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Title

Academic Librarians & Open Access of Data: Challenges & Opportunities in Research Data Management

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<https://escholarship.org/uc/item/46v1x2c7>

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Publication Date

2015-03-12



Academic Librarians & Open Access of Data

CHALLENGES & OPPORTUNITIES IN RESEARCH DATA MANAGEMENT

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UNIVERSITY OF CALIFORNIA, IRVINE, LIBRARIES

PREPARED FOR PRESENTATION @ THE UNIVERSITY OF CALIFORNIA, RIVERSIDE, 12 MARCH 2015

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University of California Open Access Policy

- ▶ The Academic Senate of the University of California passed an [Open Access Policy](#) on July 24, 2013, ensuring that future research articles authored by faculty at all 10 campuses of UC will be made available to the public at no charge.
- ▶ The policy covers more than 8,000 UC faculty and as many as 40,000 publications a year. By granting a license to the University of California prior to any contractual arrangement with publishers, faculty members can now make their research widely and publicly available, re-use it for various purposes, or modify it for future research publications.
- ▶ Faculty on three campuses (UCLA, UCI and UCSF) began depositing articles in eScholarship on November 1, 2013.

Adapted from: <http://osc.universityofcalifornia.edu/open-access-policy/>

Stakeholders

An OCLC Research report, “Starting the Conversation: University-wide Research Data Management Policy” (December 2013) lists the following stakeholders for “starting the conversation” about research data management policy on academic campuses:

- ▶ The University
- ▶ The Office of Research
- ▶ The Research Compliance Office
- ▶ The Information Technology Department
- ▶ The Researchers
- ▶ The Academic Units
- ▶ The Library

Source: <http://oclc.org/research/publications/library/2013/2013-08r.html>

Elements of the Conversation

- ▶ Who owns the data?
- ▶ What Requirements are Imposed By Others?
- ▶ Which Data Should Be Retained?
- ▶ For How Long Should Data Be Maintained?
- ▶ How Should Digital Data Be Preserved?
- ▶ Are there Ethical Considerations?
- ▶ How are Data Accessed?
- ▶ How Open Should the Data Be?
- ▶ How Will Costs Be Managed?
- ▶ What are the Alternatives to Local Data Management?

Source: <http://oclc.org/research/publications/library/2013/2013-08r.html>

Faculty Assessment of the State of Research Computing (FASRC) at University of California, Irvine (2013)

“Most critical research computing need”

- ▶ Our assessment is that long-term research data storage, and associated data management, is the single most critical research computing need not being met on campus.
- ▶ The FASRC committee believes that a well-run data storage service would allow many faculty groups to coordinate data storage using a centralized system, foster research collaboration, and provide access to archived research data.
- ▶ Faculty expressed a need for having a secure place to archive their data, if not centrally, elsewhere on or off campus.
- ▶ As a major component of the University’s scholarly product, research data must not only be stored securely but preserved and curated in trusted repositories so that the data remain accessible to the research community after a project is completed. Such accessibility enables secondary analysis of research data originally collected by University faculty and researchers

Source: <http://sites.uci.edu/fasrc/files/2012/11/Faculty-Assessment-of-the-State-of-Research-Computing-Report.pdf>

Online Courses

University of Edinburgh offers an excellent array on self-paced online instruction on a variety of topics:

- ▶ [Research data explained](#)
- ▶ [Data management plans](#)
- ▶ [Organising data](#)
- ▶ [File formats & transformation](#)
- ▶ [Documentation & metadata](#)
- ▶ [Storage & security](#)
- ▶ [Data protection, rights & access](#)
- ▶ [Sharing, preservation & licensing](#)
- ▶ [Software practicals](#)

Source: <http://datalib.edina.ac.uk/mantra/>

DIY Training Kit for Librarians (Edinburgh University)

- ▶ Promotional slides for the RDM Training Kit
- ▶ Training schedule
- ▶ Research Data MANTRA online course by EDINA and Data Library, University of Edinburgh
- ▶ Reflective writing questions
- ▶ Selected group exercises (with answers) from UK Data Archive, University of Essex
- ▶ Podcasts for short talks by the original Edinburgh speakers if running course without 'live' speakers
- ▶ Evaluation forms
- ▶ Independent study assignment: Interview with a researcher, based on Data Curation Profile

Source: <http://datalib.edina.ac.uk/mantra/libtraining.html>

Data Management for Clinical Research (Online course, Vanderbilt University)

“This course is designed to teach important concepts related to research data planning, collection, storage and dissemination. Instructors will offer information and best-practice guidelines for 1) investigator-initiated & sponsored research studies, 2) single- & multi-center studies, and 3) prospective data collection & secondary-reuse of clinical data for purposes of research. The curriculum will balance theoretical guidelines with the use of practical tools designed to assist in planning and conducting research. Real-world research examples, problem solving exercises and hands-on training will ensure students are comfortable with all concepts.”

Source: <https://www.coursera.org/course/datamanagement>

UC Irvine Libraries Initiatives

- ▶ The UCI Libraries are partners with the Office of Information Technology (OIT) and the Office of Research in an effort to define the long term direction and priorities for research computing and electronic research services on this campus.
- ▶ A committee made up of UCI faculty, and staff from the Libraries and OIT, has made a set of recommendations to campus administration based on an online survey and focus groups with faculty. Among the proposals made are the need to develop a much faster network for the movement of research data across campus and externally; more support staff to enhance services offered, such as management, preservation, and organization of research project data; and development of a research data storage system for long term, secure storage of both raw and processed data sets.
- ▶ I currently sit on an OIT/Faculty/Staff advisory committee on improving its computer network capacity.

Finding faculty for potential partnerships

- ▶ NSF awards to your institution

<http://www.nsf.gov/awardsearch/>

- ▶ NIH funded grants to your institution

<http://report.nih.gov/award/index.cfm>

- ▶ Data Management Plans
- ▶ Past faculty contributing content to institutional repositories
- ▶ Google Scholar
- ▶ Data Citation Index
- ▶ ORCID

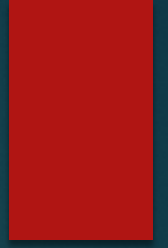
Talking Points with Faculty

UCI Libraries draft in progress

Questions to ask Faculty

- ▶ Can you tell me a bit about your research and what sort of data is involved?
- ▶ Are you collecting your own or re-using existing data?
- ▶ Where is your data currently stored?
- ▶ What software and tools do you use to manage or analyze your data?
- ▶ Do you currently share your data? Would you like to share it in the future?
- ▶ Do you link your datasets to associated research publications?
- ▶ How is your research funded and does the funding agency require data sharing or preservation?
- ▶ Have you completed a Data Management Plan?

Trusted Repositories: The Data Seal of Approval



Data Seal of Approval

- ▶ [The Data Seal of Approval](#) is one such assessment initiative. Created by the Data Archiving and Networked Services (DANS) archive in The Netherlands and overseen by an international board, the Data Seal of Approval is meant to demonstrate to researchers that data repositories are taking appropriate measures to ensure the long-term availability and quality of data they hold.
- ▶ The seal sets forth [16 guidelines](#) related to trustworthy data management and stewardship. ICPSR was one of the first six data repositories to earn the Data Seal of Approval in 2011. You can read the ICPSR self-assessment here -- http://assessment.datasealofapproval.org/assessment_28/seal/html/. The other five archives awarded the Data Seal of Approval are the Archaeology Data Service (United Kingdom); the DANS Electronic Archiving System (Netherlands); the Platform for Archiving CINES (France); the Language Archive of the Max Planck Institute for Psycholinguistics (Netherlands); and the UK Data Archive.
- ▶ The seal is awarded after an online self-assessment regarding a data repository's adherence to the guidelines. The assessment is then reviewed by the DSA Board before the seal is given.
- ▶ In Europe, the Data Seal of Approval serves as a Basic Certification step in an [integrated framework for auditing and certifying digital repositories](#).

Source: <http://www.icpsr.umich.edu/icpsrweb/content/datamanagement/preservation/trust.html>



Data Seal of Approval 2.0 (2013)

Fundamental to the following guidelines are five criteria, that together determine whether or not the digital research data may be qualified as sustainably archived:

- ▶ The research data can be found on the Internet.
- ▶ The research data are accessible, while taking into account relevant legislation with regard to personal information and intellectual property of the data.
- ▶ The research data are available in a usable format.
- ▶ The research data are reliable.
- ▶ The research data can be referred to.

Source:

https://assessment.datasealofapproval.org/media/files/DSA_booklets/DSA-booklet_1_June2010_1.pdf

Assessment manual:

https://assessment.datasealofapproval.org/guidelines_52/pdf/

Purdue University Research Repository

Start Your Research Project

- ▶ Create a Data Management Plan: Learn about the detailed requirements for your data management plan (DMP). Funding agency requirements are very specific and our DMP resources can help you to clear up any confusion.
- ▶ Upload Research Data to Your Project Create a project to upload and share your data with collaborators using our step-by-step form to guide you through the process. Invite collaborators from other institutions to join your project.
- ▶ Publish your DatasetPackage, describe, and publish your dataset with a Datacite DOI. Publishing will ensure your dataset is citable, reusable, and archived for the long-term.

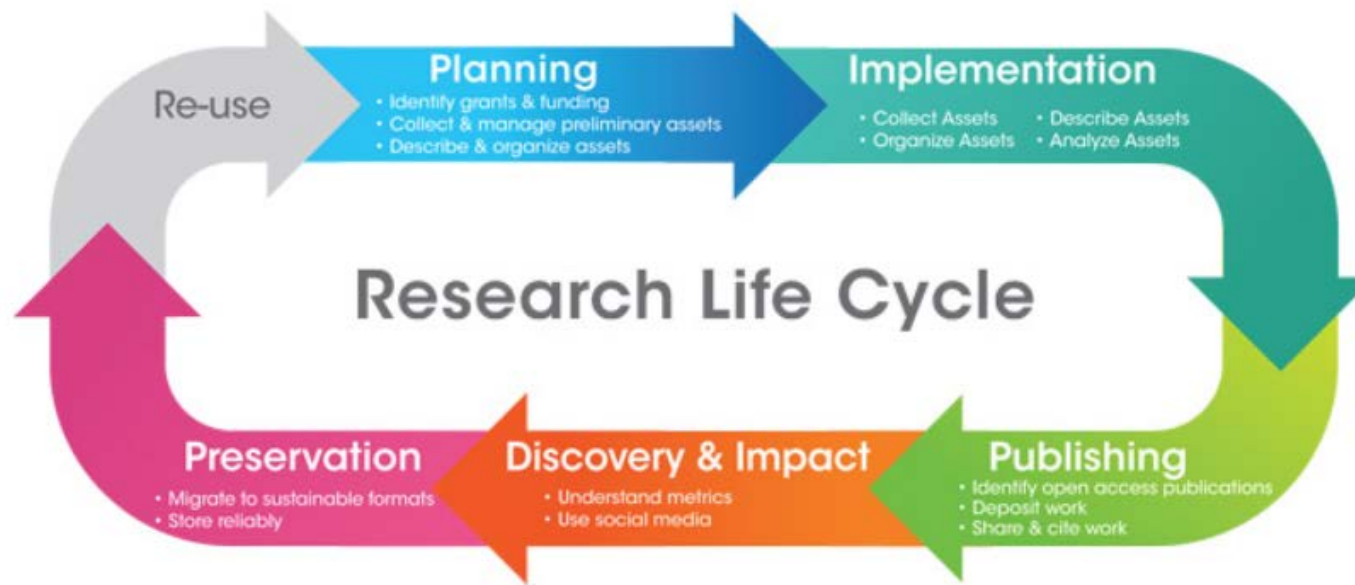
Source: <https://purr.purdue.edu/>

Developments from UCI Libraries

- ▶ Established in March 2015 a new unit for E-Research & Digital Scholarship Services
- ▶ New unit is within Collection Development Department
- ▶ Arrival of the head of the unit; unit beefed up with 2 additional staff (metadata librarian plus a programmer, transferred from Cataloging and Library IT.
- ▶ Local implementation of Dash for deposit of and access to research data generated by UCI faculty and researchers
- ▶ Collaboration with faculty on archiving research conducted from and around Orange County in an OC (California) Data Portal
- ▶ Discussion on using ORCID to identify faculty researchers

UCI Digital Scholarship Services

One-stop Destination for Help with Research and Beyond



UCI Libraries' Digital Scholarship Services support digital scholarship work performed by the UCI community, including e-Research, data management, digital humanities, and digital preservation. We offer a variety of services and tools to assist throughout the research lifecycle, from planning and implementing a research project to publishing, preserving, and increasing the visibility and impact of research outcome. Click on each phase of the lifecycle graphic above to learn more.

<http://www.lib.uci.edu/dss/>

Dash at UCs



Describe, manage, and share your research data

Explore Dash

- [Find data](#)
- [Learn more about Dash](#)
- [Read FAQ](#)
- [Visit Dash on GitHub](#)

Not part of the UC community?

[Go to DataONE Dash](#)

Visit UC Dash Sites

Find and share data from your UC Campus

- [UC Berkeley](#)
- [UC Irvine](#)
- [UCLA](#)
- [UC Merced](#)
- [UC Office of the President](#)
- [UCSF DataShare](#)
- [UC Santa Cruz](#)

Don't see your UC campus? They are not currently participating. Contact us for more information.



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Dash is a collaborative project between the [UC Libraries](#) and the [UC Curation Center](#).



<https://dash.cdlib.org/>

DataOne Dash

The screenshot shows the DataONE Dash website interface. At the top left is the 'dash' logo with the tagline 'DATA SHARING MADE EASY' and the 'UNIVERSITY OF CALIFORNIA' logo. At the top right is the 'DataONE' logo. Below these is a navigation bar with links for 'About', 'Search Data', 'Share Data', 'My Datasets', and 'DataONE Dash'. The main content area is divided into two columns. The left column features a search section with a magnifying glass icon, the text 'Search for Data', a search input field, a 'Go' button, the word 'OR', and a 'Browse all data' button. The right column features a 'Share Data' section with a globe icon, a list of four benefits: 'Make your data count', 'Get credit for your data', 'Ensure reproducibility', and 'Promote reuse', and a 'Meet funder requirements' item. Below the list is a 'Get started' button. At the bottom of the page is a footer with links for 'Terms of Use', 'FAQ', 'Policies', and 'Contact Us'. The footer also includes the 'CDL' logo and text: 'Dash is a service of the University of California Curation Center of the California Digital Library. Copyright © 2014 The Regents of the University of California'. On the right side of the footer is the text: 'DataONE Dash is a collaborative project between the DataONE Network and the UC Curation Center.' and the 'UC3' logo.

dash UNIVERSITY OF CALIFORNIA
DATA SHARING MADE EASY

DataONE

About Search Data Share Data My Datasets DataONE Dash

Search for Data

Go

OR

Browse all data

Share Data

- ✓ Make your data count
- ✓ Get credit for your data
- ✓ Ensure reproducibility
- ✓ Promote reuse
- ✓ Meet funder requirements

Get started

Terms of Use | FAQ | Policies | Contact Us

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DataONE Dash is a collaborative project between the DataONE Network and the UC Curation Center. **UC3**

<https://onshare.cdlib.org/xtf/search>

UCI Dash

The screenshot shows the UCI Dash website interface. At the top left is the 'dash' logo with the tagline 'DATA SHARING MADE EASY' and the 'UNIVERSITY OF CALIFORNIA' logo. To the right is the 'UC Irvine | UCI Libraries' logo. A navigation bar contains links for 'About', 'Search Data', 'Share Data', 'My Datasets', 'UCI Dash', and 'OC Data Portal'. Below the navigation bar is a decorative orange and red gradient banner. The main content area is divided into two columns. The left column features a 'Search for Data' section with a search icon, a text input field, a 'Go' button, and options to 'Browse all data' or 'Explore by geoLocation'. The right column features a 'Share Data' section with a share icon, a list of four benefits (Make your data count, Get credit for your data, Ensure reproducibility, Promote reuse, Meet funder requirements), and a 'Get started' button. At the bottom, there is a footer with links for 'Terms of Use', 'FAQ', 'Policies', and 'Contact Us'. The footer also includes logos for CDL (California Digital Library) and UC3 (University of California Libraries and UC Curation Center), along with copyright information: 'Dash is a service of the University of California Curation Center of the California Digital Library. Copyright © 2014 The Regents of the University of California' and 'Dash is a collaborative project between the UCI Libraries and the UC Curation Center.'

<https://dash.lib.uci.edu/>

Orange County Data Portal

The screenshot shows the Orange County Data Portal website. At the top left is the 'dash' logo with the tagline 'DATA SHARING MADE EASY' and the University of California logo. To the right is the 'UC Irvine | UCI Libraries' logo. A navigation bar contains links for 'About OCDP', 'Search OCDP', 'Share Data', 'My Datasets', 'UCI Dash', and 'OC Data Portal'. The main header reads 'Orange County CALIFORNIA Data Portal'. The main content area is split into two columns: 'Search for Data' with a search input field and a 'Go' button, and 'Share Data' with a list of benefits and a 'Get started' button. The footer includes links for 'Terms of Use', 'FAQ', 'Policies', and 'Contact Us', along with logos for CDL, UC3, and a copyright notice for 2014.

dash | UNIVERSITY OF CALIFORNIA
DATA SHARING MADE EASY

UC Irvine | UCI Libraries

About OCDP | Search OCDP | Share Data | My Datasets | UCI Dash | OC Data Portal

Orange County CALIFORNIA Data Portal

Search for Data

OR

Share Data

- ✓ Make your data count
- ✓ Get credit for your data
- ✓ Ensure reproducibility
- ✓ Promote reuse
- ✓ Meet funder requirements

Terms of Use | FAQ | Policies | Contact Us

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<https://dash.lib.uci.edu/xtf/search?smode=orangecounty-home>


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<http://creativecommons.org/publicdomain/zero/1.0/>

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CC0 use for data



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CC0 can be particularly important for the sharing of data and databases, since it otherwise may be unclear whether highly factual data and databases are restricted by copyright or other rights. Databases may contain facts that, in and of themselves, are not protected by copyright law. However, the copyright laws of many jurisdictions cover creatively selected or arranged compilations of facts and creative database design and structure, and some jurisdictions like those in the European Union have enacted additional sui generis laws that restrict uses of databases without regard for applicable copyright law. CC0 is intended to cover all copyright and database rights, so that however data and databases are restricted (under copyright or otherwise), those rights are all surrendered. CC0 is also [particularly relevant to scientific data](#). An opinion piece in *Nature* on "[Post-publication sharing of data and tools](#)" explicitly recommends open sharing and the use of CC0 to put data in the public domain:

"Although it is usual practice for major public databases to make data freely available to access and use, any restrictions on use should be strongly resisted and we endorse explicit encouragement of open sharing, for example under the newly available CC0 public domain waiver of Creative Commons."

Contents [\[hide\]](#)

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 - 1.2 The British Library
 - 1.3 CERN Library
 - 1.4 Cologne-based Libraries
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 - 1.6 Digital Public Library of America
 - 1.7 Dryad
 - 1.8 European Library
 - 1.9 European Union
 - 1.10 Europeana
 - 1.11 FigShare
 - 1.12 Flickr

https://wiki.creativecommons.org/CC0_use_for_data

CDL on Data Licensing

Data Licensing

DataONE Dash (onshare.cdlib.org)

All data submitted to DataONE Dash will require a [Creative Commons Public Domain Dedication \(CC0 1.0\) waiver](#). This waiver has no restrictions on use and encourages reuse of data for any and all purposes. Read more on why CC0 is best for data at wiki.creativecommons.org/CC0_use_for_data.

UC Dash (campus.dash.edu)

The [UC Academic Personnel Policy \(APM\) 020](#) states: "Notebooks and other original records of the research are the property of the University" (II. 5, p.3), which the university interprets as meaning that research data are owned by the university.

UCOP General Counsel currently recommends a [Creative Commons Attribution 4.0 \(CC-BY-4.0\) license](#), requiring attribution, but they continue to study the issue. In the interim, data submitted to UC Dash instances will be made available via CC-BY-4.0. We recognize that this will not fit the needs of all researchers, but it simplifies implementation of Dash at this early stage.

Our use of CC-BY to make the terms of reuse explicit has some important advantages (the following text is borrowed heavily from [the Dryad repository's FAQ](#) on their use of CC-BY licenses):

- **Interoperability:** Since CC-BY is both human and machine-readable, other people and indexing services will automatically be able to determine the terms of use.
- **Universality:** CC-BY is a single mechanism that is both global and universal, covering all data and all countries. It is also widely recognized.
- **Simplicity:** There is no need for humans to make, or respond to, individual data requests. This allows more scientists to spend their time doing science.

<http://cdluc3.github.io/dash/licensing/>

Challenges to Data Sharing

On the researcher side...

- ▶ Data sharing culture varies by discipline & by country
- ▶ Sharing data different from sharing published articles
- ▶ Not wanting someone to steal your ideas or get access to your data
- ▶ Some research, e.g. with personal identifiers cannot be shared
- ▶ Repurposing of data may be precluded
- ▶ Further consent from respondents necessary
- ▶ Privacy of respondents must be protected
- ▶ National security may come into play
- ▶ Complexity and size of dataset
- ▶ Meaningful metadata not present
- ▶ File naming inconsistent

Challenges to Data Sharing...

On the librarian side ...

- ▶ Institutional support missing?
- ▶ Skill-set missing?
- ▶ Not knowledgeable about faculty research
- ▶ Not interested or knowledgeable about a subdiscipline
- ▶ Full work load already
- ▶ Reference/Bibliographer Model
- ▶ Cannot attend training off-campus
- ▶ New model of service - helping in “publishing” research
- ▶ Lack of experience in data stewardship or data curation
- ▶ Economic constraints of institution – who’s going to pay for archiving & access?

Domain Repositories Seek Funding for Research Data Management

Current mandates for researchers to manage data have one drawback – the false assumption that it will be cost-free, or that the state will automatically support it.

Hence, 25 domain repositories, meeting in Ann Arbor at ICPSR in 2013, drafted an open letter urging one national authority to commit funds to support managing of research data and its preservation and accessibility.

See “Sustaining Domain Repositories for Digital Data: A Call for Change from an Interdisciplinary Working Group of Domain Repositories” - <http://tinyurl.com/domainrepositories25>

Challenge for Domain Repositories

- ▶ Despite the growing demand for data sharing and access, domain repositories face an uncertain financial future in the United States. The need for data archives is rising due to open access mandates, research innovations, and the growing volume of scientific data that needs to be curated, preserved, and disseminated. Yet funding for domain repositories remains unpredictable and inadequate for the task at hand. Of particular concern is the mismatch between the long-term commitments to preservation inherent in the work of archiving, and the short-term and episodic funding upon which this work is based. Many archives rely primarily on project-based grants, even though the expectation of stakeholders is that data will be available and usable indefinitely.
- ▶ Another concern is that the push towards open access, while creating more equity of access for the community of users, creates more of a burden for domain repositories because it narrows their funding possibilities. Without care, this may create a different kind of inequity-- less well-funded scholars or institutions will be less likely to have their products of research preserved for the future.

Domain Repositories' Call For Change

A Call for Change

- ▶ Domain repositories must be funded as the essential piece of the U.S. research infrastructure that they are. This means:
Ensuring funding streams that are long-term, uninterrupted, and flexible
- ▶ Creating systems that promote good scientific practice
- ▶ Assuring equity in participation and access

There may not be one solution to the problem. Repositories may very well need different funding models across domain and repository type. But in every case, *creating sustainable funding streams will require the coordinated response of multiple stakeholders in the scientific, archival, academic, funding, and policy communities.*

Source: "Sustaining Domain Repositories for Digital Data: A Call for Change from an Interdisciplinary Working Group of Domain Repositories" - <http://tinyurl.com/domainrepositories25>

Benefits to Sharing Data

- ▶ Contributing to scientific knowledge
- ▶ Potential of new discoveries & understanding based on secondary analysis
- ▶ Researchers get cited more often if their data is “published”
- ▶ Publicly funded research made transparent
- ▶ The public benefits from open access to data
- ▶ Scientific fraud risk diminished
- ▶ Improves profile of institution
- ▶ Enhances scholarly collaboration & communication
- ▶ Repurposes the library mission for the foreseeable future

Panton Principles for Open Data

Panton Principles

Principles for Open Data in Science

[Endorse](#) [Principles](#) [About](#) [Comment](#)

Science is based on building on, reusing and openly criticising the published body of scientific knowledge.

For science to effectively function, and for society to reap the full benefits from scientific endeavours, it is crucial that science data be made **open**.

By open data in science we mean that it is freely available on the public internet permitting any user to download, copy, analyse, re-process, pass them to software or use them for any other purpose without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. **To this end data related to published science should be explicitly placed in the public domain.**

<http://pantonprinciples.org/>

Final Thoughts

- ▶ These data repositories are places to archive data and not usually places to allow enhanced online analysis of data, such as enabling cross-tabulation of survey data results
- ▶ Dash & DataOne use Creative Commons Licenses – allowing commercial entities to reuse the data, which may be problematic for some researchers
- ▶ Web archiving is another way to capture at risk web data and archive it
- ▶ At UCI we are beginning to consider web archiving a collection development responsibility
- ▶ Not all data is worth archiving of course but grant funding agencies mandate archiving of funded research data

Acknowledgements

- ▶ Thanks to all the online sources from which I have included material for this presentation.
- ▶ And my gratitude to UCR Libraries, especially Rhonda Neugebauer and LAUC-R for inviting me to speak and to Judy Lee for introducing me.

Thank you!

Thank you for your participation in this session!

[Read the Learning Library blog for more of my presentations]

<http://sites.uci.edu/learninglibrary/author/dtsang/>



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About Daniel C. TSANG

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From Social Science Data Librarian to Data Librarian: Recent Presentations and Activities

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Posted on [August 12, 2014](#) by [Daniel C. TSANG](#)



— Dan Tsang gives talk on receiving ICPSR's Flanigan Award 2013. Photo credit: ICPSR.