

CERNBox

Cloud Storage for Science

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CERN - IT Storage

Outline



- Description and Architecture
- CERNBox service
- Usage examples
- Summary

Description and Architecture

What is CERNBox ?

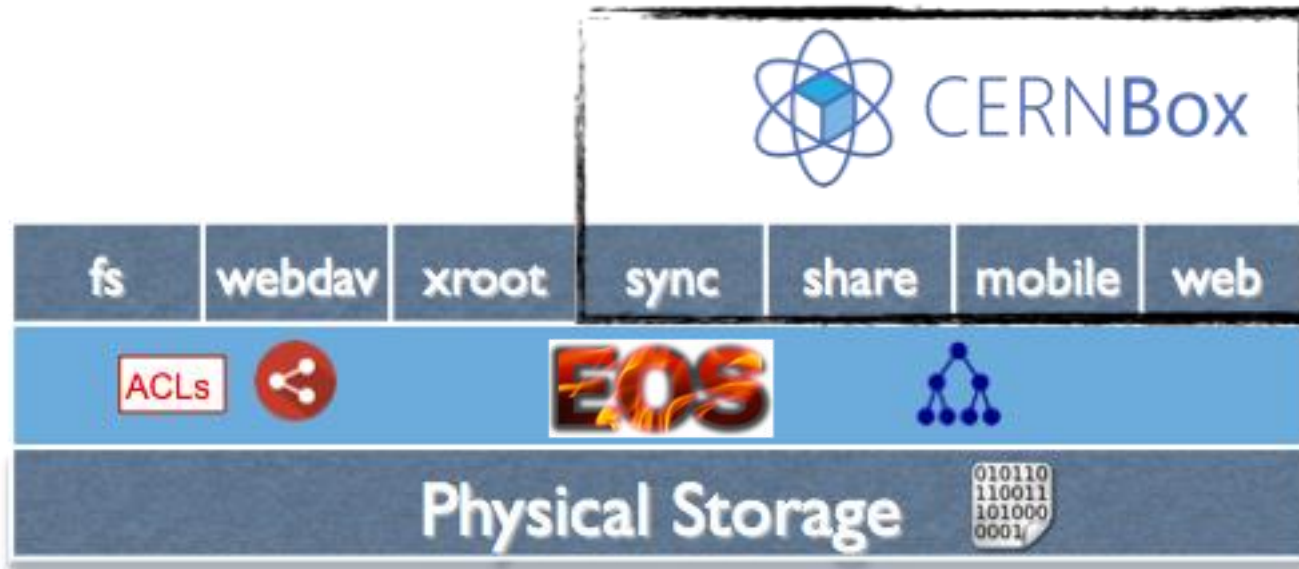


CERNBox provides a cloud synchronisation service

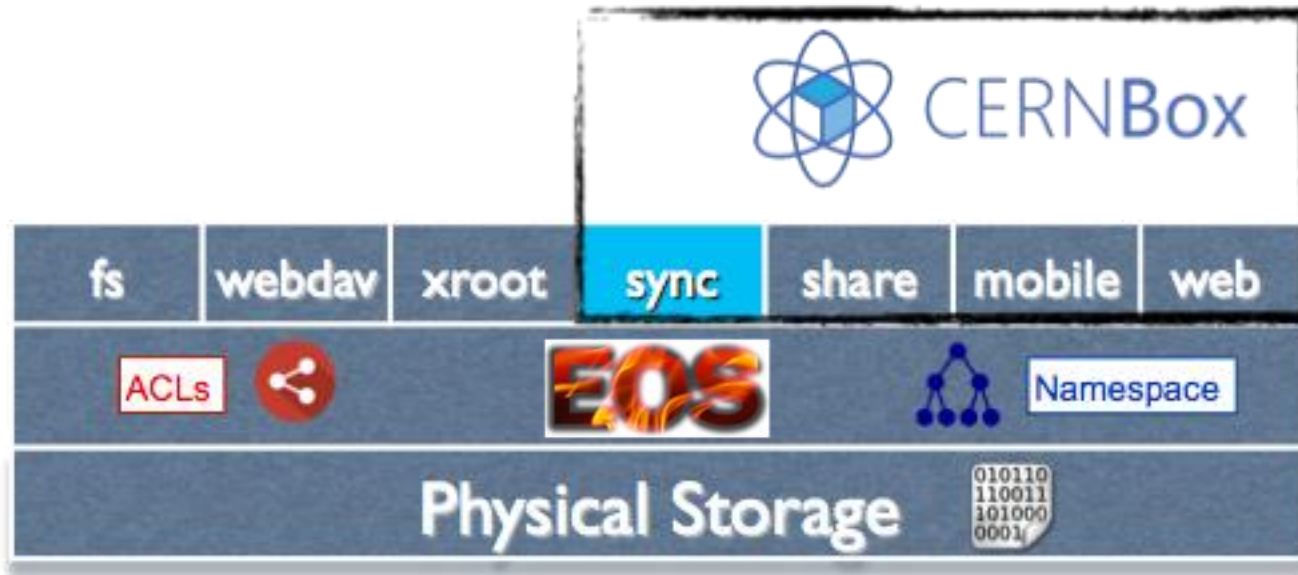
- Available for all CERN users (1TB/user initial quota)
- Synchronise files (data at CERN) and offline data access
- Easy way to share with other users
- All major platforms supported
- Based on ownCloud integrated with EOS



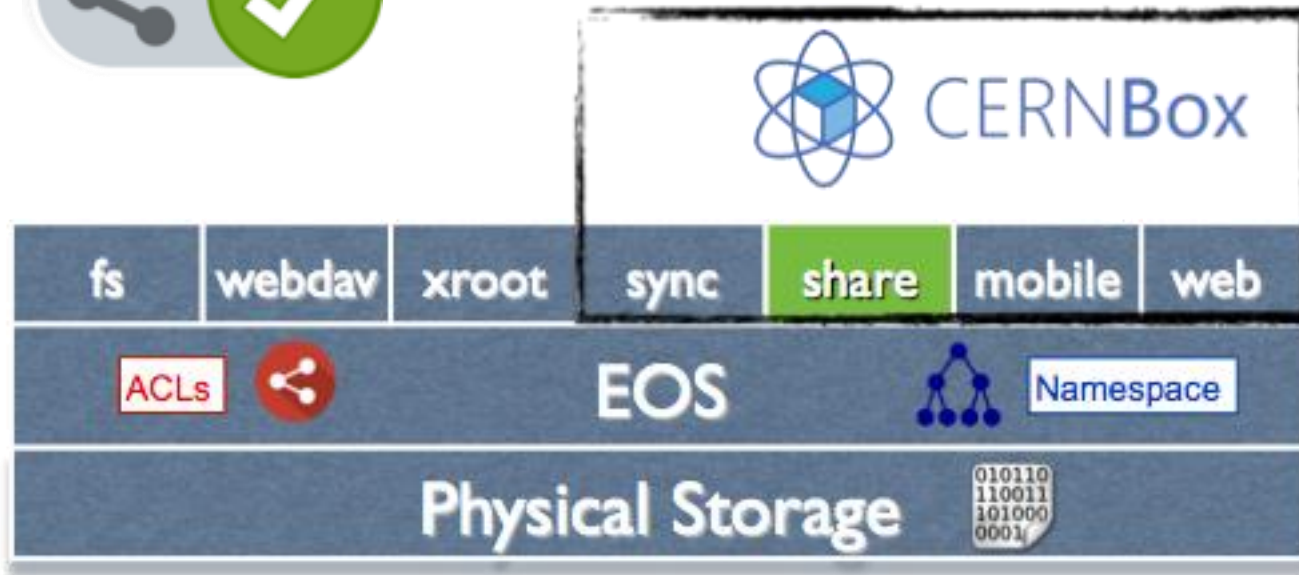
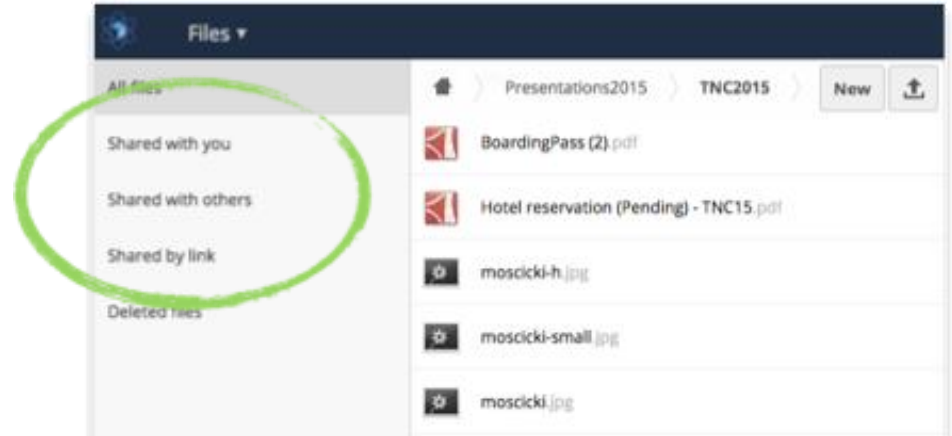
Much more than a Dropbox™ replacement!



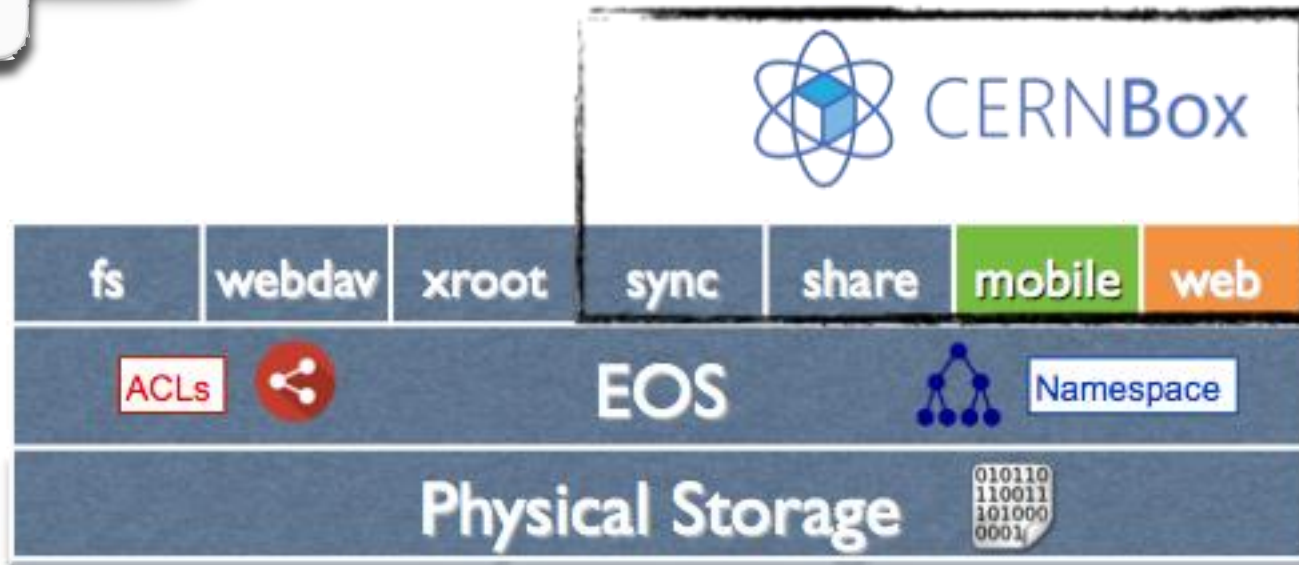
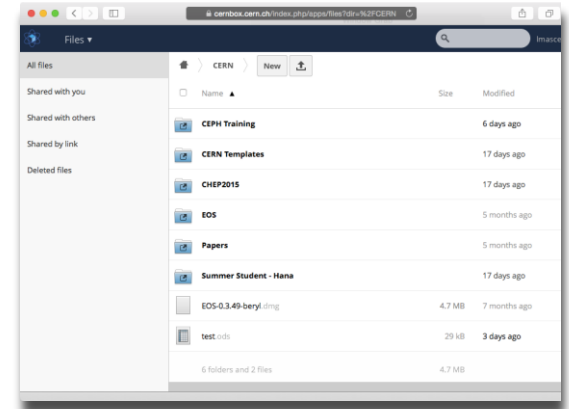
Access Methods: Sync



Access Methods: Sharing



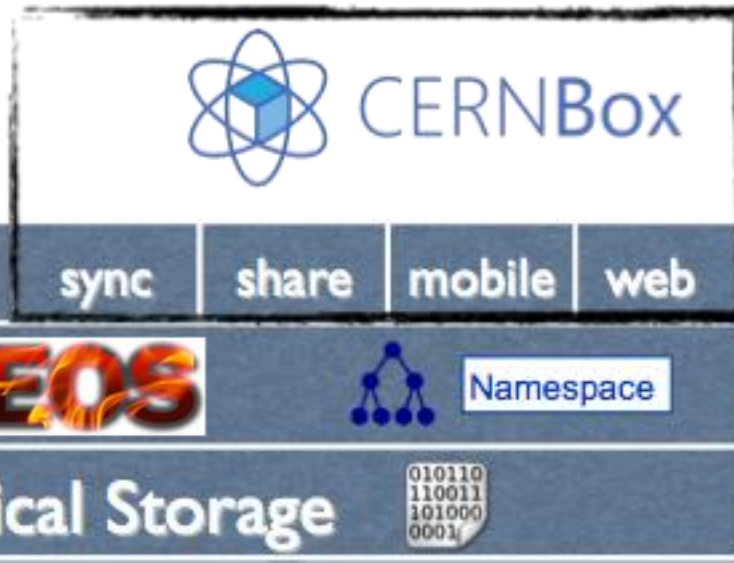
Access Methods: Mobile & Web



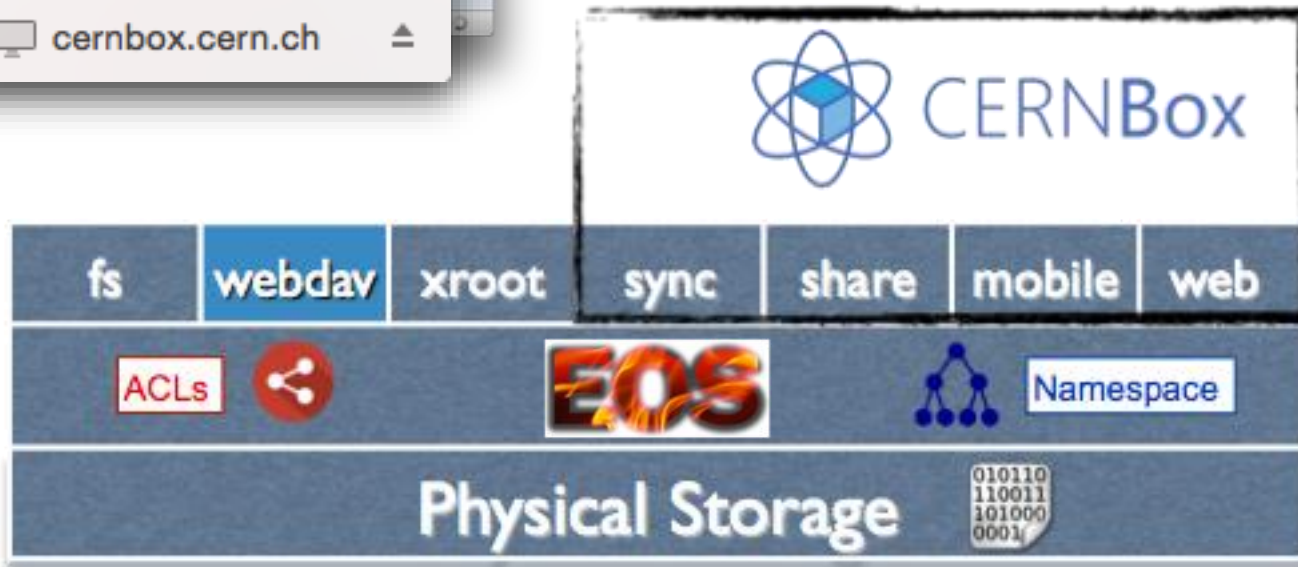
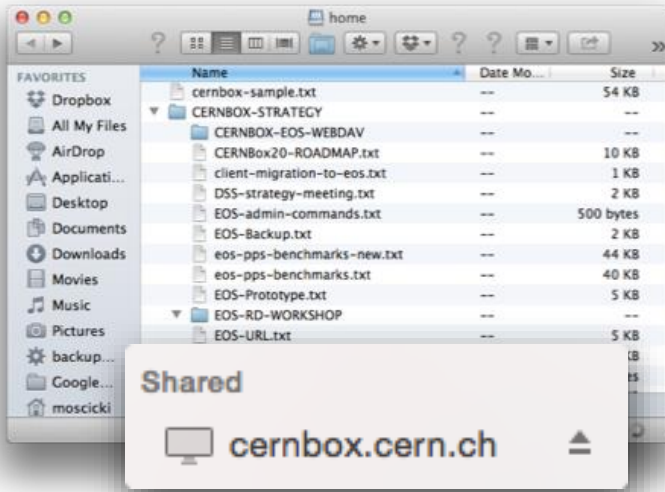
Access Methods: FUSE



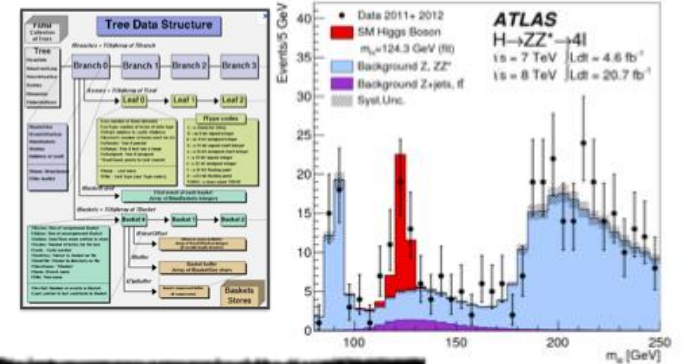
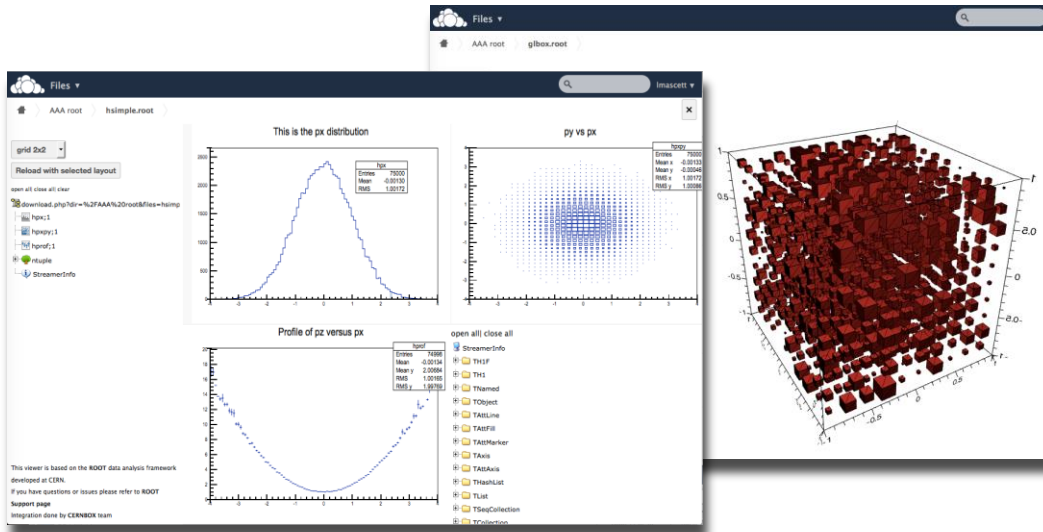
```
[lascett@lxplus2015 ~]#  
[lascett@lxplus2015 ~]# df -H -t fuse  
Filesystem      Size  Used Avail Use% Mounted on  
eosuser         506T  70T  437T  14% /eos/user  
eosatlas        36P   17P   20P  45% /eos/atlas  
eosalice        20P   11P   8.5P  57% /eos/alice  
eoscms          28P   14P   15P  49% /eos/cms  
eoslhcb         13P   7.6P  4.6P  63% /eos/lhcb  
eospublic       16P   5.8P   11P  36% /eos/public  
[lascett@lxplus2015 ~]#  
[lascett@lxplus2015 ~]# ls -lc /eos/user/l/lascett/  
total 6644  
drwx-----. 1 lascett c3      5 Dec 10 15:58 CERN  
drwx-----. 1 lascett c3      0 Jan 26 18:18 debug  
drwx-----. 1 lascett c3      0 Dec 11 09:43 download  
drwx-----. 1 lascett c3      0 Oct 31 18:24 pdf  
drwx-----. 1 lascett c3      1 Dec 11 09:44 personal  
drwx-----. 1 lascett c3      8 Dec 10 12:11 pictures
```



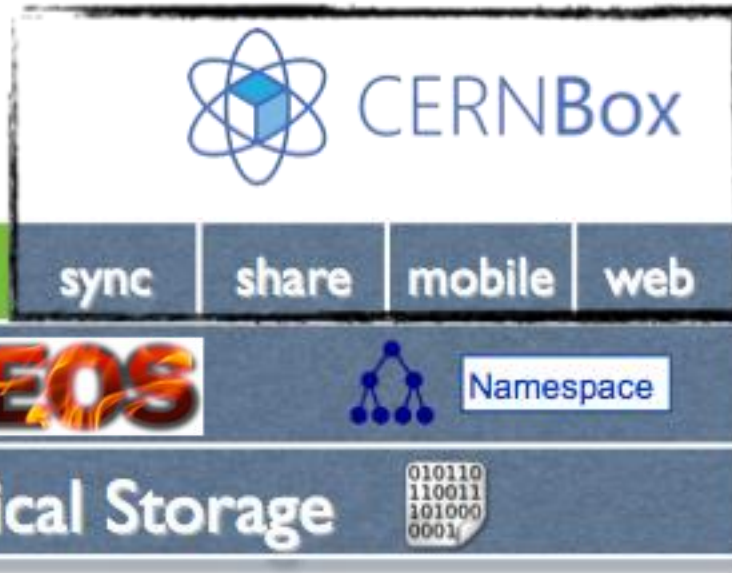
Access Methods: WebDAV



Access Methods: xroot & ROOT



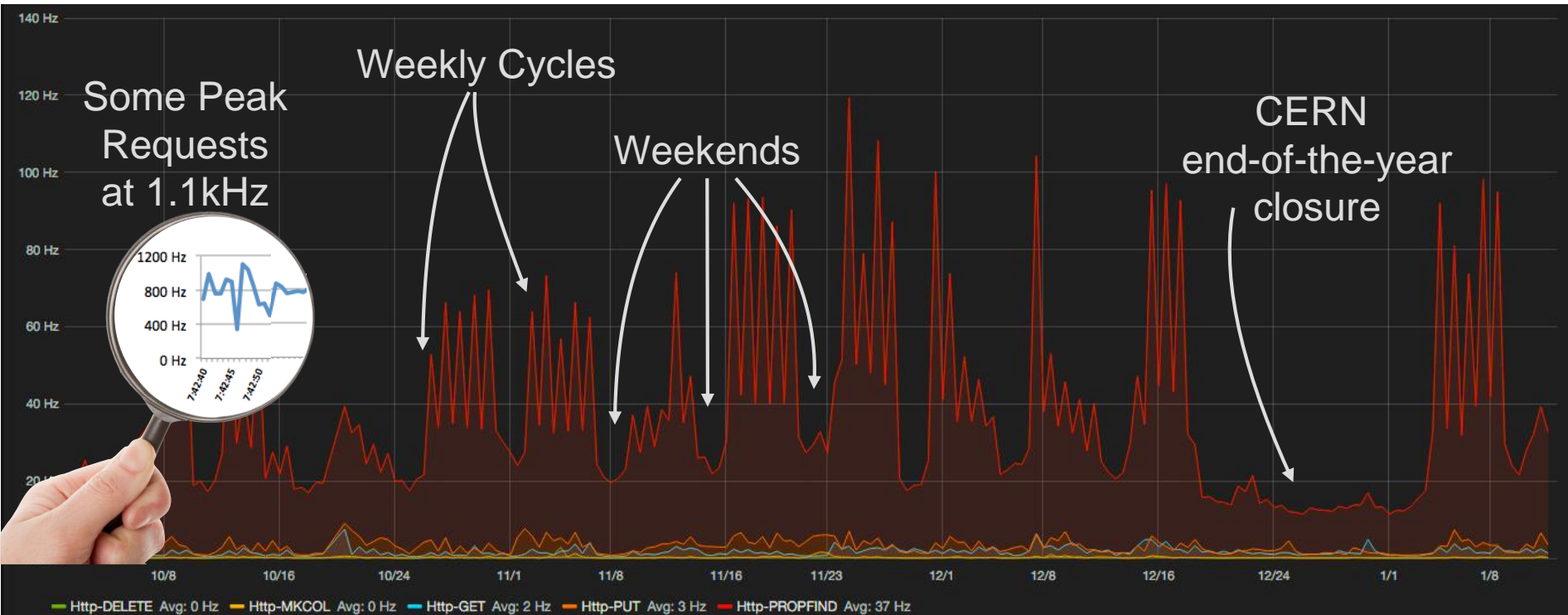
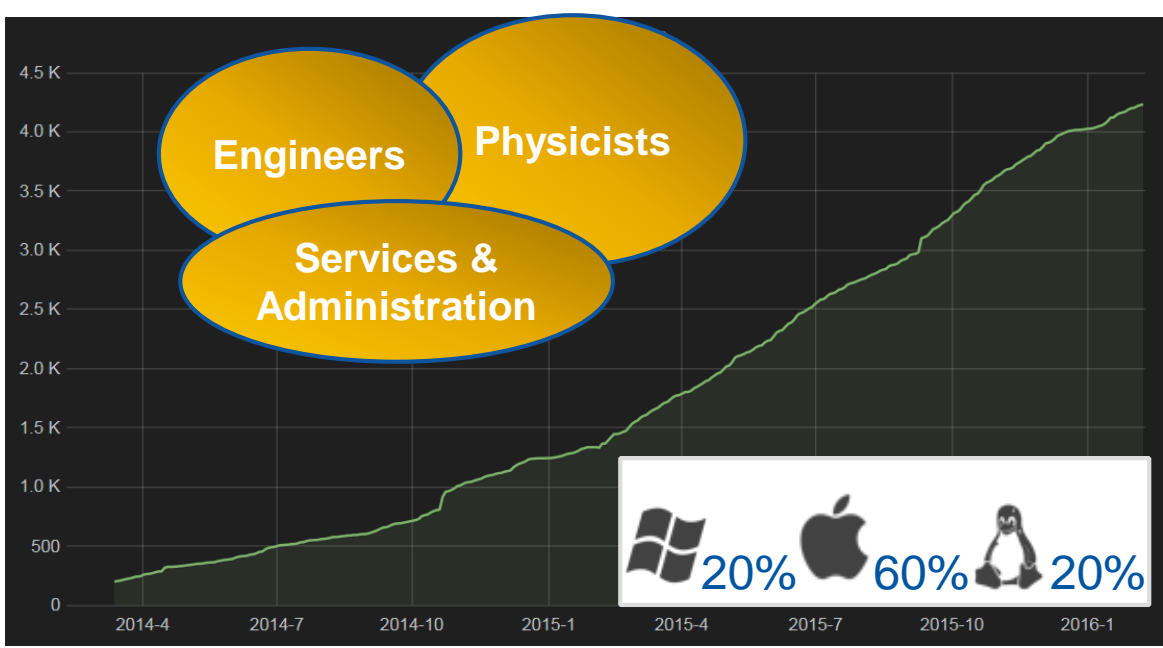
Embedded ROOT viewer
in CERNBox browser



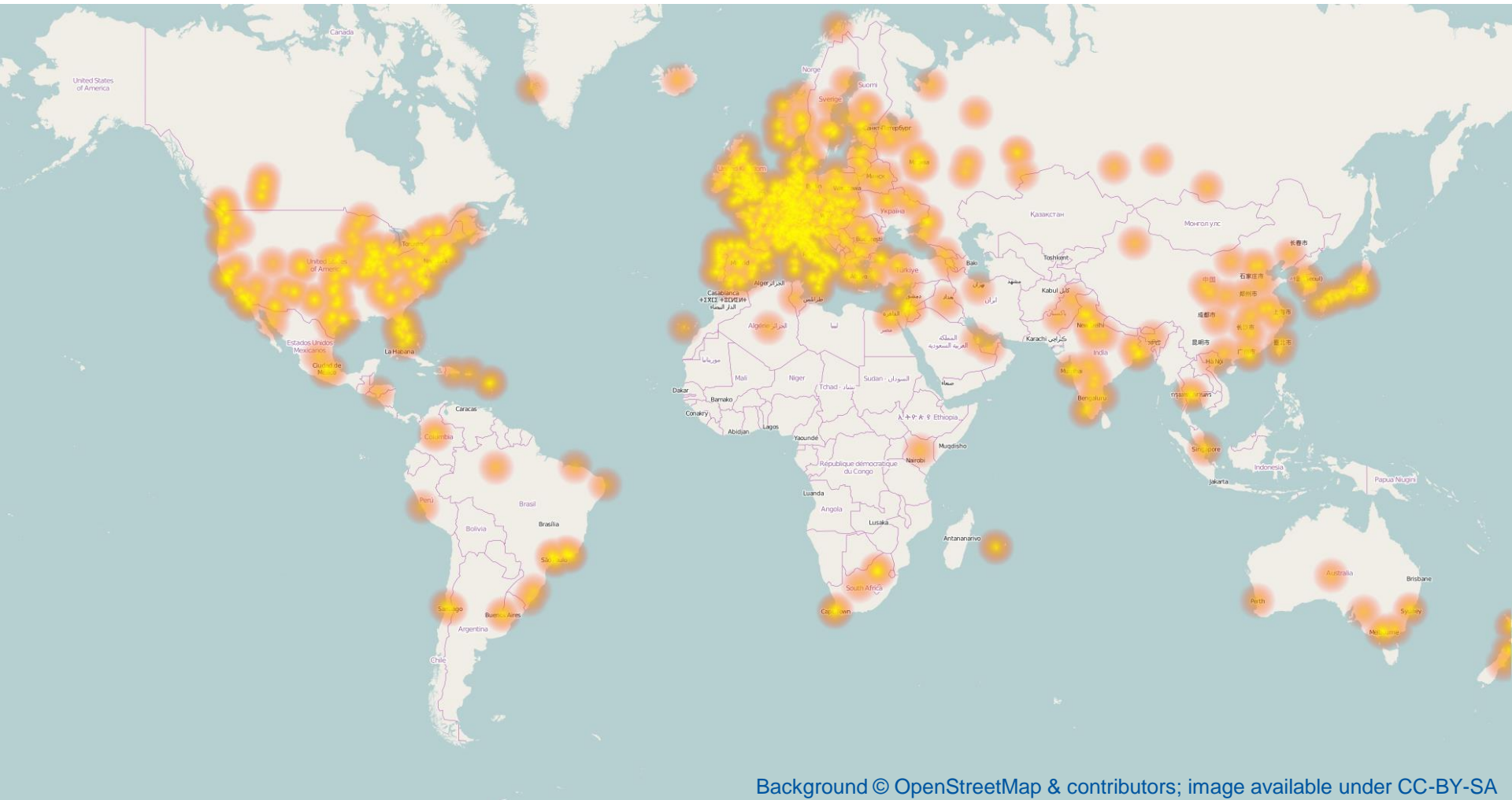
CERNBox service



Users	4337
# files	55 Million
# dirs	7.2 Million
Quota	1TB/user
Used Space	104 TB
Deployed Space	1.3 PB



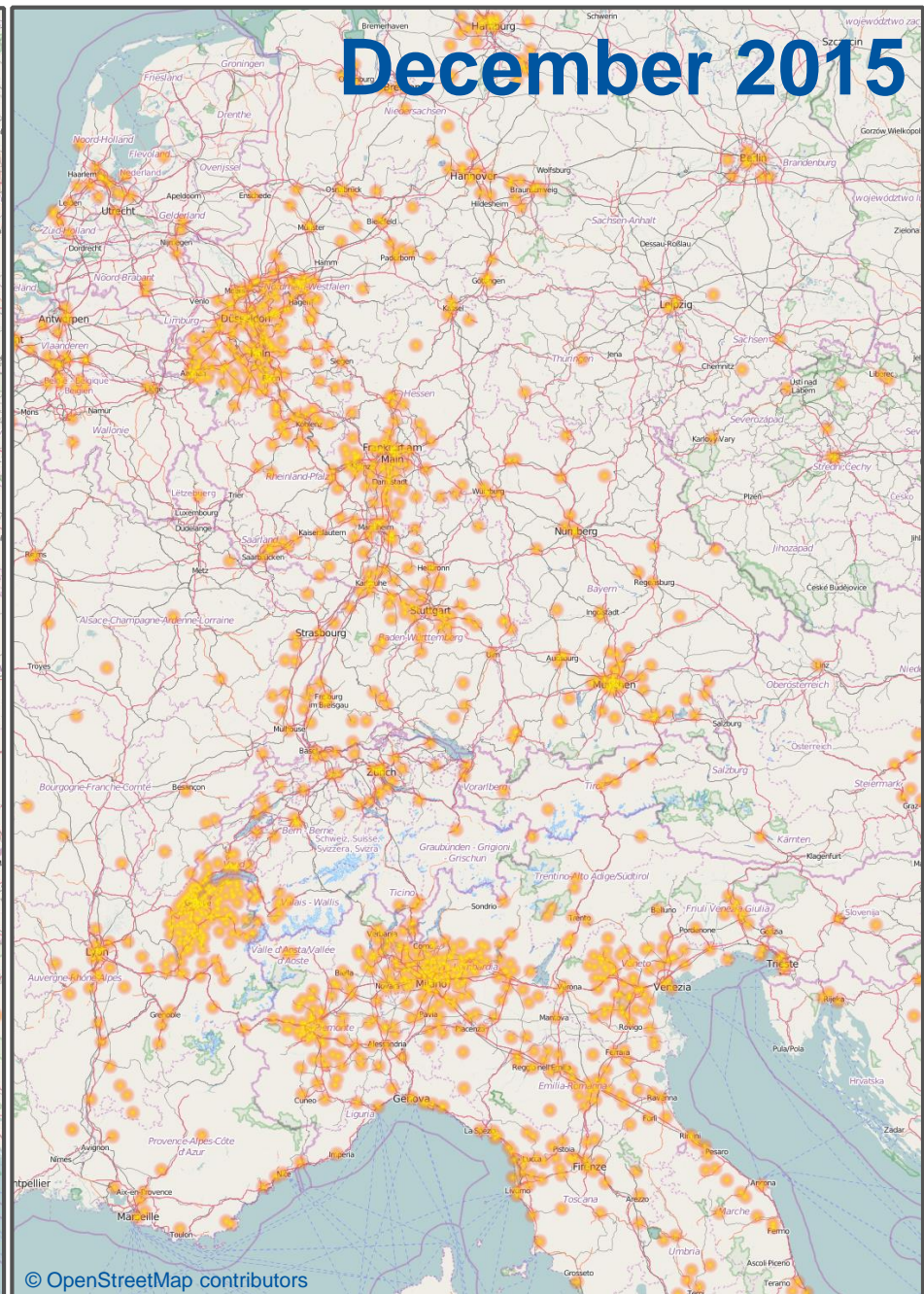
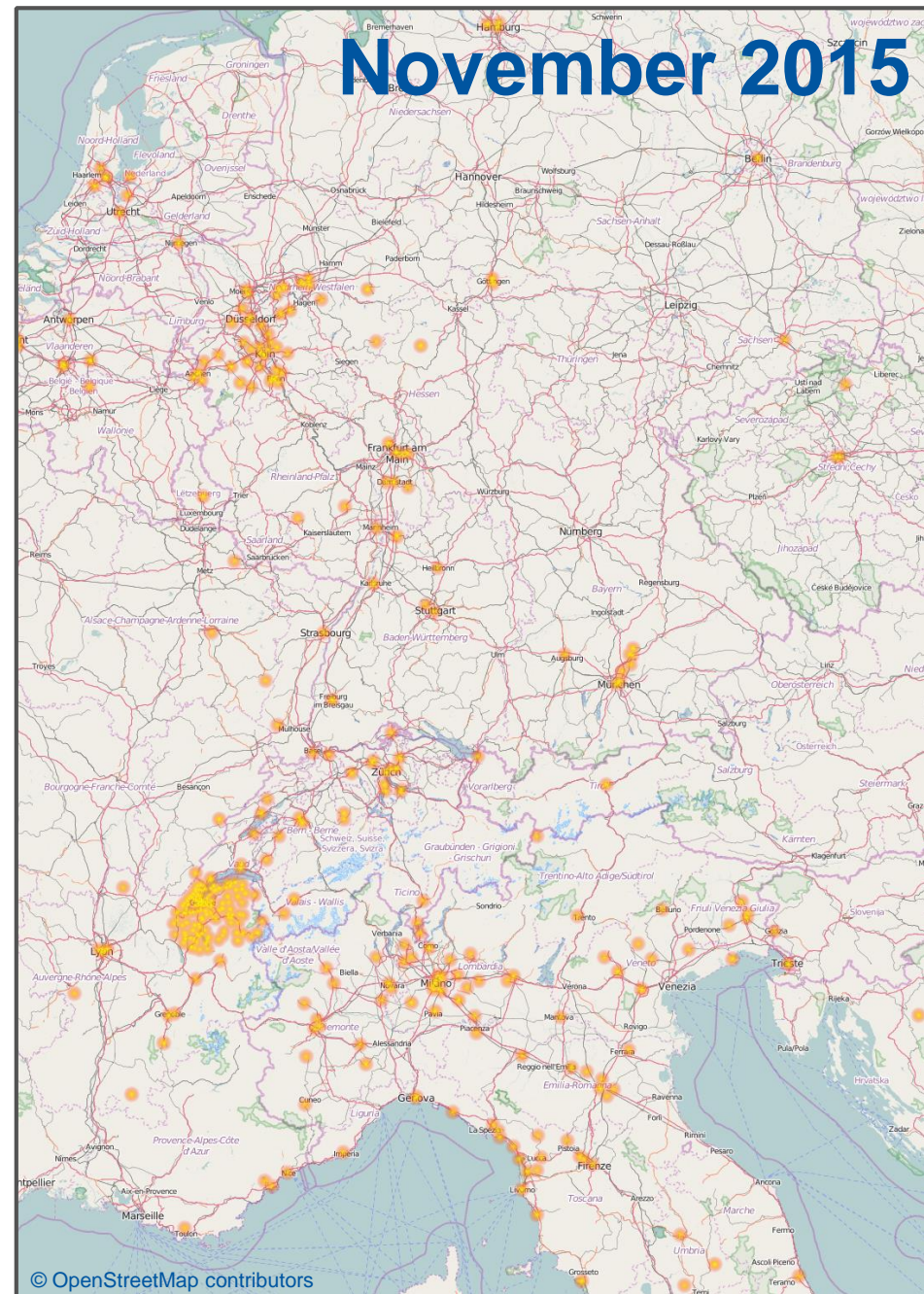
Dec 2015: Geolocation Active Users



Background © OpenStreetMap & contributors; image available under CC-BY-SA

November 2015

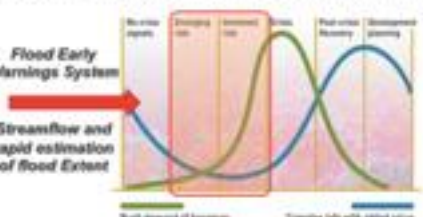
December 2015



Usage examples

A need of a global Flood Early Warning System

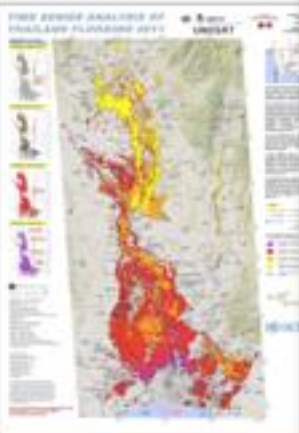
Flooding is the most common and widespread hazard worldwide



Flood Early Warnings System
Streamflow and rapid estimation of flood extent

Objectives:

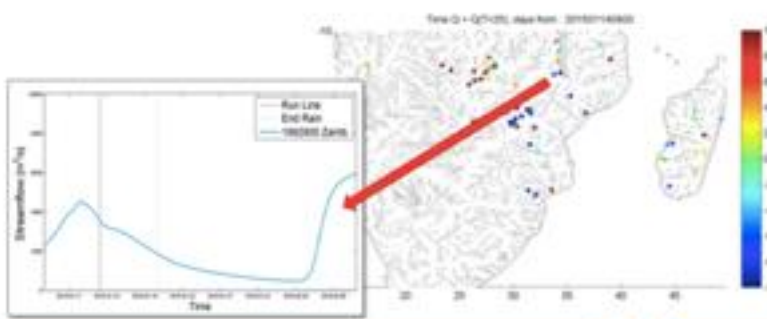
- ✓ Improve disaster response planning with timely identification of potential affected areas, in particular for critical areas of the world that lack of data
- ✓ supporting humanitarian actors during flood emergency with data and analysis
- ✓ guide satellite image acquisition overcome delays due to the triggering process of satellite imagery



Running hydrological simulations at CERN

With the support of CERN's IT-Department, the operational use of the modelling chain has been tested using CERN grid computing facilities.

1. A service CERN account have been created for the working group,
2. Codes and input data have been uploaded into IT-Dep servers through **CERNBOX**
3. First testing simulation of the forecast modelling chain with the use of IT-Dep Grid Computing platform has been successfully accomplished at CERN on March 2015.



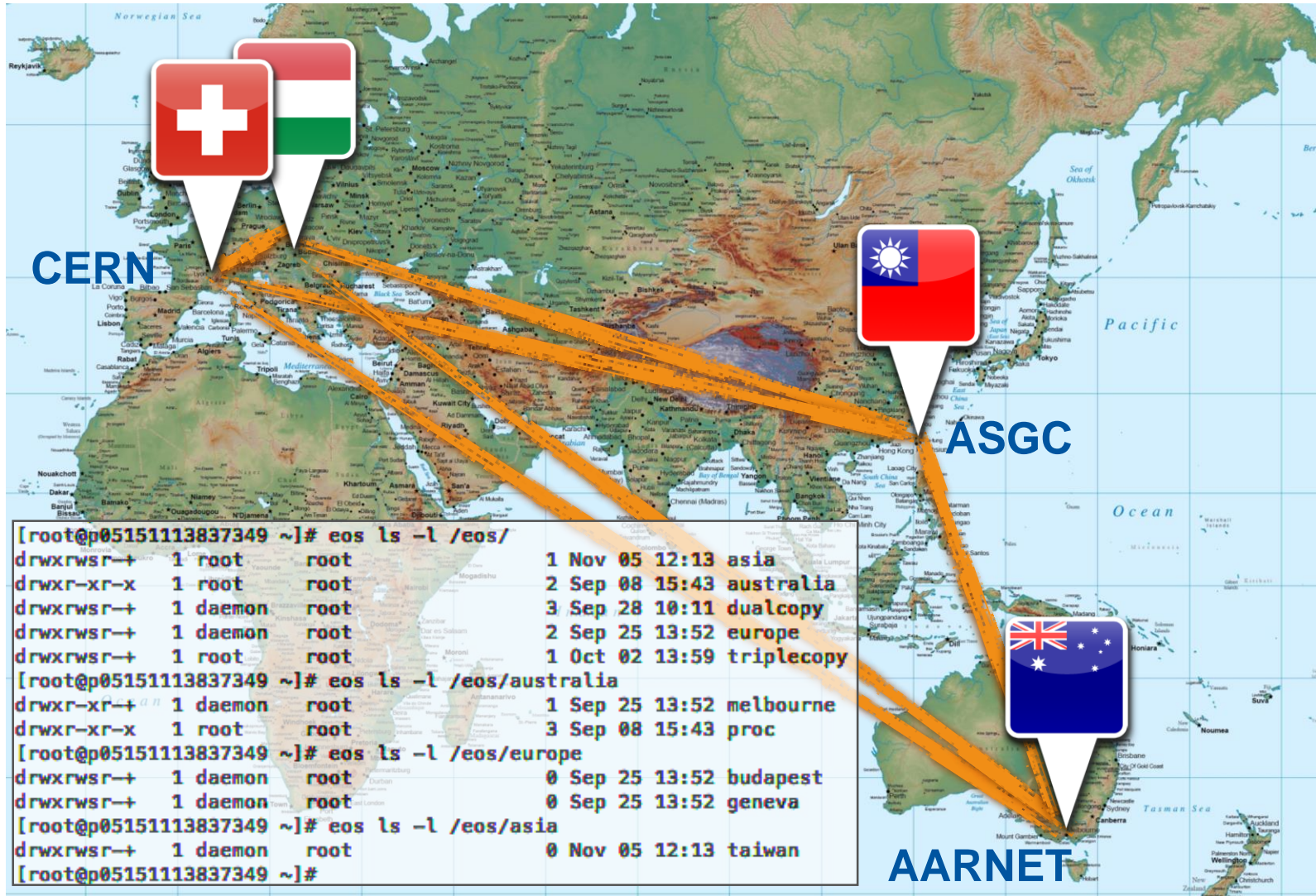
- Enable non-experts to easily use CERN Storage resources
- Powerful integration with the batch system
- Simple to share result with collaborators



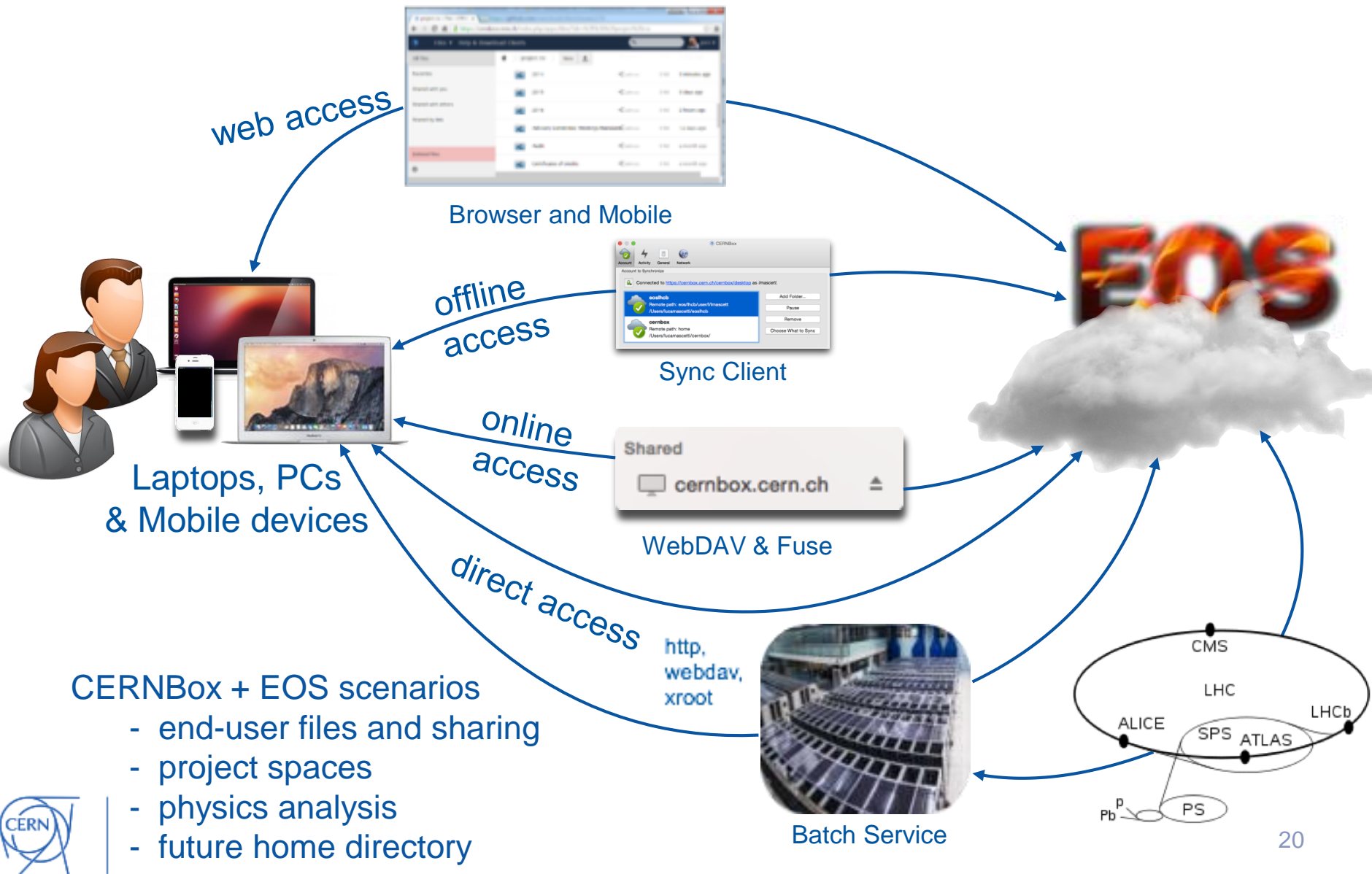
CERN Press Office



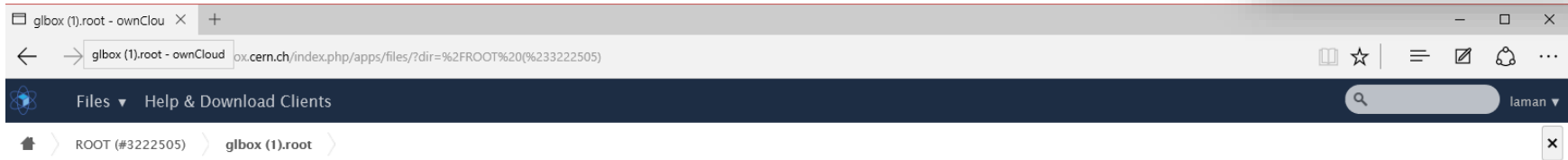
R&D - EOS World-Wide Deployment



Global service for CERN users



JavaScript ROOT (viewer)



simple ▾

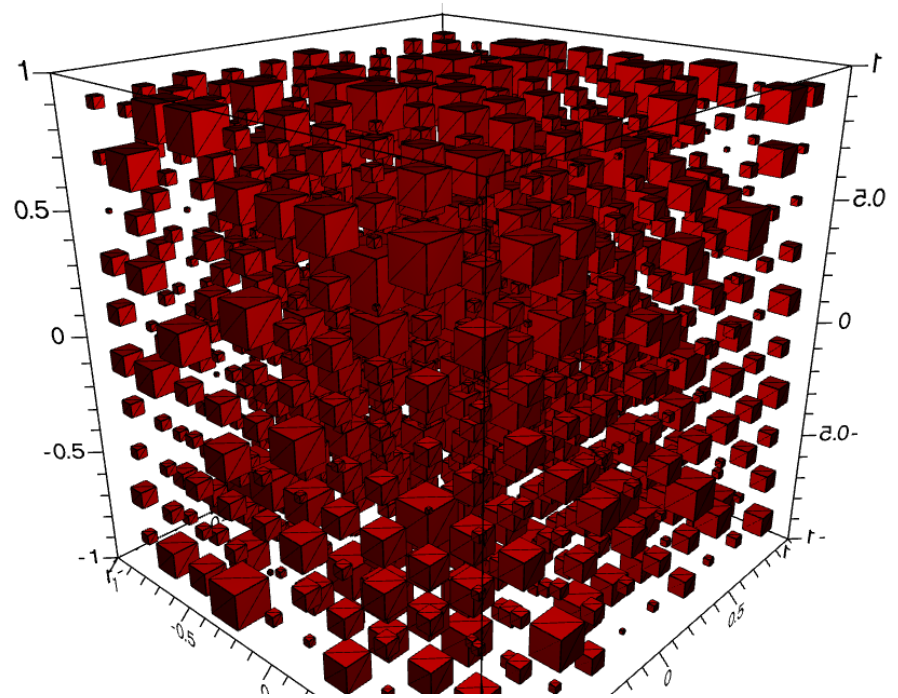
Reload with selected layout

open all close all clear

loadfile.php?file=glbox%20(1).root&dir=%2FROOT%20(%233222505)

h31;1

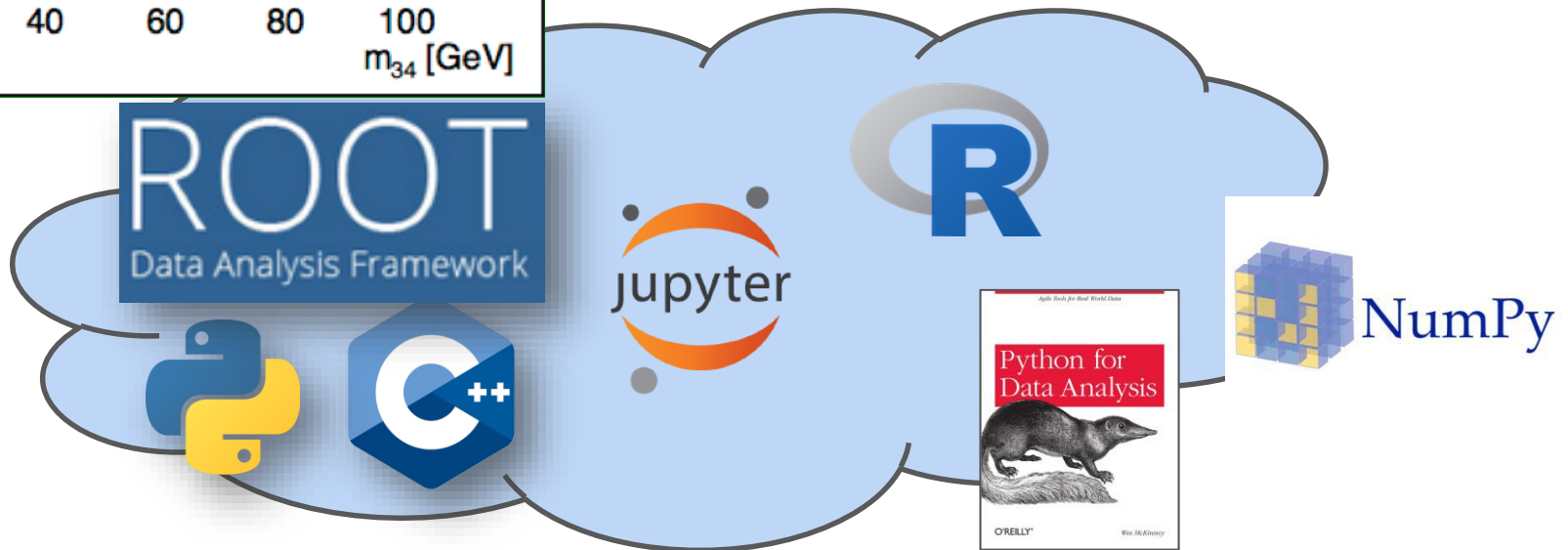
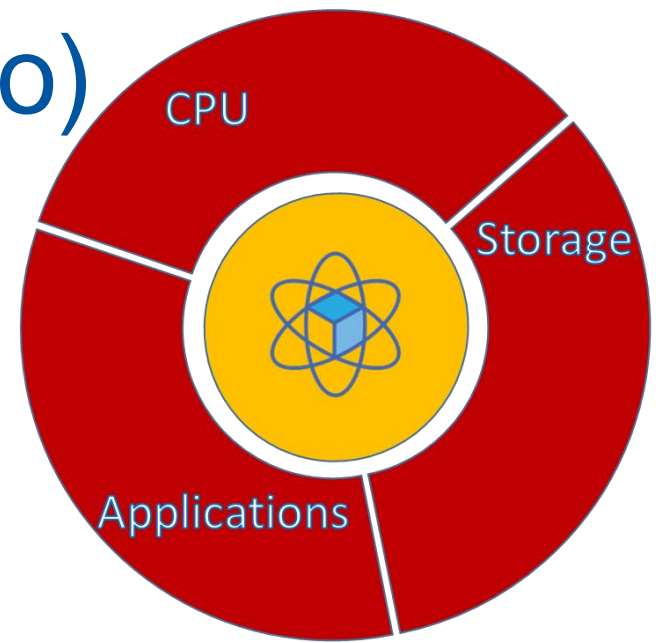
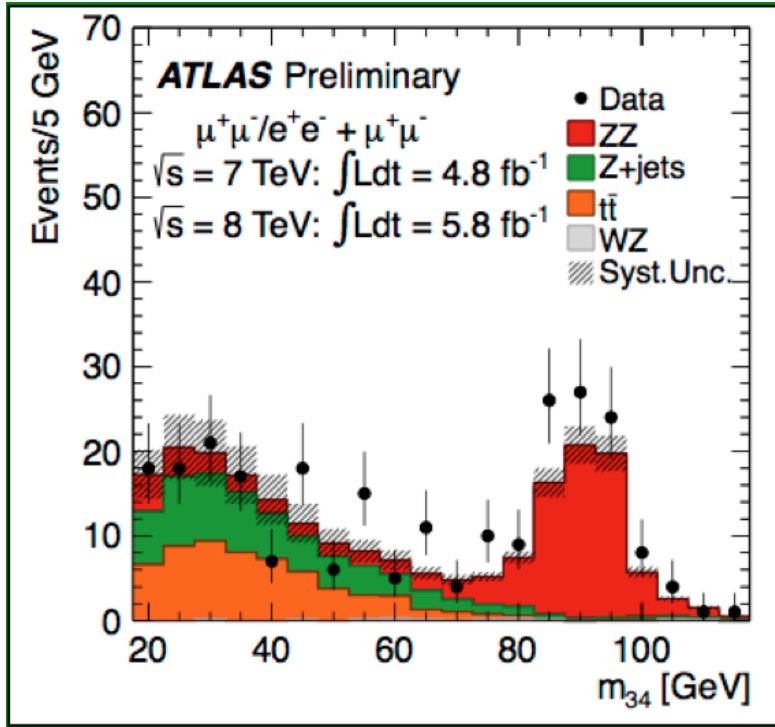
StreamerInfo



This viewer is based on the ROOT data analysis framework developed at CERN.
If you have questions or issues please refer to [ROOT Support page](#)
Integration done by CERNBOX team

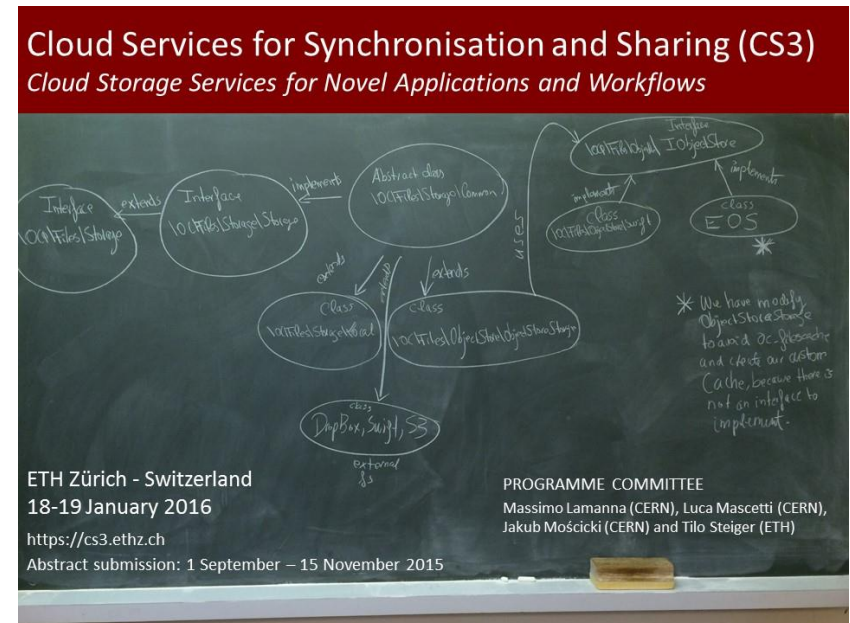
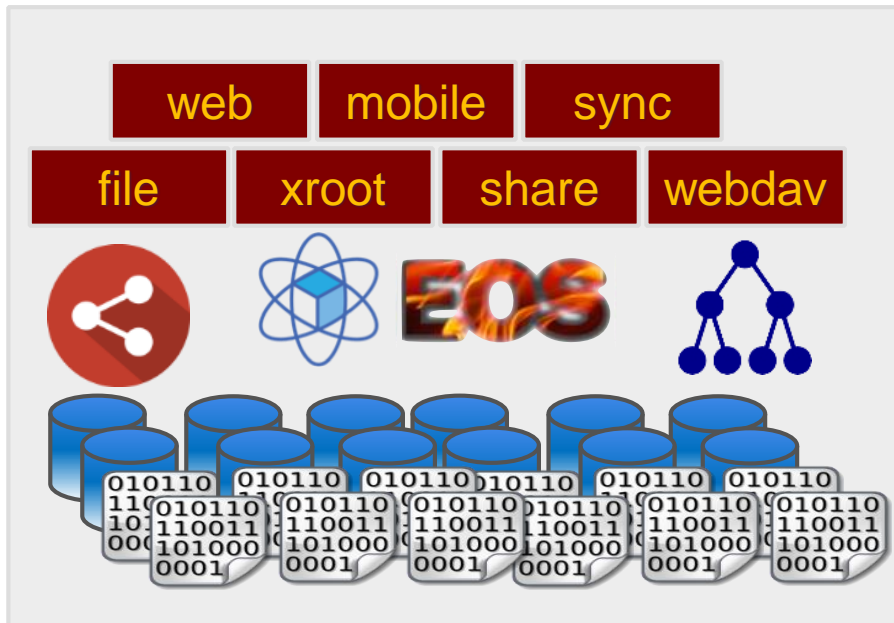


Notebook analysis (demo)



Summary

- Cloud storage enables new use cases
 - ...and a new way to work
- Build on a solid foundation
 - 140+ PB LHC disk infrastructure
- CERNBox/EOS: home for innovative applications
 - CS3 workshop: visit cs3.ethz.ch





www.cern.ch