Managing Digital Research Data at ANU

Australian National University

ANU Acknowledgment of Country:

We acknowledge and celebrate the First Australians on whose traditional lands we meet, and pay our respect to the elders past and present.

ANU Open Research Repository

- Meets open access requirements for ARC/NHMRC grants

- Mandated location for theses

ANU Research Data Management

Contents:

- Definitions of Data and Data Management
- Data Management Life Cycle
- Benefits & Requirements
- Methods of Data Management
- ANU's Data Management Services
- Writing a Data Management Plan

Digital Research Data

Any data that is created during research that can be stored on a computer.

This includes field notes and non-digital images as they can be converted to digital images

It is not:

- physical data such as biological specimens, soil samples etc.
- *Admin data: student enrolments, assessments, research publications, course resources etc*.
- Electronic Records Management System (ERMS)

Data Management

Organisation

- Bibliography Management
- File transfers & remote access
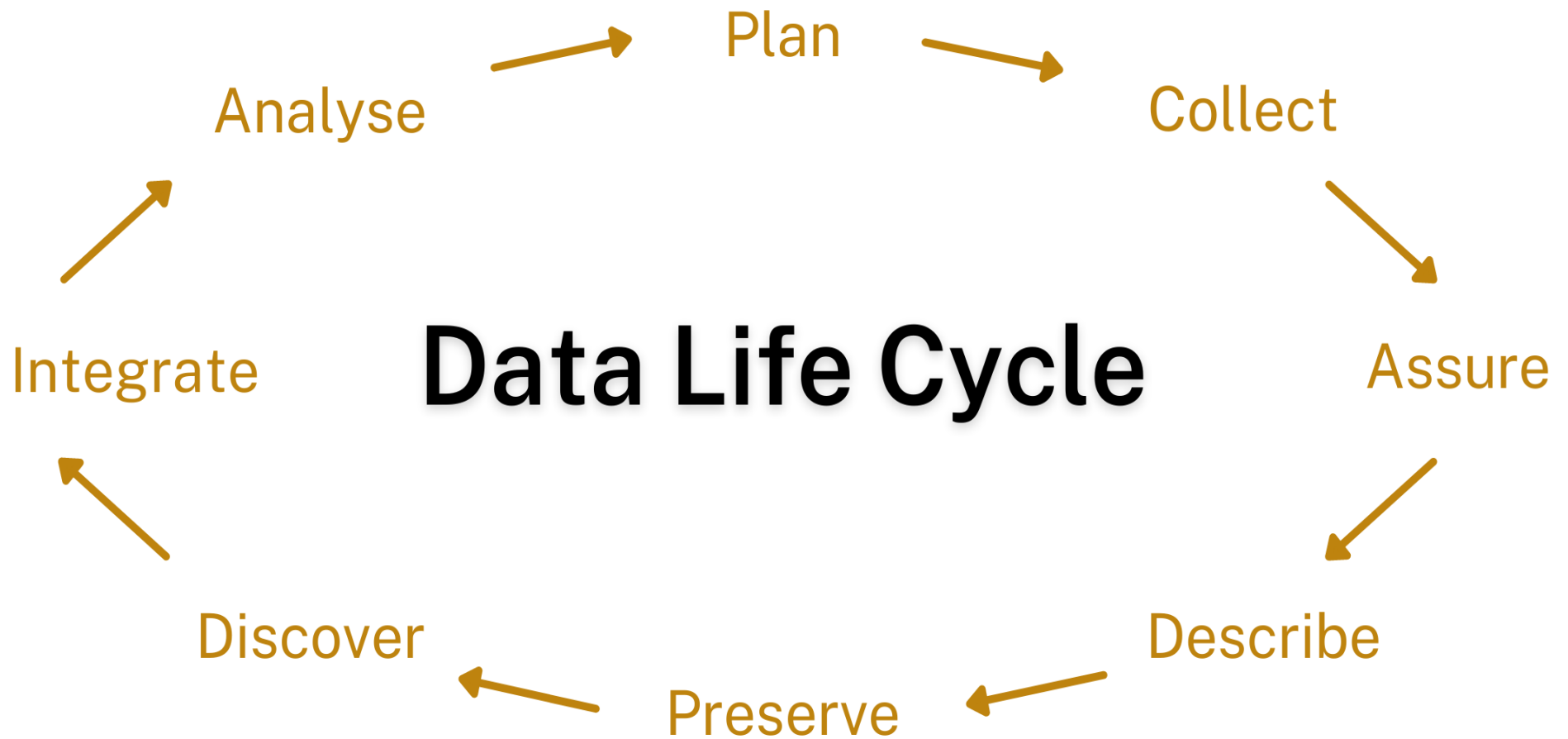- Synchronisation
- Collaboration
- Version Control

Administration

- Backups
- Validation & Authentication
- Documentation
- Access Control
- Security

Archiving

- Sharing Methods
- Licensing
- Formats & Standards
- Access Restrictions
- Metadata
- Archiving
- FAIR Principles

Data Life Cycle

Plan
Collect
Assure
Describe
Preserve
Discover
Integrate
Analyse

(DataOne Primer)

Why data management? – the future self

- Work more efficiently with data

- Protect data against loss or improper access

- Greater exposure, enhanced reputation and prestige

  - Piwowar HA and Vision TJ (2013) **Data reuse and the open data citation advantage.** *PeerJ*, **1**: e175. http://dx.doi.org/10.7717/peerj.175

  - Cousijn, H, et al. 2019. **Bringing Citations and Usage Metrics Together to Make Data Count.** Data Science Journal, 18: 9, pp. 1–7. DOI: https://doi.org/10.5334/dsj-2019-009

- Reproducibility

Why data management?

- [ANU Policy: Responsible Conduct of Research](#)

- Comply with ethical and privacy regulations

- Funding agencies

  – Data relating to publications must be kept for at least 5 years

- Journals require sharing of data, e.g. Nature, Science, PLoS, etc.

Methods of Data Management

- Data organisation
  - Bibliography management: EndNote, RefWorks, Mendeley, Zotero
  - Version control & file naming: TortoiseSVN, GitHub, BitBucket
  - File transfers: FileSender (CloudStor), OneDrive, SharePoint,
  - File storage: OneDrive, OneNote, ANU eNotebooks, SharePoint, NCI, ANU SafeShare
- Data administration
  - Backups: frequency etc
  - access control
- Data archiving and sharing
  - creative or science commons licenses

ANU's Data Management Services

- Information Technology Services (ITS)
  - OneDrive, SharePoint
- ANU Library (Digital Literacy Training, Open Research)
- Statistical Support Network
- Archives: Data Commons, Open Research, ADA
- Supercomputer (NCI)

ANU Data Storage

- OneDrive

- OneNote

- ANU eNotebooks

- National Computation Infrastructure (NCI)

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ANU Data Archives

- Open Research – ANU's institutional repository. Good for publications, theses, images

- ADA – Australian Data Archive. Social-science, medical, and economics datasets. Analyse datasets online with the NESSTAR webapp

- Data Commons – ANU data archiving service

Australian Data Archive

ANU Data Commons

- Users can deposit data for long term storage
- Can mint DOIs for datasets
- Users can self archive via web interface
- Data can be restricted or open
- Metadata can be restricted or open

ANU Data Commons (cont.)

- As long as storage is accessible via URL, Data Commons can link to it – create a reference
- Data for work in progress can be stored

Office 365/SharePoint

- A web-based collaborative platform, available on MS Office 365, used to co-author documents; Manage versions; Apply workflows; Discover and share information
- OneDrive stores your personal documents

Digital Literacy Training & Support

- Research Skills 101 – Find and Evaluate Resources

- Word for academic writing workshops

- Research data management

- NVivo

Book online at ANU Library: anu.libcal.com/calendar/training

- Digital Essentials

- EndNote

- SPSS

- Publishing with LaTeX

- Working with data in Excel

Online recordings and support: anulib.anu.edu.au/research-learn

The National Computational Infrastructure

- Fastest Supercomputer in Australia
- All staff/students can apply for access
- For complex computational or large data projects
- Dataset hosting for every large datasets of national significance

Benefits of Digital Archiving

- Long term storage of end-of-life data
- Converted to formats that are durable and free
- Owner sets Access Restrictions
  - Unrestricted: anyone can download
  - Registered: requires name and affiliation
  - Requested: users submit a request for data
  - Closed: no access

Let's avoid this...

Data Sharing and Management Snafu in 3 Short Acts

By Karen Hansen, Alisa Surkis& Karen Yacobucci

NYU Health Sciences Libraries

youtube.com/watch?v=66oNv_DJuPc

Australian National University

Additional information: Your ORCID iD and ANU
anulib.anu.edu.au/howto

Writing a Data Management Plan

The Australian National University is a participating institution of the DMPTool service*
ANU recommends the use of the default DMPTool template.

To complete a plan, you will need to consider the following:

Data Collection

- What data will you collect or create?
- How will the data be collected or created?

Documentation and Metadata

- What documentation and metadata will accompany the data?

Ethics and Legal Compliance

- How will you manage any ethical issues?
- How will you manage copyright and Intellectual Property Rights issues?

Storage and Backup

- How will the data be stored and backed up during the research?
- How will you manage access and security?

Selection and Preservation

- Which data are of long-term value and should be retained, shared, and/or preserved?
- What is the long-term preservation plan for the dataset?

Data Sharing

- How will you share the data?
- Are any restrictions on data sharing required?

Responsibilities and Resources

- Who will be responsible for data management?
- What resources will you require to deliver your plan?

*provided by the California Curation Centre of the California Digital Library

Data Management Plan

- From 2020 ARC will require that data management plans are in place prior to the commencement of the project.

  arc.gov.au/research-data-management

- ANU recommends DMPTool: dmptool.org

  Using DMPTool to create a plan

  ✓ Video 1 - youtu.be/90x6QRpehQw
  ✓ Video 2 - youtu.be/VBRuCC7y1no

Metadata

Metadata is "data that provides information about other data"

- Descriptive
  - What is it about?
  - Title, time, author, keywords
  - Relations to other data objects
- Administrative (Access & Rights)
  - Ownership and use permissions
- Provenance
  - Where does it come from?
  - History of changes to the data, versions
- Standards/Schemas

Example of Metadata

- Records from Research Data Australia:

  - researchdata.ands.org.au/measuring-effects-human-leptonychotes-weddellii/640511

- A record from OpenResearch@ANU

  - openresearch-repository.anu.edu.au/handle/1885/138114?mode=full

- The Pacific and Regional Archive for Digital Sources in Endangered Cultures (PARADISEC) paradisec.org.au/deposit/metadata/

Resources

LibGuide Data Management: ql.anu.edu.au/data

ANU Research Data Management Manual ql.anu.edu.au/cco9

ARDC: ardc.edu.au

RE3Data.org: re3data.org

ANU Research data management resources:

anulib.anu.edu.au/research-learn/research-data-management

Artificial Intelligence including generative AI:
https://libguides.anu.edu.au/c.php?g=960102&p=6969710

ANU Talk data to me: anulib.anu.edu.au/publishing

Information on Sensitive Data Training : learning.cadre5safes.org.au

Data Repositories: journals.plos.org/plosone/s/data-availability

FAIR self-assessment tool: FAIR Data Self Assessment Tool

Google Dataset Search: datasetsearch.research.google.com/

Top Tips

✓ Have a Data Management Plan

✓ Back up your data

✓ Register an ORCID

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MOST IMPORTANT

BACK UP YOUR DATA

You can't create a data management plan, share or reproduce your results if you have lost your data!

We love your feedback

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THANK YOU

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