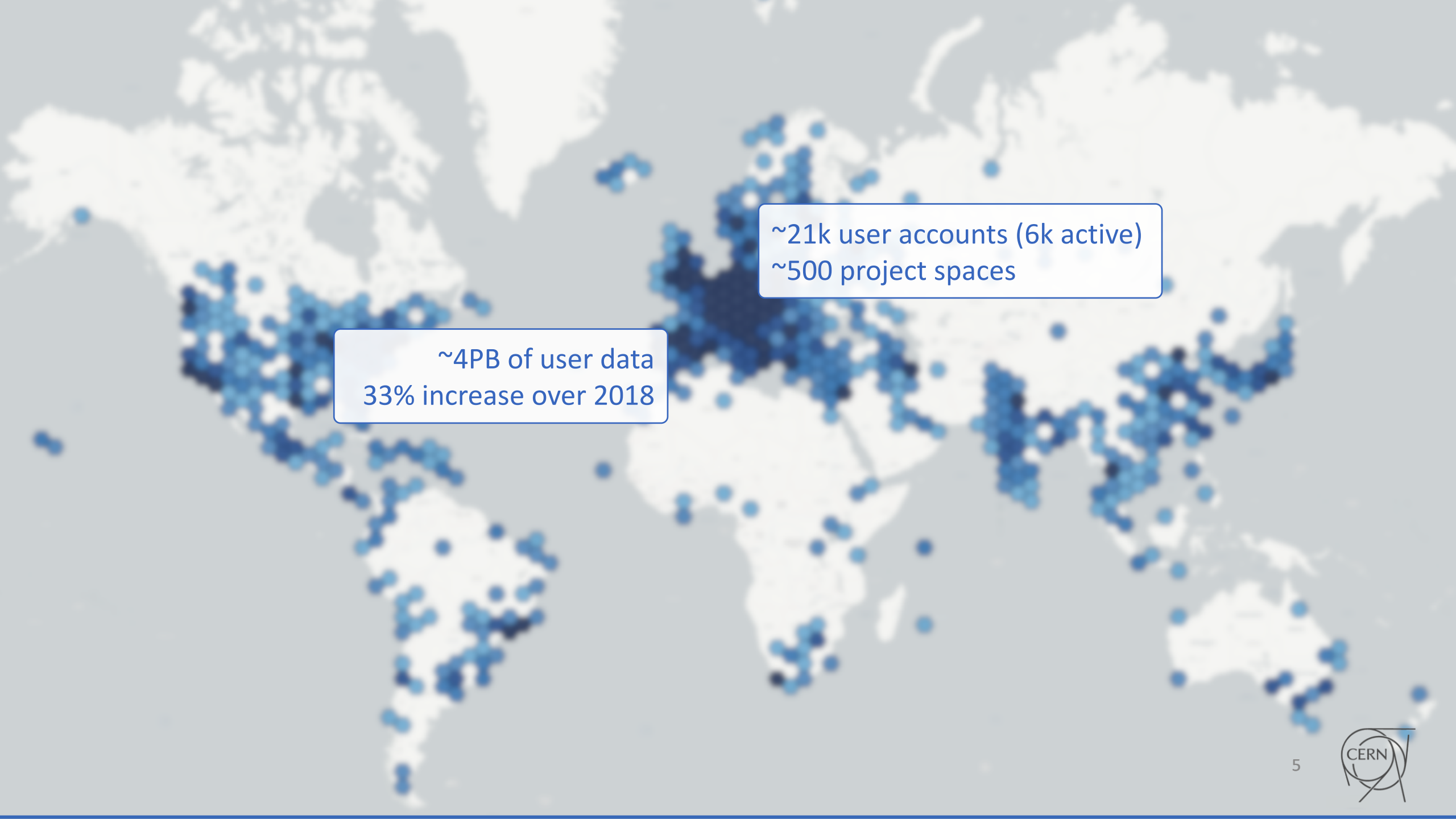
~500 project spaces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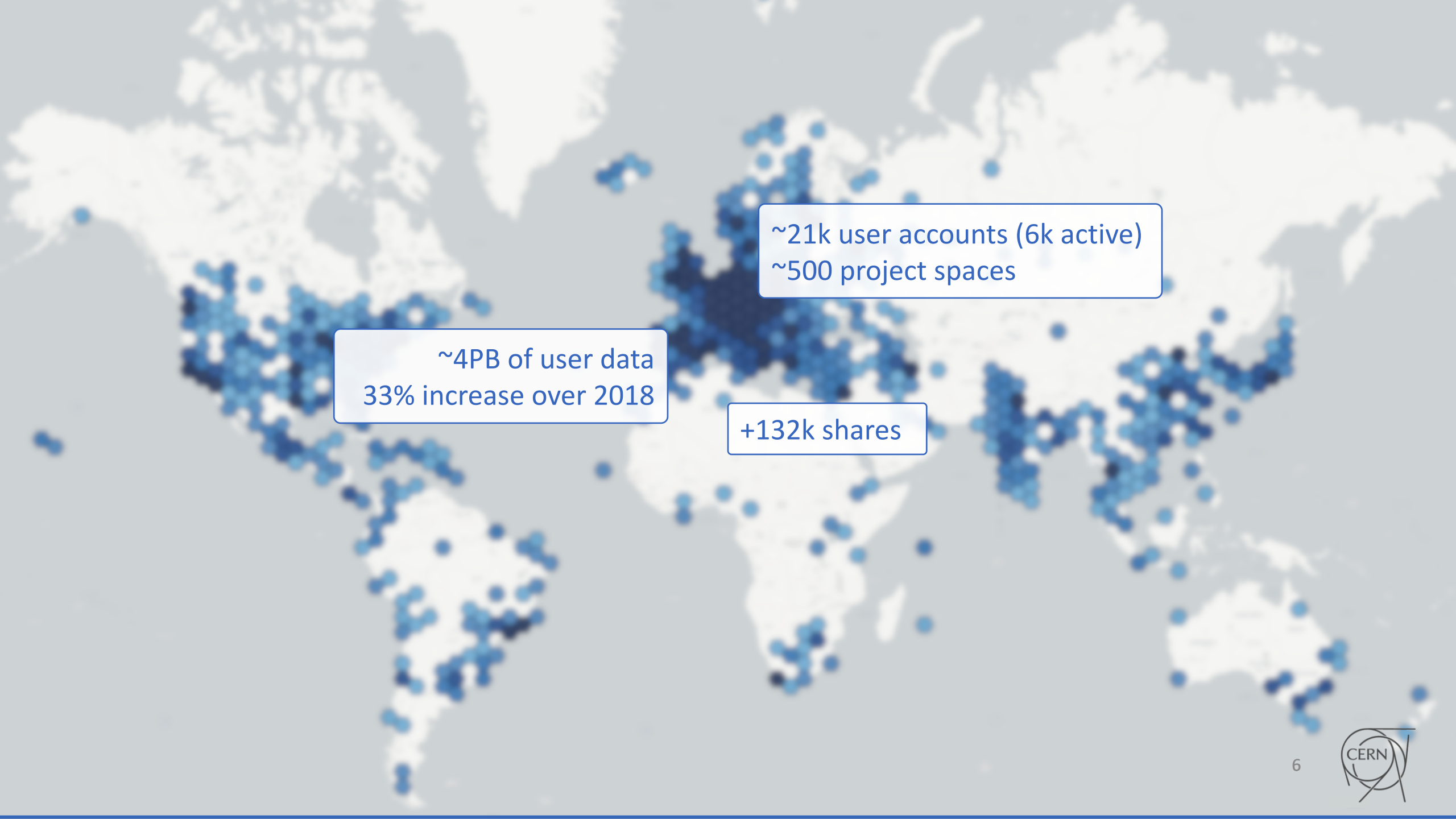
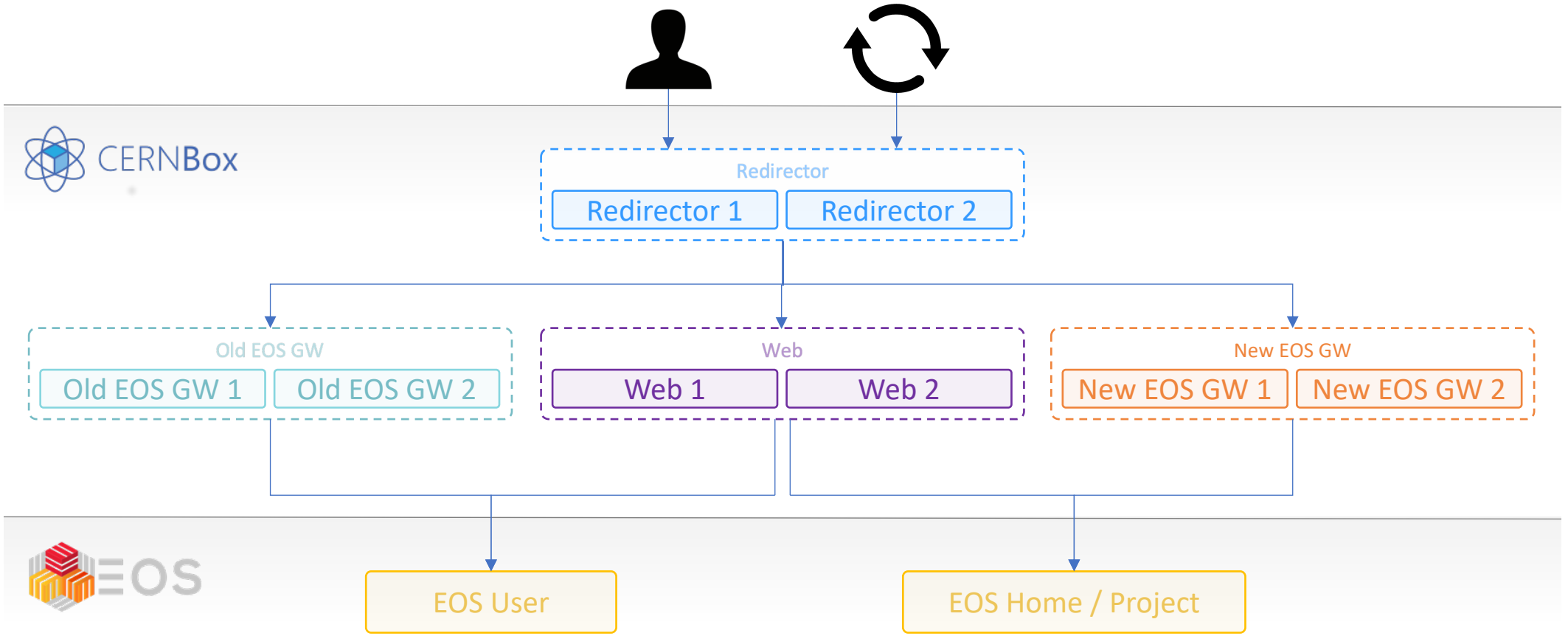
~4PB of user data
33% increase over 2018


~21k user accounts (6k active)
~500 project spaces
~4PB of user data
33% increase over 2018
+132k shares

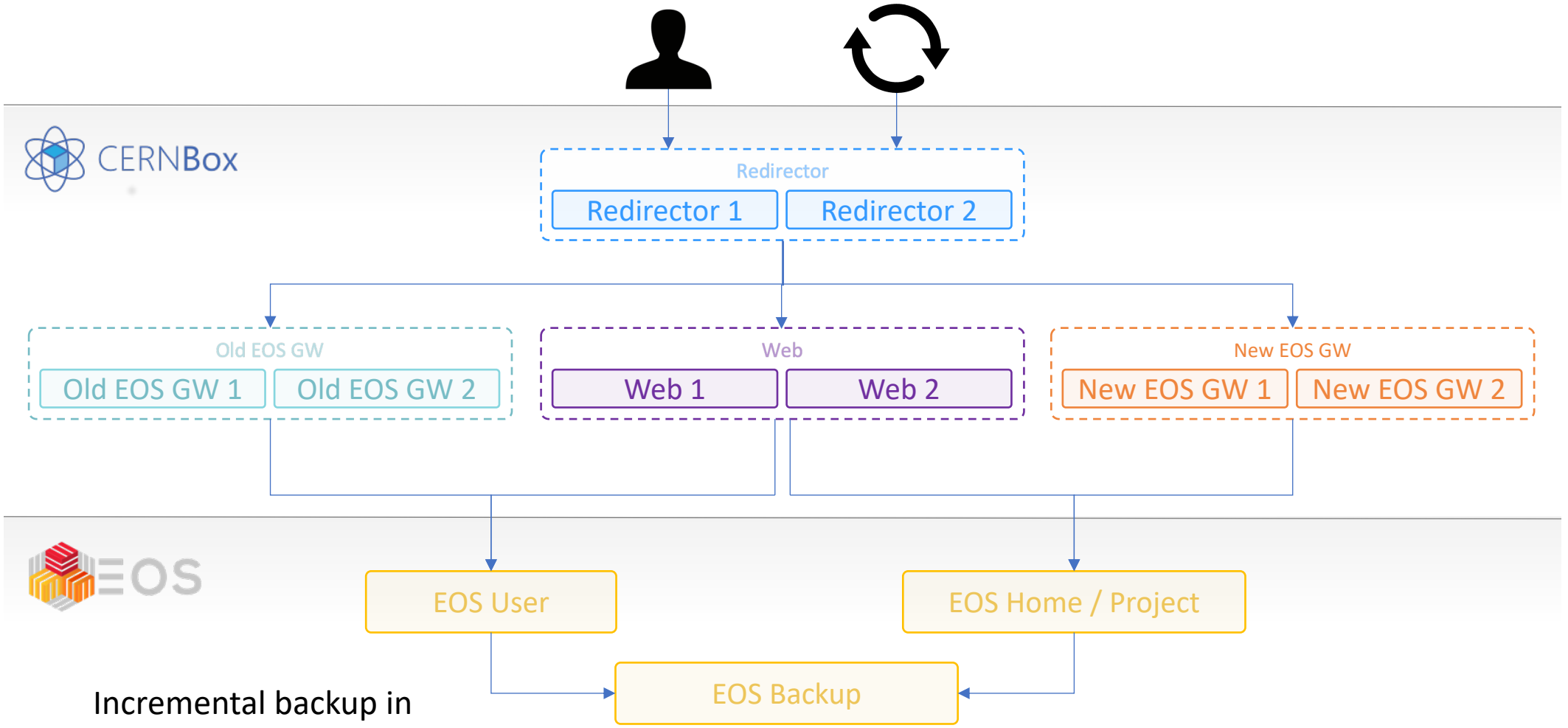
Use cases

Home folder	Sharing	Sync	Collaborative data analysis	Collaborative office editing
1TB of storage space	Secure sharing (in contrast to email)	Files synchronised across platforms	Integration with analysis platforms	Integration with MS Office and other office-like platforms
Ongoing DFS Home directory migration	File drop		Sharing capabilities	Concurrent editing

Architecture



Architecture



Incremental backup in different EOS instance

Access methods

Full sharing capabilities

Online applications

Clients for all major systems

Offline access

Sharing capabilities

Highly available cluster

For Windows integration

Direct access to EOS

Multiplatform compatibility

Application hub

CERNBox as an important part of the MAlt initiative

MAlt and CERNBox

- MALT: CERN/IT globally moving to Open Source
  - **Replacing proprietary software wherever possible**
- Consequences for CERNBox
  - Windows DFS at CERN phase-out started
  - Get all Windows users and use-cases on board
    (cf. HA Samba presentation earlier today)
  - But also: engage the user community with new web-based apps
    to replace current Desktop-based ones

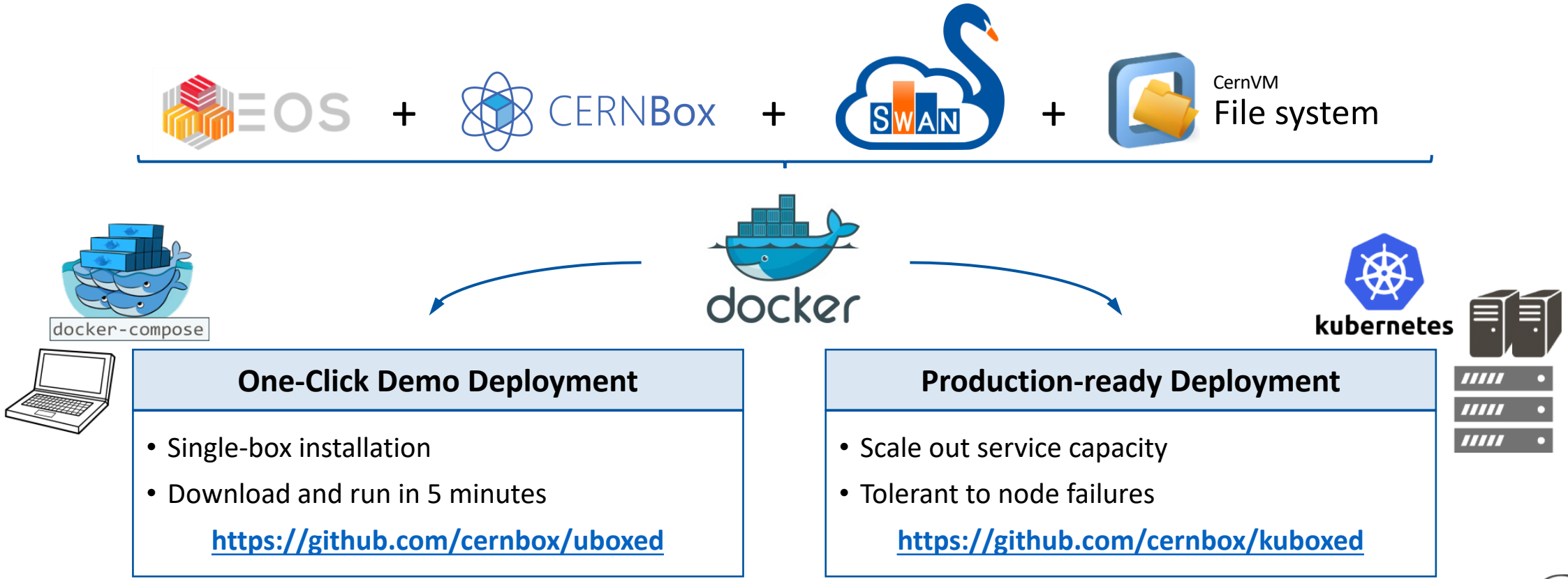
Applications

- CERNBox offering in collaboration with IT-CDA:
  - DrawIO (alternative to Microsoft Visio, already available)
  - Gantt (viewer for Microsoft Project files, already available)
  - Microsoft Office 365 via WOPI connector (to be phased out because of MALT)
  - OnlyOffice (alternative to Microsoft Office, only in Canary mode, limited access for now)
- CERNBox stand-alone:
  - Text editor
  - Image previews
  - ROOT viewer
  - SWAN integration
  - ZIP/TAR download
- Under investigation:
  - Collabora integration via WOPI connector
  - Overleaf integration
  - Markdown integration

ScienceBox

ScienceBox

- Self-contained Docker-based CERN software package



One-Click Demo Deployment

- Single-box installation
- Download and run in 5 minutes

https://github.com/cernbox/uboxed

Production-ready Deployment

- Scale out service capacity
- Tolerant to node failures

https://github.com/cernbox/kuboxed

Up to University

- Allow students in high-schools to adopt tools used in science
  - CERNBox – Cloud storage for easy sharing and access form any device
  - SWAN – Full data analysis ecosystem in a web browser

Up To University

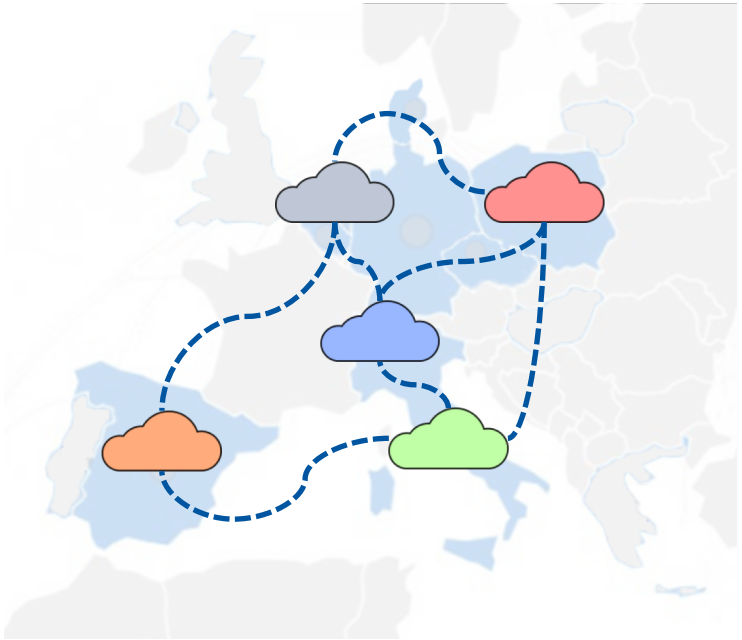
- ScienceBox in production for Up2U users for 2 years
  - Deployed at Poznan Supercomputing and Networking Center, Poland
  - Kubernetes on VMs, Ceph volumes for persistent storage
- Pilot service at CERN
  - CERNBox and SWAN on Kubernetes VMs
  - EOS on VMs and bare metal disks

CS3MESH

- EU-funded project (coordinated by CERN)
  - 6M EUR, 12 partners, 2020-2022
- Goal: Global collaborative environment for research
  - Share documents, files, projects, data, …
  - Connected Application Hubs
  - Data Science Environments
- Federation of existing CS3 sites
  - 30+ sites (e.g. CERNBox, DesyBox, Universities, …)
  - 300K+ users
  - cs3community.org
- ScienceBox is the reference platform in CS3MESH for distribution and deployment of cloud software

EUROPEAN OPEN SCIENCE CLOUD

EOSC-hub

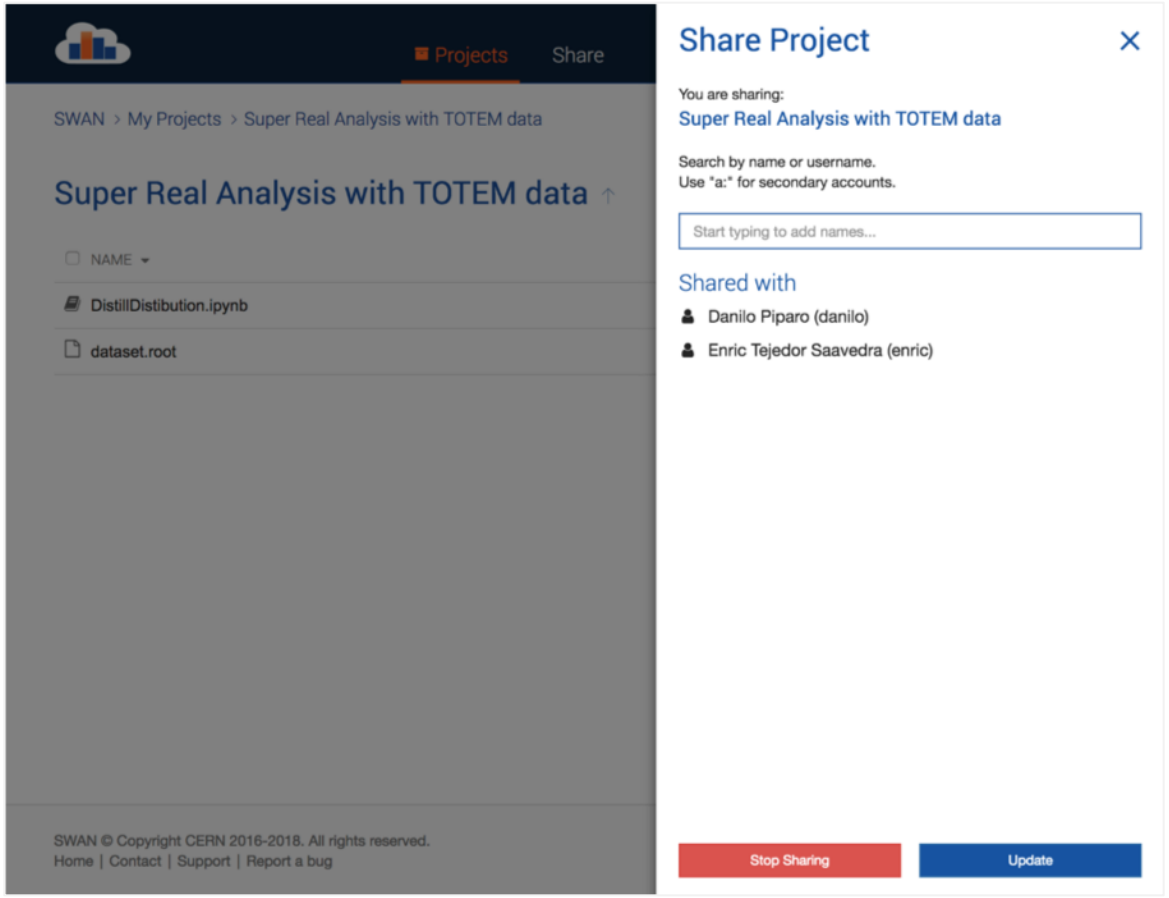


CS3

CERN

SWAN integration

- CERNBox/EOS is SWAN's home directory
  - Storage for notebooks and data
  - All experiment data potentially available
- Collaborative analysis
  - Sharing from inside SWAN interface (integration with CERNBox)
- Configurable software environment
  - Possibility to install software in CERNBox
  - Future support for Conda environments (integration with EOS “squashing” ongoing)



Moving forward

Future Generation

- REVA: CERN implementation of the CS3 APIs
  - Towards cloud-interoperability
  - Avoid vendor lock-in
  - ownCloud adopting it as foundation for their new product
- Integration with new ownCloud Web UI (Phoenix)
- Integration with new authentication methods
  - OpenID Connect

Possibly more integrations?

- With applications
  - Ongoing effort to integrate Collabora
- With CERN services
  - Kopano
  - Indico
- And with Users' applications
  - Bring your own application

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Thank you

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