

An introduction to Open Research

Library Research Services

Research Data Service
Kellie Snow
Zosia Beckles

Research Engagement Librarians
Catherine Dack
Cath Borwick
Alex Clarke

Course objectives

By the end of the session you will be able to:

- Define what open research is
- Understand open research in the context of the research lifecycle
- Identify the importance of open access and research data management and its benefits for the individual researcher
- Understand how to comply with requirements around open access and research data management

What do you know about open research?

1. What is your subject area?
2. How familiar are you with Open Access?
3. How familiar are you with data sharing?
4. Who funds your research?

<https://www.plickers.com/liveview>

What is open research?

Open
access

Open
data

Open
source

Open
standards

Why is open research important?

Credibility

Efficiency

Collegiality

Equity

Why should you make your research open?

It is good for others

It is good for you

You have to

Good for others

But everyone I want to read my papers already
has access to them

Malaria example

- Sub-Saharan Africa - majority of medical personnel, scientists, researchers and medical students are deprived of the latest medical developments, not because they lack access to the internet, but simply because they cannot afford to pay for access. Subscription paywalls make access to essential information impossible.
- A survey of malaria research articles published in 2010-11 showed that 48 per cent were open access - so could be read without payment. But every second article had restricted access, requiring some form of payment to access.
- Another survey revealed that three-quarters of malaria professionals based in Africa and Asia often can't read beyond an article's abstract. Only 2% never experience access problems.

Ebola example

“The investigators collected their samples, returned home and published the startling results in European medical journals...downloading the papers would cost a physician [in Liberia] \$45, about half a week’s salary.”

-Bernice Dahn, chief medical officer of Liberia’s Ministry of Health, writing in the New York Times



Who might want to access your research?



Good for you

More
downloads

More
citations

More
collaboration

**Making research data
publicly available can
increase research citation rates
by more than 30%**

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

You have to

You have to

Bristol policies

*Policy on
Open Access
to research
publications*

*Research data
management
and open data
policy*

Funder policies



wellcome^{trust}

UK Research and Innovation

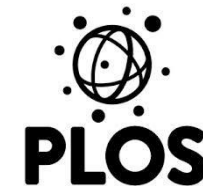
NHS

National Institute for
Health Research



Publisher policies

nature



BMJ



ELSEVIER

When to think about open research



Open access and data - distinctions

Open access	Sharing research data
Applies to peer-reviewed, academic articles i.e. 'Research claims'	Applies to the underlying data i.e. 'Research evidence'
Is mandated by research funders	Is mandated by research funders & academic publishers
Is part of the next REF	Is not part of the next REF
Should be openly available to all	Should be available without unnecessary restrictions. May not be 'open'

Open access



Open access is free, unrestricted online
access to research outputs

Access is:

- Free of charge
- No login required
- Free of most restrictions on use
(though attribution is still a must)

Types of open access

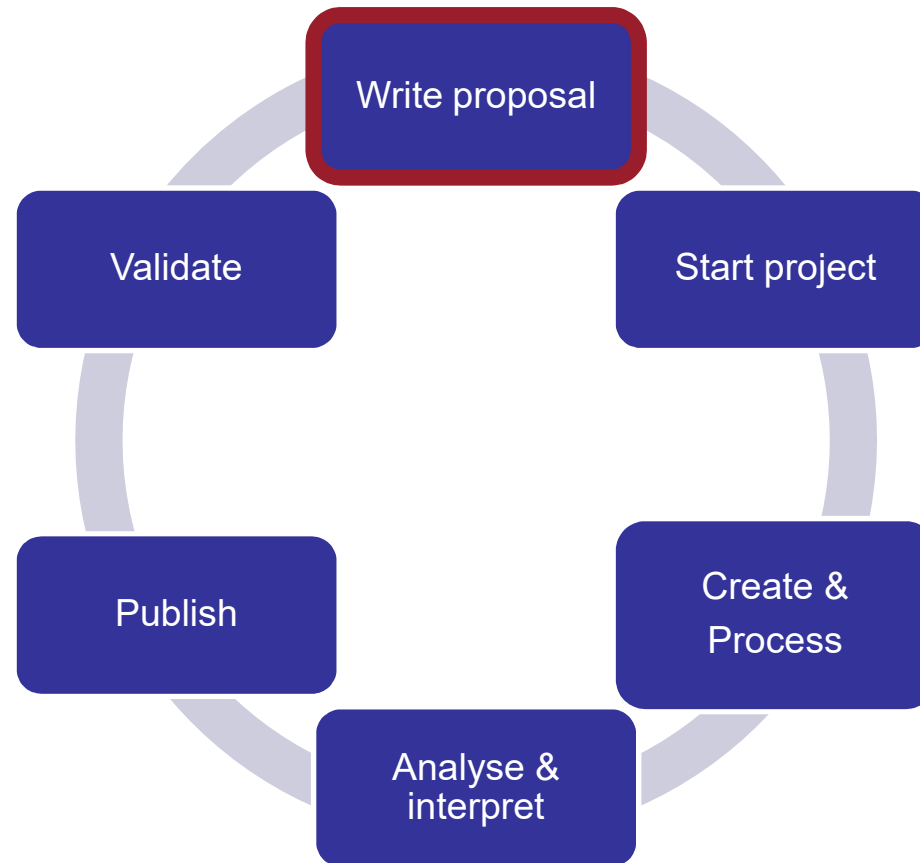
Gold open access

- Made open access by the publisher - usually requiring the payment of a fee

Green open access

- Manuscript deposited in a repository – often with a specified embargo

When to think about open access



Many funders have open access requirements

UK Research and Innovation



NHS

*National Institute for
Health Research*

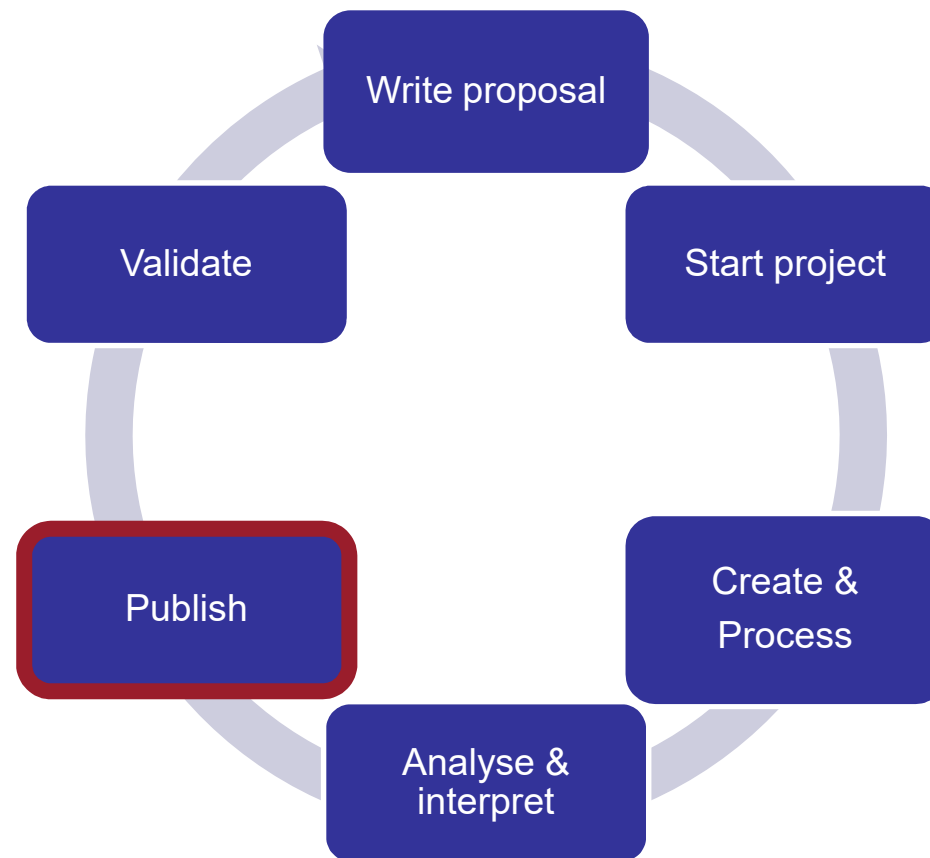
wellcometrust



Funder requirements

- Some prefer gold
- Some prefer green
- Some provide central funds for gold open access
- Some expect gold costs to be included in grant
- You need to check open access requirements before allocating costs

When to think about open access



Research England **REF 2021** Research
Excellence
Framework
and UoB open access policies

All articles and conference proceedings (with an ISSN) must be deposited in an open access repository (eg Pure) on acceptance

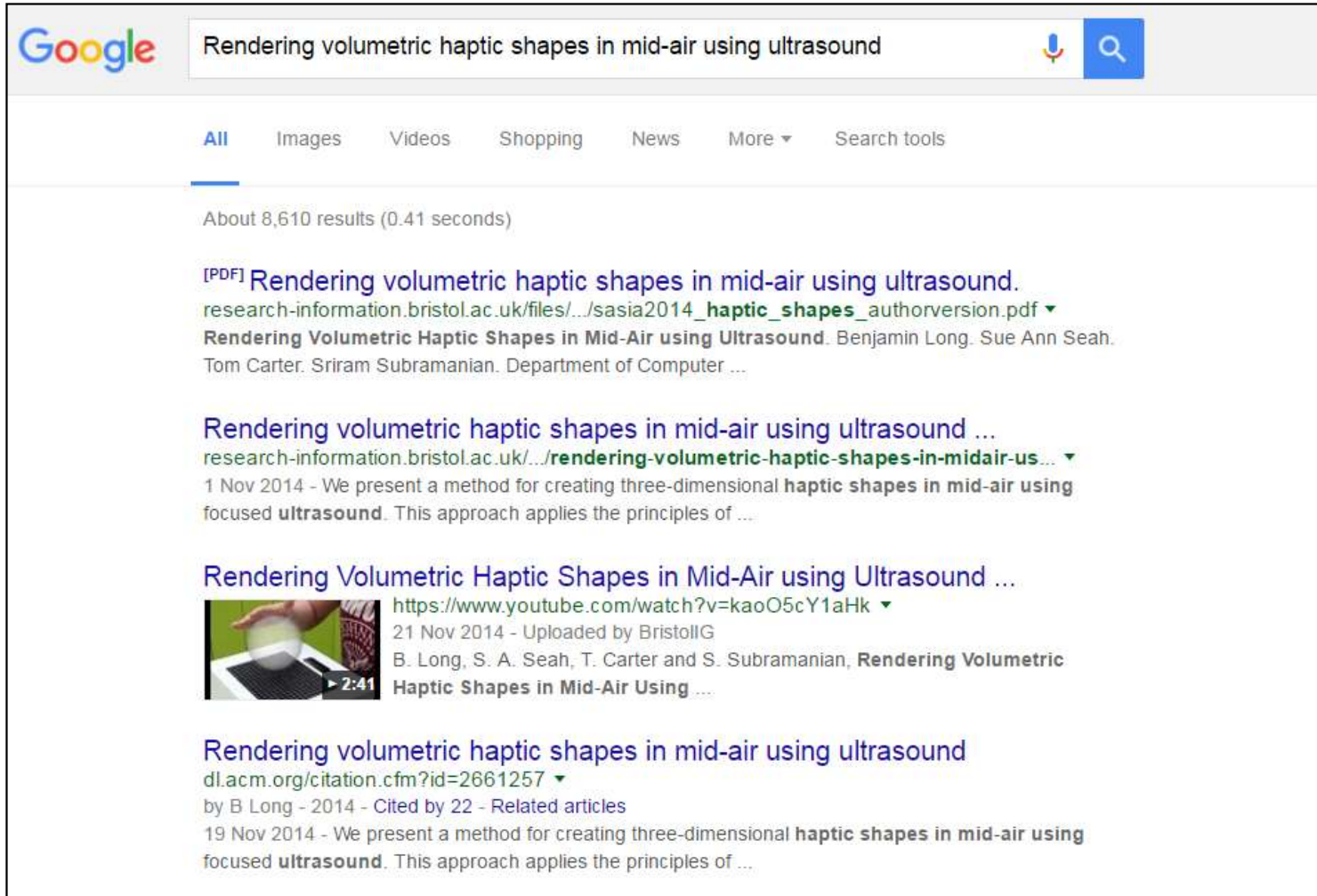
How do you make your papers green open access?

The easiest way to achieve green open access is to deposit your papers in Pure



Does anyone find papers in Pure?

- Pure records very well indexed by Google
- More than **83%** of documents in Pure have been downloaded **more than 10 times**
- Average number of downloads per paper is **63**
- Most downloaded paper downloaded **15983 times**



Google


Rendering volumetric haptic shapes in mid-air using ultrasound

All Images Videos Shopping News More Search tools

About 8,610 results (0.41 seconds)

[PDF] [Rendering volumetric haptic shapes in mid-air using ultrasound.](#)
research-information.bristol.ac.uk/files/.../sasia2014_haptic_shapes_authorversion.pdf
Rendering Volumetric Haptic Shapes in Mid-Air using Ultrasound. Benjamin Long. Sue Ann Seah. Tom Carter. Sriram Subramanian. Department of Computer ...

[Rendering volumetric haptic shapes in mid-air using ultrasound ...](#)
research-information.bristol.ac.uk/.../rendering-volumetric-haptic-shapes-in-midair-us...
1 Nov 2014 - We present a method for creating three-dimensional **haptic shapes in mid-air using focused ultrasound**. This approach applies the principles of ...

[Rendering Volumetric Haptic Shapes in Mid-Air using Ultrasound ...](#)
 <https://www.youtube.com/watch?v=kaoO5cY1aHk>
21 Nov 2014 - Uploaded by BristolIG
B. Long, S. A. Seah, T. Carter and S. Subramanian, **Rendering Volumetric Haptic Shapes in Mid-Air Using ...**

[Rendering volumetric haptic shapes in mid-air using ultrasound](#)
dl.acm.org/citation.cfm?id=2661257
by B Long - 2014 - Cited by 22 - Related articles
19 Nov 2014 - We present a method for creating three-dimensional **haptic shapes in mid-air using focused ultrasound**. This approach applies the principles of ...

What you need to do

- Log into Pure (www.bristol.ac.uk/pure)
- Click “Add New”
- Select the type of thing you are adding
- Complete the required fields (marked with a red asterisk)
- Upload your Author’s Accepted Manuscript
- Create a link to your research project
- Set to “Complete” and click “Save”
- Forward your acceptance email to ref-oa-audit@Bristol.ac.uk

What to deposit



Image: HEFCE. 2014. *Open Access Research: FAQs*
<http://www.hefce.ac.uk/rsrch/oa/FAQ/#deposit> [accessed 01/10/2015]

Money available for gold open access:

Bloodwise

Beating blood cancer since 1960

Arthritis
Research UK

UK Research and Innovation



CANCER
RESEARCH
UK



British Heart
Foundation

PARKINSON'S^{UK}
CHANGE ATTITUDES.
FIND A CURE.
JOIN US.

welcometrust

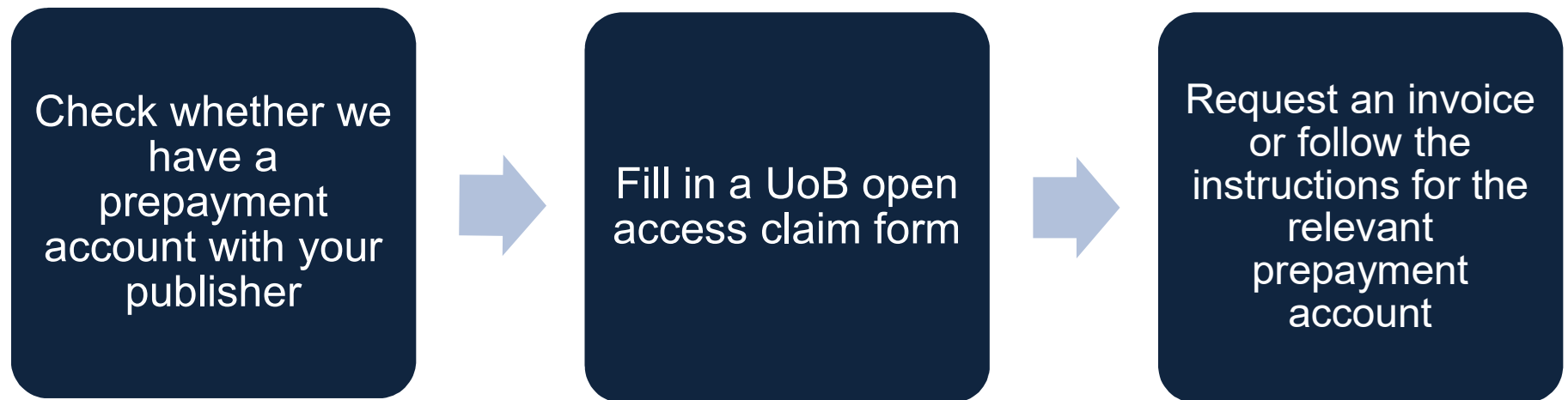
UK Research and Innovation (UKRI) and COAF open access policies

All peer-reviewed research papers which
acknowledge funding from the Research
Councils or COAF charities must be made
open access

UKRI - Gold Open Access:

- funding is provided to institutions to pay for APCs – block grants, managed by Library.
- **Grant numbers** must be included in funding acknowledgements
- If UKRI block grant is used to pay APC, **CC-BY licence** must be used
- Article must include a **short statement about access to underpinning data**
- MRC-funded papers must be deposited in **Europe PubMed Central**

UKRI and COAF gold open access



<http://www.bristol.ac.uk/library/research-support/open-access/funding/>

Making your publications open access means...

- They can be viewed by anyone in the world
- You have new audiences for your research
- You are complying with the requirements of funders and the University
- You will contribute to your institution's overall open research endeavour

Research Data



So what is research data?

EVIDENCE

Digital information either **created** or **used** as part of research.

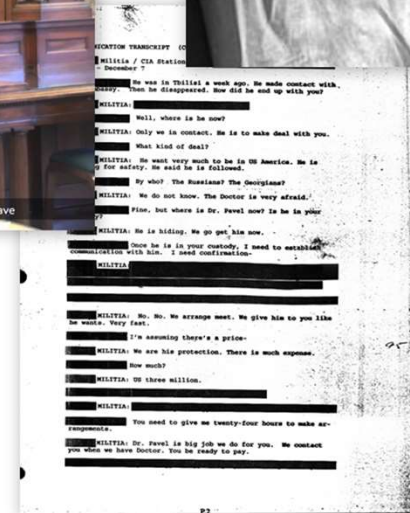
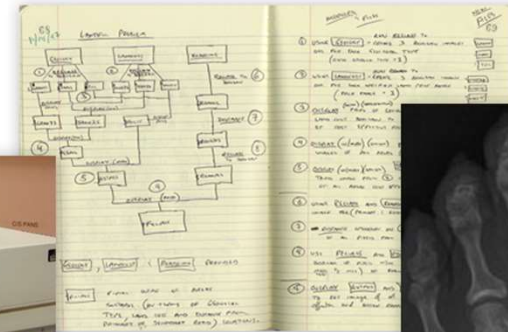
Often **underpins** a research claim.

May have high **re-use** value, even for unrelated disciplines.

Excludes data associated with research e.g. reports, project websites

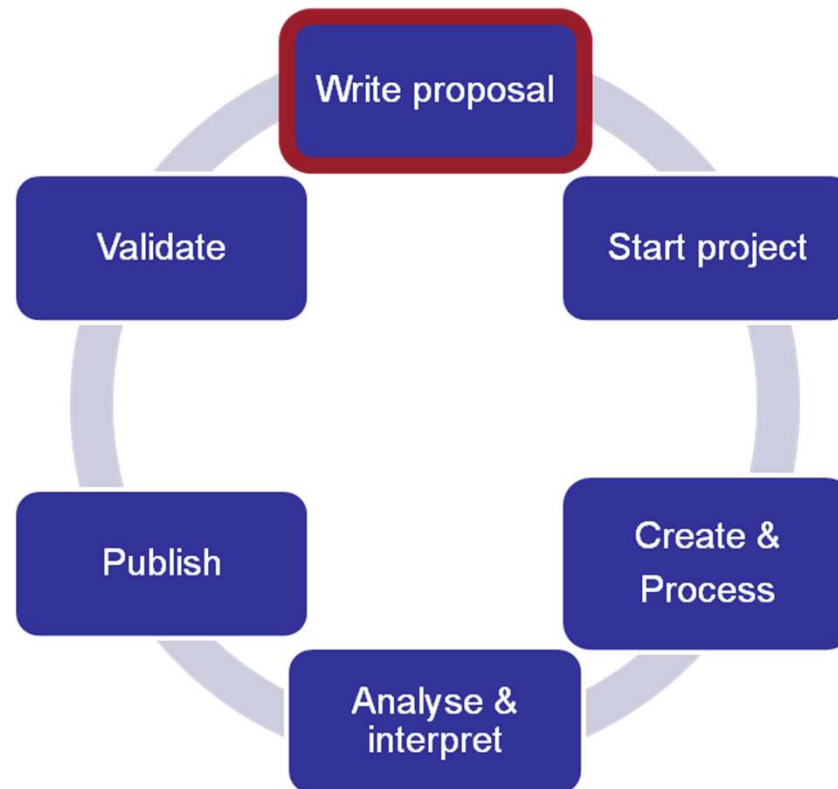
Examples

- Scan of a lab book
- An interview transcript
- Database of measurements
- Digital photographs or video
- A new software programme
- Online survey results
- Physical samples



What happens when research data is not effectively managed and shared?

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



Planning for research data

Research data in grant applications

- Most top research funders now have research data policies
- Focus is on: 1) managing data effectively and 2) making it available to others
- Most ask for a Data Management Plan (DMP) at application which covers: data creation, organisation, documentation, storage, preservation and sharing
- Many will cover costs for RDM if covered in budget

IP, commercial partners and research data

- Commercially sensitive data can often not be shared openly – this is ok!
- It can be difficult to share it at all if publication is not discussed in advance
- Contracts teams have standard clauses to address data sharing in agreements with commercial partners
- Patents take time to file – discuss with your Commercialisation Team as soon as possible!



Illustration by John R. McKiernan at
whyopenresearch.org, CC-BY



Working with data

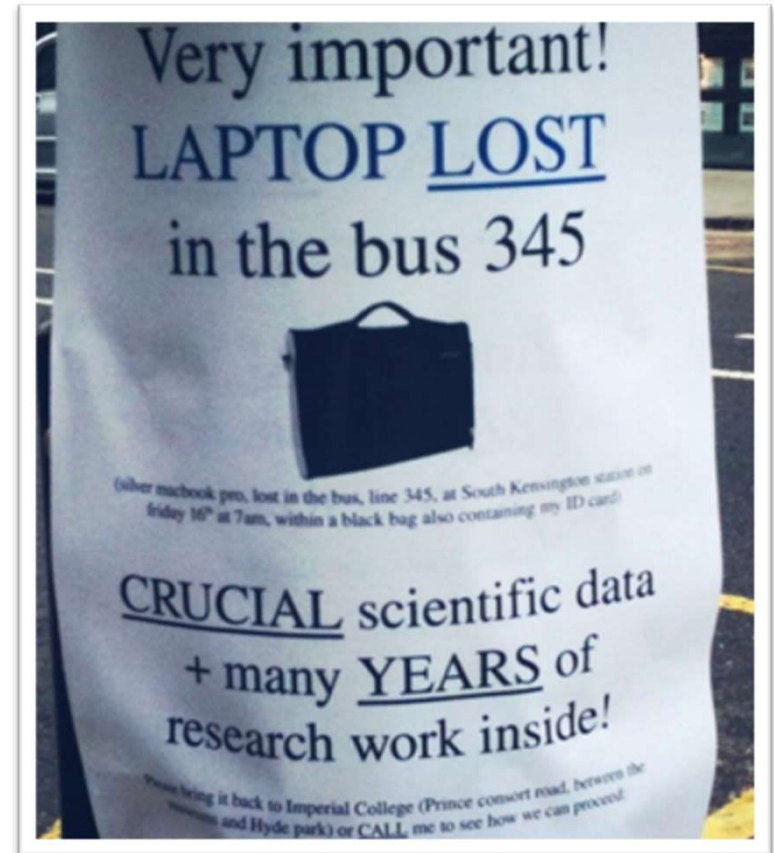
File formats

- Can easily become obsolete or software vendors go bust
- Use the most suitable formats to create your data
- If that happens to be a proprietary format, convert to an 'open' format for long-term storage e.g. SPSS and .csv or .wma and .mp3



Data storage

- Digital data is fragile and easily lost
 - Always keep more than one copy
 - Never store valuable or sensitive data on CD, DVD, USB drive or local PC hard drive
 - Be wary of personal cloud storage (and never use for sensitive data)
 - Use University facilities where possible e.g. University of Bristol Research Data Storage Facility
-



Typical order of preference: data storage (UoB)

1. Research Data Storage Facility
2. Any networked & backed up UoB drive
3. UoB Google Drive and Microsoft OneDrive

-
4. Other cloud service
 5. Personal storage (local PC, USB drive, CD etc.)

Working with sensitive data

- Encrypt any sensitive/personal information before you store it
 - 7-zip software for file encryption
 - Encrypted voice recorders/laptops in the field
- Copy data to secure server as soon as possible
- Store 'keys' in separate location

<http://www.bris.ac.uk/infosec>



Organising data

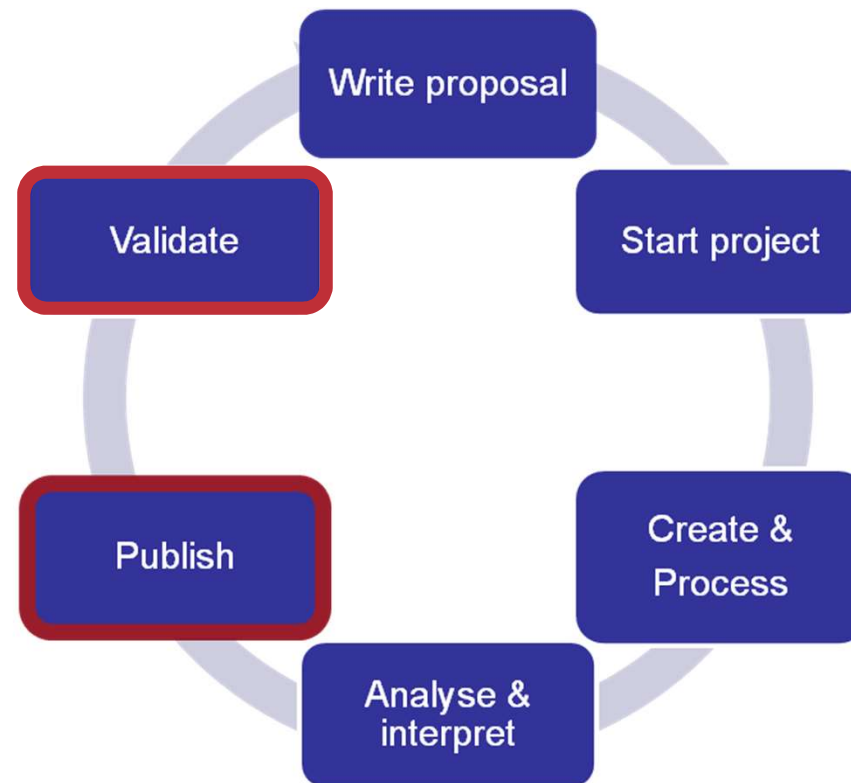
- Don't assume you'll 'just remember' what/where things are
- Decide on a consistent approach *before data is created*
- Don't rely on software to organise all your data for you
- Create logical folder structures
- Use consistent file names and consider using dates and versions
- See our 'One minute guide to file organisation' for tips (<https://data.bris.ac.uk/usingdata/>)



Describing and documenting data

- Without documentation or ‘metadata’, data is useless (you can’t find it or use it)
- If you got hit by a bus and I inherited your data, what else would I need to understand it?
- Some examples of documentation:
 - ‘Readme.txt’ file explaining how to use a new software programme
 - A database describing where video files can be found, who shot them, when & why
 - Use of a domain-specific metadata standard (see <http://www.dcc.ac.uk/resources/metadata-standards>)





Sharing research data

Which data to publish?

- Usually enough data to underpin research claims (minimum)
- Maybe much more, if data is especially valuable
- May include software or code if this is needed to replicate the research
- See our Data Evaluation Guide
<https://data.bris.ac.uk/files/2014/02/Research-data-evaluation.pdf>



Data that is not ok to publish

- Does the data involve any personal details (which can't be removed)?
- Did you gain appropriate consent to share participant data?
- Have you asked permission to reuse data generated by others e.g. crowd sourcing?
- Are there confidentiality requirements from commercial research funders or partners?
- Are you working with third party data that has licensing restrictions?



When to share data

- Most funders allow period of exclusive use (e.g. 2 years)
- Academic publishers require data to be available to readers *upon publication*
- Some disciplines have special time pressures (e.g. genomics)
- Embargoes are acceptable in some circumstances



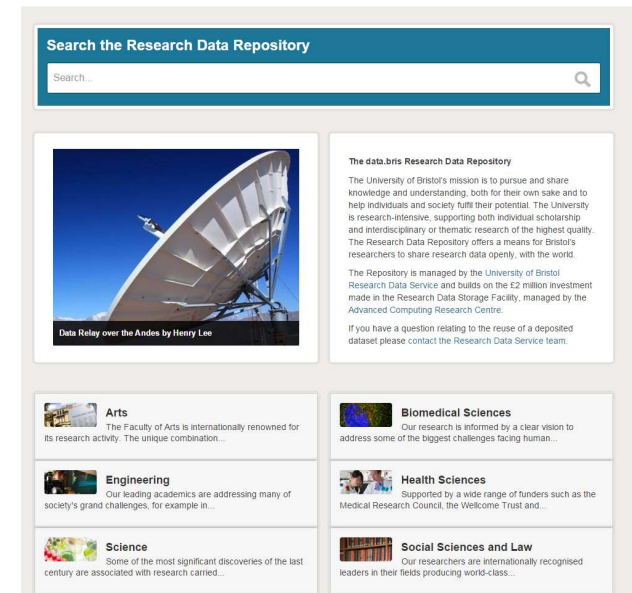
How to share data

- **'On request'** - increasingly unacceptable to funders
- **Via a project website (only)** - not ideal over long-term
- **Supplementary information** - not always in a format easy for others to reuse and may not be open access
- Instead, where possible...



1. Use a data repository

- Different types available:
 - National data centre or discipline-specific data repository service (preferred) e.g. UKDS
 - University Research Data Repository
 - Commercial service like Figshare
- Can use more than one
- Will preserve your data for the long-term
- Offer controlled access options for sensitive data



2. Obtain a DOI

Deposit with a repository who can issue a DOI (Digital Object Identifier) which you can use to cite your data

Creator (PublicationYear): Title. Publisher. Identifier

Denhard, Michael (2009): dphase_mpeps: MicroPEPS LAF-Ensemble run by DWD for the MAP D-PHASE project. World Data Center for Climate.

http://dx.doi.org/10.1594/WDCC/dphase_mpeps

You can also link to the data from your own project website.

3. Provide a data access statement

Explain how your data can be accessed and any restrictions in place

“All data created during this study is openly available from the University of Bristol Research Data Repository at <http://dx.doi.org/10.15125/12345>.”

“Due to confidentiality agreements with research collaborators, supporting data can only be made available to bona fide researchers subject to a non-disclosure agreement. Details of the data and how to request access are available through the University of Bristol Research Data Repository:
<http://dx.doi.org/10.15125/12345>.”

More data access statement examples at <https://data.bris.ac.uk/sharingdata/>

Exercise: data sharing scenarios

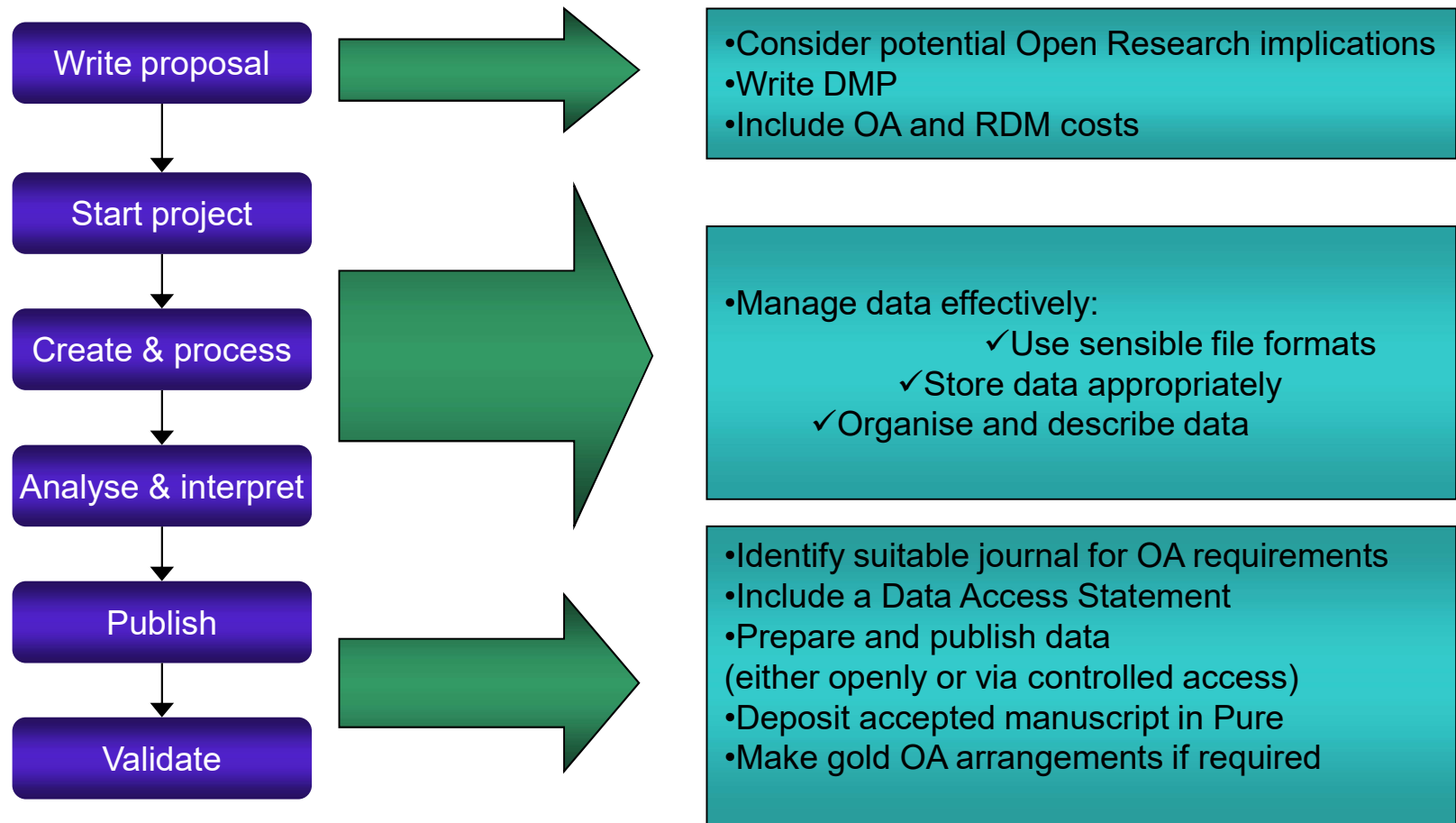
- Look at the scenarios in your handout
- Select the best data sharing solution for each

<https://www.plickers.com/liveview>

To summarise...

- Open Research is all about making research more transparent, collaborative and efficient
 - Elements affect every stage of the research lifecycle
 - Funders, (some) publishers and your university all have policies covering aspects of the topic
 - Ensure you meet these requirements by:
 - Planning for research data management throughout the course of your research and making research data accessible (ideally open)
 - Depositing your accepted manuscript in Pure (or equivalent) and making Gold arrangements if necessary
-

Open Research timeline



Thank you!

Open Access:

open-access@bristol.ac.uk

<http://www.bristol.ac.uk/library/research-support/open-access/>

Research Engagement

lib-rel@Bristol.ac.uk

Research Data Service:

data-bris@bristol.ac.uk

<http://data.bris.ac.uk/>

Presentation slides: <https://tinyurl.com/jgi-open-research-materials>