


Research Data Services at the University of Wisconsin-Madison

Brianna Marshall | Trisha Adamus

NADDI 2015 April 9, 2015

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

Speaking Today

Brianna Marshall

Digital Curation Coordinator, General Library System

Chair, RDS

Trisha Adamus

Data, Network, and Translational Research Librarian

Ebling Library

Agenda

About RDS: History + Future

Metadata Services + DDI

Conversation

- How can a group like RDS add value?
- Ideas for spreading the word about DDI to researchers?
- Ideas for expanding the DDI community to research support groups?

ABOUT RDS: HISTORY + FUTURE

What is RDS?

Interdisciplinary group of librarians, researchers, IT staff, and graduate students - data management specialists!

What we do:

- **Data management plans –** help draft or review
- **Consultations –** policies, development, best practices
- **Training and education**
- **Referral –** local/national/disciplinary resources

Sponsors


Libraries
UNIVERSITY OF WISCONSIN-MADISON


UNIVERSITY OF WISCONSIN - MADISON - HEALTH SCIENCES
EBLING LIBRARY


SCHOOL OF LIBRARY &
INFORMATION STUDIES
University of Wisconsin-Madison


DoIT


Wendt Commons
COLLEGE OF ENGINEERING









Structure

Committees

- Web
- Outreach
- Education

Toolkit project

Our Audience

UW researchers + labs

UW research support

- Schools + departments
- Grant administrators
- Librarians

RDS resources

Website à researchdata.wisc.edu

Listserv à researchdata-join@lists.wisc.edu

Twitter à @UWMadRschSvcs

CHALLENGES


image courtesy of Flickr user
adesigna (CC BY NC SA)


image courtesy of Flickr user
davidjwbailey (CC BY NC SA)

Image courtesy of Flickr user James Vaughan (CC BY NC SA)

RCA 501 Electronic Data Processing System

With the RCA 501 you can enjoy all the benefits of modern electronic data processing yet retain full control every step of the way. The RCA 501 saves time and money, provides more facts for management decisions, opens up opportunities for more business . . . all in an orderly, fully controlled manner.

The RCA 501 system you order need be no larger than you require now. New electronic concepts incorporated in the RCA 501 make it entirely practical to limit the capacity and functions of your initial data processing equipment to your current requirements. Thus you start electronic data processing on an easy-to-manage basis.

You plan the rate of conversion and enlarge the system in stages best suited to your special situation. The RCA 501's unique modular construction lets you add more work capability to the system when you decide your conversion progress or increased load warrants the build-up. The original 501 system accepts additional units in building-block fashion without disrupting the day-to-day work and without excessive re-programming.

You hold initial costs to a minimum—for equipment, site preparation, installation. Besides the savings accruing from your "custom size" system, you can count on economies resulting from the all-transistor design of the 501. It vastly reduces size and weight of units and thereby keeps cooling, power and floor area requirements at modest levels. Installation is easier and quicker.

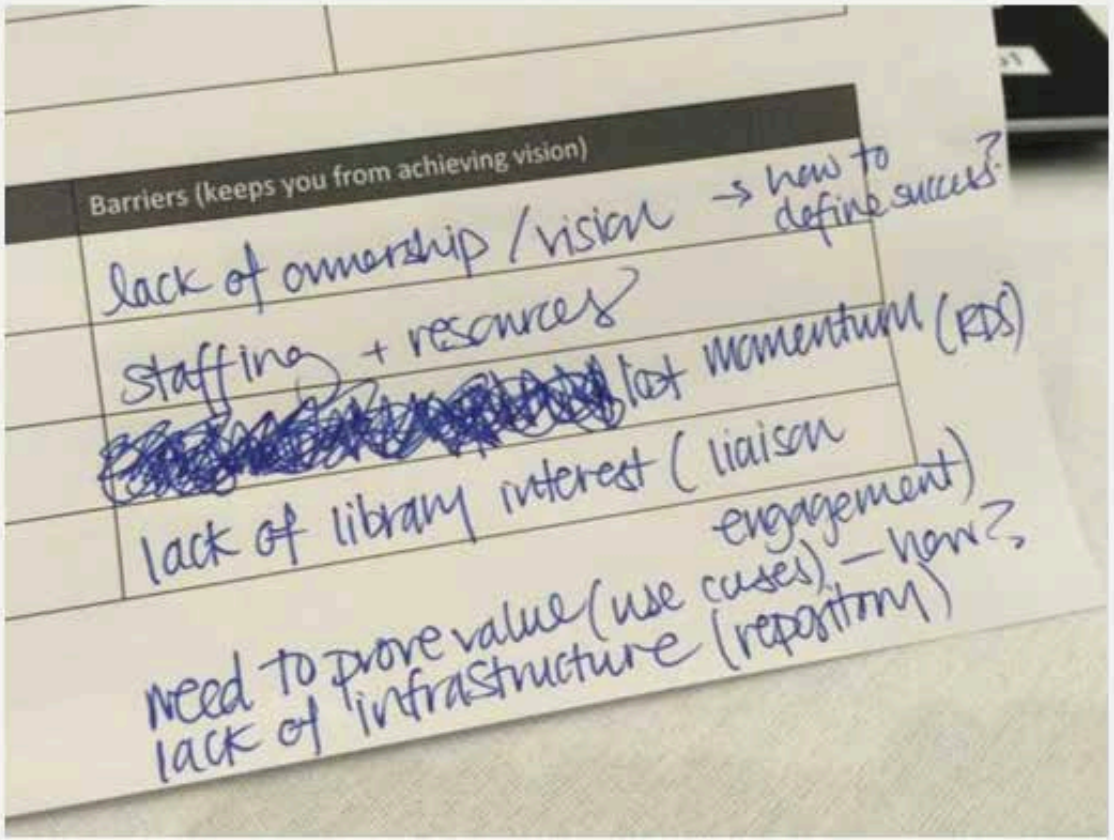
The RCA 501's unusual features help keep day-to-day operating costs low. A method of organizing data developed especially for the RCA 501 saves hours of machine time and miles of tape. Time-shared electronics makes possible up to sixteen pairs of simultaneous operations. Self-verifying calculations and dual recording assure accurate and reliable performance. These and many other advances which you would expect of the leader in electronics keep the per-unit-of-work cost low.

Recognition of the 501's unusual abilities to perform great quantities of work at low cost on a planned, orderly, fully controlled basis has resulted in system orders from leaders in banking, insurance, manufacturing and utilities as well as government agencies. Also important in their decision is the RCA program of assistance which includes installation planning, systems analysis, programming assistance, operator training and equipment maintenance, everything needed for full and effective use of the system.

For further information write RADIO CORPORATION OF AMERICA, Electronic Data Processing Division, Camden 2, New Jersey. Or, if you would like to see the RCA 501 in actual operation, ask about arranging a visit to the new RCA Electronic Data Processing Center at Cherry Hill, New Jersey (near Camden).

RADIO CORPORATION of AMERICA

ELECTRONIC DATA PROCESSING DIVISION, CAMDEN 2, N. J.



Brianna Marshall @notsosternlib · Mar 25
Ran out of room to list barriers to campuswide RDM strategy. Not trying to be pessimistic... #acrldatasvcs

4 8

image courtesy of Flickr user
Jukle Bot (CC BY NC)

Relationships

- **UW-Madison**
  - Grant admins
  - Grad School
  - General Library System
- **UW system**
  - UW-Milwaukee
- **And beyond!**
  - Twitter
  - Midwest symposium?

RDS/liaison partnerships

A great opportunity for cross-training and collaboration!

Liaisons à Disciplinary expertise + relationships with faculty, staff and students

RDS à RDM expertise

Projects Underway

- RDS brown bag series
- Blog content
- Tracking consultations (Gimlet)
- DMPTool explorations

WEBSITE

Research Data Services

DIGITAL CURATION AT THE UNIVERSITY OF WISCONSIN-MADISON

Datapoints: The RDS Blog

Apply for the NADDI 2015 Student Scholarship

UW-Madison Research Data Services is accepting applications for a student scholarship to the North American Data Documentation Initiative (NADDI) 2015 conference. The conference will be held at the Pyle Center on the UW-Madison campus, April 8-10. NADDI 2015 is the premier data documentation conference – a great opportunity for those [...]

Research Data Services

We love your data too.

Research Data Services (RDS) is an interdisciplinary organization committed to advancing research data management practice on the UW-Madison campus. We focus on providing researchers with the tools and resources that support their efforts to store, analyze, and share data.

News

- Scientific Data approves openICPSR as Recommended Data Repository
- NAHDAP Summer Workshop on "Secondary Data Analysis and NAHDAP"
- Merger of Databib and re3data.org, first version of API available
- Tentative Schedule Announced for ICPSR Biennial Meeting

more news >>

Events

Today

Wednesday, April 8
North American Data Documentatic
Thursday, April 9
North American Data Documentatic
Friday, April 10
North American Data Documentatic
Monday, April 20
8:15am Research Data Publicatic
Wednesday, April 22
2015 Research Data Access and F
Thursday, April 23
2015 Research Data Access and F
Friday, April 24

Events shown in time zone: Central Time

Google Calendar

Research Data Services

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Data Management Plans

Consultations

Education

Want to learn more about how we can help you manage your data better?

Get in touch

RDS DIGEST

Research Data Services

DIGITAL CURATION AT THE UNIVERSITY OF WISCONSIN-MADISON

Tips & Tools

Data Management Resources for Librarians

Research data management has quickly grown into a necessity for librarians on the UW-Madison campus. We understand...
Read More

DOE Public Access Plan: Scientific Publications & Data Management Plan

DOE Public Access Plan: Scientific Publications & Data Management Plan September 11, 2014 from 11:00-12:15pm Engineering Hal...
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Events

September 25 webinar on ORCID adoption by funders

25 September 2014, 10 am EDT (UTC-4) Please register in advance for this free webinar. ORCID is partnering with the Health Researc...
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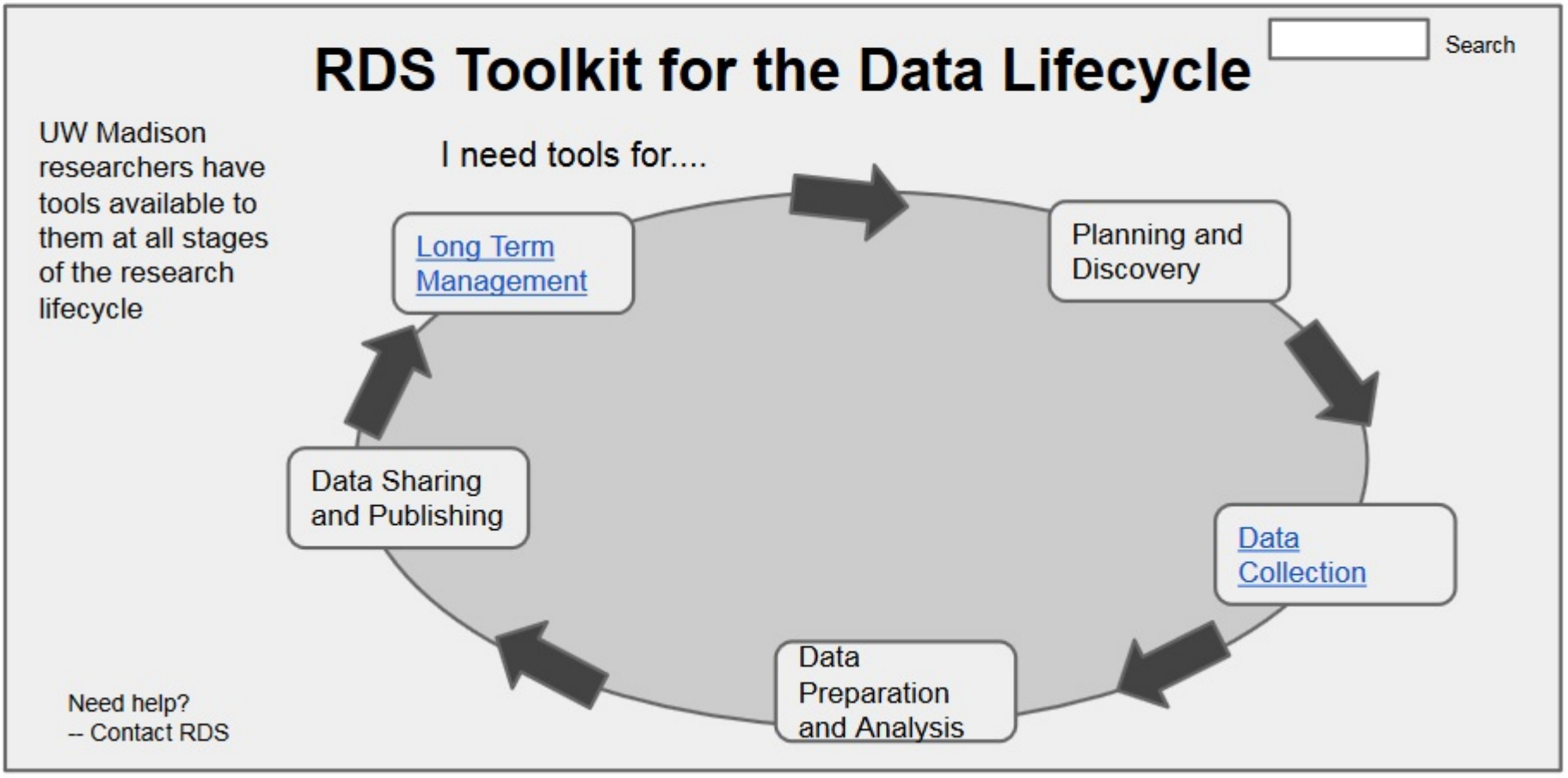
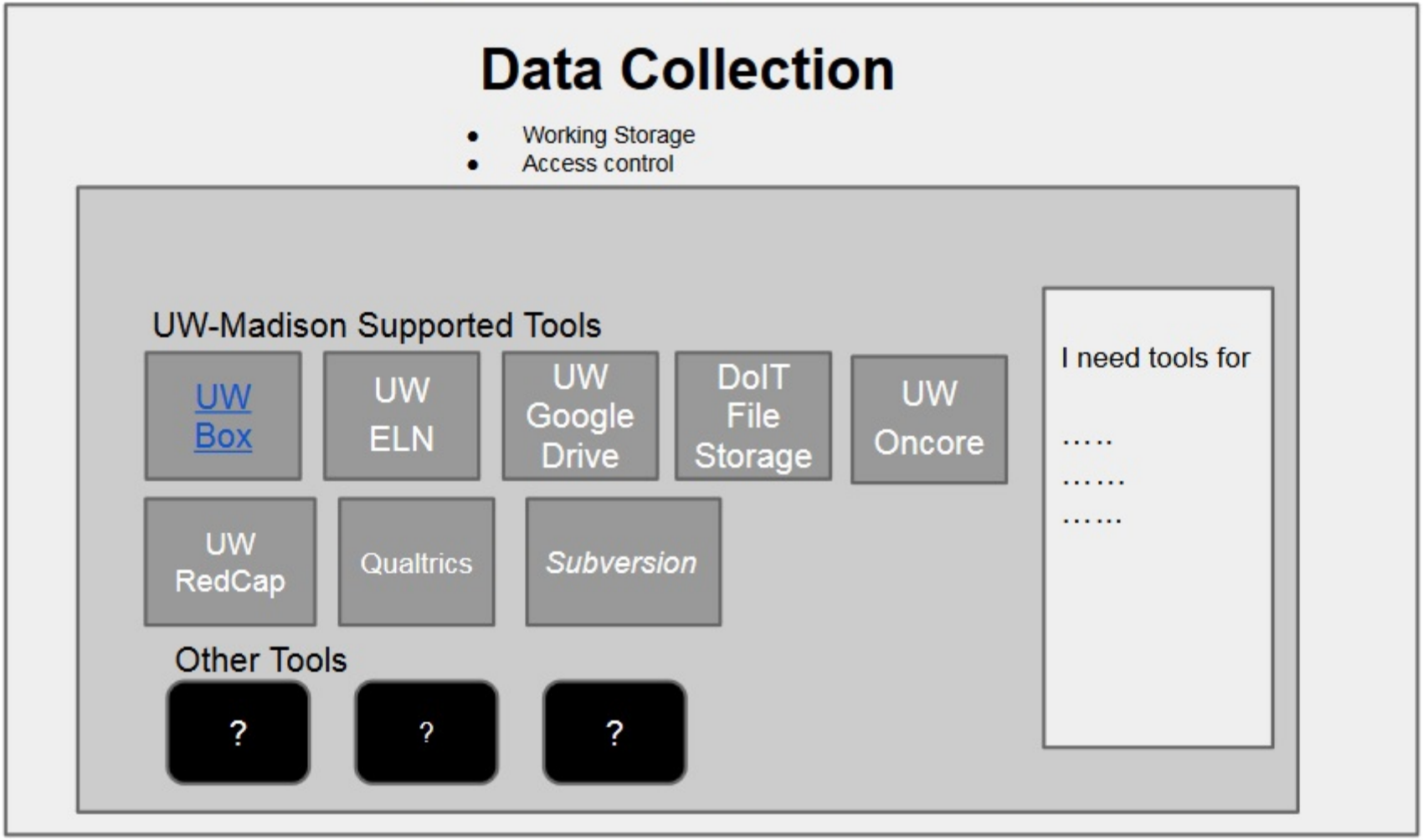
TOOLKIT

Home Page


RDS Toolkit for the Data Lifecycle
Search
UW Madison researchers have tools available to them at all stages of the research lifecycle
I need tools for....
Long Term Management
Planning and Discovery
Data Collection
Data Preparation and Analysis
Data Sharing and Publishing
Need help?
-- Contact RDS

2nd level Page -- Stage of Life Cycle

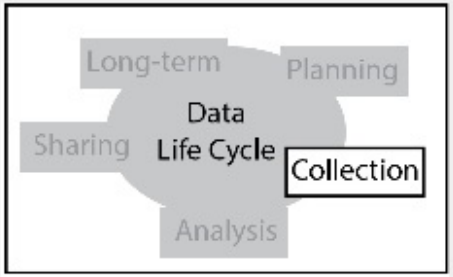
Toolkit Home



Toolkit Home

3rd level -- Tool page

Box



ABOUT

UW-Madison provides free online file storage and collaboration using a service called Box. Box provides you with a place to store, access, and collaborate on your files.

BENEFITS

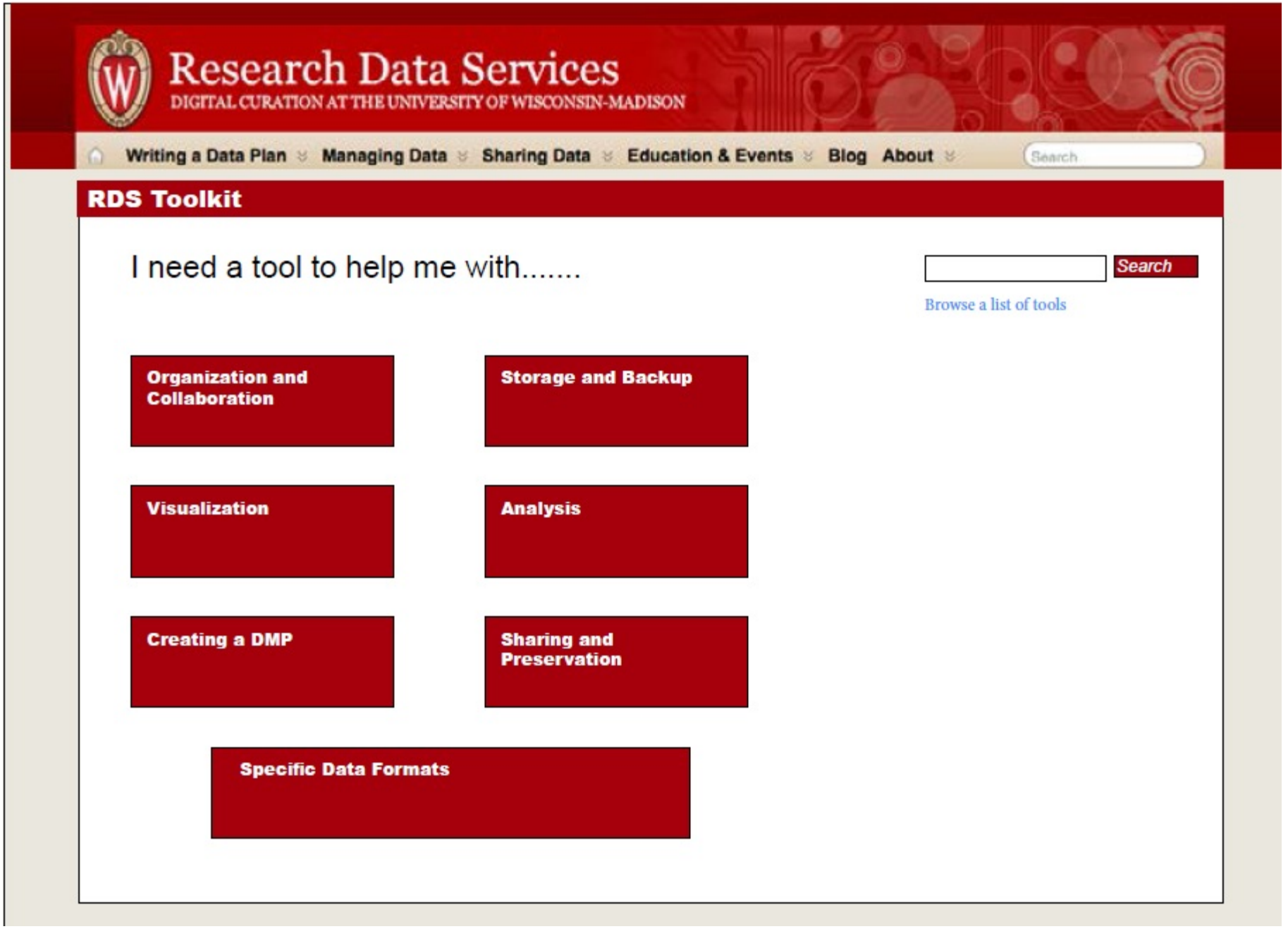
- 50 GB of FREE storage
- Easy to access, organize and manage your content in a single online location
- Access your files via the web from a wide range of devices
- Allows you to collaborate with other users on and off campus
- Ensures your files are stored and transferred securely
- Keep track of multiple versions of your documents automatically

Tool Use Cases

Link…
Link…
Link...

LEARN MORE
https://www.doit.wisc.edu/services/box/
http://researchdata.wisc.edu/tools/case-study-box/

For help with this tool, contact help@doit.wisc.edu


Research Data Services
DIGITAL CURATION AT THE UNIVERSITY OF WISCONSIN-MADISON
Writing a Data Plan
Managing Data
Sharing Data
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I need a tool to help me with.....
Search
Browse a list of tools
Organization and Collaboration
Storage and Backup
Visualization
Analysis
Creating a DMP
Sharing and Preservation
Specific Data Formats

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The Future of RDS

- **Campus context**
  - Chief Data Officer Jason Fishbain
  - UW Open Access policy
- **Potential projects**
  - Data curation pilot
  - Research needs assessment (UW Libraries)
  - Ramping up workshops
  - Exploring ELN/IR connection
  - Expanding/collaborating on WID toolkit

METADATA SERVICES + DDI

Research Data Management: Data Documentation

Metadata: Giving meaning to data

Research by neil conway on Flickr / CC BY 2.0

When preparing to share data or to preserve data for the scholarly record, it is important to describe the data so they are understandable by others in the future. To make data meaningful to people, contextual information can be provided in a "readme" text file. To make data computer-readable and searchable, metadata should be created using a standard format or schema (see below for common standards).

Data documentation can include information such as:

- Title of dataset, investigator names, creation date, keywords.
- Purpose of study, research questions, hypotheses.
- Sampling techniques, methodology, experimental protocols.
- Equipment/instrument settings

Metadata Standards/Schema

Selecting a standard or schema does not obligate you to use it to its fullest extent. You can use as much (or as little) as you need.

General Purpose schemas

- Dublin Core: general standard, can be adapted for specific disciplines (e.g., the Dryad data repository for biosciences uses Dublin Core).
- FGDC (Federal Geographic Data Committee): geospatial data, officially the **Content Standard for Digital Geospatial Metadata (CSDGM)**, but more commonly referred to as *FGDC*. Numerous editor tools are available.
- MODS (Metadata Object Description Schema): "a schema for a bibliographic element set that may be used for a variety of purposes".

Science schemas

- Darwin Core: objects contained within natural history specimen collections and species observation databases (adapted from Dublin Core).
- Ecological Metadata Language (EML): ecological data. **Morpho Data Management** software is recommended to create and edit metadata using EML and manage data collections, and is available for download.
- Integrated Taxonomic Information System (ITIS): taxonomy for "plants, animals, fungi, and microbes of North America and the world".
- NASA standards: include **DIF** (earth science data), **ISO 19115** (geographic data), **FGDC** (geospatial data), **Jakarta Lucene** Search and Retrieval Protocol, **ADN** (ADEPT/DLESE/NASA) metadata framework (learning environment resources for the earth system education community), and **Dublin Core** (generic but strongly associated with libraries).

Social Science schemas

- Data Documentation Initiative (DDI): social science numeric data. **Nesstar Publisher**, a free XML editor for DDI, is available for download.
- Electronic Metastructure for Endangered Languages Data (E-MELD)

UNIVERSITY LIBRARY
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Metadata Services

Documentations

Metadata standards
Metadata standards should be selected based on the resources included in the digital collection. This document describes the metadata standards that are used in library, museum, and archives domains

Controlled Vocabulary
Controlled vocabulary has an important role in search and browsing functions. Using controlled vocabulary is strongly recommended when the field information will be used in searching and browsing. C
way...

Best practices for descriptive metadata
A wide variety of descriptive metadata schemas currently exist, but as of yet no single metadata schema has been accepted as the 'best metadata standard' for every project. In any case, deciding whic
was created to provide project coordinators with a set of guidelines "for creating rich and sharable metadata, which can be useful to metadata aggregators and end users".

CONTENTdm

How to use

Minimum Recommended Metadata Fields

How to work with compound objects

Helpful tools

MarcEdit

Z39.50

Metadata Projects

- Encoded Archival Description (EAD) Projects
  - Lists to electronic copies of finding aids, including box and folder listings
- Historic Aerial Photo Imagebase
  - Reconnecting Access table columns with FGDC Metadata Standard sections
- Descriptive Metadata for German Emblem Book Project
  - A list of fields that have been created for each emblem

Help us to help you

The Microdata Library is a collaborative effort by data producers, curators, and users. The quality and completeness of the data and metadata we provide depend on their and your contribution.

Practices and tools

Operating the Microdata Library involves the acquisition, preparation, documentation, cataloging, dissemination and preservation of datasets and their associated material describing how the data were collected and compiled - the metadata. For all these tasks, we follow agreed international standards and good practices. In particular we have made use of the various tools and guidelines developed in collaboration with the International Household Survey Network (IHSN). These are freely available to other agencies to manage their own data cataloging and archiving activities.

Acquisition | Preparation | Documentation | Cataloging | Preservation

Initially, preparing datasets for inclusion in the Microdata Library has focused on datasets managed or held by the World Bank and a few other agencies where the preparation, documentation and cataloging have been carried out in accordance with the Data Documentation Initiative (DDI) standard. The World Bank datasets consist of household surveys - carried out for specific operations, for example, to complete an impact evaluation, evaluate the impact, research studies, and surveys carried out as part of the living standard measurement study (LSMS) - and other surveys carried out as part of global programs to assess the impact of migration and to monitor the investment climate.

The policy in developing the Library has been to only include those data sets where complete metadata are available and where access to data sets can also be provided. Procedures for getting access to the data are set out in the Terms of Use. For those data sets held and managed by the World Bank, open access will be provided as far as possible in line with the open data initiative. For other datasets, where the Bank does not have ownership of the data, the procedures for obtaining access and the conditions of use are determined by the owner.

IHSN Microdata Management Toolkit
A free DDI compliant metadata editor

NADA
Our open source survey cataloguing system

Quick reference Guide for Data Archivists
Recommendations for documenting datasets

Dissemination of Microdata Files
Formulation of microdata dissemination policies and protocols

Laurie N. Taylor

Digital Scholarship Librarian, University of Florida

Data Documentation Initiative 3 (DDI 3) Data Extraction Tools from Colectica Awarded an NIH Grant

The Data Documentation Initiative 3 (DDI 3) standard is a simply fabulous and full standard for metadata (data about data) as well as for the data contents, making it a full payload standard.

DDI 3 is such an exciting standard because it allows for the possibility of true and full computational support for data harmonization and for really working with longitudinal data. It's the type of data standard I'd been waiting for because it *gets it*. Data standards need to be able to support documenting, containing, expressing, and computing (analysis, harmonization, limitations on disclosure, everything we now do with less than ideal systems and methods). DDI 3 does this and that's why groups like ICPSR are already using it. DDI 3 is already on its way to becoming ubiquitous, but more tools for it are needed.

News of others using and supporting DDI 3 is always good. Thus, it's wonderful news that Colectica has been awarded an NIH Grant for DDI 3-based data extraction tools. From the Colectica website:

> *The award is a Phase I grant that provides supplemental support of Algenta's research on an "Open Standards-Based Data Extraction Web Tool for Complex Longitudinal Datasets". This Phase I feasibility study aims to analyze to data preparation and metadata creation workflow needed to prepare a study for online data extraction, to validate the use of the Data Documentation Initiative's DDI 3 standard for the basis of such a tool, and to create prototype web-based data extraction*

DDI - Data Documentation Initiative

A widely-used international standard for describing data from the social, behavioral, and economic sciences. Expressed in XML, the DDI metadata specification supports the entire research data life cycle.

Sponsored by the DDI Alliance, DDI version 3.2 was released in 2014.

Mappings	DataCite Metadata Schema; Dublin Core
Related Vocabularies	DDI Controlled Vocabularies
Specification	http://www.ddialliance.org/Specification/
Standard's website	http://www.ddialliance.org/

Extensions

CESSDA MLI - Council of European Social Science Data Archives Minimum Level of Information
A common base profile of DDI for use by the member archives of CESSDA.

GSIM - Generic Statistical Information Model
A reference framework that provides a common terminology acroos and between statistical organisations; aligns with DDI and SDMX.

Tools

DDI Tools
The Data Documentaion Initiative website's list of tools to implement the DDI standard.

DdiEditor
DdiEditor is a DDI-Lifecycle Editing Framework developed by the DDA - Danish Data Archive.

Geodoc Metadata Editor
The Geodoc metadata editor tool allows users to create, validate, edit and export geospatial metadata records. It also supports the creation and export of metadata records as XML output files compliant with a number of standards, including UK AGMAP 2.1, ISO 19115, FGDC, DDI, and Dublin Core.

Use Cases

Metadata and describing data

Metadata is documentation that describes data.

Properly describing and documenting data allows users (yourself included) to understand and track important details of the work. In addition to describing data, having metadata about the data also facilitates search and retrieval of the data when deposited in a data repository.

In a lab setting, much of the content used to describe data is initially collected in a notebook; metadata is a more formal, sharable expression of this information. It can include content such as contact information, geographic locations, details about units of measure, abbreviations or codes used in the dataset, instrument and protocol information, survey tool details, provenance and version information and much more. Where no appropriate, formal metadata standard exists, for internal use, writing "readme" style metadata is an appropriate strategy.

Metadata formats and standards

Metadata can take many different forms, from free text (make this a link to my read-me) to standardized, structured, machine-readable, extensible content. Specific disciplines, repositories or data centers may guide or even dictate the content and format of metadata, possibly using a formal standard. Because creation of standardized metadata can be difficult and time consuming, another consideration when selecting a standard is the availability of tools that can help generate the metadata (e.g. Morpho allows for easy creation of EML, Nesstar for DDI data, etc.).

The Digital Curation Center provides a catalog of common metadata standards, organized by discipline: http://www.dcc.ac.uk/resources/metadata-standards.

Some specific examples of metadata standards, both general and domain specific are:

- **Dublin Core** - domain agnostic, basic and widely used metadata standard
- **DDI** (Data Documentation Initiative) - common standard for social, behavioral and economic sciences, including survey data
- **EML** (Ecological Metadata Language) - specific for ecology disciplines
- **ISO 19115** and **FGDC-CSDGM** (Federal Geographic Data Committee's Content Standard for Digital Geospatial Metadata) - for describing geospatial information
- **MINSEQE** (MINimal information about high throughput SEQeuencing Experiments) - Genomics standard
- **FITS** (Flexible Image Transport System) - Astronomy digital file standard that includes structured, embedded metadata

Guide to writing "readme" style metadata

A readme file provides information about a data file and is intended to help ensure that the data can be correctly interpreted, by yourself at a later date or by others when sharing or publishing data. Standards-based metadata is generally preferable, but where no appropriate standard exists, for internal use, writing "readme" style metadata is an appropriate strategy.

This document is also available as a PDF that includes example readme files.

Best practices

Create one readme file for each data file, whenever possible. It is also appropriate to describe a "dataset" that has multiple, related, identically formatted files, or files that are logically grouped together for use (e.g. a collection of Matlab scripts). When appropriate, also describe the file structure that holds the related data files (see Example 2 in the PDF version).

Name the readme so that it is easily associated with the data file(s) it describes.

Write your readme document as a plain text file, avoiding proprietary formats such as MS Word whenever possible. Format the readme document so it is easy to understand (e.g. separate important pieces of information with blank lines, rather than having all the information in one long paragraph).

Format multiple readme files identically. Present the information in the same order, using the same terminology.

Use standardized date formats. Suggested format: W3C/ISO 8601 date standard, which specifies the international standard notation of YYYYMMDD or YYYYMMDDThhmmss.

Follow the scientific conventions for your discipline for taxonomic, geospatial and geologic names and keywords. Whenever possible, use terms from standardized taxonomies and vocabularies, a few of which are listed below.

Metadata

Definition

Metadata is information about the context, content, quality, provenance, and/or accessibility of a set of data.

Relevance

Metadata may be . . .

- required for depositing a data set in disciplinary repositories or for publishing it in research journals
- critical documentation for the longevity and reproducibility of research data
- useful for visualizing or analyzing the data in data files

What are some examples of metadata?

Metadata can exist in a variety of different formats. Some of the most common ones are summarized in the table below.

Type of metadata	Example of this type
A text or html document.	Metadata includes authors, dates, location, etc. This metadata accompanies data on Seasonal Frost Depths, Midwestern USA (1971-1981) that is archived in the National Snow and Ice Data Center.
An XML document linked to data files.	Metadata includes authors, locations, dates, etc. This metadata is linked to TIGER/Line Shapefile data on Wisconsin Congressional Districts, 2009 provided on Data.gov. (Note: you may need to select "View page source" in your browser to see the XML format.) Follows the FDGC (Federal Geographic Data Committee) digital geospatial metadata standard.
Information embedded in an XML data file.	Metadata includes authors, dates, organism, publication, instrument, etc. It is kept within the X-ray diffraction data file for UDP-galactopyranose mutase in the Protein Data Bank repository. (Note: you may need to select "View page source" in your browser to see the XML format.) Follows the PDBML (Protein Data Bank Markup Language) specification.

What metadata help is available?

A data specialist from one of the following groups may be able to help you find, adapt, and use an appropriate metadata standard.

- An informatics specialist or IT consultant in your department.
- A digital curation consultant.
- The subject librarian for your department.
- A disciplinary society in your research area.

Metadata

Metadata Standards

A sample of the Ecology Metadata Language (EML) standard

Links to a few representative metadata standards in disciplinary areas

Disciplinary area	Metadata standard	Description
General	Dublin Core	Widely used in disciplinary and institutional repositories.
	Disciplinary Metadata from the DCC	Searchable list of disciplinary metadata standards and related information. Includes biology, Earth science, physical science, social science & humanities and general research data.
Life Sciences	Darwin Core	Designed to facilitate the sharing of information about biological diversity. It is primarily based on taxa, their occurrence in nature as documented by observations, specimens, and samples and related information.
	Ecology Metadata Language (EML)	Maintained by the Ecological Society of America. Consists of XML modules that can be used to document ecological datasets.
Humanities	Seeing Standards: A Visualization of the Metadata Universe	Information on 105 cultural heritage metadata standards.
	Text Encoding Initiative	A widely-used standard for representing textual materials in XML.
Social Sciences	DDI	A metadata specification for the social and behavioral sciences created by the Data Documentation Initiative. Used to document data through its lifecycle and to enhance dataset interoperability.

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- A digital curation consultant.
- The subject librarian for your department.
- A disciplinary society in your research area.

Brianna Marshall @notsosternlib · Apr 3

do any of you offer services related to DDI? know groups who do? @AWhitTwit @badgerbouse @pmhswe @KristinBriney @celiemme @yasmeen_azadi

2 1

Steve Van Tuyl
@badgerbouse

Follow

@notsosternlib @AWhitTwit i'm thinking about providing a 'data documentation' workshop broader than, but including some, ddi stuff. #maybe

Amanda Lea Whitmire
@AWhitTwit

Follow

@notsosternlib I teach my students how to create it using Colectica for Excel, & could do same for anyone. Sort of a service?

Workshops

- **DDI for the Data Librarian** (2012)
  - University of Texas at Austin
  - A 2-day workshop for data librarians and archivists involved in data management and researcher support.
- **DDI Workshop** (2011)
  - University of California at San Diego
  - First workshop for DDI3 in the US
  - The goal of this workshop is to familiarize data curators and managers with this standard and its potential role in good management practices for data.

In the Literature

Blank, G., & Rasmussen, K. B. (2004). The Data Documentation Initiative: The value and significance of a worldwide standard. *Social Science Computer Review*, *22*(3), 307-318. http:dx.doi.org/10.1177/0894439304263144

Rasmussen, K. B., & Blank, G. (2007). The data documentation initiative: a preservation standard for research. *Archival Science*, *7*(1), 55-71. http:dx.doi.org/10.1007/s10502-006-9036-0

Vardigan, M., Heus, P., & Thomas, W. (2008). Data documentation initiative: Toward a standard for the social sciences. International Journal of Digital Curation, 3(1), 107-113. http:dx.doi.org/10.2218/ijdc.v3i1.45

NEXT STEPS?

Recommendations

- Centralized place to find information
- Adapt website for the new user
- Provide information specific to different audiences
  - Researchers/users
  - Support groups like RDS

Materials for Research Support Groups

- Workshop template
  - How granular? Just DDI? Or integrated into a broader topic? (Colectica, spreadsheets)
- Case studies
- Specific community space
- The more documentation, the better

RDS Possibilities

- Targeted metadata guidance
- Fall 2015 social science workshop
- Utilize DDI expertise (Barry!)
- Share back with research data support and library communities

Conversation

- How can a group like RDS add value?
- Ideas for spreading the word about DDI to researchers?
- Ideas for expanding the DDI community to include research support services?

Get in touch

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@UWMadRschSvcs

Thank you!

Adapt this presentation as needed!

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