

Linked Data Library Ecosystem Powered by AI

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- What is Linked Data for Libraries?
- How we support MARC and Linked Data?
- Metadata flow in a future eco system
- Ex Libris roadmap
- Focus Group for Production
- Sneak peek for our LOD Eco System
- Primo, discovery and beyond

We want a global metadata ecosystem that enables users to find what they need and access it in the best way.

The library vision



What is Linked Data?

Semantic web

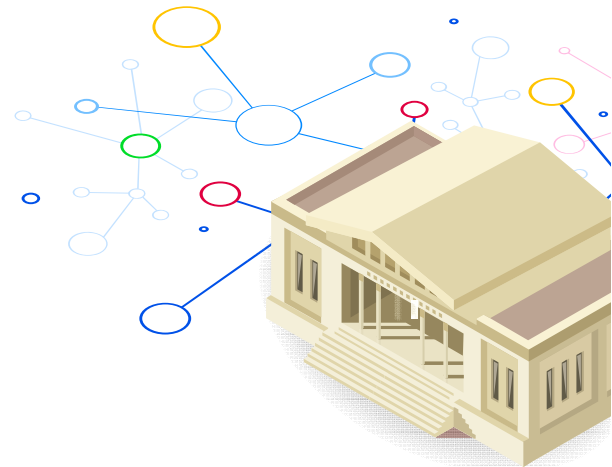
- The term “Semantic Web” refers to W3C’s vision of the Web of linked data.
- It enable to create data stores on the Web, build vocabularies, and write rules for handling data.
- It is about making links, so that a person or machine can explore the web of data.

Linked Data

- Structured data as relationships
- Define facts by using triples: **subject–predicate–object**
- Allow easy to find, access and share information across the internet
- Enable computers to understand relationships between entities
- Answer complex queries

What is Linked Data for Libraries?

- Semantic web is allowing interoperability
- Accurate lookups for related entities
- Distributed data
- Robust relationships
- Graph representation
- Smart in-depth queries
- Structured data to be used by AI models



Main challenges



Data Management

Quality, usability, caching
and integration



Eco System

Governance, Standards and
Interoperability



Discovery

Big data, user centric,
smart searches

What we want to achieve?

Discovery

- Next Experience
- Simple and quicker research discovery flows
- Recommendations to resources
- Easy navigation to related information

Management

- Enable the discovery Next Experience
- Global scale
- Curated richness
- Automation and Efficiency
- Shift focus to the unique materials

How will we achieve it?

Discovery

- Leveraging linked data (as a network)
 - Navigations – In/Out
 - Enriched Data
 - Smart search based on relationships
- Recommendations based on relationships

Management

- End to end workflows
- Distributed Linked Data Authorities/Entities
- Collaborative cataloging
- Multi formats side by side with existing

Connect

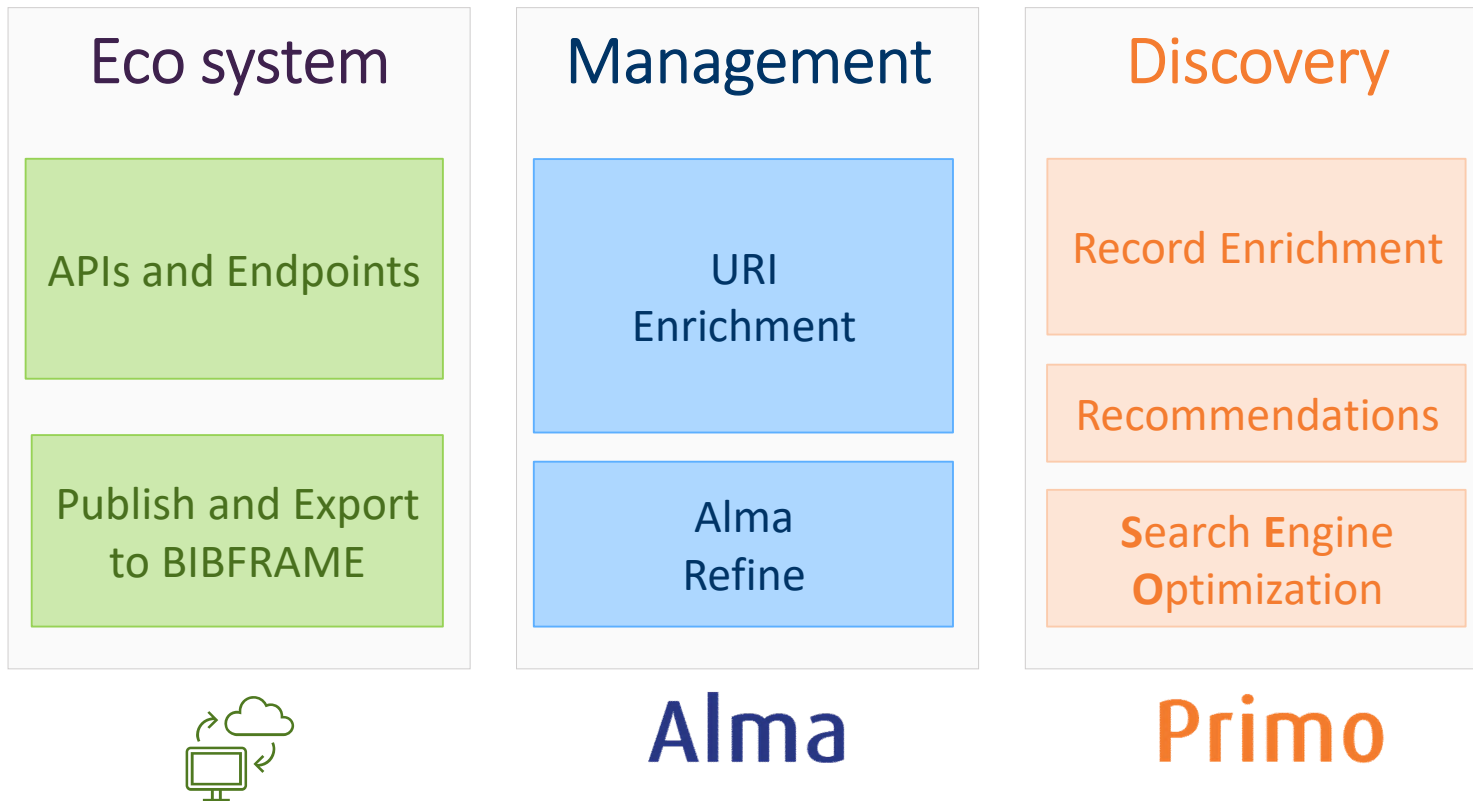
- Easy access to data from other systems

MARC and Linked Open Data

- MARC is and will continue to be fully supported
- MARC can be enriched with Linked Open Data and utilize for richer display
- You can move gradually on your own pace from MARC to LOD
- You will be able to use MARC side by side LOD as long as needed



What already exists for MARC and LOD?



Roadmap MARC and Linked Open Data

- Sneak peek
 - Primo Info Card
- Planned
 - Enhanced URI support
 - URI
 - ORCID
 - ISNI
 - Alma Refine ORCID

The screenshot displays a library catalog record for the book "The old curiosity shop" by Charles Dickens. The record includes a book cover, title, author information, and a list of related persons. The related persons section lists Charles Dickens, George Cattermole, and Hablot Knight Browne, each with a small portrait and a "Show more" link. The record also features "Save and Export Options" such as Cite This Item, Permalink, E-mail, Print, Endnote Desktop, Save to Endnote Web, and Export Bibtext. A yellow banner at the bottom of the record indicates "Place a hold or request to borrow item: LOG IN".

LOD scope for 2023 H2 - 2024 H1

Main Workflows

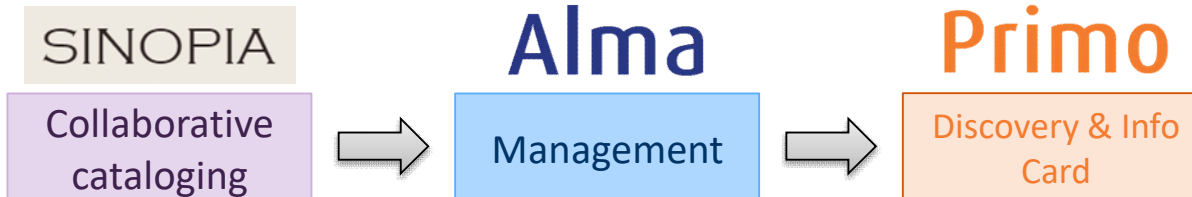
- One by one resource creation and management (e.g. Special Collections)
- Services: cataloging, acquisition, inventory management, discovery, and fulfillment

Data Scope

- Unique material
- Same authorities as today but using URI as ID base

Main Features

- Collaborative Cataloging via Sinopia (Eco system)
- Authority Linking and Updates (Alma and CZ)
- Core Workflows – Acquisition Inventory and Fulfilment (Alma)
- Discovery and Info Card (Primo)



Linked Data Focus Group

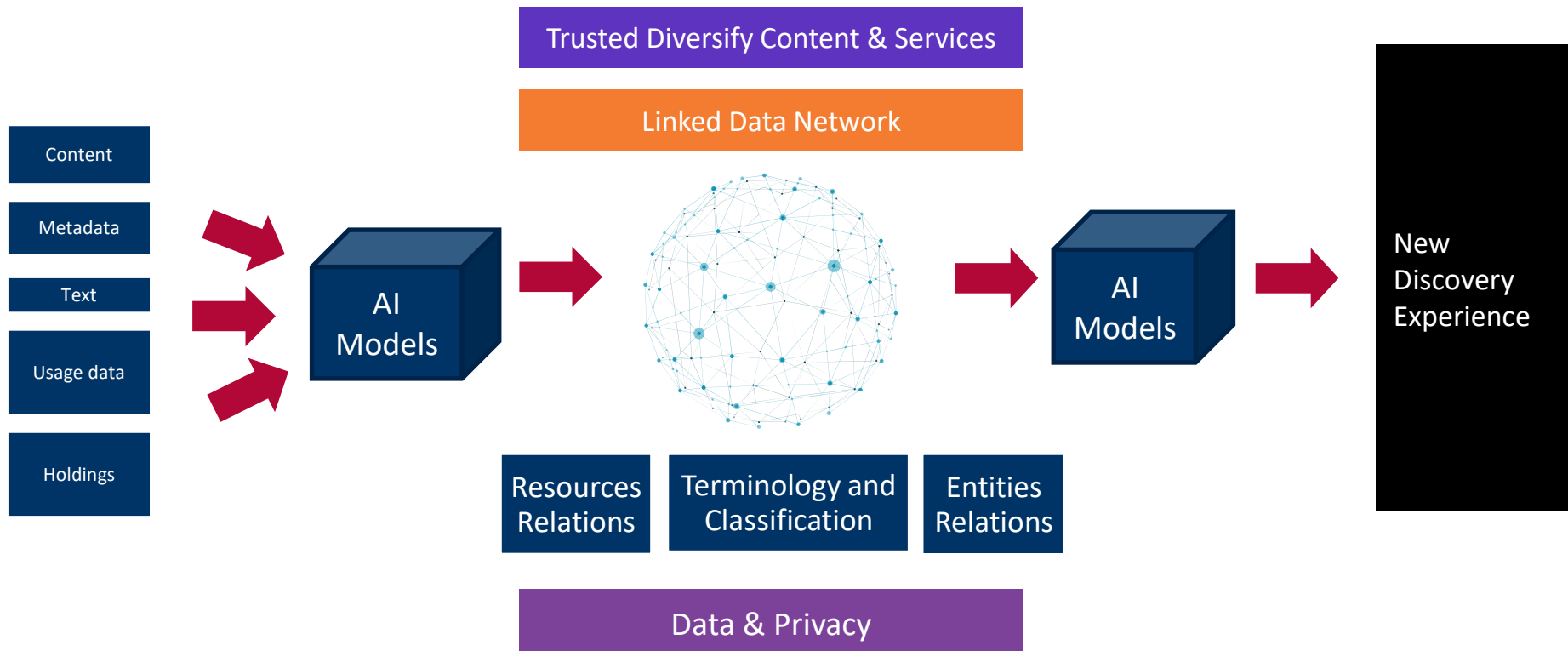
- **Goal:** Use BIBFRAME in production as part of end to end workflows
- **Working together**
 - Design reviews
 - Testing
 - Use in production
 - Fix issues
 - Additional critical enhancements
- **Declaration of scope**
 - The Institution will define the catalog scope
 - The institution will be part of the development process
 - The institution will use BIBFRAME in production
- **Length of commitment**
 - Until end of April 2024 – be part of development cycles
 - May 2024 – starting to work in production
 - Until end of 2024 – feedback on the workflows, needs fixes and enhancements



UC DAVIS



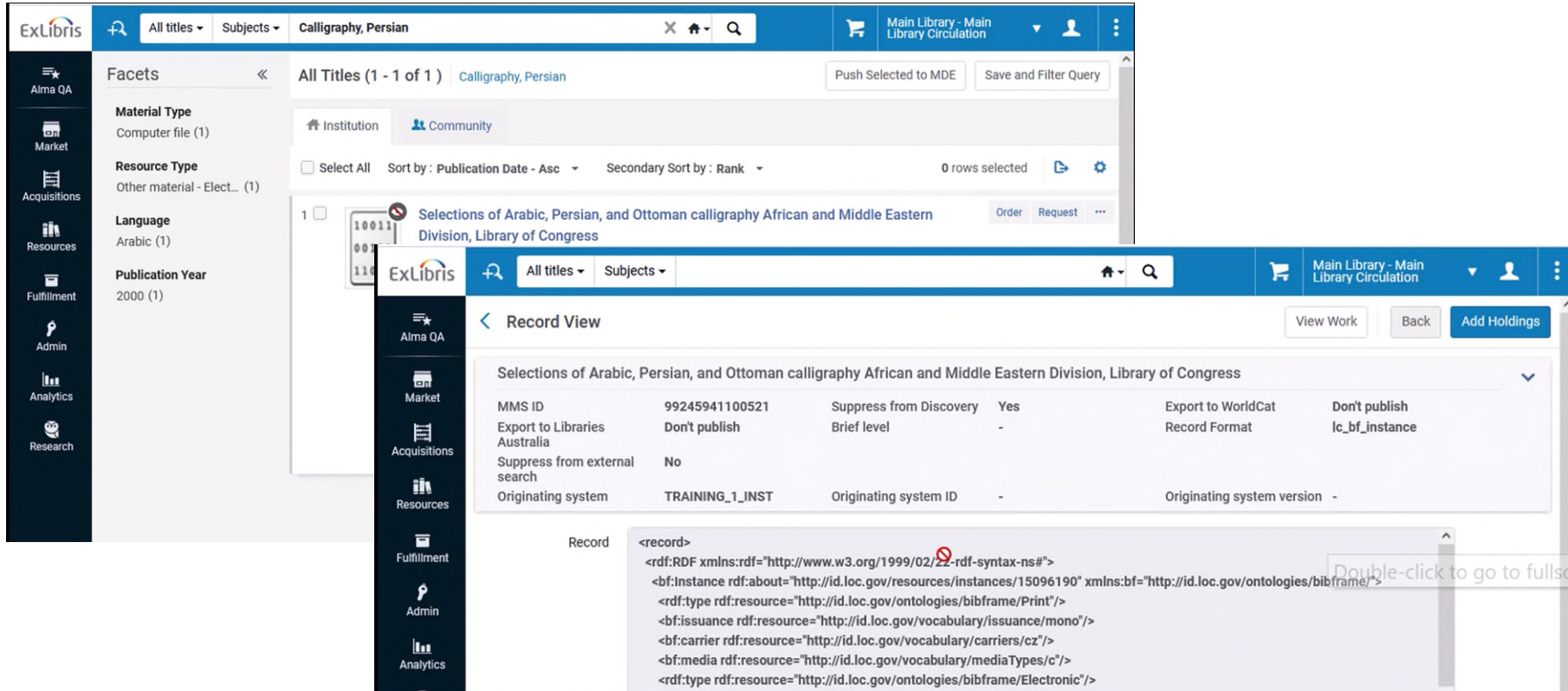
A thought of the future Linked Data and AI together





Linked Open Data eco system sneak peek

Alma Demo



The screenshot displays the Ex Libris Alma interface. The top navigation bar includes the Ex Libris logo, search filters (All titles, Subjects), and the current search term 'Calligraphy, Persian'. The left sidebar contains navigation icons for Alma QA, Market, Acquisitions, Resources, Fulfillment, Admin, Analytics, and Research. The main content area shows search results for 'Calligraphy, Persian' with facets for Material Type, Resource Type, Language, and Publication Year. A record view overlay is open, showing details for 'Selections of Arabic, Persian, and Ottoman calligraphy African and Middle Eastern Division, Library of Congress'. The record view includes a table with fields like MMS ID, Suppress from Discovery, and Export to WorldCat. Below the table is an XML record snippet.

Facets

- Material Type: Computer file (1)
- Resource Type: Other material - Elect... (1)
- Language: Arabic (1)
- Publication Year: 2000 (1)

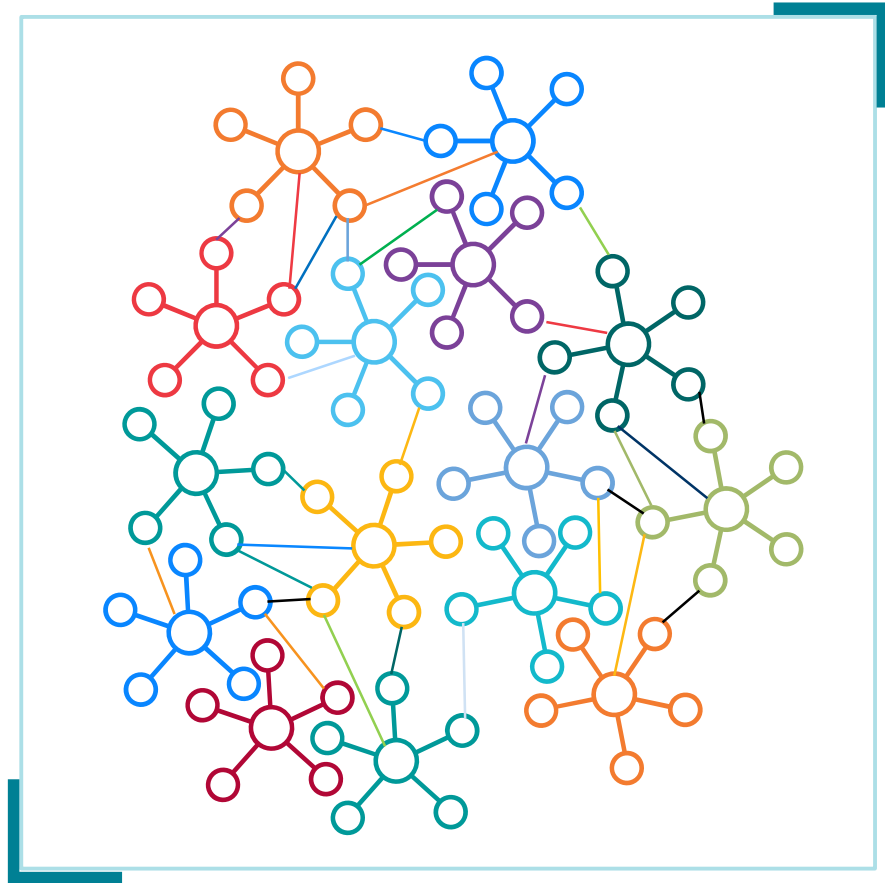
Record View

MMS ID	99245941100521	Suppress from Discovery	Yes	Export to WorldCat	Don't publish
Export to Libraries	Don't publish	Brief level	-	Record Format	lc_bf_instance
Suppress from external search	No				
Originating system	TRAINING_1_INST	Originating system ID	-	Originating system version	-

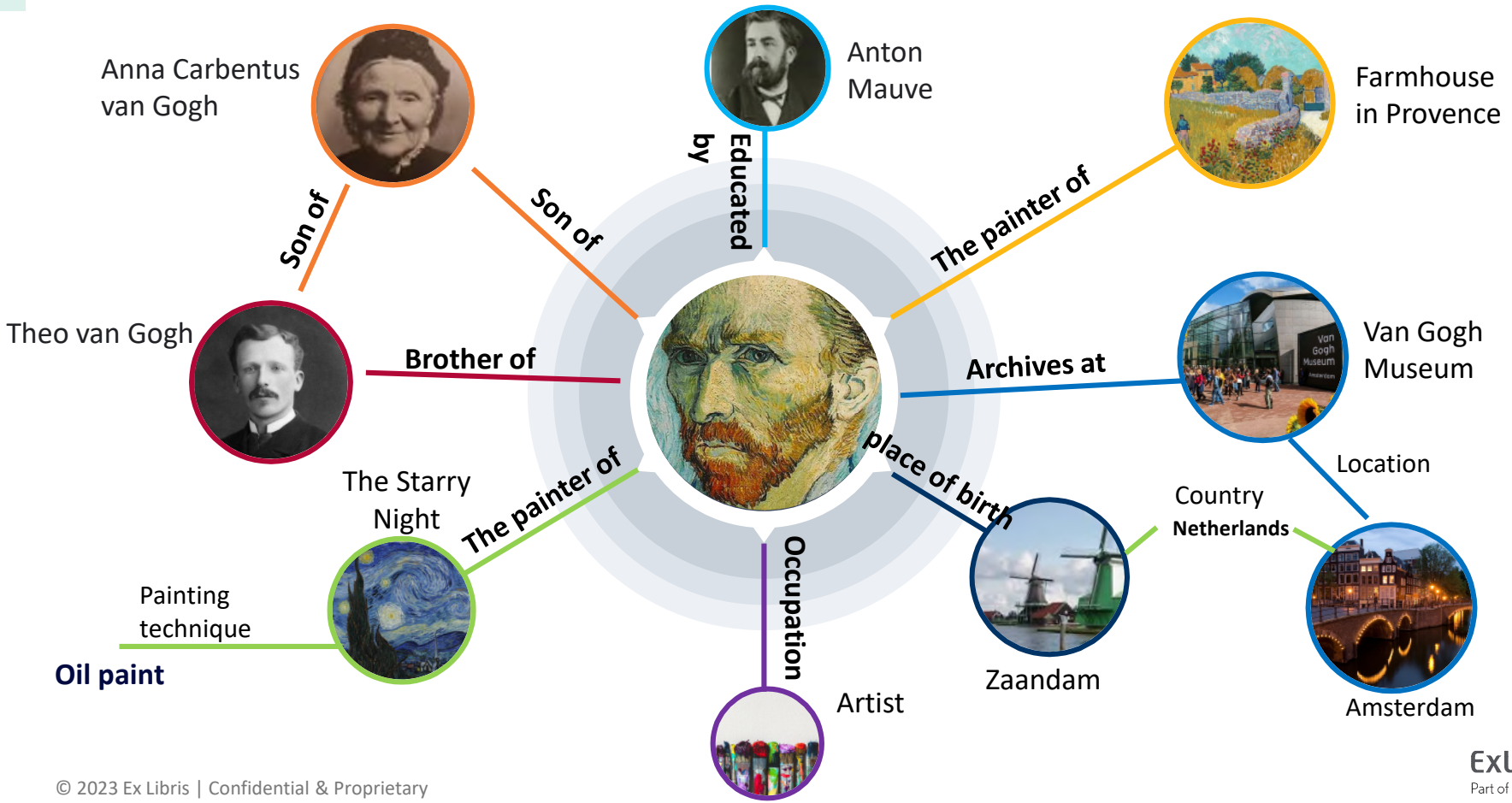
Record

```
<record>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
<bf:Instance rdf:about="http://id.loc.gov/resources/instances/15096190" xmlns:bf="http://id.loc.gov/ontologies/bibframe/">
<rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Print"/>
<bf:issuance rdf:resource="http://id.loc.gov/vocabulary/issuance/mono"/>
<bf:carrier rdf:resource="http://id.loc.gov/vocabulary/carriers/cz"/>
<bf:media rdf:resource="http://id.loc.gov/vocabulary/mediaTypes/c"/>
<rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Electronic"/>
```

New Experience Based on a Linked Data Networks



Connecting the dots for a richer discovery experience



Linked Data Network

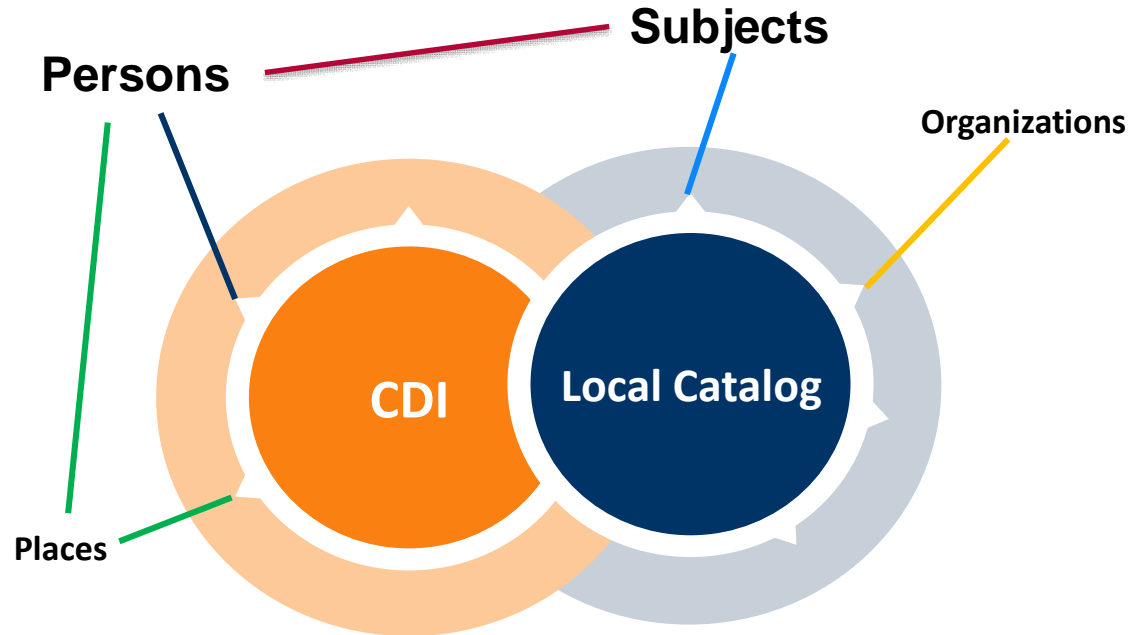
Search

Exploration

Autocomplete

Recommendation

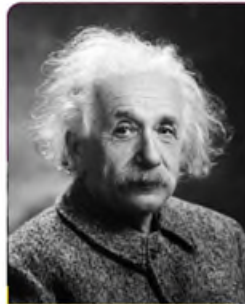
Linking out



Providing linked data experience to all libraries, *regardless* of their records format.

Person Entity within the discovery workflow

Providing users a richer, simpler, more intuitive and accurate discovery experience.



Albert Einstein, 1879–1955

German-born theoretical physicist; developer of the theory of relativity

Albert Einstein was a German-born theoretical physicist, widely acknowledged as the greatest physicists of all time. Einstein is known for developing the theory of relativity, and made important contributions to the development of the theory of quantum mechanics. Relativity and quantum mechanics are together the two pillars of modern physics. His mass–energy equivalence formula $E = mc^2$, which arises from relativity theory, has been dubbed "the world's most famous equation". His work is also known for its influence on the philosophy of science. He received the 1921 Nobel Prize in Physics "for his services to theoretical physics, and especially for his discovery of the law of the photoelectric effect".

Person Information

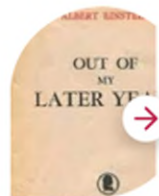
Titles written by Albert Einstein



Relativity: the special and general theory



The world as I see it



Einstein, Albert
Out of My Later Years

Rogers, Michael

Titles written about Albert Einstein



Annus mirabilis :
1905, Albert
Einstein, and the...

John Gribbin 1946-;
Mary ribbin New York
: Chamberlain Bros.
©2005



Albert Einstein : a
biography

Albrecht Fölsing 1940
New York : Viking
1997



Einsteins Akte :
Einsteins Jahre in
Deutschland aus...

Siegfried Grundmann
Berlin : Springer
©1998

Relations:

Person <-> Title

Person <-> Person

Related People



Leopold Infeld

Co-author

"The evolution of physics; the growth of ideas from early concepts to...



Stephen Hawking

Editor

"A stubbornly persistent illusion: the essential scientific works of...



Lise Meitner

Contributor

Feier der 100. Geburtstage von Albert Einstein, Otto Hahn, Lise...



Person Entities – Components

Person Entity Details

Storing all the persons and their relevant details.



Search

Person and its relevant details should be available for search.

Autocomplete

Creating dedicate person autocomplete file, which includes the info we need for search and display.

Relations

Creating relations between entities, like:
person to title
person to person



Person Entity – Albert Einstein details

Albert Einstein, 1879-1955

ID: 123456

Short desc: *German-born theoretical physicist; developer of the theory of relativity (1879–1955)*

Desc: *Albert Einstein was a German-born theoretical physicist, widely acknowledged to be one of the greatest physicists of all time. Einstein is known for developing the theory of relativity, but he also made important contributions to the development of the theory of quantum mechanics...*

Vocabularies ID:

LCNAF: [n79022889](#)

GND ID: [118529579](#)

IDREF: [026849186](#)

Links to internal and external sources:

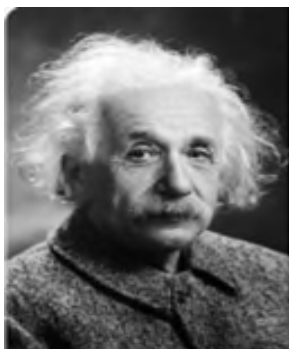
Wikidata: <https://www.wikidata.org/wiki/Q937>

Wikipedia: https://en.wikipedia.org/wiki/Albert_Einstein

Name variations: אַלבערט איינשטיין, ألبرت أينشتاين, Алберт Ейнштейн, 阿尔伯特·爱因斯坦

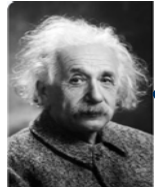
Occupations: theoretical physicist, philosopher of science, inventor, science writer

Link to image: https://commons.wikimedia.org/wiki/File:Albert_Einstein_Head.jpg



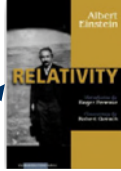
Albert Einstein

Person to Titles - Titles written by Albert Einstein



Albert Einstein

Author



Relation:

Title: Relativity; the special and general theory.

Relation Type: author

Author

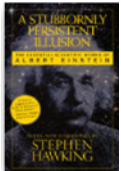


Relation:

Title: Einstein's 1912 manuscript on the special theory of relativity

Relation Type: author

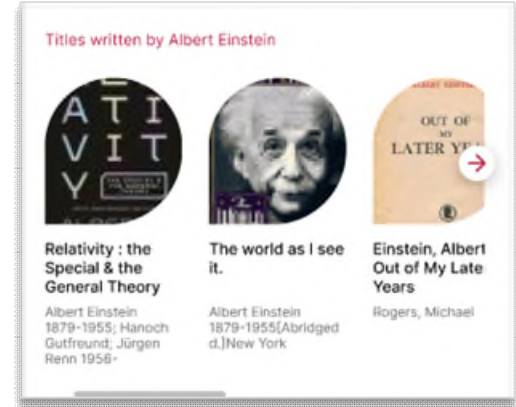
Author



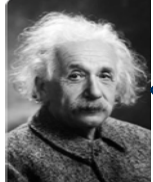
Relation:

Title: A stubbornly persistent illusion: the essential scientific writings of Albert Einstein

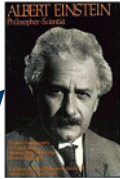
Relation Type: author



Person to Titles - Titles written about Albert Einstein



Albert Einstein



Relation:

Title: Albert Einstein, philosopher-scientist.

Relation Type : subject



Relation:

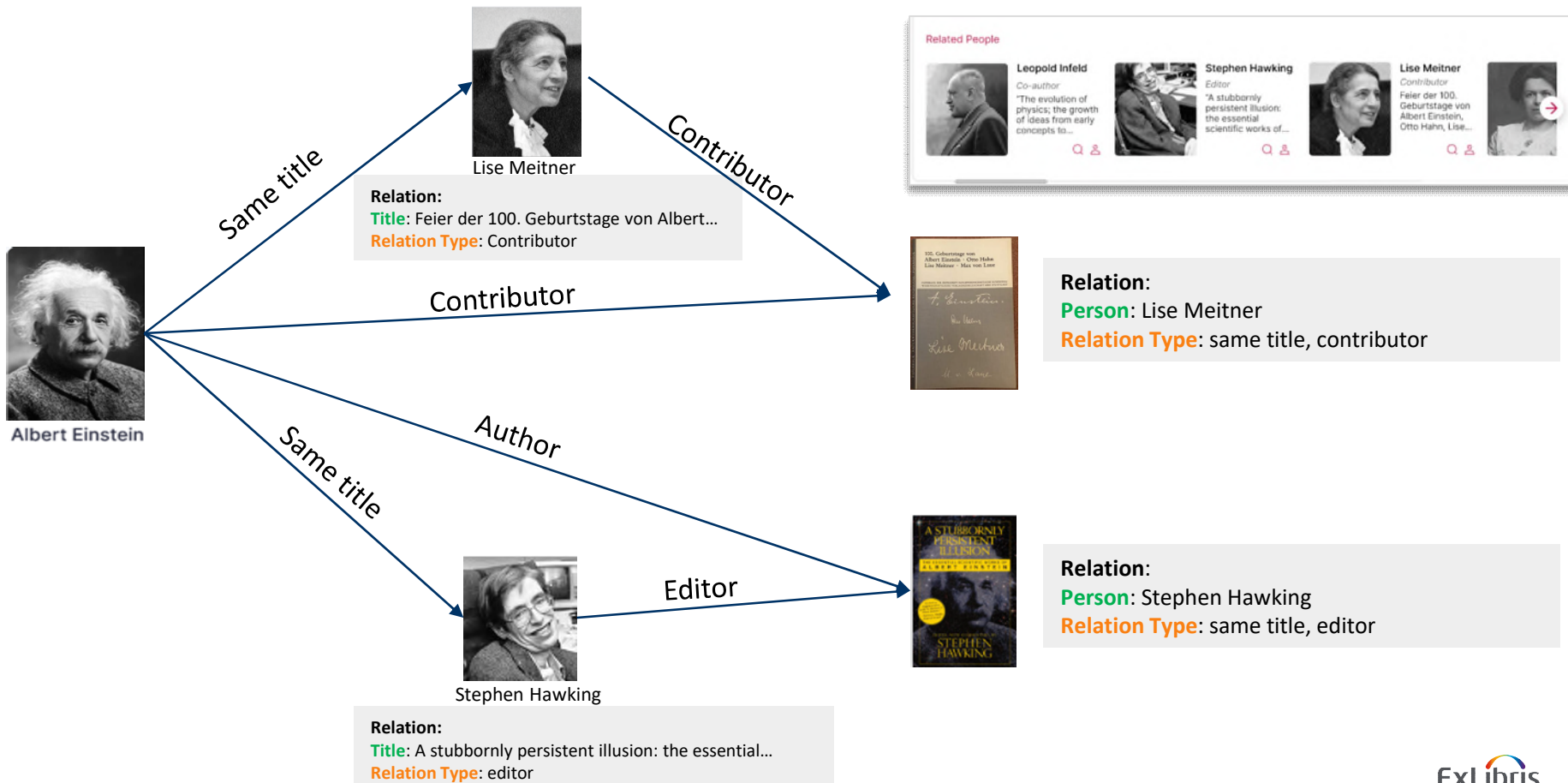
Title: Albert Einstein: "those happy Bernese years".

Relation Type : subject

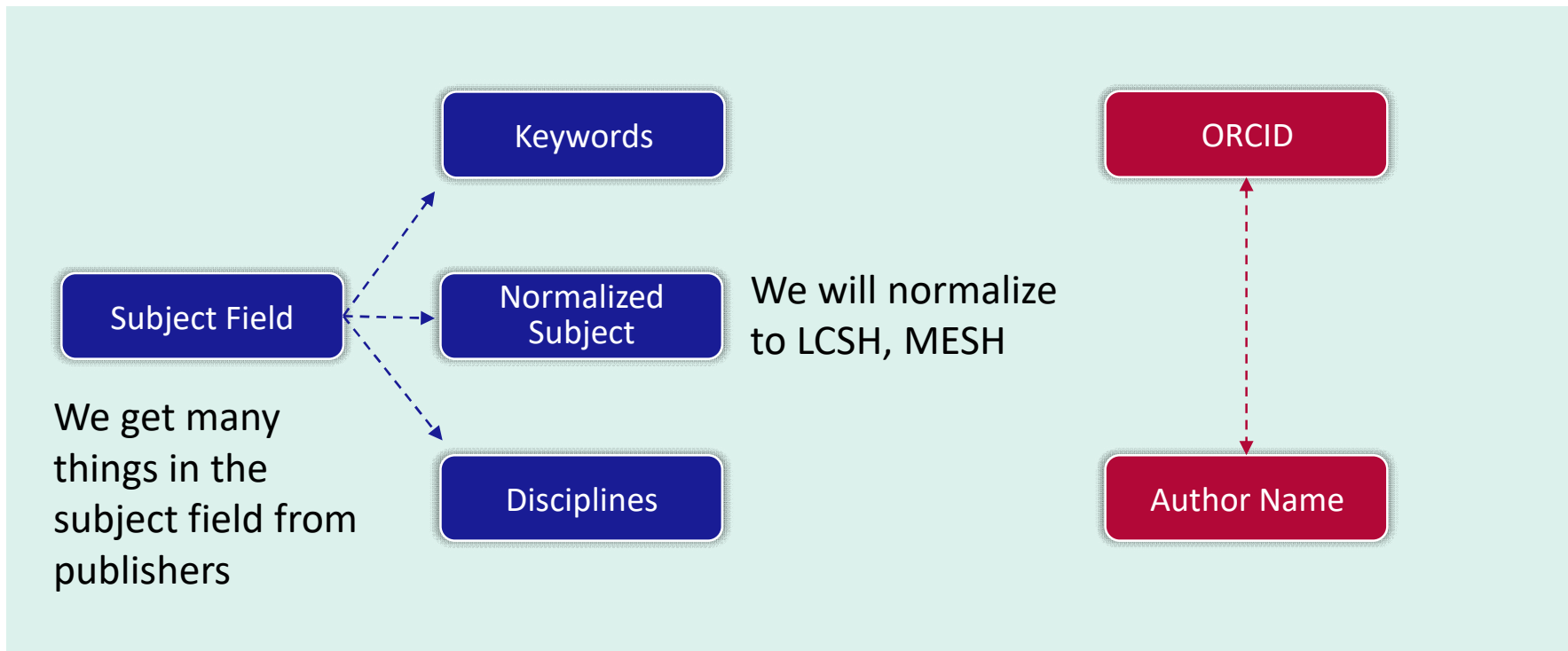
Titles written about Albert Einstein

Annus mirabilis : 1905, Albert Einstein, and the...	Albert Einstein : a biography	Einsteins Akte : Einsteins Jahre in Deutschland aus...
John Gribbin 1946-; Mary ribbin New York : Chamberlain Bros. ©2005	Albrecht Fölsing 1940 New York : Viking 1997	Siegfried Grundmann Berlin : Springer ©1998

Person to Persons - Related People to Albert Einstein



CDI – Data Projects



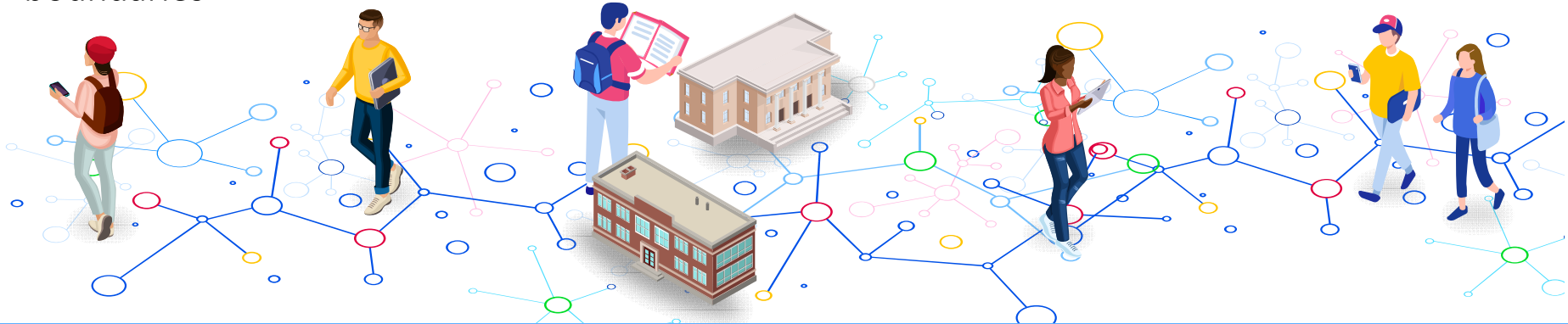
Summary

Libraries are breaking out of their walls and boundaries

The libraries community is designing its future

Ex Libris is working with the community towards a linked future

There's lots you can do already!



Want to hear more? Talk to us!