

The DESY Cloud System



DESY IT VV

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Aufgabenstellung:
DESY braucht einen CloudSpeicher

Für wann: Sommer 2014

Projektstart: Anfang 2014

Leute:

Tigran, Marvin, Quirin, Sven, Christian, (van der Reest und Birigit) and myself.

How do people see “The Cloud” ?



- From the Amazon, Google, etc experience:
 - Unlimited storage space
 - Indestructible data store, never losing data
 - Fast immediate access versus slow archive
 - Pay per use == detailed billing
- From the Web 2.0 experience:
 - Accessible from all kind of OS's and mobile devices and from anywhere.
 - Synchronizing folders with “The Cloud”
 - Very easy to share data with groups and/or individuals.

The dCache cloud (cont)

What does that mean for DESY?

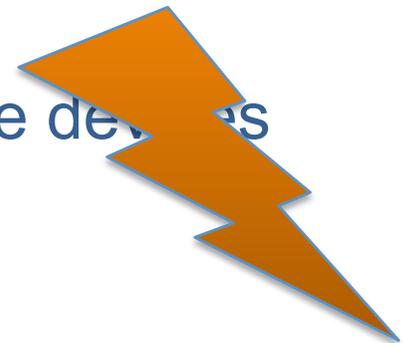
Big Data Part

- Unlimited storage space (scalability)
- Indestructible data store (resiliency)
- Fast immediate access versus slow archive
 - (Tape versus Disk and both)
- Pay per use, (detailed billing)



Web 2.0

- Accessible from all kind of OS's and mobile devices and from anywhere.
- Synchronizing folders with “The Cloud”
- Very easy to share data with groups and/or individuals.



Web 2.0 Cloud interface



- For the web 2.0 interface we need some experts.
- Not much time for evaluation.
- Going for the most popular solution
 - Reduce likelihood for ‘product disappearing’
 - Possible build a user-community (Open Source)

dCache Cloud



- TU-Berlin
- TU-Dresden
- CERN
- Jülich
- United Nations (according to Tigran)

OC Features important for us..



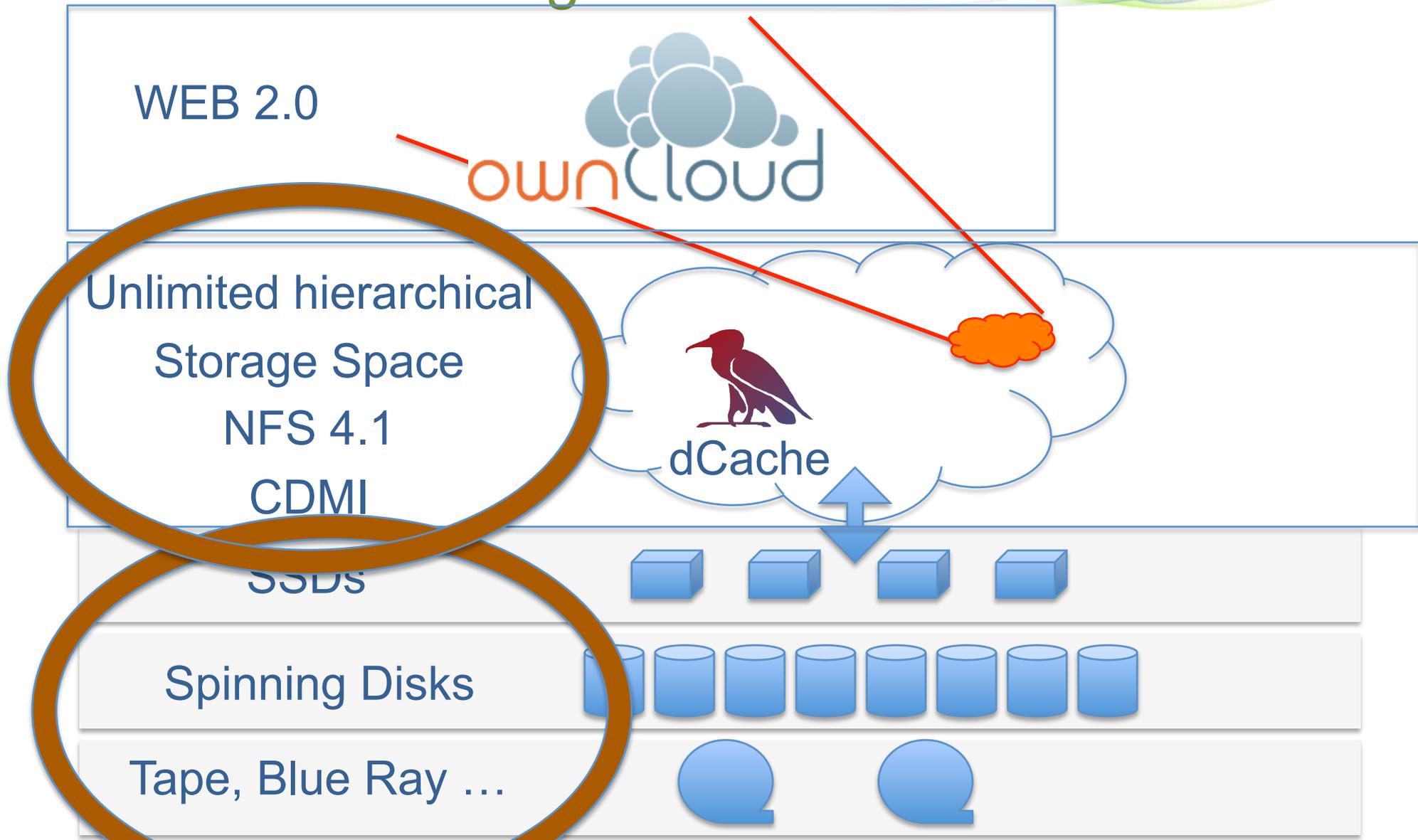
- provides sync clients for all OS's
- provides upload/download clients for mobile devices
- allows simple sharing of data

What provides dCache



- Unlimited space
- Managed space
 - Hot spot detection
 - Migration between media, decommissioning
- Multi protocol access
 - NFS, CDMI(Cloud), WebDAV, gridFTP(GlobusOnline)
- Multi Media Support
 - Tape
 - Spinning Disk
 - SSD's

dCache – OwnCloud Data Management



- Simply running OwnCloud on dCache was the easy bit and works nicely.
- dCache provides an NFS interface which lets it look like a regular file system.
- This is exactly what ownCloud needs.
- The fact the dCache doesn't allow files to be modified doesn't really bother ownCloud.

But how about ownerShip ?

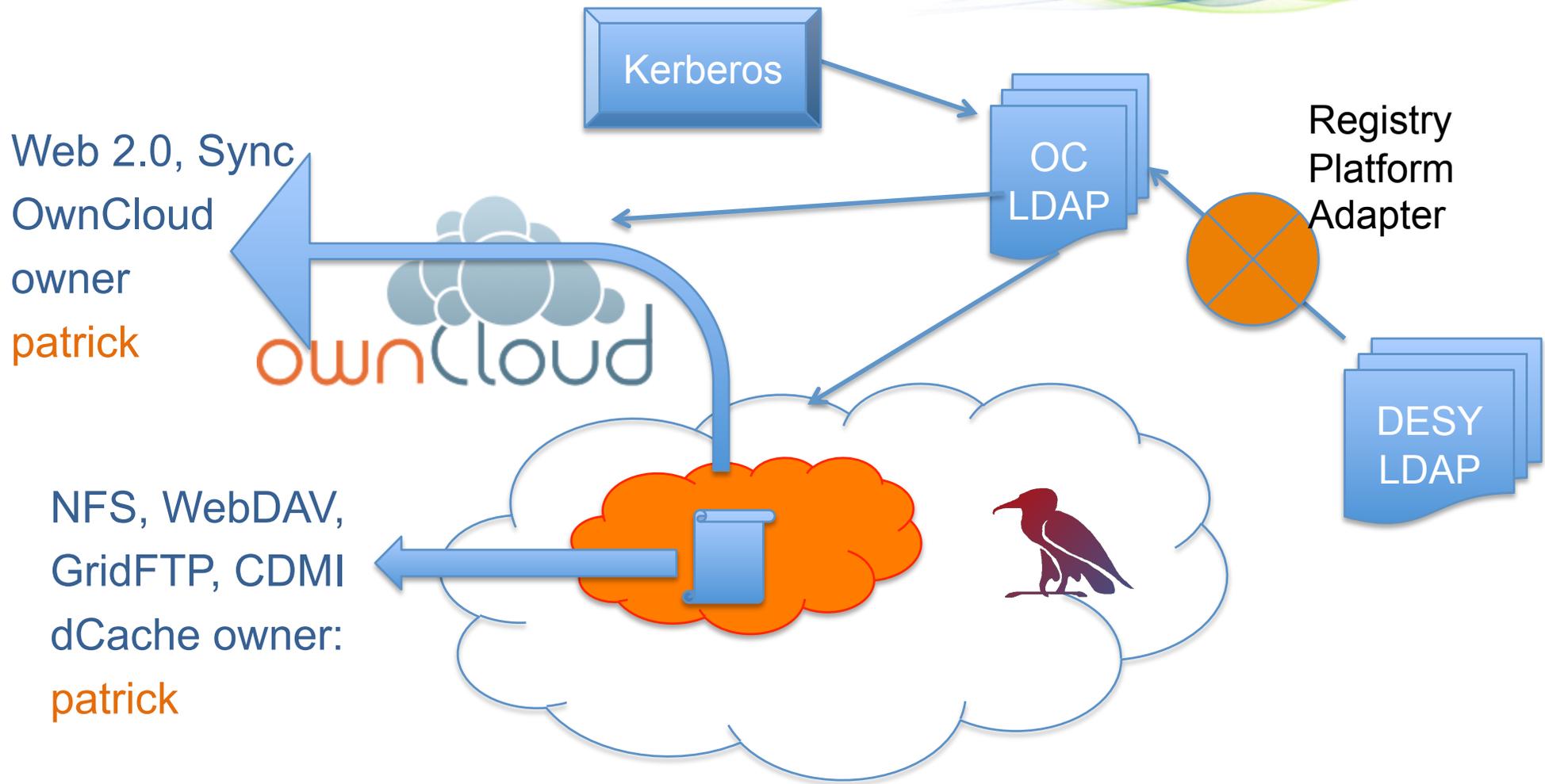
- Owner ship

- Files owned by 'patrick' in OwnCloud are owned by apache/owncloud in dCache
- That prevents us from using the same data with NFS4.1 or CDMI from dCache
- Tigran solved that issue.

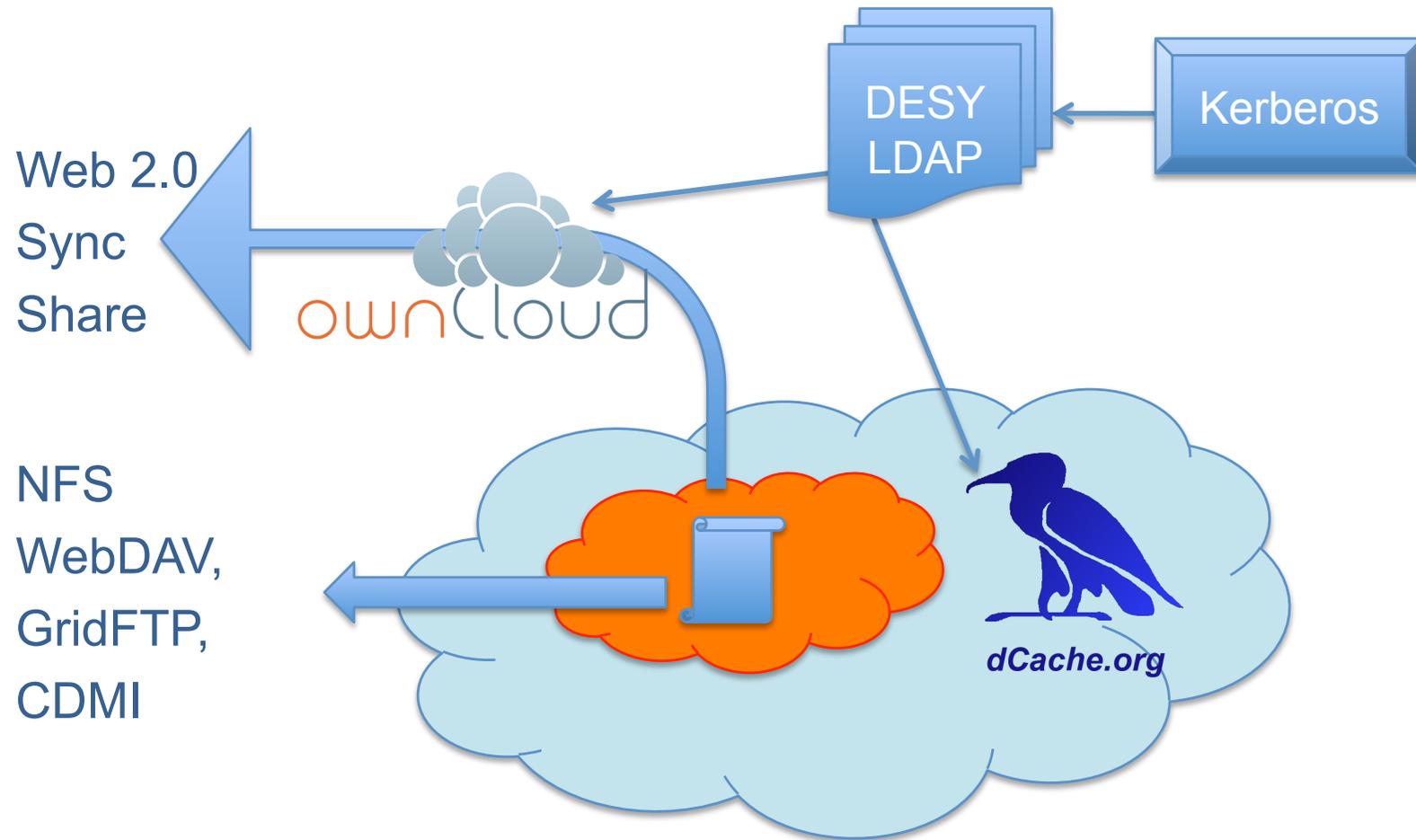
- dCache ACL's versus OwnCloud Sharing

- Files shared in OwnCloud needs to have similar ACL in dCache.
- Not solved, won't be solved in the context of this project

Ownership/mapping issue



Ownership/mapping issue



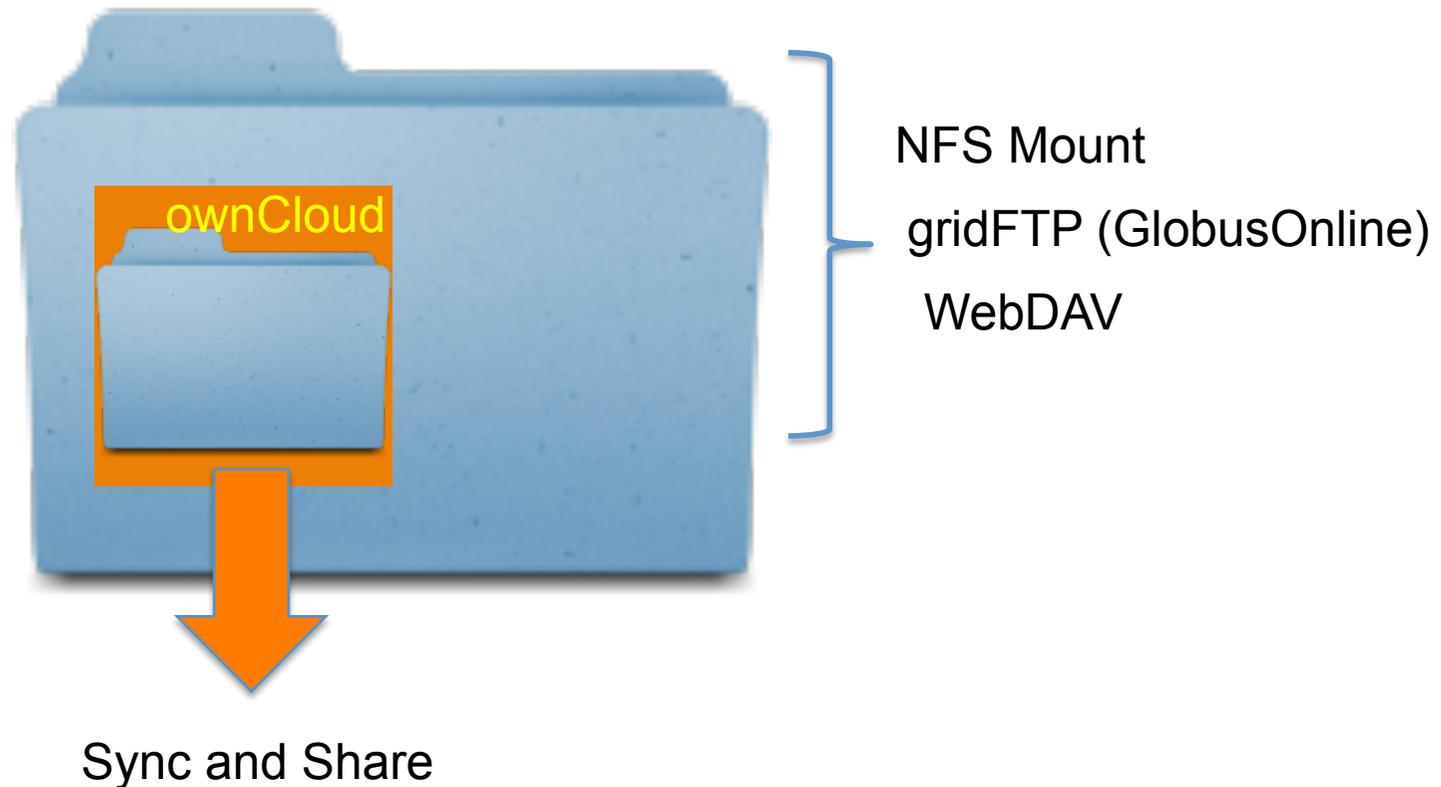
Integration

- We need an registry platform adapter
- Adapter has to create the users home in dCache before first access by OwnCloud
- Adapter has to (somehow) fill in the OwnCloud LDAP from the DESY LDAP.
(There are possibly other alternatives)

How would that look like for you ? dCache.org

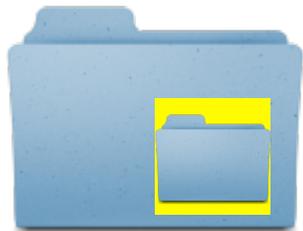
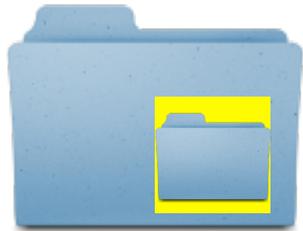
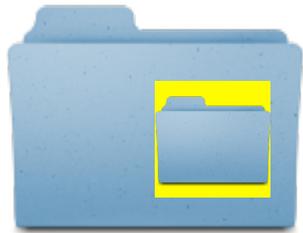
Your XXL Space

/cloud/desy/home/PATRICK



How would that look like for you ? dCache.org

dCache homes



NFS Mount
gridFTP (GlobusOnline)
WebDAV



What's done



- We already installed two systems.
 - One connected to the DESY LDAP
 - One with the dCache.org private cloud
- Most feature are already available
- Birgit already ordered hardware
 - Initially 200 TeraBytes

What's still missing ?

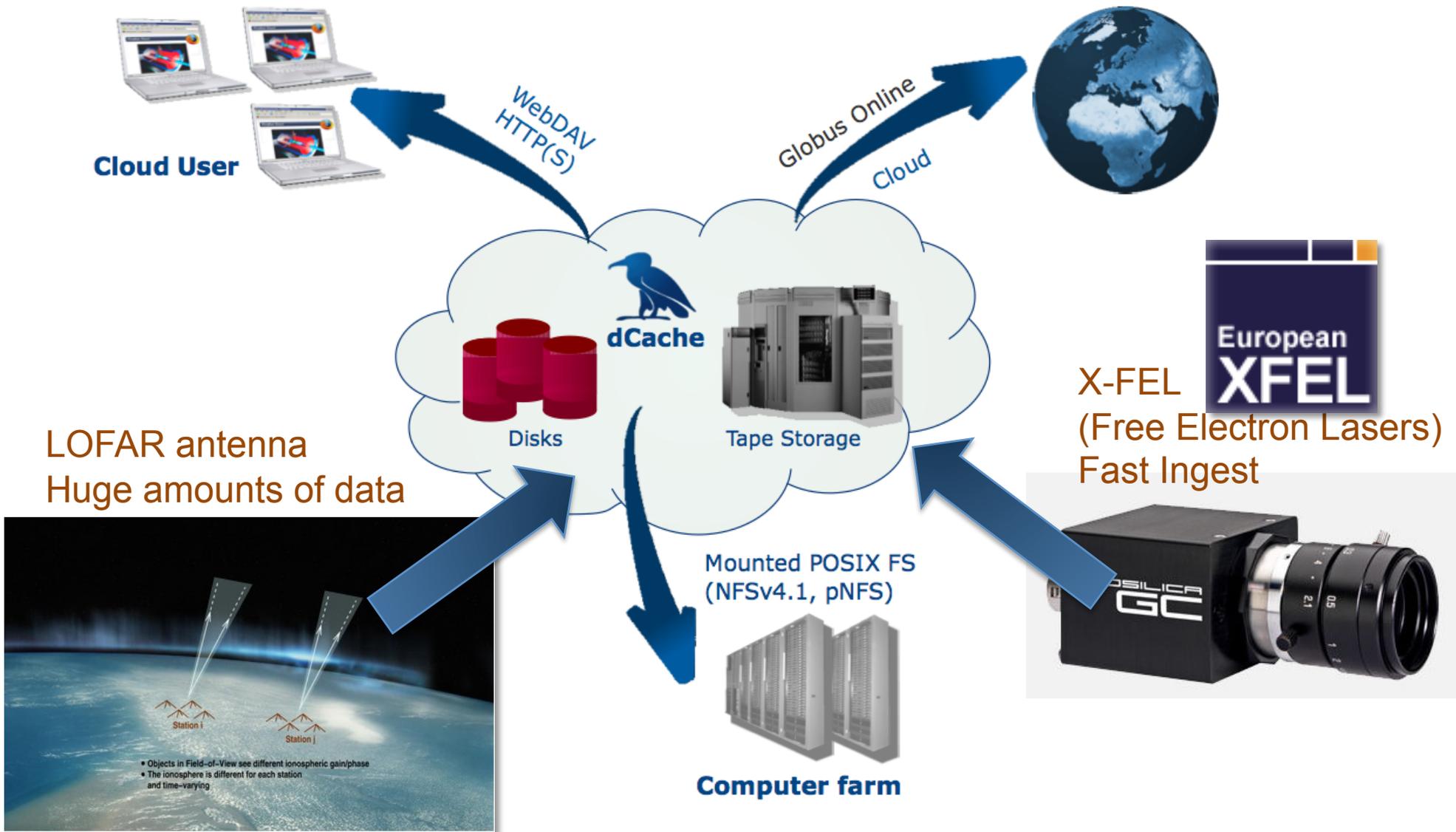
- The platform adapter needs to be written
- The DESY LDAP -> ownCloud filter needs to be done
- Customizing the ownCloud name space to support our schema.
- HTW Student (Leonie) is evaluating a ownCloud sync client working against dCache directly (under supervision of Tigran)

- Sven is going to define a set of reproducible test, which we can run on about 20 machines to
 - Verify scalability
 - Guaranty for future dCache or OwnCloud updates
 - Functional
 - Performance

Further timeline

- We expect to have a pre-production system ready in about 6 - 8 weeks.
- You will be the guinea pigs

dCache Big Data Cloud



The End

further reading
www.dCache.org