


EVOLVING TOWARDS AN
ERA OF
OPEN RESEARCH

Scriberia 

Open Science

What's in it for me ?

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Dr Joëlle Desterbecq

The Turing Way Community, & Scriberia. (2020). CC-BY 4.0.
Zenodo. <https://doi.org/10.5281/zenodo.4323154>

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10 September 2024
Welcome Days – Academic Staff Members
UCLouvain

OBJECTIVES

At the end of this seminar, you will

- Become familiar with the present state of Open Science, and the diversity of perspectives that this encompasses
- Develop an understanding of core underlying academic, economic, and societal principles and concepts supporting Open Science
- Be able to explain why Open Science matters
- Be able to argue pros and cons
- Be aware of some tools and practices involved in Open Science (inside and outside UCLouvain)



Open Science : Discussion



Plan

- **SETTING UP THE CONCEPTS**
 - Open Science
 - Open Access
 - Open Data and Research Data Management
 - Open Evaluation
 - Other dimensions of Open Science
- OPEN SCIENCE AT UCLouvain

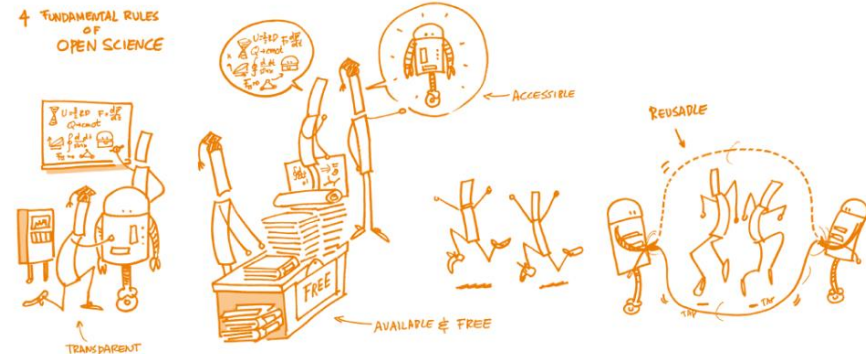


Open Science : Principles

- Make scientific research, data and dissemination **accessible** to everyone
- Increased **transparency, re-use**, participation, cooperation, accountability and reproducibility for research
- Improve the **quality** and **reliability** of research through principles like inclusion, fairness, equity, and sharing
- **Accelerate** the research process
- Reinforce research integrity, cooperation and knowledge **sharing**

<https://book.fosteropenscience.eu/>

<https://eua.eu/issues/21:open-science.html>



Why Open Science ?

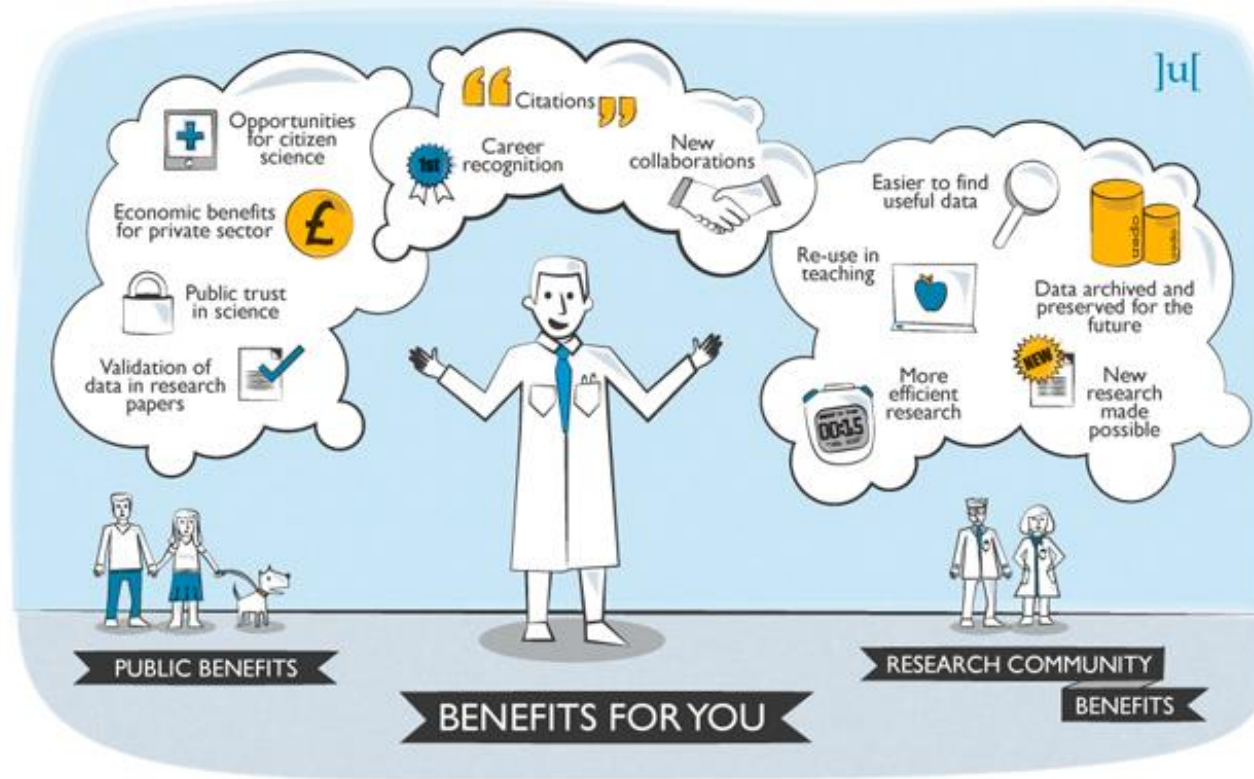


Image CC-BY by [Brian Hole](#)

Open Access - Publication



Open Access : Definition

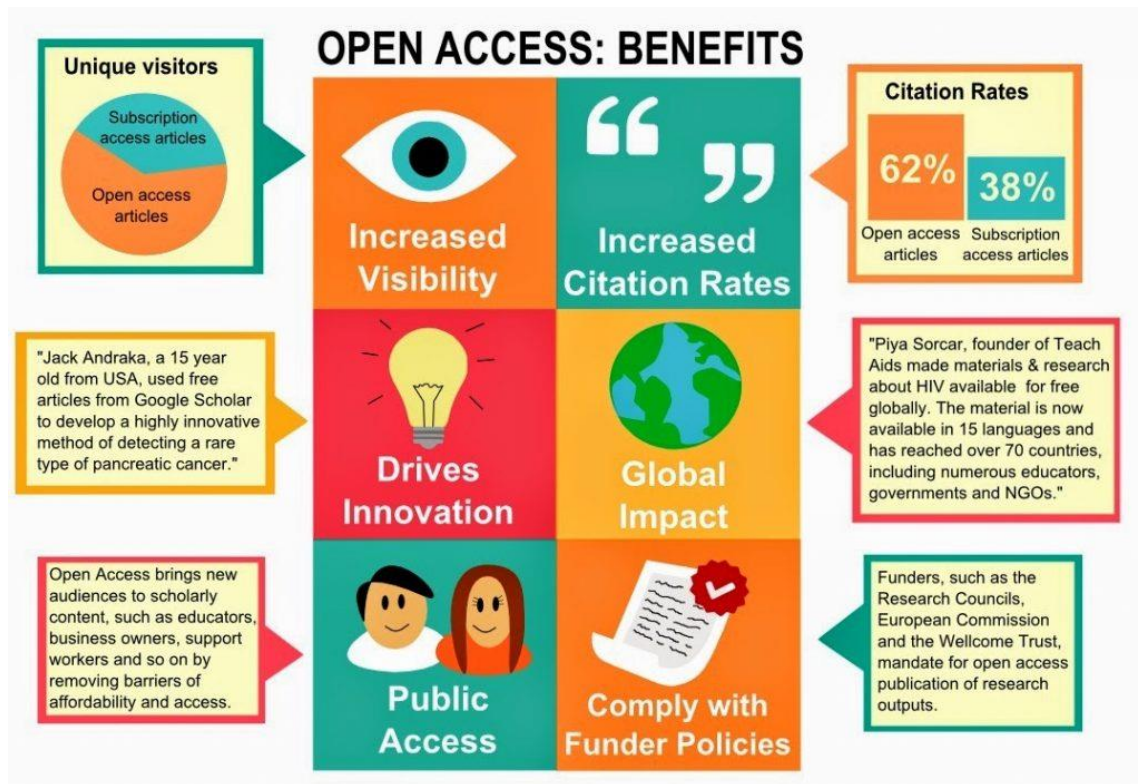
UNESCO :

A publication is considered in Open access if :

- its content is **universally and freely accessible**, at **no cost to the reader**, via the Internet or otherwise;
- the author or copyright owner irrevocably **grants to all users**, for an unlimited period, the **right to use, copy, or distribute the article**, on condition **that proper attribution is given**;
- it is **deposited**, immediately, in full and in a suitable electronic form, in at least one widely and internationally recognized **open access repository** committed to open access.

<https://en.unesco.org/open-access/what-open-access>

Why Open Access





Annual sales academic journals: **7.6 billions €**

Since 1980, prices multiplied by 4
(in addition to inflation)

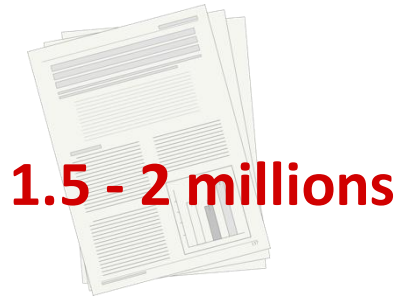
UCLouvain annual cost: **4 millions €**

Journals : cost at UCLouvain

- 4 M€ / year
- 53 researchers / research logisticians / teaching assistants
- Per week : 5 (good) electric bikes



The True Cost of Science Publishing



English-language
journal articles



Annual sales academic
journals

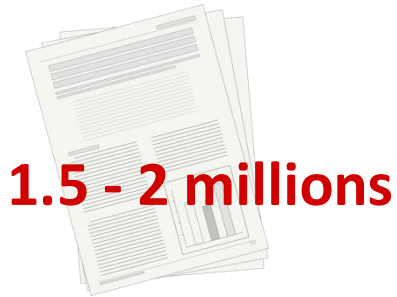


Revenue per article

Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. A Max Planck Digital Library Open Access Policy White Paper. 28 April 2015.



The True Cost of Science Publishing



English-language
journal articles



Annual sales academic
journals

3.800 – 5.000 €

Revenue per article

Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. A Max Planck Digital Library Open Access Policy White Paper. 28 April 2015.



Ways of publishing in Open Access



[CC BY Brianna Buljung, Emily Bongiovanni & Ye Li](#)

- **GREEN OPEN ACCESS:** Self-archiving of scientific publication on an institutional repository (UCLouvain => Dial.pr)
- **GOLD OPEN ACCESS:** Direct publication in an Open Access Journal, that charges you with **Author Publication Charges (APC)**. The publisher can be a commercial agent or not.
- **DIAMOND OPEN ACCESS:** Direct publication in an Open Access Journal that does **not charge any APC**.
- **HYBRID OPEN ACCESS:** Publication in a Journal **that both requires** a subscription from the University to access the journal and APC to publish a particular publication in Open Access.

FAIR Open Access Principles

- The journal has a **transparent** ownership structure, and is controlled by and responsive to the **scholarly** community
- **Authors** of articles in the journal **retain copyright**
- **All articles** are published open access and an **explicit open access licence** is used
- Submission and publication are **not conditional in any way on the payment of a fee** from the author or their employing institution, or on membership of an institution or society
- **Any fees paid** on behalf of the journal to publishers are **low, transparent, and in proportion** to the work carried out

Open Access Decree (Communauté française – 2018)

| | |
|-----------------------------|--|
| What should I do ? | Deposit the full text of your journal articles in open access in the DIAL.pr institutional repository → Deposit + Open access |
| Who is concerned ? | Researchers financed in whole or in part by the Wallonia-Brussels Federation (for ex. FNRS, grant students included, ...) |
| Which publications ? | Articles published in a periodical that appears at least once a year |
| Which version? | The version accepted for publication but without the final layout, also known as the “postprint” |
| When to submit? | Directly after acceptance of the article by the publisher. An embargo period during which the article remains closed to the public is possible (6 or 12 months) |
| Since when? | The decree requires open access from the start of the 2018 academic year |

Source :
<https://dial.uclouvain.be/pr/boreal/sites/PR.boreal/files/librairien/plaquette%20OA.pdf>

Open Peer Review

Open peer review is an umbrella term for a number of overlapping ways that peer review models can be adapted in line with the ethos of Open Science, including making **reviewer and author identities open**, **publishing review reports** and enabling greater **participation** in the peer review process

Ross-Hellauer T. What is open peer review? A systematic review [version 2; peer review: 4 approved]. F1000Research 2017, 6:588 (<https://doi.org/10.12688/f1000research.11369.2>)



Open Peer Review

- **Open identities:** Authors and reviewers are aware of each other's identity
- **Open reports:** Review reports are published alongside the relevant article
- **Open participation:** The wider community to be able to contribute to the review process
- **Open interaction:** Direct reciprocal discussion between author(s) and reviewers, and/or between reviewers, is allowed and encouraged
- **Open pre-review manuscripts:** Manuscripts are made immediately available (e.g., via pre-print servers like arXiv) in advance of any formal peer review procedures
- **Open final-version commenting:** Review or commenting on final “version of record” publications
- **Open platforms:** Review is de-coupled from publishing in that it is facilitated by a different organizational entity than the venue of publication

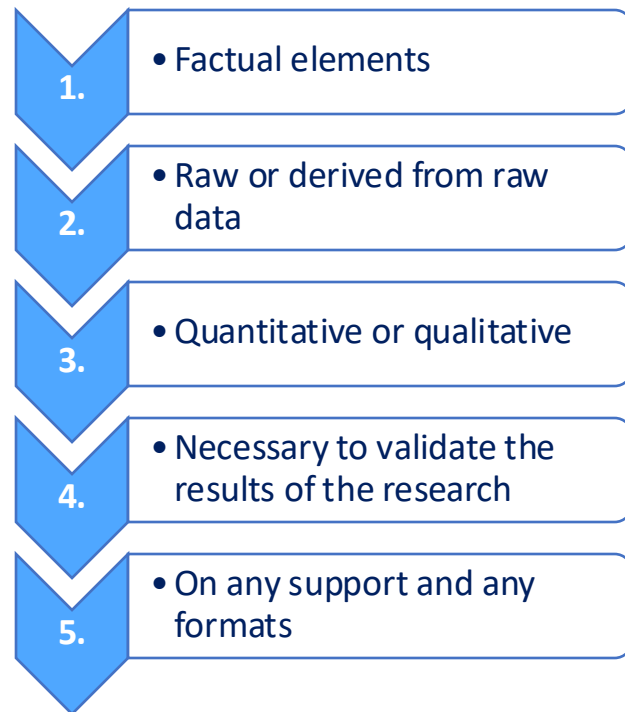
Open Data & Research Data Management



<https://book.fosteropenscience.eu/>

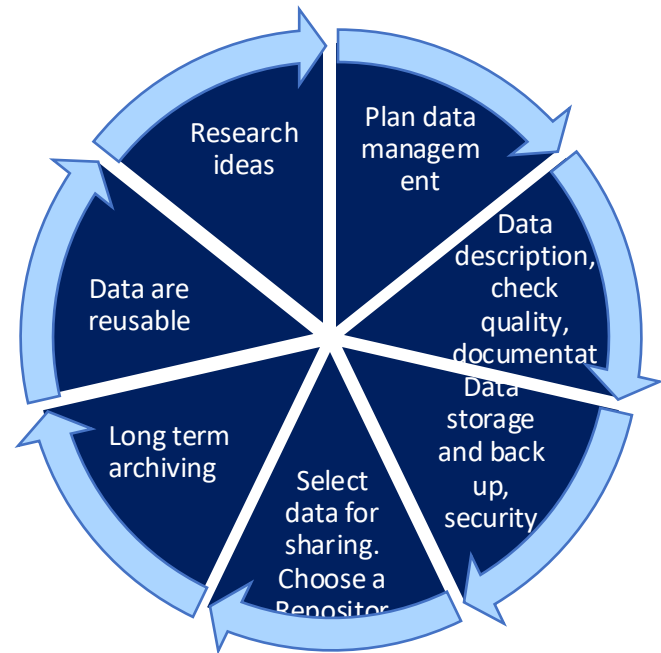
Research Data : What are data ?

- **Factual elements**: figures, texts, images, sounds, results of recordings, measurements, computer programmes, etc.
- **Raw** (i.e. not processed, manipulated or transformed in any way) **or derived from raw data** (i.e. obtained after transformation of raw data)
- **Quantitative** (figures, measurements, statistics, survey answers) or
- **Qualitative** (interview, speeches, recordings of speakers, videos)
- On which the **research is grounded**
- Necessary according to the scientific community to **validate the results** of the research
- Can be stored on any **support** (paper, digital, etc.) and in any **format** (.png, .mpeg, .svg, .wma, .pdf, .txt, .xml, etc.)".



Data Management Plan

- The data management plan is a **management tool**.
- Its purpose is to summarize the **description and evolution of the data sets** in your research project.
- The DMP considers **every steps of research data lifecycle** => data management **during and after** the research project.
- It **prepares your data** for sharing, re-use and long-term preservation.
- The DMP is continually **updated**, it's a dynamic document.



DoRANum. Données de la recherche : apprentissage numérique [En ligne]. France : DoRANum; 2023 MAJ le 23/08/2023. Le Plan de Gestion de Données pas à pas [consulté le 15/01/2024]. Nous traduisons https://doranum.fr/plan-gestion-donnees-dmp/le-plan-de-gestion-de-donnees-pas-a-pas_10_13143_t94g-9j96/

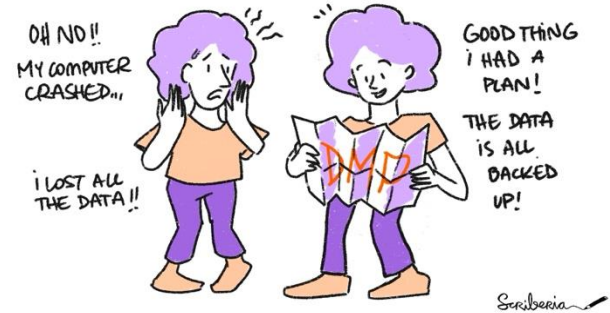
Writing a Data Management Plan

The DMP is made up of a **series of questions** that works as a checklist of attention points to guide the researcher.

More and more **funders require a DMP** to be drawn up on the basis of a template (UE Commission, FNRS, ...). There is also a **template UCLouvain**.

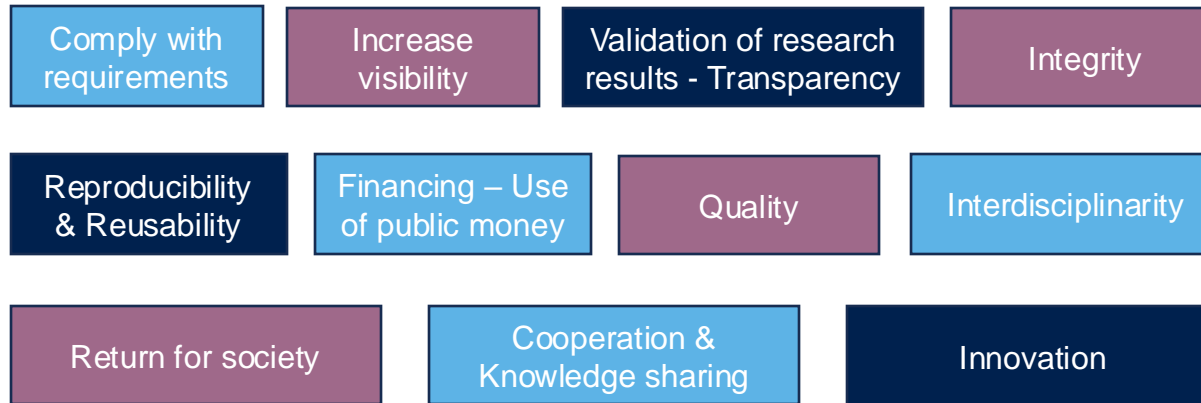
Structure :

1. Data collection / description
2. Data documentation and metadata
3. Ethical and legal issues
4. Data storage and back-up
5. Data selection and preservation after research
6. Data sharing
7. Responsibilities and resources



The Turing Way Community, & Scriberia. (2021). Zenodo.
<https://doi.org/10.5281/zenodo.4906004>

Why Preserving & Sharing Data ?

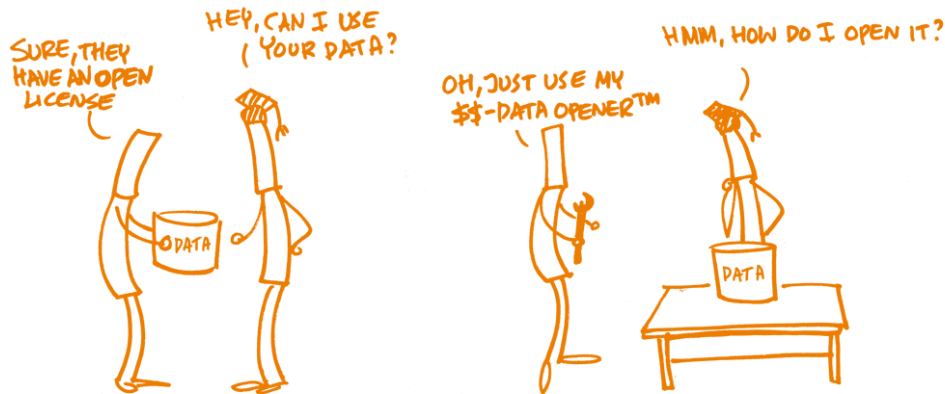


DoRANum. Données de la recherche : apprentissage numérique [En ligne]. DoRANum, 2017. Enjeux et bénéfices : fiche synthétique [modifié le 08 août 2018 ; consulté 15 janvier 2023]. https://doranum.fr/enjeux-benefices/fiche-synthetique_10_13143_mgcn-1863/
Open Science Training Handbook, <https://book.fosteropenscience.eu/>

Open Data : Definition

“Open data is data that can be **freely used, re-used and redistributed** by anyone – subject only, at most, to the requirement to **attribute and share-alike**”

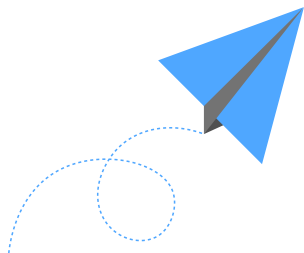
Open Knowledge foundation, Open Data Handbook.
<https://opendatahandbook.org/guide/en/what-is-open-data/>



<https://book.fosteropenscience.eu/>

Open Data Principles

- **Availability and access** : the data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.
- **Re-use and redistribution** : the data must be provided under terms that permit re-use and redistribution, including the intermixing with other datasets.
- **Universal participation** : everyone must be able to use, re-use and redistribute – there should be no discrimination against fields of endeavor or against persons or groups :
 - For example: restrictions of use for certain purposes (e.g. only in education), are not allowed”.



Source: <https://opendatahandbook.org/guide/en/what-is-open-data/>

“FAIR” Data Principles

Findable

The first step in (re)using data is to find them. Metadata and data should **be easy to find** for both humans and computers.

Accessible

Once the user finds the required data, she/he need to know **how they can be accessed**, possibly including authentication and authorisation.

Interoperable

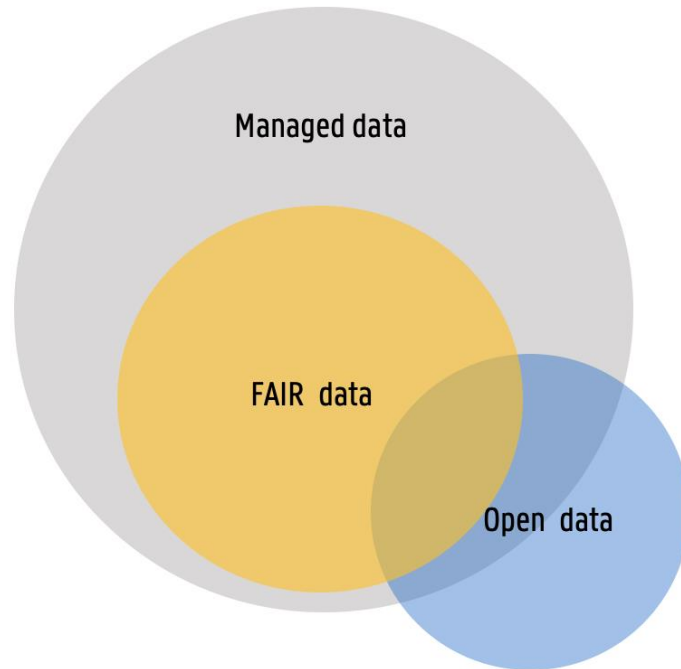
Data can be exploited, **exchanged, compared** or re-used in a variety of contexts
→ the data must be able to be integrated with other data

Re-usable

Optimizing the reuse of data → **documentation** is provided, data/metadata are described, A clear and accessible **license defines the conditions** for re-use.

<https://www.go-fair.org/fair-principles/>

“FAIR Data” et “Open Data”



<https://www.ugent.be/en/research/openscience/datamanagement/after-research/fair-data.htm>

Degrees of data sharing

- The principle : **“As open as possible, as closed as necessary”**.
- Open data is not mandatory. **But data must be “FAIR”**
- There are different levels of Openness
 - It ranges from making data fully open on one end, to keeping them fully closed on the other, with various possible forms of restricted/controlled access in-between.



What is a Data Repository

- A **data repository** is an online platform that is used to **deposit completed datasets** with the purpose to **publish, share and/or preserve them**
 - **Frozen Data** (no more transformation, the research is completed)
 - Short or medium term (5, 10, 15 years or more)
 - Share in open data; restricted and controlled data; closed data when necessary (but open metadata)
- A data repository compiles, manages and **gives access to data, associated metadata and documentation**
- It contributes to **make your data FAIR** : findable, accessible, reusable, interoperable.

<https://www.ugent.be/en/research/openscience/datamanagement/after-research/data-repositories.htm>

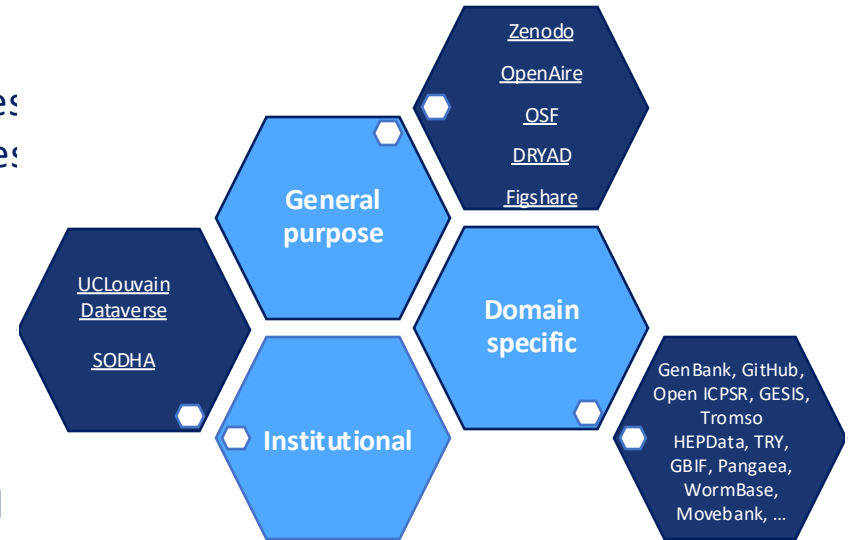
Dedieu, L. ; Barale, M. 2020. Déposer des données dans un entrepôt, en 6 points. Montpellier (FRA) : CIRAD, 4 p.

<https://doi.org/10.18167/coopist/0070>

Data Repository categories

There are different types of Data Repositories

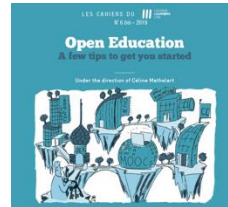
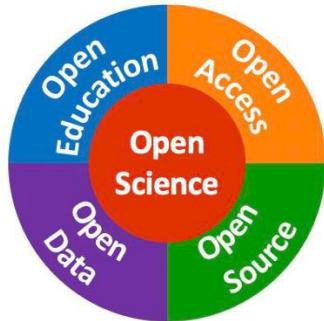
- **General purpose or multidisciplinary :**
accept a wide range of data types (and sometimes other research outputs as well) from all disciplines
- **Domain specific / disciplinary :**
focus on specific data types or data from specific research domains
- **Institutional :** hold research data outputs from a particular research institution
→ UCLouvain Dataverse, SODHA (Belgian federal data archive for social sciences and the digital humanities)
- Repositories **provided by publishers**



Dedieu, L. ; Barale, M. 2020. Déposer des données dans un entrepôt, en 6 points. Montpellier (FRA) : CIRAD, 4 p. <https://doi.org/10.18167/coopist/0070>
<https://www.ugent.be/en/research/openscience/datamanagement/after-research/data-repositories.htm>

Openness : other dimensions

- **Open Source** : software that allows anyone to use it, study it (through access to the source code), modify or adapt it, and redistribute it, with minimal restrictions
- **Open Education** : a movement aimed at making education universal, available to the greatest number of people. The concept is based on the sharing of **educational resources** and practices in order to break down barriers to access



open source

Open Evaluation & CoARA



CoARA
Coalition for Advancing
Research Assessment

Research and researchers' assessment

- Both research and researcher find themselves evaluated through two primary methods: **peer review and metrics**
- There are often complaints that peer review takes too long, often **fails to detect** errors, and that **anonymity shields biases**
- **There is debate** as to whether **the metrics are the absolute measures** of the quality of research, its impact and the individual quality of researchers

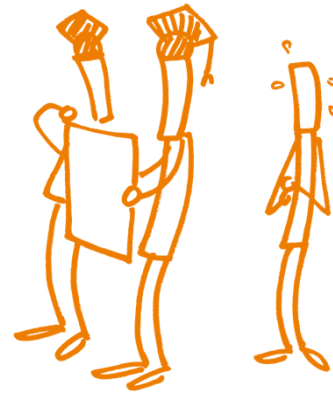
Source : <https://book.fosteropenscience.eu>

→ Questioning how research and researchers are evaluated

What is Open Evaluation ?

- The development of a **fair evaluation** system or protocol for research proposals, based on **transparency** of the process and those involved.

<https://book.fosteropenscience.eu>, (Glossary, « Open Evaluation »)



<https://book.fosteropenscience.eu>

Agreement on reforming research assessment and “Coalition”

- In line with the principles of Open Evaluation
- **Signed by UCLouvain** in autumn 2023
- The signatories agree on the need to reform research assessment practices
- They are entitled to become a member of the “**Coalition for Advancing Research Assessment**” (CoARA)
- The Agreement does not have any legally binding effect, but it represents a **public commitment** to reforming research assessment

<https://coara.eu/>

Reforming research assessment ? Principles

1.

- Recognises the diverse outputs, practices and activities in assessment

2.

- Basing assessment primarily on qualitative judgement, for which peer review is central

3.

- Supported by responsible use of quantitative indicators

4.

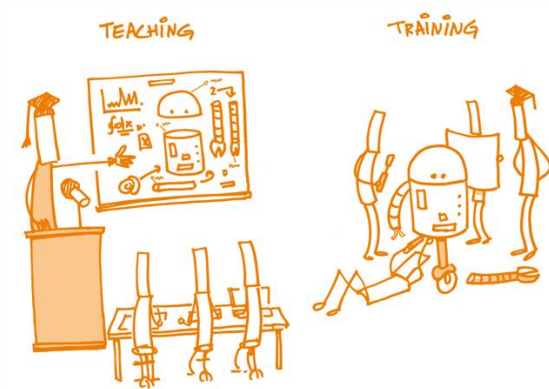
- Reward early sharing and open collaboration

Plan

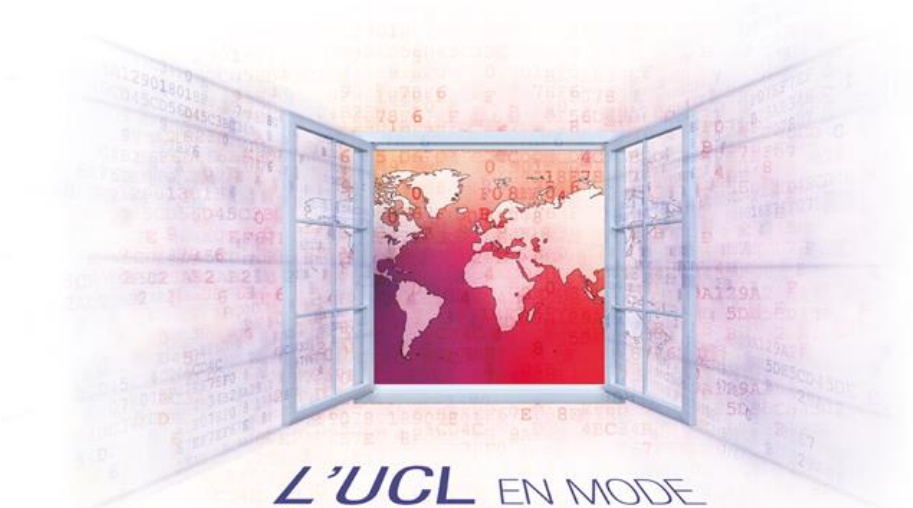
- SETTING UP THE CONCEPTS
 - Open Science
 - Open Access
 - Open Data and Research Data Management
 - Open Evaluation
 - Other dimensions of Open Science
- **OPEN SCIENCE AT UCLouvain**



How does UCLouvain supports you in your Open Science practices ?



<https://book.fosteropenscience.eu/>

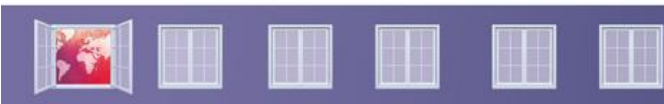


L'UCL EN MODE
OPEN



EDUCATION SOURCE PUBLICATION
OPEN STRATEGIES AT UCLouvain

UCL
Université
catholique
de Louvain



www.uclouvain.be/universite-numerique




How does UCLouvain supports you ?

Advices and information

- about open access, open data and research data management practices
- review your Data Management Plan (DMP)
 - regarding tools and resources
 - regarding IP and data privacy

Trainings

- Trainings on Open Science, Open Access, Open Data and research data management
 - Trainings in encoding and exporting scientific publication in UCLouvain Institutional Repository (DIAL.pr) – Libraries (BIUL)



Research Data Officer (RDO)
Joëlle Desterbecq
Data Protection Officer (DPO)
Michèle Remy
Responsible for “DIAL.pr” Repository
Aurore Wuyts

<https://sites.uclouvain.be/training/biul/>



How does UCLouvain supports you ?

Network and Community

- **Data Ambassadors** in the UCLouvain Institutes
- The Wallonia-Brussel's Federation Data Ambassadors Network



<https://dial.uclouvain.be/RDM/fr/node/82>

UCLouvain Tools and Resources

- Data Repository : **Dataverse**
- Institutional Repository for publications : **DIAL.pr**
- **Open Journal System** platform (OJS)
- **DMP Online** (to write your DMP)
- **Research data management Portal**
- UCLouvain **CISM**, Mass Storage

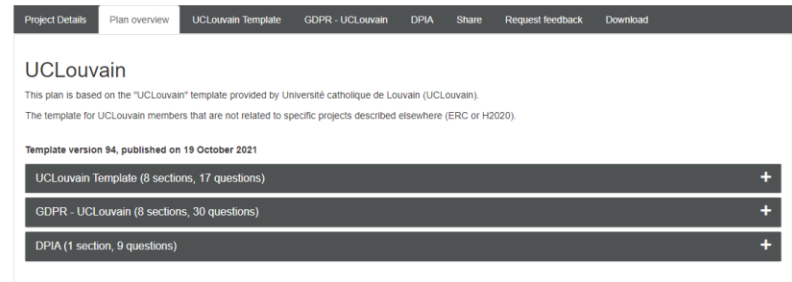
<https://uclouvain.be/fr/universite-numerique/rdm>

<https://uclouvain.be/en/research/cism>

DMP Online

- **DMP Online – the software** : <https://dmponline.be/>
 - Open-source software
 - Drawing up data management plans (DMP)
 - Can be shared and edited by your (international) research partners, via ORCID
- **Templates** :
 - Funders DMP templates and UCLouvain Template
 - A set of questions and guidelines to answer it
- Possibility to **request a feed-back** ➔ RDO

Joelle's Plan



The screenshot displays the 'Joelle's Plan' page in the DMP Online system. At the top, there is a navigation bar with tabs: 'Project Details', 'Plan overview', 'UCLouvain Template', 'GDPR - UCLouvain', 'DPIA', 'Share', 'Request feedback', and 'Download'. The main content area is titled 'UCLouvain' and contains the following text: 'This plan is based on the "UCLouvain" template provided by Université catholique de Louvain (UCLouvain). The template for UCLouvain members that are not related to specific projects described elsewhere (ERC or H2020)'. Below this, it states 'Template version 94, published on 19 October 2021'. A table lists the components of the plan:

| Component | Questions |
|--------------------|--------------------------|
| UCLouvain Template | 8 sections, 17 questions |
| GDPR - UCLouvain | 8 sections, 30 questions |
| DPIA | 1 section, 9 questions |

UCLouvain : Green Open Access

- **An institutional repository: dial.uclouvain.be**

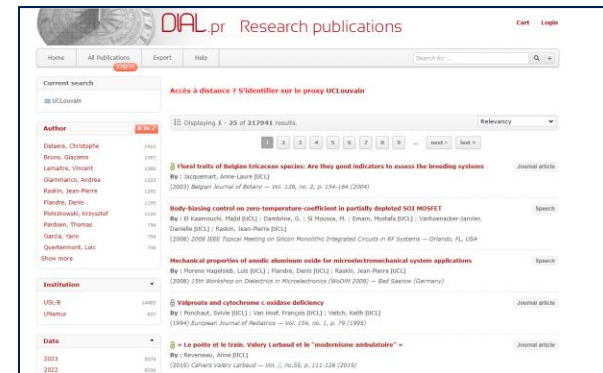
- Researchers from UCLouvain who are, at least partially, financed by public funding (FNRS, grant students, included), have to **deposit** their research articles in **Open Access** on Dial in UCLouvain.
(Decret de la Communauté française du 3 mai 2018).

- An embargo period is possible
- Post-print => after peer-review, but before publisher's layout.

- **DIAL.pr**

- More than 220.000 publications, 93.109 publications with full text, 48.137 Open Access
- 2022 : 4.000 encoded articles (published in 2019-2021), 84% Open Access, 8% under embargo

<https://dial.uclouvain.be/pr/boreal/fr/Home>



UCLouvain : Diamond Open Access

- **An institutional Open Journal Platform** ojs.uclouvain.be
 - Platform for the **editorial management** and diffusion of **Open Access journals** published by members of the UCLouvain scientific community
 - online publishing of scientific journals
 - digital support of the entire editorial process of a journal (submission, review process, online publication)
 - Open-Source platform used by more than 9,000 journals with more than 10 articles published per year
 - OJS-UCLouvain currently hosts 22 Open Access journals
 - More than 220.000 consultations in 2022



Dataverse UCLouvain

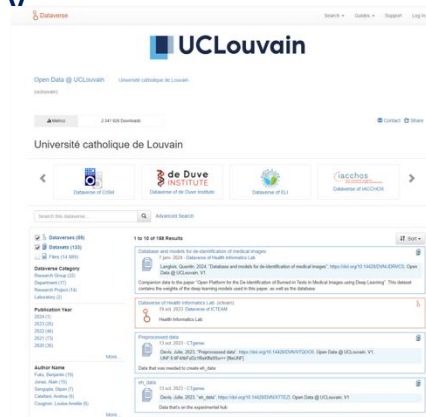
- **Dataverse**

- Open-Source application for sharing, referencing, extracting and analyzing research data
- Preserving and sharing data in **Open or FAIR mode**
 - Specify the **degree of data openness** : closed access, open access, restricted access
 - → Several levels of openness : FAIR to Open
- Available for fields without thematic data repository available

Dataverse UCLouvain

- Dataverse UCLouvain <https://dataverse.uclouvain.be>
 - Data are stored on a **specific server of UCLouvain** managed by UCLouvain
 - Data will be provided with a **DOI** (Digital Object Identifier)
 - Each research entity : **free space of 1Tb** (> 1T = financial contribution)
 - All data submitted are guaranteed to last **for 15 years** (> 15 years = extension = financial contribution)
 - Many research institutes have already created a sub-repository
 - 13 institutes have a dataverse on the institutional repository
 - 110 data sets (January 2023)
 - 1.500.000 downloads (January 2023)

<https://uclouvain.be/fr/universite-numerique/opendata.html>



Bibliography

REFERENCES :

Aurore Wuyts, Que faut-il déposer en libre accès dans DIAL ?, UCLouvain,
<https://dial.uclouvain.be/pr/boreal/sites/PR.boreal/files/librairian/plaquette%20OA.pdf>

Coalition for Advancing Research Assessment (CoARA), <https://coara.eu/>

Dedieu, L. ; Barale, M. 2020. Déposer des données dans un entrepôt, en 6 points. Montpellier (FRA) : CIRAD, 4 p.,
<https://doi.org/10.18167/coopist/0070>

DoRANum. Données de la recherche : apprentissage numérique [En ligne]. DoRANum, 2017. Enjeux et bénéfices : fiche synthétique [modifié le 08 août 2018 ; consulté 15 janvier 2023]. https://dorum.fr/enjeux-benefices/fiche-synthetique_10_13143_mgcn-1863/

DoRANum. Données de la recherche : apprentissage numérique [En ligne]. France : DoRANum; 2022. Plan de gestion de données : Définition(s) des données de la recherche. We translate. https://dorum.fr/plan-gestion-donnees-dmp/definitions-des-donnees-de-la-recherche_10_13143_b4zc-8e79.

DoRANum. Données de la recherche : apprentissage numérique [En ligne]. France : DoRANum; 2023 MAJ le 23/08/2023. Le Plan de Gestion de Données pas à pas [consulté le 15/01/2024]. We translate. https://dorum.fr/plan-gestion-donnees-dmp/le-plan-de-gestion-de-donnees-pas-a-pas_10_13143_t94g-9j96/

Bibliography

European University Association, Open Science, <https://eua.eu/issues/21:open-science.html>

Ghent University, Open Science, <https://www.ugent.be/en/research/openscience/datamanagement/after-research/fair-data.htm>, <https://www.ugent.be/en/research/openscience/datamanagement/after-research/data-repositories.htm>

GO FAIR, Fair Principles, <https://www.go-fair.org/fair-principles/>

Open Knowledge foundation, Open Data Handbook. <https://opendatahandbook.org/guide/en/what-is-open-data/>

Ross-Hellauer T. What is open peer review? A systematic review [version 2; peer review: 4 approved]. F1000Research 2017, 6:588 (<https://doi.org/10.12688/f1000research.11369.2>)

Sonja Bezjak, April Clyburne-Sherin, Philipp Conzett, Pedro Fernandes, Edit Görögh, Kerstin Helbig, Bianca Kramer, Ignasi Labastida, Kyle Niemeyer, Fotis Psomopoulos, Tony Ross-Hellauer, René Schneider, Jon Tennant, Ellen Verbakel, Helene Brinken, & Lambert Heller. (2018). Open Science Training Handbook (1.0). Zenodo. <https://doi.org/10.5281/zenodo.1212496>, <https://book.fosteropenscience.eu/>

UNESCO, Open Access, <https://en.unesco.org/open-access/what-open-access>

Bibliography

ILLUSTRATIONS :

Brian Hole, <https://fr.slideshare.net/slideshow/overcoming-obstacles-to-sharing-research-data/32891438#1>

Brianna Buljung, Emily Bongiovanni, Ye Li, [Navigating the Research Lifecycle for the Modern Researcher](#) (1st edition, 2022).

Open Science Training Handbook, <https://doi.org/10.5281/zenodo.1212496>, <https://book.fosteropenscience.eu/>

The Turing Way Community, & Scriberia. (2020). Illustrations from the Turing Way book dashes. Zenodo. <https://doi.org/10.5281/zenodo.4323154>

The Turing Way Community, & Scriberia. (2021). Illustrations from the Turing Way book dashes. Zenodo. <https://doi.org/10.5281/zenodo.4906004>

Year of Open, <https://www.yearofopen.org/what-is-open-access>

Bibliography

UCLouvain TOOLS AND RESOURCES:

DMP Online, <https://dmponline.be/>

UCLouvain Dataverse, <https://dataverse.uclouvain.be>

UCLouvain, Université Numérique, <https://uclouvain.be/fr/universite-numerique> (Resources on Open Access, Open Data, Research Data Management, Open Education)

UCLouvain, Center for High Performance Computing and Mass Storage, <https://uclouvain.be/en/research/cism>

UCLouvain, Bibliothèques et Learning Centers, Support à la recherche, <https://uclouvain.be/fr/bibliotheques/support-a-la-recherche.html>

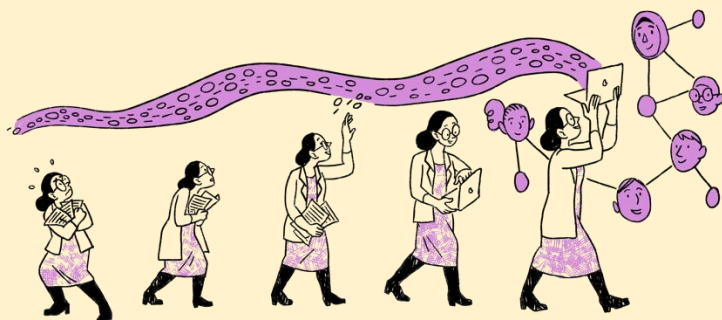
UCLouvain Institutional Repository, DIAL.pr, <https://dial.uclouvain.be/pr/boreal/fr/Home>

UCLouvain Open Educational Resources (OER) repository, <https://oer.uclouvain.be>

UCLouvain Libraries Training Catalogue, <https://sites.uclouvain.be/training/biul>

UCLouvain, Open Journal Systems (OJS), <https://ojs.uclouvain.be/>

Wallonia-Brussels Federation, Data Ambassadors Network, <https://dial.uclouvain.be/RDM/fr/node/82>



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What's in it for me ?

Pr. Yves Deville
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Zenodo. <https://doi.org/10.5281/zenodo.4323154>

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