

Challenging Dropbox:

The Adoption and Usage of New Cloud Storage Service “sciebo” at German Universities

Dominik Rudolph, Raimund Vogl, Holger Angenent, Anne Thoring,
Andreas Wilmer, Christian Schild
WWU Münster

Academia & Cloud Services

Advantages of cloud services

- Worldwide accessibility of data
- Most recent versions of documents on all devices
- Easy exchange and collaboration

Concerns about commercial providers

- Data security (sensitive research results, confidential information on grades, exams, assessments etc.)
- Terms of use grant operators extensive rights
- Locations abroad with less strict data protection laws
- Commercial interests

Academia & Cloud Services

What is sciebo?

Sciebo (“science box”) is a secure sync & share cloud storage service for academic research and education in North-Rhine Westphalia (NRW).

- 5.000.000 GB storage volume
- 2.800.000 € public grants
- 250.000 potential users – 50.000 by now
- 30 GB+ storage volume for each user
- 25 participating institutions
- 3 data center sites at universities
- Launch: 02.02.2015



Research Focus

Research questions

How has sciebo developed during the first year of service in terms of ... ?

- Adoption, compared with the assumptions of Diffusion Theory
- Usage (storage demand, bandwidth)
- Performance

Predictions I

Adoption

- The diffusion of sciebo will follow the diffusion curve according to Rogers.
- Due to relative advantages and users' knowledge of the technology sciebo will diffuse faster than Dropbox (within their respective populations).

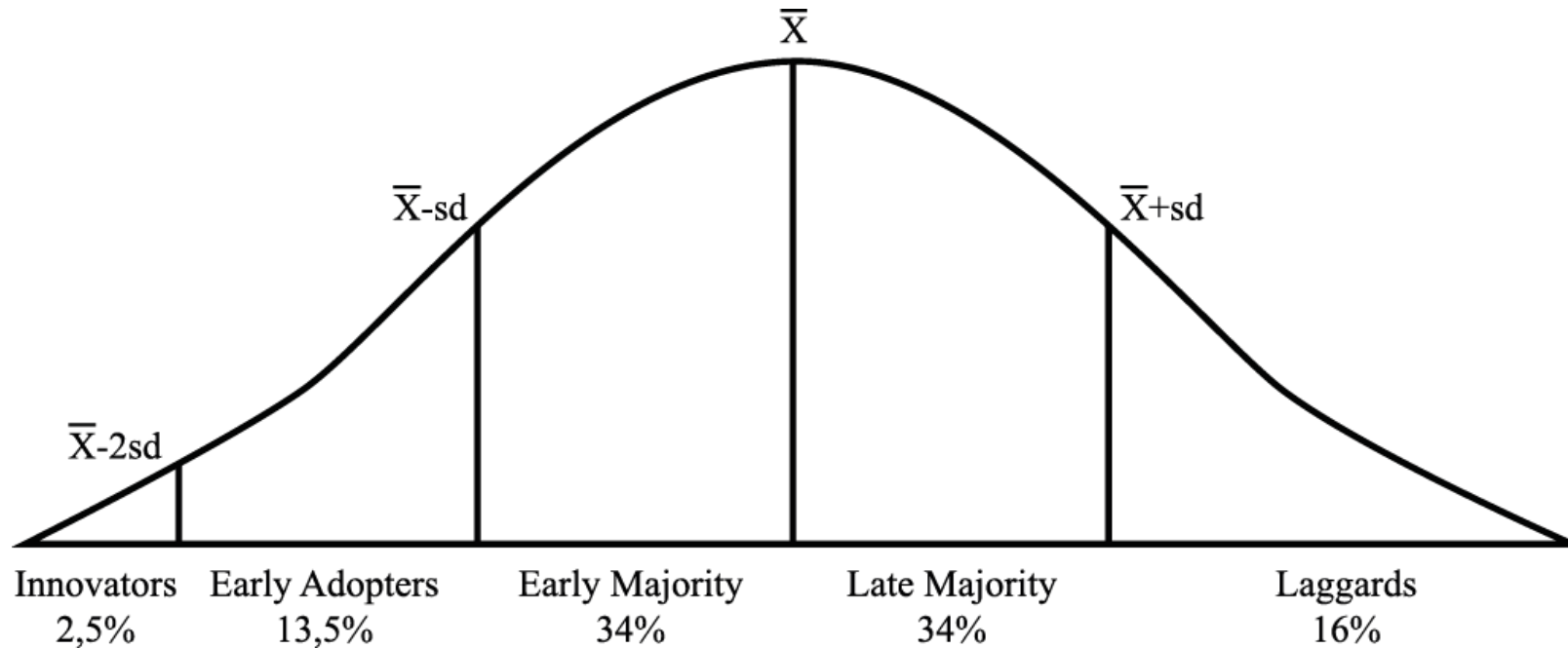
Usage

Storage demand

- Each user will need an average storage volume of 8 GB (pessimistic scenario) to 16 GB (optimistic scenario). A maximum storage space of 30 GB will fit most users.
- Growth will be quite linear, with a 30 percent basis synchronization at the beginning and just small gain of 3 percent a month.

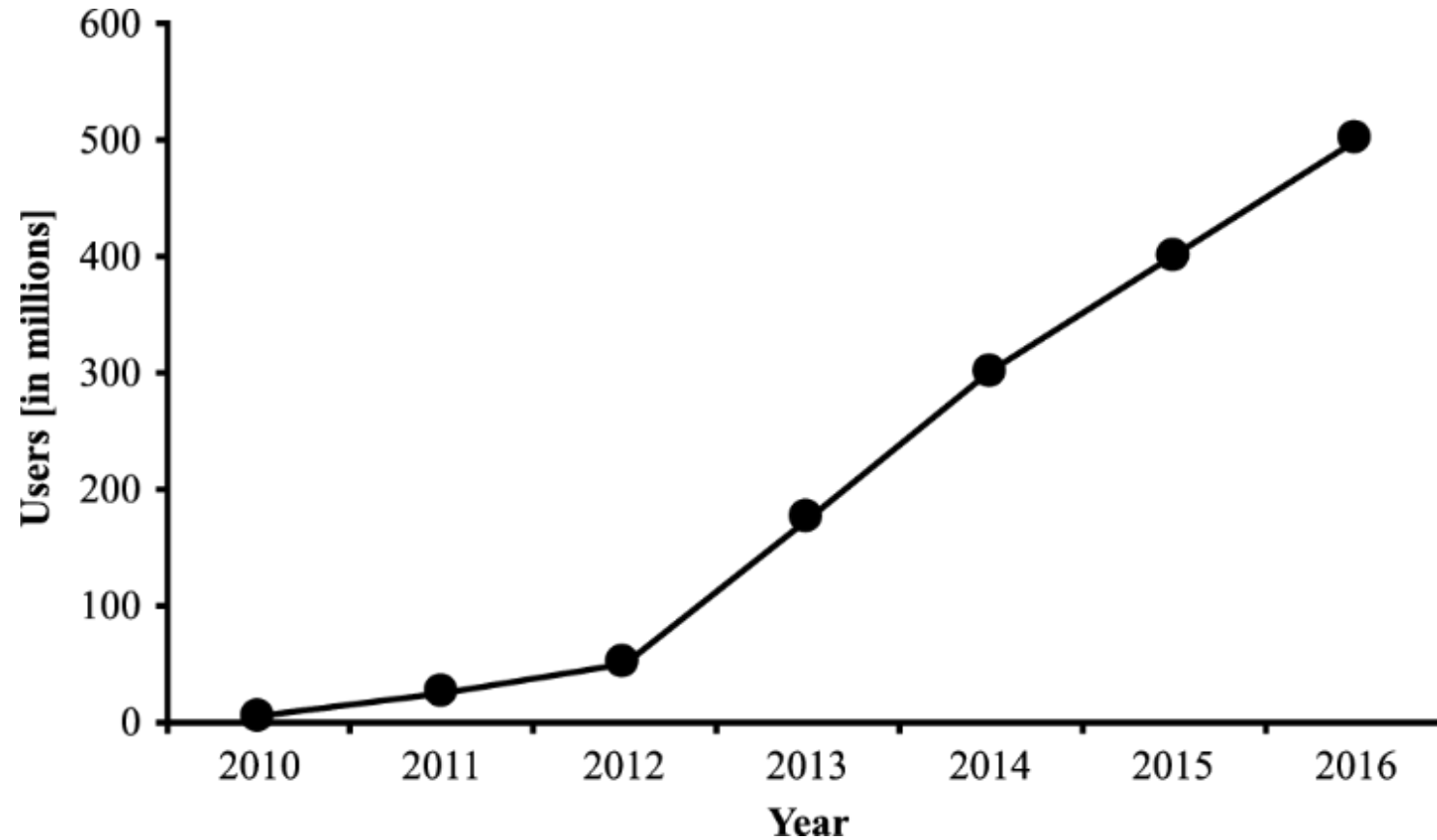
Diffusion of Innovations

Adopter categories (Rogers 2003)



Diffusion of Innovations

Diffusion of Dropbox (Dropbox 2016)



Predictions II

Usage

Bandwidth

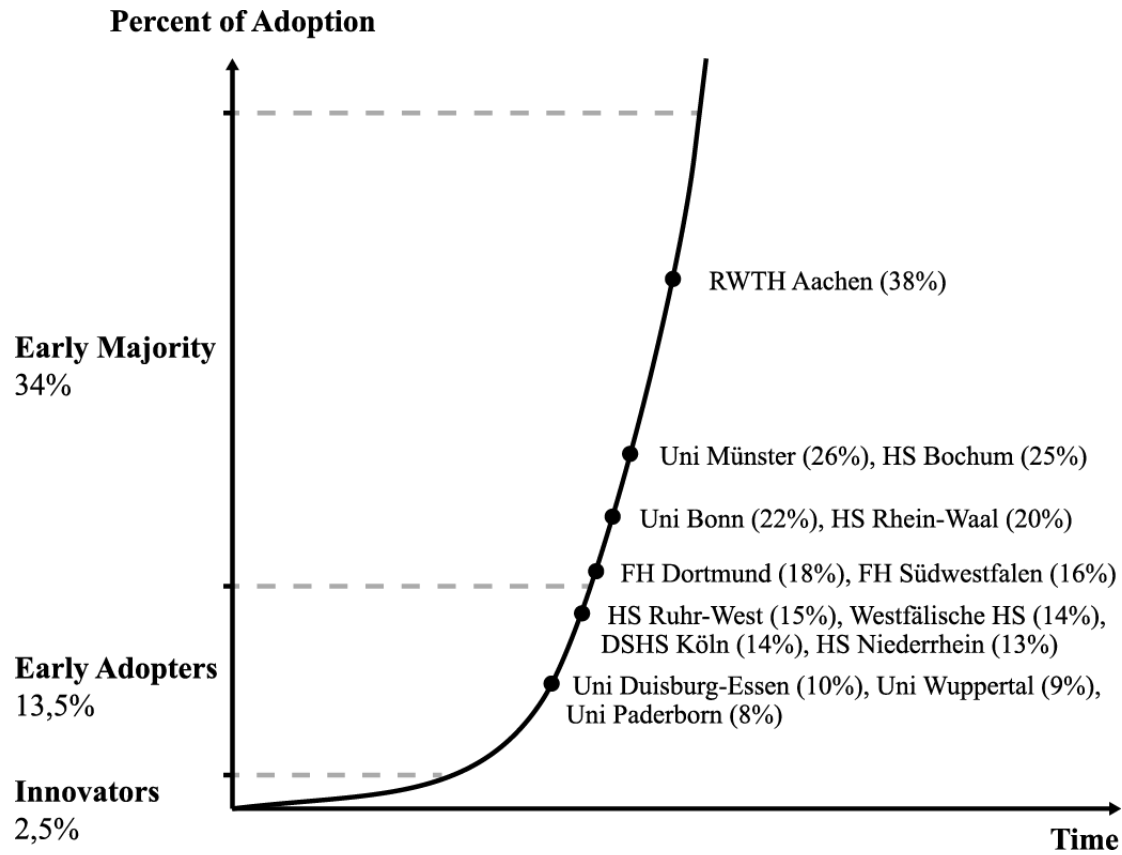
- According to an optimistic scenario, the estimated internet connection bandwidth required for service operation will be 3 Gbps (approx. 1 GB for each site).

Performance

- Availability scores will be 99.5% per year for each of the sites with a minimum of 98% per month.

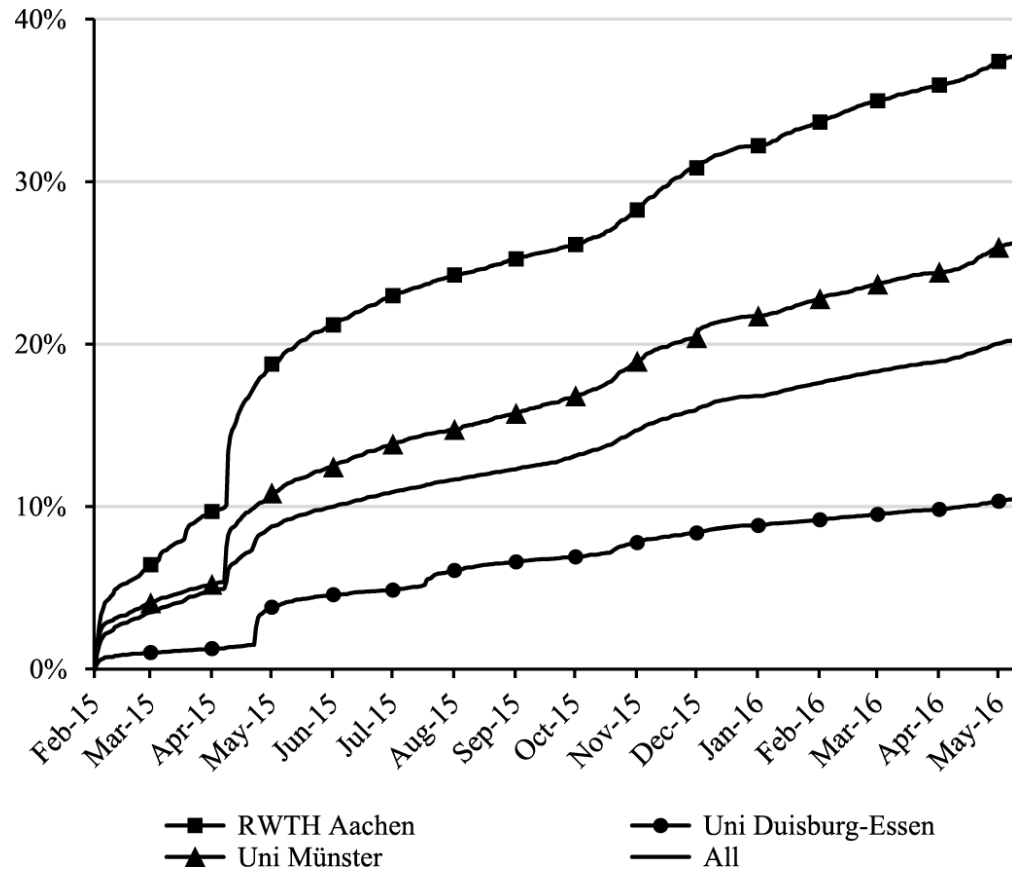
Adoption

Diffusion of sciebo after one year of service



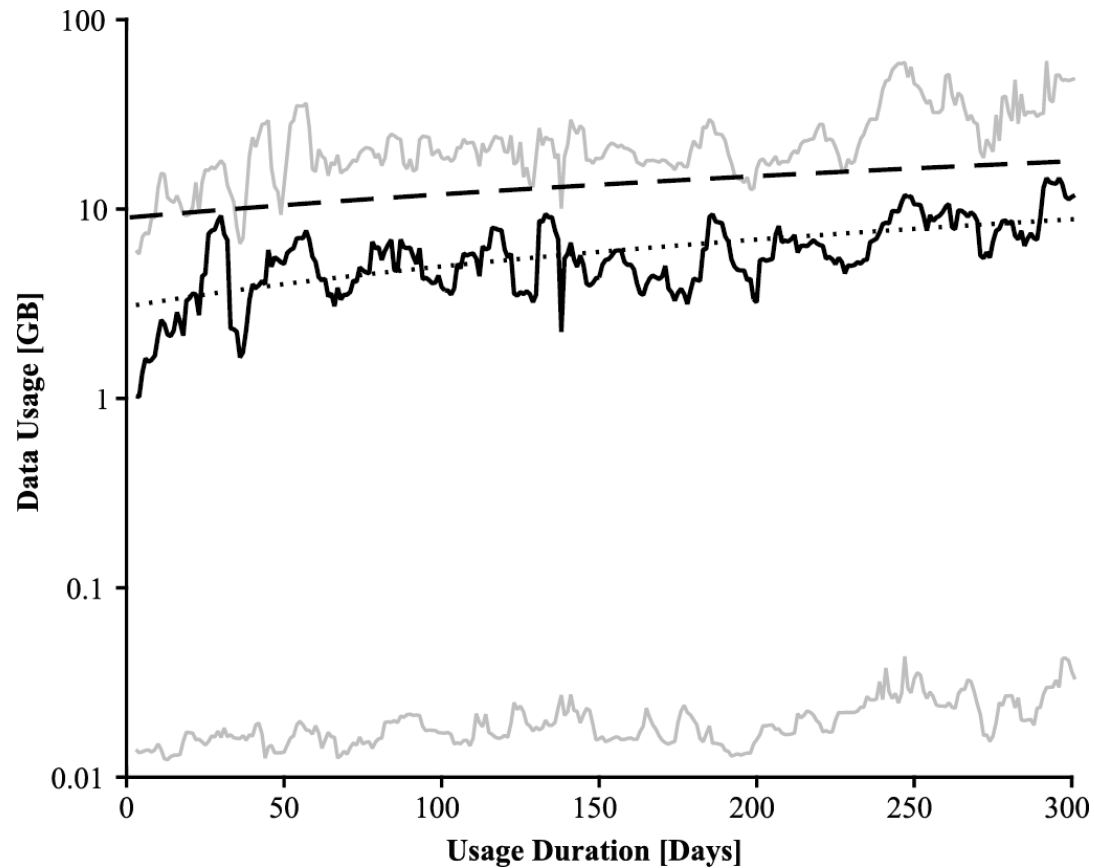
Adoption

Diffusion curves of chosen universities with the same size starting Feb 2015



Usage

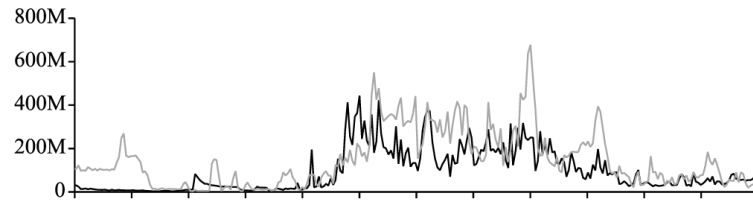
Storage load on individual user basis per time vs. model



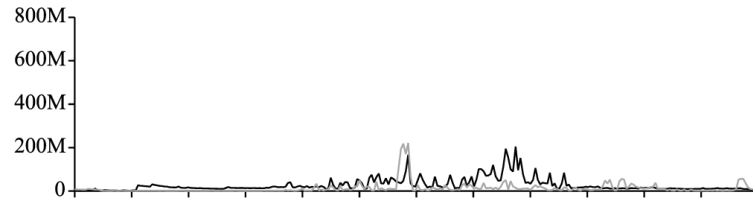
Usage

Bandwidth

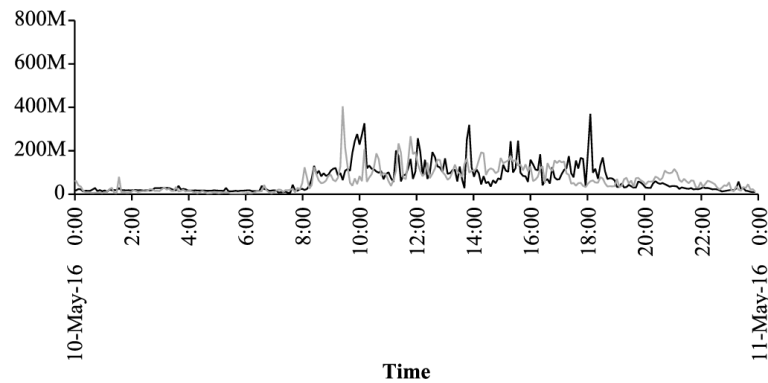
HP59SNS-A-Bridge-Aggregation10-972
BW: 20.0 G



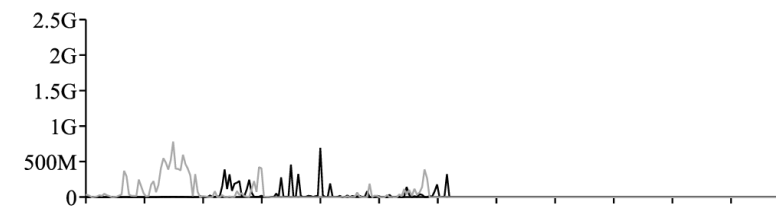
HP59SNS-B-Bridge-Aggregation10-972
BW: 20.0 G



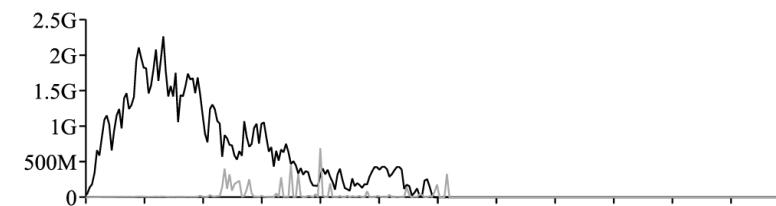
HP59SNS-C-Bridge-Aggregation10-973
BW: 20.0 G



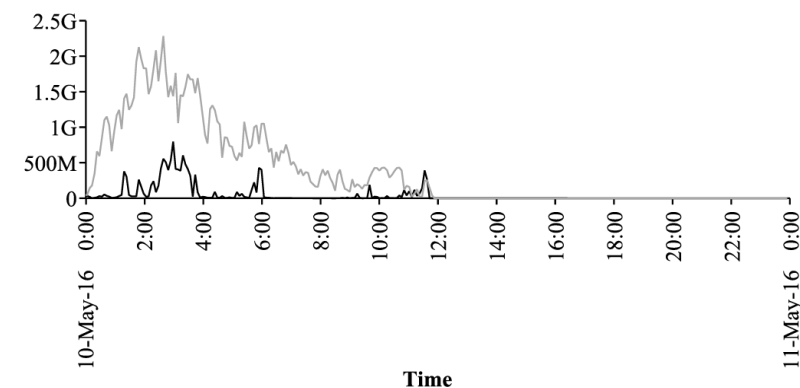
HP59SNS-A-Route-Aggregation30-17093
BW: 20.0 G



HP59SNS-B-Route-Aggregation30-17094
BW: 20.0 G



HP59SNS-C-Route-Aggregation29-17094
BW: 20.0 G



Performance

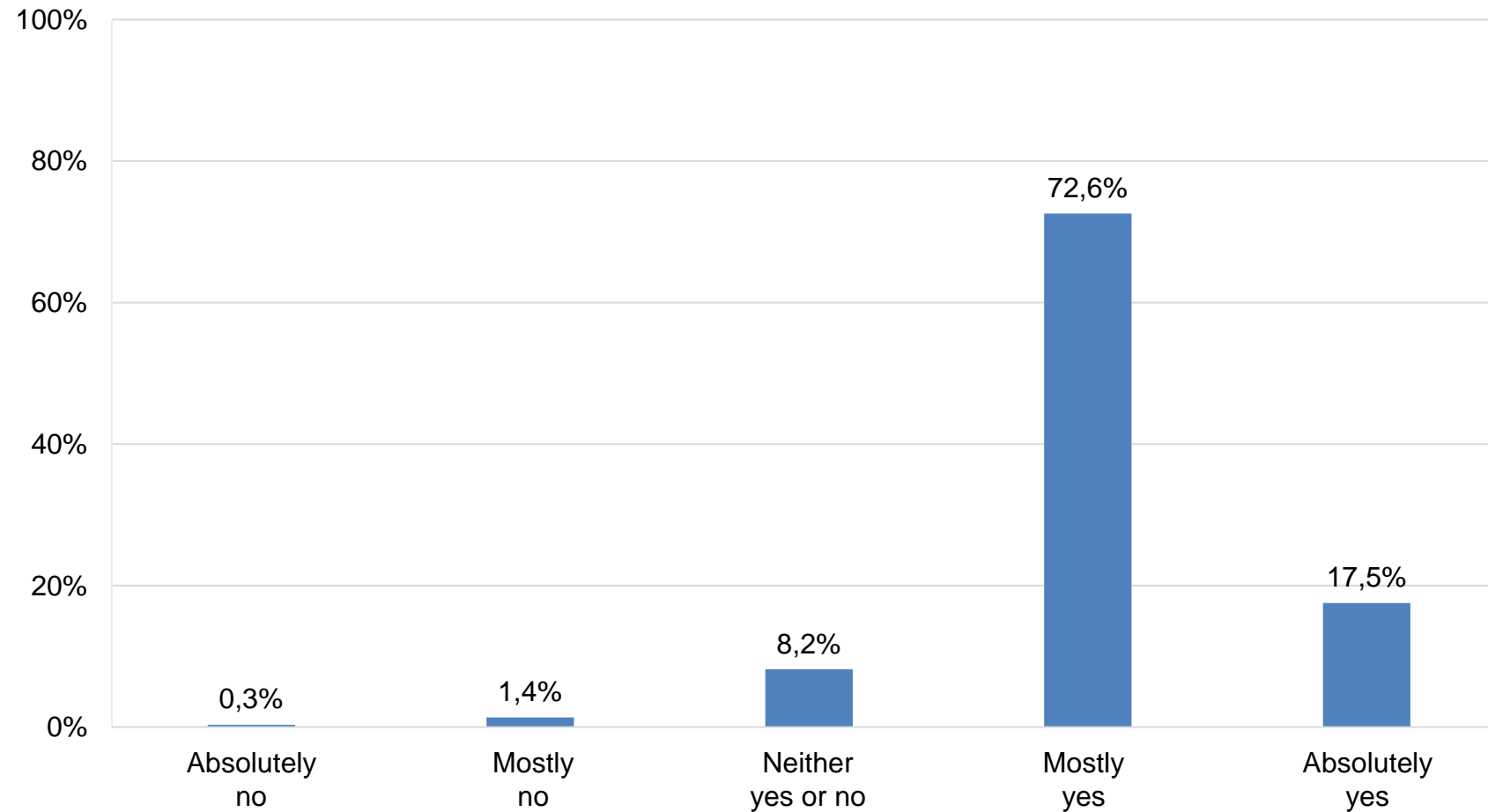
Availability scores (in %) for the tree sites hosting sciebo

	Site A	Site B	Site C
Jan 2016	99.76	100.00	99.93
Feb 2016	99.16	99.66	99.56
Mar 2016	95.69	99.91	98.52
Apr 2016	99.99	100.00	98.93
Mar 15 – Apr 16	99.41	99.81	99.68

User Evaluation (recent work)

Users' trust in sciebo

(n=4,572)

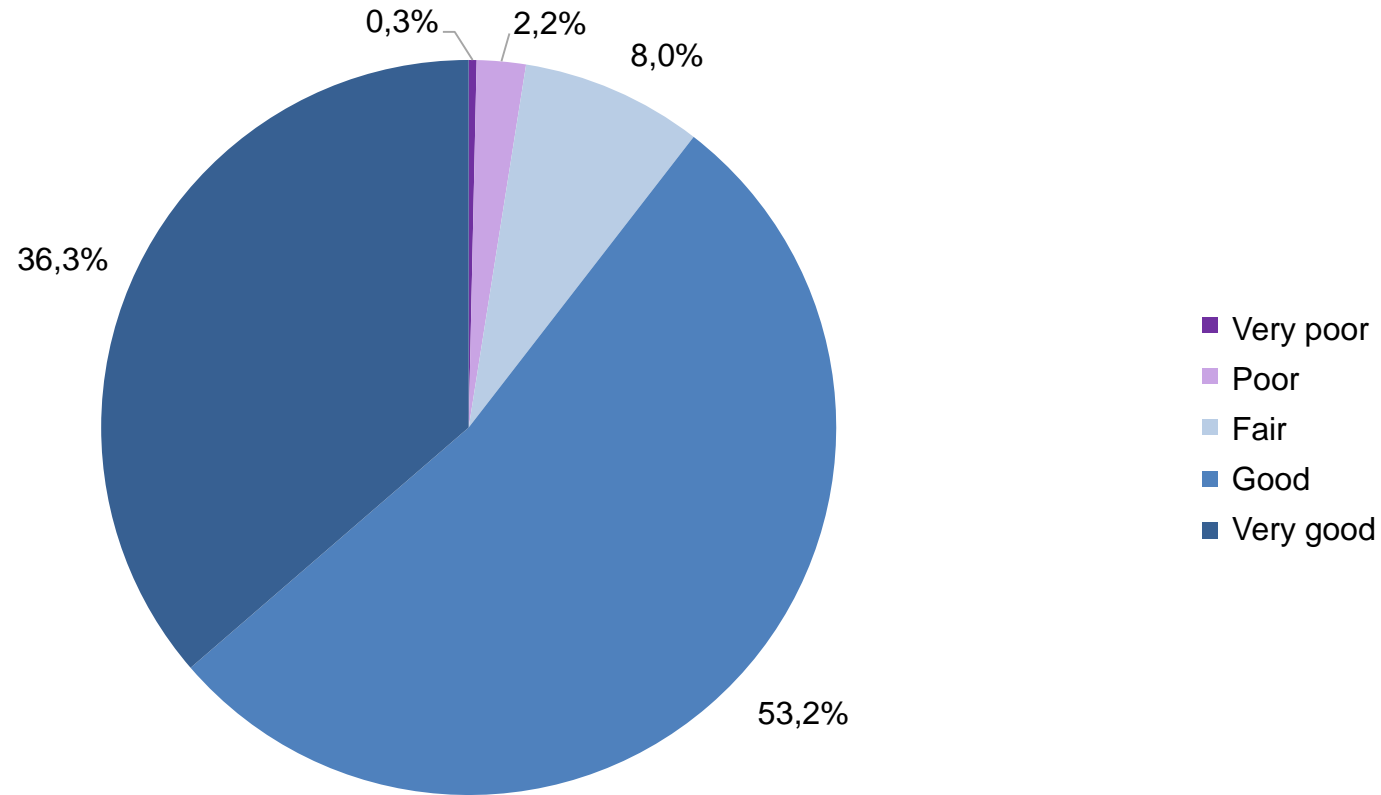


14

User Evaluation (recent work)

Users' overall evaluation of sciebo

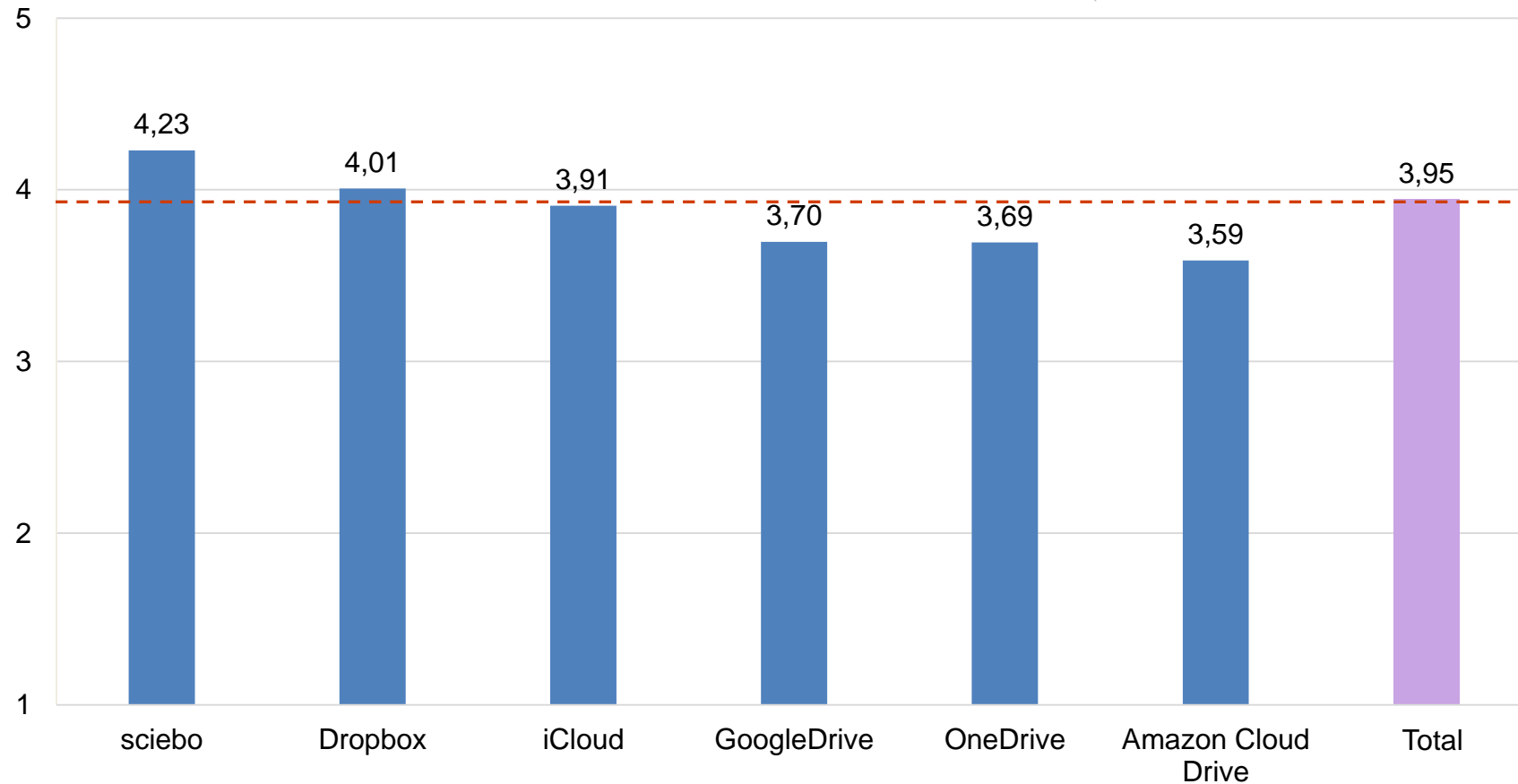
(n=4,645)



User Evaluation (recent work)

Users' overall evaluation of different cloud services (comparison of means)

(n.min=365, n.max=12.754, without n.total)



Conclusion

- Diffusion speed depends on:
 - share of technophiles within the institution
 - marketing measures
- no influence of organization size measurable
- Fast growth
- System performance and availability: targets met
- High trust and user satisfaction