

Data Management Services Product Management

Data Management Services Product/Service Definition

The Data Management Services provide faculty, researchers and graduate students with guidance and support during the research data lifecycle (see data lifecycle diagram in the Appendix). This support and guidance includes:

- Assistance with development of data management plans for grant proposals.
- Assistance with managing the life cycle of research data, including producing or capturing, describing, providing access, and preserving research data in an appropriate repository
- Assistance with metadata, including referrals to appropriate metadata standards and their application
- Referrals to units in University Information Technology Services (UITs), such as the Research Data Center, HPC/HTC Consulting, AZ-Live, Visualization, and Statistical Consulting.
- Campus-wide education on issues related to data management, such as open data and open science.

Data Management Services Business case

In the past, academic libraries have been involved at the end of the traditional research publication cycle providing access to articles, books and other publication formats. Academic libraries are now becoming more involved at various points in the research life cycle. Several changes have taken place in the past several years to accelerate this change.

In 1999, the U.S. Office of Management and Budget amended [OMB Circular A-110](#) to require research data produced with funding from Federal agencies be made publicly available through procedures established through the Freedom of Information Act (FOIA). Federal agencies have implemented this policy in a variety of ways, such as:

- The National Science Foundation (NSF) requires all grant proposals to include a supplemental data management plan, see [NSF Dissemination and Sharing of Research Results](#). This is a new implementation of their Data Sharing Policy.
- The National Institute of Health (NIH) expects all grant proposals requesting more than \$500,000 to include a data sharing plan. See [NIH Data Sharing Policy](#).
- The National Endowment for the Humanities (NEH) Digital Humanities Implementation Grants requires a plan on how data will be managed, disseminated, and preserved. See [NEH Digital Humanities Implementation Grants](#).

In addition, the Office of Science and Technology Policy released a policy memorandum on February 22, 2013 directing federal agencies with more than \$100 million in research and development expenditures to develop plans to make the published results of federally funded research freely available to the public within one year of publication and requiring researchers to better account for and manage the digital data resulting from federally funded scientific research.

- In response, the Association of Research Libraries, the Association of American Universities and the Association of Public and Land-grant Universities are identifying what campuses need to get ready for the federal agency plans and to reflect campus interests and needs to the federal agencies as they formulate their draft plans.

The changes at the National Science Foundation and the National Institute of Health, has accelerated libraries' increasing involvement in data management plans. Academic libraries are

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also becoming involved at several points in the research data lifecycle. In response, many academic libraries have begun to focus on developing library services that support storing and curating data in order to increase research productivity.

The University of Arizona, with the Libraries and the Office of the Vice-President for Research (VPR) taking a lead, charged the Campus Data Management and Curation Advisory Committee with the following: identify needed support mechanisms; identify needed cyber infrastructure; and propose organizational models and distribution of responsibility. The Committee's recommendations (approved on April 6, 2012) included:

- The campus needs to develop a coordinated, campus-wide strategy in support of data management for researchers across campus
- The Libraries will serve as integrated point of service for faculty and researchers
- Office of the VPR will collaborate with the Libraries on communication about data management service to campus and provide information to campus business managers through Sponsored Projects
- UITS will work with other units to develop costs for data storage options and collaborate with the Libraries and Office of the VPR to develop a long-term strategy for data storage, data access and data preservation.
- The campus should foster internal and external collaborative opportunities aimed at improving research data management
- Establish an ongoing Campus Data Management Subcommittee, a subcommittee of the Research Computing Governance Committee, to establish tools and policies for the management and curation of research data, work with stakeholders to make available tools that can be used for determining which practices are most appropriate for particular types of data, and provide advice to the UA on optimal strategies going forward.

Data Management Services Target Market Description

The target market for data management services is faculty, researchers, and graduate students at the University of Arizona. The intent of Data Management Services is to provide support and advice to faculty, researchers, and graduate students as they develop data management plans for grant proposals and during the research data lifecycle.

Data Management Product/Service Requirements

One of the recommendations from the Campus Data Management and Curation Advisory Committee is that UITS will work with other units to develop costs for data storage options and collaborate with the Libraries and Office of the VPR to develop a long-term strategy for data storage, data access and data preservation.

Some disciplines provide subject data repositories where faculty and researchers can upload their data. In addition, some journal publishers require authors to submit their data and other supporting materials along with their article manuscript. The subject data repositories and the journal publishers that accept data do not cover a majority of disciplines. The UA either needs to develop a data repository for faculty and researchers who are working in disciplines that do not have a subject data repository or collaborate with other organizations (such as GWLA) to develop a regional data repository. The Research Computing Governance Committee, with membership from the Library, UITS, Office of the VPR, and various academic units, is developing recommendations for the development of a data repository for campus. Related, the

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Libraries are involved in an ABOR RIF tri-university effort titled “Live-data Repositories”, an initial step towards the vision of united data management support across the three state universities.

Currently, the solutions we offer include:

- Campus Repository Service – there are limitations on file size and limited data management/curation services. Refer to the Campus Repository Services Product Roadmap
- UITS Research Data Center includes shared memory, distributed memory and high throughput, but does not provide data curation services or ability to share data with others

Data Management Services 3-5 Year Vision and Current State

3-5 Year Vision:

Faculty, researchers, and graduate students will be aware of our data management services; will know where to obtain information about them; and will know how to access our services. By using our services, customers will be able to gain knowledge about data management and data curation practices and become more self-sufficient as a result of using data management services. Any referrals we make, whether within the library, to another unit on campus or outside the university, will be necessary, appropriate and seamless. Those using our services will overwhelmingly be pleased with the services we provide.

Current State

Webpage

In June 2012, the Data Management Resources website (<http://data.library.arizona.edu>) was released. The website includes many resources, including the Data Management Plan Tool (DMPTool), an online tool that helps researchers develop data management plans by providing templates using specific agency requirements. It was developed by several libraries and is hosted by the California Digital Library. The Library configured the DMPTool for the UA and added specific information and links for UA faculty, researchers, and graduate students.

According to Google Analytics (from 10/17/2012 to 9/30/2013), there have been 880 unique visitors to the Data Management Resources website.

Marketing and Promotion

We are working with the Office of the VPR on promotion and marketing:

- June 7, 2012 -- 3D memo sent to campus from Carla Stoffle, Leslie Tolbert, and Michele Norin announcing the *Recommendations of the Campus Data Management and Curation Advisory Committee* and formation of standing data management committee
- December 2012 -- 3D memo sent to campus and an email message was sent to the RAMTALK listserv announcing data management services.
- April 25, 2013 – Campus Note was published in Lo Que Pasa from Carla Stoffle and Leslie Tolbert on data management services.

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In addition, email messages sent to all new NSF and NIH grant awardees include a message about data management services, cc'ed to the Data Curation Librarian.

Education

The past several years, SPDM has developed three programs on Open Data and Open Science:

- Fall 2011, as part of Open Access Week, open data advocates: Eric Kansa, Victoria Stodden and Steve Koch presented at *The Future of Data: Open Access and Reproducibility* campus-wide program and also met with several groups on campus.
- Fall 2012, as part of Open Access Week, campus speakers: Jennifer Barton, Sudha Ram, and Bonnie Hurwitz presented at *The Open Data Revolution: Challenges and Innovations* campus-wide program.
- February 2013, Michael Nielsen, author of Reinventing Discovery: the New Era of Networked Science, visited campus and gave a campus-wide presentation on *Open Science: Accelerating the pace of Scientific Discovery* and met with several campus groups.

Activities and Timelines for 1-3 years

Data Management Services are still in development. Even though there has been some initial work that has been done, we are still in the “development, promotion and building mode”. Activities for the coming 1-3 years are organized under Promotion, Organizational Model for Scaling out Data Management Services, Education, Needs Assessment, Metadata Services, and Intra- and Inter-Institutional Support.

Promotion

There has been some use of the Data Management Resources website; however there still is a general lack of awareness on campus of data management services. This coming year, the emphasis will be on promoting library and campus data management services. We plan to approach promotion in several ways:

- Once a semester -- send out memos about data management services collaborating with the VPR's Office and the Dean of the Libraries on the content of the memo (ongoing).
- Summer/Fall 2013 -- develop Data Management Services brochure.
- Fall 2013 and ongoing -- work with RST and AHSL librarians to communicate with colleges and departments on data management services.
- Summer 2013 -- contact grants recipients (pre-January 2013) to congratulate them on their grant award and provide information about data management services.
- Contribute to the Research Portal that is being led by the VPR's Office.
- Ongoing -- work with Campus Data Management Subcommittee on additional ideas and campus groups to promote our services to.

Organizational Model for Scaling out Data Management Services

Currently, the Data Curation Librarian is the only library staff member providing support for data management services. There is a clear need to promote data management services on campus (as noted above) and to assess needs for additional services. The Research Services Team

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has responsibilities for needs assessment and communication to faculty and graduate students. In addition, each RST librarian has assigned responsibility as a College Coordinator. The Data Curation Librarian and RST agreed to work together on the following:

- Communicate with colleges and departments about data management services
- Develop and present Data Management workshops to colleges and departments

The Arizona Health Sciences Center Library (AHSL) has responsibility for the Colleges of Public Health, Pharmacy, Nursing, and Medicine. The AHSL librarians serve as liaisons to the AHSL colleges. The Data Curation Librarian and AHSL librarians will work together on communicating with faculty and researchers and developing data management workshops for the health sciences colleges.

Needs Assessment

Research what additional data management and data curation services campus should provide by working with the Campus Data Management Subcommittee, RST librarians, and AHSL librarians.

Education

Workshops and Presentations

- Contact colleges about offering a workshop for their faculty and graduate students on data management plans and data curation (starting Fall 2013 and continuing each semester).
- Develop workshops for faculty and graduate students on data management and data curation in collaboration with RST librarians (starting Fall 2013 and continuing each semester).
- Develop online data management tutorials and provide access on the Data Management Resources website (first tutorials available Fall 2013, other related tutorials developed as needed).

Open Data -- develop campus-wide programs on issues related to data management, such as open data and open science.

Metadata Services

Provide metadata services to faculty, researchers, and graduate students related to research data.

- Provide consulting services on relevant metadata standards to faculty, researchers, and graduate students as they develop data management plans (ongoing).
- Provide consulting services on metadata application to faculty, researchers, and graduate students (ongoing).
- Investigate the use of data identifiers, such as DOIs, ARKs, and how this would link with ORCID (Open Researcher and Contributor ID) (Spring 2014).

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Intra- and Inter-Institutional Support

Utilize expertise on campus in data management and data curation. For example, the Campus Data Management Subcommittee recommended adding the following functionality and resources to the Data Management Resources website:

- Dynamic discussion system where faculty, researchers, and graduate students can ask questions on developing data management plans of others on campus (Coordino, <http://www.coordino.com> is an example of such a system). (Spring 2014)
- Provide a compilation of successful data management plans and relevant data projects at the University of Arizona (Fall 2013)

Explore various inter-institutional resources to help the University of Arizona expand the data management services it provides (Spring 2014), such as:

- Digital Preservation Network, <http://www.dpn.org/>
- DataOne, <http://www.dataone.org/>
- Data Conservancy, <http://dataconservancy.org/>
- VIVO, <http://vivoweb.org/>

Bibliography

NSF Dissemination and Sharing of Research Results –
<http://www.nsf.gov/bfa/dias/policy/dmp.jsp>

NIH Data Sharing Policy -- http://grants.nih.gov/grants/policy/data_sharing/

NEH Digital Humanities Implementation Grants -- <http://www.neh.gov/grants/odh/digital-humanities-implementation-grants>

OMB Circular A-110 -- http://www.whitehouse.gov/omb/circulars_a110#53

Appendix

Research Data Life Cycle

