Statistics Canada
FAIR Assessment Framework
Presented by Karen Farley
2023-12-04

Delivering insight through data for a better Canada
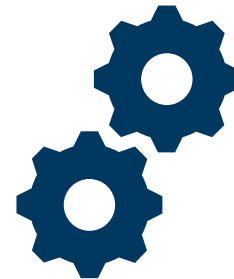
WHAT ARE THE FAIR DATA PRINCIPLES?

| FINDABLE	ACCESSIBLE	INTEROPERABLE	REUSABLE

WHY DO I NEED TO BE FAIR?

Part of our mandate is to be FAIR

Federal departments and agencies should develop strategies and tools to implement FAIR data principles to ensure interoperability of scientific and research data and metadata standards by January 2023, with a phased plan for full implementation by January 2025.

Any culture change requires an initial diagnostic
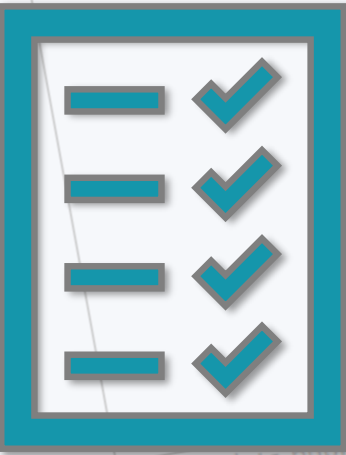
"Metrics are vital to any management process; they not only quantify activity but can define the variation between what is observed and what is desired."

– Data Management Body of Knowledge (DMBOK)

Uncovering which elements are missing is part of building a better understanding

WHAT IS STATCAN DOING TO IMPROVE ITS FAIR MANDATE?
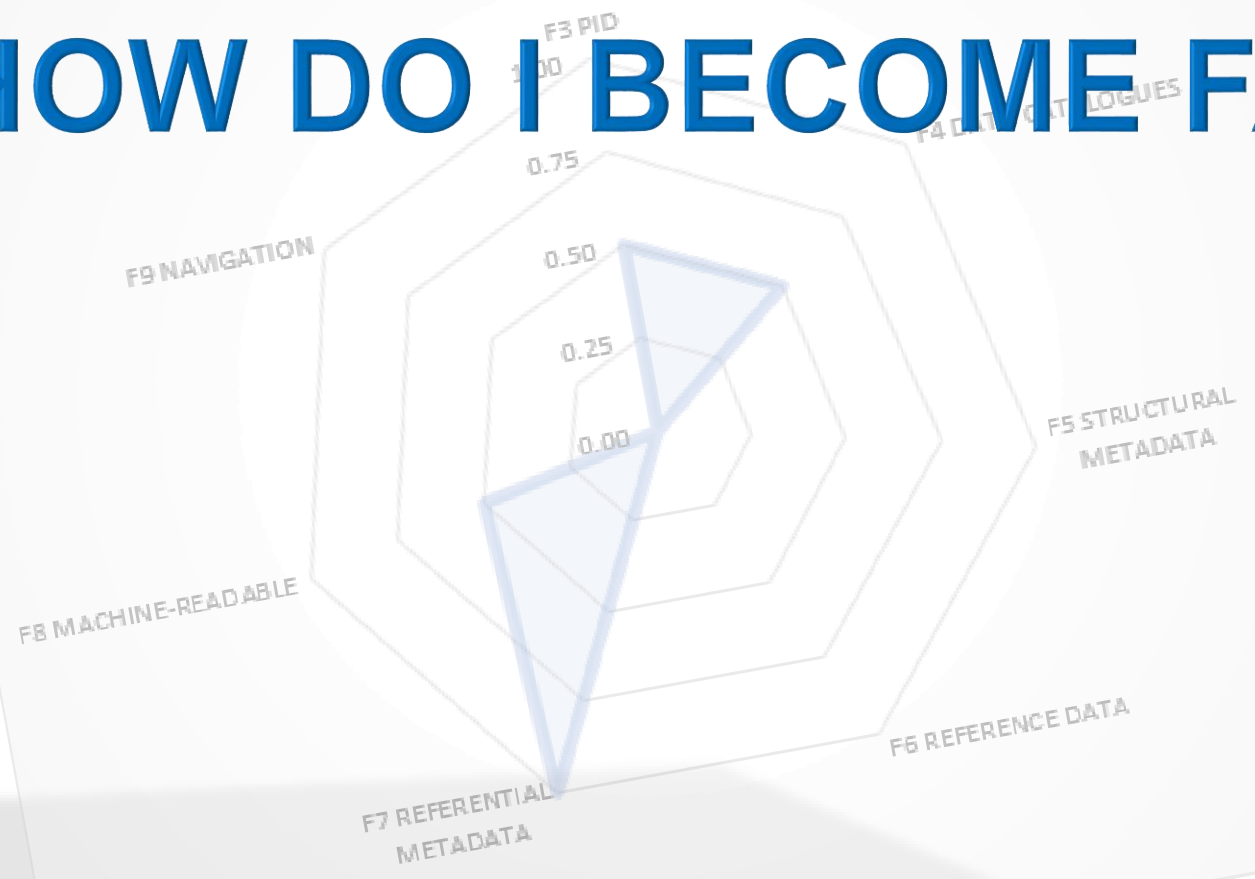
Building a Metadata Hub

Adopting and promoting standards

Working with international standards bodies and collaborative communities

HOW DO I BECOME FAIR?

TELL ME WHAT TO DO ....

HOW IS STATISTICS CANADA ENABLING BEING FAIR?
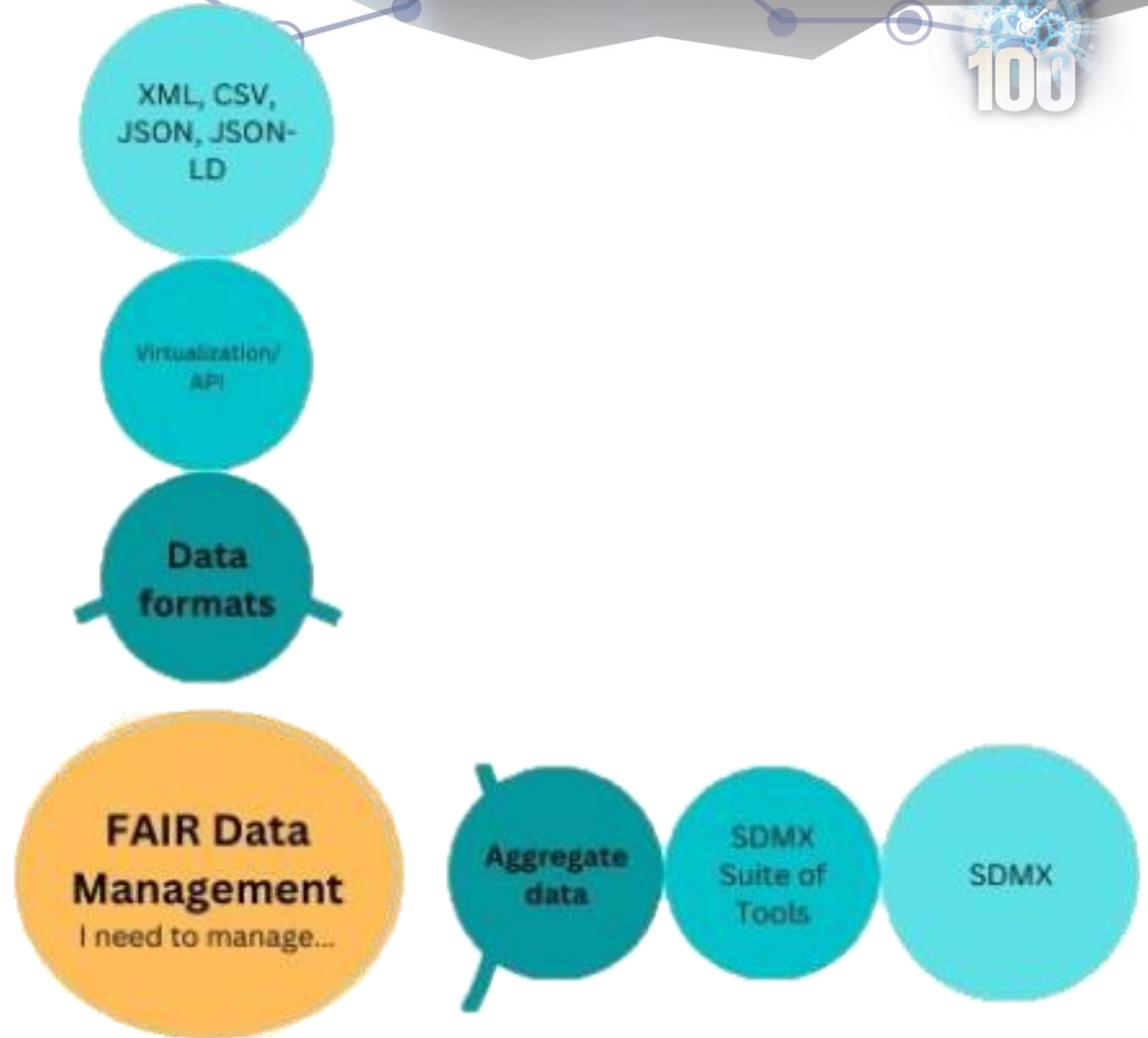
ADOPTING A SELFE SERVE MODEL

Legend

Inner ring- Capability

Middle ring- Tool

Outer ring- Standard
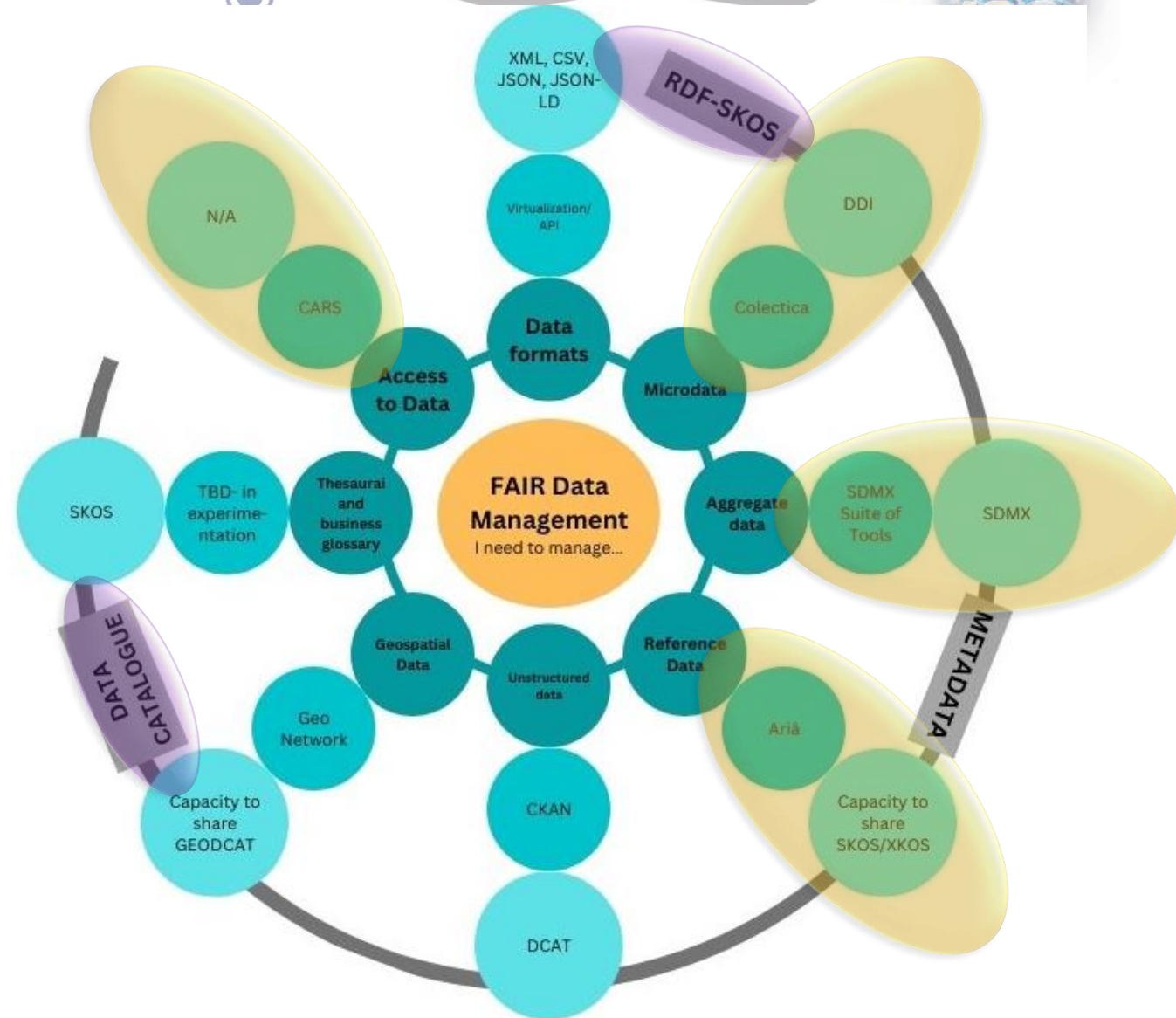
FIRST ...WHERE ARE YOU NOW?

Let's get a baseline with the FAIR Assessment Tool

WHAT IS THE FAIR ASSESSMENT TOOL?

1. A method of measuring maturity by program/product to assess the level of compliance within the spirit of FAIR principles

2. The data needed to perform a GAP analysis for process and product improvement

Wei wants to improve her overall data management and uses the FAIRness assessment to help

Wei analyzes the tool dashboard to understand gaps ③

FAIRness Tool Dashboard

ACCESSIBLE

A1 STANDARDIZED PROTOCOLS DATA
1.00
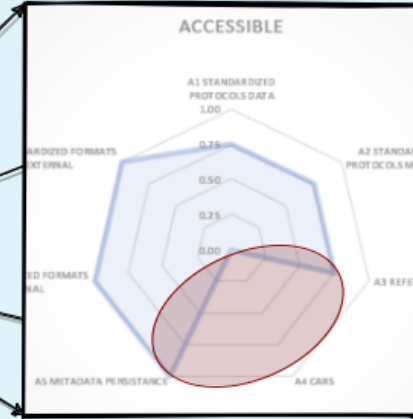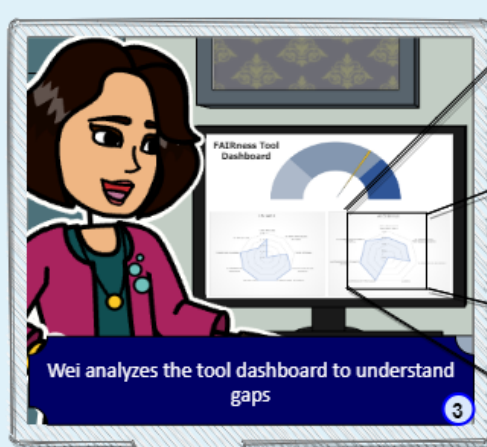0.75
0.50
0.25
0.00
A2 STANDARD PROTOCOLS MET
A3 REFERE
A4 CARS
A5 METADATA PERSISTANCE
ARDIZED FORMATS ERNAL
D FORMATS AL

Amina and John work collaboratively to update the product making it more FAIR ⑤

START

Program Areas are looking to modernize and enhance their programs. ①

USER uses the FAIRness Assessment to see how F.A.I.R. (Findable, Accessible, Interoperable, Reusable) their metadata and data are ②

USER is presented with a diagnostic of the **FAIR** principles for analysis ③

USERS identify areas for **continual improvement** and prioritize development ④

Technical units perform enhancements, resulting in greater timeliness, quality and metadata driven insights. ⑤

USER re-runs the FAIRness Assessment and demonstrates stronger strategic alignment to FAIR principles ⑥

END

Wei (business owner) spends the morning performing the assessment ②

Wei works with John (subject matter expert) and Amina (IT professional) to identify how adopting data and metadata standards would make their data FAIR ④

Wei is happy to have contributed to a FAIRer StatCan by enhancing her survey data ⑥

To understand how metadata can proactively impact FAIR, see how Karen chooses to register in the data catalog to improve her FAIR alignment

FAIR ASSESSMENT EXAMPLE: DATA ACCESS PROTOCOLS

	Answer	Score		Examples
A1 DATA ACCESS PROTOCOL: Are the data accessed through a standardized protocol?	A1.1 YES: Using REST/SOAP APIs from data standards.	1.00		*A1.1 Examples of standards include SDMX, OData, open geospatial consortium, W3C, and DDI.*
	A1.2 YES: YES: Using REST/SOAP APIs from non-international data standards.	0.80		*A1.2 NO ADDITIONAL INFORMATION*
	A1.3 YES: Using open data connectors.	0.60		*A1.3 Examples include ODBC, CSV, and PostgreSQL.*
	A1.4 YES: Using commercial data connectors.	0.40		*A1.4 Examples include SAS datasets, SQL Server, and Oracle or hyperlinked file-based datasets that represent an open file format.*
	A1.5 YES: Using static HTTP	0.20		*A1.5 Access to static content files through HTTP and having not filter/query capability*
	A1.6 NO: Standardized protocols are not used.	0.00		*A1.6 Completely closed or not accessible*

THE FAIR ASSESSMENT USES KNOWLEDGE FOR EDUCATION

- A series of questions that assess how FAIR a statistical program data output is

- Properly formatted with easy to understand, pre-filled responses

- Results are displayed in a visually-appealing dashboard outlining each of the FAIR data principles
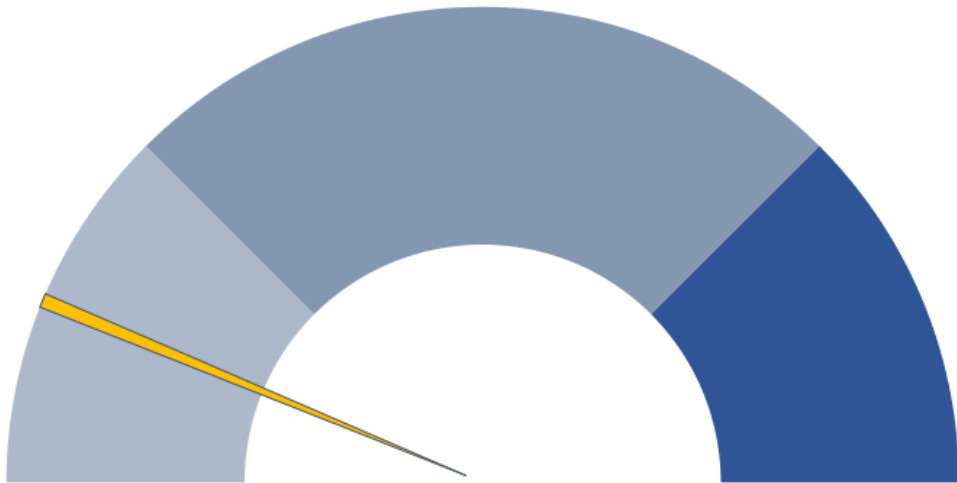
2023-12-04: Demo Statistical Data overall FAIR maturity 12%

ACCESSIBLE

A1 DATA ACCESS PROTOCOL
A2 STRUCTURAL METADATA ACCESS
A3 REFERENTIAL METADATA ACCESS
A4 SECURE ACCESS
A5 METADATA PERSISTANCE
A7 STANDARDIZED DATA FORMATS

This pillar contributes to 30% of your overall score
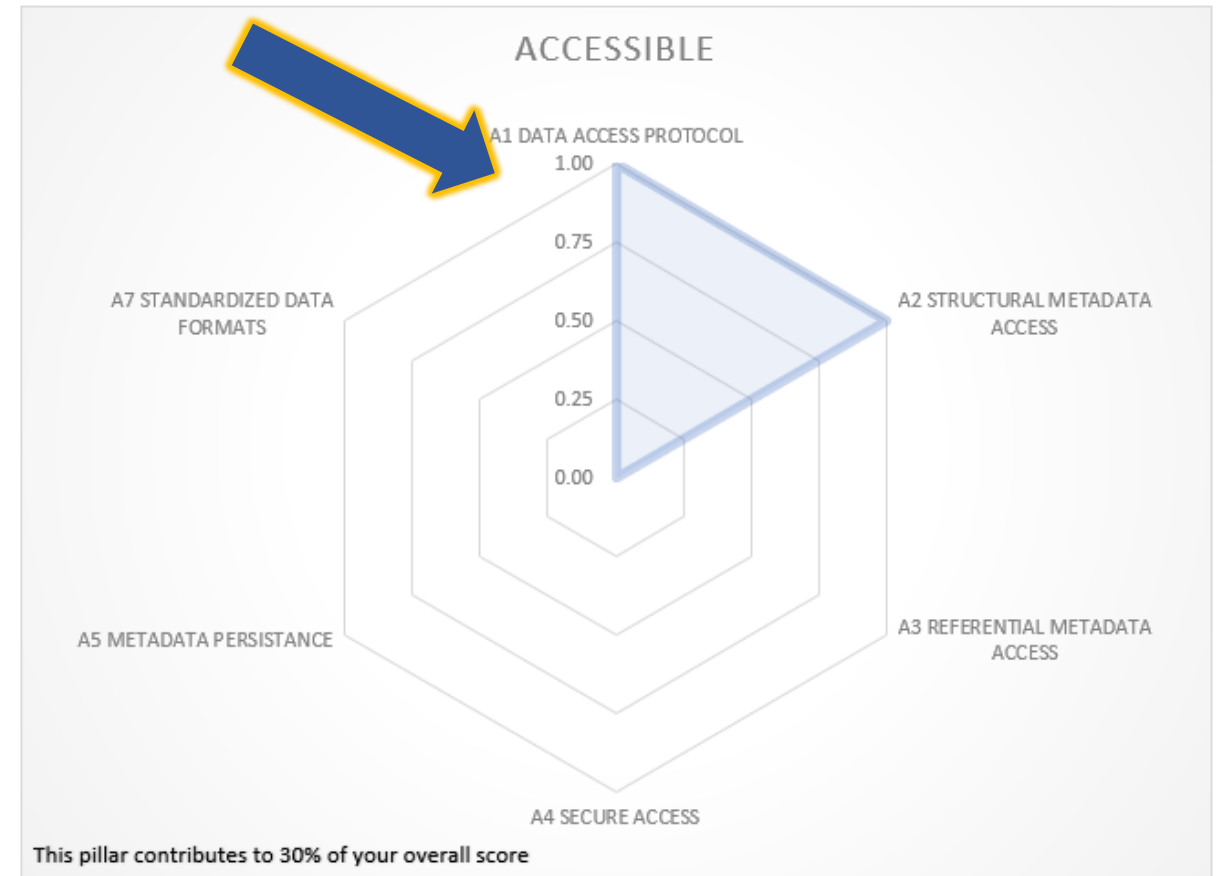
POSITIVE FEEDBACK FROM OUR FIRST USERS

"I am continuing to develop our CHSP standardization requirements, using the FAIR Assessment and Guidelines."

"(THE DASHBOARD) WAS INFORMATIVE AND SHOWS WHAT NEEDS TO BE COMPLETED."

"The factors and key areas addressed in the assessment **are in line with our expectations of standards we are striving for** within our program. The examples of what constituents one level vs another, provided in the guide, **were helpful**."

"I would like to have detailed documentation on the FAIR initiative so that it can be **shared with everyone** on my team and our partners who will help us implement FAIR!"

"As part of the upcoming GST/HST redesign, we will include the FAIR initiative as part of activities to be completed."

*"It **helps to know** where we are lacking."*

ASSESSMENTS HAVE MANY USES

At New Development

- Checklist of FAIR requirements

At Product Re-design

- Gap analysis to highlight and improve FAIR

For Strategic Analysis

- Checklist of FAIR requirements at the agency-level, that stand to have the greatest impact

Statistics Canada / Statistique Canada

Canada

UNDERSTANDING OUR MATURITY IS KEY

Issues:

- **Clear rules, tools, guidelines and standards are lacking**
- **Metrics are required** to help us understand our **data management maturity**

Solution:

- Provide a FAIR Assessment to help programs advance their data management maturity
- Apply a common approach to data management that is aligned to **FAIR Data Principles**, the **DMBOK** and the **Enterprise Solutions being actively built by the Agency**

Outcomes:

Quality data is produced faster	Statistical processes are streamlined	Data is more easily located	Reduced maintenance costs	Poorly structured data is a thing of the past	Data providers share data easily using web services/Data Hubs

APPENDIX

- Contact
- References
- FAIR Assessment Building Blocks

Contact

Please feel free to contact Karen Farley

karen.farley@statcan.gc.ca

REFERENCES

o **GO FAIR**

  https://www.go-fair.org/

o **Making Data F.A.I.R.**

(A good FAIR overview in nontechnical terms)

  https://medium.com/fluree/making-data-f-a-i-r-93629e82c459

o **RDA FAIR Data Maturity Model: specification and guidelines**

(Foundation for the current STATCAN FAIR assessment)

  https://www.rd-alliance.org/group/fair-data-maturity-model-wg/outcomes/fair-data-maturity-model-specification-and-guidelines-0

o **Australian Fair Assessment Tool**

  https://ardc.edu.au/resources/working-with-data/fair-data/fair-self-assessment-tool/

o **Roadmap for Open Science And the StatCan Open Science Action Plan**

  Roadmap-for-Open-Science.pdf (ic.gc.ca)

  https://gcdocs.gc.ca/statcan/llisapi.dll/open/15618288

The FAIR Assessment Building Blocks

F

- Persistent identifiers
- Catalogues
- Standardized metadata
- Machine readability functionality

A

- Standardized data & metadata protocols
- Adoption of CARS for SSI *(STC internal Security Access system)*
- Standardized formatting for metadata
- Metadata persistence

I

- Semantic & syntactic knowledge for data & metadata
- Adoption of API for Data Exchange

R

- Statistical metadata & data standards
- Inclusion of provenance and lineage
- Inclusion of licencing information in metadata