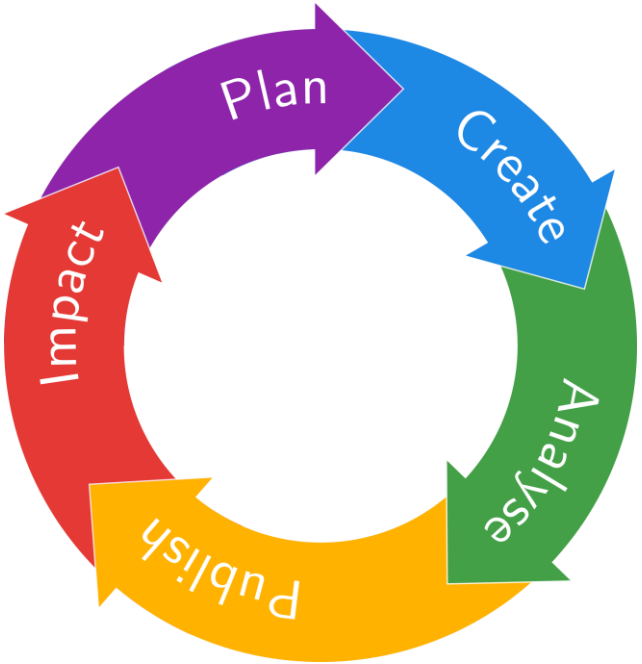
Data Management

Tame your research data!



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THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

Centre for eResearch

Learning Objectives

- Awareness of the storage services available at UoA
- Understand how to perform common tasks using figshare
- Awareness of the research data landscape
- Develop a strategy for capturing and organising research data
- Understand legal and ethical issues around research data

What is data?

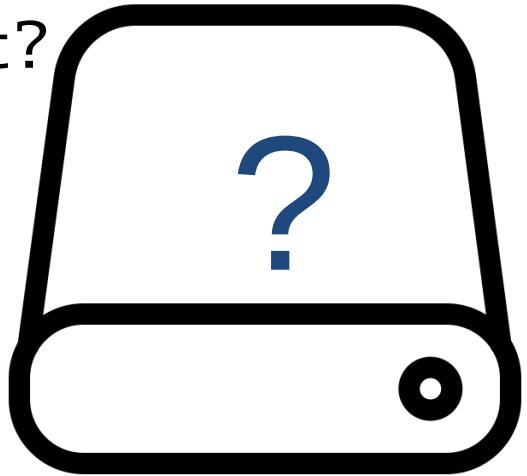
What is your research topic?
What kinds of data will you deal with?

Where do you store your data?

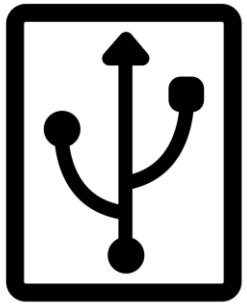
How do you organise and label it?

How do you manage backups?

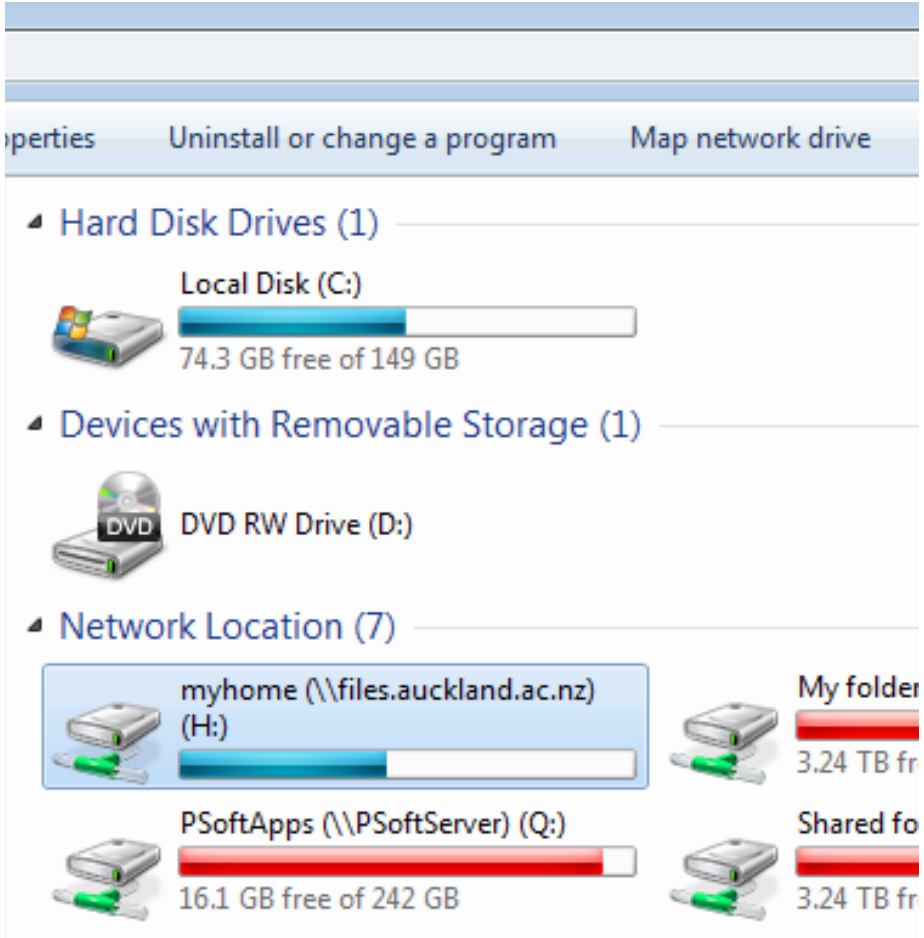
How do you describe or document your data?



Storage Options



Storage Options



Storage Options

IBM® GPFS

https://www.flickr.com/photos/chrissamuel/

Storage Options

Storage Options

Storage Options

Storage Options

Publishing Data

- Scientific Integrity
- Funder requirements
- Impact
- Collaboration
- Innovation and reuse
- Preservation
- Teaching
- Public record

UoA Research Data Publishing and Discovery Service

figshare

auckland.figshare.com

Data Sharing and Management Snafu in 3 Short Acts

NYU Health Sciences Library

https://www.youtube.com/watch?v=N2zK3sAtr-4

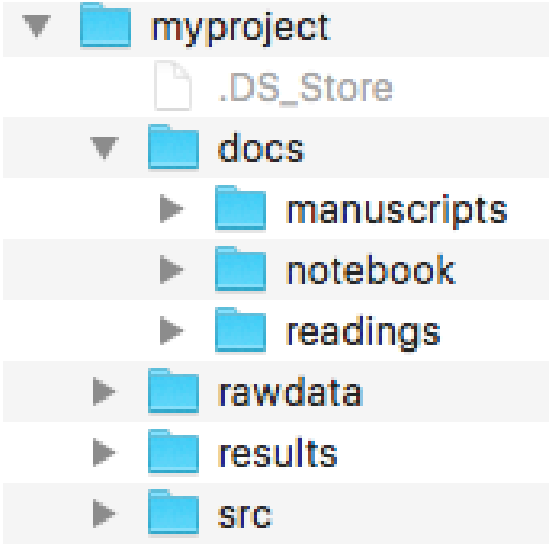
Data Management Plans

NZ - based on NSF

Data collection

What kinds?
How much? raw + (analysed * no. analyses) + (backup * redundancies)
Will it grow?
Will it change over time?
What file formats?
How will you organise it?
Where will you store it?
How will you document and describe it?
How will you check it for errors?

Hierarchies



Hierarchies - tips

- Follow conventions from other host projects or communities if they exist.
- Try to avoid overlapping categories.
- Don’t let folders get too big, or too deep.
- Avoid using the same name for subfolders (or files in different subfolders).

Naming Files and Folders

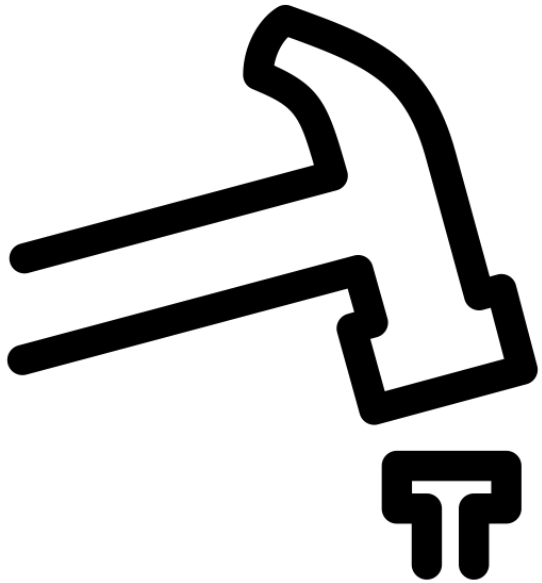
- Project/grant name/number
- Date of creation YYYYMMDD
- Initials of creator
- Description of content
- Collection method
- Version number x.y

Filename Schemes

[investigator]-[method]-[specimen]-[yyymmdd].ext
cm-lcms-8887-20160126.dat

[type of file]-[creator]-[subject]-[yyymmdd].ext
transcript-cm-fsgroup-2016060.md

[date]-[type]-[subject].ext
20130412-interview-recording-MDB.mp3



How does this compare with what you do now?

All files
All images
All export images
ASCII art (*.txt, *.ansi, *.text)
Alias Pix image (*.pix, *.matte, *.mask, *.alpha, ...)
AutoDesk FLIC animation (*.fli, *.flc)
C source code (*.c)
C source code header (*.h)
Colored XHTML (*.xhtml)
DDS image (*.dds)
Digital Imaging and Communications in Medicine image (*.dcm, *.dicom)
Encapsulated PostScript image (*.eps)
Flexible Image Transport System (*.fit, *.fits)
GIF image (*.gif)
GIMP brush (*.gbr)
GIMP brush (animated) (*.gih)
GIMP compressed XJT image (*.xjt, *.xjtgz, *.xjtbz2)
GIMP pattern (*.pat)
HTML table (*.html, *.htm)
JPEG image (*.jpg, *.jpeg, *.jpe)
KISS CEL (*.cel)
MNG animation (*.mng)
Microsoft Windows icon (*.ico)
OpenRaster (*.ora)
PBM image (*.pbm)
PGM image (*.pgm)
PNG image (*.png)
PNM image (*.pnm)
PPM image (*.ppm)
Photoshop image (*.psd)
Portable Document Format (*.pdf)
PostScript document (*.ps)
SUN Rasterfile image (*.im1, *.im8, *.im24, *.im32, ...)
Silicon Graphics IRIS image (*.sgi, *.rgb, *.rgba, *.bw, ...)
TIFF image (*.tif, *.tiff)
TarGA image (*.tga)
Windows BMP image (*.bmp)
X BitMap image (*.xbm, *.icon, *.bitmap)

File Formats

File Formats

```
01101100
01101111
01110110
01100101
```

ascii

File Formats

Open. Standardised. In wide use. Easy to datamine, transform, or re-cast.

What software do you expect to use? Are you collaborating or sharing with others?

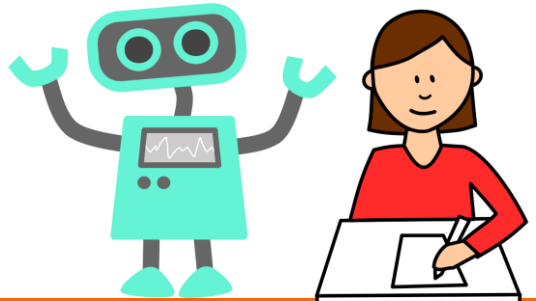
Domain specific standards?

Consider fidelity or quality issues if using compression.

Metadata

- Project
  - What is the study
  - Methodologies and instruments
  - Bibliographic references
- File/Database
  - How files or tables relate
  - What formats
  - README.txt
- Item or variable
  - Meaning or definition of variable terms

Metadata



Dublin Core Metadata Initiative®

Making it easier to find information.

Metadata

What metadata should I provide for single items?

What metadata should I provide for collections, and about the whole study?

Which standards will I use?

How long to keep data?

University Policy

Minimum 6 years

Clinical trial – 10 years (or until children turn 26)

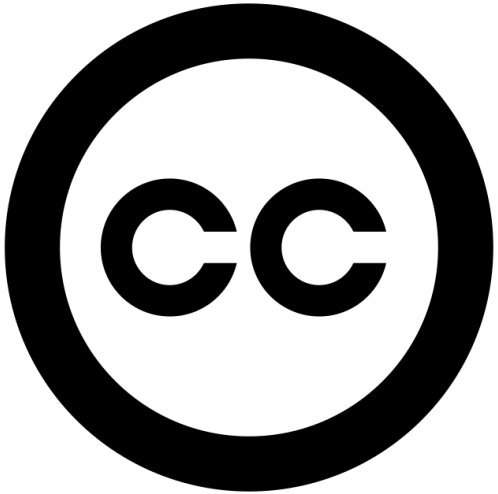
Patent? – 21 years from date of filing

Ethics? – Check

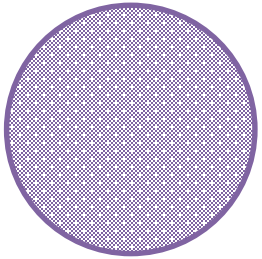
Community or heritage value – indefinitely

Who owns your data?

Copyright and Licensing



?



WIKIPEDIA
The Free Encyclopedia

https://wiki.auckland.ac.nz/display/CERES/Research+Data+Management+Workshops

Spaces People Create

eResearch - Staff Only

Pages
Blog
Workflow

SPACE SHORTCUTS
Product Requirements
Projects

CHILD PAGES
Centre for eResearch
Research Data Management Wor...
+ Create child page

Pages / Centre for eResearch

Edit Watch Share

Research Data Management Workshops

Created by Cameron McLean, last modified on 12 Jul, 2016

https://goo.gl/9lBaez

HACKYHOUR@AUCKLAND

Research - Tools - Code - Sharing

3-4pm @ Strata Cafe every Thursday

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In the creation of the workshop we have taken inspiration and adapted some ideas and materials from a number of existing resources.

Research Data Management: File Organization
Katherine McNeill & Helen Bailey
http://libraries.mit.edu/data-management/files/2014/05/file-organization-july2014.pdf
(CC-BY-NC-SA)

Melbourne_MANTRA
University of Melbourne and University of Edinbrugh
http://library.unimelb.edu.au/digitalscholarship/training_and_outreach/mantra2
(CC-BY)

Research Data Management: 101 The Lifecycle of a Dataset
Katherine McNeill
http://libraries.mit.edu/data-management/files/2014/05/research-data-management-iap2014.pdf
(CC-BY-NC-SA)

Escaping Datageddon - Dorothea Salo and Ryan Schryver - University of Wisconsin
http://researchdata.wisc.edu/wp-content/uploads/EscapingDatageddon1.pdf
(CC-BY)

Managing and Sharing Data: Best Practices for Researchers. Veerle Van den Eynden, Louise Corti, Matthew Woollard and Libby Bishop
http://www.data-archive.ac.uk/media/2894/managingsharing.pdf
(CC-BY-NC-SA)

Australian National Data Service website at http://ands.org.au/guides/data-citation-awareness.html Accessed 8 December 2015
(CC-BY)

Tidy Data http://vita.had.co.nz/papers/tidy-data.pdf