

INTERNET2



May 8-11, 2023

Atlanta, GA



Tackling Storage Challenges Together

PRESENTERS:

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Tackling Storage
Challenges Together



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Why is Community Important?



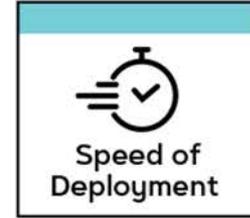
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what
**MATTERS
MOST**
for your
cloud
services?



NET+

History of our work on NET+ Google Workspace for Education

- 2020: Service Evaluation begins
- 2021: Google introduced storage limits
- 2021: 25+ universities participated in the negotiations
- 2021: Cloud Storage Working Group was created
- 2021 to 2023: Focus on storage management



Common Challenges

There are gaps in some foundational components:

- Policy - retention, storage, reasonable use
- Alternative Storage solutions
- Underserved research use cases

Coming to the best decision for the good of the institution:

- Finding the right balance, who gets what services at what level
- Aligning right players on an approach
- Creation of use policies

Common Challenges Cont...

Communication and change management:

- Communication of approach
- Crafting the right messaging
- Finding or building training and resources to help users

Assessing organizational impact:

- Users finding time to move data
- Amount of time and resources it's taking away from the IT teams responsible for Google Workspace for Education for their school

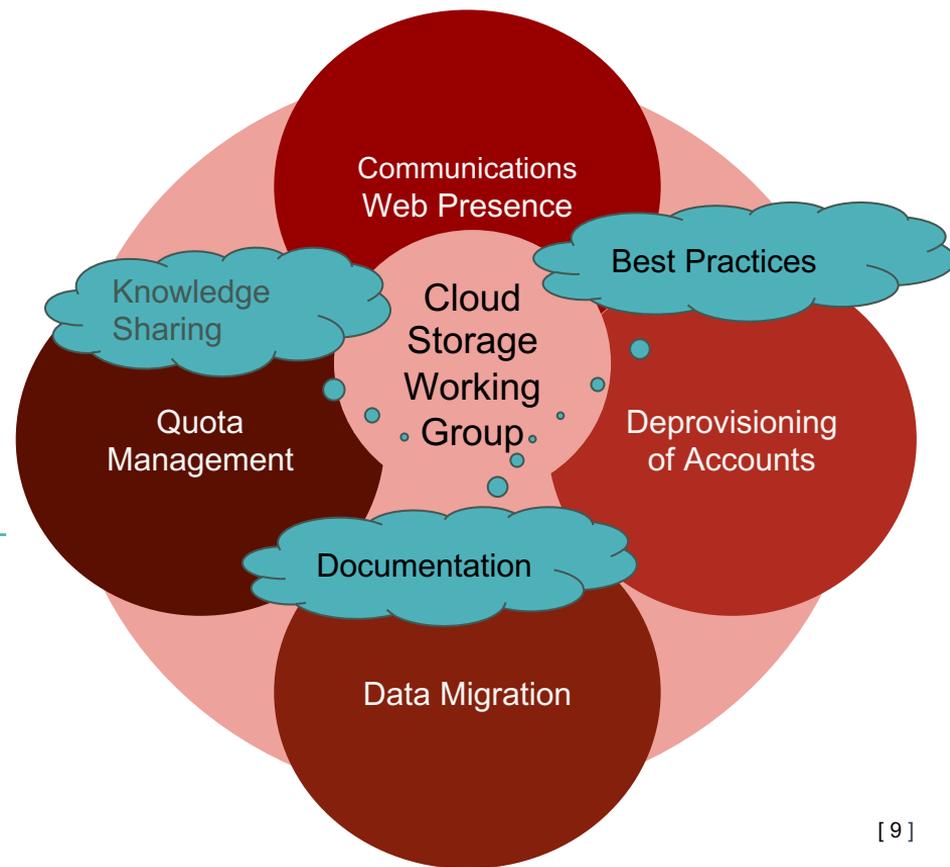
Tools

- Google's lack of tools (or tools delivered later than expected)

Internet2 NET+ Google Workspace for Education

Cloud Storage Working Group

<https://spaces.at.internet2.edu/x/xoEgCw>
cloud-storage-working-group@internet2.edu



Approaches and experiences

- Role of Google at each institution
- Fundamentals (Base Licensing, limited storage) vs. Google Workspace for Education Plus (more storage, more advanced security tools)
- Pay for overages or reduce storage used
- Types of quota structures
- How centralized or distributed the decision-making is
- Storage policies: Specifically Google-centric or more encompassing
- Implementation of quotas: New accounts first or existing accounts first

Deprovisioning of Accounts

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Cloud Storage Working Group - Deprovisioning of Accounts

<https://spaces.at.internet2.edu/x/HZPqDg>
cswg-account-deprovisioning@internet2.edu



Participants:

- Chuck Boeheim, Cornell University - LEAD
- Amanda Caton, Lehigh University
- Andy Smith, The George Washington University
- Annette Aquino, Arizona State University
- Ben Poliakoff, Reed University
- Brian Cors, University of Michigan
- Chris Clements, San Diego State University
- Craig Hynes, Rutgers University
- Dana Voss, Internet2
- David Karnowski, University of Wisconsin-Madison
- Ian Crew, University of California - Berkeley
- Jake Burggraaf, Arizona State University
- John Kelly, Notre Dame University
- Josh Casper, University of Minnesota
- Justin Booth, Michigan State University
- Justin Moore, Portland State University
- Justin Zemlyak, Indiana University
- Katie Weber, University of Minnesota
- Lee Alexander, University of Illinois - Urbana
- Marc Cogle, Rice University
- Mark Debonis, Virginia Tech University
- Matt Deal, North Carolina State University
- Mike Reeves, University of Minnesota
- Pirooz Jolani, The George Washington U
- Sabila Husain, Harvard University
- Steve Nguyen, University of Minnesota

What do you need to accomplish?

- Storage reduction
- License management
- End service for a population (e.g. alumni)
- Migrate to a different service
- Avoid breakage for collaborators
- Retain institutional data
- Comply with institutional retention rules

Most Common Steps

Prevent Access during holding period

- Set user quota to zero
- Turn off services
- Remove license
- Suspend user
- Rename user
- Change password, revoke tokens
- Remove Drive sharing with Drive Trust Rules
- Label or rename content for visibility

Warn Collaborators

- Rename user to show status
- Add label to files (requires license)
- Encourage users to make copy or move to shared drive

Remove Data

- Delete Drive Content with GAM
- Delete Drive Content with Vault retention rules
- Move content from Drive to a service account
- Delete account

Resources

[Deprovisioning of Accounts wiki site](#)

[Deprovisioning of Accounts workgroup email](#)

[Public folder with Deprovisioning of Accounts Examples and Documentation](#)

[Useful information for Google Workspace admins \(especially new ones\)](#)

[Cornell University Deprovisioning of Accounts document](#)

[Internet2/Google webinar series presentations and links to resources](#)


April 6, 2023 Presentation



NC STATE
UNIVERSITY

Berkeley
UNIVERSITY OF CALIFORNIA

Quota Management

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Cloud Storage Working Group - Quota Management

<https://spaces.at.internet2.edu/x/N4RQDw>
cswg-quota-management@internet2.edu



Participants:

- Justin Zemlyak, Indiana University - LEAD
- David Barks, University of Maryland College Park - LEAD
- Amanda Caton, Lehigh University
- Annette Aquino, Arizona State University
- Chris Clements, San Diego State University
- Christina Gomez, University of Wisconsin-Madison
- Chuck Boeheim, Cornell University
- Dana Voss, Internet2
- David Karnowski, University of Wisconsin-Madison
- David Severance, University of California, Irvine
- Dianna Betts, Cornell University
- Jake Burggraff, Arizona State University
- Jed Rogge, University of California, Irvine
- John Entrup, Cornell University
- John Kelly, University of Notre Dame
- Josh Casper, University of Minnesota
- Justin Booth, Michigan State University
- Justin Hendrix, Virginia Tech
- Kyle Cooper, Rice University
- Lee Alexander, University of Illinois - Urbana
- Marc Cogle, Rice University
- Matt Deal, North Carolina State University
- Philip Reinhart, New York University
- Sabila Husain, Harvard University
- Steve Nguyen, University of Minnesota
- Steve Sobiech, North Dakota State University
- Tim Champ, University of Maryland, Baltimore County

Quota Management Goals

- Manage storage growth
 - Determine what user populations need Quotas, what quotas are appropriate, and when those quotas will be enabled
 - Determine a plan for shared drives
 - Consider setting quotas at the OU or group level
- Enable all to do their work
- Socialize the idea of “the end of unlimited”
- Give users pathways to move data to other platforms

Resources

[Quota Management wiki site](#)

[Quota Management workgroup email](#)

[What Counts as Storage](#)

[Overview of Google Storage - 5 pages](#)

[Buy More Storage](#)

[Internet2/Google webinar series presentations and links to resources](#)

INTERNET2 2023 COMMUNITY EXCHANGE



April 11, 2023 Presentation



Data Migration

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Cloud Storage Working Group - Data Migration

<https://spaces.at.internet2.edu/x/hoVQDw>
cswg-data-migration@internet2.edu



Participants:

- Annette Aquino, Arizona State University
- Dana Voss, Internet2
- David Cavalieri - CU Boulder - LEAD
- Hellen Zziwa, Harvard - LEAD
- Jake Burggraaf, Arizona State University
- John Entrup, Cornell
- Josh Casper, University of Minnesota
- Justin Hendrix, Virginia Tech
- Kitty Bridges, New York University
- Kyle Kurr, UCI
- Kyle Cooper, Rice University
- Marc Cogle, Rice
- Matt Deal, North Carolina State University
- Michael Balak, University of Minnesota
- Quyen Vaillant - Internet2
- Sabila Husain, Harvard University
- Steve Nguyen, University of Minnesota
- Steve Sobiech, NDSU
- Tron Compton-Engle, CWRU

Internet2 Data Migration RFI

Request For Information built

- Questions provided by Data Migration Workgroup
- Reviewed, fine-tuned with input from the NET+ GWfE SAB
- Nov 2022 - Feb 2023

RFI Released [RFI page](#)

- Feb 14, 2023

RFI Responses Received

- March 17, 2023

Vendor Responses

Ranked

- 8 institutions and Internet2 participated in the scoring

Top 3 Vendors

- CloudM
- DryvIQ
- Globus

How NET+ Services Help Speed Up Access to the Cloud for R&E

REDUCE TIME

Pre-negotiated terms and conditions developed by peer higher education institutions

Service providers are required to complete and provide standard compliance documentation

REDUCE COST

Volume discounting based on the size of the Internet2 membership

Legal negotiation costs supported by community participation in the negotiation

REDUCE RISK

Contracts capture important compliance and legal requirements for higher education

Pricing backed by a Facilitation Agreement with Internet2 – typically with a multi-year term and capped price increases

Key Elements of a NET+ Cloud Service



Developed through a community led **Service Evaluation Process**

Reviewing services to ensure they meet higher education standards in areas such as functional, technical, security and compliance, business and legal, and other areas of importance.

Backed by a group negotiated **Facilitation Agreement**

Ensuring standard and differentiated higher education contract terms and conditions, and discounting for qualified institutions.

Supported and maintained by a **Service Advisory Board and Program Manager**

Convening the community in meaningful ways around cloud services while supporting ongoing management of the service offering.

NET+ Service Evaluation Components

Functional Assessment

- Review features and functionality
- Tune service for research and education community

Technical Integration

- Network: determine optimal connection and optimize service to use the Internet2 R&E network
- Identity: InCommon participation and community identity toolkit support

Security and Compliance

- Security assessments
- FERPA, HIPAA, privacy, data handling
- Accessibility

Business

- Legal: customized agreement using NET+ community contract templates
- Business model
- Define pricing and value proposition

Deployment

- Documentation
- Use cases
- Support model

Contact dvoss@internet2.edu to express interest in participating in the service evaluation

Next Steps

- Need support from 5 - 7 Internet2 member institutions for each of the top vendors selected
- Contact Dana Voss dvoss@internet2.edu if interested

Resources

[Data Migration wiki site](#)

[Data Migration workgroup email](#)

[Internet2/Google webinar series presentations and links to resources](#)



April 20, 2023 Presentation



University of Colorado **Boulder**



HARVARD
UNIVERSITY



RICE UNIVERSITY

Communications

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Cloud Storage Working Group - Communications

<https://spaces.at.internet2.edu/x/G4RQDw>
cswg-communication@internet2.edu



Participants:

- Amanda Pecora-DeFazio, Rutgers University
- Allison Oslund, Texas A&M University
- Annette Aquino, Arizona State University
- Chris Bard, Rice University
- Christina Gomez, University of Wisconsin - Madison
- Dana Voss, Internet2
- Jake Burggraaf, Arizona State University
- Katie McInerney, North Carolina State University
- Kellie Greaves, University of Minnesota
- **Matt Klein, Cornell University (Workgroup Lead)**
- Monica McSharry, New York University
- Sabila Husain, Harvard University
- Sarah Bailey, University of California, Berkeley
- Sarah Noell, North Carolina State University
- Steven Nguyen, University of Minnesota
- Xanat Hernandez Alvarez, University of California, Irvine

Resources

Communication Group page: <https://spaces.at.internet2.edu/x/G4RQDw>

Links to resources:

Cornell University

Status as of April 2023: Quotas imposed. Terms for past alumni under review, but they will be able to keep Gmail. 15GB default for faculty, staff, and students and more can be requested. Google services will end for new alumni the November after they graduate. Students and alumni can switch to Office 365 email if they want.

- [Mass emails to faculty and staff, alumni, and students](#)
- [Strategic Storage Initiative](#) website
- [Google File Ownership - the Good, the Bad and the Ugly](#)

Indiana University

- [About Changes to Storage in Google at IU](#) website
- [About the Student Email Move from Gmail at IU to Exchange](#) website

Resources - continued

Communication Group page: <https://spaces.at.internet2.edu/x/G4RQDw>

Lewis & Clark College: [Communication to End Users Regarding Account Deletion](#)

University of California, Irvine:

- [GWE project Page](#)
- [GWE News Announcement](#)
- [Google Workspace \(Formerly G-Suite\) Storage Changes website](#)

University of Minnesota: [Sustainable Storage Good Practices](#)

University of Michigan - Ann Arbor

- [New storage limits for UM-Google now in effect](#)
- [Google storage project site](#)
- [Check your storage](#)

University of Wisconsin - Madison : [Reshaping the Google Workspace service](#)

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Resources

[Communications wiki site](#)

[Communications workgroup email](#)

[Internet2/Google webinar series presentations and links to resources](#)



April 18, 2023 Presentation



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Harvard University story

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ABOUT HARVARD



Harvard's mission is to advance new ideas and promote enduring knowledge. Since our founding in 1636, Harvard has grown to include 11 degree-awarding schools along with our allied institutions, including the Harvard Radcliffe Institute.

Students

- 25,266

Alumni

- 400k+ worldwide

Faculty

- 2,452

Staff

- 17,187

What do the bread aisle and Harvard's storage options landscape have in common?

A lot of options!



Google Storage at Harvard

0.1

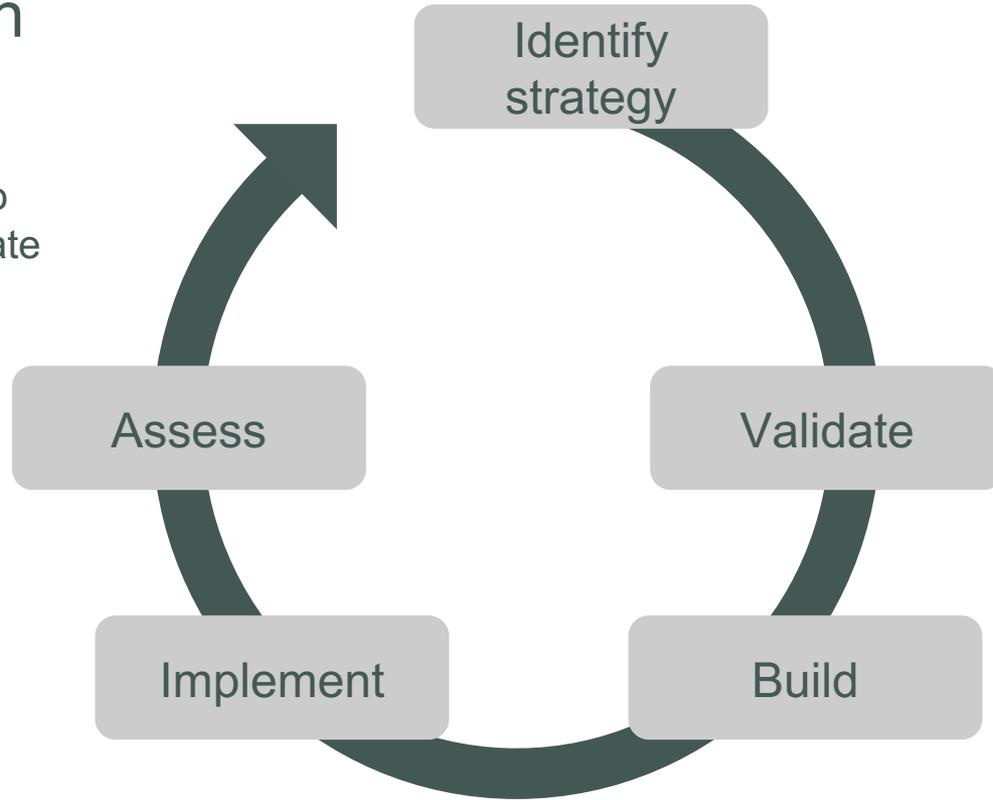
1.9 PB

- Harvard will continue to stay on Google
- We signed the Internet2 negotiated contract

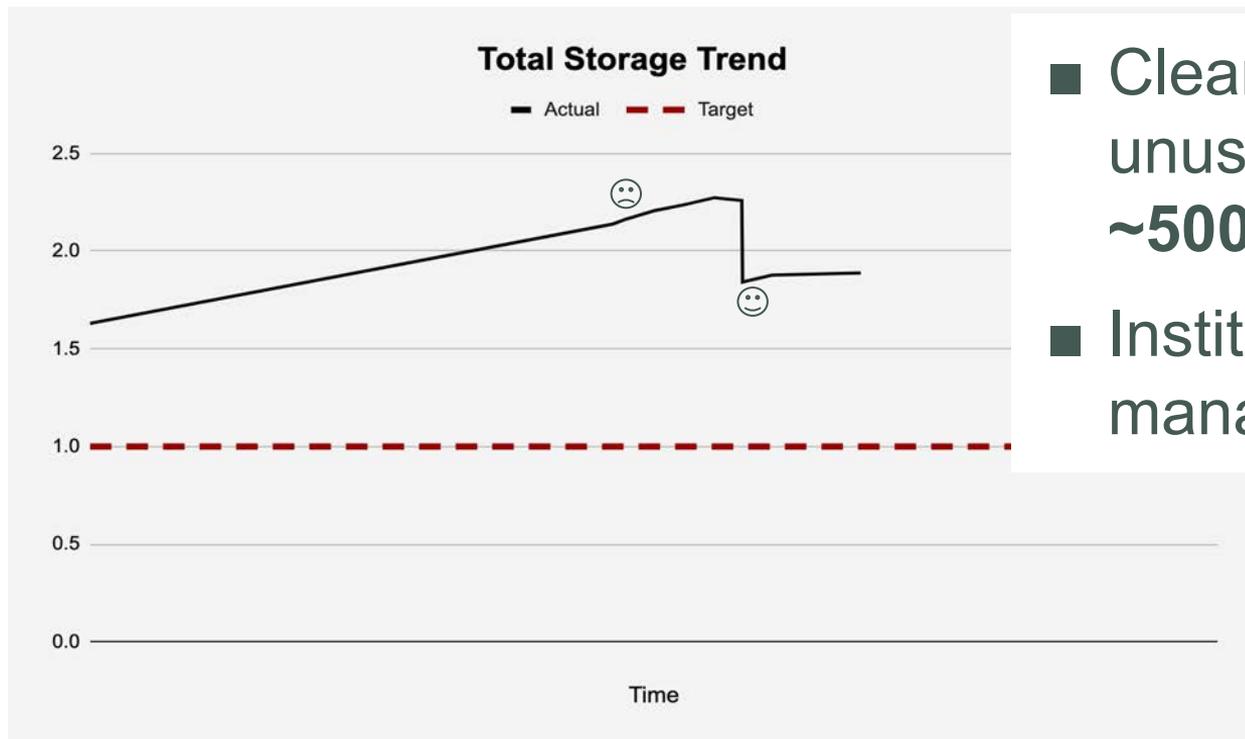
We are working ensuring our users continue to enjoy the benefits of Google in a sustainable way

Our Approach

A collaborative and iterative approach to get to our steady state needs.



Progress



- Cleaned up unused data ~500 TB
- Instituted lifecycle management

Options Considered

1.

No quotas

Apply no limits and pay for all use

2.

Tiered quotas

Base quota on role

3.

School specific quotas

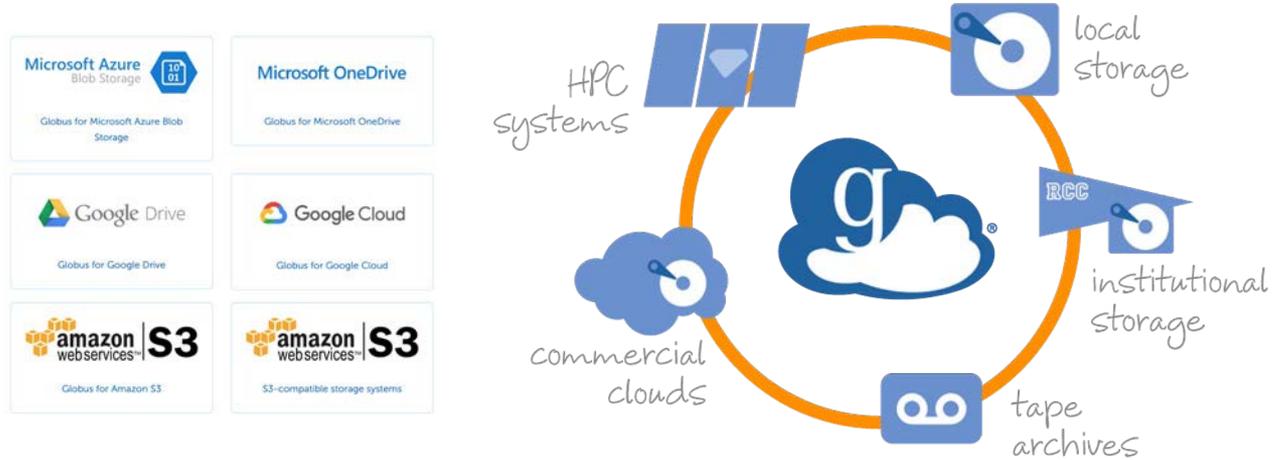
Limits determined based on affiliation

4.

Base quota, upgrade possible

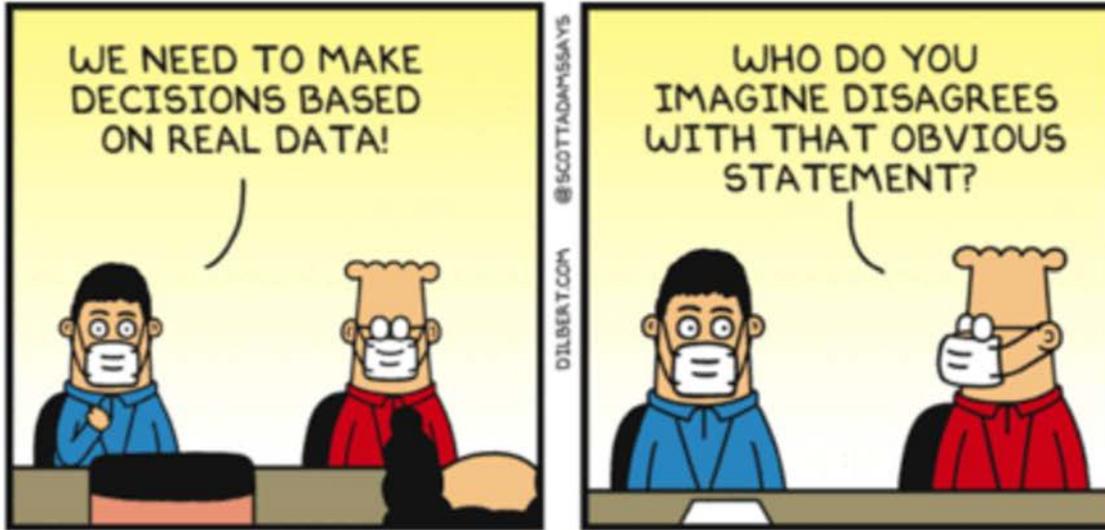
Consistent quotas across user population with the option to pay to upgrade

Globus



Enable data transfer and sharing for heavy storage users by implementing Globus Premium Connectors for our Cloud Services

Lessons Learned so far



- Data
- Governance
- Funding
- Time

Q&A

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