Data Management Planning

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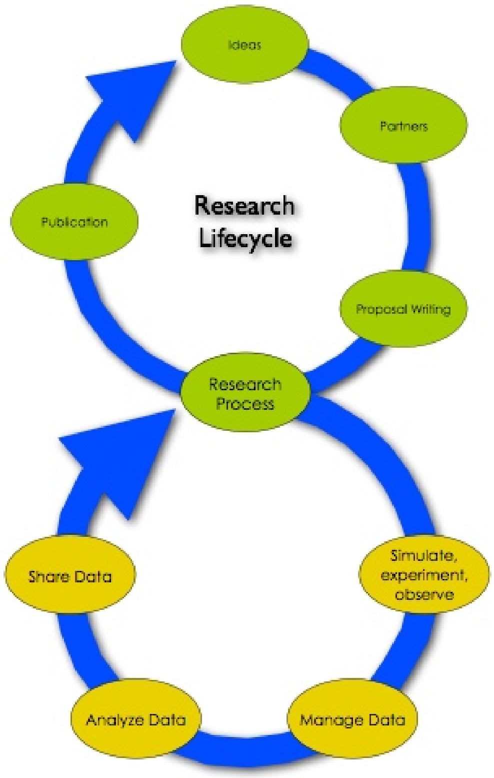
Data Management Planning - First Principles

Context - Data Management Requirements

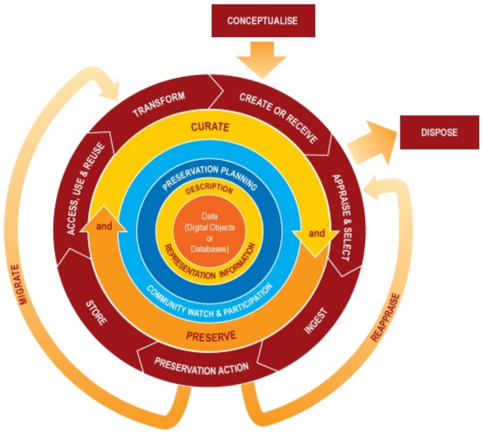
- Data Management Plan requirements from funding agencies
- Data sharing requirements from funding agencies and publishers
- IRB Protocol requirements for explicitly defining how collected data will be handled, de-identified, shared and/or destroyed, expected risks
- Increased collaborative research requiring efficient sharing of data within research teams
- Data intensive research magnifies inefficiencies in data management

Relationship Between the Research and Data Lifecycles



JISC Research Lifecycle

http://www.jisc.ac.uk/whatwedo/campaigns/res3/jischelp.aspx



DCC Data Curation Lifecycle

http://www.dcc.ac.uk/resources/curation-lifecycle-model

Some Definitions

Data

Data. For the purposes of this document, data are any and all complex data entities from observations, experiments, simulations, models, and higher order assemblies, along with the associated documentation needed to describe and interpret the data.

- National Science Foundation (2007). Cyberinfrastructure Vision for 21st Century Discovery. National Science Foundation, Cyberinfrastructure Council. Washington, DC. http://www.nsf.gov/pubs/2007/nsf0728/nsf0728.pd pg. 22

Documentation (AKA Metadata)

Metadata. Metadata are a subset of data, and are data about data. Metadata summarize data content, context, structure, interrelationships, and provenance (information on history and origins). They add relevance and purpose to data, and enable the identification of similar data in different data collections.

- National Science Foundation (2007). Cyberinfrastructure Vision for 21st Century Discovery. National Science Foundation, Cyberinfrastructure Council. Washington, DC. http://www.nsf.gov/pubs/2007/nsf0728/nsf0728.pd pg. 22

Embargo

Embargo. A period during which access to research data is not allowed to certain types of users. This is either to protect the revenue of the publisher or (more generally) to protect the interests of other parties (for example, partner research organizations).

- University of Bristol: Research Data Management Glossary

License

A **licence** in this context is a legal instrument for a rights holder to permit a second party to do things that would otherwise infringe on the rights held.The first thing to note is that only the rights holder (or someone with a right or licence to act on their behalf) can grant a licence; it is therefore imperative that the intellectual property rights (IPR) pertaining to the data are established before any licensing takes place.

- How to License Research Data. Digital Curation Centre. http://www.dcc.ac.uk/resources/how-guides/license-research-data#x1-20002

Some Recommendations

I'M EXHAUSTED FROM ALL OF THE BASIC RESEARCH I'M DOING.
Dilbert.com DilbertCartoonist@gmail.com
IT'S TOO BAD THAT THE VALUE OF MY WORK WON'T BE QUANTIFIABLE FOR ANOTHER TEN YEARS.
5-28-10 ©2010 Scott Adams, Inc./Dist. by UFS, Inc.
I'D LIKE TO SEE YOUR LAB REPORT.
SO... THE NEW RULE IS THAT WE WRITE DOWN STUFF?

What you need to know ...

- Who?
- What?
- Where?
- When?
- Why?
- How?
- Access?

Huh?

Who? Credit (researchers, sponsors), Questions, Responsibility, Role

What? What was measured, Units, Aggregation

Where? Geographic Location (define datum, Coordinate System, Method)

When? Date, Time - structured, Consistent, Time Zone, Standards-based

Why? Purpose for Data collection, Suggested Use, Known Limitations

How? Instruments, Sensors, Algorithms, Models, Software, Methods

Access? Licensing Terms, Embargo, Redistribution, Modification, Privacy Concerns

Organization

Define folder and file names and structure - and use it

Use meaningful names that include basic information (e.g. date, measurement, collection, etc.)

Unique

Avoid Spaces

ASCII Characters only

Security of Files & Backups

Backups

Structure / Content

Consistent content

Separate data from analysis

Focus on tabular structure for tabular data

Explicitly encode missing data, and document that encoding

Use meaningful column headings - while keeping short without spaces

Include units

Data dictionary

Formats

Plan for data & metadata integration into an archive

Open Standards
>>>
Proprietary ASCII
>
Proprietary Binary - Documented
>
Proprietary Binary

Documentation

Many documentation standards

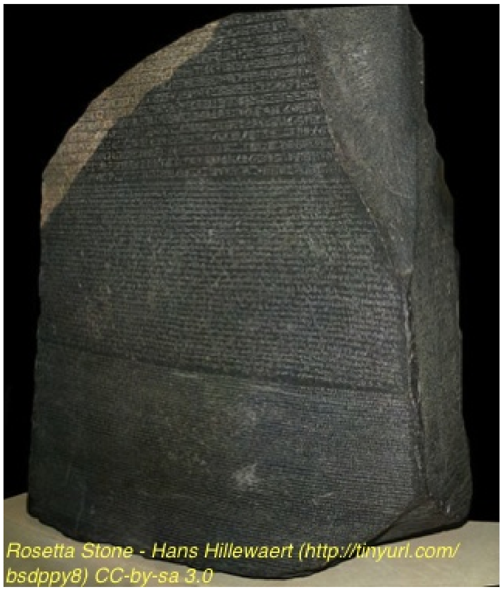
Machine and human readable

Commonly based on Extensible Markup Language (XML)

Wide variety of strategies/methods/tools for creating documentation

Enables Discovery, Use, and Understanding

Work with experts in documentation for your discipline to identify relevant standards for your data



Rosetta Stone - Hans Hillewaert (http://tinyurl.com/bsdppy8) CC-by-sa 3.0

Data Curation - Selecting and Transition to Preservation System

Identify what data need to be shared & preserved

- Data directly related to publications
- Raw data - especially when they cannot be replicated or replaced
- Derived data that have a high cost of production
- Retention required by protocol or other legal requirements

Documentation

- Enables discovery, understanding and use/reuse
- Supports long-term preservation: format information, dependencies
- Citation information

Who is responsible for providing continuity of access?

Bottom Line

Get help … Consult early and often (rds@unm.edu) - your target archive

Maintain documentation from the project planning stage and throughout your work

Adopt a systematic model for organizing your data: naming, file structure, formats, storage, backups

Adopt consistent and documented data structures

Separate data from analysis products

Always have the entire data lifecycle in mind when you are managing your data

Resources

PLOSONE Data Sharing Requirements: http://www.plosone.org/static/policies#sharing

Library of Congress: Sustainability of Digital Formats: http://www.digitalpreservation.gov/formats/index.shtml

Digital Curation Centre: Disciplinary Metadata: http://www.dcc.ac.uk/resources/metadata-standards

Creative Commons Licensing Information: https://creativecommons.org/

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