

## Research Data Management

### What is research data management?

Research data management may seem a slightly forbidding term – but in fact just refers to how you deal with all the information you make use of in the course of your research. It covers:

- How you organize and structure material (both print and electronic)
- How you store it and back it up
- How you prepare material for analysis, to share with others, or for long-term preservation

It includes working with structured data (the sort that might be stored in a table or database), but certainly isn't limited to that – it also covers textual sources, images, recordings, and much more.

The two key goals of good data management are both about making the research process as efficient as possible:

- In the short term, to make sure you can find the information you need when you want it
- In the longer term, to ensure the information you've collected remains useful: that it's stored safely, and that it will still make sense if you (or others) need to refer to it again in a few years' time

There may also be funding body requirements that you need to meet:

- You may need to submit a data management plan when you apply for funding
- You may be required to make your data publicly available at the end of a project

### Start early and think ahead

A key principle of good data management is forward planning. The earlier you start thinking about how you'll manage your information, the easier it will be: that way you can put good systems in place before you're swamped with material.

But while the beginning of a project is the ideal time to think about this, it's never too late to make some improvements. Take some time to look at your current ways of dealing with information. Are there changes you could make to make life easier for yourself? It's worth having one eye on the future – how are things likely to develop over the course of your research project? Is it likely you'll wish to reuse this material in later projects, or to share it with other researchers?

For those working with a lot of structured data, IT Services' Research Support team (<http://www.oucs.ox.ac.uk/rts/rtsservices.xml>) can provide technical advice. They can also help with the technical aspects of funding bids.

### Backing up

We all know that it's important to back up our files, but it's very easy not to get around to doing so. Setting up an automated back-up can remove the pressure to remember to do this on a regular basis. You can make your own back-ups onto, for example, an external hard drive. However, it's worth keeping back-ups in multiple places – in case of fire or theft, for example.

IT Services' HFS back-up service (<http://www.oucs.ox.ac.uk/hfs/>) is available free of charge to University staff and postgraduates, and will store back-ups of your data in three separate places, one of which is outside Oxford.

If you work on multiple computers, a synchronization service can ensure you always have the latest version of your files wherever you're working. Dropbox (<http://www.dropbox.com/>) is popular, but plenty of others exist.

## Data sharing and curation

Even if your research project isn't one that's focused on creating a major database, you may nevertheless produce some form of dataset. You may wish to consider sharing this through a data repository: in addition to being useful to other researchers, if people use and cite your data, this can help boost your own academic reputation.

Although data sharing is usually done towards the end of a project, it pays to think about it from the beginning. Shared data needs to be consistently presented and properly documented – that is, in a form that's intelligible to other people, and accompanied by any auxiliary information another user will need to make sense of it (notes on the sources, for example, or on how the data has been manipulated or edited). It's a lot easier to think about this sort of thing when you first collect or compile the data, rather than having to go back and fill in the gaps later.

Oxford has its own research archive for text-based research outputs, called ORA (<http://ora.ouls.ox.ac.uk/>). Two new services will also shortly be launched: DataBank, an institutional data repository, and DataFinder, a catalogue of datasets designed to aid discovery and reuse: email [ORA@bodleian.ox.ac.uk](mailto:ORA@bodleian.ox.ac.uk) for more information. The Bodleian Libraries also can provide advice on curation-related issues (such as data standards and metadata), and can issue DOIs (unique, permanent digital object identifiers) for datasets. The Oxford University Research Data Management website offers further advice about data sharing and archiving (<http://www.admin.ox.ac.uk/rdm/datasharing/>), including details of other repositories. The national Digital Curation Centre's website (<http://www.dcc.ac.uk/>) is another useful source of information.

## Data management tools

Managing your data is far easier if you're using the tools that are best suited for the job, so it's worth taking some time to explore the variety of software that is available. There's a wide range of software out there designed for specific jobs – in addition to spreadsheets or relational databases for searching, sorting, and analysing structured information, there are also tools for annotating and organizing textual or graphical materials. Bibliographic software can be used for more than just generating citations: many people find it helpful for creating a searchable index of their source materials and notes. If you want to perform complex searches on a body of textual sources, it may be worth finding out more about TEI XML as a means of tagging and analysing texts.

The Research Skills Toolkit website (<http://www.skillstoolkit.ox.ac.uk/>) provides an overview of lots of useful software and services. Your colleagues may also have useful recommendations to make.

## Training

IT Services' IT Learning Programme (<http://www.oucs.ox.ac.uk/itlp/>) offers a wide range of courses – for both beginners and more advanced users. There are courses on specific software packages and on more general skills: database design, working with digital images, and so on.

The Graduate Training site (<https://weblearn.ox.ac.uk/portal/hierarchy/grad>) and the Skills Hub (<https://weblearn.ox.ac.uk/portal/hierarchy/skills/>) offer details of further training provision.

## Further information and advice

The University of Oxford Research Data Management website (<http://www.admin.ox.ac.uk/rdm>) provides guidance and further information about the services available.