# Online initiation to research data and their management in 4 points

1. **Familiarizing yourself with the concept of research data**
2. **The importance of research data management (RDM)**
3. **The concept of research data: some sites**
4. **Discover free online tutorials on research data**

## 1. Familiarizing yourself with the concept of research data

Research data, or scientific data, can be defined as the set of information collected, observed or created in a digital form as part of a research project.

The following broad data categories are generally distinguished:

- observation data: survey data, remote-sensing data, sampling data, field records, digital microscopy images, etc.
- experimental data: gene sequences, chromatograms, results of agronomic tests, results of plant or animal selection, etc.
- models and simulations: climate models, economic models, models of plant growth, models of agricultural production, multi-agent models of renewable resources management, companion modelling, etc.
- derived or compiled data: databases compiled from of a set of acquired and/or created data, results of text mining or data mining.

For an **international definition** of research data, see the following document from OECD (2007): *Principles and Guidelines for Access to Research Data from Public Funding.*

## 2. The importance of research data management (RDM)

Research data management (RDM) refers to all the operations pertaining to the acquisition, description, storage, and processing of information produced during a research project as well as to making this information accessible. RDM extends over the **project's entire life cycle** and even after the project has ended, starting from the creation of data to their dissemination and conservation, with a view to their perpetuation or reuse.

Data management is part of the research process. Project proponents have a **special responsibility** towards their parent institution and the agency that funds their research. Ensuring the quality of data, their archiving and sharing is a requirement of public donors who very often make their **funding** of research projects conditional on **open data**, i.e., **providing free access to them** in order to multiply their social and economic impacts.

## 3. The concept of research data: some sites

Managing research data in your institution, Jisc, UK, 2016

https://www.jisc.ac.uk/guides/research-data-management

Working with data, Australian National Data Service (ANDS)
http://www.ands.org.au/working-with-data

10 aspects of highly effective research data: Good research data management makes data reusable, posted on the Elsevier Connect website by Anita de Waard, Helena Cousijn, and IJsbrand Jan Aalbersberg, 2015
https://www.elsevier.com/connect/10-aspects-of-highly-effective-research-data

23 Things: Libraries for Research Data, Research Data Alliance (RDA), 2016
https://www.rd-alliance.org/group/libraries-research-data-ig/outcomes/23-things-libraries-research-data-supporting-output

How-to Guides & Checklists, The Digital Curation Center, UK
http://www.dcc.ac.uk/resources/how-guides

## 4. Discover free online tutorials on research data

**Courses in English are listed first,** followed by two courses in French.

For each language, we have ranked the tutorials according to our preferences in descending order, even if the courses are not substitutes for one other. Some address a particular topic, while others present an original approach that we find noteworthy.

**European Data Portal e-learning programme** (Open Data Institute, European Data Portal, Sponge UK, Adapt Learning)
https://www.europeandataportal.eu/elearning/en/#/id/co-01
Since 2014
Target audience, objective: Helping discover what open data is and how it is changing the lives of everyone on our planet.
Lesson examples: Lesson 1 – What is open data? Lesson 4 – Why do we need to licence? Lesson 5 – What makes quality open data? Lesson 9 – Choosing the right format for open data; Lesson 10 – How useful is my data? Lesson 11 – How to clean your data.

**Essentials 4 Data Support** (Research Data Netherlands – RDNL, The Netherlands)
http://datasupport.researchdata.nl/en
2014
Target audience, objective: People who (want to) support researchers in storing, managing, archiving and sharing their research data.
Complete and ergonomic module, in English and Dutch, in 6 parts: 1) definitions; 2) planning; 3) data management; 4) archiving; (5) legislation and policies; 6) supporting researchers.
Access: 1) free, online only (without registration); 2) free, online only with registration of user profile in order to benefit from various additional facilities (posting comments, participating on the forum, accessing additional exercises); 3) Full course (online + face to face with certificate), paid registration (250 €) for a complete tutored course with 2 course days at the beginning and at the end of the

training, and 6 weeks of using the online course with a set of tasks to be carried out, with exchanges possible on a private forum.

**MANTRA: Research Data Management Training** (University of Edinburgh, UK)

http://datalib.edina.ac.uk/mantra/

Since 2014

Target audience, objectives: A free online course for those who manage digital data as part of their research project. Four different training paths depending on the user profile: research student, career researcher, senior academic, and information professional.

Module consisting of 9 lessons of about 30 slides each, concise and didactic (videos of interviews, exercises): 1) concepts pertaining to research data; 2) data management plans; 3) data organization; 4) file formats and conversions; 5) documentation and metadata; (6) storage and security; (7) data protection, rights and access; 8) sharing, conservation and licensing; 9) practical exercises on data processing software: SPSS, R, ArcGIS, NVivo.

**Research Data BootCamp** (University of Bristol, UK)

http://data.bris.ac.uk/research/bootcamp/

2012

Target audience, objectives: Giving researchers the keys to producing high quality data with potential for long-term use (originally developed for University of Bristol researchers as part of the Jisc Managing Research Data Programme).

Module inspired by the MANTRA course, in 7 lessons of half an hour each: 1) what are research data? 2) why is it necessary to manage research data? 3) planning management of one's research data; 4) creating data; 5) data retention; 6) organizing and storing data; 7) sharing data.

**New England Collaborative Data Management Curriculum (NECDMC**) (University of Massachusetts Medical School, USA)

http://library.umassmed.edu/necdmc/index

2014

Target audience, objectives: Teaching data management best practices to undergraduates, graduate students, and researchers in the health and life sciences, and engineering disciplines.

Each of the curriculum's seven online instructional modules aligns with the National Science Foundation's data management plan recommendations and addresses universal data management challenges.

Curriculum material available in ppt, doc formats.

**Data Management Course** (University of Minnesota, USA)

http://z.umn.edu/datamgmt

2012

Module in 7 videos with material for complementary activities. A Data Management Plan template (DMP Template) is available for download and use from Google Docs: https://docs.google.com/file/d/0B5Dm3XFQloc4TXdJTnU1dDkwdVk/edit?usp=sharing

**RDM modules** (University of Hertfordshire, UK)

http://www.herts.ac.uk/rdm/training/rdm-modules

2014

Four-part module covering a project's life cycle: 1) planning of the project; 2) launching of the project; (3) data retention and sharing; 4) data publication and archiving. Material available in pdf, ppt formats.

**RDMRose** (JISC, University of Leeds, University of Sheffield, University of York, UK)

http://rdmrose.group.shef.ac.uk/

2012-2016

Target audience, objectives: Providing a set of training materials for information professionals on managing research data.

Module in 8 sessions: 1) introduction to the management of research; 2) place of data in the research cycle; 3) data life cycle model; 4) design and comparison of websites on the management of research data; 5) research data; (6) research data management; 7) case studies of research projects with data management; 8) points of view of different actors (administrators, researchers, librarians, information specialists) on the different roles around research data in an institution.

**Data Acquisition and Management** (Columbia University, USA)

http://ori.hhs.gov/education/products/columbia_wbt/rcr_data/introduction/index.html

2012

Target audience, objectives: Providing answers to questions that researchers face during their research when they have to manage data.

Module based on case studies: introduction, case studies, questions and answers, annotated case, foundation text, resources, and conclusion.

**Guidelines for Responsible Data Management in Scientific Research** (Clinical Tools Inc., Office of Research Integrity, US Department of Health and Human Services)

https://ori.hhs.gov/images/ddblock/data.pdf

2006 (46 pages)

Target audience, objectives: Training researchers in the responsible management of research data.

Handbook with definitions, practical advice, sources of information, quizzes.

**Data Management Module** (Northern Illinois University, USA)

http://ori.hhs.gov/education/products/n_illinois_u/rcrmain.html

2003-2004

Target audience, objectives: Promoting responsible conduct of a research project among those involved in research activities.

Even though a little old, this course has an original approach from the point of view of accountability, emphasizing data integrity and ownership. Description of the steps in the management of research data, case study, quiz and glossary.

**Video Tutorials** (UK Data Service, University of Essex, University of Manchester and Jisc, UK)

https://www.ukdataservice.ac.uk/use-data/tutorials/

2014

Video tutorials: Accessing data, data analysis tools, citing data, depositing data in a warehouse, managing data, teaching with data, etc.

**An introduction to research data management and sharing (in French)** (Institut de l'Information Scientifique et Technique (French Institute for Scientific and Technical Information) – Inist-CNRS, France)

http://www.inist.fr/donnees/co/module_Donnees_recherche.html

2014

Target audience, objective: Sensitizing scientists to the management, sharing and leveraging of research data.

Five-part module: 1) context and issues; 2) research data; 3) good management practices; 4) describing the data; 5) publication and imparting value to data. Each part concludes with a knowledge test, some of whose questions are specific to the French national context.

**Free access to research results with the Horizon 2020 framework (in French)** (Institut de l'Information Scientifique et Technique (French Institute for Scientific and Technical Information) – Inist-CNRS, France)

http://www.inist.fr/?-Tutoriels-multimedias-H2020-

2015

Target audience, objective: Helping research teams in submitting Horizon 2020 projects through multimedia tutorials on open access to research results: 1) Open access to research results within the Horizon 2020 framework – General principles; 2) DMP (Data Management Plan) – Overview; 3) DMP – Description of data; 4) DMP – Standards and metadata; 5) DMP – Data sharing; 6) DMP – Data archiving; 7) Storage of data in a data warehouse; 8) Perennial identifiers.

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**Information**

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