



“LOD” the Missing Link:

Gathering to Completeness Using
Knowledge Syntheses in Health Sciences

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OLA Superconference | February 4th, 2022



Part I: Context

01

**Defining and
Assessing LOD**

02

**LOD in
Libraries**

03

**Defining KS in
Health Sciences**

04

**LOD in Health
Sciences**

Activity: What the data?

Linked open data?
Open data?
Linked data?
Metadata?

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Defining &
Assessing
LOD

LOD in
Libraries

Defining KS
in Health
Sciences

LOD in the
Health
Sciences

Activity Recap: What the data?

Type of Data	Definition
Metadata	<ul style="list-style-type: none">- Structured information that describes, explains, locates, for the purpose of retrieval, use, or management of an information resource
Linked Data	<ul style="list-style-type: none">- Connections between data that are stored in different databases, organizations, and locations
Open Data	<ul style="list-style-type: none">- Data that can be freely used, re-used and redistributed by anyone
Linked Open Data	<ul style="list-style-type: none">- Non-proprietary, interoperable, machine-readable structured data

Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Zooming in: What is linked open data?

Linked Open Data

Non-proprietary
Interoperable

Machine-readable (contains structured data)

Examples of LOD

- Wikidata
- Library special collections



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Features of Data

Type of Data	Interoperability	Open Access
Metadata	Not necessary	Not necessarily
Linked Data	Yes	No
Open Data	Depends	Yes
Linked Open Data	Very high	Yes

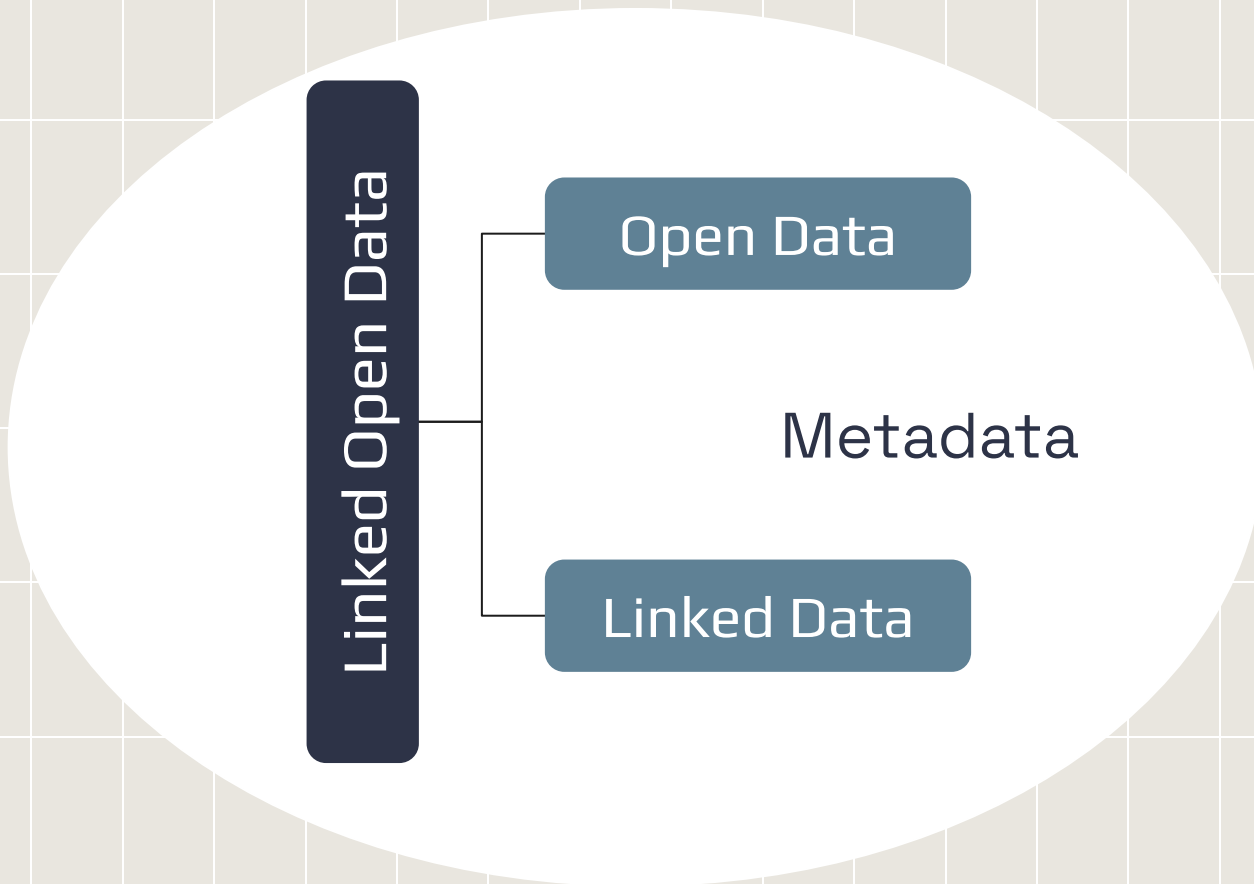
Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Features of Data



Defining & Assessing LOD

LOD in Libraries

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LOD in the Health Sciences

Benefits and Challenges of LOD

Benefits	Challenges
Open web-based scalable infrastructure	Data quality
Promoting community engagement, progress and innovation, accountability and transparency	Privacy and consent
Efficient	Mosaic effect
Interoperability	Cost and sustainability

Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

This table was largely adapted from the content by Open Knowledge Foundation.

Activity: LOD in Your Libraries?

Have you worked with LOD at your libraries? If so, what kind of projects?

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LOD in Libraries 1/3

Catalogue and LOD

Visible
Reusable
Shareable
Exchangeable
Bibliographic metadata

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LOD in Libraries 2/3



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LOD in Libraries 3/3

OpenAIRE for Canadian Scholarly Content	Natural Sciences and Engineering Research Council of Canada	Canadian Institutes of Health Research
Research Outcomes	164, 531	71, 425
Open Access	64%	73%

Defining and Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Defining KS in Health Sciences 1/3

“the contextualization and integration of research findings of individual research studies within the larger body of knowledge on the topic” using a method that is “reproducible and transparent”.

— Canadian Institutes of Health Research

Examples of KS

- Systematic Reviews
- Scoping Reviews
- Rapid Reviews
- Realist Reviews
- Integrative Reviews
- Mapping Reviews

Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Defining KS in Health Sciences 2/3



Time consuming: Requires approx. 1 year to complete (exception: rapid reviews)



Resource heavy: Requires at least three members



Methodologically complex: Includes protocol, eligibility criteria, comprehensive search, screening (two stages), and data abstraction

Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Defining KS in Health Sciences 3/3

North American/European, closed, and disconnected

Academic Literature

Embase®
on Ovid®

Scopus

WEB OF SCIENCE

CINAHL®
Advanced Searching Tutorial
Available via EBSCOhost

Wolters Kluwer Health | Ovid
Ovid MEDLINE®

Grey Literature

Google Scholar

Canadian Institutes of Health Research

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Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

LOD in Health Sciences

- Linked Open Drug Data
- Life Sciences Linked Open Data
- Observational Health Data Sciences and Informatics

Defining & Assessing LOD

LOD in Libraries

Defining KS in Health Sciences

LOD in the Health Sciences

Part II: Content

01

Challenges

02

Why LOD

03

Implementation

04

**Impact and
Implication**

Activity: Your Observations

Where do researchers access information at your libraries (e.g., subscribed databases, institutional repositories, OA repositories, etc.)?

How accessible are these sites of information?

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Access challenges of collaboration

LOD has been beneficial to health sciences researchers

However, when translating to KS these issues arise:

- Lack of access to the same publications during full-text screening
- Barriers to resources (publications, datasets etc.) in the Global South

Challenges of KS publications

8 of **963** KS were published by authors from low-middle income countries

Knowledge syntheses in medical education: Examining author gender, geographic location, and institutional affiliation

Challenges

Why LOD

Implementation

Impact and Implication

Why LOD?

- Facilitating sharing and communication
 - Accessible publications for full-text screening
 - Machine readable - easier to extract
 - Improves knowledge equity in KS participation and publications
- Increases visibility of publications in the Global South
 - Reducing linguistic barriers

How LOD Could Be Implemented 1/2

“Cochrane needs to get better at talking to machines.”

— Ben Goldacre, UK Symposium, 2013

Phase I: Conditions for the success of linked open data

- Identify open health science content and where it is hosted
- Encourage the creation of open access content

Phase II: Implementing linked open data

- Apply ‘user stories’ to select or guide the development of linked open data infrastructure
- Develop shared ontologies

Challenges

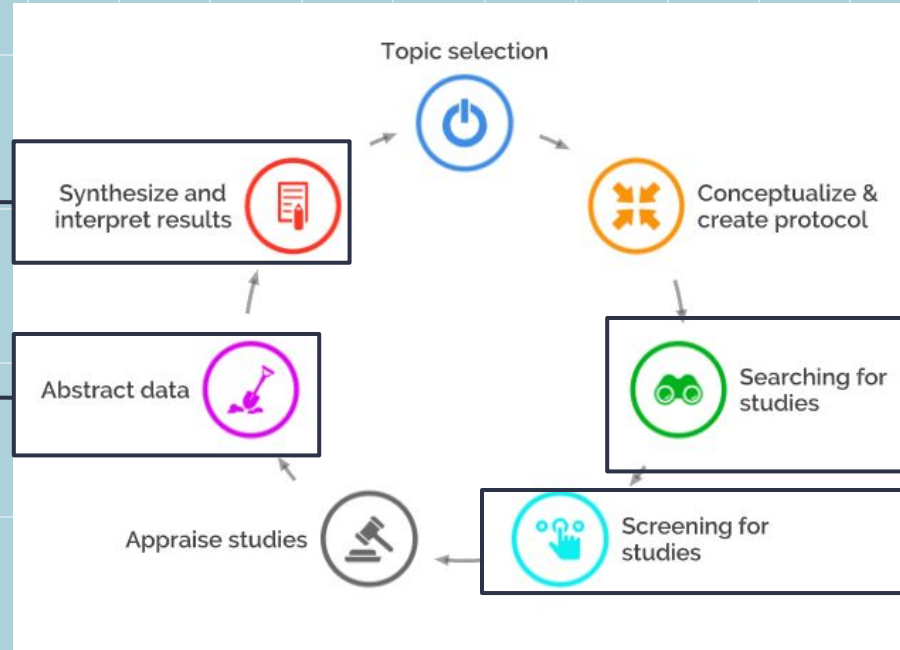
Why LOD

Implementation

Impact and Implication

Knowledge Synthesis Cycle

Machine readability



Visibility

Machine readability

Challenges

Why LOD

Implementation

Impact and Implication

How LOD Could Be Implemented 2/2

LOD health science system ideal but can start by extrapolating ways to work toward knowledge equity using conditions for LOD:



- Form global partnerships to collaboratively understand and meet information needs
- Encourage open access publication
- Check with PI(s) if 'grey literature' beyond text can be included
- Highlight the limitations of databases used in knowledge syntheses

Challenges

Why LOD

Implementation

Impact and Implication



Impact and Implication 1/2

Accessibility and
Availability

Semantic
heterogeneity and
Interoperability


Usability and
Learnability

Challenges

Why LOD

Implementation

Impact and Implication



Impact and Implication 2/2

Accessibility and
Availability

Preservation

Semantic
heterogeneity and
Interoperability

Consistent Metadata
Systems

Usability and
Learnability

Centralized distribution
and Decentralized
contribution

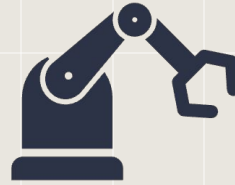
Takeaways from LOD and KS



Capacity for evidence-based medicine low in low-income and middle-income countries



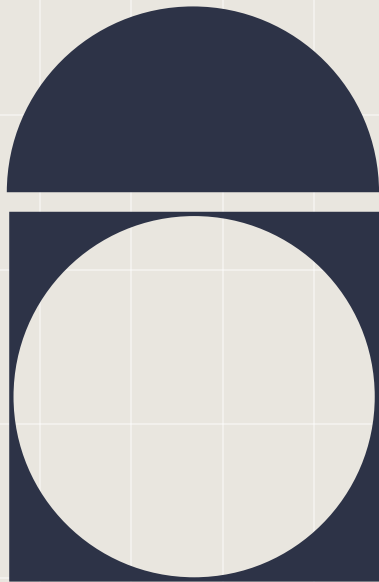
Local and regional knowledge lacking when synthesizing reviews



Automation of various steps of the review process to reduce time and labour



LOD part of initiatives being explored by libraries but not knowledge syntheses



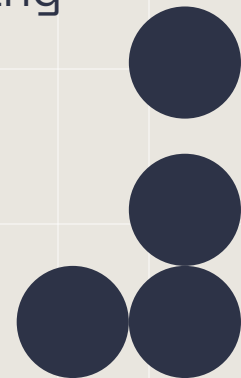
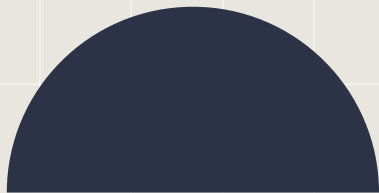
THANK YOU!

Questions or Comments?

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