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Ohio IR Day | Fall 2017 Meeting

Nov 14th, 10:15 AM - 11:00 AM

The Library's Role in Data Management Support: A Perspective from UC Libraries

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University of Cincinnati - Main Campus

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The Library's Role in Research Data Management Support

A perspective from UC Libraries

Amy Koshoffer

Science Informationist

www.libraries.uc.edu

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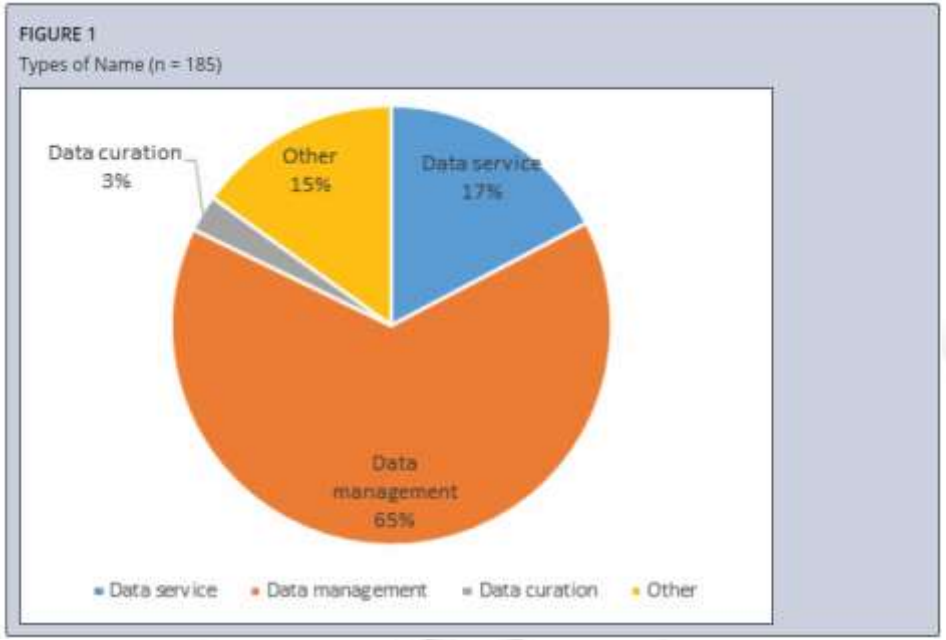
A study of 185 library websites indicated that 65% use the term "data management" on their webpage. (Yoon & Schultz 2017)

A recent survey of 80 American Research Libraries (ARL) institutions found that 80% had data curation and repository services in place or planned to provide them (Hudson-Vitale et al., 2017).

Survey of 73 ARL libraries found that 74% offer some data management support (Fearon et al., 2013).



Yoon, A., & Schultz, T. (2017). Research Data Management Services in Academic Libraries in the US: A Content Analysis of Libraries' Websites. *College & Research Libraries, 78*(7), 920. doi:https://doi.org/10.5860/crl.78.7.920

http://crl.acrl.org/index.php/crl/article/view/16788/18346
http://publications.arl.org/Data-Curation-SPEC-Kit-354/
http://publications.arl.org/Research-Data-Management-Services-SPEC-Kit-334

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What is Research Data Management?

All activities focused on helping

describe, explain, locate, make it easier to retrieve, use, or keep track of *

data

- Researcher Generated Data
- Resources Researchers need to conduct scholarship
- Digital
- Key to reproducibility of research
- Key to data sharing

Leads to …

- Easier research workflow
- More grants
- More money and time to do research
- Happier life

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* NISO, Understanding Metadata 2004;1

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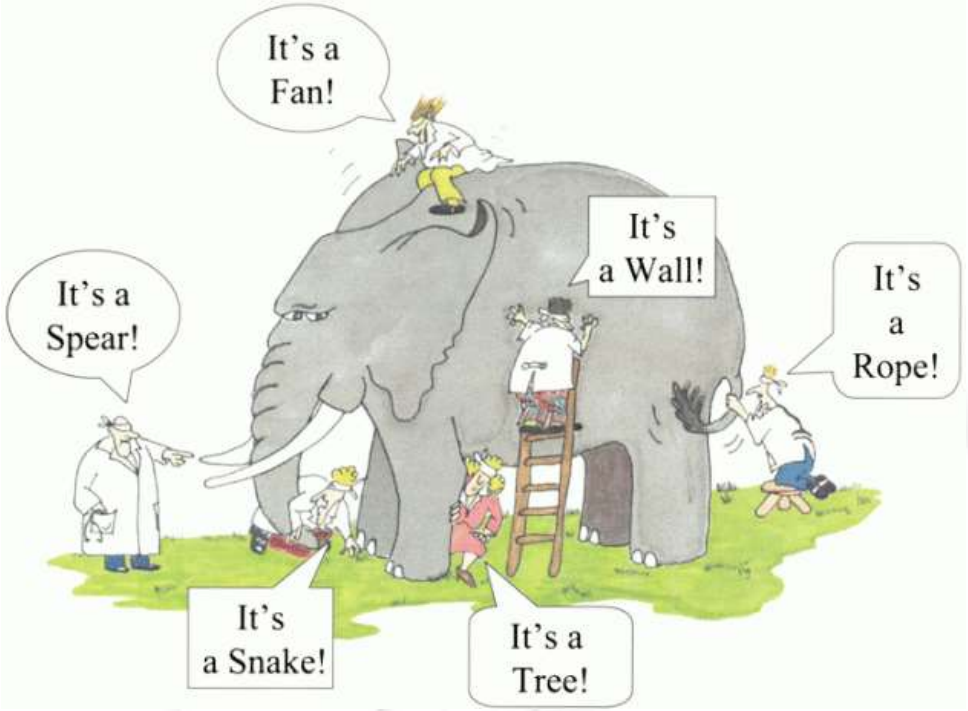
What is Research Data?

- Research data, unlike other types of **information**, is collected, observed, or created, for purposes of analysis to produce **original research results**". (University of Edinburgh)
  - Information collected to answer new questions

- "The recorded factual material commonly accepted in the research community as necessary to **validate research findings**". (Excerpted from OMB Circular A-110 36.d.2.i)
  - Information collected to answer old questions



https://library.umassmed.edu/necdmc/modules - Module 1

www.libraries.uc.edu

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Research Data Associated with Most Disciplines:

UC: Research of Kristina Neumann:
Google map of ancient Antioch with coin data overlay

- Numerical measurements
- Text from Survey/Focus groups
- Images
- Video
- Mapping/GIS data

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Why Manage Research Data?

For the Scientific Community = Sharing

- Meet grant & publishing requirements
  - Support Open Access Policies
- Facilitate new discoveries

For the Research Group = Sharing

- Save time, increase research efficiency
- Maintain data integrity

For the Individual = Management

- Preserve your data
- Increase your research impact

From MIT Libraries' Reasons to Manage & Publish Your Data www.libraries.uc.edu

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Data management Plans vs. Data Management Planning

- Plan
  - List of activities
  - Contract with funding agency
  - Specific to each funder

- **Planning**
  - **On-going activities**

Planning makes creating the plan easy

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Questions to be Addressed in a DMP

- What are the funding agency requirements for data management?

- What data will be created during the research project?

- How will the data files be named and organized?
- How will changes in the data files be tracked?

- Which file format(s) will be used for the data?
- How will the data be documented?

- Where will the data be stored?
- How long will the data be stored? (e.g., 2 years? 10 years?)

- Should the data be placed in a repository or an archive for sharing and long-term storage?

- Who should have access to the data?

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https://www.purdue.edu/research/Ugrad/docs/scripts/Data_Management.pdf

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Meet Grant & Publishing Requirements

	Policy Coverage		Policy Stipulations					Support Provided			
Funder	Published Outputs	Data	Time Limits	DMP	Access / Sharing	Long-term curation	Monitoring	Guidance	Article Repository	Data Repository	Costs
AHRQ	●	●	●	●	●	◐	◐	◐	●	◐	◐
ASPR	●	●	●	●	●	●	●	◐	●	◐	◐
CDC	●	●	●	●	●	◐	●	◐	●	◐	◐
DOD	●	●	●	●	●	○	●	○	●	**	◐
DOE	●	●	●	●	●	◐	◐	◐	●	◐	◐
DOT	●	●	●	●	●	◐	●	◐	●	○	●
FDA	●	●	●	●	●	◐	●	◐	●	◐	◐
NASA	●	●	●	●	●	◐	●	◐	●	◐	◐
NIH	●	●	●	●	●	◐	◐	◐	●	◐	◐
NIST	◐	●	◐	●	●	●			●	**	
NOAA	●	●	●	●	●	●	●	◐	●	◐	◐
NSF	●	●		●	●	◐	●		●	●	●
SI	●	●	●	◐	●	○	○	○	◐	◐	○
USDA	●	◐				◐	○	○	●	**	●
USAID	○	●	○		◐		○	○	○	**	
USGS	●	●	●	●	●	●	●	●	●	**	●
VA	◐	◐	◐	●	**	◐	●	○	●	**	●

Last updated: October 18, 2016

● Full Coverage ◐ Partial Coverage
○ No Coverage ☐ Not Enough Information
** For more information, see http://bit.ly/FedOASummary

www.libraries.uc.edu

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https://figshare.com/articles/Overview_of_OSTP_Responses/1367165

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National Science Foundation
WHERE DISCOVERIES BEGIN

When policies go into effect -	Jan. 2016 (for both Article and Data)
Data Management Plan required with funding proposal -	Yes
Timeline for making articles public -	No later than 12 months from publication
Recommended article repository -	NSF Public Access Repository (NSF-PAR) https://par.nsf.gov/
Timeline for making data public -	https://www.nsf.gov/bfa/dias/policy/dmp.jsp

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The Results of Poor Research Data Management

Data Sharing and Management Snafu in 3 Short Acts

http://www.youtube.com/watch?v=N2zK3sAtr-4&feature=player_embedded

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Issues that arise in Video:

1. Perception that all is in the article – interpretation but not data
2. Ignoring Funding or Publisher requirements
3. Not sure of location of ONLY copy of data
4. Storage of data on a USB, not backed-up in a more reliable location
5. Off campus storage – no instructions for access
6. Proprietary program that is no longer accessible
7. Non-open format of file type
8. Abbreviations used – meaningless variable and file names
9. No explanation included with data set
10. Lost communication with original data generator

Main issues - Data has no Context

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Research Data Management Best Practices

- Give files meaningful names
- Organized within a folder structure
- Use open formats that will be accessible in the future
- Back up data – “The 3-2-1Rule”
- Prepare for long term preservation
- Provide context –
  - Metadata
  - Readme describing file relationship
  - Protocols
- Provide contact info for data generator
- Name a steward
- Chose a repository

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Journal Requirements

PLOS

Data Availability

The data underlying the findings of research published in PLOS journals must be made publicly available. Rare exceptions may apply and must be agreed to with the Editor. Data should be de-identified where appropriate (see Human Subjects and Animal Research).

= the 'minimal dataset' consists "of the dataset used to reach the conclusions drawn in the manuscript with related metadata and methods, and any additional data required to replicate the reported study findings in their entirety.

https://www.plos.org/editorial-publishing-policies
http://wiki.datadryad.org/Journal_instructions

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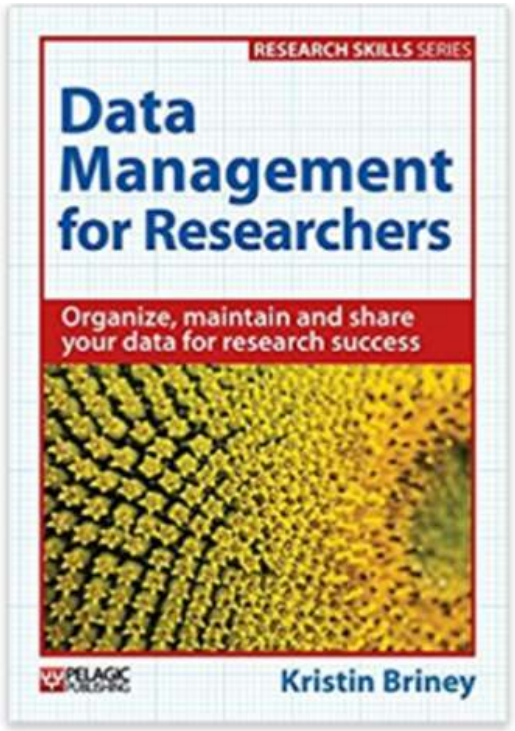
Data or it did not happen

-Kristen Briney



https://pelagicpublishing.com/products/data-management-for-researchers-briney

TEDx Talks
Published on Nov 10, 2015

https://www.youtube.com/watch?v=dXKbkpilQME

DATA AB INITIO

http://uwm.edu/libraries/dataservices/

www.libraries.uc.edu

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Sharing Data – Dr. Christy Holland

PLOS article link - http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177786

scholar@uc
The UC digital repository, part of the UC Research Hub.

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Type keywords in here

Browse | About | Contact | Help

Clot on a Suture Dataset

Collection submitted by: Shenwen Huang

Browse this collection

Clot On a Suture Dataset: Human clots in porcine plasma, Plasma Only (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Human clots in porcine plasma, rt-PA (3.15 ug/ml) (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Human clots in porcine plasma, rt-PA (3.15 ug/ml), Definity, & US (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine clots in human plasma, Plasma Only (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine clots in human plasma, rt-PA (3.15 ug/ml) (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine clots in human plasma, rt-PA (3.15 ug/ml), Definity, & US (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine, Plasma Only (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine, rt-PA (3.15 ug/ml) (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Clot On a Suture Dataset: Porcine, rt-PA (3.15 ug/ml), Definity, & US (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)
Porcine and Human Clot SEM Images (Huang, Shenwen; Shekhar, Himanshu; Holland, Christy)

https://scholar.uc.edu/collections/sufia:bc386p70c

Library input –
Readme files

www.libraries.uc.edu

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Data Management Makes Sharing Data Easier

Research communities want data sharing

Applications in Plant Sciences 5(10):1700111. 2017
https://doi.org/10.3732/apps.1700111

The Frontier of Data Discoverability: Why We Need to Share Our Data

Theresa M. Culley

Theresa Culley – Professor of Biology

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www.libraries.uc.edu

http://www.bioone.org/doi/full/10.3732/apps.1700111

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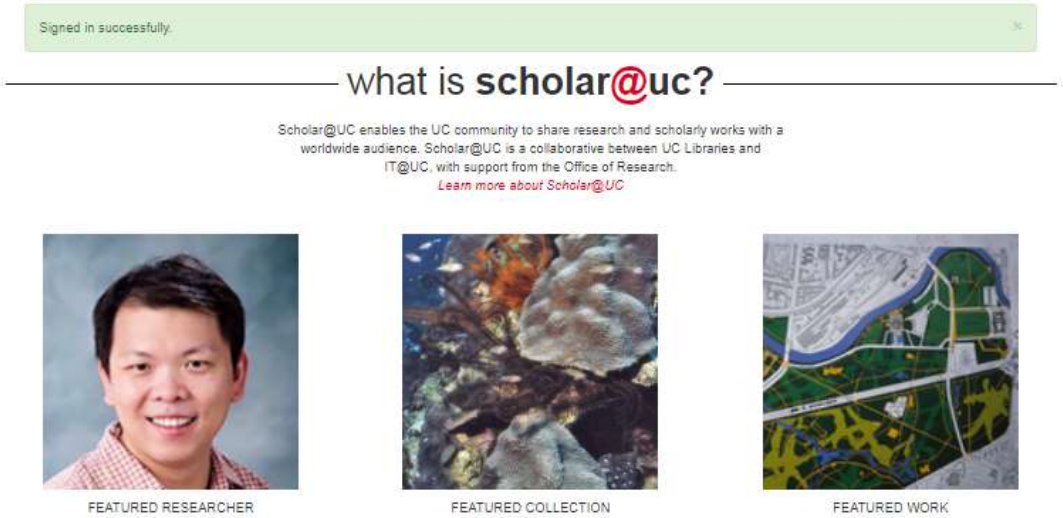
Scholar@UC



- Samvera Community
- In house Developers
- Partnership with IT@UC

- Self Submission
- 6 required metadata fields
  - 21 possible fields

https://scholar.uc.edu/
https://samvera.org/

www.libraries.uc.edu

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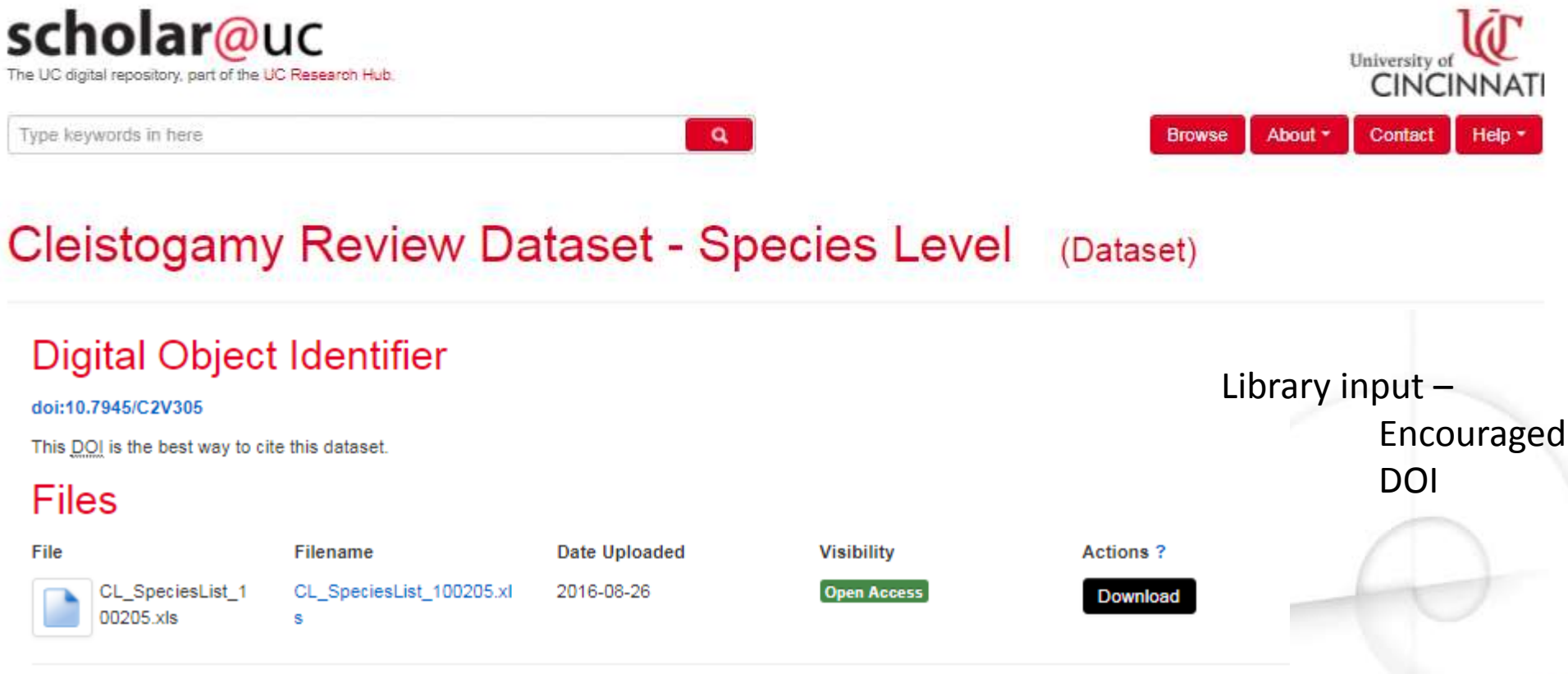
Sharing Data Example



Library input –

Encouraged Submission to IR

DOI

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www.libraries.uc.edu

https://scholar.uc.edu/works/datasets/zk51vj50m

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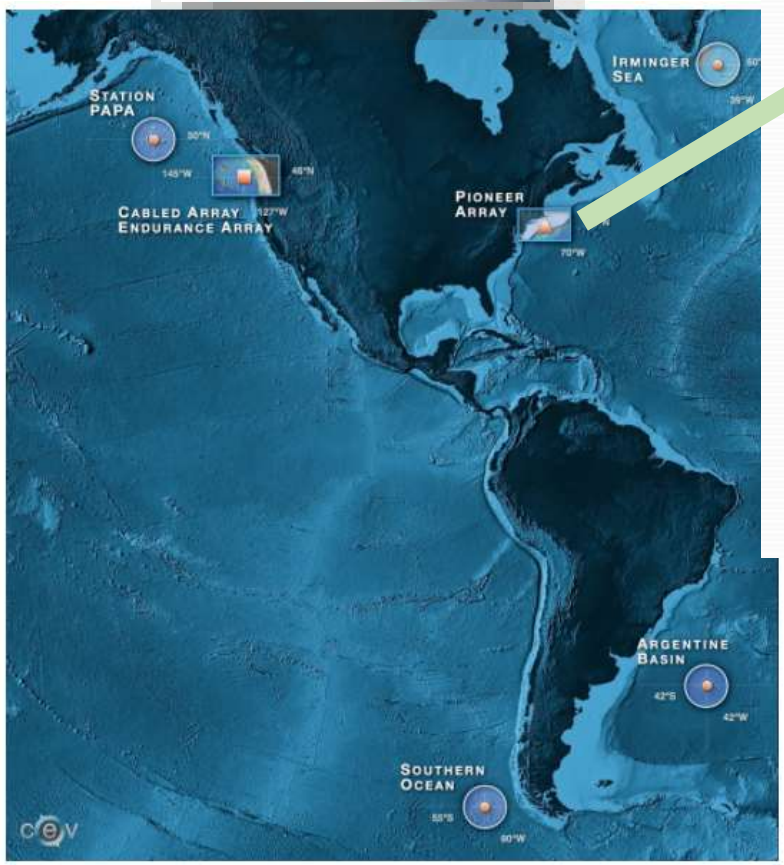
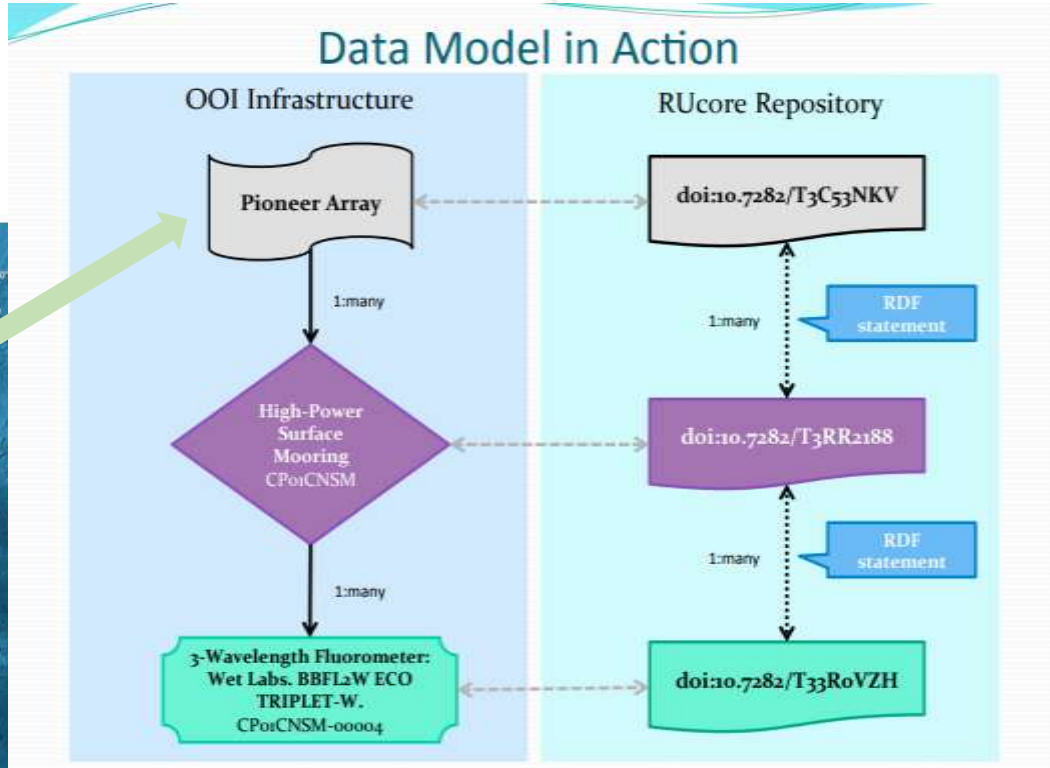
Sharing Data Example

Collecting data to monitor health of the Atlantic and Pacific Oceans

- DM by Cyberinfrastructure group @ Rutgers University
- 800+ instruments
- 75 sites
- Over 10,000 data products in 1st year
- Data deposited in RUcore
- Dynamic Data
- Metadata and DOI strategy developed by RU Librarians
- Based on instrument recalibration





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http://oceanobservatories.org/
https://www.cni.org/topics/e-science/an-ocean-of-data-a-metadata-and-doi-strategy-for-large-dynamic-data-about-the-worlds-oceans
https://rucore.libraries.rutgers.edu/rutgers-lib/46629/#related

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Cool Data Examples

Shared by Data Librarians around the nation

- **University of British Columbia** - Social housing for pigs: http://hdl.handle.net/11272/10219
- **Stanford University** - The Revs Vehicle Dynamics Database: https://purl.stanford.edu/cv083fq4881
- **University of Minnesota** - Frogs Exploit Statistical Regularities in Noisy Acoustic Scenes to Solve Cocktail-Party-Like Problems: https://doi.org/10.13020/D6ZP4H
- **Brown University Library** - Dramatic fighting by male cuttlefish for a female mate: https://doi.org/10.7301/Z0PR7SX4
- **Brown University Library** - Laura the camel from the Cleveland Zoo's brain: https://doi.org/10.7301/Z00C4SPV
- **Brown University Library** - 3D print your own skeleton of a 2,000 year old Ibis mummy in RISD's museum: https://doi.org/10.7301/Z0PZ56R5
- **American University** - List of U.S. Military Bases Abroad" (http://dx.doi.org/10.17606/M6H599 (downloaded over 3168 times)
- **Virginia Tech** - How do sea birds dive without injury? https://data.lib.vt.edu/collections/rn3011410
- **Research Data Archive** - International Comprehensive Ocean-Atmosphere Data Set (ICOADS) - https://rda.ucar.edu/datasets/ds548.0
- **Research Data Archive** - NCEP GDAS/FNL 0.25 Degree Global Tropospheric Analyses and Forecast Grids - https://rda.ucar.edu/datasets/ds083.3

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Partnerships – Dr. Nan Niu, Requirement Engineering

1) Teaching Tool

Repository Use cases were the sources of data for a class project

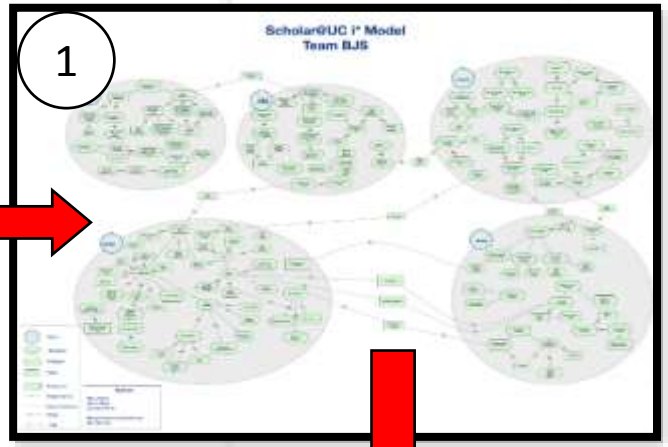
2) Research Tool

Replication study of viewpoint modeling to better understand traceability impact on team-level requirements modeling

3) Data Archive

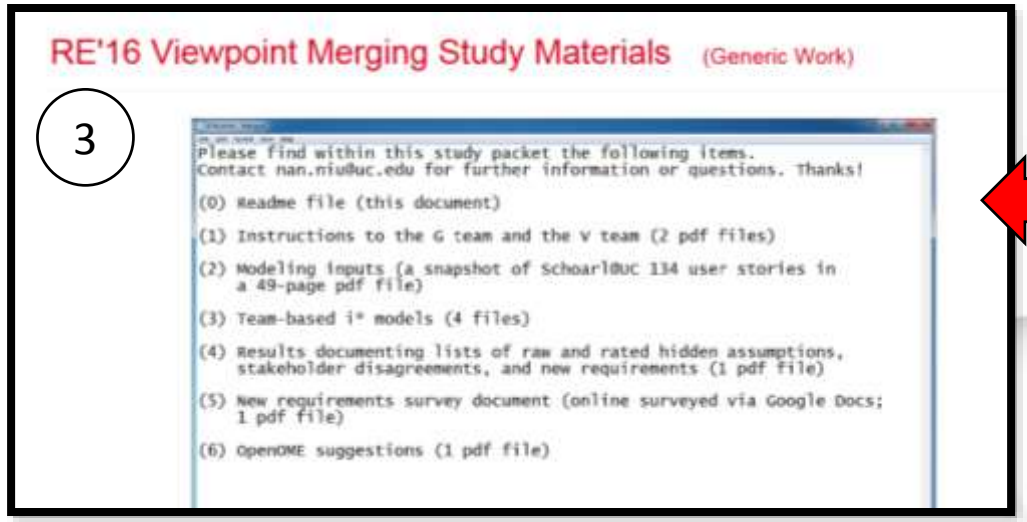
Put all data related to paper into Scholar@UC

1



2

3



Link to supporting documentation for Research Paper in Scholar
https://scholar.uc.edu/works/generic_works/05741s72s

Library Blog Posts
https://libapps.libraries.uc.edu/liblog/2016/01/scholaruc-goes-to-class/
http://libapps.libraries.uc.edu/liblog/2016/09/paper-featuring-scholaruc-gets-best-research-paper-award/

www.libraries.uc.edu

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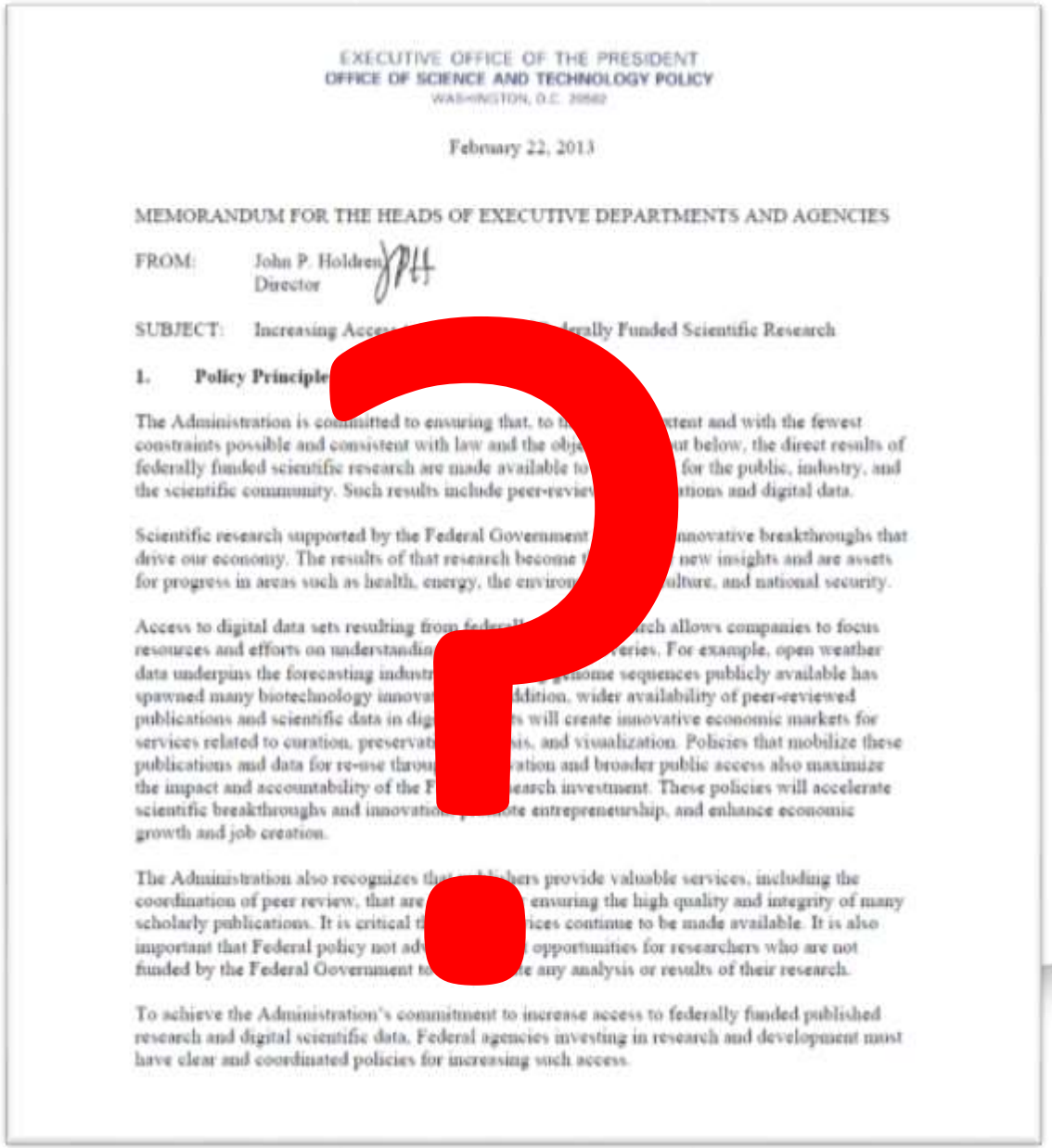

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

February 22, 2013

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: John P. Holdren
Director

SUBJECT: Increasing Acce[illegible]erally Funded Scientific Research

1. **Policy Principle**

The Administration is committed to ensuring that, to t[illegible]xtent and with the fewest constraints possible and consistent with law and the obj[illegible]ut below, the direct results of federally funded scientific research are made available to [illegible] for the public, industry, and the scientific community. Such results include peer-revie[illegible]tions and digital data.

Scientific research supported by the Federal Government [illegible]nnovative breakthroughs that drive our economy. The results of that research become t[illegible] new insights and are assets for progress in areas such as health, energy, the environ[illegible]ulture, and national security.

Access to digital data sets resulting from fede[illegible]rch allows companies to focus resources and efforts on understandin[illegible]veries. For example, open weather data underpins the forecasting industr[illegible]enome sequences publicly available has spawned many biotechnology innova[illegible]ddition, wider availability of peer-reviewed publications and scientific data in dig[illegible]s will create innovative economic markets for services related to curation, preservat[illegible]sis, and visualization. Policies that mobilize these publications and data for re-use throu[illegible]ation and broader public access also maximize the impact and accountability of the F[illegible]earch investment. These policies will accelerate scientific breakthroughs and innovatio[illegible]ote entrepreneurship, and enhance economic growth and job creation.

The Administration also recognizes th[illegible]hers provide valuable services, including the coordination of peer review, that are [illegible] ensuring the high quality and integrity of many scholarly publications. It is critical t[illegible]ices continue to be made available. It is also important that Federal policy not ad[illegible] opportunities for researchers who are not funded by the Federal Government to [illegible]e any analysis or results of their research.

To achieve the Administration's commitment to increase access to federally funded published research and digital scientific data, Federal agencies investing in research and development must have clear and coordinated policies for increasing such access.

The MEMO -

Federal Requirements:

Subject: Increasing Access to the Results of Federally Funded Scientific Research

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https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf

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Efforts to capture at risk data

http://www.ppehlab.org/datarefuge

Sharing rescued data

http://climatemirror.org/

As mirrored data

landsat-pds.s3.amazonaws.com | HTTP | US | amzn-noc-contact@amazon.com

This mirror is operated by Amazon AWS. It is currently hosting the following datasets:

- earthexplorer.usgs.gov | TBA GB TBA GB

https://climate.daknob.net/

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Eric Holthaus @EricHolthaus

Scientists: Do you have a US .gov climate database that you don't want to see disappear?

Add it here:

11:22 PM - 10 Dec 2016

https://twitter.com/EricHolthaus/status/807802801506041856

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LIBRARIES+ NETWORK

DataRefuge

Penn Libraries

ASSOCIATION OF RESEARCH LIBRARIES

moz://a

https://libraries.network/

www.libraries.uc.edu

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Why should Libraries have a role in Research Data Management?

We are masters at giving context to, preserving, and providing access to information.

We are integral to the research process.

Data management activities expand on our existing partnership with researchers.

Relevant to our mission

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How did we get started at UC?

Pre-planning

- The Dean of Libraries, Director of the Science and Engineering Libraries, and Chief Information Officer attended the ARL-DuraSpace E-Science Institute in Dec 2012.

- Strategic Planning
- $$$$$

- Partnerships
- Built/Building Team
- Developed/Developing Services
- New spaces
- Resources

- Work in Progress....

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Should you conduct a needs assessment?

- There are lots of examples of surveys
- Could follow these examples
- At UC we did conduct a survey
  - 55.76% response rate
  - Researchers express need for
    - Data Management Consultation
    - Assistance Archiving Data

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Strategic Initiatives

University of Cincinnati Libraries
Strategic Planning Initiatives

INITIATIVE CHARTER

1. General Information	
Initiative Name:	**Developing a Suite of Programs for UC Researchers** (Research, Implement)

www.libraries.uc.edu

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Partnerships

- Central IT
- UC Libraries – Liaison Librarians, Digital Scholarship Center
- Researchers
- Office of Research
  - AVP Integrated Research– Head of DAAP Library
- Colleges
- Other centers, organizations within UC

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Partnerships

Changjoo Kim –
GIS Partner

Tom Beck –
HPC/Data Day Partner

Geoffrey Pinski
Office of Research – IP office

Littisha Bates
Data Day Partner

Dylan Ward and Craig Dietsch –
GIS Partners

Michael Richardshon
Data Day Partner

John Wallrodt –
Repository/Data Day/
GIS Partner

Yan Yu
Data Day Partner

Members of the Consortium on Cultural Diversity in Chemistry
COS Partners

Brett Kottmann
IT@UC – HPC/UCScienceNet

Jane Combs
IT@UC – Research and Computing

And so many more…

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Building the Team

Research Data Services Team

- Senior Associate Dean & Directory of Health Sciences Library
- Assistant Director for Research and Informatics
- Director of Science and Engineering Libraries
- Informationists
- Metadata Librarians
- Liaison Librarians
- IT@UC Representatives
- Scholarly Communications &
  Digital Publishing Strategist

Collaborators

- Repository Team
- Digital Scholarship Center

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Building the Team

Professional development

- Science Boot Camps
- Research Data and Access Preservation Conference (RDAP) https://www.asist.org/events/rdap-summit/
- Midwest Data Librarian Symposium - https://mwdatalibrariansymposium.wordpress.com/
- Subject Specific
  - iDigBio Digital Data Conference - https://www.idigbio.org/tags/berkeley
- ACRL – Data Management Roadshows http://www.ala.org/acrl/conferences/roadshows/rdmroadshow

Professional Organizations

- Research Data Alliance https://www.rd-alliance.org/node
- Association for Information Science and Technology (ASIST) https://www.asist.org/
- SLA Data Caucus http://data.sla.org/
- International Association for Social Science Information Services and Technology (IASSIST) http://iassistdata.org/

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Building Services

- Set up a website
  http://libraries.uc.edu/digital-scholarship/data-services.html

- Specialized Emails
  ASKDATA@UC.EDU , ASKGIS@UC.EDU

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Building Services

- Health Informatics
- Data Management Planning
- Geographic Information Systems support
- Data Visualization
- Specialized workshops
  - Data management planning
  - Bioinformatics databases
  - Data best practices
  - OSF, REDCap, LabArchives,
  - Intro to GIS, R

www.libraries.uc.edu

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http://www.mdpi.com:8080/2220-9964/6/8/249/htm

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Some of our Accomplishments

- Established Health Informatics Lab
  - Hired Graduate Assistant – teaches R workshops, support

- GIS Support - http://guides.libraries.uc.edu/gis
  - Established a Data & GIS Collab
  - Student workers – support
  - GIS Learning Community

- Center for Open Science
  - Role of Ambassador
  - Reproducibility Workshops
  - OSF.UC.EDU

- NCBI workshops

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Some of our Accomplishments

- Held two UC Data Day Events – Next will be March 6, 2018
  - Keynote by Patty Brennan
  – Director of NLM and NIH Interim Associate Director for Data Science
- DMPTool Integration
- ORCID Institutional Membership
- Repository Support - Scholar@UC Camps
- Grant support
  - 2 NIH Informationist Supplements
  - Replicating the NIH Model at UC
    - College of Medicine – awarded grants to COM faculty
    - College Engineering and Allied Science considering model

Student Poster Session, UC Data Day 2017

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Challenges

- Data Management is not sexy no matter how you package it
- Developing good use cases
- Avoiding the perception of mandates
- Building partnerships takes time
- Getting time with researchers
- Social Science research support
- Budgets are never big enough

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Our Next Steps:

Connect with more researchers

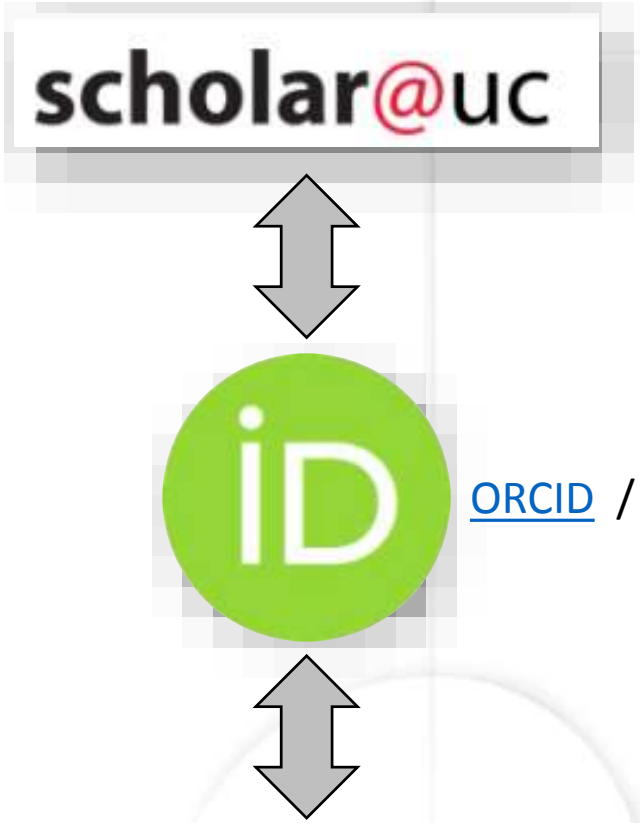
Data Science Support - Symposium

Data Visualization Support – Curriculum/DSC

Integration into researcher workflows – Purdue example

Interoperability of Systems

Digital Preservation Policy



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How do you get started?

Take a moment of Zen

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How do you get started?

Are you a team of one or many?

- Focus on the small steps - best practices
- Focus on existing partnerships
- Make use of the existing community

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Resources

Great Institutional Resources
U of Minnesota - https://www.lib.umn.edu/datamanagement
Massachusetts Institute of Technology - https://libraries.mit.edu/data-management/

Get on Newsletters
University of Illinois https://www.library.illinois.edu/rds/ get a Data Nudge
Stanford - https://library.stanford.edu/research/data-management-services

Professional or Institution Courses and Resources
DataOne - https://www.dataone.org/data-management-planning
U of Massachusetts – NECDMC https://library.umassmed.edu/necdmc/dmp
Mantra - http://mantra.edina.ac.uk/
SLA Data Caucus – Toolkit - http://data.sla.org/data-tool-kit/

Books *Data Management: A Practical Guide for Librarians* – Margaret E. Henderson
978-1-4422-6439-7 • eBook

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Thank You

Questions?

Answers?

Slides available at https://osf.io/7v6e3/

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