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

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

Many Organizational Structures!

Many People Involved!

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

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.
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 librarians in a number of new roles.

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

With whom do you share your data?

- Nobody at all: 8%
- Researchers in my unit: 49%
- Researchers on campus: 17%
- Researchers at other U.S. institutions: 22%
- Researchers at international institutions: 12%
- The general public: 5%
The libraries' first success was a campus-facing Web site that gathered resources and information for our changing data environment.

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.
I'm going to describe a number of initiatives that make up the core of our research data management program.
First, we look at a new model of librarian roles and expectations.
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**

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

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

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

Top Ten Ways to Make Your Research Data Open

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

15
librarian co-instructors

Creating a Data Management Plan for Your Grant Application

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

Understanding User Needs

Rate the following potential tools, services, consultation roles, and training needs

- Tools for sharing data with collaborators
- Tools for creating data management plans for grant applications
- Service: Automatic back-up for data
- Service: Preservation to enable long-term access
- Consultation on new data management and collaboration tools
- Consultation on appropriate research data repositories
- Tools for creating persistent URLs for data (e.g., DOIs)
- Service: Data Archiving in repositories on campus (e.g., for GIS data)
- Tools for describing data with appropriate
- Service: Metadata creation for better discovery of data
- Training on sharing sensitive data appropriately
- Training on data-related intellectual property issues
- Training on managing data specific to my field
- Tools for creating data citations for citing

Very Useful  Useful  Somewhat Useful  Not Useful  Not Applicable

University of Minnesota
Driven to Discover
This area of opportunity for libraries is something new that we have been doing for a long time.
Our existing repository services for digital archiving, preservation, and open access are addressing needs not currently met on campus.
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.
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.
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

Recap
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


Bibliography