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Designing a Large Scale Cooperative Cloud Storage Platform for the Academic Community in Northrhine-Westfalia (NRW)

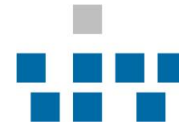
EUNIS Riga, June 13, 2013

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WWU Münster

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Agenda

1. Why Sync&Share NRW?
 - Motivation from user survey
2. Market and products for Sync&Share
3. Designing a large scale Sync&Share service
 - Service characteristics
 - Sizing
 - System architecture and Service operation
4. Timeline for Sync&Share NRW

Why Sync&Share NRW?

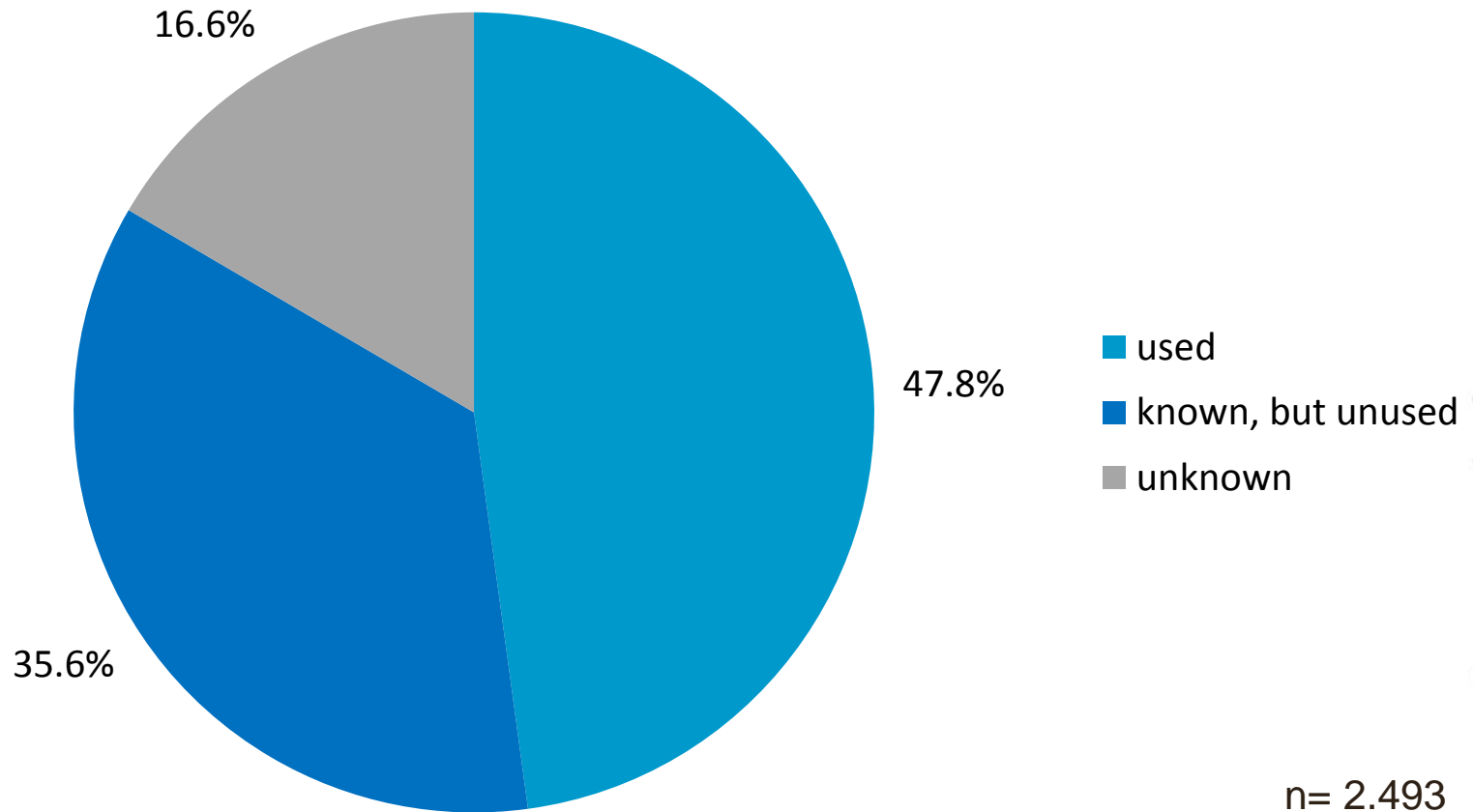
- 2006: Amazon EC2/S3
- 2007: Dropbox
- 2009: NIST definitions for Cloud Computing
- Academic community uses free and/or paid public cloud services (eg. dropbox for scientific project communication)
- Data privacy/confidentiality concerns – esp. for non-EU services
- Lack of on-premise alternatives compliant with EU/german data protection laws (Datenschutzgesetz, Auftragsdatenverarbeitung)
- Demand imminent by late 2011: discussion at universities

Sync&Share NRW Timeline

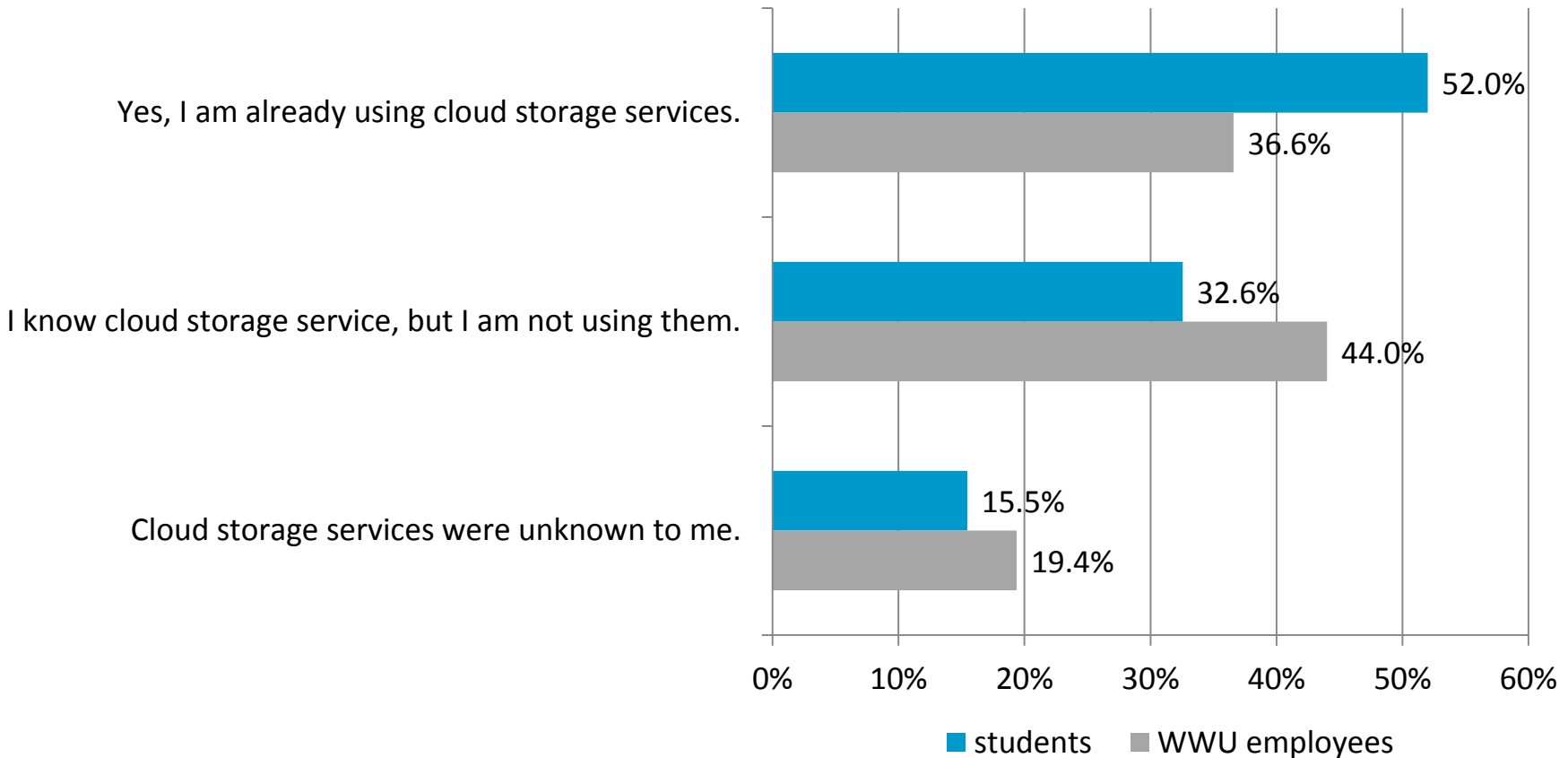


- 25.04.2012 Uni Münster students petition for S&S service
- 07.05.2012: NRW Uni IT director workshop on Sync&Share
- May 2012: Uni Münster user survey on cloud storage demand
- 27.6.2012: System Architecture design workshop
- Mid 2012: Sync&Share Software Evaluation: favorit -> OwnCloud
- Oct 2012: first proposal by system vendor with OwnCloud
- Nov 2012: discuss funding possibilities with Ministry and DFG
- 15.01.2013: final workshop for S&S NRW consortium formation
- 22.05.2013: workshop on legal aspects (DFN Berlin)
- 28.05.2013: funding proposal filed at Science Ministry by Univ. of Münster as lead in Sync&Share NRW consortium – DFG peer review currently underway
- Dec 2013: still hoping to get Sync&Share NRW started!

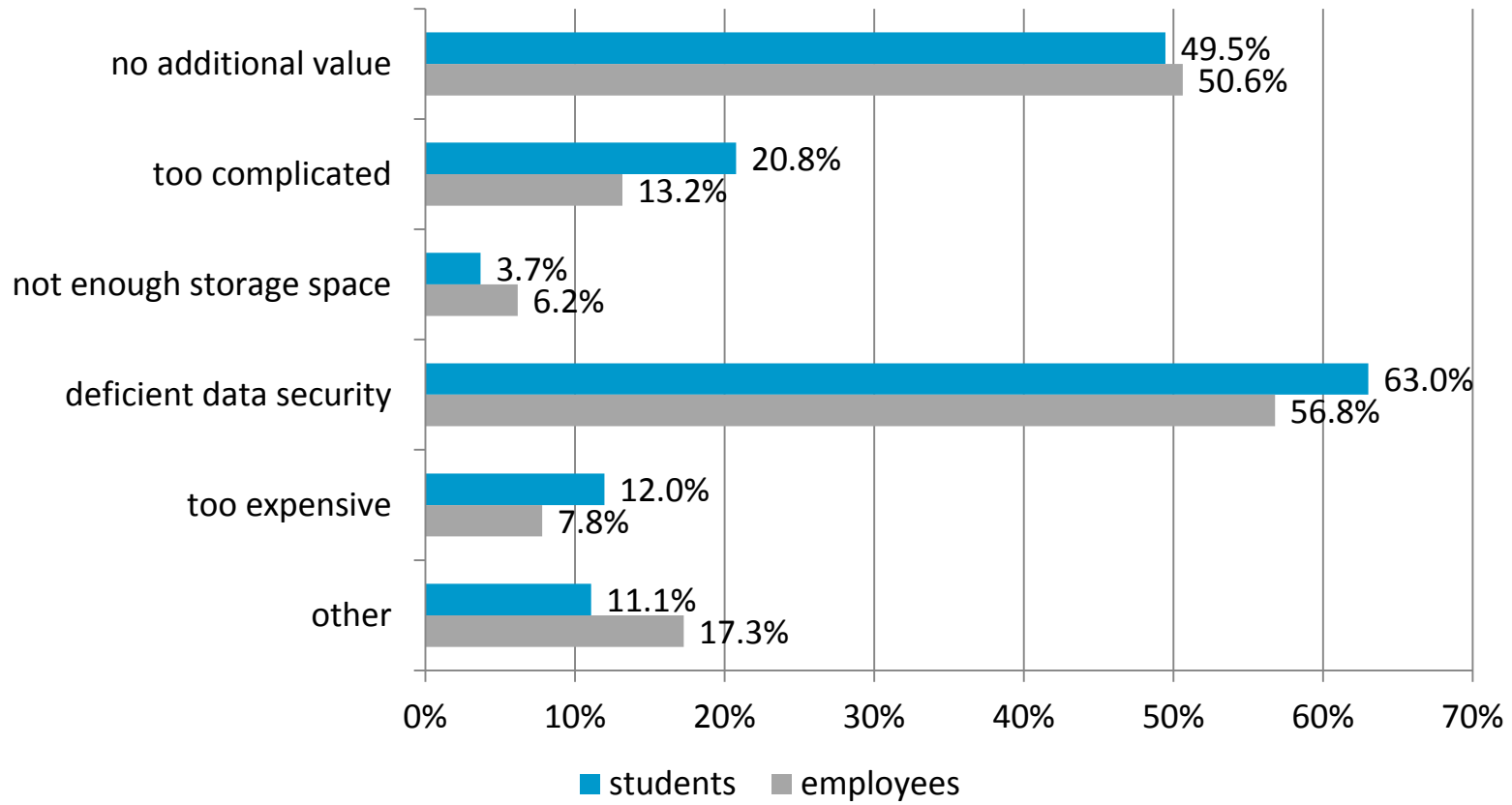
Previous usage of cloud services by WWU users (students and employees)



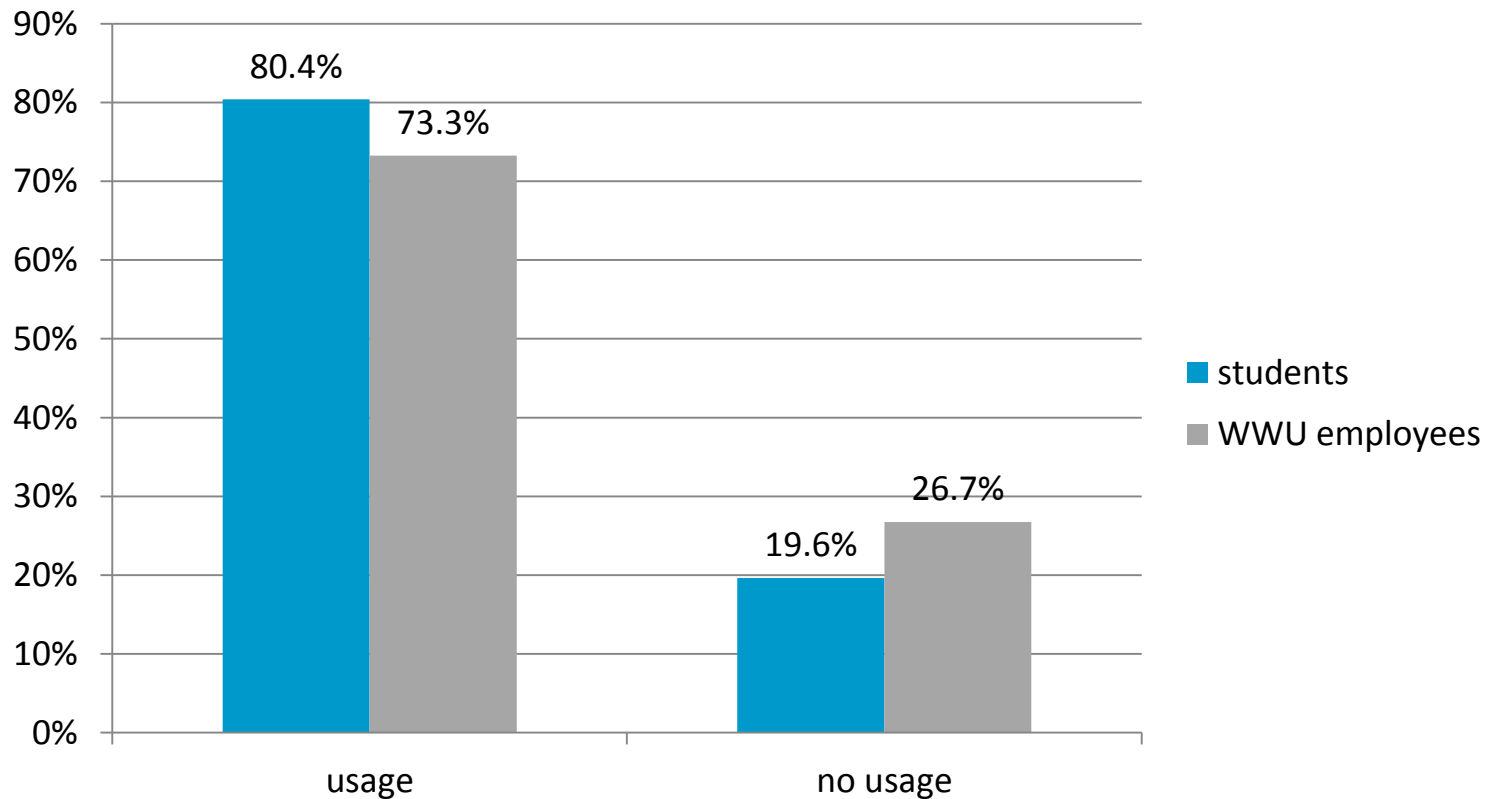
Storage Cloud Service: Usage amongst WWU students and employees



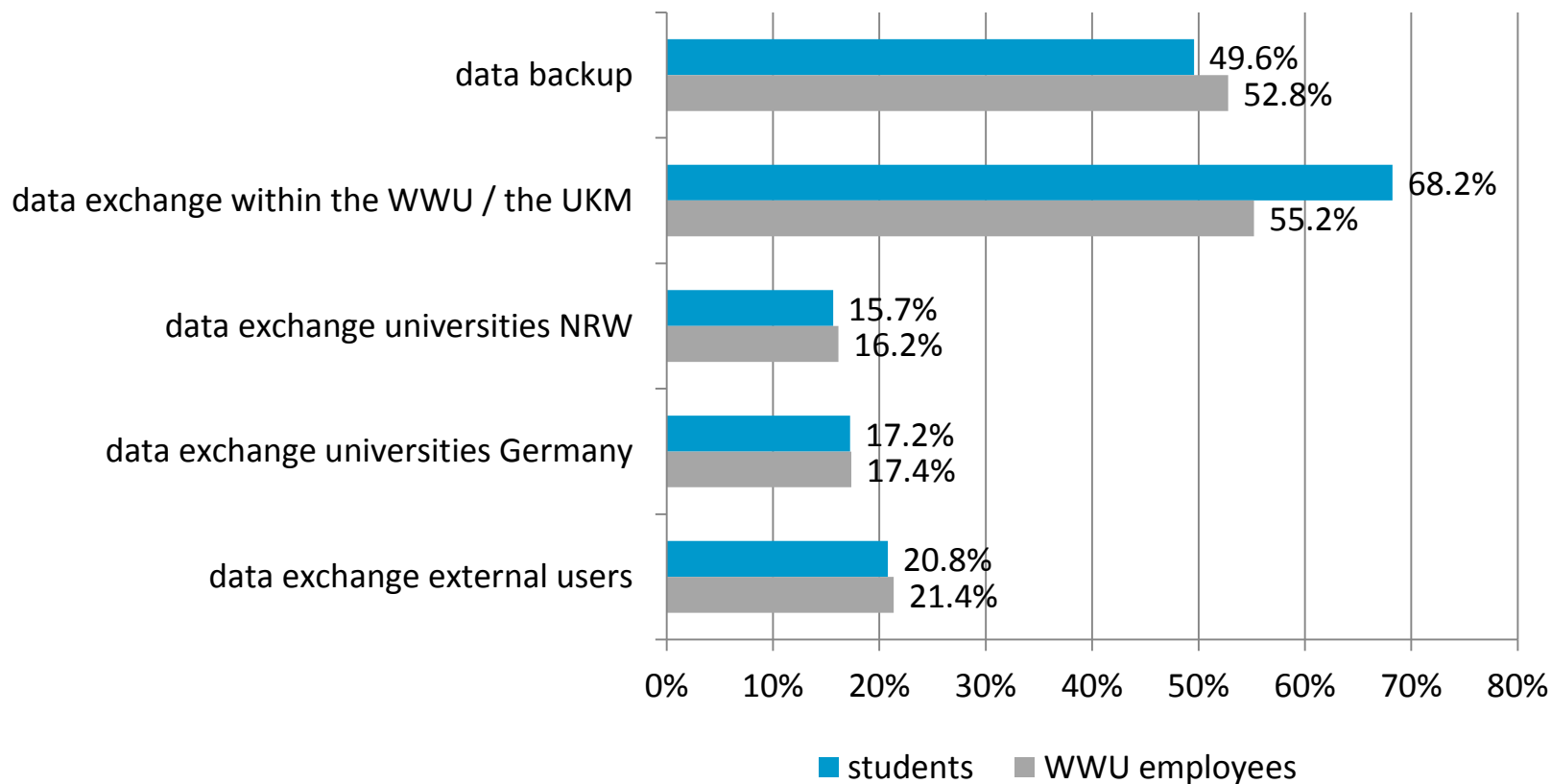
Reasons for not using cloud storage: Students vs. employees



Willingness to use on-premise storage cloud : Students vs. employees



Intended usage for on premise cloud storage : Students vs. employees



Sync&Share NRW Timeline



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Market and Products for Sync&Share

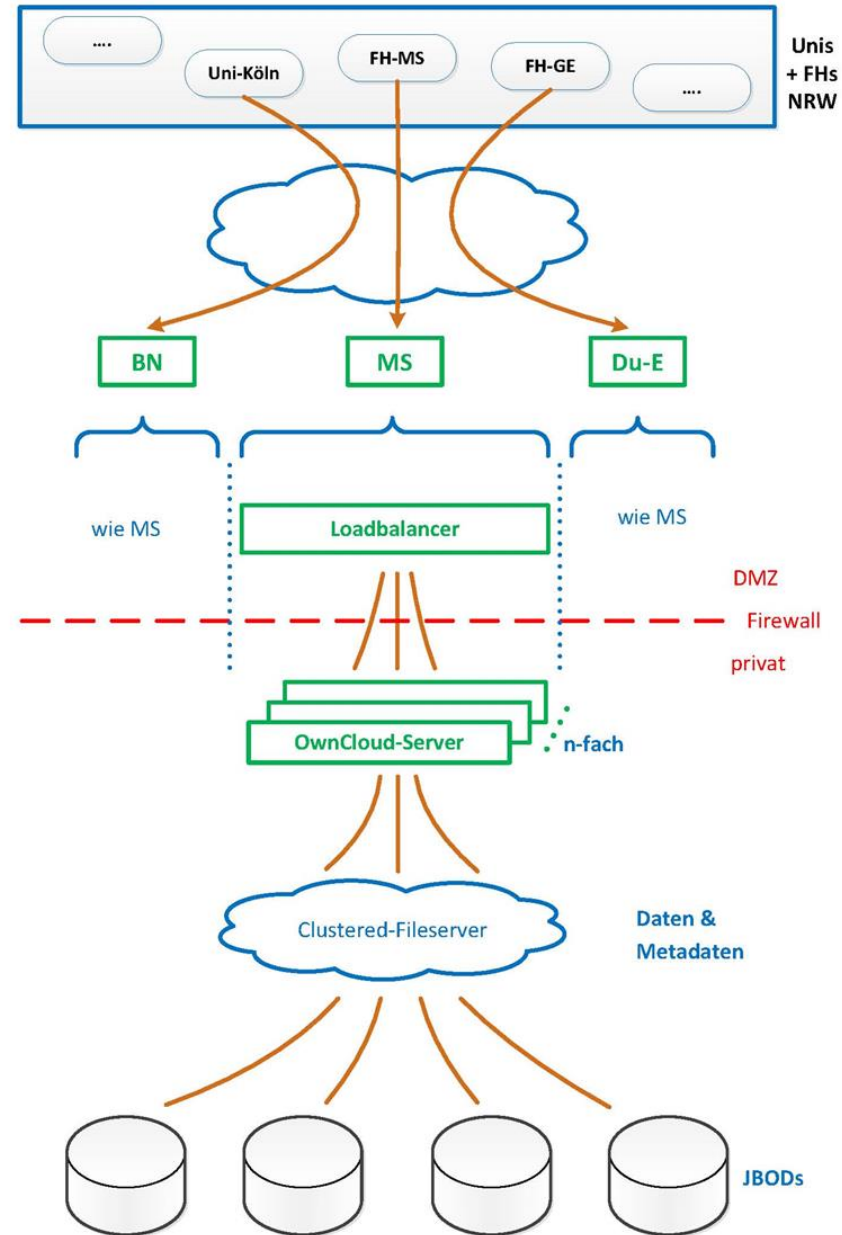
- Evaluated software solutions for Sync&Share in Summer of 2012:
 - iFolder (students recommendation; Open Source)
 - Powerfolder (tests at GWDG Göttingen; commercial)
 - TeamDrive (commercial)
 - OwnCloud (then new; Open Source)
- Sync&Share Solutions: Software + Plattform
 - IBM GPFS GSS appliance with OwnCloud
 - EMC ISILON with Syncplicity (or OwnCloud)
 - Object stores: DELL (Grau Data), DDN (Mezeo), HDS (HCP Anywhere)

Sync&Share NRW - service characteristics

- User self enrolment (keep management effort down)
- Aim for 30 GB per user; 400GB for scientific work groups (better than dropbox)
 - -> 6 PB highly available storage space envisioned to be needed
- Sync clients for common platforms (Win, Mac, Linux, Android, iOS)
- Web interface: eg. to share data with other users
- Limited external (non academic community) users possible
- No additional backup of stored data – Sync&Share!
- Approx. 60% of NRW Uni FTE/students committed; possibly more
- Service provided by 3 university computer centers (MS, BN, DU-E) for the consortium - best effort service

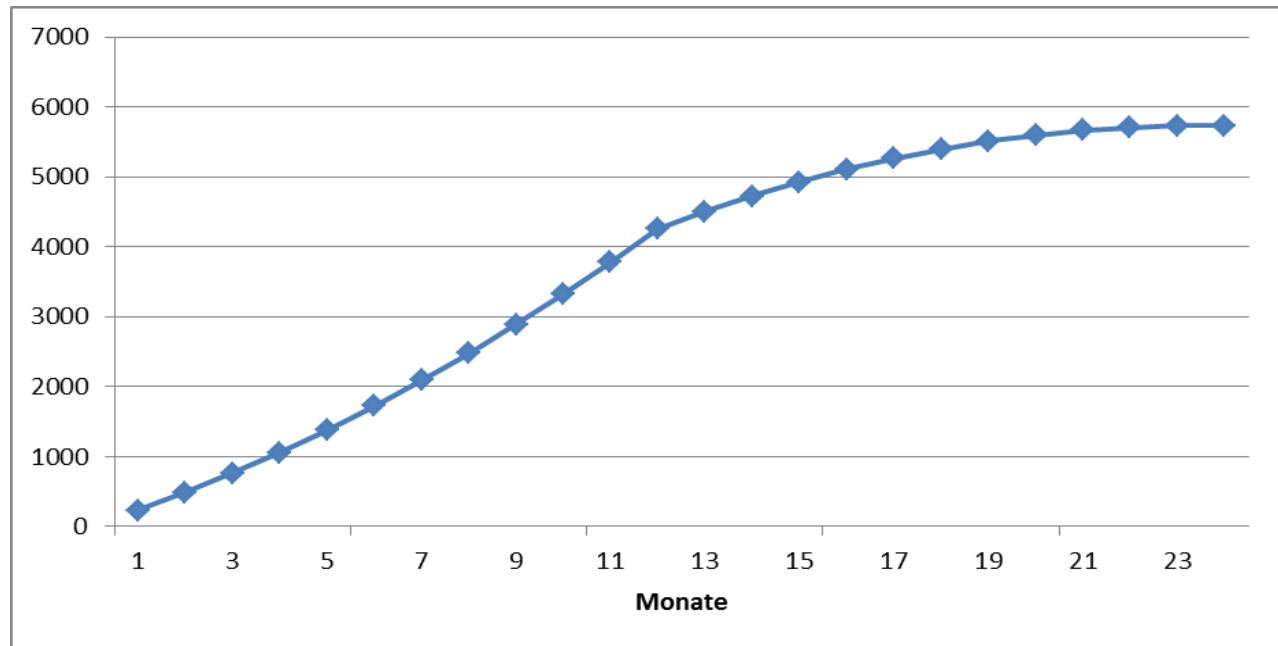
Schematic view of system architecture

Service distributed to three university data centers to keep resource demand in acceptable limits.



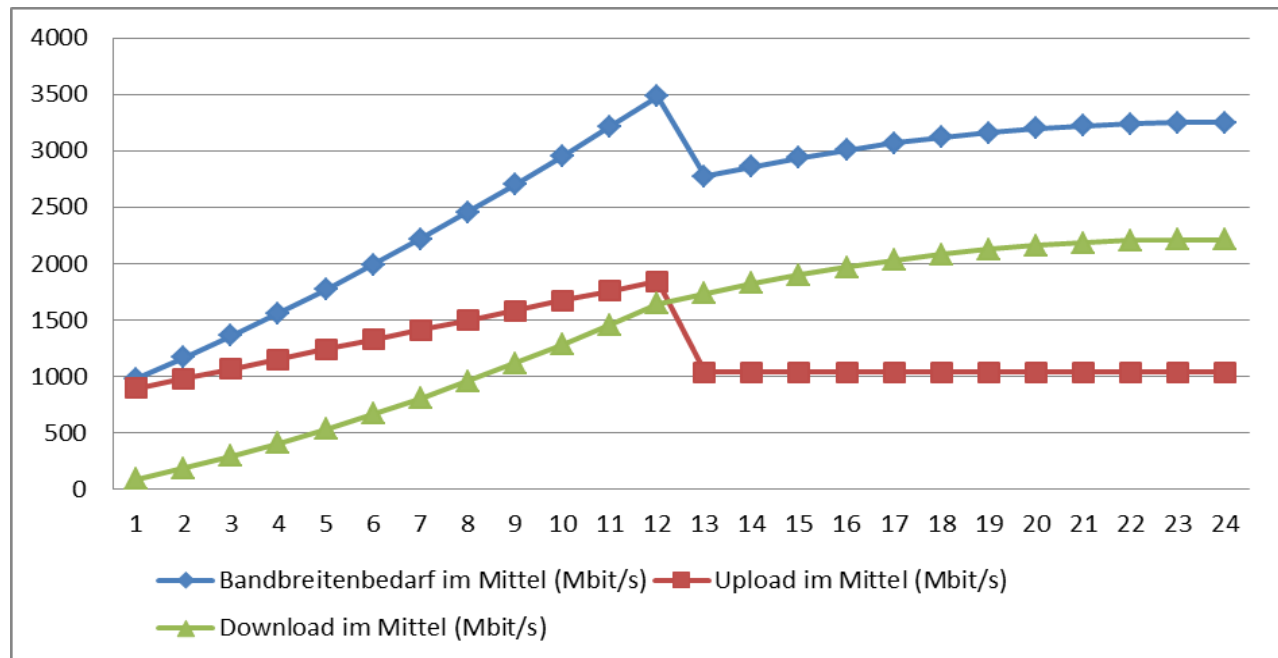
Model prediction:

Data volume
in storage cloud



Model prediction:

Network bandwidth
demand (all 3 sites)



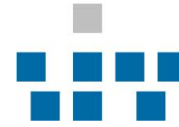
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Thank you very much for your attention!

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