Opening doors to data

Grant Gibson

Canadian Research Data Centre Network

Date: 2025-05-29

Introduction

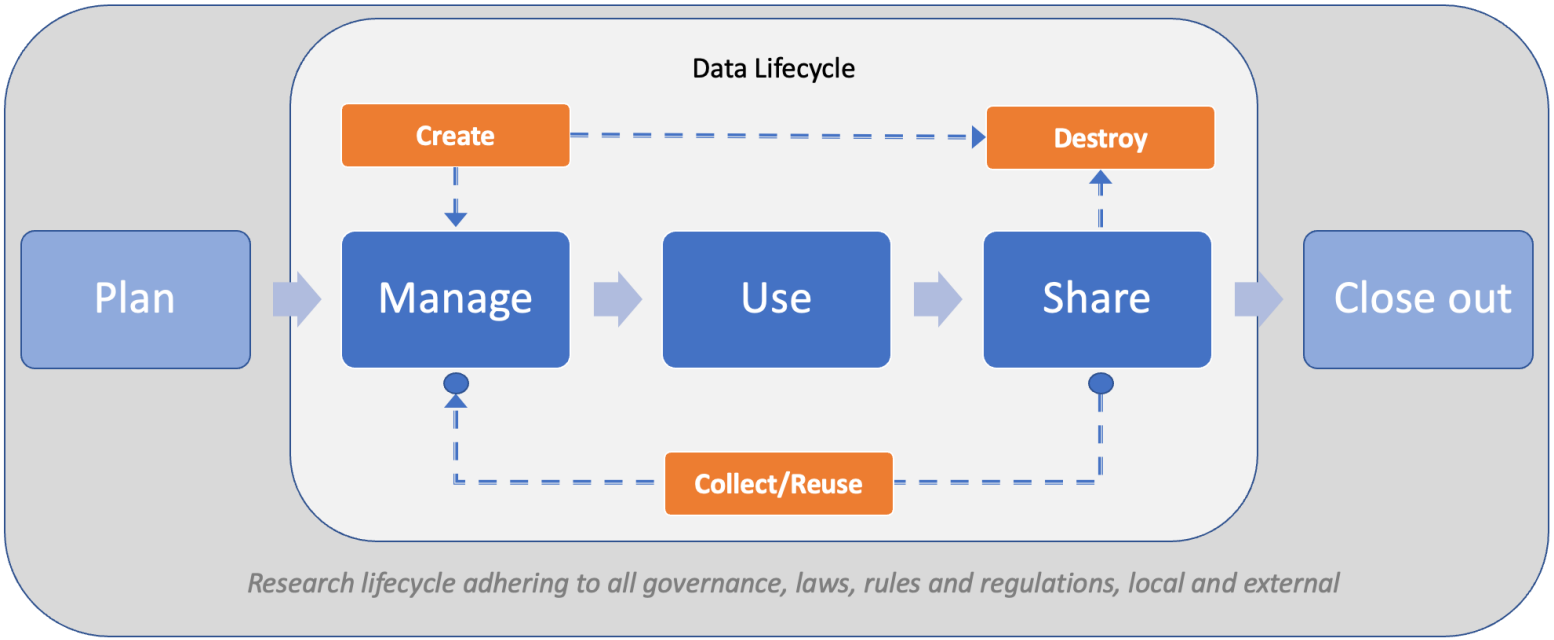
- Evolution of data discovery & open science
- Journal pressures
- Council pressures
- University pressures

Containing this

- Today we're talking about restricted access data
- Not all sensitive data, and not open data, but data that have an access process or mechanism

Data lifecycle

- Image of data lifecycle & description (credit: University of Wisconsin Data Governance Program)



Targets

- FAIR data
- “As open as possible, as closed as necessary”
- This is not binary, but a continuum

Researcher support for discoverability

F - Findable

Researcher support for discoverability

F - Findable

Can anyone discover that your data even exist?

Can others even figure out where the data you used are?

Concepts:

- Persistent Identifiers
- Indexing (including metadata)

Researcher support for discoverability

A - Accessible

Researcher support for discoverability

A - Accessible

Can others access the data you used?

Can they figure out HOW to do so?

Concepts:

- Data accessibility statement
- Access metadata
- Transparent process

Researcher support for discoverability

I - Interoperable

Researcher support for discoverability

I - Interoperable

Concepts:

- Open source
- Machine-readable
- Metadata
- Control vocabularies

Researcher support for discoverability

R - Reusable

Researcher support for discoverability

R - Reusable

Concepts:

- Provenance
- Licensing
- Archiving

Case study: CBS

- Canadian Blood Services offers secondary use research data (that is, databases about donors that you can request)
- Suppose you were a researcher interested in research on data about donors

1. Think about a research question and evaluate whether you could answer it
2. Outline the process you would follow to get the data

- We'll take up these questions and discuss how "FAIR" we think the data are.

Case study: CBS

- Canadian Blood Services offers secondary use research data (that is databases about donors that you can request)
- Suppose you were a researcher interested in research on data about donors

1. Think about a research question and evaluate whether you could answer it
2. Outline the process you would follow to get the data

- We'll take up these questions and discuss how "FAIR" we think the data are.

INSERT FAIR GRAPHIC

Takeup (GA)

FAIR Restricted data

- Findability doesn't **need** to be affected, but often is
- Accessibility might mean something different
- Interoperability can sometimes be tricky
- Reusability can be better, but this requires effort

Findability

- Organizations providing data as a non-priority activity
- Resources to make it findable may not even be considered
- Knowledge of how to make data discoverable might not exist
- Even where a core dataset from an academic source exists there can be
  a. A research team primarily using the data and making it available is secondary (see item 1)
  b. Because it isn't open, it's not posted, and making it findable is a separate activity (where with open data it's often put into a service that manages both curation and discoverability)

Accessibility

- Is it even considered?
  - I would argue yes, very seriously, but not with a lens of FAIR
  - Some of this is foundational see Read et al. 2024

Interoperability

- This goes hand-in-hand with findability and suffers the same resourcing issue
- Metadata can have the potential to disclose individuals
- Restricted datasets don't generally have good metadata

Reusability

- Data often belong to an organization and so don't suffer the same risks that data held by individuals do
- Similar to Interoperability/Findability issues though, improper data management makes data less reusable

What would success look like? (GA)

Data management planning

- *DMP template tool*
  - Consider what anyone following on from you will be starting from. Everything that got you from that step to another point becomes part of your research data
  - Not every part of the project data will therefore be restricted and you need to plan for that

Data Accessibility Statements

- Thorough description of the access process, links to info, financing considerations, and licensing info/terms-of-use
- "Access available on request" NOT sufficient
- Encourage data source to template this language! If no, DIY with review

Data Accessibility Statement Contents

Data Accessibility Statement Contents

- Who can access
  - Rank?
  - Research themes?
  - Citizenship?
- Terms of access
  - Consultation?
  - Ethics?
  - Proposal?
  - Citation?
  - TRE?
- Licensing/Agreements
  - Ex. CC-BY vs. CC-BY-NC
- Costs

Data discovery efforts

- Any datasource can now be indexed in Lunaris relatively easily.
- Metadata only deposits where there is some info to provide to potential users.
- Metadata only deposits also create a PID (persistent identifier) which makes the data a lot easier to find for someone who wants to use it in the future because YOU CAN CITE IT

Preservation efforts

- If a datasource overwrites my data with a new copy and doesn't say anything then someone trying to recreate my work will be very confused at best
- Ideally new versions get new PIDs and older versions point to the newest
- Frequency of versioning will depend on frequency of access and preferences of organizations.

How do I talk to my data source?

- Raise the issue
- Highlight the benefits
- Point to resources

Case study; indexing in Lunaris

- Lunaris is a service of the Digital Research Alliance of Canada
- It collates metadata from a variety of sources
- Data sources can work with Lunaris to have their datasets indexed

Lunaris page

[insert screenshot of Lunaris Page]

System needs

- Lunaris has a metadata schema (list of information it can process and display)
- Any data source can provide a database of this information about their datasets to be “harvested”
- Work with Lunaris team to determine how the data should be formatted

Case study

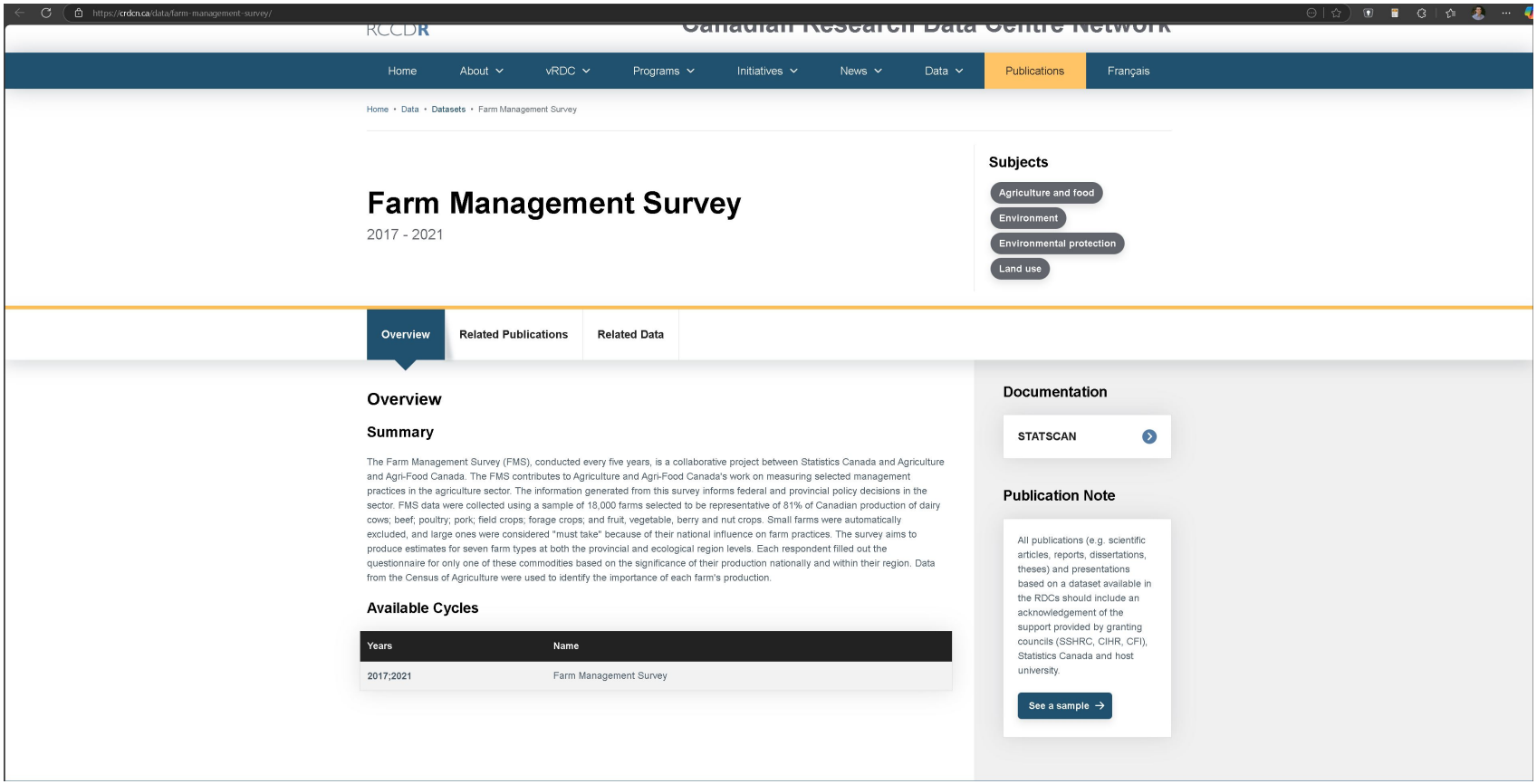


Figure 1: CRDCN_screenshot

Case study

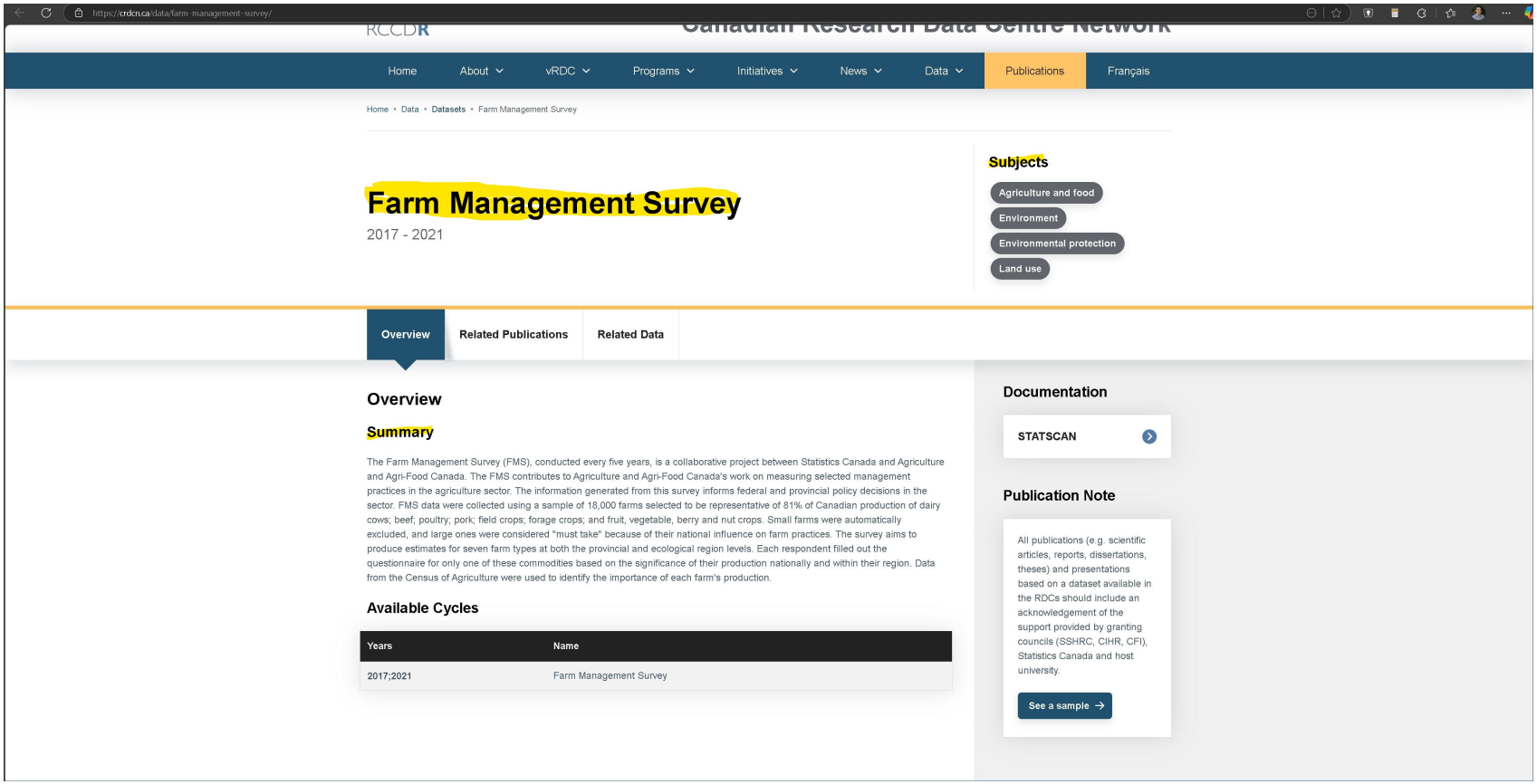


Figure 2: CRDCN_screenshot

Case study

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Id	Permalink	Title	Dataset Ti	Available C	Data Type	dataset_ye	dataset_ye	Summary	Summary French	Dataset ID	URL Ref	URL Ref Fr	Subjects	Acronym	Acronym F	Content	Date
94	39803	https://crc	Farm Mana	EnquÃªte s	2017;2021	Cross-Sec	2017	2021	The Farm Management Survey (FMS), conducted every five years, is a collaborative project between Statistics Canada and Agriculture and Agri-Food Canada. The FMS contributes to Agriculture and Agri-Food Canada's work on measuring selected management practices in the agriculture sector. The information generated from this survey informs federal and provincial policy decisions in the sector. FMS data were collected using a sample of 18,000 farms selected to be representative of 81% of Canadian production of dairy cows; beef; poultry; pork; field crops; forage crops; and fruit, vegetable, berry and nut crops. Small farms were automatically excluded, and large ones were considered "must take" because of their national influence on farm practices.	L'EnquÃªte sur la gestion des fermes (EGF), menÃ©e tous les cinq ans, est un projet collaboratif entre Statistique Canada et Agriculture et Agroalimentaire Canada. L'EGF contribue au travail d'Agriculture et Agroalimentaire Canada concernant l'adoption de certaines pratiques de gestion dans le secteur agricole. Les renseignements provenant de cette enquÃªte permettent d'orienter la prise de dÃ©cisions relatives aux politiques fÃ©dÃ©rales et provinciales dans ce secteur. Les donnÃ©es de l'EGF ont Ã©tÃ© recueillies Ã partir d'un Ã©chantillon de 18 000 exploitations agricoles sÃ©lectionnÃ©es pour qu'elles reprÃ©sentent 81 % de la production canadienne de vaches laitiÃ¨res, de bovins de boucherie, de volaille, de porcs, de grandes cultures, de cultures fourragÃ¨res et de cultures de fruits, de	4680	https://ww	https://ww	Environme	FMS	EGF	The Farm Management Survey (FMS), conducted every five years, is a collaborative project between Statistics Canada and Agriculture and Agri-Food Canada. The FMS contributes to Agriculture and Agri-Food Canada's work on measuring selected management practices in the agriculture sector. The information generated from this survey informs federal and provincial policy decisions in the sector. FMS data were collected using a sample of 18,000 farms selected to be representative of 81% of Canadian production of dairy cows; beef; poultry; pork; field crops; forage crops; and fruit, vegetable, berry and nut crops. Small farms were automatically excluded, and large ones were considered "must take" because of their national influence on farm practices.	8/2/2023 15:52

Figure 3: Screenshot of CRDCN dataset database

Step 1: Metadata crosswalk

- Sounds fancier than it is
- Map fields from my database to the schema from Lunaris
- In some cases these will be dynamic and obvious (ex. "Database name")
    - Some will be dynamic and non-obvious
- In some cases these will be static and need to be generated (ex. "Rights")

Crosswalk examples

Step 2: Translation code

- Example in the resources (.py and .R) for our translations
- Dynamic fields mapped against the current database
- Static fields added at the end
- If you have EN/FR metadata both can be included in one file
- Write output as .json file

Step 3: Publish

- Post the .json file somewhere (anywhere) accessible on the web and share this with the Lunaris team
- Updates made to the file will be automatically reflected in Lunaris ("Harvester" checks back on occasion)

Result

- Restricted dataset is much more discoverable to those seeking information on a given topic
- Updates to metadata including access protocols, dataset info, even new data available are machine readable

Result

[screenshot of same datapage, only in Lunaris]

Option 2 - Metadata only deposits

- More detailed and of greater use to others
- Create similar metadata profile to previous example
- BUT, can include documentation

Introducing: Borealis

- National collection of Dataverse instances (one from *most* Canadian universities)
- Your dataverse ingests data, Borealis rolls it up into a national service
- Borealis info is collected by other search tools (including Lunaris).

Borealis & restricted data

- Can't deposit personally identifiable info into Borealis
- CAN create metadata records including deposit of supporting documents
- With the right supporting documents, Borealis can be a very effective tool for data discovery
  - Anonymized version of dataset
  - Questionnaires
  - Structural files

Borealis & restricted data

- Metadata only $<$ Metadata w summary docs $<$ Metadata w variable level information
- Resource document and explainer available

Why choose Borealis or Lunaris

Lunaris Pros:

- Dynamic updates to content 'automatic'
- Minimal lift to create a series of entries from existing data

Borealis Pros:

- Permits a greater level of detail about the resource
- Allows document upload
- Creates a permanent landing page for the resource
- Mints a DOI for the resource which is 'versioned'

Why choose Borealis or Lunaris

Lunaris Cons:

- Limited and inflexible info about data source
- Needs a landing page to point to
- No "permanence" to the record, nothing is created to cite or point to
- System needs some data skill to populate automatically/navigate

Borealis Cons:

- Process to create/update records more involved
- Many fields to populate (though most are optional)
- Records cannot be deleted (this is also a pro)
- Accessibility (for upload) limited to consortia members