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dCache, list of topics

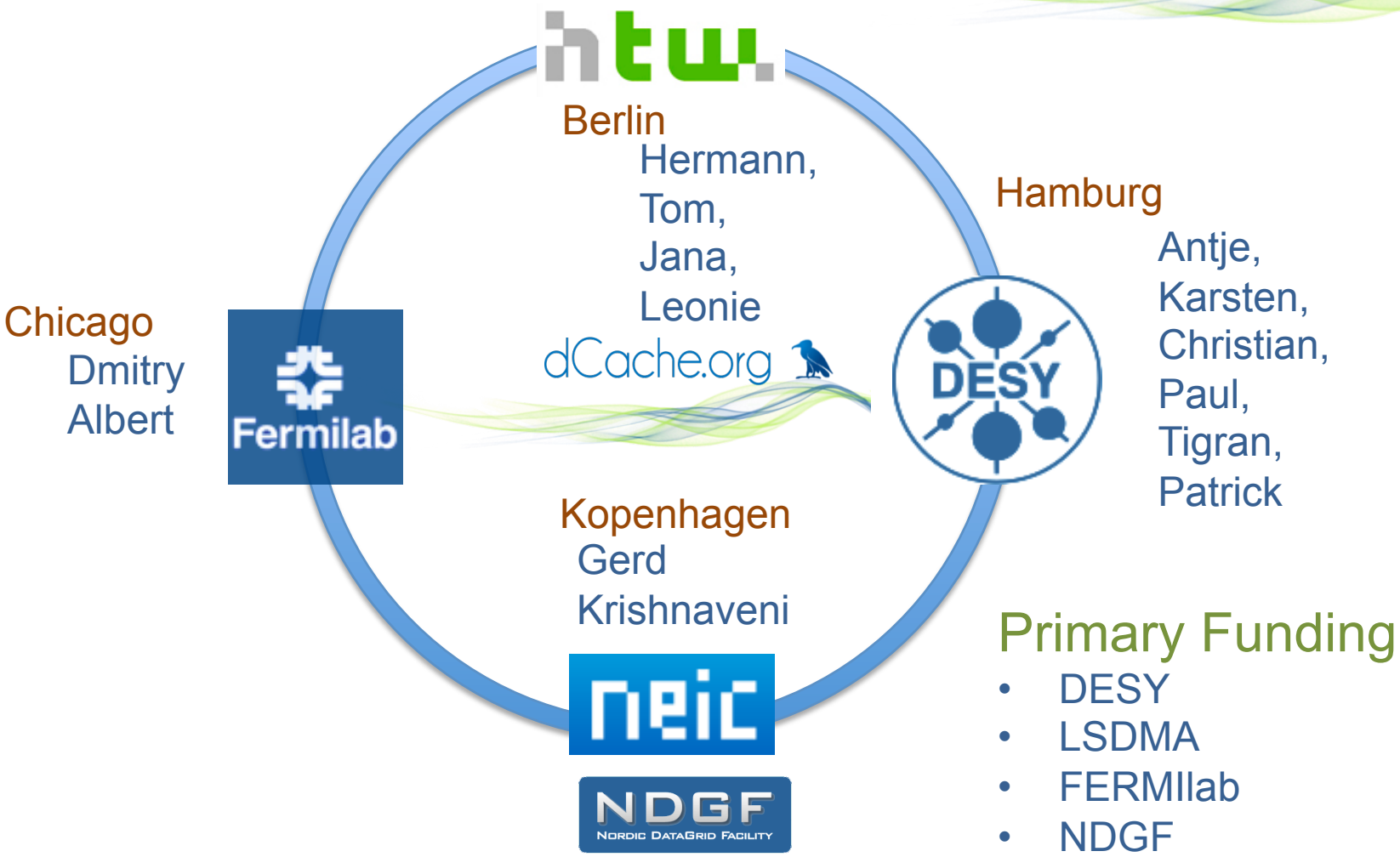
EGI Meeting on H2020

Patrick Fuhrmann

Content

- The project structure
- Project funding, customers and contacts
- Current work areas and plans

The dCache partners and team



Primary Funding

- DESY
- LSDMA
- FERMIlab
- NDGF

Primary Communities

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- WLCG (Worldwide, 60 Labs)
- Photon Science (DESY)
- LSDMA (Germany)
- Intensity Frontier (FERMILab)
- CSSB (DESY, Center of Structural System Biology)

LSDMA

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Data Lifecycle Labs (Customers)

- Energy
  - smart grids, battery research, fusion research
- Earth and Environment
- Heath
- Key Technologies
  - synchrotron radiation, nanoscopy, high throughput microscopes, electron-microscope imaging techniques
- Structure of Matter

Data Service Integration Team

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- **Federated Identity**
- Federated Data Access
- Metadata Management
- Archiving

LSDMA and H2020

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Possible topics for common projects in LSDMA:

- Federated Identities
- Federated Storage systems, which could be storage clouds
- Already collaborating in storage:
  - dCache
  - UNICORE

dCache development areas

Generic development

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- Extending the hierarchical storage management from Tape/Disk to Tape/ Disk/Fast Media(SSD)
  - Based on rules or manual intervention
- Pushing further for standards beyond nfs and WebDAV towards cloud standards

Development for WLCG

- Contributing to the different xrootd federations (FAX and AAA)
- Collaborating with CERN DM on the WLCG http “Eco System”
  - DavIX
  - WebDAV and NFS(for local access)
  - Dynamic Http Federation
- Improving fast analysis by adding fast access layers (SSD)
- CMS Tape Disk separation effort

Development for Photon Communities

- Small file support for Tertiary Storage and possibly for long term archiving.
- Support of HDF5 and other container formats -> means read/modify/write for dCache.
- NFS 4.1 / pNFS for fast local analysis

Development for LSDMA

- Federated Identity
  - Building an IdP infrastructure (initially in Germany)
  - Supporting SAML in dCache.
  - Goal is to allow dCache access from Social Network accounts.
- Implementing CDMI (from HTW)
  - Collaboration with UNICORE
- Implementing Object stores.

Scientific Storage Cloud

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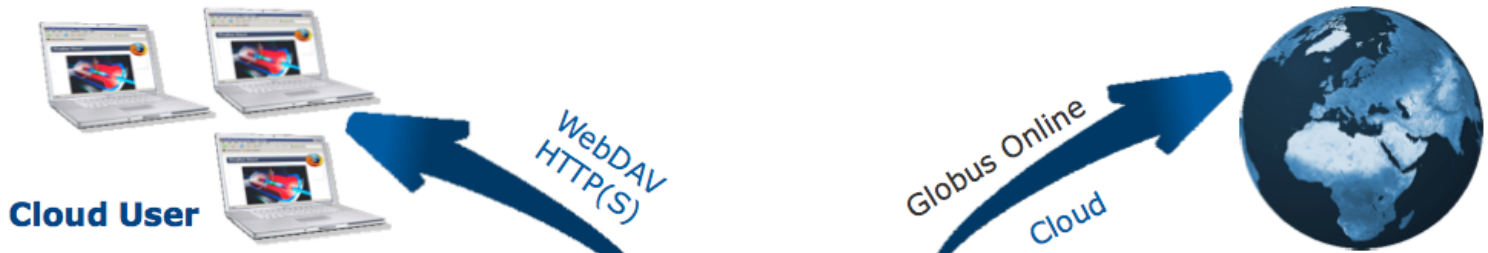
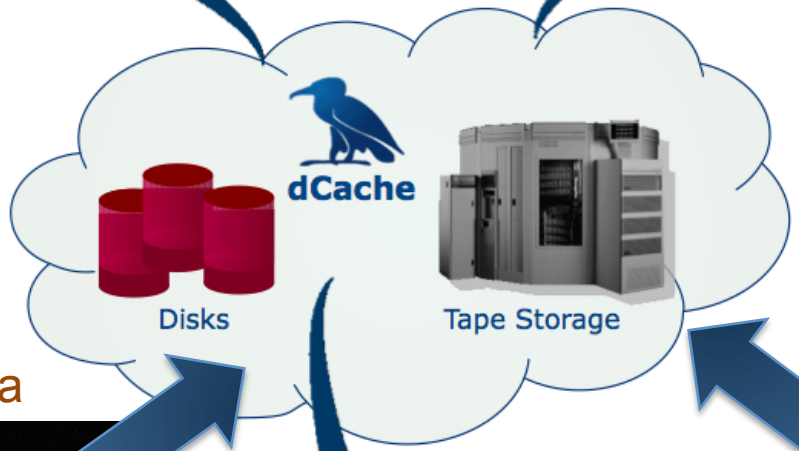


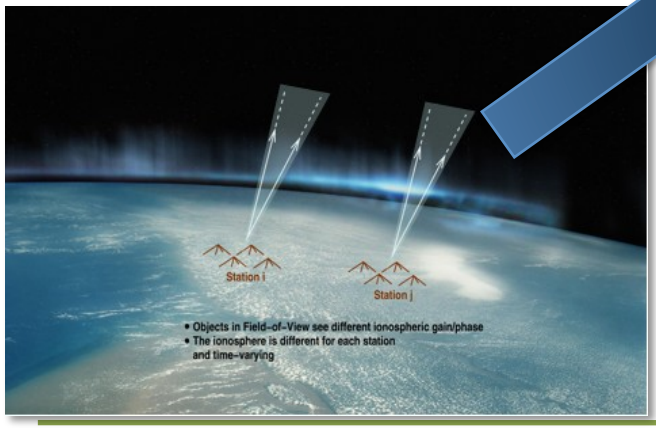
WebDAV
HTTP(S)

Globus Online

Cloud



LOFAR antenna
Huge amounts of data



Mounted POSIX FS
(NFSv4.1, pNFS)

Computer farm

X-FEL
(Free Electron Lasers)
Fast Ingest

European XFEL

Scientific Storage Cloud Requirements

- Data can be accessed by a variety of protocols
  - Globus-online transfers via gridFTP
  - FTS Transfers for WLCG via gridFTP or WebDAV
  - Private upload and download via WebDAV
  - Public anonymous access via plain http(s)
  - Direct fast access from worker-nodes via NFS4.1/pNFS (just a mount like GPFS or Lustre but with standards)
- Individuals are authenticated by different mechanisms
  - X509 certificates or proxies
  - Username/password
  - SAML assertions (from IdP)
  - Kerberos tokens

Deployment of the scientific storage cloud

- Next week we will open the cloud for DESY and HTW students.
- Steps
  - Multi Protocol (support of Mobile Clients and e.g. Globus Online data transfers.
  - Multi authentication (e.g. Google account)
  - Investigation in more Web 2.0 sharing mechanisms. (Authorization)
  - Integrating in Local Infrastructure systems (DESY, FERMIlab etc)