

***RESEARCH AS DESIGN: DESIGN AS
RESEARCH***



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Oklahoma State University
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BACKGROUND



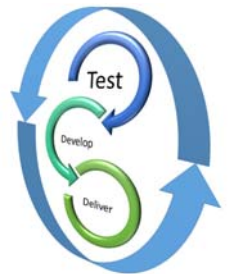
We worked with OSU's office of Institutional Research and Planning to identify new and tenure-track faculty who had not yet achieved tenure, which was a total of 259 members. We interviewed 31, or 12% of the total number who could have responded to our invitation. They were from the following departments/colleges: Business, Construction Management, Design, Housing and Merchandising, Engineering, Entomology, Geology, History, Sociology, Zoology

We obtained IRB approval to contact all new and tenure-track faculty in order to schedule individualized interviews. Our research goals were as follows:

1. What are faculty needs for research data support relating to data management plans, data analysis and storage, data information literacy, and research impact?
2. What is the library's role in providing some or all of those services and resources?
3. Who else on campus is offering similar services and how can we create partnerships?
4. What training do librarians themselves need in order to provide quality services to support these needs?

METHODOLOGY*

- Do any of your funding sources require you to draft a data management plan? If yes, how do you go about creating this plan?
- What type of data do you generate? What is the size of a typical data set?
- Who performs the majority of the following activities-Data collection; data documentation (metadata); data cleaning; Backing up data; data analysis; data storage and organization; data sharing outside of your research group; data archive or long-term storage; data disposal/destruction associated with your research?
- Does personnel within your department/college typically provide technical support or assistance with your OSU research?
- Does your research include the analysis of data collection by others (also referred to as a secondary data)?
- Do you generate metadata? Could you please describe the system for version control that you have in place?
- How often and how do you share your data with others? What happens to your data after the research project has concluded?
- How important do you think these services (data management planning; institutional repository; data storage; data carpentry; metadata support; research impact (Altmetric and ORCID) might be and how likely would you be to use these services?
- How important is it for your students to learn about data information literacy processes and tools?



*Questions adapted from Data Curation Profile Toolkit and the University of Virginia Data Interview Protocol in the ARL Spec Kit 334

DATA ANALYSIS

Entry #	Date Created	Date Updated	Date	1) What is	2) Do any	<u>If yes<	Do you as	Are you a	<u>If yes<	Quantitat	Geospatia	Digital dat	Digital tex
1	2016-04-20 11:23:40		Apr 04, 2016										
2	2016-04-20 11:59:52		Apr 04, 20	Technology	Yes	yes	Themselv	Not Yet		Checked		Checked	Checked
3	2016-04-20 12:16:36			Sociology	No					Checked	Checked	Checked	
4	2016-04-20 12:26:54		Feb 17, 20	business	No					Checked		Checked	Checked
5	2016-04-20 12:37:18		Mar 11, 2016		No					Checked			
6	2016-04-20 12:45:48		Mar 11, 2016		No					Checked			Checked
7	2016-04-20 12:53:38		Mar 15, 20	Entomolo	No					Checked	Checked	Checked	
8	2016-04-20 13:18:32		Feb 26, 20	CEAT	Yes		he wrote the data plan off the top of his f			Checked	Checked		Checked
9	2016-04-20 13:36:28		Mar 24, 20	CEAT	Yes		He benchi outside	nothing in Tulsa		Checked			Checked
10	2016-04-20 13:46:31		Mar 18, 2016		Yes					Checked			Checked
11	2016-04-20 13:53:15		Mar 16, 20	Engineeri	Yes		Copied colleague DMP from another proj			Checked			Checked
12	2016-04-20 13:57:19		Mar 24, 2016		Yes		NSF			Checked	Checked		Checked
13	2016-04-20 14:06:12		Mar 24, 20	NIDCD	No					Checked		Checked	
14	2016-04-20 14:10:53		Mar 23, 2016		No								
15	2016-04-20 14:15:44		Mar 30, 20	Arts and Sciences						Checked			
16	2016-04-20 14:21:05		Mar 29, 20	Human Sc	No					Checked		Checked	Checked
17	2016-04-20 14:25:42		Mar 29, 20	Arts and s	No							Checked	
18	2016-04-20 14:32:04		Mar 28, 2016		Yes					Checked			Checked
19	2016-04-20 14:49:16		Mar 23, 20	managem	No					Checked			Checked
20	2016-04-20 14:59:37		Mar 11, 20	Engineeri	Yes		to share h no	no		Checked	Checked		Checked
21	2016-04-20 15:11:43		Apr 05, 20	Human Sc	No		She would follow gu	Has gotten (I believe		Checked			
22	2016-04-20 15:23:23		Feb 25, 2016		No								Checked
23	2016-04-21 11:14:45		Mar 21, 20	Arts and S	Yes		Not yet, Spring	no		Checked			Checked
24	2016-04-21 11:34:23		Feb 25, 20	Engineeri	No								
25	2016-04-21 11:52:26		Feb 26, 20	History	No					Checked	Checked		Checked
26	2016-04-21 12:06:30			Construct	No								
27	2016-04-21 12:18:09		Mar 09, 2016		Yes		not creating plans ye	Cinthyia offered the		Checked			
28	2016-04-21 12:26:32		Mar 24, 2016		No					Checked			
29	2016-04-21 12:46:39			Human Sciences			Not at this yes						
30	2016-04-21 12:57:11		Mar 09, 20	Zoology	No		Not at the moment but yes			Checked			
31	2016-04-21 13:06:45		Mar 09, 20	Human Sc	No		not at the for MSR- so yes in the future			Checked		Checked	Checked

WHY DESIGN THINKING

The five phases of the design process:



This process allowed us to:

- Engage in both individual and shared thinking
- Define the elements that were of most importance and interest to our researchers regardless of what we already knew about other trends
- Move from random ideas to cohesive action items fairly quickly thanks to our pre-identified categories which allowed us to keep the conversation moving forward and sustain momentum
- Identify internal training and professional development needs that will allow liaison librarians to collaborate with faculty in an informed and proactive manner

DESIGN THINKING

1. **Empathy:** Develop a deep understanding of user needs and therefore really comprehend the situation from their point of view. Most often, this takes the form of in-person interviews and asking open-ended questions to tease out what the user's challenges are in a particular context.
2. **Ideation:** Distill insights and needs into a compelling problem statement that can serve as a solution-generation springboard during the later steps. This stage is all about identifying patterns or problem statements as well as both explicit and implicit needs and focusing on generating as many "solutions" to solve them.



DESIGN THINKING



- 1. Prototyping:** Narrow down solutions to those that are deemed most feasible and identify what type of feedback might be sought, how it will be recorded, as well as a plan for letting go of what is not working and further developing what is.
- 2. Testing:** Refine solutions and make them better based on the additional feedback received until a desired “final” result has been achieved. This final step comprises acting on the feedback received and most importantly, trying again!

DESIGN THINKING @ OSU

1. We split up the faculty responses among the liaisons, the Associate Dean and the head of the liaison program. Each person was responsible for examining responses on the spreadsheet and summarizing the results that were then recorded in a Google Doc for ease of access
2. After that second-level triage was done, we met as a group and wrote each perceived challenge from the summary response onto a different Post It note first individually, then collated as a group



DESIGN THINKING @ OSU

1. Re-frame challenges into “How might we...” questions
2. Draw and be visual
3. Keep all ideas on the table at first
4. Switch to a new brainstorm question every fifteen to twenty minutes
5. Set a goal for how many ideas you want to generate in total
6. Look at each idea:
 - What’s at the core of your idea: what gets you excited about it? What is the real need that this is addressing?
 - Make a list of all the challenges and barriers you are facing with your idea. What are you missing? Who would oppose the idea?
 - Think of additional possibilities that might satisfy the needs your idea responds to. For example: how might we raise money to acquire furniture for a certain space?
 - Let go of ideas that feel too difficult to implement, or that you are not excited about



BRAINSTORMING PROCESS



Hire data specialist or re-purpose positions (3)
Training Support
Preparing online instr. type class
WILE LIVE (12)
Data certificate - Cohort (2)
Peer training
Campus license Lynda.com
UG Res. Office training for (2)
Student researchst mentors
Training Exchange Mother (2)
COMPUSES

RESULTS-CHALLENGES

AWARENESS IS ROCKY

Unaware of library support

Unaware of DMP basics

Believe mostly science uses DMP

Ethics
How do I cite a data set?
When can I use someone else's data?
Where do I find open data sets?

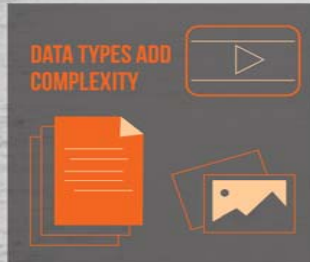
Confidentiality
How do I protect my data?
Can my data be stolen?
How do I store open data while maintaining confidential components?

How do others cite my data and will they?

CONFIDENCE IN DATA SHARING IS STILL A LONG CLIMB

WHAT DO WE DO WITH A SEA OF DATA?

DATA TYPES ADD COMPLEXITY

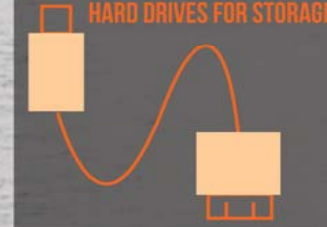


METADATA BASICS & ORGANIZATION STANDARDS ARE LACKING



WHAT DO WE DO WITH A SEA OF DATA?

20% DEPEND ON EXTERNAL HARD DRIVES FOR STORAGE



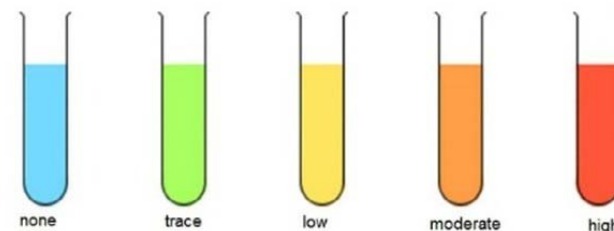
CENTRALIZED STORAGE IS AN ISSUE



RESULTS-SOLUTIONS

Priority Level 1

- Link to existing data sets and repositories from library website and see what existing training videos and learning objects we can borrow
- Join Center for Open Science and create an OSU landing page
- Develop a library/institutional policy for ShareOK (OSU's institutional repository) to enable faculty to upload and store datasets to comply with federal grant requirements
- Create a campus-wide research data committee that would engage campus partners in the following activities:
 - Consulting and access to a referral network both within the libraries and across the university of dedicated experts
 - Centralize research data services and resources
 - Offer workshops and training
 - Ongoing researcher engagement and needs assessment
 - Define cyberinfrastructure planning and support
 - Offer programming and events such as a data forum



RESULTS-SOLUTIONS

Priority Level 2

- Develop a data certificate-possibly offer stipends for faculty to participate
- Develop a training exchange program with other institutions
- Provide training for both graduate and undergraduate students and faculty mentors via Office of Undergraduate Research and in collaboration with the Graduate College

Priority Level 3

- Hire a data specialist position
- Integrate data information literacy as part of concurrent enrollment course and explore offerings throughout the curriculum for both graduate and undergraduate students
- Coordinate an OSU data forum to bring together researchers on campus
- Coordinate a data conference for regional/national programming
- Create an OSU data center to store all types and sizes of data
- Obtain an institutional membership to Globus



DISCUSSION

1. Developed internal training for outreach and workshops
2. Reached a small, but we feel representative, sample
3. Allowed us to make deeper connections
4. Forced us to think beyond the website/workshop models
5. Liaisons really do make a difference
6. Closing the loop is very important



THANK YOU!

Resources:

1. <http://dschool.stanford.edu/>
2. <https://www.ideo.com/post/design-thinking-for-educators>
3. <https://library.educause.edu/resources/2014/6/7-things-you-should-know-about-design-thinking>

Questions?

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