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Research Data Management

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ULB PhD Day 2025

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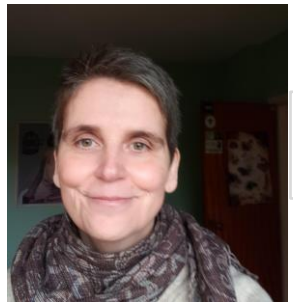

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Why Care About Research Data?

- **90%** of all global data has been generated in the last **two years** *(World Economic Forum, 2017)*
- Scientific data output is increasing by **30% per year** *(The International Data Corporation, IDC)*
- **54%** of data in published studies is **unverifiable** *(Vines et al.,2014).*
- **Paper mills** are responsible for an **increasing number of fraudulent publications**, with up to **2%** of papers in some fields being fabricated *(Nature, 2021).*

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- Can others easily reuse your data?
- Will you be able to access (and understand) your own data in 5-10 years?
- What happens if a colleague leaves—can their data still be found?

📉 **Did you know that 80% of datasets older than 20 years have been lost?**

To start - ask yourselves the following questions:

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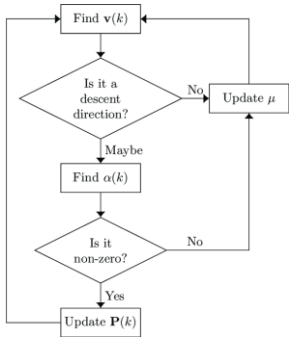
📊 **Research data** is any piece of information used to support research findings. It can be qualitative or quantitative, factual or interpretative, numerical, textual, or audiovisual, including:

- 📁 Spreadsheets, documents, test measurements
- 📷 Photographs, audio and video recordings
- 🧪 Slides, artifacts, specimens, samples
- 📊 Models (numerical, analytical, engineering)
- 🔢 Simulation software, algorithms, scripts
- 📝 Questionnaires, surveys, transcripts
- 📖 Methodologies

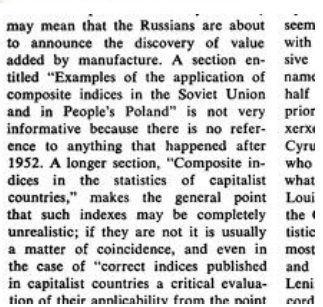


Questionnaire – Métro de Montréal

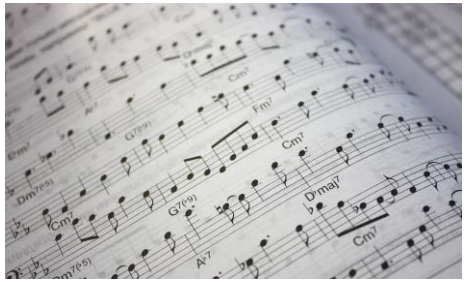
Pour chacune des questions suivantes, réponds par Vrai ou Faux.

Question	Vrai	Faux
1. L'inauguration du métro de Montréal a eu lieu en 1966.		
2. 5000 ouvriers pendant 4 années pour sa construction.		
3. Le métro de Montréal comptait à l'origine 20 stations.		
4. Il fût un jour le métro le plus rapide au monde.		
5. Ses voitures pneumatiques sont toujours utilisées aujourd'hui.		
6. Les locomotives actuelles sont en service depuis 10 ans.		
7. C'est dans la ville de Québec que sont construites les nouvelles voitures.		
8. C'est 468 nouvelles voitures qui seront mises en service graduellement à compter de 2014.		
9. Pour son transport, la voiture modèle a due être démantelée en 10 parties.		
10. Les tests techniques se déroulement pendant la nuit au métro de Montréal.		
11. Certains passages laissent à peine 5 centimètres de		

Date	Start Time	Lunch Start	Lunch End	End Time	Overtime	Hou
4/1/2019	8:00am	1:00pm	1:30pm	5:00pm	0	
4/2/2019	8:00am	1:00pm	1:30pm	5:00pm	0	
4/3/2019	8:00am	1:00pm	1:30pm	5:00pm	2	
4/4/2019	8:00am	1:00pm	1:30pm	5:00pm	0	
4/5/2019	8:00am	1:00pm	1:30pm	5:00pm	0	
4/6/2019	900am	2:00pm	2:30pm	6:00pm	0	
4/7/2019	900am	2:00pm	2:30pm	6:00pm	0	
4/8/2019	800am	1:00pm	1:30pm	5:00pm	1	
4/9/2019	800am	1:00pm	1:30pm	5:00pm	1	
4/10/2019	800am	1:00pm	1:30pm	5:00pm	1	



may mean that the Russians are about to announce the discovery of value added by manufacture. A section entitled "Examples of the application of composite indices in the Soviet Union and in People's Poland" is not very informative because there is no reference to anything that happened after 1952. A longer section, "Composite indices in the statistics of capitalist countries," makes the general point that such indexes may be completely unrealistic; if they are not it is usually a matter of coincidence, and even in the case of "correct indices published in capitalist countries a critical evaluation of their applicability from the point



What is Research Data?

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Research Data Management (RDM) includes activities such as:

- Planning
- Collecting
- Organizing
- Documenting
- Storing
- Sharing
- Preserving

• Each researcher is accountable for the management of their data in accordance with the **ULB policy on research data management.**

What is Research Data Management (RDM)?

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A **Data Management Plan** (DMP) is a formal “living” document that describes in detail how data collected within a research project will be managed throughout the entire life cycle of the project.

- A DMP helps to:
  - ✔ Ensure data is high-quality, secure, and sustainable
  - ✔ Guarantee accessibility and reusability of data
  - ✔ Update data management strategies as the project evolves

Start with a Data Management Plan

📌 **Data collection**– What data will be collected, processed, or generated?

📌 **Data Handling** –What formats, methodology and best practices will be used?

📌 **Data storage-** How will data be managed **during & after** the project?

📌 **Legal & Ethical Considerations** – Security, privacy compliance, and ethical aspects.

📌 **Data Sharing & Accessibility** – Will data be openly accessible? What restrictions apply? ➡ Remember: Justify your decisions.

📌 **Storage & Long-Term Preservation** – How will data be stored short-term and preserved for future usability?

📌 **Goal:** Ensure data remains usable even years after the project ends.

Data Management Plan: what to include

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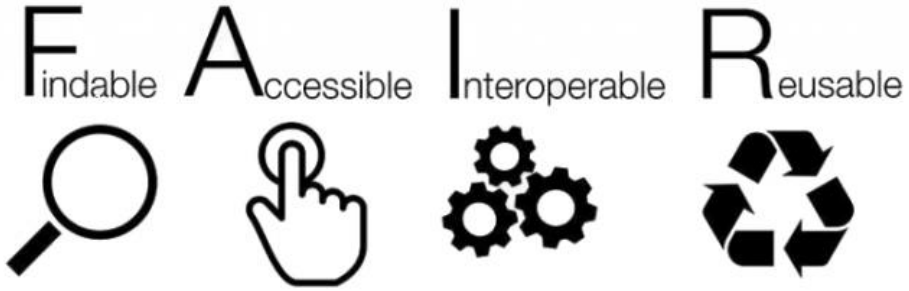


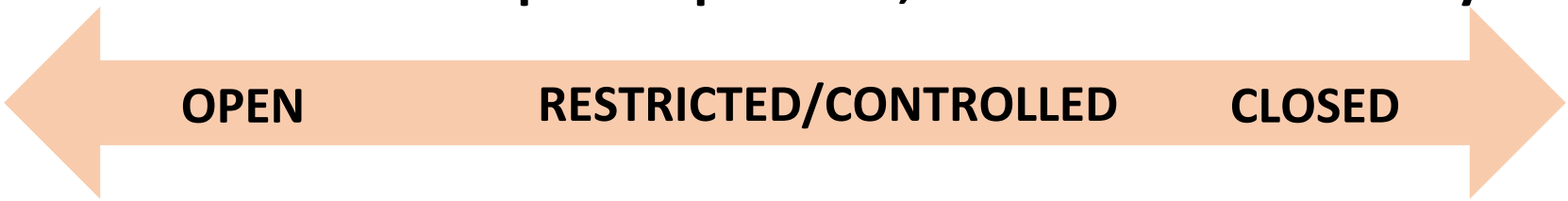
🔎 **Findable** - Use rich metadata*, keywords, and DOIs**.
📂 **Accessible** - Archive data in trusted repositories.
📡 **Interoperable** - Use common standards and formats (when possible choose open formats over proprietary ones).
♻️ **Reusable** - Include documentation (eg. README files) and licenses (eg.CCO, CCO BY 4.0).

***Metadata:** structured information that describe, explain, locate, and contextualise data.
Eg: author(s) name, author(s) ORCID, DOI, licence, language, journal, title, etc.
DOI: A **Digital object identifier is a persistent identifier or handle used to uniquely identify various objects, standardized by the International Organization for Standardization (ISO).[1]

Follow FAIR Data Principles

FAIR DATA is different from OPEN DATA

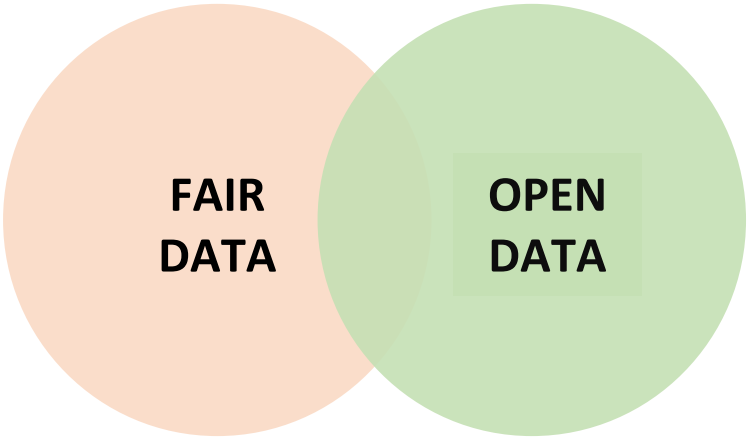
FAIR data: "As open as possible, as closed as necessary"



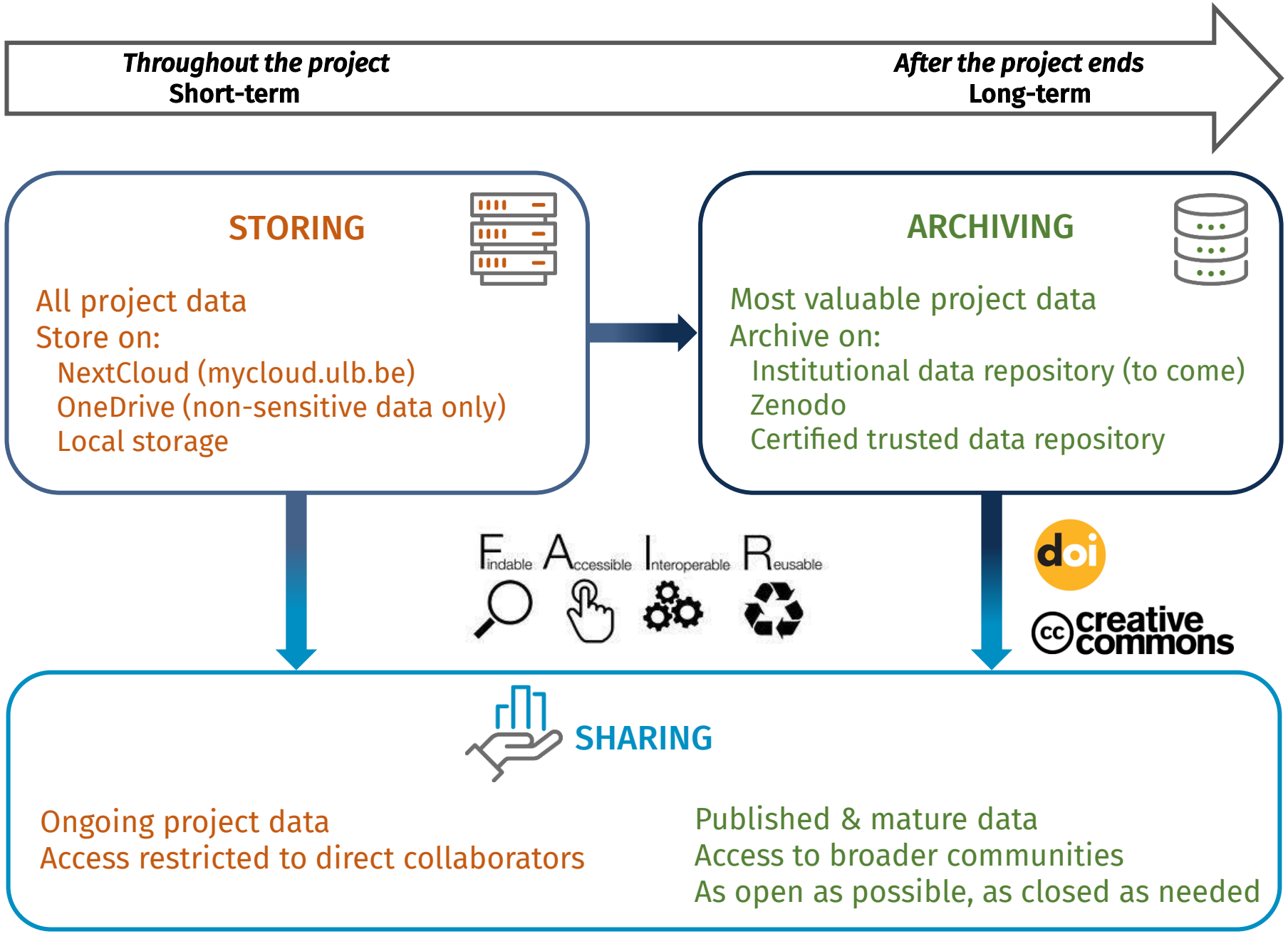
Freely used, modified & shared by anyone for any purpose

Limits on who can access & use data, how, or for what purpose

Under embargo, unable to share



Adapted from '[Managing and sharing research data](#)' by S. Jones, CC-BY


Throughout the project
Short-term
After the project ends
Long-term
STORING
All project data
Store on:
NextCloud (mycloud.ulb.be)
OneDrive (non-sensitive data only)
Local storage
ARCHIVING
Most valuable project data
Archive on:
Institutional data repository (to come)
Zenodo
Certified trusted data repository
Findable Accessible Interoperable Reusable
doi
creative commons
SHARING
Ongoing project data
Access restricted to direct collaborators
Published & mature data
Access to broader communities
As open as possible, as closed as needed

Different **data repository types**:

1. **General-purpose repositories** accept a wide range of data types (and sometimes other research outputs as well) from all disciplines.
   - Zenodo (nb: it does not allow to delete the files once uploaded)
   - Open Science Framework
2. **Domain-specific repositories** focus on specific data types or data from specific research domains.
3. **Institutional repositories** hold research data outputs from a particular research institution (Under development at ULB).

An international, searchable register of existing research data repositories is available at **re3data.org**. You can also search for repositories/databases via **FAIRsharing.org**.

Preserving research data

- **Webpages** dedicated to RDM
  - ENG: https://portail.ulb.be/en/research/research-data-management
  - FR: https://portail.ulb.be/fr/recherche/gestion-des-donnees-de-recherche
- **Training sessions** (recording and material)
  - ENG: https://uv.ulb.ac.be/course/view.php?id=103853
  - FR: https://uv.ulb.ac.be/course/view.php?id=103880
- **DMPonline**: online tool to create DMP (including various funders templates and writing tips) – free for the ULB staff www.dmponline.be (login with your ULB netID)
- **ULB MyCloud:** Institutional Cloud for research data storage https://mycloud.ulb.be/.
- **Contact:** rdm-support@ulb.be (questions related to RDM, Data Management Plans review)
- **Valorization/Intellectual property rights**: ulbkto@ulb.be
  - https://portail.ulb.be/en/research/service-technology-transfer-tto
  - https://portail.ulb.be/en/research/intellectual-property

RDM & DMP related support at ULB

- **Personal or sensitive data**
  - Approval from the ethics committee
  - Anonymise/pseudonymise before sharing
  - Agreement for data sharing in the informed consent
  - The ULB's Data Protection Officer can be consulted for methodological advice and/or for any GDPR related questions: (email: rgpd@ulb.be)

- **Experiments on humans or animals**
  - Approval from the ethics committee
  - Agreement for data sharing in the informed consent

- **Third-party data/ data from collaboration with external partners**
  - Check licenses or collaboration agreements before sharing data

Ethical and Legal aspects

- **Healthcare:** Comité d'Ethique hospitalo-facultaire Erasme-ULB
- **Animal experiment:** Comité d'Ethique - Expérimentation animale
- **Psychology:** Comité d'avis éthique Facultaire de la Faculté des Sciences psychologiques et de l'Education
  - in some cases, this Committee will request an ethical opinion from Comité d'Ethique hospitalo-facultaire Erasme-ULB
- **Philosophy and Social Sciences:** Comité d'éthique de la Faculté de Philosophie et Sciences sociales
- **Any other research domain:** Comité Central d'éthique de la recherche de l'ULB

RDM & DMP related support at ULB

🔍 **Enhancing Scientific Integrity & Transparency**
- Proper data management allows for verification of findings and facilitates reuse in future research.

🔐 **Protecting Intellectual Property & Privacy**
- Helps safeguard intellectual property rights and prevents data leaks or unauthorized use.

📈 **Increasing Research Impact & Citations**
- Well-managed data enables greater visibility, reuse, and citations, enhancing researcher recognition.

📂 **Preventing Data Loss & Ensuring Longevity**
- Poor management leads to data loss—80% of datasets over 20 years old become inaccessible.

To conclude: Why Effective Data Management Matters?

📂 **Facing Data Vulnerability & Policy Shifts**

•Political or institutional changes can lead to data loss, restriction, or deletion.

•RDM ensures critical datasets remain accessible and protected, regardless of external decisions.

📜 **Meeting Funding & Compliance Requirements**

•Major funding bodies require data management plans for funding approval.

•Proper documentation ensures legal and ethical compliance.

To conclude: Why Effective Data Management Matters?

Thank you!

To contact us: rdm-support@ulb.be