Research Data Management and Sharing and Research Visibility

Sara Mannheimer, Associate Professor, Data Librarian
Jason Clark, Professor, Head of Digital Library Initiatives

Outline

- Data management planning (Sara)
- Storing, archiving, and sharing data (Sara)
- Metadata basics (Sara)
- Benefits of metadata and identifiers (Jason)
- Research(er) visibility (Jason)

Data are...

Data management & sharing requirements

- 2013 OSTP memo required funding agencies with $100 million in expenditures to require researchers to make data public
- 2022 OSTP memo expands requirement to all funding agencies
  - Notably, NIH will implement an updated data management and sharing policy, starting in January 2023.
    NIH data sharing resources | NIH policy FAQs

Expectations for Data and Research sharing and dissemination

National Endowment for the Humanities (NEH)

- Dissemination of Project Results [grant policy]

National Science Foundation (NSF)

- Dissemination and Sharing of Research Results [grant policy]

Expectations for Data and Research sharing and dissemination

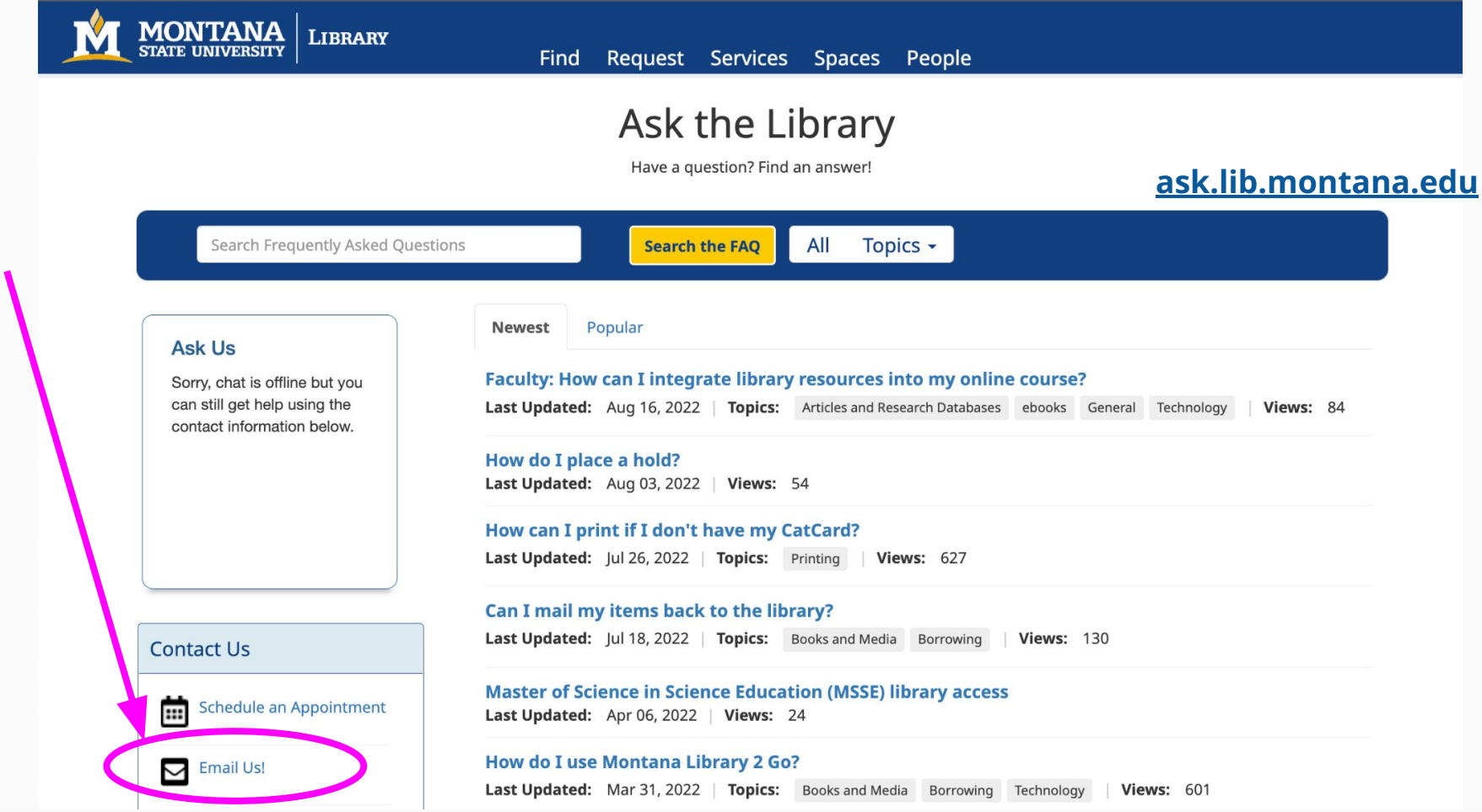
Private funders

- Gates Foundation, Mellon

Journals are requiring data sharing

- PLOS, JAMA

Data management planning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Last Updated: Aug 03, 2022 | Views: 54
How can I print if I don't have my CatCard?
Last Updated: Jul 26, 2022 | Topics: Printing | Views: 627
Can I mail my items back to the library?
Last Updated: Jul 18, 2022 | Topics: Books and Media Borrowing | Views: 130
Master of Science in Science Education (MSSE) library access
Last Updated: Apr 06, 2022 | Views: 24
How do I use Montana Library 2 Go?
Last Updated: Mar 31, 2022 | Topics: Books and Media Borrowing Technology | Views: 601

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Montana State University Library / Services / Data Management Resources

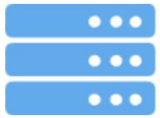
Data Management Resources

lib.montana.edu/services/data

Data Management Planning Toolkit

Data Publication & Discovery

File Storage (UIT)



Data Transfer & High-Performance Computing (RCi)

The Library can help you create and implement a data management strategy.

When your research data is ready to be published, we can facilitate data publishing and promote discovery.

Contact the Data Librarian | Schedule a Data Consultation

FAIR Principles

Findable

Accessible

Interoperable

Reusable

www.go-fair.org/fair-principles

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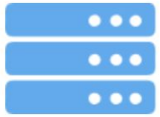

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Contact the Data Librarian | Schedule a Data Consultation

Data Management Planning Toolkit

The resources below can help you write data management plans to comply with funder requirements. For basic guidance on data management, we recommend reading Good Enough Practices for Scientific Computing (Wilson et al., 2016). Or contact us for one-on-one help.

★ Data Management on-demand workshops

lib.montana.edu/services/data/toolkit

Data Management Plan Template

Shape and structure your data management plan.

Cut-and-Paste Language

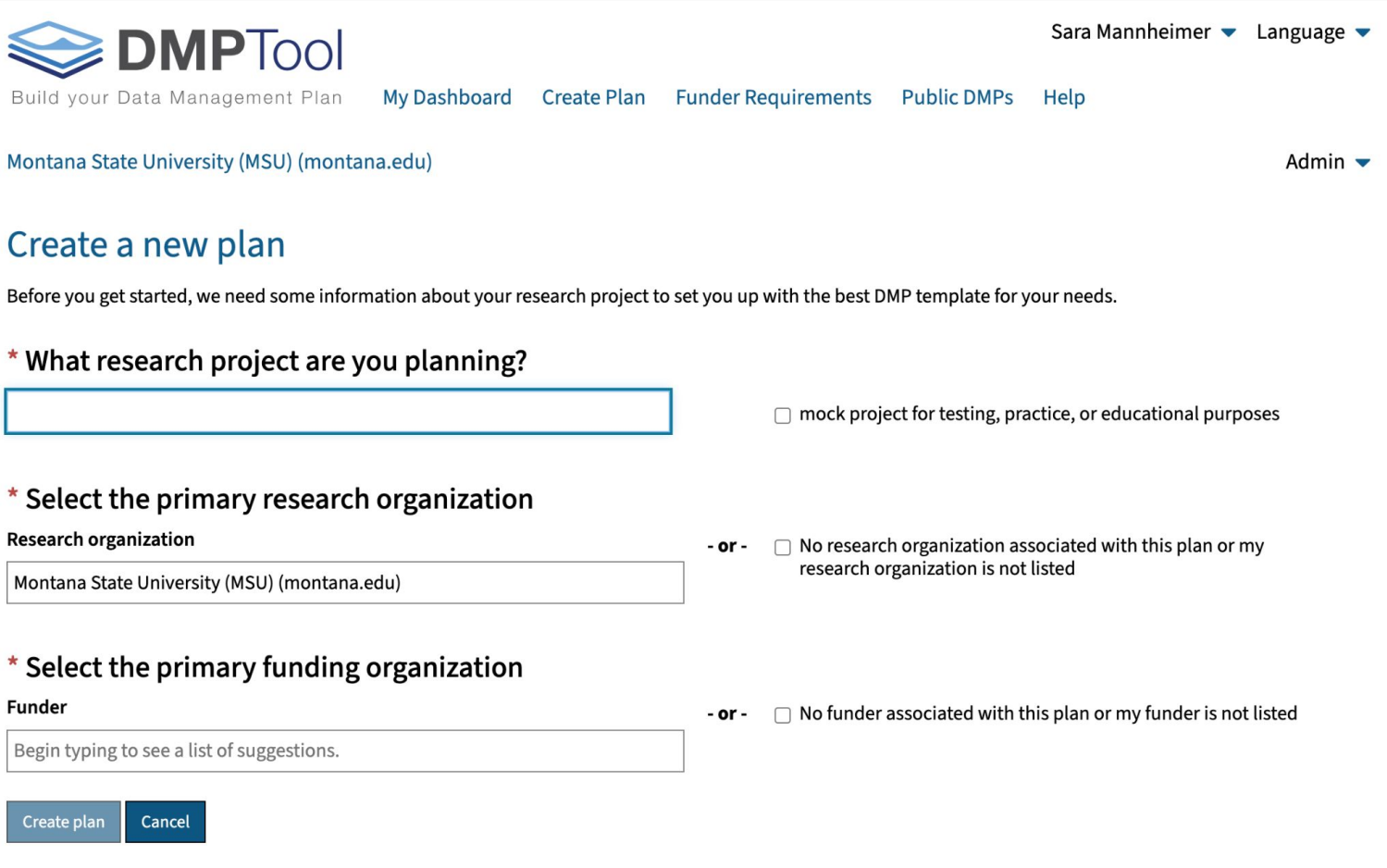
Use in your data management plan.

Metadata Guidance

Help your data be machine readable and understood by others.

DMP Tool

Create data management plans that meet institutional and funder requirements. Review public DMPs.
DMP Tool Tutorial from ASU


DMPTool
Build your Data Management Plan
My Dashboard
Create Plan
Funder Requirements
Public DMPs
Help
Sara Mannheimer
Language
Montana State University (MSU) (montana.edu)
Admin
Create a new plan
Before you get started, we need some information about your research project to set you up with the best DMP template for your needs.
* What research project are you planning?
mock project for testing, practice, or educational purposes
* Select the primary research organization
Research organization
Montana State University (MSU) (montana.edu)
- or -
No research organization associated with this plan or my research organization is not listed
* Select the primary funding organization
Funder
Begin typing to see a list of suggestions.
- or -
No funder associated with this plan or my funder is not listed
Create plan
Cancel

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Cut-and-Paste Language

Provided by MSU Library Data Services
Last updated: 21 February 2021

Storage, backup, & security | Dryad | Zenodo | ICPSR | Policies for Reuse | MSU Data Policies

Storage, Backup, and Security

Microsoft OneDrive/SharePoint

MSU researchers and affiliates have access to the Microsoft OneDrive/SharePoint cloud storage system. This service is an institutional resource and fully compliant with all data policies, and it enables collaboration between teams within MSU and across institutions by allowing users to edit, download, and share files. It can also function as a cloud backup system by syncing content between local machines and the cloud. Data stored in OneDrive will be stored in the PI's account and shared as appropriate with other researchers.

Note: Any questions related to the storage of personally identifiable information and applicable security standards may be directed to MSU's Legal Counsel.

Knox

Knox is a server managed by the MSU IT Center that utilizes encryption to safeguard student data or other information that MSU has a legal obligation to protect.

Data Transfer

The MSU Research Cyberinfrastructure Storage Cloud platform offers a Globus Endpoint that researchers can use to

Data Storage

UIT provides support for OneDrive and High-Performance Computing.

The Library can connect you to solutions from UIT, or you can reach out to them directly.

High Performance Computing

- Access to computer processing

Storage Clusters

- Access to data storage and transfer

Research CyberInfrastructure (RCI) - https://www.montana.edu/uit/rci/

Data archiving and sharing

Data Archiving and Sharing - Scenario

Potential ask from a partner:

“I have a series of video recordings that I’d like to share. How can I deidentify this type of material? How would I license and share it as data that can be reused?”

Data curation

Help with human subjects considerations when sharing data, including deidentification guidance

Guidance on metadata and contextual information

Help with data repository selection and deposit

Data Publication and Discovery

MSU Library recommends that datasets be published in trustworthy data repositories, especially those that are commonly used in your discipline. Our research suggests that publishing data in a disciplinary repository promotes discovery and reuse of research data.

The library provides a search tool for datasets published by MSU researchers. Click the button below to explore MSU research datasets.

MSU Dataset Search

Recommended general repositories

DRYAD

Data publishing is provided to MSU affiliates for free via an MSU Library membership.

Log in with your NetID and password to deposit data

General purpose repository appropriate for any type of data

Non-profit organization

Provides lightweight data curation

National Snow and Ice Data Center

a part of CIRES at the University of Colorado Boulder

The Qualitative Data Repository

Environmental Data Initiative

Metadata basics

datadryad.org

Search

Explore Data | About | Help | Login

ORCID Account

Dryad uses ORCID as its primary login method.
Please use, or create, your ORCID login credentials to login to Dryad.

Login or create your ORCID iD

Dryad's Commitment to You

Curation

All datasets are curated to ensure they are Findable, Accessible, Interoperable, and Reusable

Compliance

Enabling adherence to funder and publisher open data mandates

Community Supported

Dryad is researcher-led and supported by our institutional and publisher members

Privacy Policy Accessibility Policy Terms of Service

Contact us Follow us on Twitter Check out our Blog

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ORCID
Connecting research and researchers

Sara Mannheimer English

Search...

https://orcid.org/
0000-0002-1433-6782

Preview public record

Printable version

Names

Name
Sara Mannheimer

Biography

As Associate Professor and Data Librarian at Montana State University, I help shape practices and theories for curation, publication, and preservation of data. My research examines the social, ethical, and technical issues of a data-driven world.

Emails

sara.mannheimer@gmail.com

Websites & social links

Dataset: Basic Information

Dataset Title *

Author(s)

First Name *	Last Name *	Institutional Affiliation: *	Author Email *
Sara	Mannheimer	Montana State University Bozeman*	

https://orcid.org/0000-0002-1433-6782 Corresponding Author

+ Add Author

Research Domain *

Research Facility:

Funding

Granting Organization: *

National Science Foundation

N/A

National Science Foundation

National Science Foundation of Sri Lanka

Award Number

remove

Data Description

DRYAD

Keywords: Adding keywords improves the findability of your dataset. E.g. scientific names, method type

qualitative

- qualitative data
- qualitative study
- qualitative studies
- qualitative mapping
- qualitative research
- qualitative interviews
- qualitative metasummary

collected? How has it been processed?

P

Related Works

Are there any preprints, articles, datasets, software packages, or supplemental information that have resulted from or are related to this Data Publication?

Work Type

Article

Identifier or external url

example: https://doi.org/10.1594/PANGAEA.726855

remove

Upload Your Files

DRYAD

You may upload data via two mechanisms: directly from your computer, or from a URL on an external server (e.g., Box, Dropbox, AWS, lab server). We do not recommend using Google Drive.

We require that you include a README.md file based on our template in order to provide key information for understanding and reuse of your data.

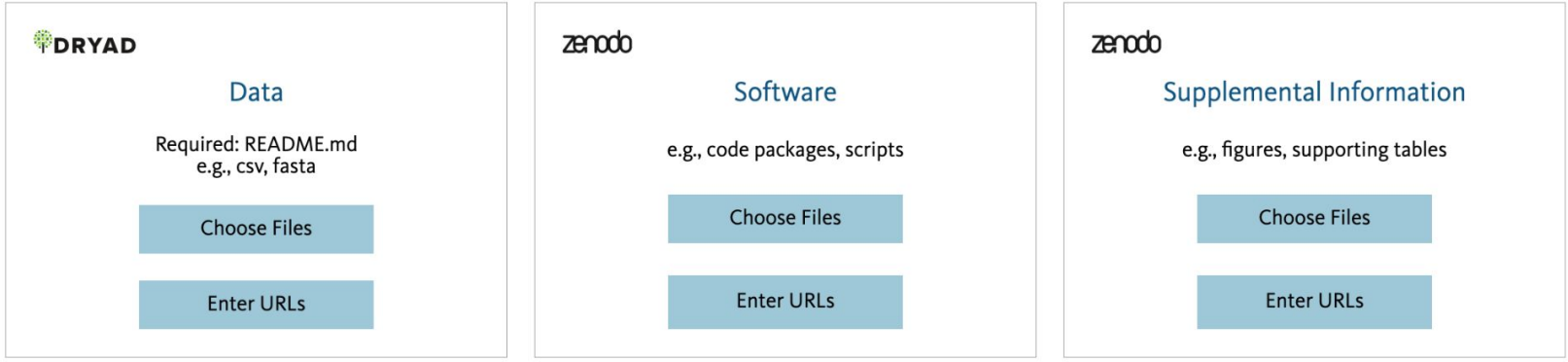
If you prefer, you can edit the Markdown online at hackmd.io.

Open the link (above)

Copy and paste the text into a new note (create new by clicking the plus sign)

When you're done, save into a README.md and upload the file under the *Data* category

Software and Supplemental Information can be uploaded for publication at Zenodo. You will have the opportunity to choose a separate license for your software on the review page.



Metadata

Metadata helps future users find and understand published datasets. Please contact the Library to discuss metadata standards in your field.

Readme files and codebooks

A common way to provide metadata to your research dataset is through a readme file and/or a codebook.

- Readme checklist from Mozilla Science.
- Readme template, adapted from Cornell University.
- Guide to codebooks from ICPSR.

Recommended descriptive elements for your dataset

When publishing data in a repository, we recommend that you provide the following descriptive elements:

- **Title** of the dataset (unique from associated articles)
- **Author** (the person/people who collected the data)
- **Institution** (Montana State University)
- **Date** last modified
- **Version**, if applicable
- **Short description** of the dataset

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- **Version**, if applicable
- **Short description** of the dataset

README Template

lib.montana.edu/services/data/toolkit/readme/

Download as a TXT File

```
This DATSETNAMEreadme.txt file was generated on YYYY-MM-DD by NAME
<help text is included in angle brackets, and can be deleted before saving>


GENERAL INFORMATION

1. Title of Dataset:

2. Author Information
        A. Principal Investigator Contact Information
                Name:
                Institution:
                Address:
                Email:

        B. Associate or Co-investigator Contact Information
                Name:
                Institution:
                Address:
                Email:
```

Metadata + Identifiers
Benefits

a) Collect and make publicly available appropriate metadata associated with scholarly publications and data resulting from federally funded research, to the extent possible at the time of deposit in a public access repository. Such ***metadata should include*** at minimum:

i) all author and co-author names, affiliations, and sources of funding, referencing digital persistent identifiers, as appropriate;

ii) the date of publication; and,

iii) a unique ***digital persistent identifier*** for the research output;

Office of Science and Technology Policy (OSTP) Memo on ***Ensuring Free, Immediate, and Equitable Access to Federally Funded Research*** (August 2022)

Metadata + Identifier Standards

In standardized description and identification, we gain:

- Keywords
- Search/Browse
- Aggregation
- Indexability
- Analysis

Identifiers

Creating permanent links for your research data.

- Useful in citation
- Useful as a permanent location

A persistent identifier (PID) is a long-lasting reference to a document, file, web page, or other object.

Identifiers - Types

Article Identifiers

- DOI, Digital Object Identifier

Researcher Identifiers

- ORCID, Open Researcher and Contributor ID

Organizational Identifiers

- Dissemination and Sharing of Research Results [grant policy]

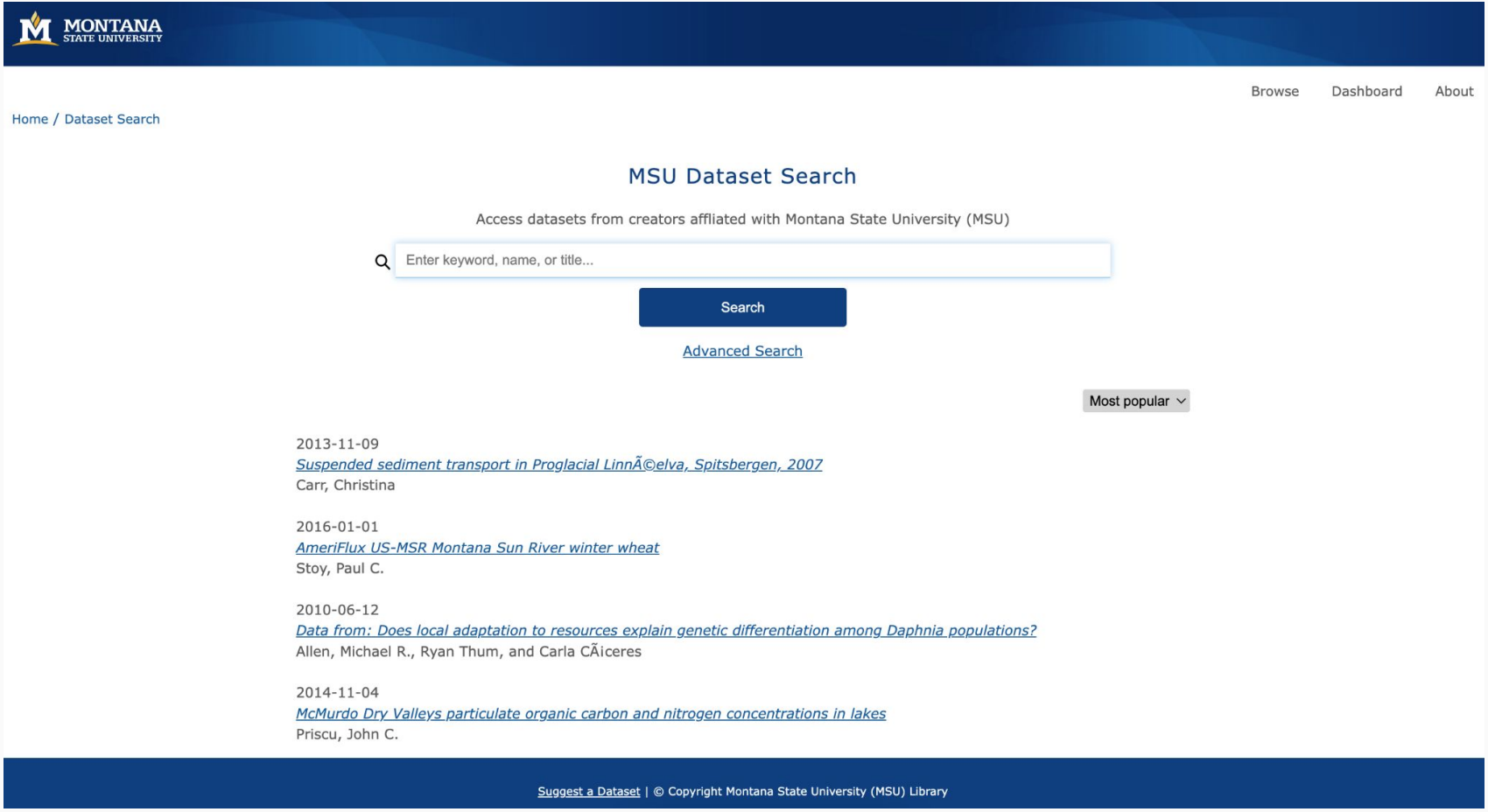
Identifiers - Why?

CUI BONO?

- Recognition
- New forms of impact and analysis

Research data visibility - Dataset Search

arc.lib.montana.edu/msu-dataset-search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MSU Dataset Search
Access datasets from creators affliated with Montana State University (MSU)
Enter keyword, name, or title...
Search
Advanced Search
Most popular
2013-11-09
Suspended sediment transport in Proglacial LinnÃ©elva, Spitsbergen, 2007
Carr, Christina
2016-01-01
AmeriFlux US-MSR Montana Sun River winter wheat
Stoy, Paul C.
2010-06-12
Data from: Does local adaptation to resources explain genetic differentiation among Daphnia populations?
Allen, Michael R., Ryan Thum, and Carla CÃiceres
2014-11-04
McMurdo Dry Valleys particulate organic carbon and nitrogen concentrations in lakes
Priscu, John C.
Suggest a Dataset | © Copyright Montana State University (MSU) Library

MSU Dataset Search as an example of this metadata and identifier work

- Index of research data shared by MSU researchers
- Refined metadata for broad findability
- Permanent identifiers built into the system

MSU Dataset Dashboard

Last updated: 2022-09-27 11:09:52 am

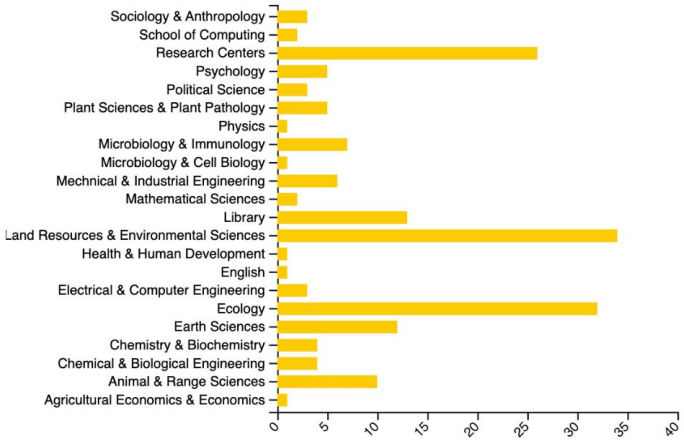
116

total datasets

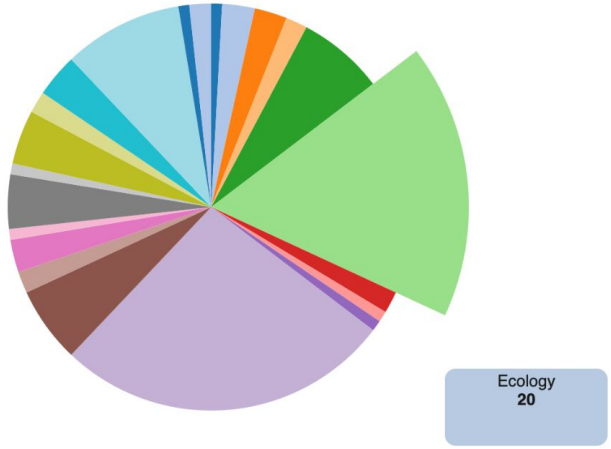
176

total contributors

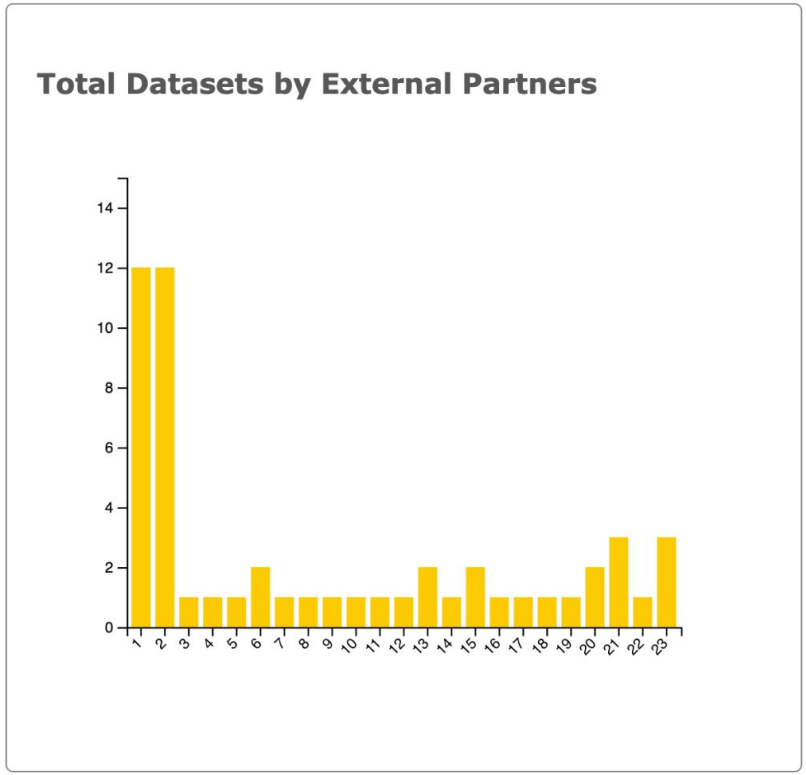
Contributors by Department



Total Datasets by Department



Analytics


Total Datasets by External Partners
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
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9
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11
12
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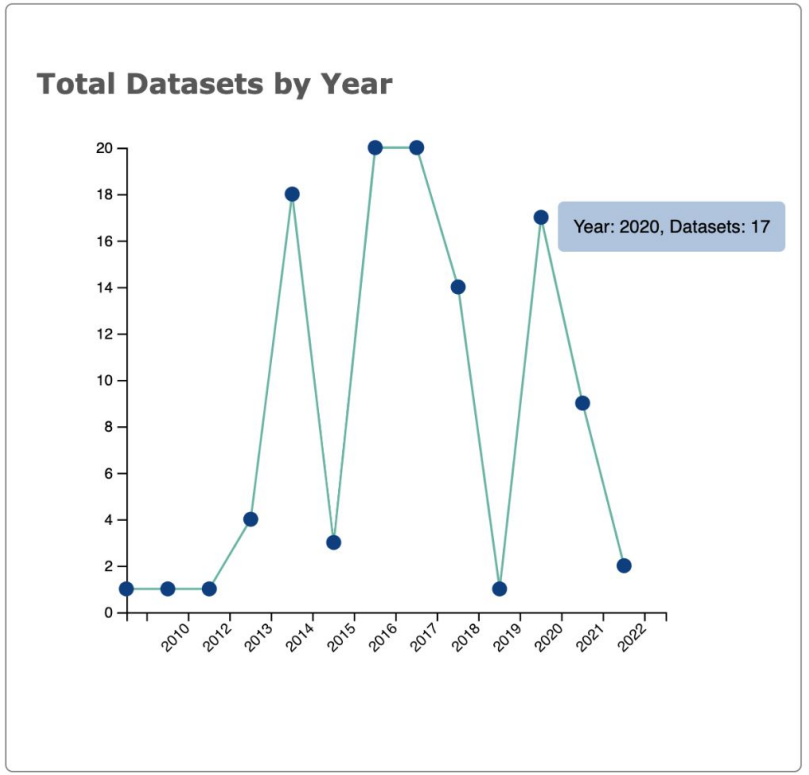

Total Datasets by Year
20
18
16
14
12
10
8
6
4
2
0
Year: 2020, Datasets: 17
2010
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

Research(er) Visibility + Analytics

Visibility - Library Services and Expertise

- Consultation work
- Technical SEO and Semantic Web Optimization work
- Analysis and Data Science work

Visibility - Consultation

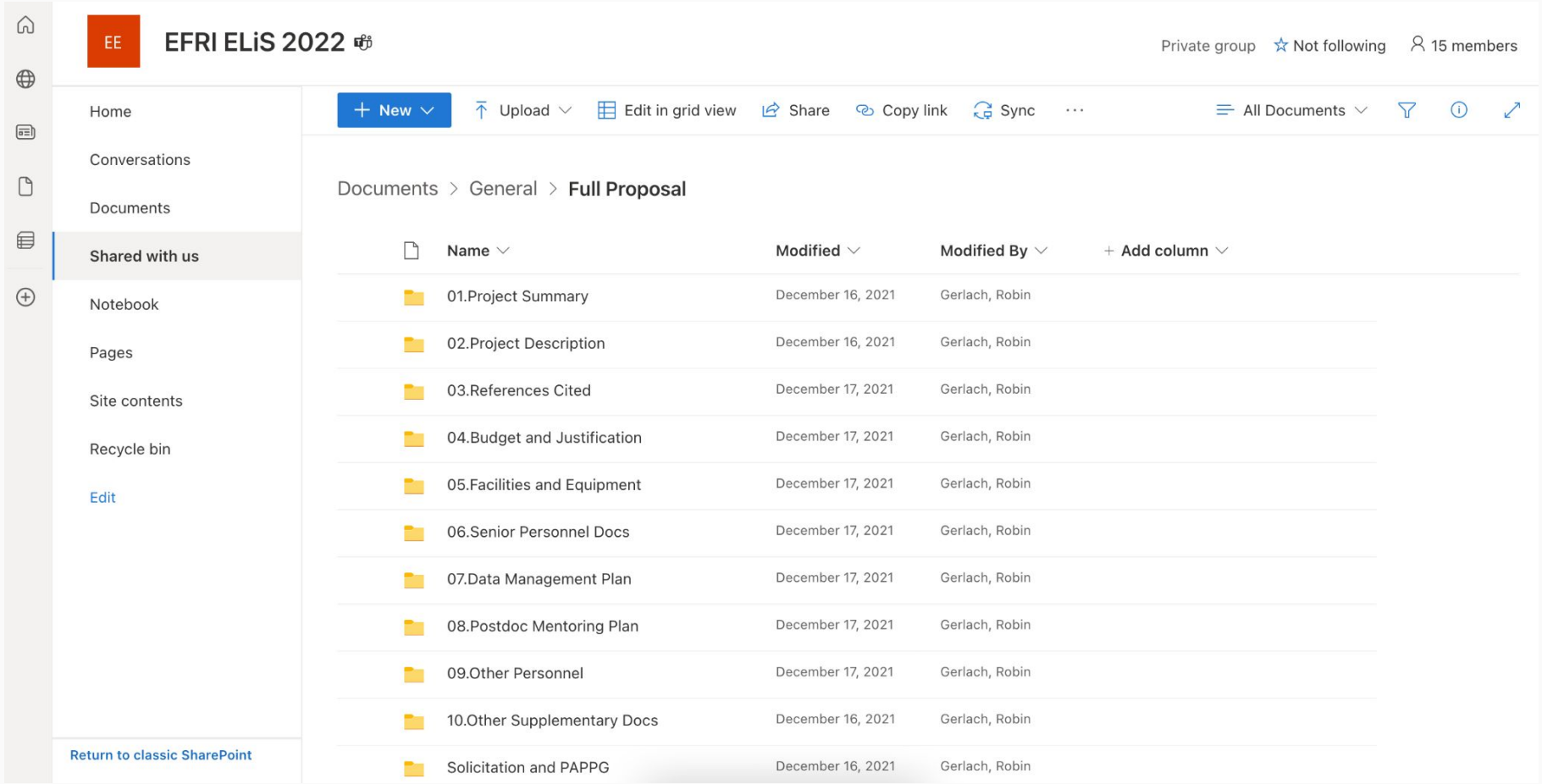
Research and data sharing strategies

Metadata consults and automation

Data management planning

Visibility - Consultation Scenario

- Connect with Project Investigator.
- Work through goals for project data management, sharing, and research dissemination.
- Advise and draft sections of grant narrative.


EE
EFRI ELiS 2022
Private group
Not following
15 members
Home
Conversations
Documents
Shared with us
Notebook
Pages
Site contents
Recycle bin
Edit
Return to classic SharePoint
New
Upload
Edit in grid view
Share
Copy link
Sync
All Documents
Documents > General > Full Proposal
Name
Modified
Modified By
Add column
01.Project Summary December 16, 2021 Gerlach, Robin
02.Project Description December 16, 2021 Gerlach, Robin
03.References Cited December 17, 2021 Gerlach, Robin
04.Budget and Justification December 17, 2021 Gerlach, Robin
05.Facilities and Equipment December 17, 2021 Gerlach, Robin
06.Senior Personnel Docs December 17, 2021 Gerlach, Robin
07.Data Management Plan December 17, 2021 Gerlach, Robin
08.Postdoc Mentoring Plan December 17, 2021 Gerlach, Robin
09.Other Personnel December 17, 2021 Gerlach, Robin
10.Other Supplementary Docs December 16, 2021 Gerlach, Robin
Solicitation and PAPPG December 16, 2021 Gerlach, Robin

Dissemination and Sharing of Research Results

Our goal for this project is to build a collaborative research team within a scientific focus area that is consistent with the NSF priorities of Engineering Living Systems (ELiS). We have defined **four areas** in our approach to sharing the project outcomes with the research community and the public at large. Our objectives are to distribute our research results by: Area **1- Disseminating research findings through peer-reviewed publications and presentations**; Area **2- Communicating with researchers and the public at large**; Area **3- Sharing designs/models of 3-D printed objects** (biofilms and structural elements); and Area **4- Sharing method resources**.

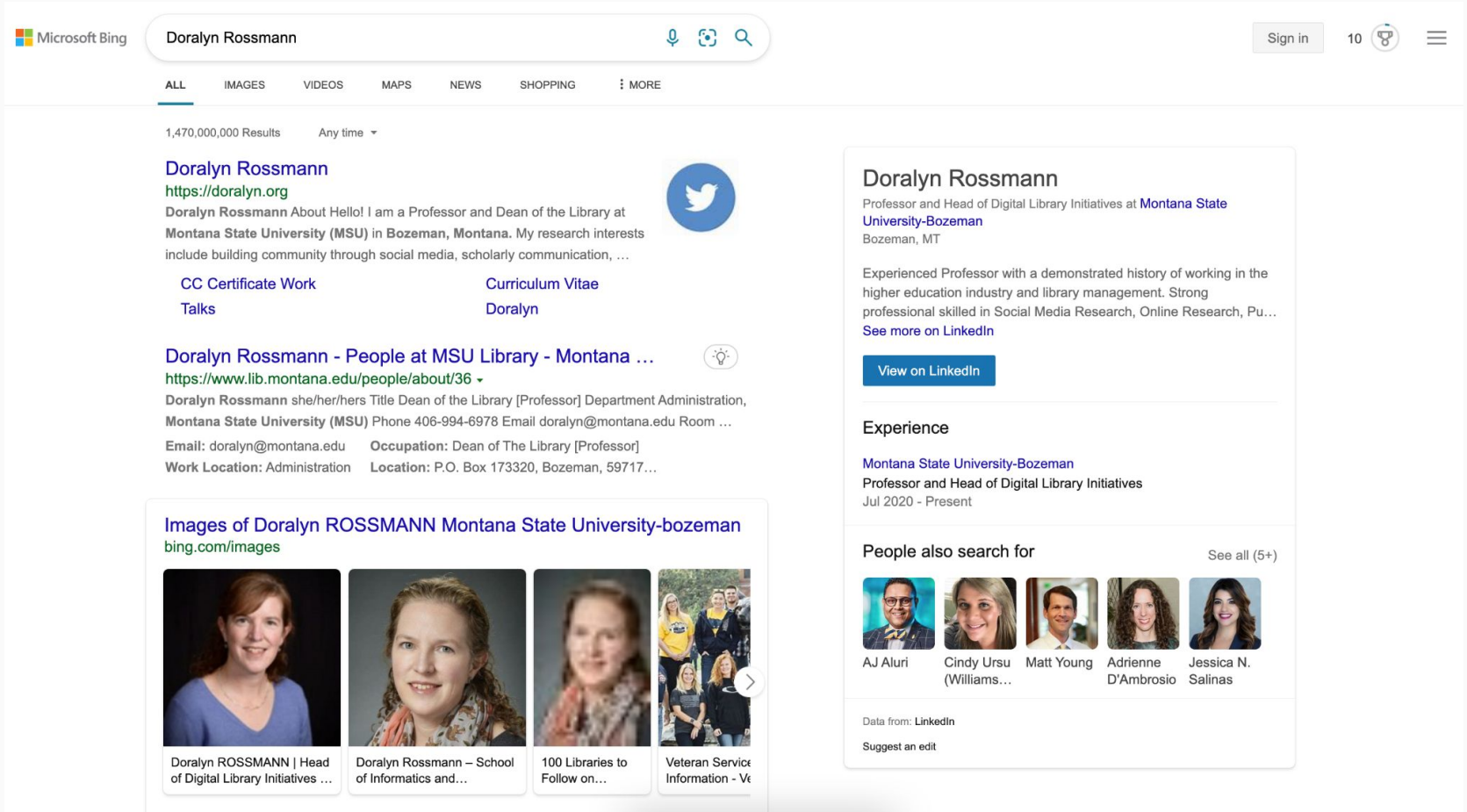
Publications and scientific presentations

The scientific community depends on peer reviewed publications to gauge the quality and impact of scientific research. As a team, we have a compelling commitment to maximize the use of our research dollars and share our findings through publications in peer-reviewed journals. Moreover, we have partnered with the research and data service units within the Montana State University Library to ensure best practices in data management, data archiving, and research findability using metadata are in place. Knowing that there is a fine line between balancing the completeness of datasets and analysis with the timeliness of reporting project outcomes, we have developed a series of target performance metrics (**Table S1**) to guide our production of high-quality, high-impact, and high-volume research throughout the duration of the proposed project. We intend to embrace open access journals (*e.g.*, *PLoS* journals, Nature publications, *Frontiers* journals) when submitting our research for peer review publication, so that the scientific community can have immediate and free access to our findings. We will leverage institutional funding for open access journals, along with funds in the budget (included in Other Direct Costs category in budget justification). We will also strive to take advantage of options to publish supplementary materials to increase accessibility of datasets. In addition, our team will make use of other mechanisms to increase access to our publications (*i.e.*, ResearchGate, Data in Brief, Zenodo – *c.f.*, Data Management Plan). Similarly, our team will be very active in sharing our science with the broader research community by presenting our work at local, regional, national, and international meetings. Our expectation is that all

Visibility - Optimization

Technical Search Engine + Semantic Web Optimization

- Findability and Aggregation
- Creating your researcher profile and data profile
- Defining your research cohort or a center


Microsoft Bing
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Sign in
10
ALL
IMAGES
VIDEOS
MAPS
NEWS
SHOPPING
MORE
1,470,000,000 Results
Any time
Doralyn Rossmann
https://doralyn.org
Doralyn Rossmann About Hello! I am a Professor and Dean of the Library at Montana State University (MSU) in Bozeman, Montana. My research interests include building community through social media, scholarly communication, …
CC Certificate Work
Curriculum Vitae
Talks
Doralyn
Doralyn Rossmann - People at MSU Library - Montana …
https://www.lib.montana.edu/people/about/36
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Email: doralyn@montana.edu
Occupation: Dean of The Library [Professor]
Work Location: Administration
Location: P.O. Box 173320, Bozeman, 59717…
Images of Doralyn ROSSMANN Montana State University-bozeman
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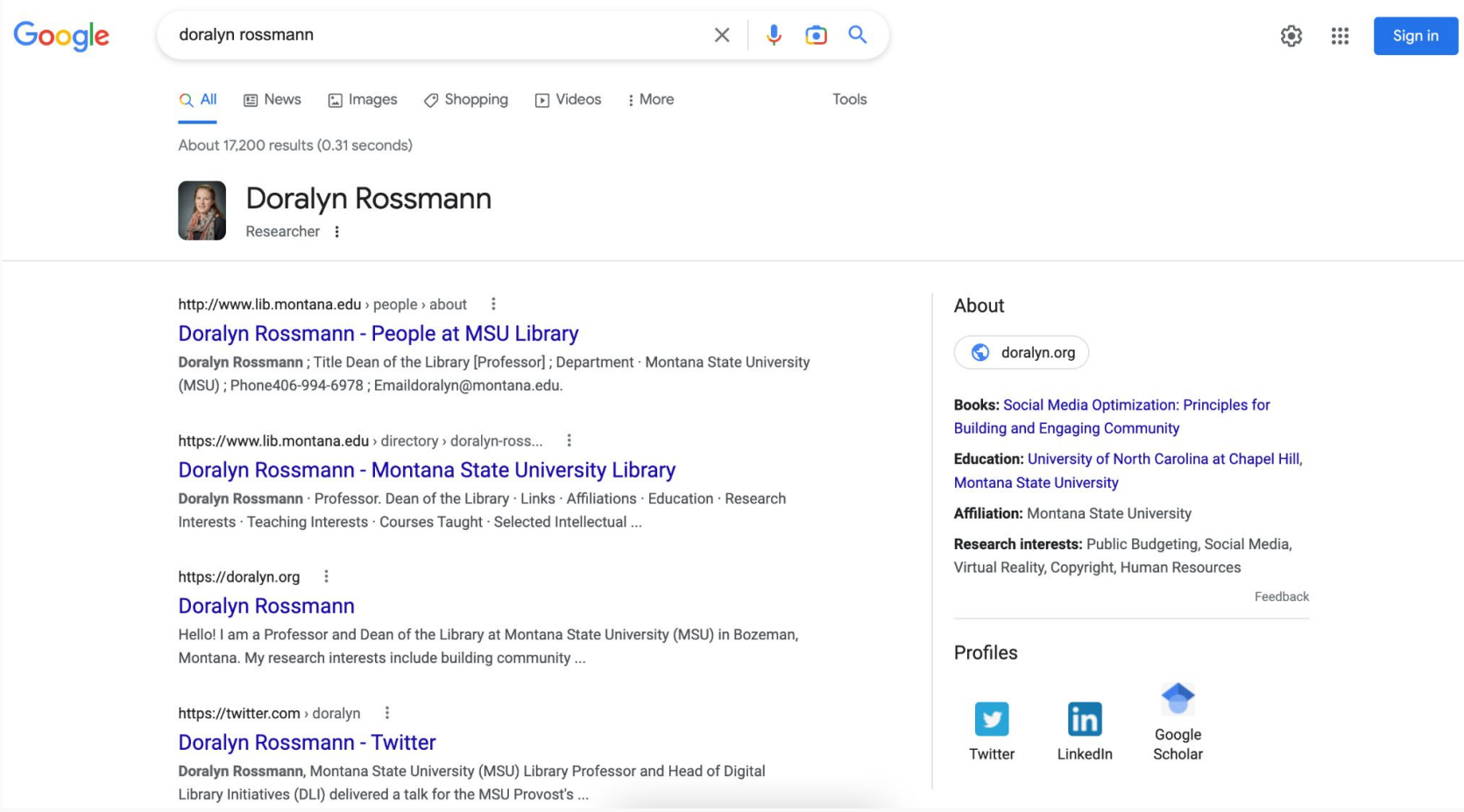
Doralyn Rossmann – School of Informatics and…
100 Libraries to Follow on…
Veteran Service Information - Ve
Doralyn Rossmann
Professor and Head of Digital Library Initiatives at Montana State University-Bozeman
Bozeman, MT
Experienced Professor with a demonstrated history of working in the higher education industry and library management. Strong professional skilled in Social Media Research, Online Research, Pu…
See more on LinkedIn
View on LinkedIn
Experience
Montana State University-Bozeman
Professor and Head of Digital Library Initiatives
Jul 2020 - Present
People also search for
See all (5+)
AJ Aluri
Cindy Ursu (Williams…
Matt Young
Adrienne D'Ambrosio
Jessica N. Salinas
Data from: LinkedIn
Suggest an edit


Google
doralyn rossmann
Sign in
All
News
Images
Shopping
Videos
More
Tools
About 17,200 results (0.31 seconds)
Doralyn Rossmann
Researcher
http://www.lib.montana.edu › people › about
Doralyn Rossmann - People at MSU Library
Doralyn Rossmann ; Title Dean of the Library [Professor] ; Department · Montana State University (MSU) ; Phone406-994-6978 ; Emaildoralyn@montana.edu.
https://www.lib.montana.edu › directory › doralyn-ross...
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https://doralyn.org
Doralyn Rossmann
Hello! I am a Professor and Dean of the Library at Montana State University (MSU) in Bozeman, Montana. My research interests include building community ...
https://twitter.com › doralyn
Doralyn Rossmann - Twitter
Doralyn Rossmann, Montana State University (MSU) Library Professor and Head of Digital Library Initiatives (DLI) delivered a talk for the MSU Provost's ...
About
doralyn.org
Books: Social Media Optimization: Principles for Building and Engaging Community
Education: University of North Carolina at Chapel Hill, Montana State University
Affiliation: Montana State University
Research interests: Public Budgeting, Social Media, Virtual Reality, Copyright, Human Resources
Feedback
Profiles
Twitter
LinkedIn
Google Scholar

Visibility - Optimization, how?

- Metadata and Identifier work
- Intentional Website Architectures
- Building Signals for Indexing Agents (crawlers)

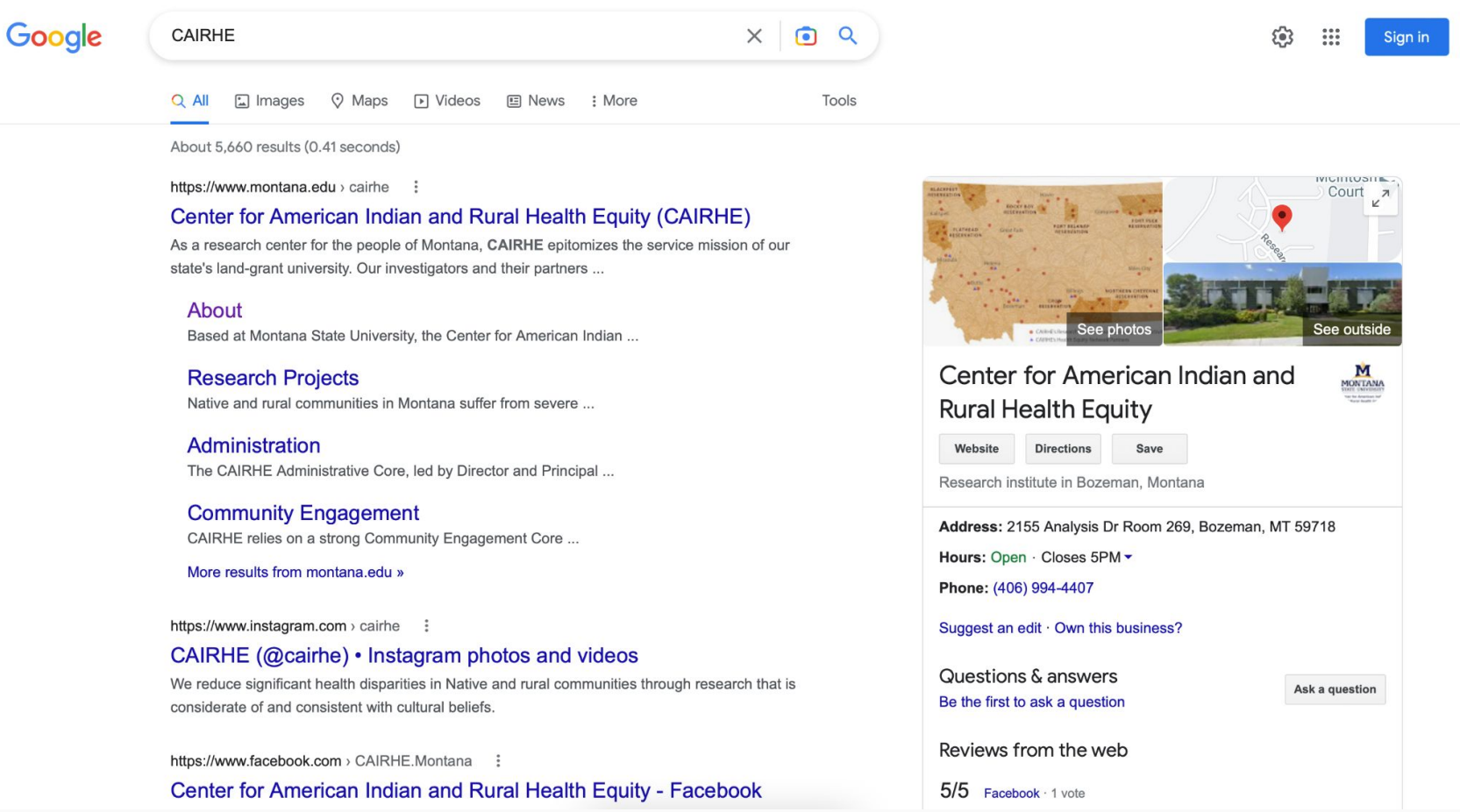
Technical Search Engine + Semantic Web Optimization

- Research Unit or Cohort
  - Define and Optimize for Findability
  - New Website Architectures and Tagging
  - Create Metadata sources for Indexing (Wikimedia)

Visibility - Optimization Scenario

Example: Center for American Indian and Rural Health Equity (CAIRHE)

- Work includes:
  - New Sitemap and Audit of Website Architecture
  - Google Business Registration
  - Entity Creation (Wikidata as a new data source)


Google
CAIRHE
Sign in
All
Images
Maps
Videos
News
More
Tools
About 5,660 results (0.41 seconds)
https://www.montana.edu › cairhe
Center for American Indian and Rural Health Equity (CAIRHE)
As a research center for the people of Montana, CAIRHE epitomizes the service mission of our state's land-grant university. Our investigators and their partners ...
About
Based at Montana State University, the Center for American Indian ...
Research Projects
Native and rural communities in Montana suffer from severe ...
Administration
The CAIRHE Administrative Core, led by Director and Principal ...
Community Engagement
CAIRHE relies on a strong Community Engagement Core ...
More results from montana.edu »
https://www.instagram.com › cairhe
CAIRHE (@cairhe) • Instagram photos and videos
We reduce significant health disparities in Native and rural communities through research that is considerate of and consistent with cultural beliefs.
https://www.facebook.com › CAIRHE.Montana
Center for American Indian and Rural Health Equity - Facebook
See photos
See outside
Center for American Indian and Rural Health Equity
Website
Directions
Save
Research institute in Bozeman, Montana
Address: 2155 Analysis Dr Room 269, Bozeman, MT 59718
Hours: Open · Closes 5PM
Phone: (406) 994-4407
Suggest an edit · Own this business?
Questions & answers
Be the first to ask a question
Ask a question
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5/5 Facebook · 1 vote

Visibility - Analytics

Defining our institutions and university expertise

Increasing reach and impact of scholarship and data

Insights and data visualization

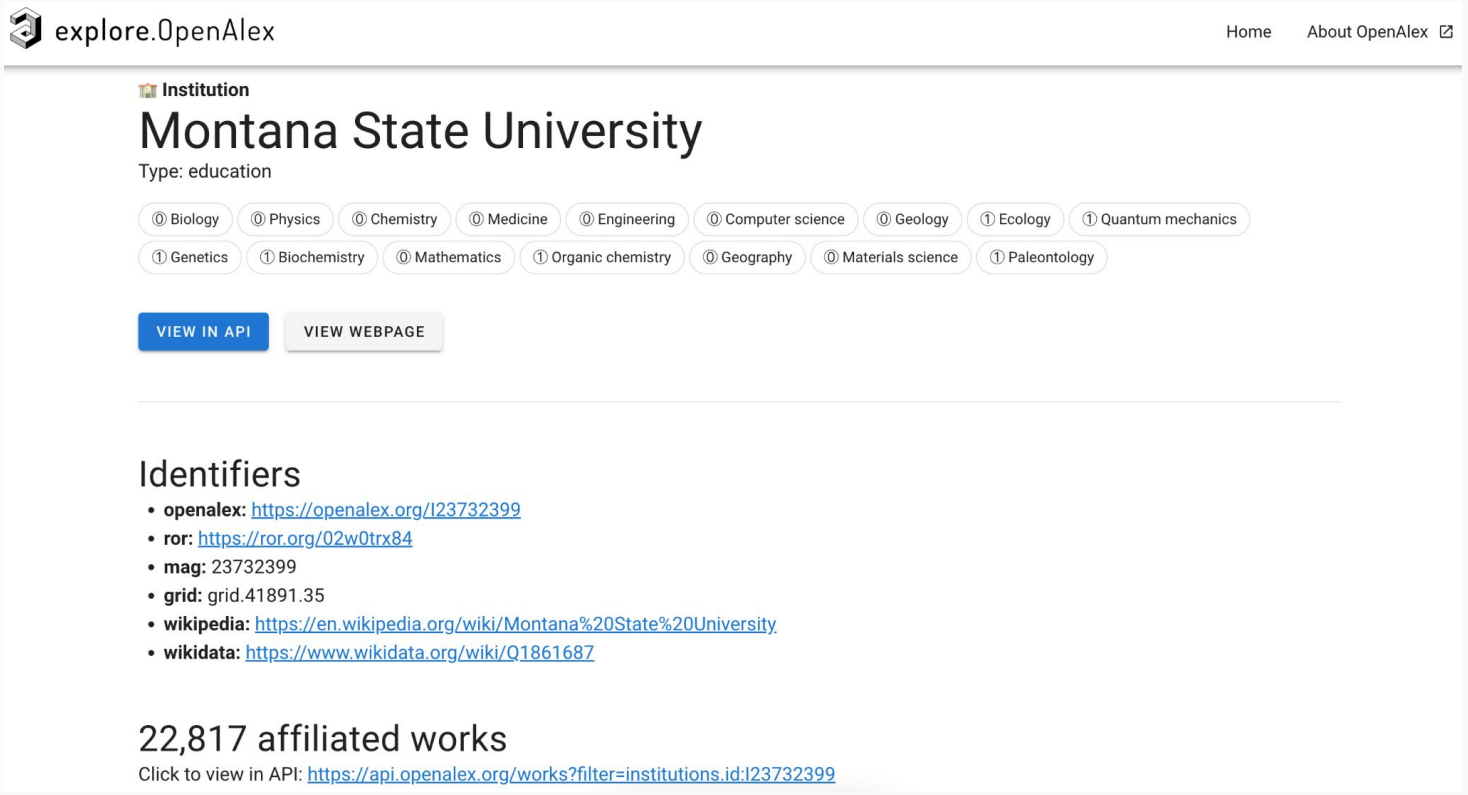
Analysis of research patterns and metadata

Could lead to:

- New insights about how your work is received.
- Community detection to help you find new collaborators.

Expertise Search [beta]

Analytics + Insights Scenario



Analytics + Insights - Benefits

Showing rows 0 - 24 (7753 total, Query took 0.0017 seconds.)

```
SELECT * FROM `authors` WHERE `institution_name` LIKE "%montana%";
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

1 > >> | Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

	id	oa_id	oa_url	name	orcid	position	affiliation	institution_id	institution_name	institution_ror
Edit Copy Delete	42	A3037946954	https://openalex.org/A3037946954	P. T. Baker	https://orcid.org/0000-0003-2745-753X	middle	*NULL*	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	189	A2343198265	https://openalex.org/A2343198265	Neil J. Cornish	https://orcid.org/0000-0002-7435-0869	middle	*NULL*	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	609	A2780469136	https://openalex.org/A2780469136	Margaret Millhouse	https://orcid.org/0000-0002-8659-5898	middle	*NULL*	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	2134	A1976792712	https://openalex.org/A1976792712	Steven T. Kalinowski	https://orcid.org/0000-0001-8504-4923	first	Department of Ecology, Montana State University, B...	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	2135	A155128725	https://openalex.org/A155128725	Mark L. Taper	*NULL*	middle	Department of Ecology, Montana State University, B...	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	2533	A2483596954	https://openalex.org/A2483596954	Sandra K. Halonen	*NULL*	middle	*NULL*	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84
Edit Copy Delete	4608	A2128648166	https://openalex.org/A2128648166	Jamie D. Sherman	https://orcid.org/0000-0001-6223-6850	middle	*NULL*	https://openalex.org/I23732399	Montana State University	https://ror.org/02w0trx84

Metadata + Identifier harvest ->

Aggregation and indexing ->

Expertise Search user interface

Analytics + Insights - Interface and Visualization

MONTANA STATE UNIVERSITY

Browse Dashboard About

Home / Search

Search

Enter keyword, name, or title...

Search

Advanced Search

Search for **technology ethics**

Filter All

Sort Relevance Date

Popular Searches semantic web machine learning precision agriculture

Dr. Kristen Intemann
https://www.montana.edu/history/directory/1524204/kristen-intemann
Dr. Kristen Intemann. Professor. Center for Science, **Technology**, **Ethics** & Society. Ethics, Philosophy of Science, Feminist Philosophy.
✚ more

Summary

The library can partner with you to support:

- Data management planning
- Data curation - deidentification, metadata/description
- Data sharing
- Findability and visibility for research and research data
- Contact us: ask.lib.montana.edu

Questions

Resources, Services, and Tools

- Data Management Resources - MSU Library
- Research(er) Visibility Services - MSU Library
- Data Storage and High Performance Computing - RCI
- Office of Research Development
- Tools
  - MSU Dataset Search
  - README template (for research data)
  - README creator (for code)
  - DMP Tool

Thanks!