

The Libraries' Role in Research Data Management: A case study from the University of Minnesota

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Research Services Librarian and Co-Director of
the University Digital Conservancy



Our research data management program grew out of an organic process over several years of projects and initiatives.

E-science and Data
Services Collaborative
E-scholarship Working Group
GIS Data Group
Data Storage Group
Research Support Services Collaborative
Data Management, Access, and Archiving
Research Communities and Networks
Digital Arts and Humanities

Many Organizational Structures!

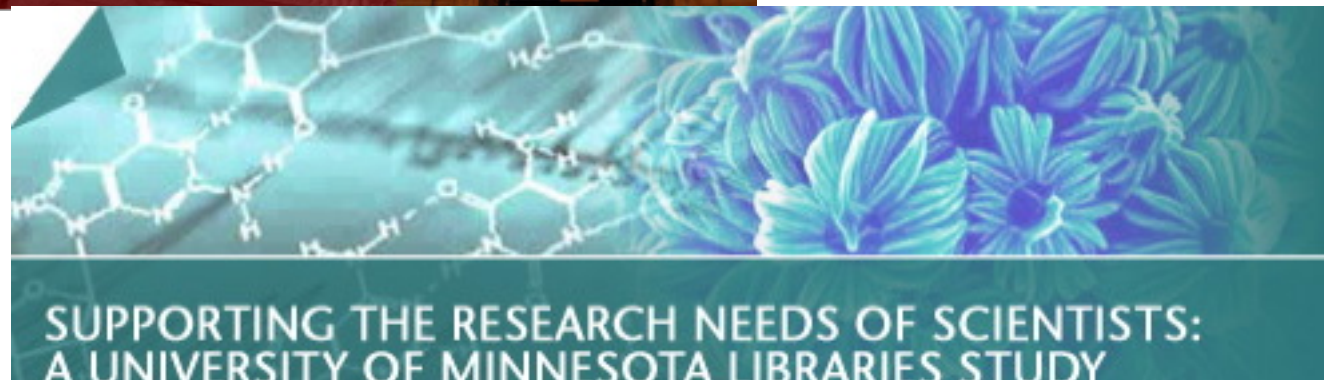
Many People Involved!

Interdisciplinary Sciences Librarians
Data Services Librarian
Translational Sciences Librarian
Metadata Strategist
Digital Preservation Strategist
Liaison's "E-scholarship" role
Research Services Librarian
Digital Arts and Humanities Librarian

Evidence pointing to changes in the research landscape prompted the libraries to reassess our users' needs.



The libraries evaluated our users' research behaviors through a series of assessments from 2006-2011.

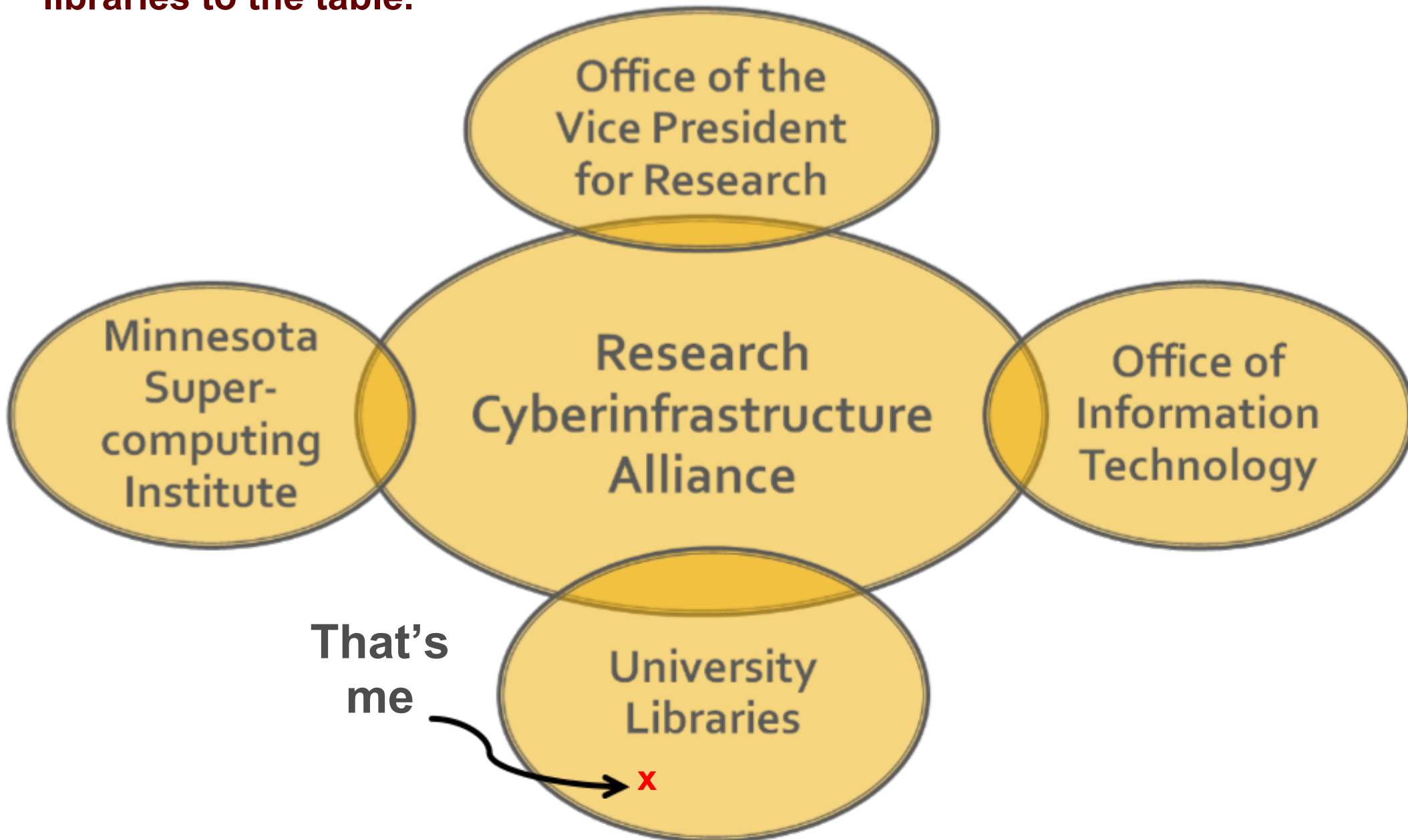


Understanding User Needs



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The campus Research Cyberinfrastructure Alliance (RCA) brought the libraries to the table.



The RCA performed a gap analysis of the existing services and viewed the libraires in a number of new roles.

Service Portfolio - Research Cyberinfrastructure Alliance					
<i>Consulting- Information Services</i>	Web URL	MSI	CLA	Library	OIT
Study design	CLA: https://research.cla.umn.edu/publicwiki/index.php?Id=Research+Consulting		✓		
IRB issues	CLA: https://research.cla.umn.edu/publicwiki/index.php?Id=Research+Consulting		✓		
Grants information and support	CLA: https://research.cla.umn.edu/publicwiki/index.php?Id=Research+Consulting LIB:		✓	✓	
Data access, acquisition and licensing	LIB:			✓	
Assessment and planning services	LIB:			✓	
Performance measurement	OIT: In development- service statements – will be at http://www.umn.edu/oit/planning				✓
Standards advisory	LIB:			✓	
Best practices for metadata, data archiving and preservation	LIB:			✓	
Intellectual property rights issues, open	LIB:			✓	

Examples of library roles listed in the portfolio:

- Best practices for metadata, data archiving and preservation
- Intellectual property rights issues, open access models
- Standards advisory
- Tutorials and hands-on workshops
- Metadata description and advisory services
- Repository services for archiving, access and data re-use

The PEL survey received 780 responses from an excellent disciplinary cross-section of faculty and researchers on campus.

“....We evaluated the file sharing service from central IT but found it too cumbersome to use....”

- A post-doc in the College of Science and Engineering

“...beyond the basics it's not clear who to contact for what.” - Faculty Member in the College of Liberal Arts.

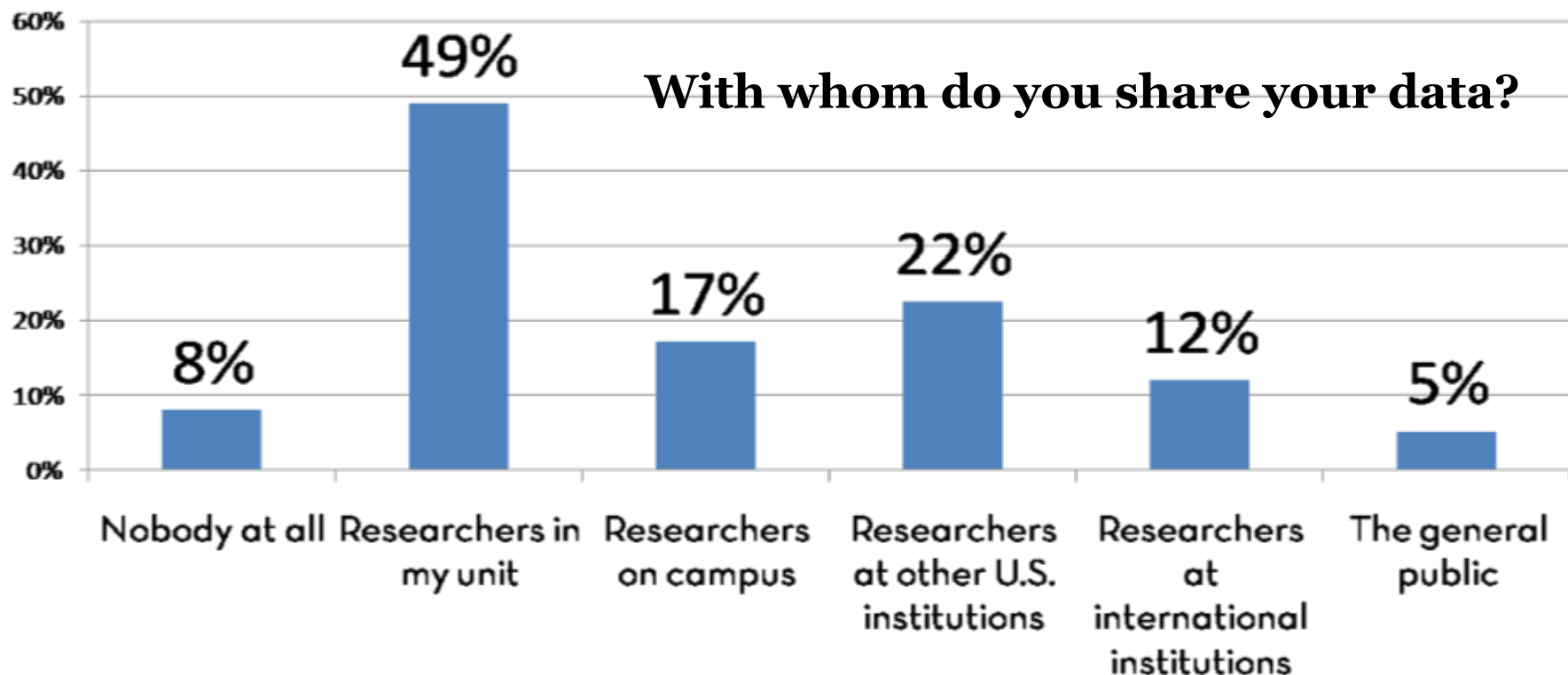
“I feel as if I'm living on borrowed time, no confidence in having access to adequate data storage for research in the future.” - Faculty Member in the College of Education & Human Development.

“I find it hard to translate the terms into my research in the humanities.” - Faculty Member in the College of Liberal Arts

The PEL survey found that 92% of our researchers share their data with others, but only 5% make their data public.

“If infrastructure exists for sharing data, the knowledge has not been imparted on me.”

- Post-doc in the College of Science and Engineering



The libraries' first success was a campus-facing Web site that gathered resources and information for our changing data environment.

The screenshot shows the University of Minnesota Libraries website. At the top, there is a dark red header with the University of Minnesota logo and the slogan "Driven to Discover™". To the right of the logo, it says "UNIVERSITY OF MINNESOTA". Further right, there are links for "myU" and "One Stop". Below this is a search bar with the text "Search Library Web site" and a "Search" button. The main navigation bar includes "Home", "About Us", "Services", and "How to Find". On the right side of the navigation bar, there are links for "Ask Us!", "Chat", "Email", "Phone", and "FAQ". The main content area features a large banner image of a yellow airplane. Below the banner, there is a central article titled "Managing Your Data". To the left of the article is a sidebar with a "Managing Your Data" section containing links for "Data Management - Home", "Data Management Plans", "Copyright and Ethics", "Preservation and Archiving", "Share Data", "Tools and Services", and "Workshop and Training". To the right of the article is a "Contact Us" section with links for "Lisa Johnston, Research Services Librarian", "Meghan Lafferty, Chemistry, Chemical Engineering and Material Sciences Librarian", and "Amy West, Social Sciences and Data Services Librarian".

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myU > One Stop >

Search Library Web site Search

UNIVERSITY LIBRARIES

Welcome: ljohnsto | [My Account](#) | [logout](#)

Home About Us Services How to Find Ask Us! Chat :: Email :: Phone :: FAQ

Managing Your Data

Digital data is growing at an exponential rate: from the digital family photos on a home computer to the terabytes of data generated by researchers in the various disciplines across the university. How do we as individuals and scholars in the digital research environment keep up with our growing data management needs?

The [University Libraries](#) are here to assist you with research data management issues through best practices, training, and awareness of data preservation issues. This site examines the research data life-cycle and offers tools and solutions for creation, storage, analysis, dissemination, and preservation of your data.

Creating a data management plan?

The libraries can help you create of a [data management plan](#). We are interested in working with individuals to consult on the best ways to share, disseminate, and make accessible their research data. Here are some next steps you can take toward creating your plan:

- Take one of our [data management workshops](#) or watch our online tutorial on best practices.

Contact Us

[Lisa Johnston](#),
Research Services Librarian

[Meghan Lafferty](#),
Chemistry, Chemical Engineering and Material Sciences Librarian

[Amy West](#),
Social Sciences and Data Services Librarian

Managing Your Data

Data Management - Home

Data Management Plans

Copyright and Ethics

Preservation and Archiving

Share Data

Tools and Services

Workshop and Training

Campus Training and Outreach



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I'm going to describe a number of initiatives that make up the core of our research data management program.

**Campus Training
and Outreach**

**Data
Archiving**

**Library Staff
Education**

**Access and
Preservation**

First, we look at a new model of librarian roles and expectations.

**Library Staff
Education**

Library liaisons have e-scholarship built into their position description and data has become a core area of engagement.

A Framework for Articulating New Library Roles

E-scholarship: "an area of library engagement that supports interdisciplinary and data intensive research for all research across campus" (Williams, 2009).

Karen Williams, Associate University Librarian
for Academic Programs, University of Minnesota Libraries

Example librarian roles around research data:

Campus Engagement: Seeking opportunities to collaborate with data producers and repository contributors

Collection development: Systematically select material in all formats including data sets and multimedia

Scholarly Communication: Recruiting institutional scholarly output such, as research data, for inclusion in the University Libraries' digital archiving initiatives.

This is not a one-person job. All library staff can be involved with liaisons acting as the spokes to the libraries' wheel of data services.

Examples Staff Questions and Needs:

- Examples of data!
- Defining the Libraries' role in relation to other University administrative units (ie. IRB, OVPR)
- Scaffold "schol com," IR, and open access issues to research data
- Guidelines on how to discuss the topic with faculty/students
- Discussion opportunities for how this affects their job

Examples of Staff Education Initiatives:

- Definitions of data-related terms
- Defining intellectual property issues (especially copyright) for data
- A liaison toolkit, with data audit questions
- Present with the Research Services Librarian to faculty
- Events....lots of events: Coffee clubs, listening sessions, and speaker series on relevant data management topics.

Next, more highlights from our campus training and outreach efforts.

**Campus Training
and Outreach**

Other campus outreach activities include promoting best practices in digital preservation and incorporating data into Open Access week.



MS Word

PDF

MS Excel

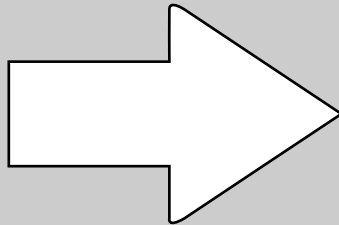
CSV

GIF or JPG

AAC (iTunes)

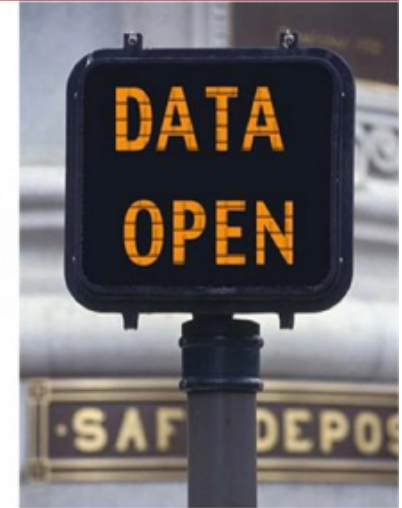
TIFF

WAV



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LIBRARIES



Celebrate Open Access Week and "Make Your Data Open"

Top Ten Ways to Make Your Research Data Open

10. Make data available upon request (e.g., by email).
9. Publish data as a supplement to your journal article in **journals that support data supplements**.
8. Post data sets to your project web site like the **Cedar Creek Ecosystem Science Reserve**.
7. Publish in a data repository for your discipline, e.g. **arXiv, ICPSR** and others.
6. Publish in the **University's Digital Conservancy** like the **Department of Aerospace Engineering & Mechanics**.
5. Ensure the openness of your shared data with a **Creative Commons Zero license**.
4. Use **proper citation techniques** for the data you reference in journal articles.
3. Don't limit data sets to short-term, proprietary formats like Microsoft Excel: **Learn more about file formats for long-term access**.
2. For private data, use **anonymization techniques** before sharing.
1. **Manage your data** throughout the research process.

Campus Training and Outreach

Our data management plan workshops and consultations have reached over 300 faculty since January 2011.

5
Active learning
exercises

18
Sessions taught
this year

7 Departmental
Requests

15
librarian
co-instructors

Slides:



Creating a Data Management Plan for Your Grant Application

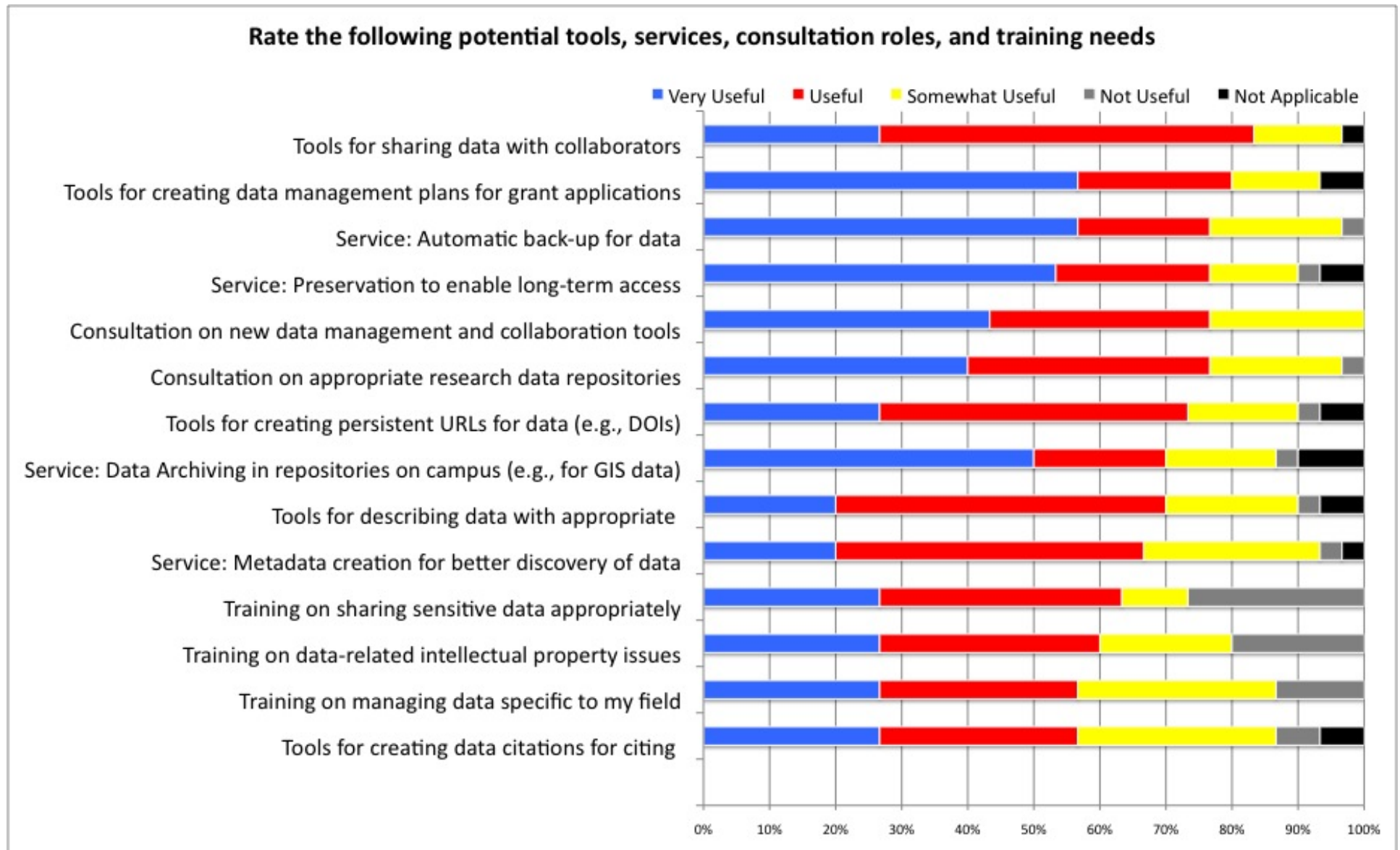
Lisa Johnston (ljohnsto@umn.edu)
Kristi Jensen (kjensen@umn.edu)

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Science & Engineering Library

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Google docs Menu

Finally, user needs are continuing to be assessed with evaluation of workshop attendees and new "Data Literacies" grant research.



This area of opportunity for libraries is something new that we have been doing for a long time.

**Data
Archiving**

Our existing repository services for digital archiving, preservation, and open access are addressing needs not currently met on campus.



digitalconservancy

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[University of Minnesota Digital Conservancy >](#)
[University of Minnesota - Twin Cities >](#)
[Unmanned Aerial Vehicle \(UAV\) Research Group >](#)
[Control Law Flight Data >](#)

Please use this permanent URL to cite or link to this item: <http://purl.umn.edu/107827>

Title: Thor Flight 15

Authors: Murch, Austin

Issue Date: 22-Jun-2011

Description: Flight test data, Thor Flight 15 on 06/06/11, in two formats: MATLAB and plain text

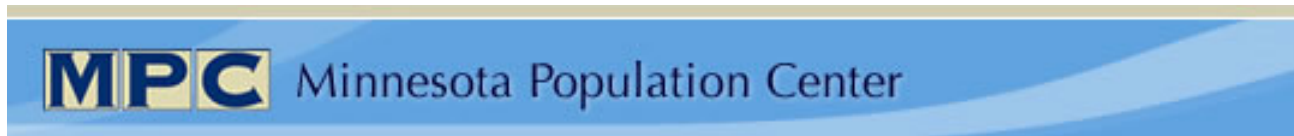
Permanent URL: <http://purl.umn.edu/107827>

Appears in Collections: [Control Law Flight Data](#)

Files in This Item:

File	Description	Size	Format	
flight_data_dictionary_thor.pdf	Metadata	196Kb	PDF	View/Open
FlightReports_2011_06_06.txt	Flight Report for Test Date	2Kb	Text	View/Open
thor_flight15_loworderAW_2011_06_06.txt	Flight Data, plain text format	11441Kb	Text	View/Open
thor_flight15_loworderAW_2011_06_06.mat	Flight Data, MATLAB format	1113Kb	MATLAB	View/Open

Data require specialized approaches and it is important to express our capacities clearly for our users.



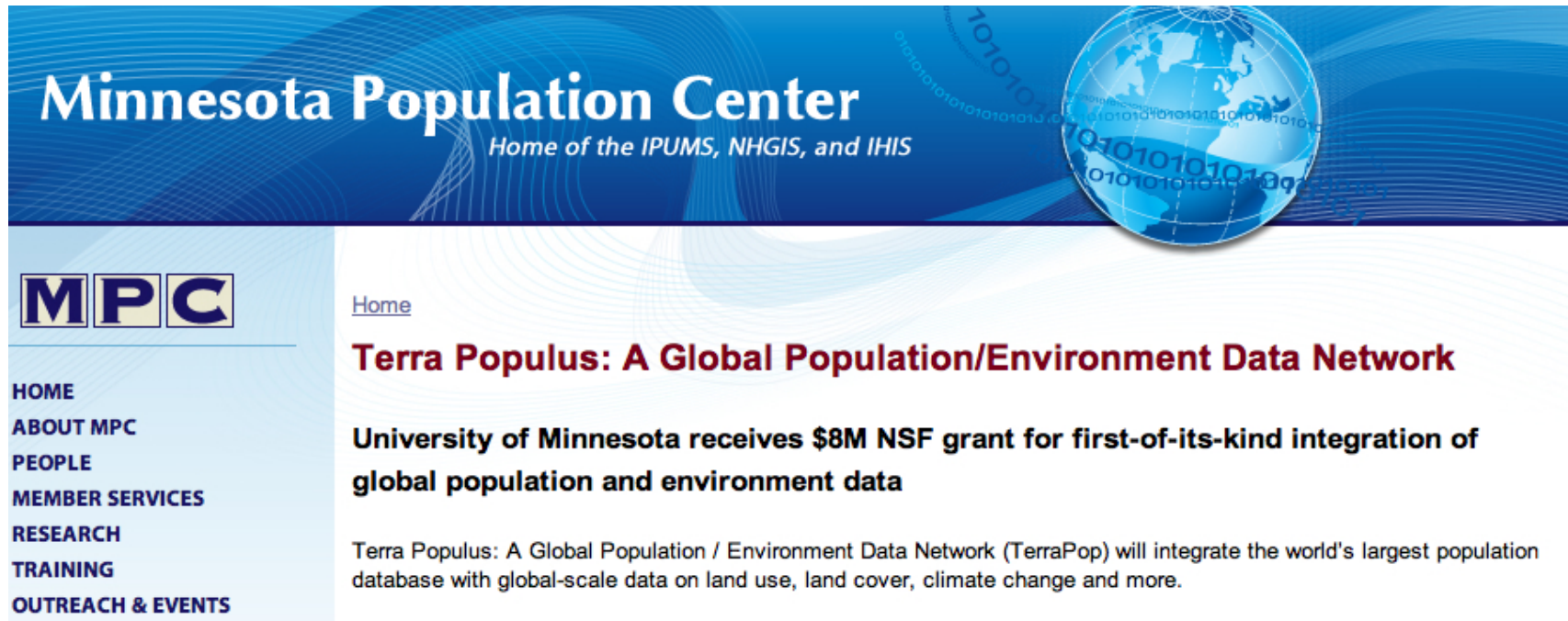
Finally, the libraries are the key to long-term access and preservation of our campus research data assets.

**Access and
Preservation**

It is not enough to just keep the data safe....we have to create unique environments that facilitate access, reuse, and generate new discoveries.



The Library plays a key role in building these new cyberinfrastructure environments as the preservation and access experts.



Minnesota Population Center
Home of the IPUMS, NHGIS, and IHIS

MPC

- HOME
- ABOUT MPC
- PEOPLE
- MEMBER SERVICES
- RESEARCH
- TRAINING
- OUTREACH & EVENTS

[Home](#)

Terra Populus: A Global Population/Environment Data Network

University of Minnesota receives \$8M NSF grant for first-of-its-kind integration of global population and environment data

Terra Populus: A Global Population / Environment Data Network (TerraPop) will integrate the world's largest population database with global-scale data on land use, land cover, climate change and more.



U-Spatial: Spatial Sciences and Systems Infrastructure

U-Spatial networks data, equipment, and expertise to benefit all researchers working with spatial science and systems at the University of Minnesota.

Library Roles in Research Data Management

Current

- NSF and NIH Data Management Plan (DMP) consultation and training sessions
- “Managing Your Data” web site includes research services directory, and subject-specific data repositories.
- Promote best practices in data citation, digital preservation of files, and sharing.
- Continuing needs-assessment, exploring “data literacy” skills of graduate students.
- Data Archiving Services that preserve and disseminate research data through existing services, such as the University Digital Conservancy and UMedia Archive.

Prospective

- Sponsorship of speaker series on emerging fields such as digital humanities, data visualization, or citizen science
- Data Archiving Services that preserve and disseminate specialized forms of research data (e.g., U-Spatial, Terra Populus)
- Metadata Guidelines that help researchers describe their research data assets for sharing, allowing others to reuse more easily.
- Implementation of a Research Commons facility, supplied with technology, tools, and expertise, to help develop communities of practice in a face-to-face context

Thanks. Please reuse any of our web site and workshop content.

Website: "Managing Your Data" University of Minnesota Libraries.
<https://www.lib.umn.edu/datamanagement>

Workshops: "Creating a data management plan" University of Minnesota Libraries **<https://www.lib.umn.edu/datamanagement/workshops>**

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http://www.pop.umn.edu/terra_pop

U-Spatial: Spatial Sciences and Systems Infrastructure (2011)
<http://uspatial.umn.edu/index.html>