Choosing Between Data Sharing Repositories for the Life Sciences

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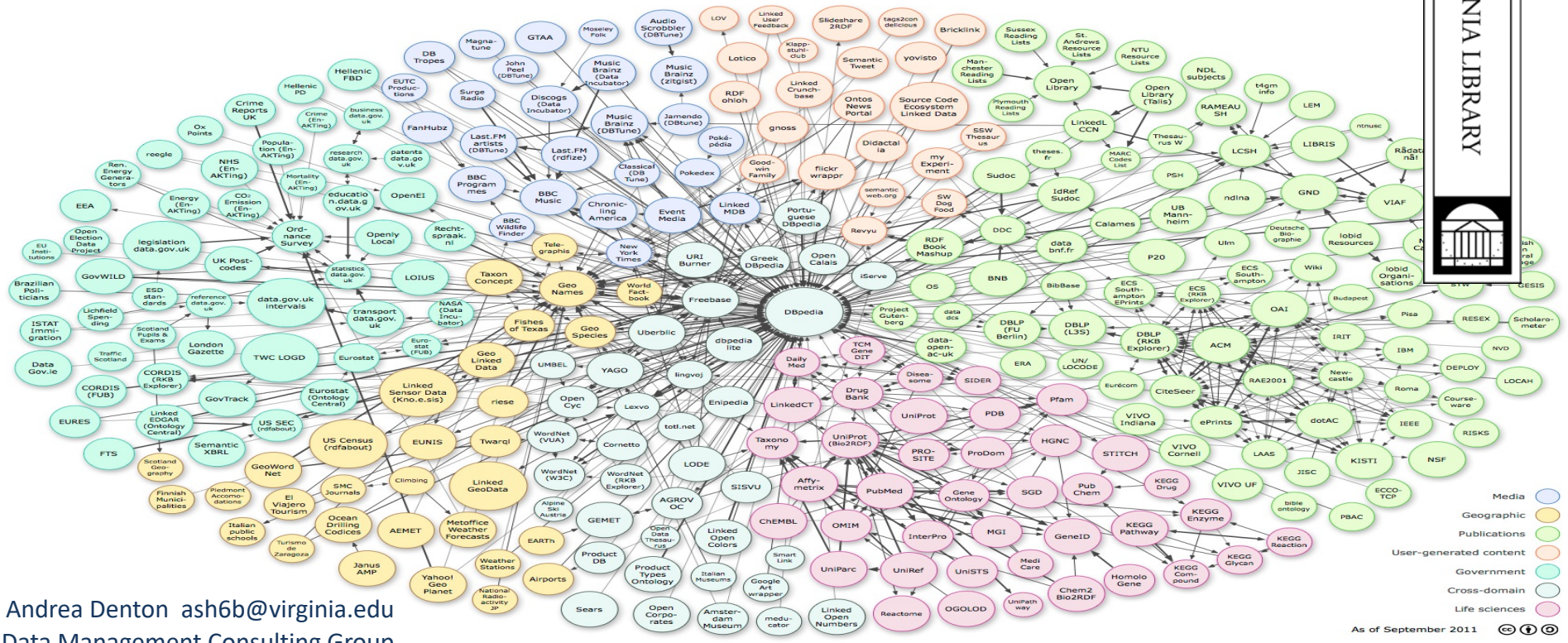

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Linking Open Data cloud diagram, by Richard Cyganiak and Anja Jentzsch. http://lod-cloud.net/

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Today we will:

- Define data repository
- Discuss motivations for sharing data
- Describe issues around ownership and sharing of data
- Utilize tools to find data repositories
- Discuss considerations in choosing a data repository
- Visit some repositories in the life sciences

Data repositories:

- Storage location for datasets
  - Research data repositories
- Online
- Typically freely available, searchable
- Items (datasets) are permanent, linkable, citable

Motivations for sharing data…

Overarching reasons

- Enabling others to replicate and verify results as part of the scientific process
- Powering future research and discovery by allowing researchers to ask new questions and conduct new analyses
- Linking to research products like publications and presentations, creating a more complete understanding of the study
- Preserving for future use and research
- Lowering barrier of entry into research for non-scientists

Motivations for sharing data…

Practical reasons

- Meeting expectations of sponsors, funders, publishers and institutions
- Receiving credit for research for career advancement, even if no publications resulted from it

Can I share my data?

That depends on many factors

- Who owns the data?
- Requirements from sponsors, publishers, collaborators
- Institutional concerns such as IRB, data ownership
- Documentation on your research data
- Risks to sharing or not sharing the data
- Privacy and confidentiality issues with your data
- Commercial value of the data
- Intended uses of the data
- Method of sharing the data

Who owns my research data?

"Data and notebooks resulting from sponsored research are the property of the University of Virginia. It is the responsibility of the principal investigator to retain all raw data in laboratory notebooks (or other appropriate format) for at least five years after completion of the research project (i.e., publication of a paper describing the work, or termination of the supporting research grant, whichever comes first) unless required to be retained longer by contract, law, regulation, or by some reasonable continuing need to refer to them." – UVA Policy RES-002 https://policy.itc.virginia.edu/policy/policydisplay?id=RES-002

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Can I share my data?

You must request permission

The Associate VPR and your Dean will have to approve your request to share research data.

You will need to identify an appropriate repository or archive before seeking permission.

Why use a data repository?

Why you shouldn't just put your data on a website

Websites typically don't have:

- Persistent identification
- Persistent access
- Provision for future preservation
- Professional backup

Why use a data repository?

Why you shouldn't just put your data on a website

You will waste time:

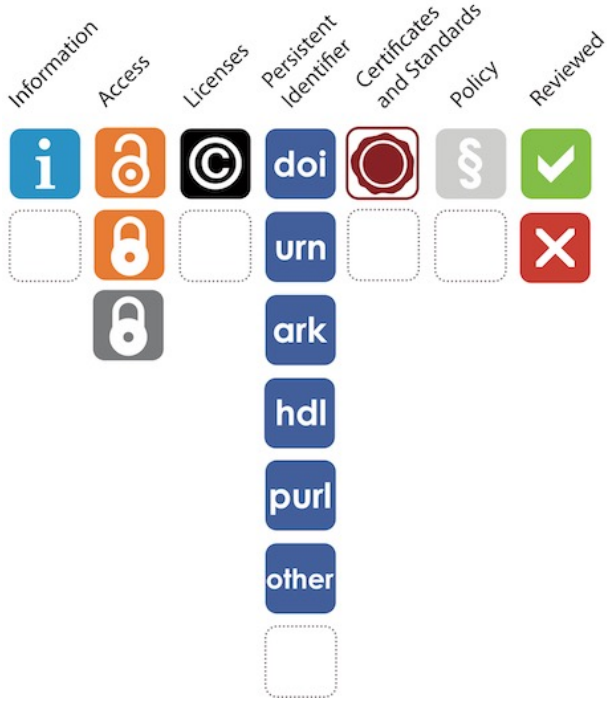
- Managing requests for access
- Preserving the data for reuse

Data repository advantages

Why you should put your data in a repository or archive

Services provided:

- Persistent Identifiers -- unique and citable
- Access controls
- Terms of Use and Licenses
- Repository guidelines for deposit



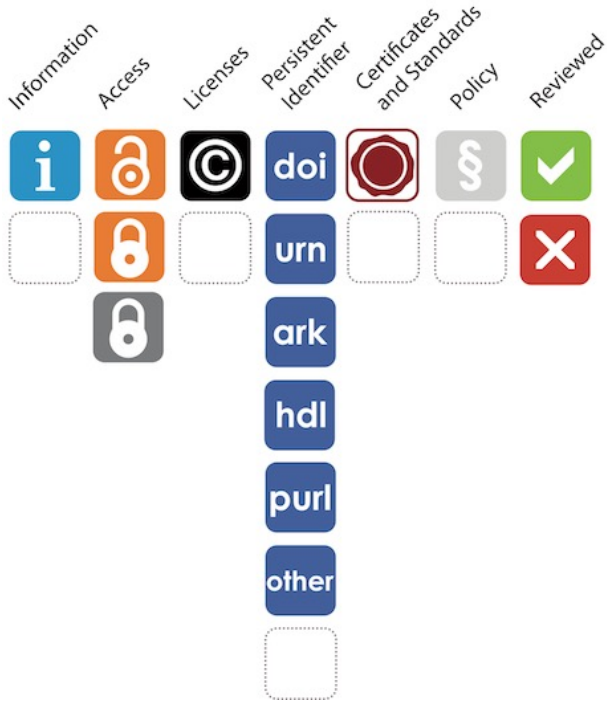
http://blogs.plos.org/mfenner/files/2013/06/figure2.png

Data repository advantages

Why you should put your data in a repository or archive

Services provided:

- Data preservation -- migrating to new formats or emulating old formats
- Professional backup and documentation
- Repository standards ensure commitment and quality



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Selecting a data repository

Questions to consider when selecting a repository or archive

- Does your funder specify a specific location or facility?
- Does your discipline recommend a specific repository or archive?
- Does your publisher require placement of data in support of an article in a specific location?
- Does your institution have specific requirements?

Data redundancy is important, so consider placing your data in at least two repositories or archives.

Selecting a data repository

Best Practices

- Choose early: There will be fewer surprises at the end of your research when you deposit your data.
- Metadata: Knowing the requirements for documentation at the start will enable you to design your data collection materials for easier metadata creation and facilitate your documentation creation.
- Persistent Identifiers: Be sure the repository supplies one so your data is findable, citable, and can be linked to your publication(s).

Selecting a data repository

Best Practices

- Data embargo (timed release): If you want to embargo your data be sure it is allowable, and learn about any restrictions before you submit.
- Data access: Identify any barriers that may limit or restrict data reuse.

Locating a data repository

International registries for data repositories

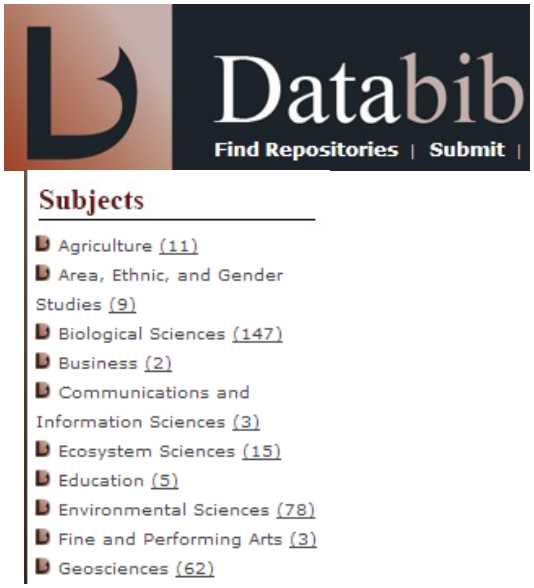
- **Databib** http://databib.org/
- **Re3data** http://re3data.org

You can start with these directories, or use them after determining if the funder, publisher, discipline, or institution have specific requirements.

Simmons College hosts the Open Access Directory – a compendium of factual lists about open access. They have a list of data repositories by discipline.
http://oad.simmons.edu/oadwiki/Data_repositories

Exercise: Identifying a repository

Chose which registry you wish to start with: **Databib** or **re3data.** Re3data has a more granular subject search than Databib. Databib contains more North American repositories. You will probably want to search both registries.



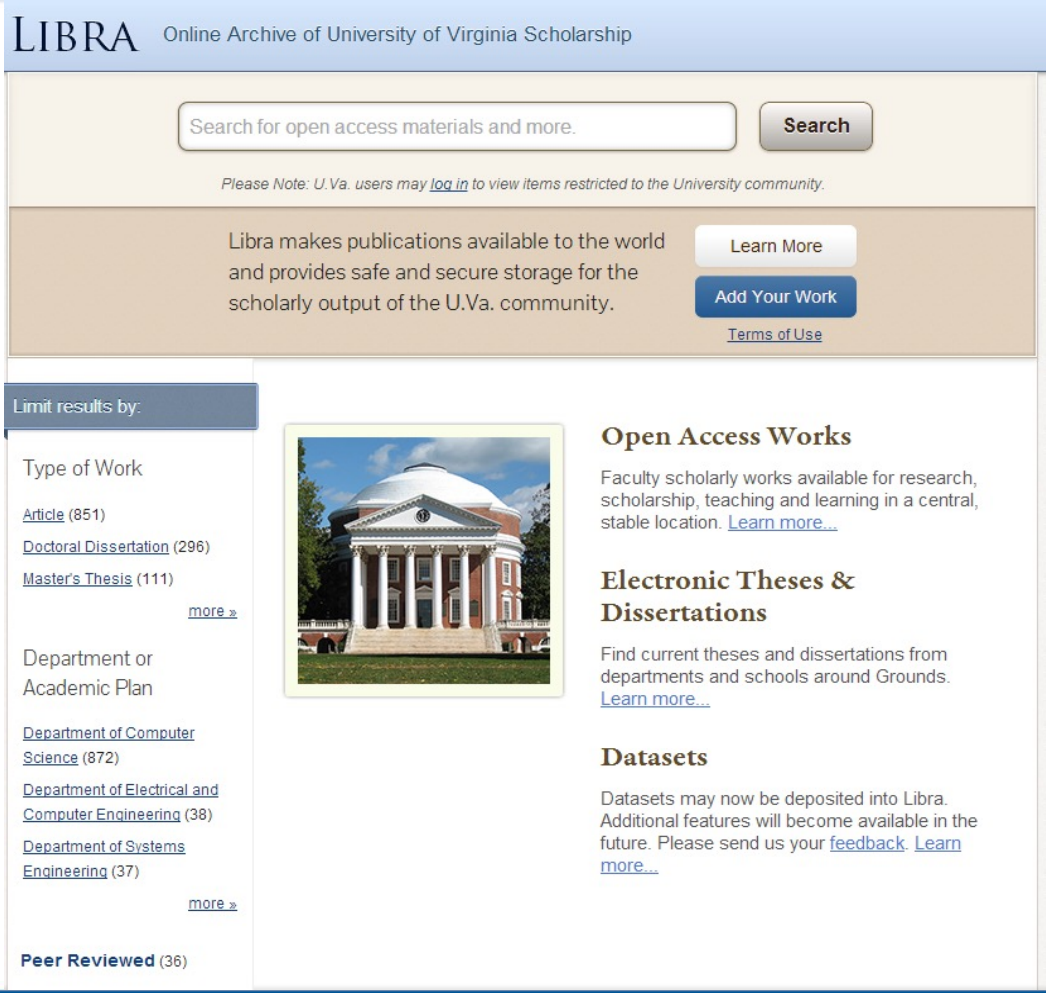
Browse the subject list to find your research discipline, enter the discipline in the search box, or select search or advanced search.

UVa Institutional Repository: Libra

Libra

UVa Institutional Repository

- Opened in 2011
- Thesis and dissertations
- Articles
- Article preprints
- Conference paper, posters
- Books
- Chapters in an edited collection
- Datasets



General options

figshare: http://figshare.com/*
“figshare is a repository where users can make all of their research outputs available in a citable, shareable and discoverable manner.”

GitHub: https://github.com/
“**GitHub is the best place to share code** with friends, co-workers, classmates, and complete strangers. ”

Open Science Framework: https://opensciencefframework.org/
“The Open Science Framework (OSF) is part network of research materials, part version control system, and part collaboration software.”

A few science/life sciences options

Dryad: http://datadryad.org/*
"Dryad is a nonprofit repository for data underlying the international scientific and medical literature."

TreeBASE http://treebase.org/treebase-web/about.html
"TreeBASE… includes phylogenetic trees and data matrices, together with information about the relevant publication, taxa, morphological and sequence-based characters, and published analyses."

NIH Data Sharing Repositories
http://www.nlm.nih.gov/NIHbmic/nih_data_sharing_repositories.html
"NIH-supported data repositories that accept submissions of appropriate data from NIH-funded investigators (and others)." Options for genomic data (e.g. Sequence Read Archive), organism-based (Flybase, Wormbase), etc.

*Both figshare and Dryad mentioned by Nature Publishing Group as appropriate generic repositories for datasets for their data journal

We're available to help

- The Data Management Consulting Group provides consulting and training services to UVA researchers and graduate students in all aspects of data sharing.
- We can help you navigate and negotiate through the tricky issues and many approvals in order to responsibly share your research data.
- Contact us at dmconsult@virginia.edu .

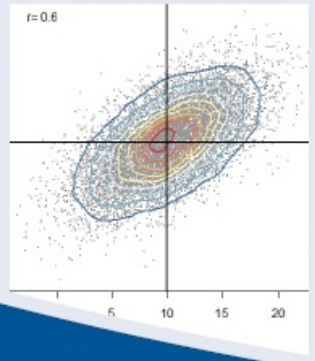
Photo credit
http://vprompt.com/wp-content/uploads/2013/10/data-mining-300x154.jpg

Additional links

- Data Management Consulting Group website – http://dmconsult.library.virginia.edu
- "Data Rights and Responsibilities Guidance 1.0" developed jointly by the Data Management Consulting Group, Office of General Counsel, and Office of the Vice President for Research - http://dmconsult.library.virginia.edu/data-rights-and-responsibilities-guidance-1-0/
- "Institutional Data Protection Standards" provided by the Information Security, Policy, and Records Office (ISPRO) - http://www.virginia.edu/informationsecurity/dataprotection/

RESEARCH DATA SERVICES

Offering expert data assistance at every stage of the research process.



1: PLANNING

We can assist you with developing a data management plan and designing your planned data analysis, including:

- Implementing plans, using tools, and creating workflows for managing research data
- Advising on study design, power analysis, and choice of statistical methods
- Helping to meet increasingly stringent criteria from funding agencies

2: FINDING & COLLECTING

We have access to thousands of sources of data and experts who will help you:

- Locate, evaluate and format data
- Create metadata and data documentation protocols for new data collection
- Capture data using best practices and appropriate technology

3: ANALYZING

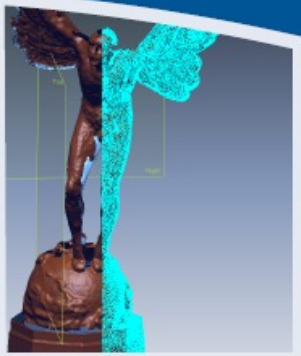
Get expert assistance from statistical, spatial, or media specialists to analyze your data and present your research:

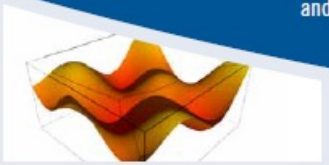
- Learn to use cutting-edge tools and methods
- Experiment with high-resolution visualization technologies
- Develop graphical representations that bring impact to your analysis

4: SHARING & ARCHIVING

We can consult with you on strategies to help others discover or access your research by:

- Adhering to data sharing policies and norms
- Selecting a data-sharing repository
- Making your data easier to discover and reuse





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Contact us at researchdataservices@virginia.edu