

GIS and Data: Making Space @ MIT

Development of the MIT Libraries GIS and Data Lab

Amy Nurnberger,
Program Head, Data Management Services,
ORCID: [0000-0002-5931-072X](https://orcid.org/0000-0002-5931-072X) @ANurnberger

Daniel Sheehan,
Program Head, GIS & Statistical Software Services

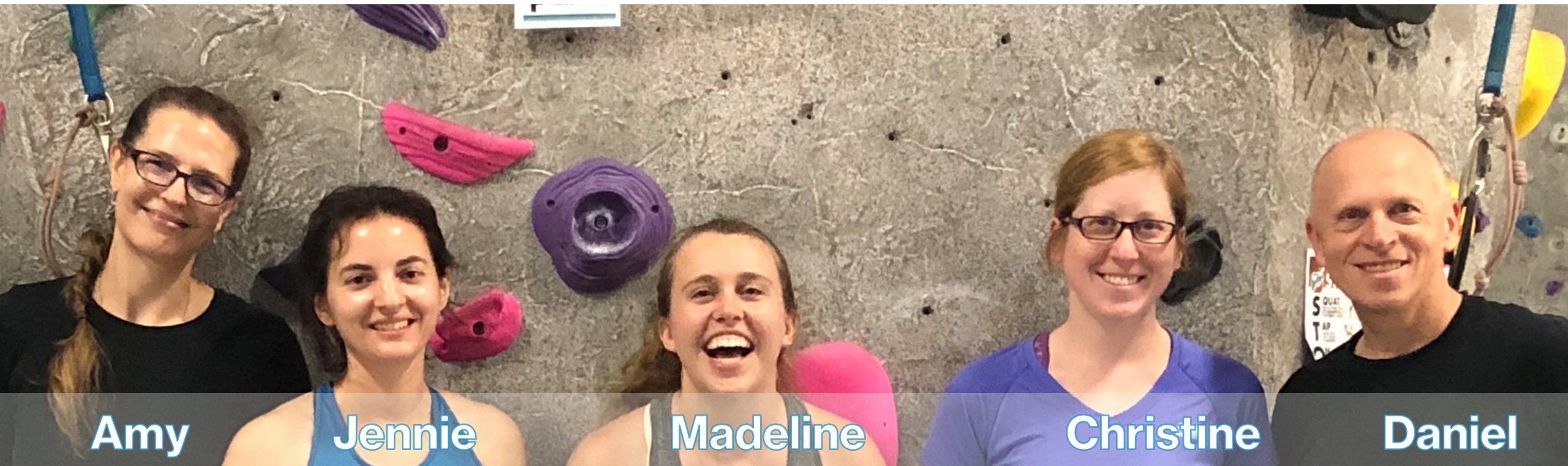
This work is licensed under a
[Creative Commons Attribution 4.0
International License](https://creativecommons.org/licenses/by/4.0/).



NNLM-NER e-Science Social, 2019-03-29
Northborough, MA

**MIT
Libraries**

Introductions: DSS → GIS & DMS teams



Amy

Jennie

Madeline

Christine

Daniel



Helen Bailey
DMS & DLS



Phoebe Ayers
DMS & LIRS



Ece Turnator
DMS & LIRS



Joe Carrano
DMS & IASC

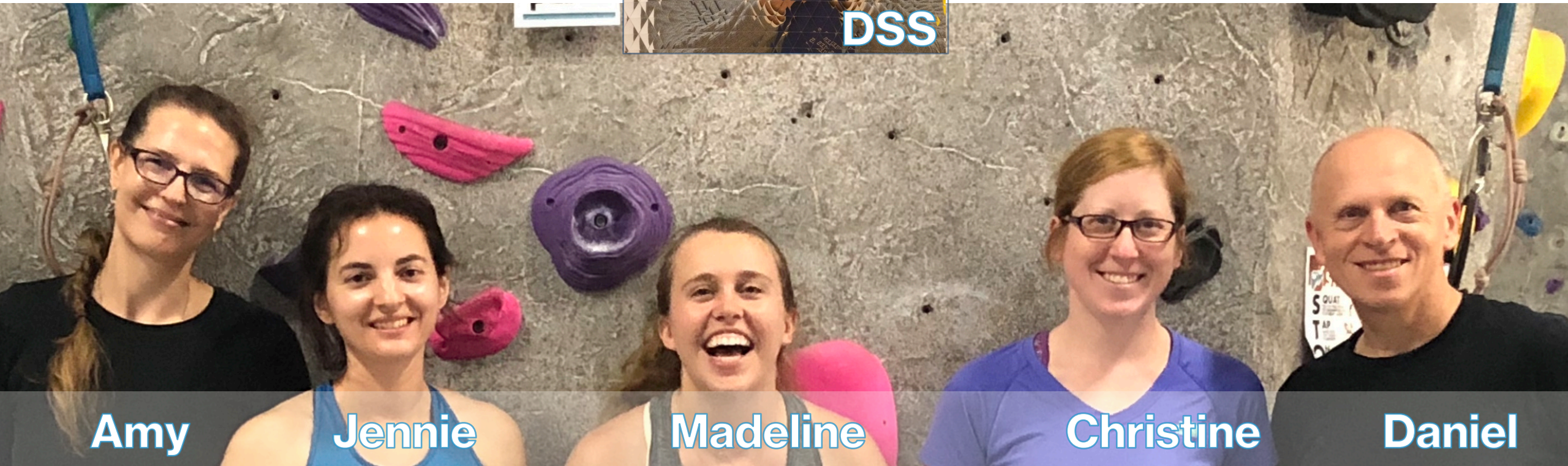


Ye Li
DMS & LIRS



Mikki S. Macdonald
DMS & SCCS

Introductions: Data & Specialized Services



Amy

Jennie

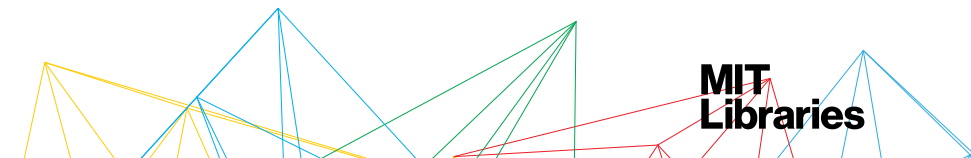
Madeline

Christine

Daniel

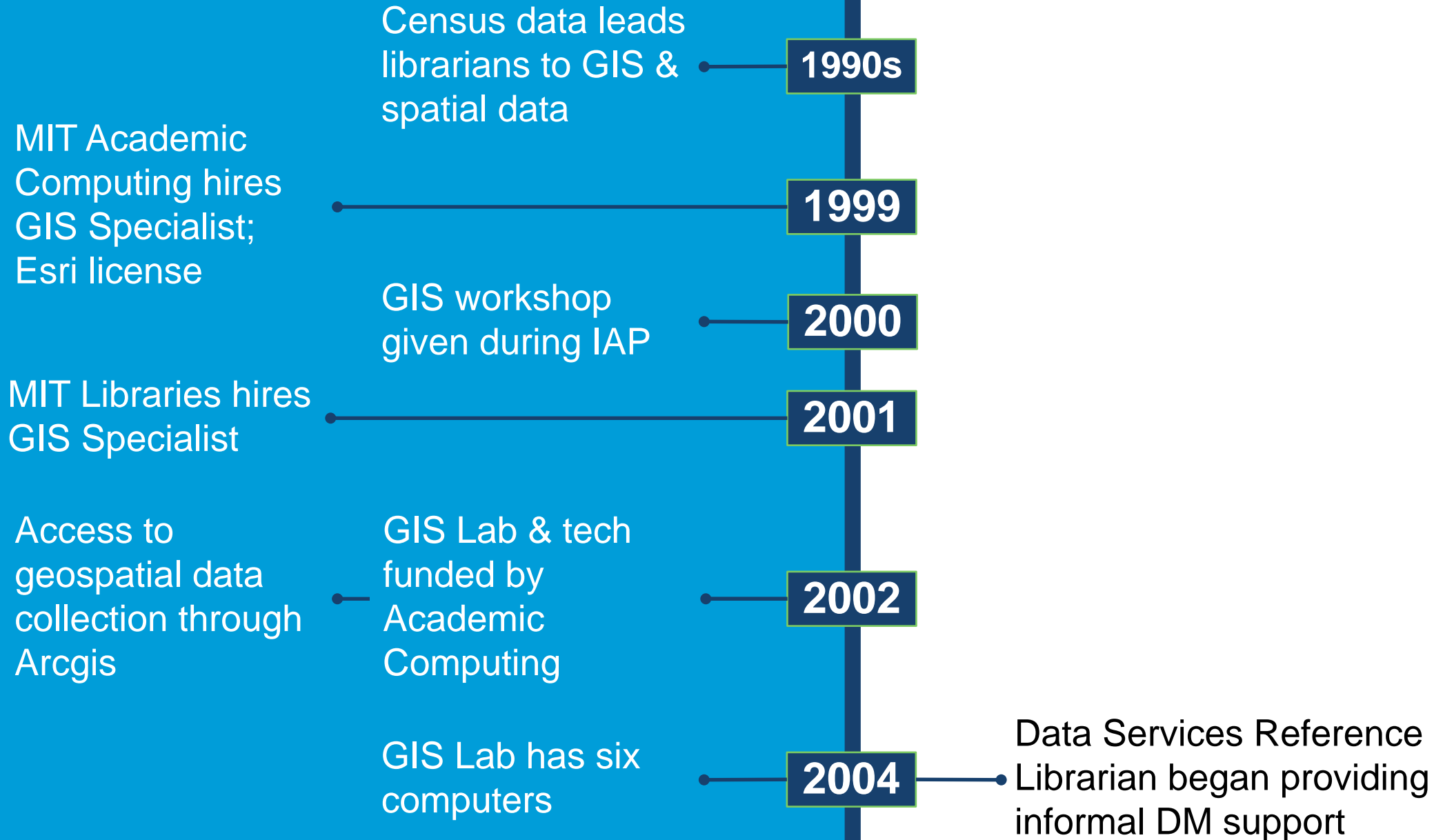
Plan for this session

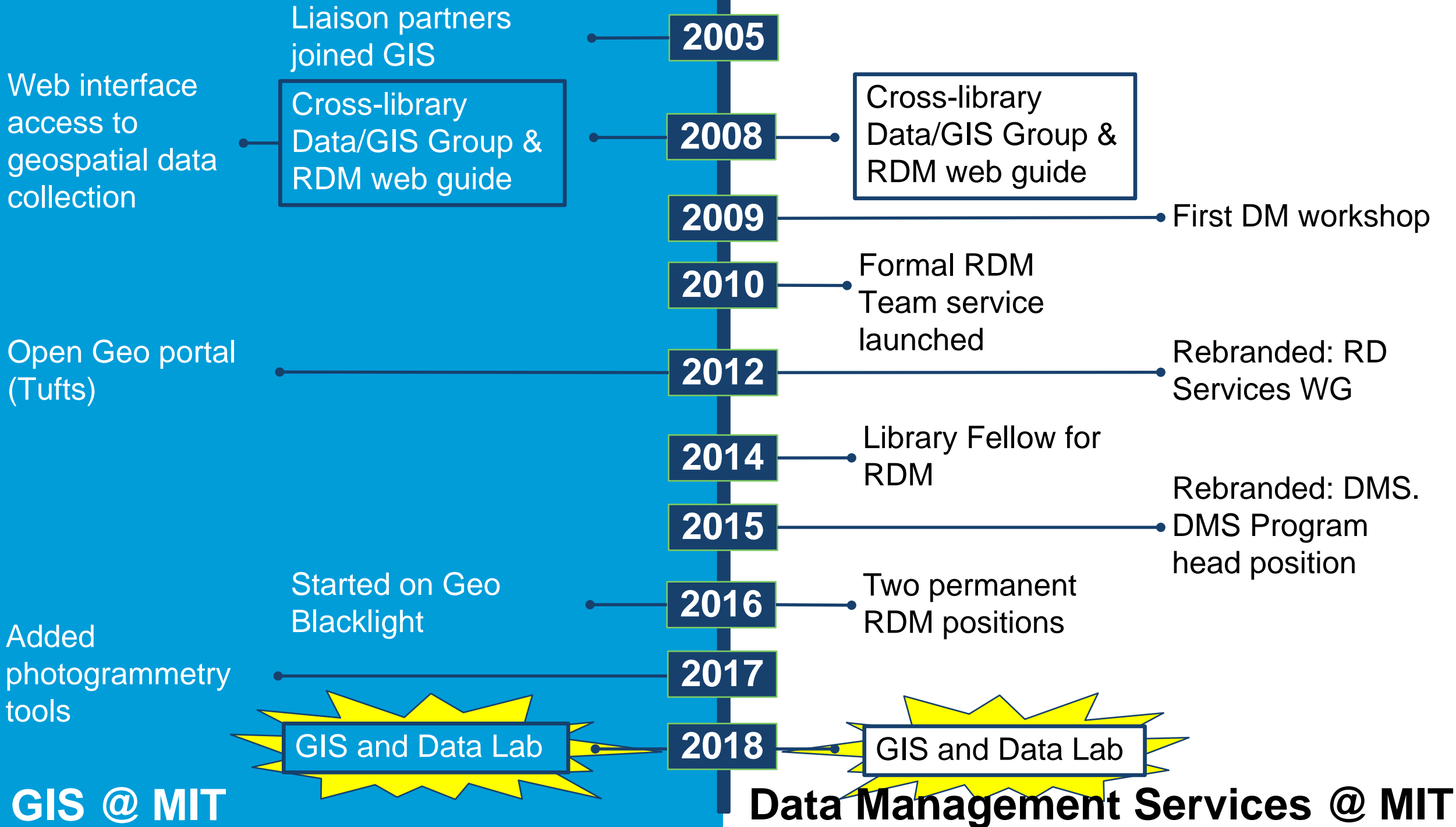
- Understand the MIT context for GIS and RDM services
- Follow the development of the GIS and Data Lab space
 - Successes
 - Lessons
- Understand the space assessment goals and results
 - Successes
 - Lessons
- Explore future plans



GIS @ MIT Libraries

Data Management Services @ MIT

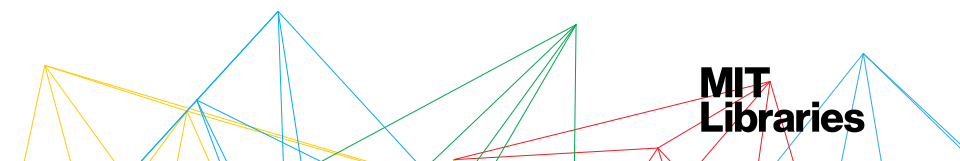
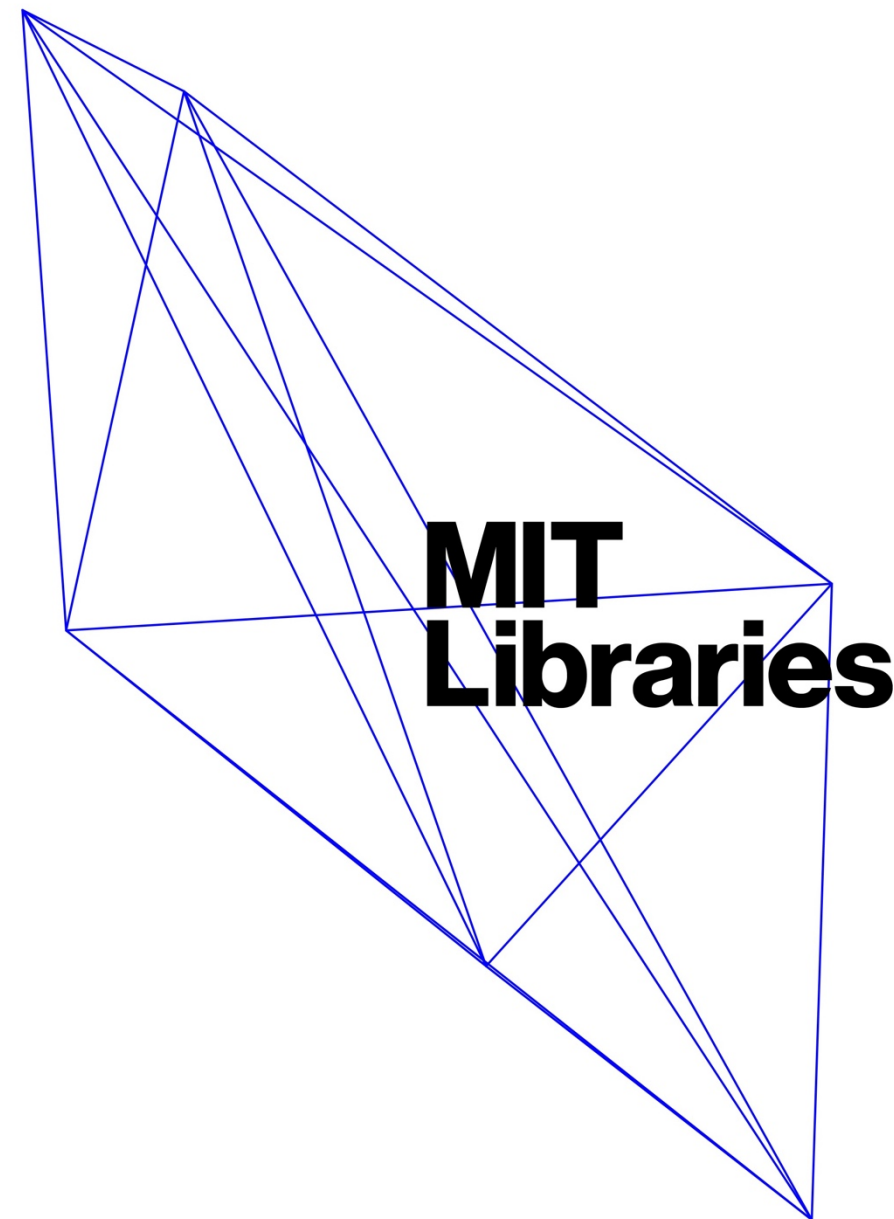


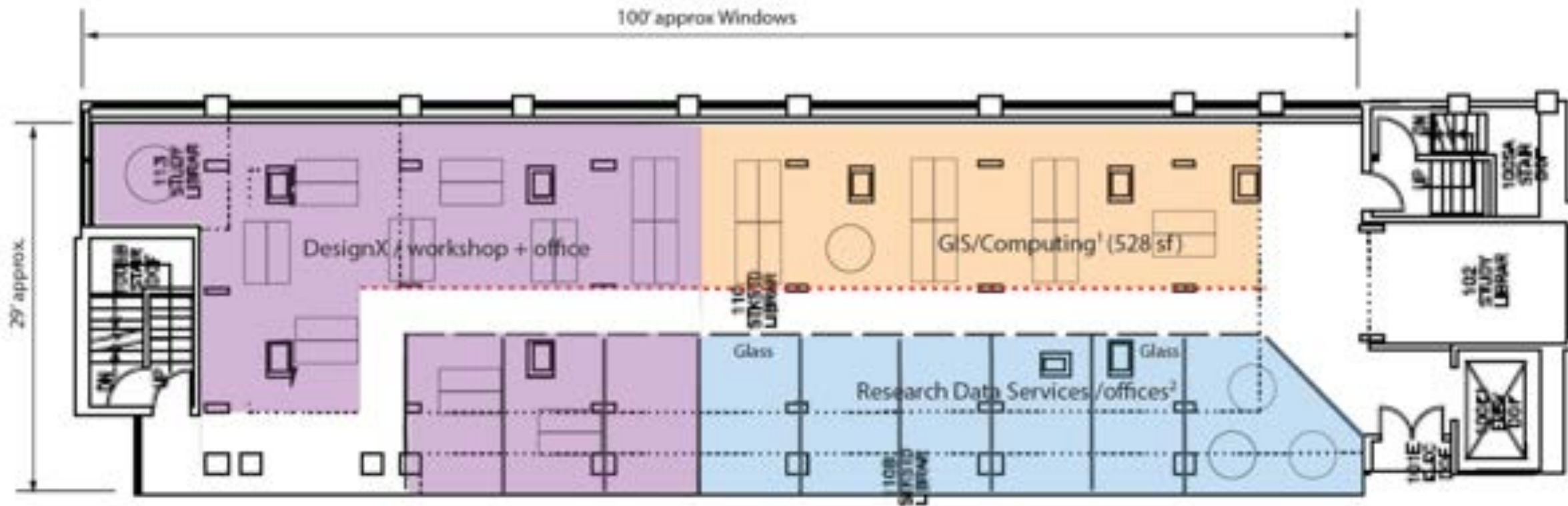


In the beginning,



MITdesignX is an academic program in the MIT School of Architecture and Planning (SA+P) dedicated to design innovation and entrepreneurship.





But then, things happened...



and it became



**MIT
Libraries**

(Good thing, too, once we got into the space – you'll see)

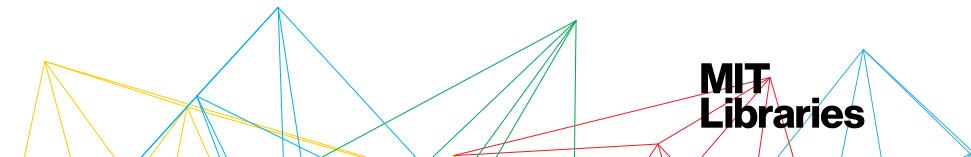


**MIT
Libraries**

New goals!

"focused spaces for Learning, Community, and Creating"

- Co-locates DSS staff in GIS and Data Management services;
- Expands the current GIS lab to:
 - Accommodate additional users,
 - Enable experimentation with additional data services on lab computers, and
 - Improve instruction capabilities.
- Creates space for consultation and collaboration;
- Provides space to experiment with visualization and virtual reality technologies.
- Adapts to current and future needs of DSS and the MIT Libraries
- Increases access to expertise



The process



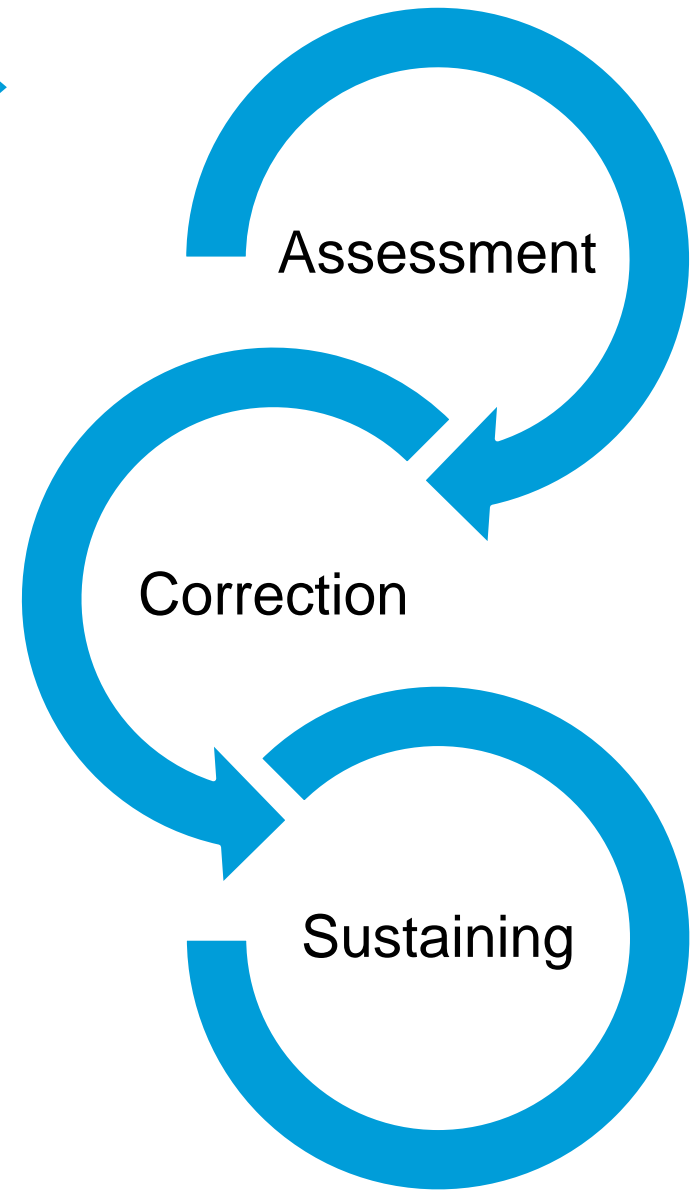
↓ Needs

- Services
- Power & data
- Floorplan & furniture
- Offices

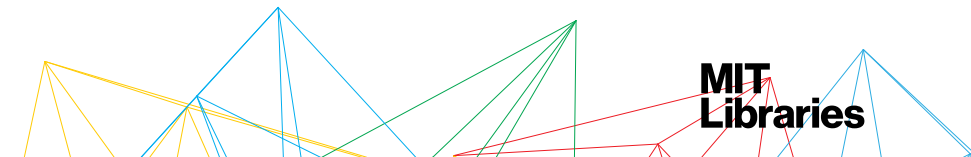
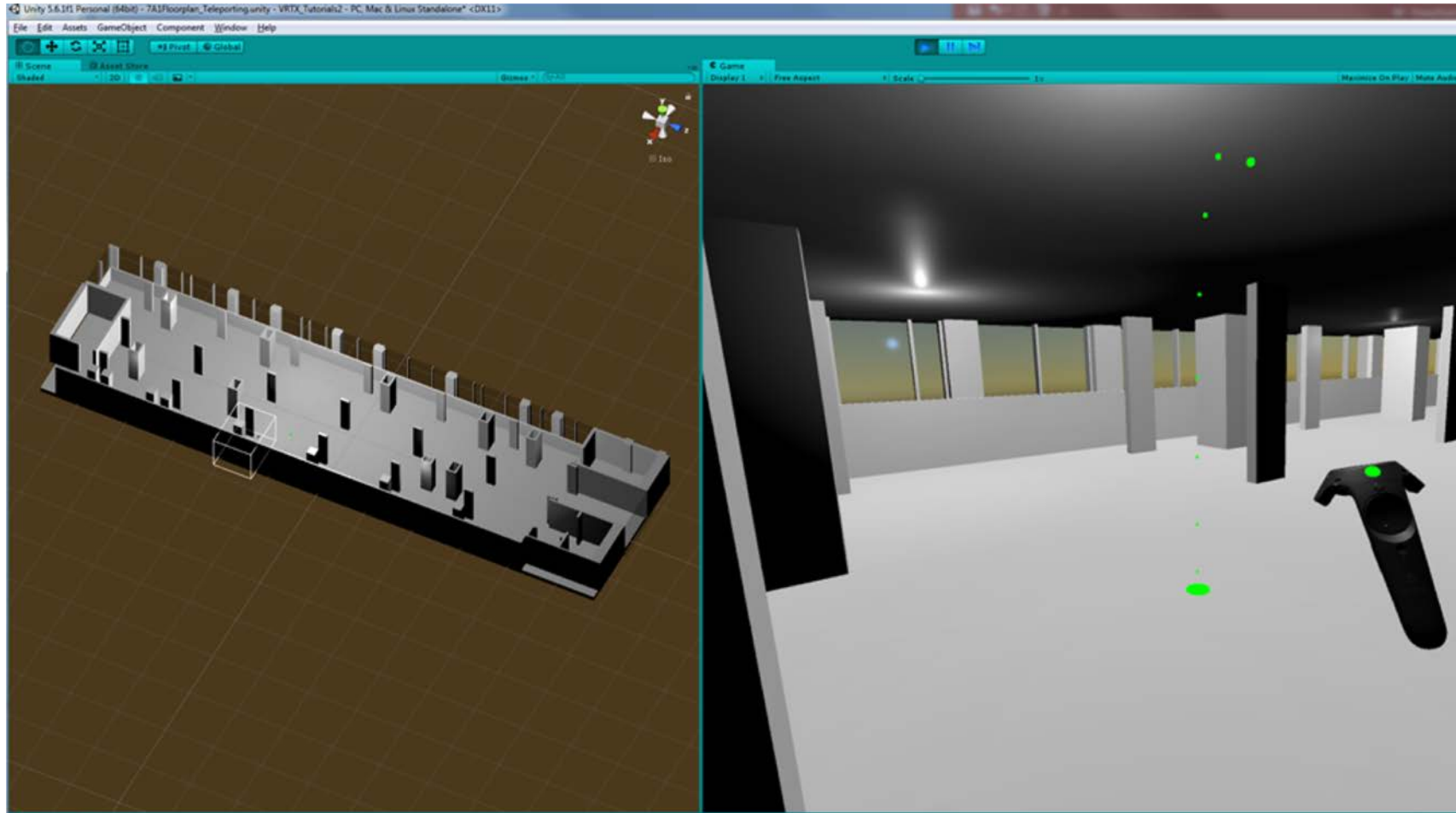
↓ Solutions

↓ Refinement

↓ Implementation



Transition to a new GIS and Data Lab



The process



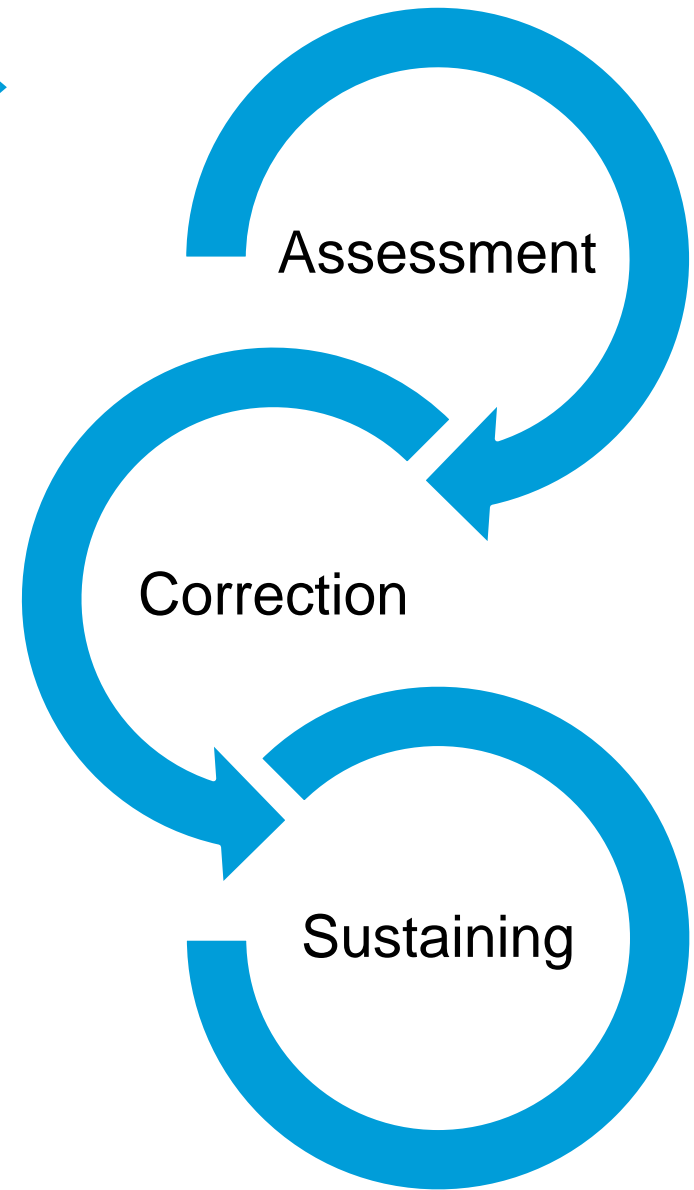
↓ Needs

- Services
- Power & data
- Floorplan & furniture
- Offices

↓ Solutions

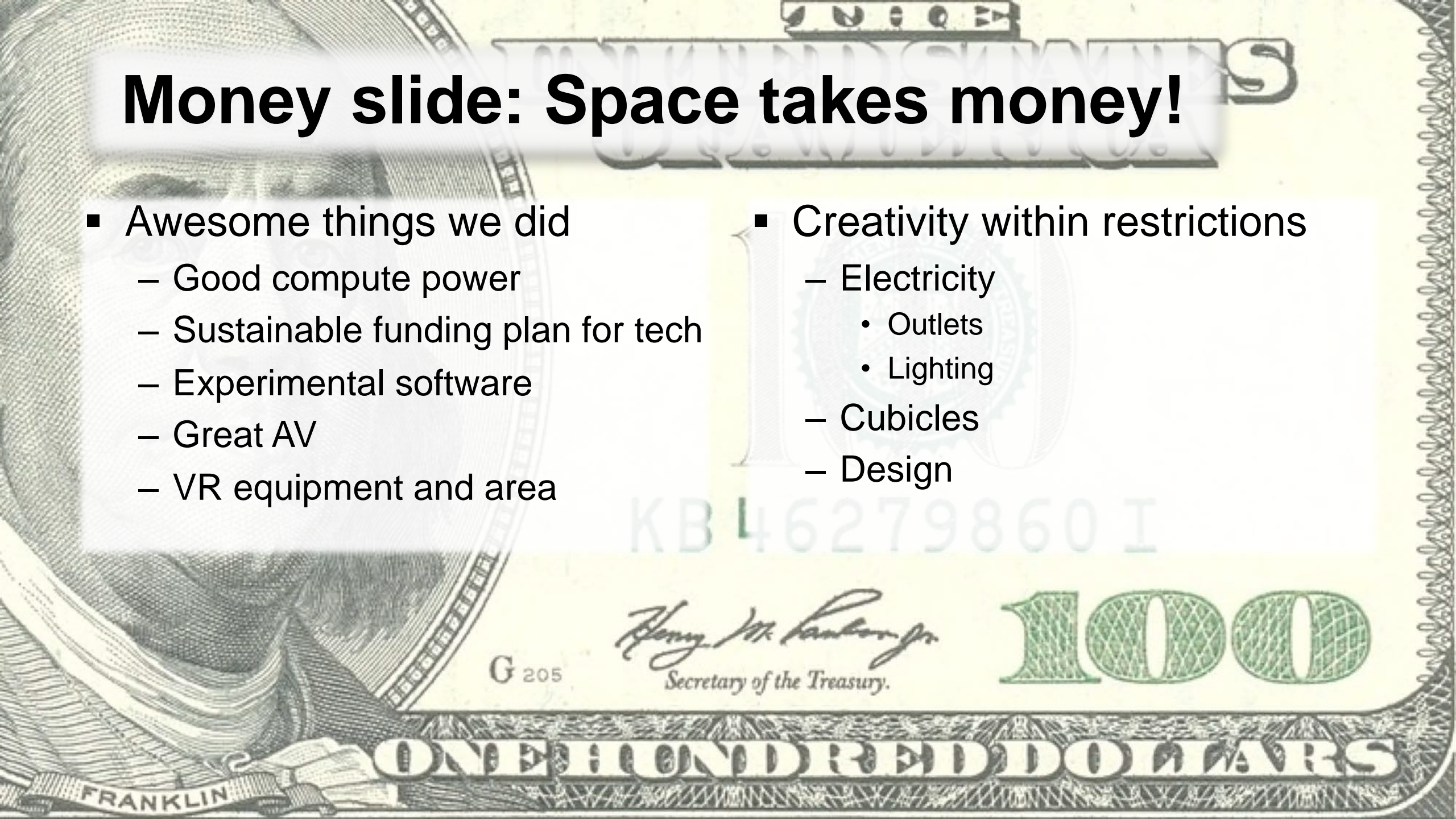
↓ Refinement

↓ Implementation



Money slide: Space takes money!

- Awesome things we did
 - Good compute power
 - Sustainable funding plan for tech
 - Experimental software
 - Great AV
 - VR equipment and area
- Creativity within restrictions
 - Electricity
 - Outlets
 - Lighting
 - Cubicles
 - Design



The process



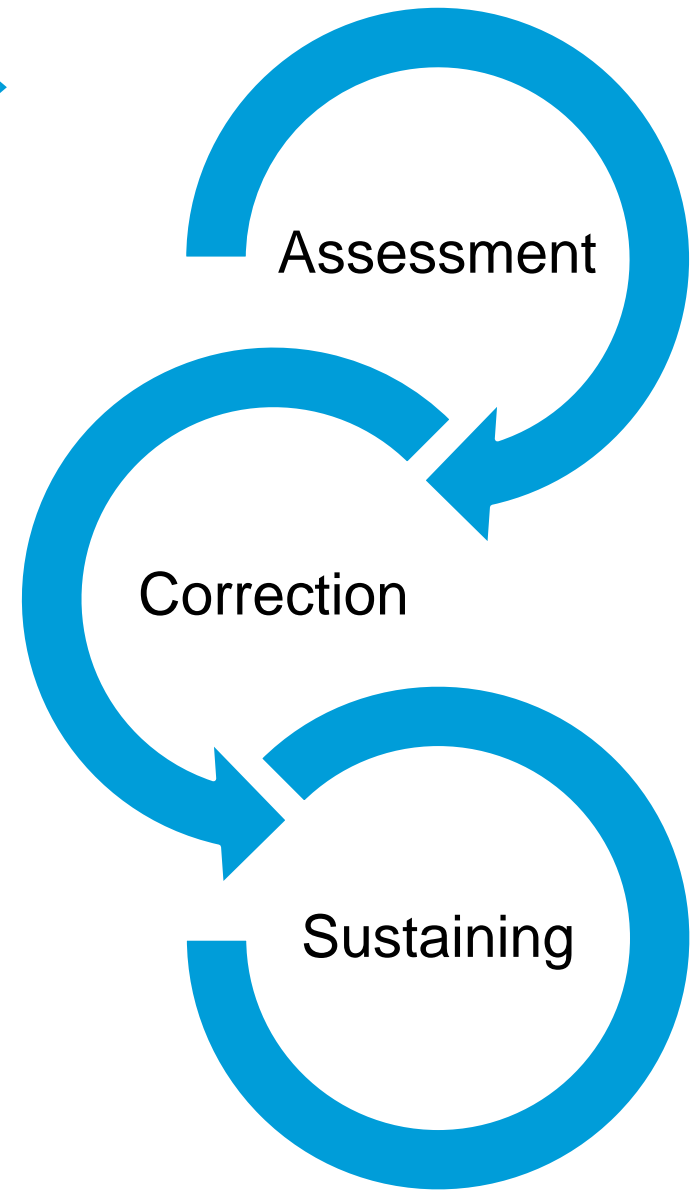
↓ Needs

- Services
- Power & data
- Floorplan & furniture
- Offices

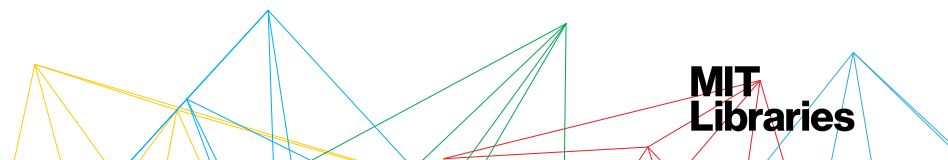
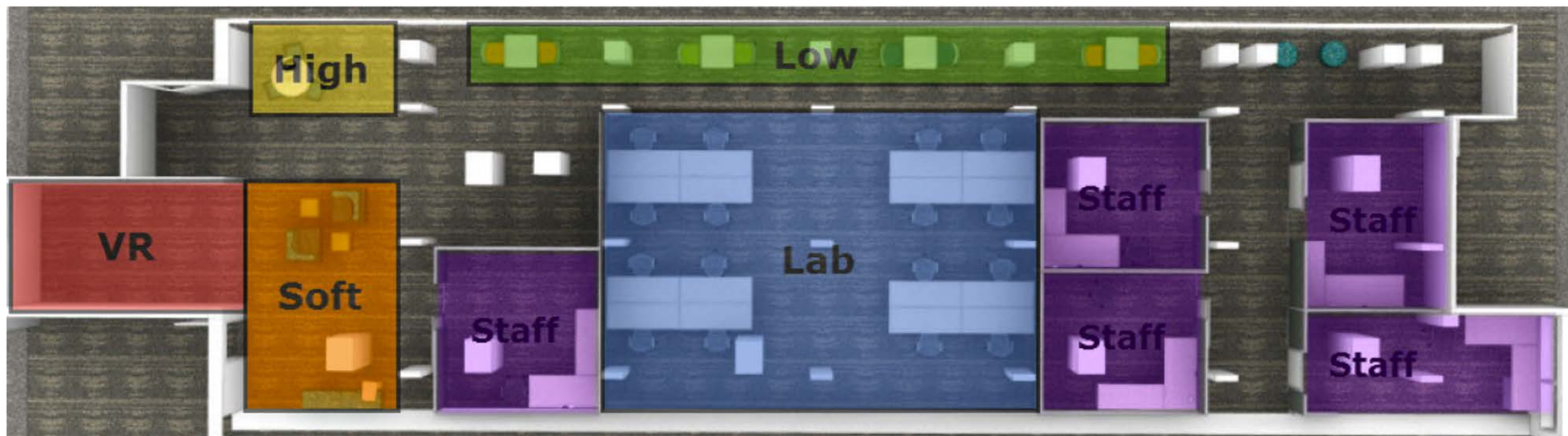
↓ Solutions

↓ Refinement

↓ Implementation

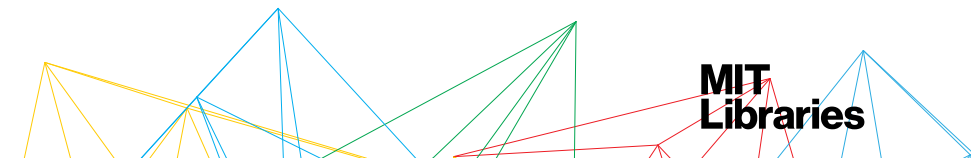


Final lab space configuration



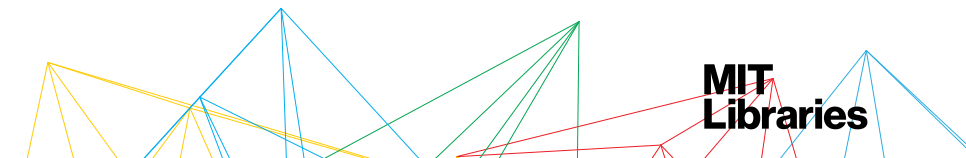
Assessment framework: Goals

- Improve instruction capabilities (Learning)
- Create space for consultation and collaboration (Community)
- Create convenient access to expert help /Increase visibility & accessibility of DSS staff (Community & Learning)
- Improve community access to technologies to enable creation of new work (Creating)



Assessment framework

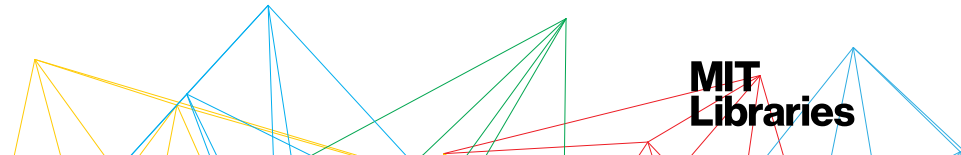
GOAL	OBJECTIVE	MEASURE	TOOL	TARGET
1. Improve instruction capabilities (Learning)	a. Increase Community engagement in learning activities at multiple scales, from group-work, to class enrichment, to workshop events	i. Number and type of workshops being taught, by whom, for whom	Instruction log (existing) for library-taught workshops that captures: Workshop title, Workshop schedule, Instructor dept, number of participants, participant dept & MIT status	1/month (average)
		ii. Learner/participant satisfaction	Instruction feedback survey at the end of instruction that captures: Noise level, Room arrangement, convenience, Other	60% met expectations or exceeded them



10 objectives

16 measures

8 tools



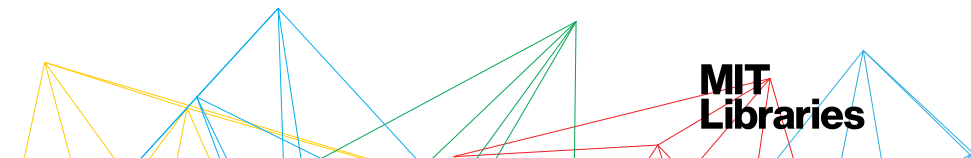
Lessons learned

No plan is perfect

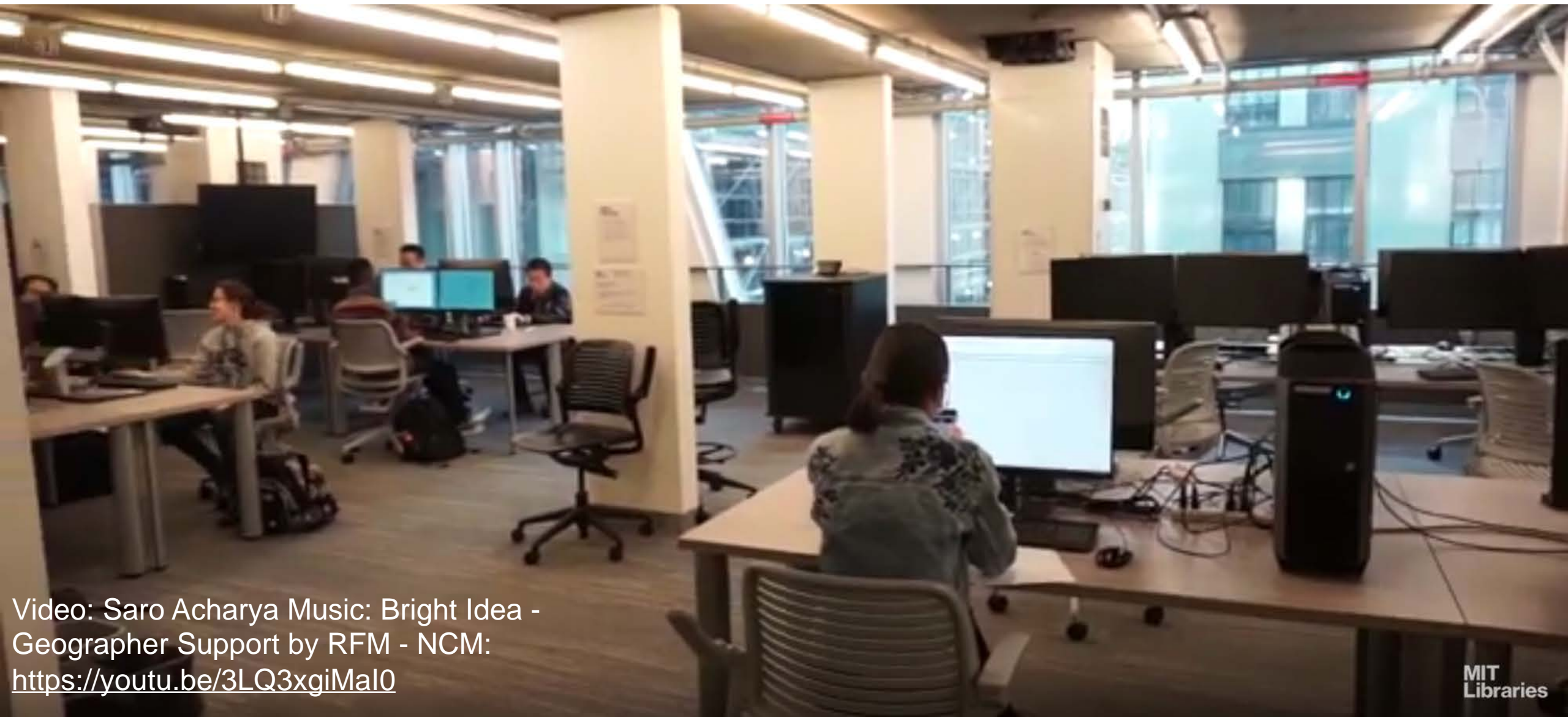
No plan survives confrontation with reality (\$\$)

Be specific, assume nothing

Having assessment in mind at the beginning clarifies needs



Realizing the Goals



Video: Saro Acharya Music: Bright Idea -
Geographer Support by RFM - NCM:
<https://youtu.be/3LQ3xgiMaI0>

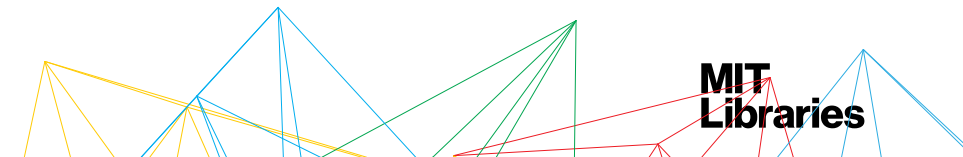
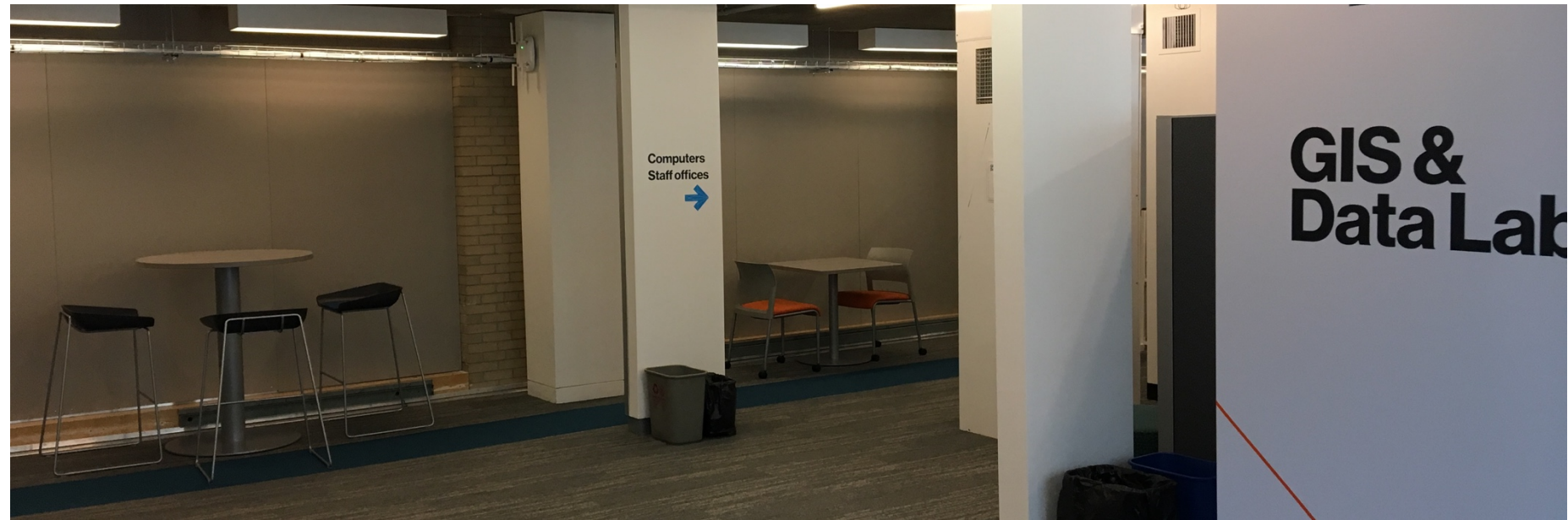


The GIS Lab is open to anyone
with an MIT Kerberos account.

Improved instruction capabilities

Instruction at
multiple
scales

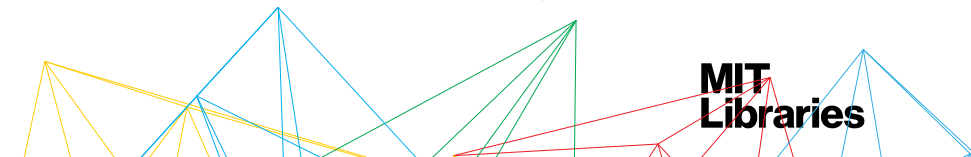
- One on one
- Group work
- Class enrichment
- Workshops and other events



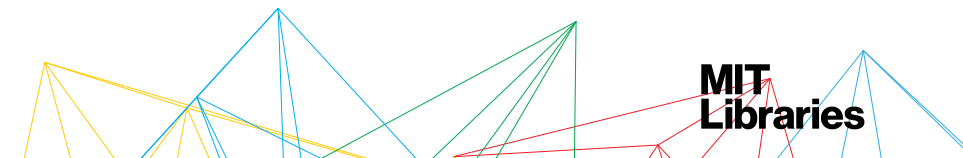
Improved instruction capabilities

The workshops!

- Introduction to Gephi for network analysis & visualization
- Introduction to cleaning and prepping data with OpenRefine
- Introduction to using LIDAR data in GIS
- Make a Map in Minutes
- Introduction to GIS
- GIS Level 2
- Introduction to Stata
- Introduction to Python for GIS
- Virtual Reality workshop series
- Introduction to Satellite Remote Sensing
- MINITAB Statistical Software: Experimental Designs and Taguchi Method for Robust Product/ Process Optimization
- Workshops for the following classes or programs:
 - SPURS,
 - Architecture Design Option Studio,
 - HASTS,
 - Terrascope,
 - CMS.633/833,
 - 11.A11,
 - 11.THG
 - Senseable City Lab



Consultation & collaboration space



Consultation & collaboration space



Access to expertise / Staff visibility

If they see it,
they will
come!

- Lab visible from main entrance to campus
- Staff easily accessible in lab space
- GIS + DMS office hours



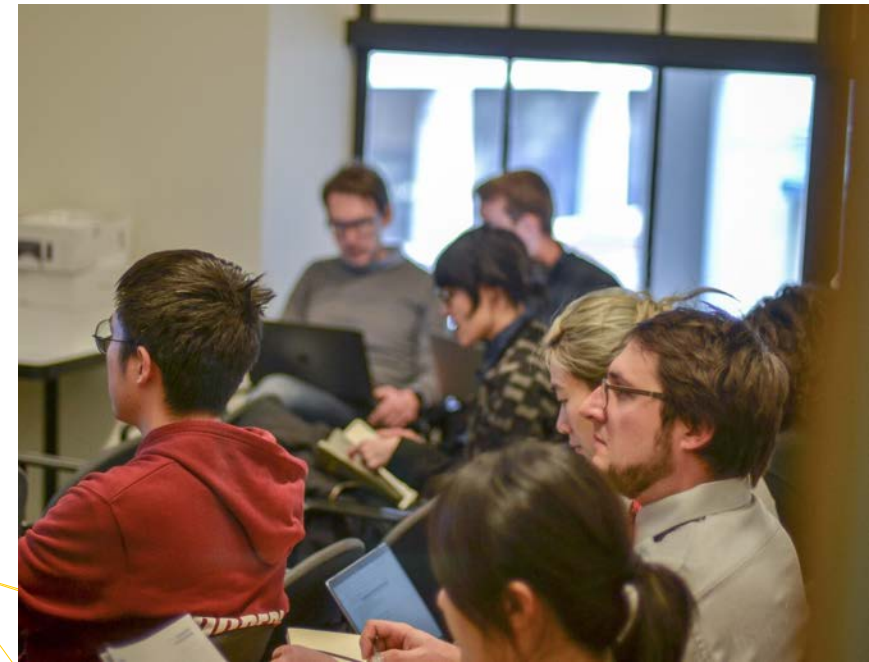
Access to technologies

- Increased number of available computers
- Improved displays
- Better layout and capacity for instruction
- Introduced VR space and equipment



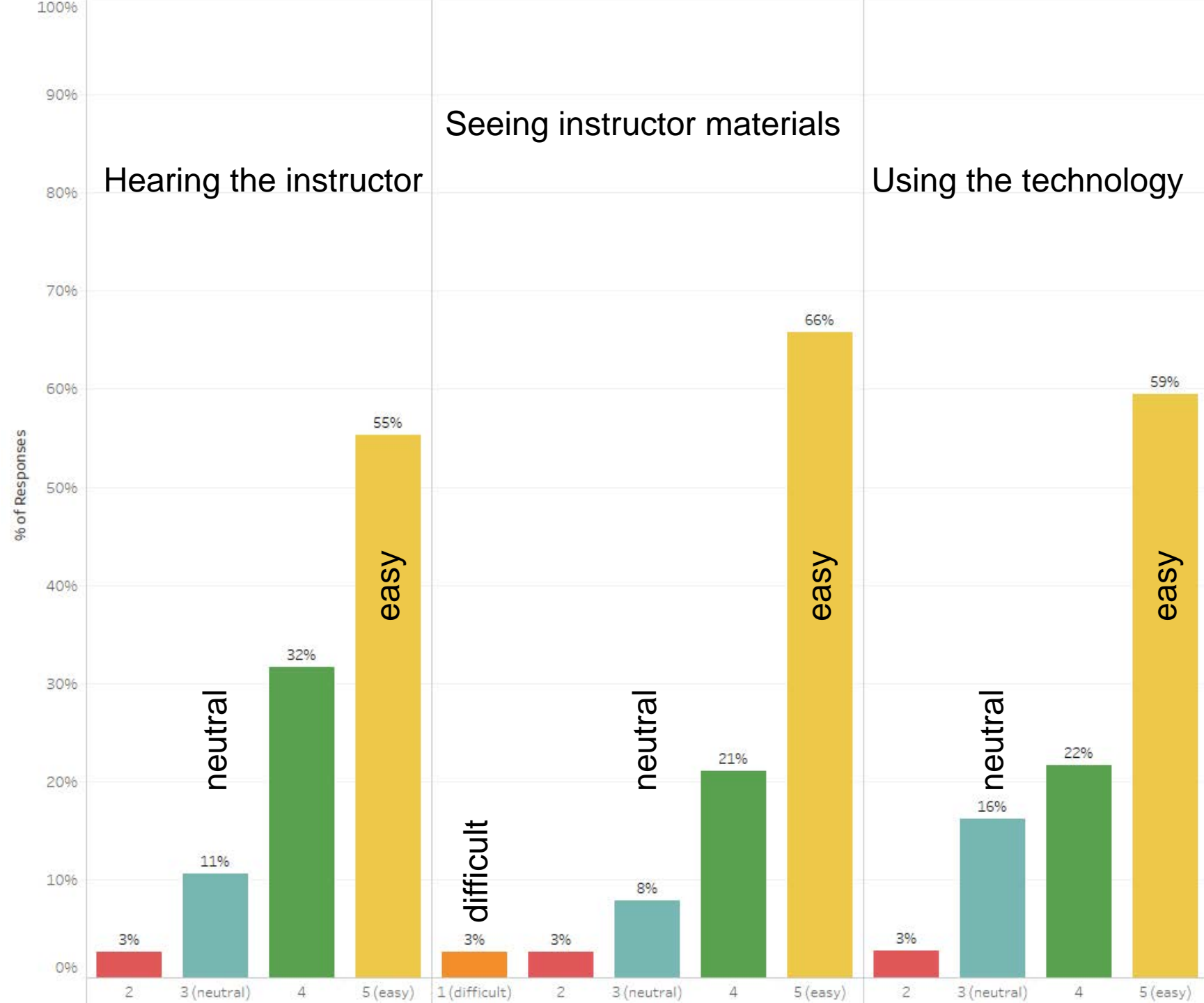
Other experimental aspects realized

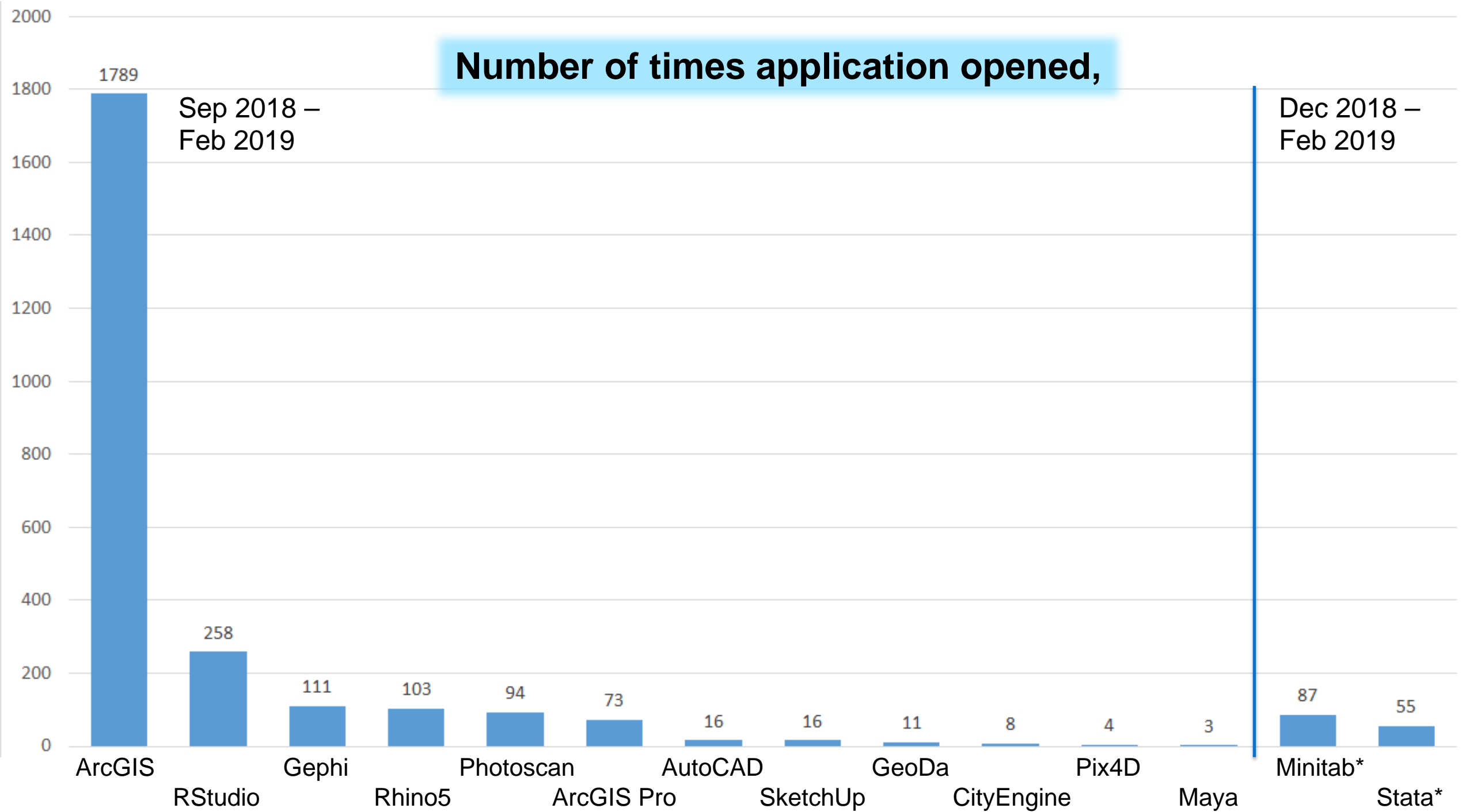
- Evolving internship program supporting equity, diversity, inclusion, and social justice goals
- Development of VR Space
- Data visualization
- Software pilots
- Expanded community use of space



Assessment Results

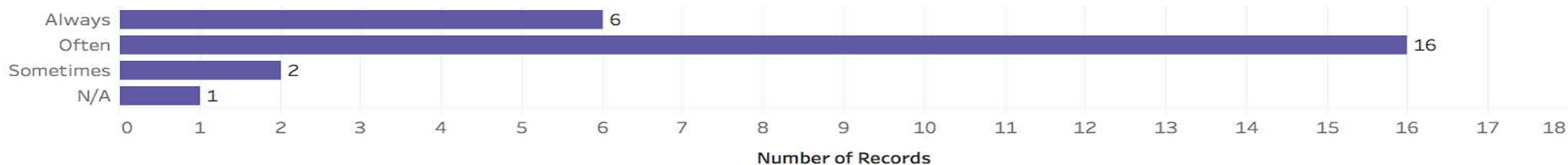
Workshop participant experience



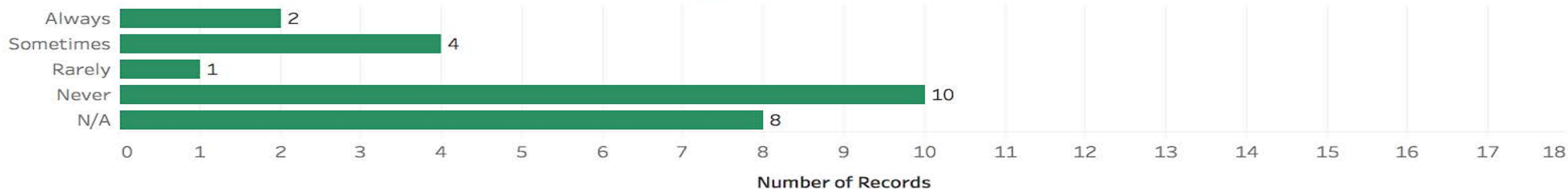


Staff experience of space

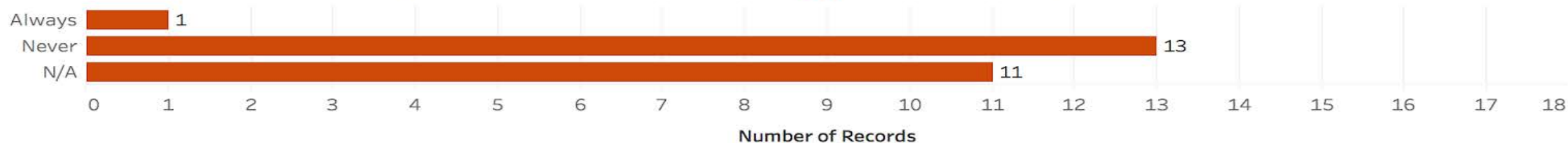
How often did you successfully conduct **individual work** in your office?

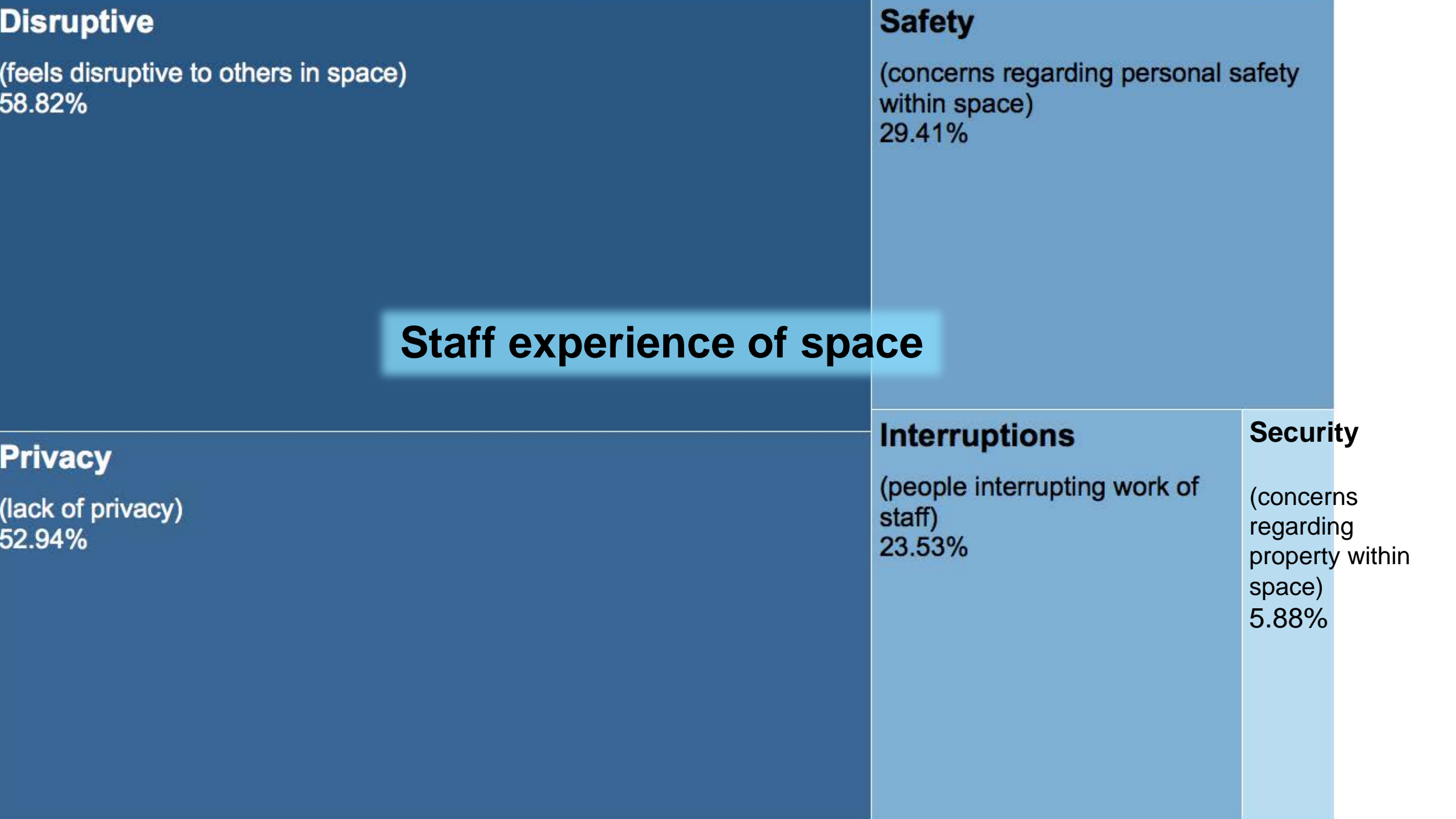


How often did you successfully conduct **a meeting** at your desk?



How often did you successfully conduct **an online meeting/phone call** in your office?





Disruptive
(feels disruptive to others in space)
58.82%

Safety
(concerns regarding personal safety within space)
29.41%

Staff experience of space

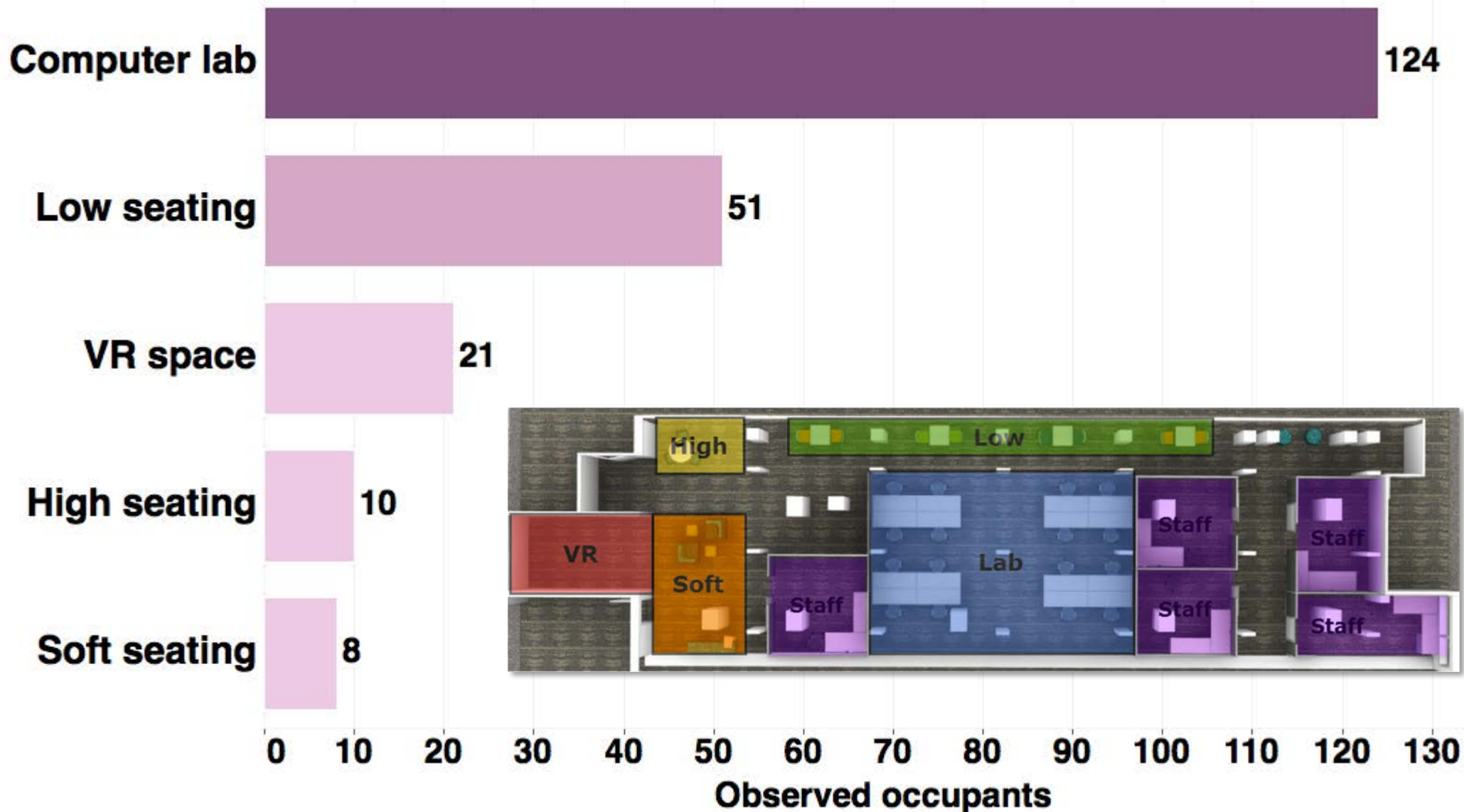
Privacy
(lack of privacy)
52.94%

Interruptions
(people interrupting work of staff)
23.53%

Security
(concerns regarding property within space)
5.88%

Space use

Total number of users in each space, as counted over 2 weeks on 73 occasions



Lessons learned

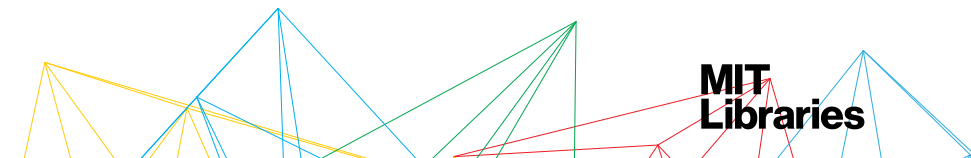
Serendipity works!

Word of mouth works!

Assessment is hard (to get responses)

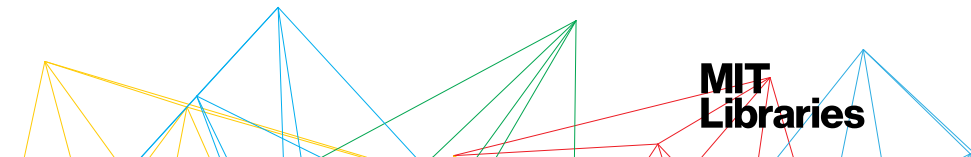
Challenges: Security, Staff privacy, Noise management

Adaptation continues



Where we go from here...Innovation continues

- Experimental Collections Fund
 - Working with faculty to collect, process, and store drone imagery
 - Visualizing parts of the Geospatial Collection in VR
- Building services on GIS and DMS intersections
- Software experiments
- Practical tool use instruction for DMS
- Bringing the Library in to work with data



Thank you!

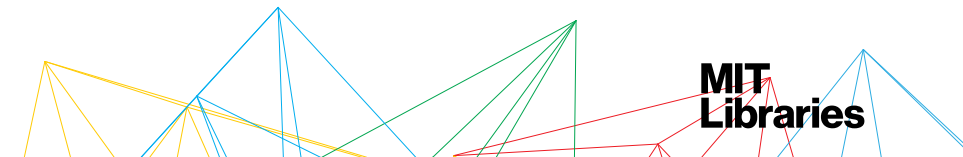
Let's talk! Questions?

<http://libraries.mit.edu/data-management> |
data-management@mit.edu

nurnberg [at] mit.edu

<https://libguides.mit.edu/gis/> |
gishelp@mit.edu

dsheehan [at] mit.edu



References not included on slides

Please respect the copyrights and licenses of the creators

Front of U.S. \$100 Federal Reserve note. Public Domain.

<https://commons.wikimedia.org/wiki/File:Usdollar100front.jpg>

Video: Inside the GIS & Data Lab. Video: Saro Acharya Music: Bright Idea - Geographer Support by RFM - NCM: <https://youtu.be/3LQ3xgiMaI0>

This work may be cited as:

Nurnberger, A. & Sheehan, D. (2019). GIS and Data: Making Space @ MIT. NNLM-NER e-Science Social, 2019-03-29, Northborough, MA.

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).



**MIT
Libraries**