
Linked Open Data for Beginners

September 11, 2023



Presenters

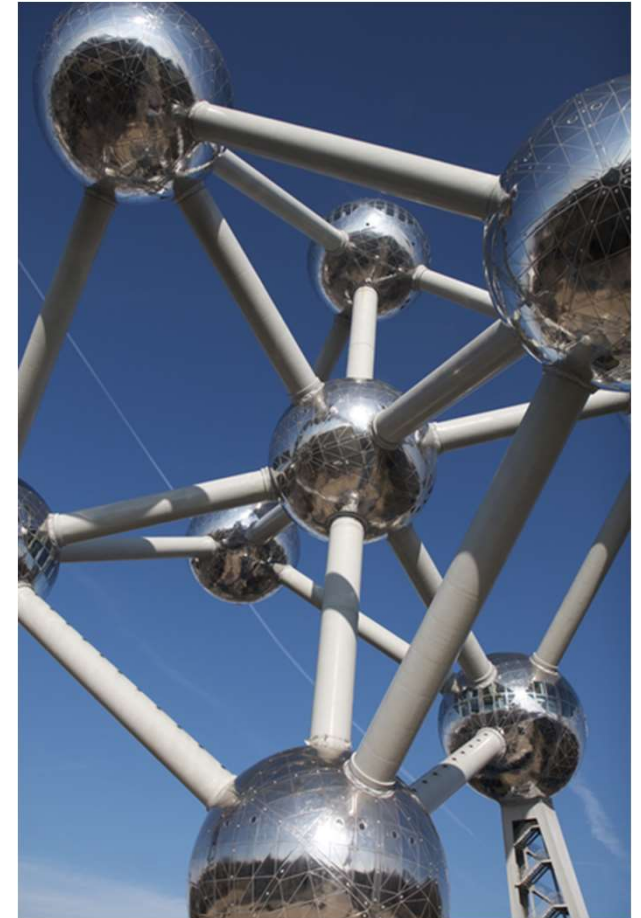
- Catherine Grove, Head of Metadata Services, Northwestern University
- Hans Schürmann, Head Data Management, SLSP (Swiss Library Service Platform)
- Xiaoli Li, Head, Content Support Services, University of California, Davis

Topics

- What is linked data?
- What does linked data look like?
- Linked data implementation
- Other linked data programs at IGeLU
- Q&A

What is Linked Open Data?

- Way to publish and connect structured data
- Sharing and connecting data
- Open = freely used, modified, and shared
- Machine-readable
- Library information becomes discoverable and linkable



<https://commons.wikimedia.org/wiki/File:Atomium.png>

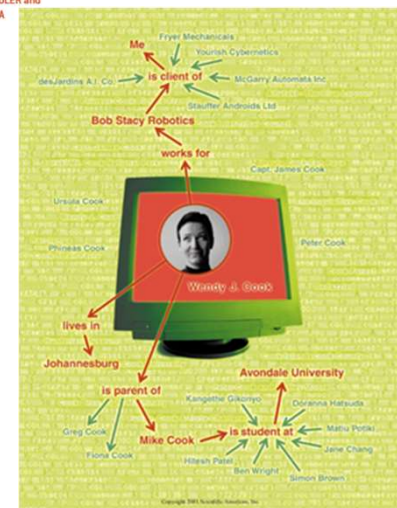
A Few Linked Data Milestones

- 2006 - Tim Berners-Lee coins the term “Linked Data”
- 2008 - Europeana prototype goes live
- 2010 - Linked Data Service of GND prototype starts
- 2011 - *Linked Data and Ex Libris Tools* at IGeLU
 - LOD Special Interest Working Group forms (now LOD [Community of Practice](#))
 - [schema.org](#) launches
- 2012 - Wikidata launches
 - BIBFRAME model is released
- 2016 - Share-VDE begins
- 2023 - Ex Libris Linked Data Focus Group forms

THE SEMANTIC WEB

A new form of Web content that is meaningful to computers will unleash a revolution of new possibilities

by
TIM BERNERS-LEE,
JAMES HENDLER and
DRA LASSILA



May 2001, *Scientific American*

Linked Data Principles

<https://www.w3.org/DesignIssues/LinkedData.html>

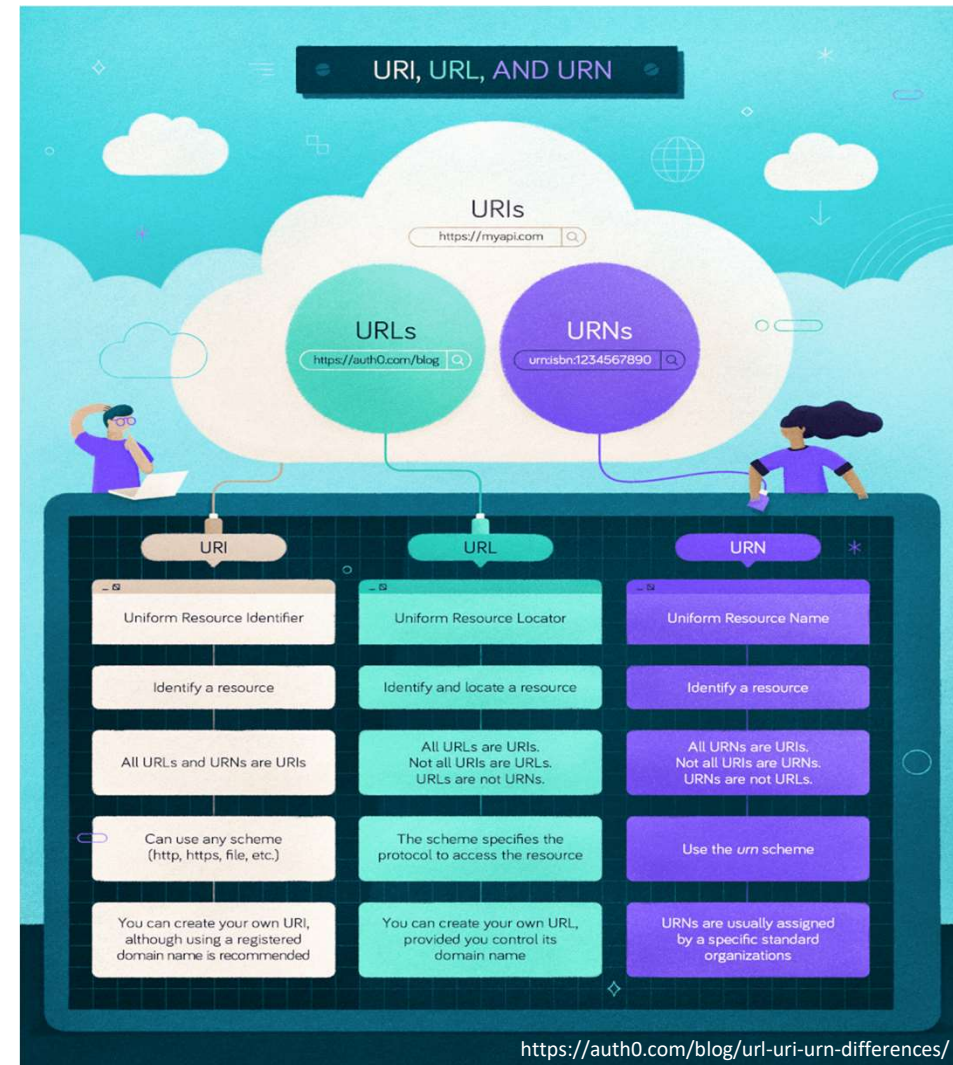
- Use URIs as names for things
- Use HTTP URIs so that people can look up those names
- When someone looks up a URI, provide useful information, using the standards
- Include links to other URIs so that they can discover more things.



https://commons.wikimedia.org/wiki/File:Comic_Mural_Tintin,_Herg%C3%A9,_Brussels.jpg

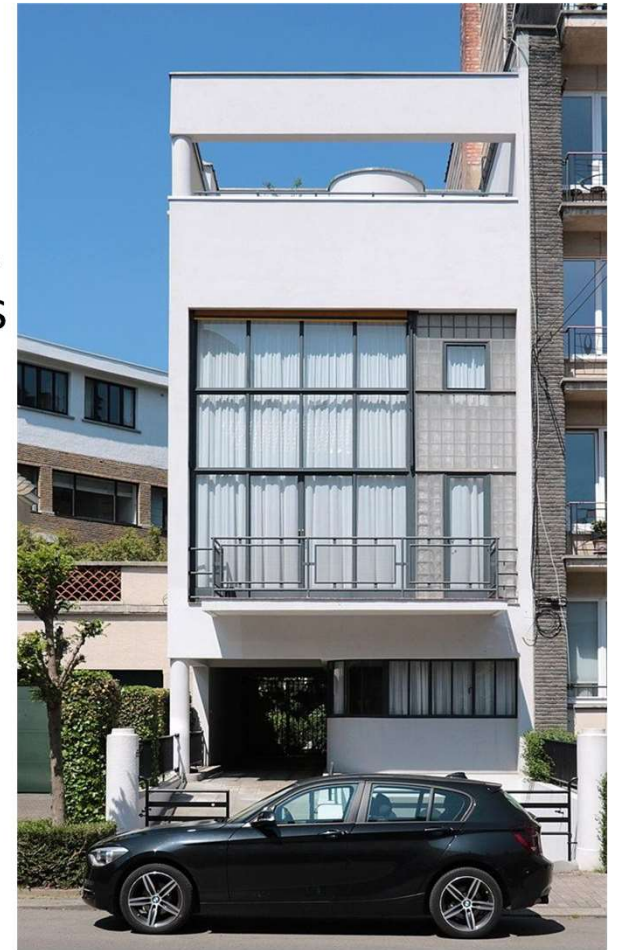
URIs

- URI = Uniform Resource Identifier
 - Identifies a resource
 - URL = Uniform Resource Locator
 - URN = Uniform Resource Name
- IRI = Internationalized Resource Identifier
 - Can contain most characters from the universal character set (UNICODE/ISO 10646)



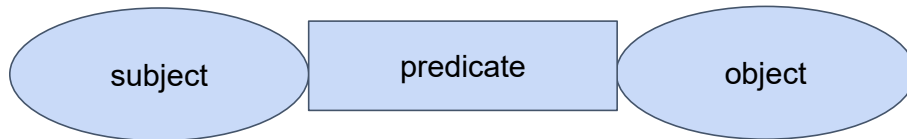
URIs (continued)

- URIs can be resources for people, organizations, buildings, artworks, places, things, and concepts
 - Maison de Verre
<https://www.wikidata.org/wiki/Q109037412>
 - Volume
<http://rdaregistry.info/termList/RDACarrierType/1049>
- Multiple URIs can identify the same resource
 - Chantal Akerman
<http://viaf.org/viaf/49220690>
<https://www.wikidata.org/wiki/Q239823>



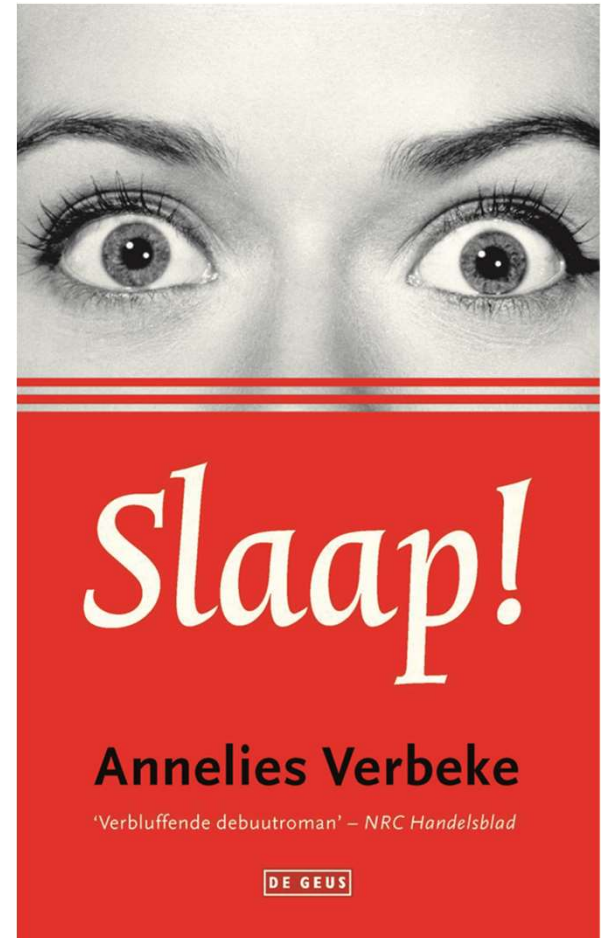
RDF and SPARQL

- RDF = Resource Description Framework
 - Standard model for expressing relationships
 - Computers use these structured relationships



<the book> <has the author><Annelies Verbeke>

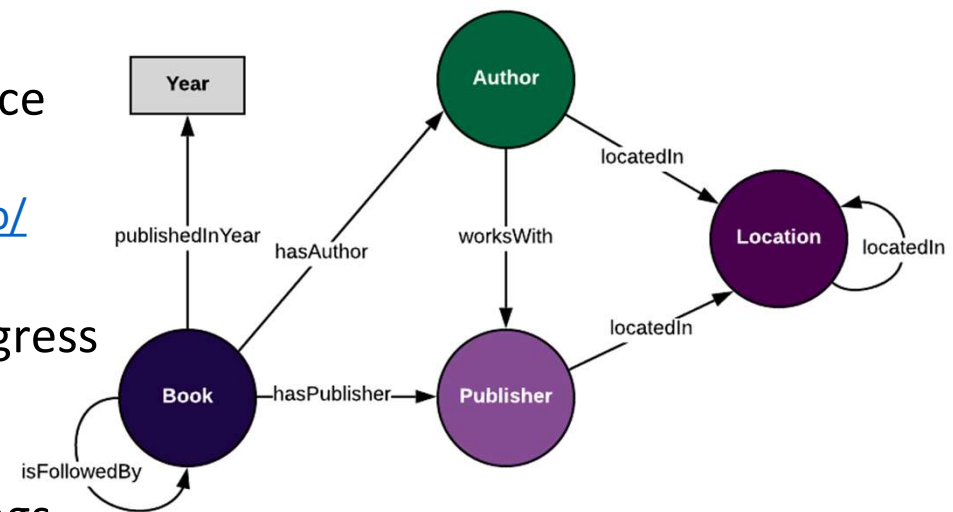
- SPARQL
 - Standard to query and extract data from RDF
 - SPARQL endpoints



<https://www.singeluitgeverijen.nl/de-geus/boek/slaap/>

Ontologies: a selection

- RDA/RDF
 - Aligned with the IFLA Library Reference Model (LRM)
 - RDA registry <https://www.rdaregistry.info/>
- BIBFRAME
 - Developed by the U.S. Library of Congress
 - Uses RDF modeling
- schema.org
 - Can be used with a variety of encodings



<https://enterprise-knowledge.com/wp-content/uploads/2020/01/Ontology-Ontology.png>

Editors: a selection

- Bibliographic description
 - Sinopia
 - MARVA
- Entities
 - OCLC Meridian
 - Share-VDE JCricket
 - Wikidata

The screenshot shows a web-based editor interface for a bibliographic record. The main content area is titled "Work" and contains several sections:

- Creator of Work:** A dropdown menu set to "Person" with search fields for LONAP (showing "Williams, Catherine M. | change | x") and MARC relator terms (showing "Contributor | x").
- Title Information:** A dropdown menu set to "Work Title" with a "Preferred Title for Work" field containing "History of the Davidson Ditch, north of Fairbanks, Alaska". Below are fields for "Part number" and "Part name".
- Form/Genre:** A "SEARCH LOOPT" field and a "Thesaurus (if not LOOPT)" field.
- Government publication:** An empty text field.
- Date of Work:** An empty text field.

On the right side, there is a sidebar with "Title Information" and "Other contributors". The "Title Information" section includes "Creator of Work: Williams, Catherine M. Contributor" and "History of the Davidson Ditch, north of Fairbanks, Alaska". The "Other contributors" section lists "Reuther, Joshua D. Contributor", "Northern Land Use Research, Inc. Contributor", and "Fairbanks Gold Mining, Inc. Contributor". Below this, there are "Subject of the Work" entries: "Fairbanks Region (Alaska)-History. LCSH", "Fairbanks Region (Alaska) History", "fairbanksregion(alaska)history", "Gold mines and mining-Alaska-Fairbanks Region-History. LCSH", "Gold mines and mining Alaska", "Fairbanks Region History", "goldminesandminingalaskafairbanksregionhistory", "Gold dredging-Alaska-Fairbanks Region-History. LCSH", "Gold dredging Alaska", "Fairbanks Region History", "golddredgingalaskafairbanksregionhistory", and "Ditches-Alaska-Fairbanks Region. LCSH".

What does linked data look like?

ETH zürich

ETH Library @ swisscovery

New Search Help Journal Search Interlibrary Loan ETH Library

The screenshot shows the ETH Library search interface. The search bar contains the query "andreas b kilcher max frisch" and the filter "swisscovery without CDI". The search results are displayed in a list format. The first result is a book titled "Max Frisch" by Kilcher, Andreas B, published in 2011. The second result is an article titled "Bilderangst und Fabulierlust : Poetik, Politik und Anthropologie des Erzählens gemäss Max Frisch" by Kilcher, Andreas B, published in 2012. The third result is an article titled "Stillers Bibliothek : Frischs Poetik der Reproduktion". The interface includes a sidebar for filtering results by resource type, year, and library, and a top navigation bar with various search options.

andreas b kilcher max frisch

swisscovery without CDI

All Books Journals Maps Databases Images Films More

Tweak your results

Sort by Relevance

Show only Available in swisscovery libraries

Resource Type Articles (4) Books (2)

Year From 2011 To 2014 Refine

Libraries ETH Zurich ETH Bibliothek (3) ETH Thomas-Mann-Archiv (1)

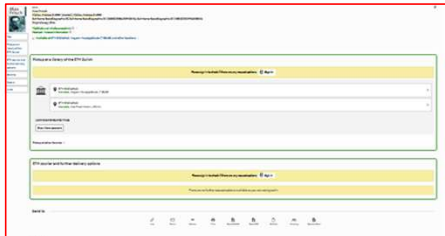
0 selected 1-6 of 6 results

1 **Max Frisch** BOOK
Max Frisch
Kilcher, Andreas B 1963- (creator); Kilcher, Andreas B 1963-
Suhrkamp BasisBiographie 50; Suhrkamp BasisBiographie 50 (IDSBB)003615034DSV01; Suhrkamp BasisBiographie 50 (NEBIS)005040135EBI01
Originalausg.; 2011
Available at ETH Bibliothek Magazin Hauptgebäude (T 38136) and other locations

2 **Bilderangst und Fabulierlust : Poetik, Politik und Anthropologie des Erzählens gemäss Max Frisch** ARTICLE
Kilcher, Andreas B 1963-
"Man will werden, nicht gewesen sein"; 2012 S. 165-183
2012
Available at ETH Bibliothek Max Frisch-Archiv (MFL-Mül-Nie)

3 **Stillers Bibliothek : Frischs Poetik der Reproduktion** ARTICLE

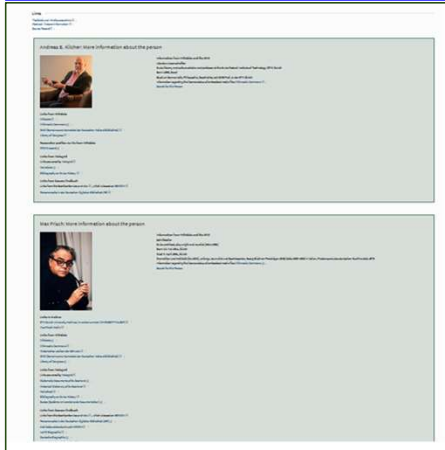
What does linked data look like?



short resource description



metadata details



LOD information

What does linked data look like?

Top	Details
Pickup at a library of the ETH Zurich	Title Max Frisch
ETH courier and further delivery options	Attribution von Andreas B. Kilcher
Send to	Publication Berlin : Suhrkamp
Details	Edition, date Originalausg. 2011
Links	Format 158 S. : Ill. ; 19 cm
	Language German
	Series Suhrkamp BasisBiographie 50 > Suhrkamp BasisBiographie 50 (IDSBB)003615034DSV01 > Suhrkamp BasisBiographie 50 (NEBIS)005040135EBI01 >
	Subject Authors, Swiss -- 20th century > BIOGRAPHIEN (LEBEN UND WERK) > DEUTSCHSPRACHIGE SCHWEIZER LITERATUR > Frisch, Max > Frisch, Max 1911-1991 > Frisch, Max 1911-1991 -- Criticism and interpretation > Interpretation > ZWANZIGSTES JAHRHUNDERT N. CHR >
	Classifications 838.91209 (Dewey) 830 (Dewey) GN 4602 (RVK)
	Publication form Biography > Biographie > Biografie >
	Identifier ISBN : 9783518182505
	Author Kilcher, Andreas B 1963- (creator) > Kilcher, Andreas B 1963- >
	Display in the GND Kilcher, Andreas B. 1963- Search for this Person Frisch, Max 1911-1991 Search for this Person Interpretation
	Display in IdRef Kilcher, Andreas B. 1963-.... Frisch, Max 1911-1991

Andreas B. Kilcher: More information about the person



Information from Wikidata and the GND

Literaturwissenschaftler
Swiss literary and culture scholar and professor at the Swiss Federal Institute of Technology (ETH) Zurich
Born: 1963, Basel
Studium Germanistik, Philosophie, Geschichte; seit 2008 Prof. an der ETH Zürich
Information regarding the license status of embedded media files [Wikimedia Commons](#) .
[Search for this Person](#)

Links from Wikidata

[Wikidata](#) >
[Wikimedia Commons](#) >
[GND \(Gemeinsame Normdatei der Deutschen Nationalbibliothek\)](#) >
[Library of Congress](#) >

Researcher profiles via IDs from Wikidata

[ORCID record](#) >

Links from Metagrid

[Links powered by Metagrid](#)
[Helvetica](#) >
[Bibliography on Swiss History](#) >


Links from beacon.findbuch

[Links from the SeeAlso-Service pnd-aks](#) , which is based on [BEACON](#)
[Personenseite in der Deutschen Digitalen Bibliothek \(49\)](#) >

What does linked data look like?

Top	Details
Pickup at a library of the ETH Zurich	Title Max Frisch
ETH courier and further delivery options	Attribution von Andreas B. Kilcher
Send to	Publication Berlin : Suhrkamp
Details	Edition, date Originalausg. 2011
Links	Format 158 S. : Ill. ; 19 cm
	Language German
	Series Suhrkamp BasisBiographie 50 > Suhrkamp BasisBiographie 50 (IDSBB)003615034DSV01 > Suhrkamp BasisBiographie 50 (NEBIS)005040135EBI01 >
	Subject Authors, Swiss -- 20th century > BIOGRAPHIEN (LEBEN UND WERK) > DEUTSCHSPRACHIGE SCHWEIZER LITERATUR > Frisch, Max > Frisch, Max 1911-1991 > Frisch, Max 1911-1991 -- Criticism and interpretation > Interpretation > ZWANZIGSTES JAHRHUNDERT N. CHR. >
	Classifications 838.91209 (Dewey) 830 (Dewey) GN 4602 (RVK)
	Publication form Biography > Biographie > Biografie >
	Identifier ISBN : 9783518182505
	Author Kilcher, Andreas B 1963- (creator) > Kilcher, Andreas B 1963- >
	Display in the GND Kilcher, Andreas B. 1963- <input type="button" value="Search for this Person"/> Frisch, Max 1911-1991 <input type="button" value="Search for this Person"/> Interpretation
	Display in IdRef Kilcher, Andreas B. 1963-..... Frisch, Max 1911-1991

Max Frisch: More information about the person



Information from Wikidata and the GND

Schriftsteller
Swiss architect, playwright and novelist (1911-1991)
Born: 15. Mai 1911, Zürich
Died: 4. April 1991, Zürich
Dramatiker und Architekt (bis 1955), anfangs Journalist und Sportreporter, Georg-Büchner-Preisträger 1958; lebte 1960-1965 in Italien, Friedenspreis des deutschen Buchhandels 1976
Information regarding the license status of embedded media files Wikimedia Commons [↗](#).
[Search for this Person](#)

Links in Archive
[ETH Zurich University Archives \(Inventarnummer: CH-001807-746 804\) ↗](#)
[Max Frisch Archiv ↗](#)


Links from Wikidata
[Wikidata ↗](#)
[Wikimedia Commons ↗](#)
[Historisches Lexikon der Schweiz ↗](#)
[GND \(Gemeinsame Normdatei der Deutschen Nationalbibliothek\) ↗](#)
[Library of Congress ↗](#)

Links from Metagrid
[Links powered by Metagrid ↗](#)
[Diplomatic Documents of Switzerland ↗](#)
[Historical Dictionary of Switzerland ↗](#)
[Helvetica ↗](#)
[Bibliography on Swiss History ↗](#)
[Sudoc \(Système Universitaire de Documentation\) ↗](#)

Links from beacon.findbuch
[Links from the SeeAlso-Service pnd-aks ↗, which is based on BEACON ↗](#)
[Personenseite in der Deutschen Digitalen Bibliothek \(194\) ↗](#)
[Architekturdatenbank archINFORM ↗](#)
[LeMO Biographie ↗](#)
[Deutsche Biographie ↗](#)
[Internet Movie Database \(IMDb\) ↗](#)
[Theaterlexikon der Schweiz ↗](#)

What does linked data look like?

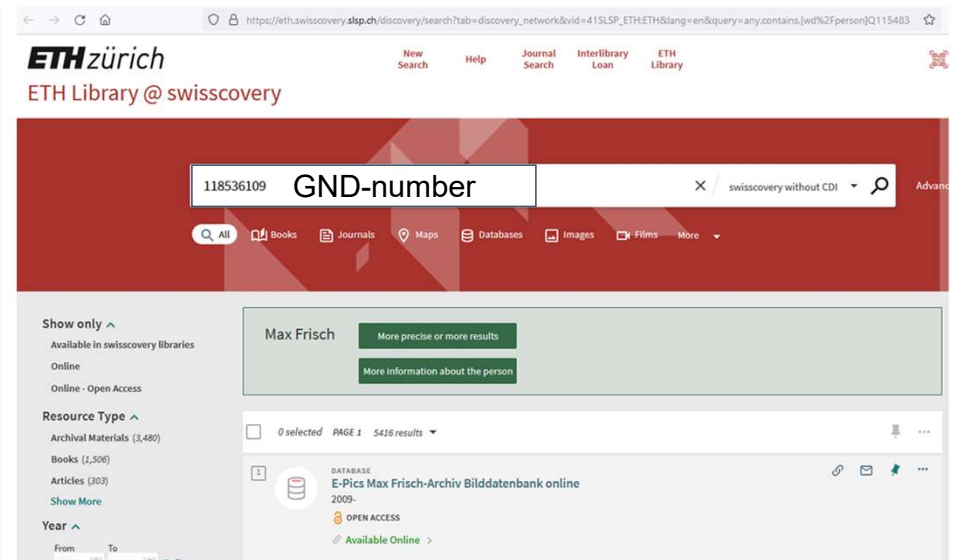
Max Frisch: More information about the person



Information from Wikidata and the GND
Schriftsteller
Swiss architect, playwright and novelist (1911-1991)
Born: 15. Mai 1911, Zürich
Died: 4. April 1991, Zürich
Dramatiker und Architekt (bis 1955), anfangs Journalist und Sportreporter, Georg-Büchner-Preis 1960-1965 in Italien, Friedenspreis des deutschen Buchhandels 1976
Information regarding the license status of embedded media files [Wikimedia Commons](#) .
[Search for this Person](#)

Links in Archive
[ETH Zurich University Archives \(Inventarnummer: CH-001807-7:Hs 804\)](#) >
[Max Frisch Archiv](#) >

Links from Wikidata
[Wikidata](#) >
[Wikimedia Commons](#) >
[Historisches Lexikon der Schweiz](#) >
[GND \(Gemeinsame Normdatei der Deutschen Nationalbibliothek\)](#) >
[Library of Congress](#) >



ETH zürich
ETH Library @ swisscovery

118536109 GND-number

Max Frisch

More precise or more results

More information about the person

0 selected PAGE 1 5418 results

DATABASE
E-Pics Max Frisch-Archiv Bilddatenbank online
2009-
OPEN ACCESS
Available Online >

[https://eth.swisscovery.slsp.ch/discovery/search?tab=discovery_network&vid=41SLSP_ETH:ETH&lang=en&query=any,contains,\[wd%2Fperson\]Q115483](https://eth.swisscovery.slsp.ch/discovery/search?tab=discovery_network&vid=41SLSP_ETH:ETH&lang=en&query=any,contains,[wd%2Fperson]Q115483)

What does linked data look like?

← → ↻ 🏠 <https://www.wikidata.org/wiki/Q115483>

WIKIDATA

Item **Discussion**

Max Frisch (Q115483)

Swiss architect, playwright and novelist (1911-1991) [✎ edit](#)
Max Rudolf Frisch

▼ In more languages
Configure


Language	Label	Description	Also known as
English	Max Frisch	Swiss architect, playwright and novelist (1911-1991)	Max Rudolf Frisch
German	Max Frisch	Schweizer Architekt und Schriftsteller (1911-1991)	
Alemannic	Max Frisch	No description defined	
French	Max Frisch	architecte et écrivain suisse	Max Frish

All entered languages

Statements

Instance of human [✎ edit](#)
+ 2 references [+ add value](#)

image [✎ edit](#)



ETH-BIB-Max Frisch-Com C20-015-023-001.tif
3,213 × 4,837, 2 pages, 44.63 MB

← → ↻ 🏠 https://commons.wikimedia.org/wiki/File:ETH-BIB-Max_Frisch-Com_C20-015-023-001.tif


WIKIMEDIA COMMONS

File **Discussion**

File:ETH-BIB-Max Frisch-Com C20-015-023-001.tif

From Wikimedia Commons, the free media repository

File File history File us



Size of this [JPG preview](#) of this TIF file: 398 × 599 pixels. Other resolutions: 159 × 240 pixels | 319 × 480 pixels | 510 × 768 pixels | 680 × 1,024 pixels | 1,360 × 2,048 pixels | 3,213 × 4,837 pixels.
Original file (3,213 × 4,837 pixels, file size: 44.63 MB, MIME type: image/tiff, 2 pages)

Main page
Welcome
Community portal
Village pump
Help center

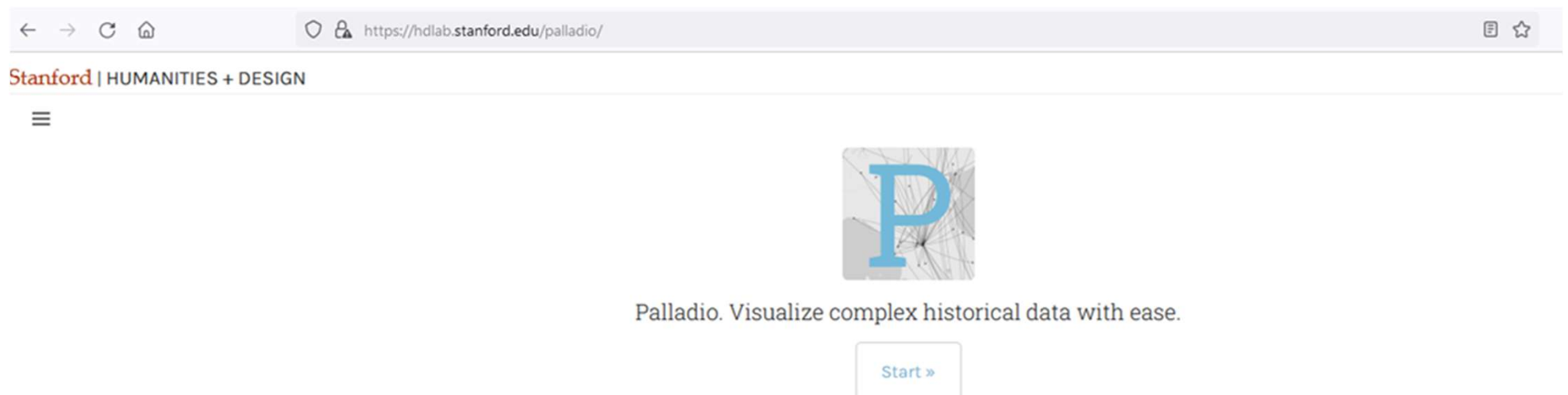
Sprachauswahl
English

Participate
Upload file
Recent changes
Latest files
Random file
Contact us

Tools
What links here
Related changes
Special pages
Permanent link
Page information
Concept URI
Cite this page
Nominate for deletion

Print/export
Download as PDF
Printable version

What does linked data look like?



The screenshot shows a web browser window with the address bar displaying `https://hdlab.stanford.edu/palladio/`. Below the address bar, the text "Stanford | HUMANITIES + DESIGN" is visible. A hamburger menu icon is located on the left side. The main content area features a large blue letter "P" overlaid on a network graph visualization. Below this graphic, the text "Palladio. Visualize complex historical data with ease." is displayed, followed by a button labeled "Start »".

What does linked data look like?

Create or Open Palladio projects

Copy and paste out of your spreadsheets, drag-and-drop to upload tabular data (e.g. .csv, .tab, .tsv), or link to a file in a public Dropbox folder to create a new Palladio project.

Create a new project
Load an existing project

Create a new Palladio project by uploading your data from a spreadsheet or flat-file, or load data from a SPARQL endpoint. [Not sure how Palladio works?](#)

Load .csv or spreadsheet

Copy and paste out of your spreadsheets, drag-and-drop to upload tabular data (e.g. .csv, .tab, .tsv), or link to a file in a public Dropbox folder to create a new Palladio project. [Not sure how to structure your data?](#)

```
197 Trebsen 51.2843847,12.7576824
198 Treviso 45.6669811,12.243839
199 Udine 46.0710668,13.2345794
200 Ule 48.4, 9.983333
201 Urbiana 43.6677728,12.5206526
202 Urbino 43.7262567,12.6365633
203 Utrecht 52.09179, 5.1145699
204 Valleggio 45.3546919,10.7343791
205 Venice 45.4488474,12.3155151
206 Venloo 51.8167566,4.6641023
207 Verce111 45.3202272,8.4185735
```

Load

More than one table? No problem! If you have more than one table, start by uploading your primary table. The primary table should contain the main entities you want to visualize. It could be a collection of objects, like persons or letters, or more abstract concepts, like relationships or flows. Once you have uploaded your primary table, you will be able to extend it with additional information from other tables.

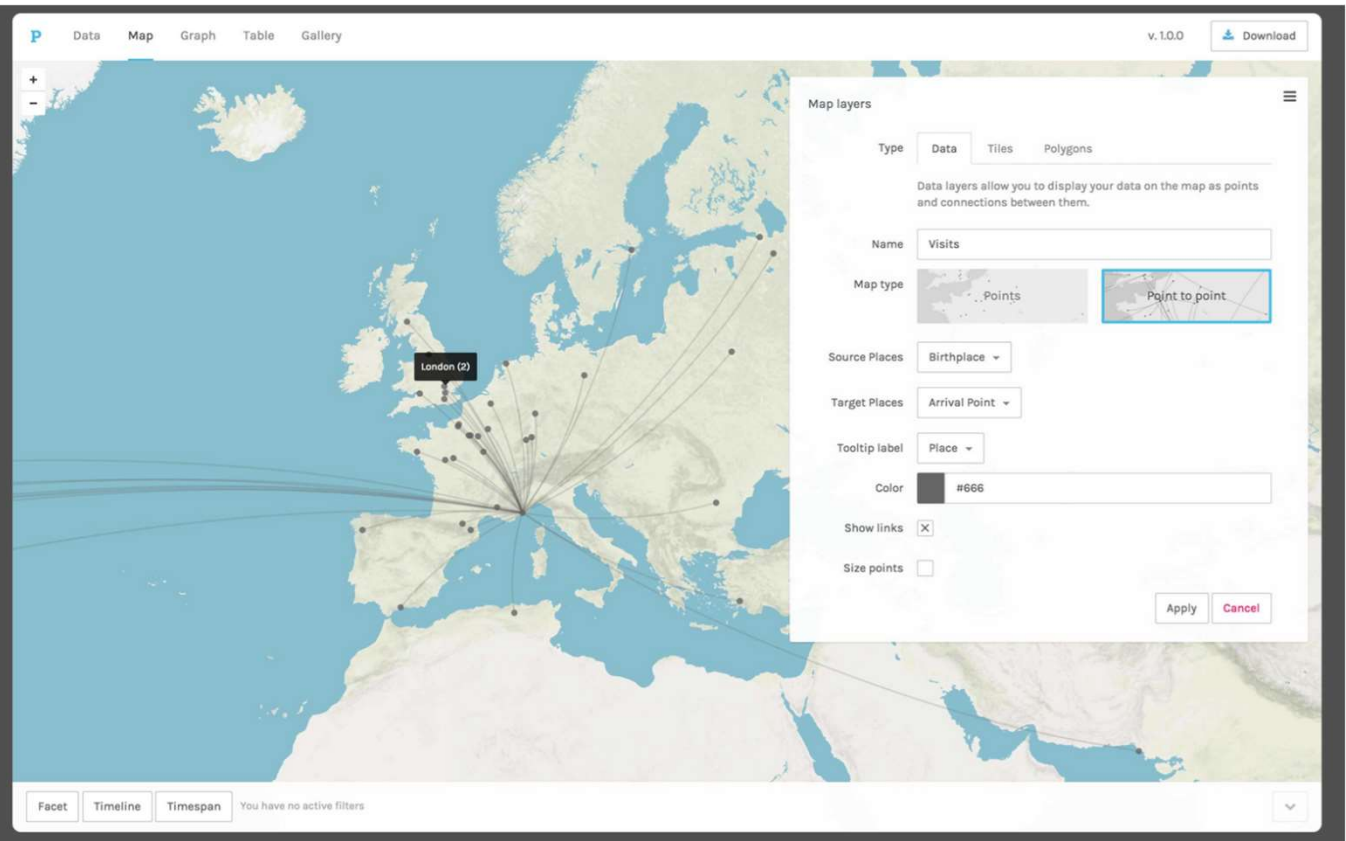
[Load data from a SPARQL endpoint \(beta\)](#)

What does linked data look like?

Visualize your data

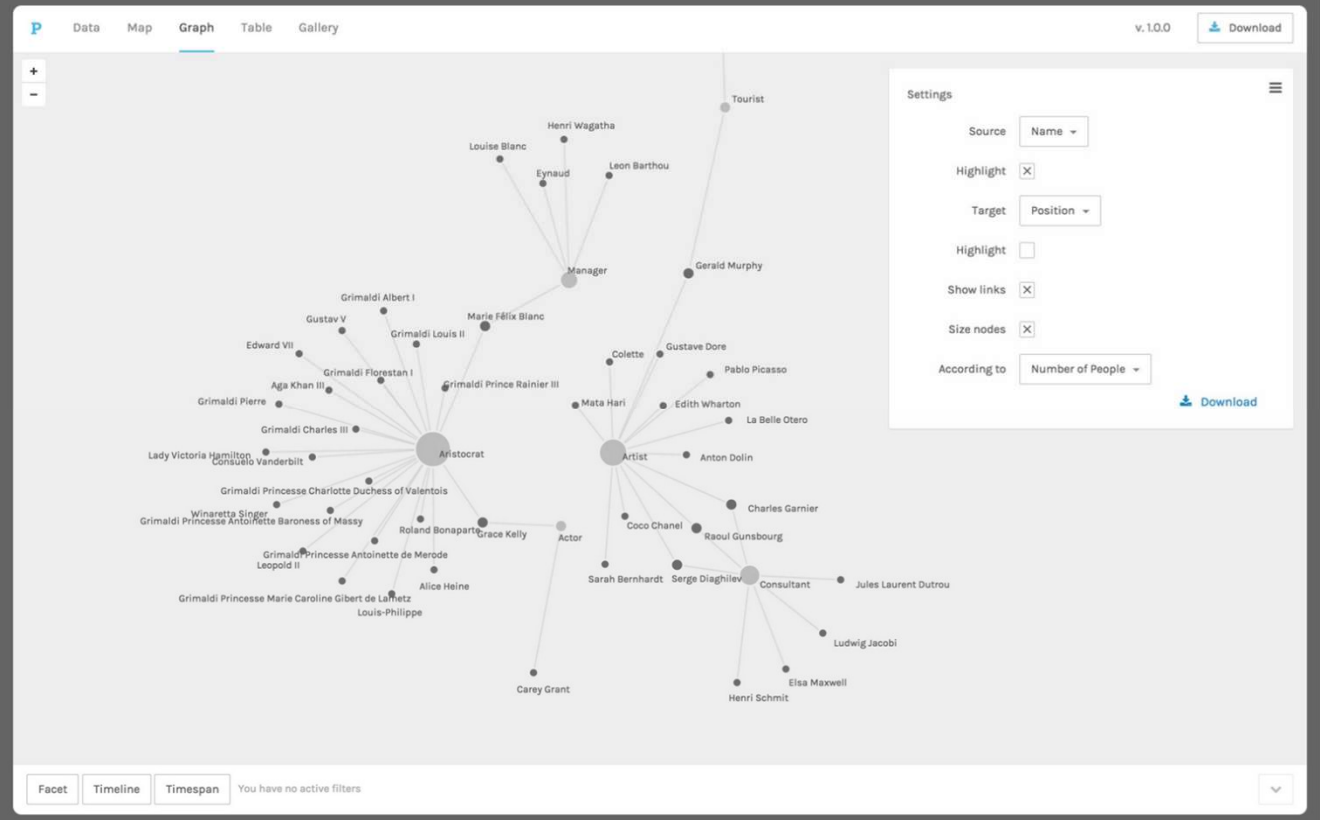
In the Map view, you can see any coordinates data as points on a map. Relationships between distinct points can be connected by lines, with the arc of the line representing the flow of the relationship.

Points on the map can be sized to represent their relative magnitude within your data. With the map's tooltip function you can select which information will be displayed when hovering over a specific point on the map. Zoom in and out using the + and - buttons. Export the nodes and links of Map visualizations (though not the Map background itself) as .svg files.



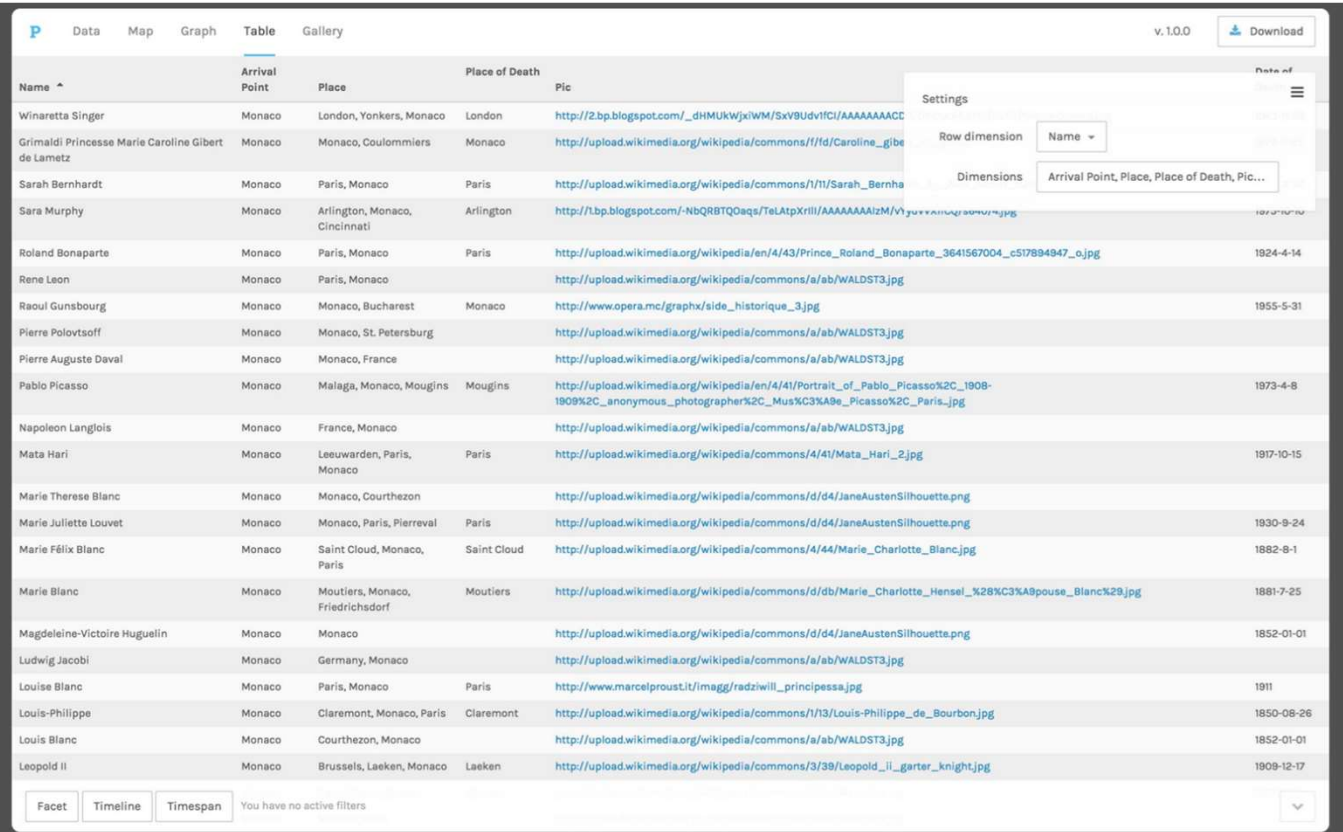
What does linked data look like?

In the Graph view, you can visualize the relationships between any two dimensions of your data. Graph information will be displayed as nodes connected by lines. Nodes can be scaled to reflect their relative magnitude within your data. The display of links and labels can be toggled on and off. Export Graph visualizations as .svg files.



What does linked data look like?

In the List view, dimensions of your data can be arranged to make customized lists. Export List visualizations as .csv files.



Name	Arrival Point	Place	Place of Death	Pic	Date of Birth	Date of Death
Winaretta Singer	Monaco	London, Yonkers, Monaco	London	http://2.bp.blogspot.com/_dHMukWjxiWM/SxV9Udv1FCI/AAAAAAAAACC		
Grimaldi Princesse Marie Caroline Gilbert de Lametz	Monaco	Monaco, Coulommiers	Monaco	http://upload.wikimedia.org/wikipedia/commons/f/fd/Caroline_gibe		
Sarah Bernhardt	Monaco	Paris, Monaco	Paris	http://upload.wikimedia.org/wikipedia/commons/f/f1/Sarah_Bernha		
Sara Murphy	Monaco	Arlington, Monaco, Cincinnati	Arlington	http://1.bp.blogspot.com/-NbQRBtQ0aqs/TelAtpxXrII/AAAAAAAAAizM/vYy...		
Roland Bonaparte	Monaco	Paris, Monaco	Paris	http://upload.wikimedia.org/wikipedia/en/4/43/Prince_Roland_Bonaparte_3641567004_c517894947_o.jpg	1924-4-14	
Rene Leon	Monaco	Paris, Monaco		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		
Raoul Gunsbourg	Monaco	Monaco, Bucharest	Monaco	http://www.opera.mc/graphx/side_historique_3.jpg		1955-5-31
Pierre Polovtsoff	Monaco	Monaco, St. Petersburg		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		
Pierre Auguste Daval	Monaco	Monaco, France		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		
Pablo Picasso	Monaco	Malaga, Monaco, Mougins	Mougins	http://upload.wikimedia.org/wikipedia/en/4/41/Portrait_of_Pablo_Picasso%2C_1908-1909%2C_anonymous_photographer%2C_Mus%C3%A9e_Picasso%2C_Paris_--jpg	1973-4-8	
Napoleon Langlois	Monaco	France, Monaco		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		
Mata Hari	Monaco	Leeuwarden, Paris, Monaco	Paris	http://upload.wikimedia.org/wikipedia/commons/4/41/Mata_Hari_2.jpg		1917-10-15
Marie Therese Blanc	Monaco	Monaco, Courthezon		http://upload.wikimedia.org/wikipedia/commons/d/d4/JaneAustenSilhouette.png		
Marie Juliette Louvet	Monaco	Monaco, Paris, Pierrefeu	Paris	http://upload.wikimedia.org/wikipedia/commons/d/d4/JaneAustenSilhouette.png		1930-9-24
Marie Félix Blanc	Monaco	Saint Cloud, Monaco, Paris	Saint Cloud	http://upload.wikimedia.org/wikipedia/commons/4/44/Marie_Charlotte_Blanc.jpg		1882-9-1
Marie Blanc	Monaco	Moutiers, Monaco, Friedrichsdorf	Moutiers	http://upload.wikimedia.org/wikipedia/commons/d/db/Marie_Charlotte_Hensel_%28%C3%ABpouse_Blanc%29.jpg		1881-7-25
Magdeleine-Victoire Huguelin	Monaco	Monaco		http://upload.wikimedia.org/wikipedia/commons/d/d4/JaneAustenSilhouette.png		1852-01-01
Ludwig Jacobi	Monaco	Germany, Monaco		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		
Louise Blanc	Monaco	Paris, Monaco	Paris	http://www.marcelproust.it/magg/radziwill_principessa.jpg		1911
Louis-Philippe	Monaco	Claremont, Monaco, Paris	Claremont	http://upload.wikimedia.org/wikipedia/commons/f/f3/Louis-Philippe_de_Bourbon.jpg	1850-08-26	
Louis Blanc	Monaco	Courthezon, Monaco		http://upload.wikimedia.org/wikipedia/commons/a/ab/WALDST3.jpg		1852-01-01
Leopold II	Monaco	Brussels, Laeken, Monaco	Laeken	http://upload.wikimedia.org/wikipedia/commons/3/39/Leopold_ii_garter_knight.jpg		1909-12-17

What does linked data look like?

In the Gallery view, data can be displayed within a grid setting for quick reference. Here dimensions of your data can also be linked to outside web-based information. Sort your data according to different dimensions.

The screenshot shows a web application interface with a navigation bar at the top containing 'Data', 'Map', 'Graph', 'Table', and 'Gallery' (which is selected). In the top right corner, there is a version number 'v. 1.0.0' and a 'Download' button. The main content area is a grid of 20 cards, each featuring a portrait of a historical figure, their name, profession, and a 'Select a text dimension' link. The figures are: Grimaldi Princesse Marie Caroline Gibert de Lametz (Aristocrat), Aga Khan III (Aristocrat), Albert Aubert (Financier), Alice Heine (Aristocrat), Anton Dolin (Artist), Antony Noghes (Monegasque), Basil Zaharoff (Financier), Camille Blanc (Financier), Carey Grant (Actor), Charles Garnier (Artist), Charles Wells (Gambler), Claude Blanc (Gambler), Coco Chanel (Artist), Colette (Artist), Constantin Radziwill (Financier), Consuelo Vanderbilt (Aristocrat), Duc de Valmy (Financier), Edith Wharton (Artist), Edmond Blanc (Financier), and Edward VII (Aristocrat). At the bottom left, there are buttons for 'Facet', 'Timeline', and 'Timespan', with the text 'You have no active filters' to the right. A small dropdown arrow is visible in the bottom right corner.

What does linked data look like?

← → ↻ 🏠 <https://hdlab.stanford.edu/palladio-app/#/upload> 100% ☆

P

Create a new project
Load an existing project
Try with sample data

Create a new Palladio project by uploading your data from a spreadsheet or flat-file, or load data from a SPARQL endpoint. [Not sure how Palladio works?](#)

Load .csv or spreadsheet
Copy and paste out of your spreadsheets, drag-and-drop to upload tabular data (e.g. .csv, .tab, .tsv), or enter a [URL to a tabular data file](#) to create a new Palladio project. [Not sure how to structure your data?](#)

1

Load

More than one table? No problem! If you have more than one table, start by uploading your primary table. The primary table should contain the main entities you want to visualize. It could be a collection of objects, like persons or letters, or more abstract concepts, like relationships or flows. Once you have uploaded your primary table, you will be able to extend it with additional information from other tables.

[Load data from a SPARQL endpoint \(beta\)](#)

Linked data implementation



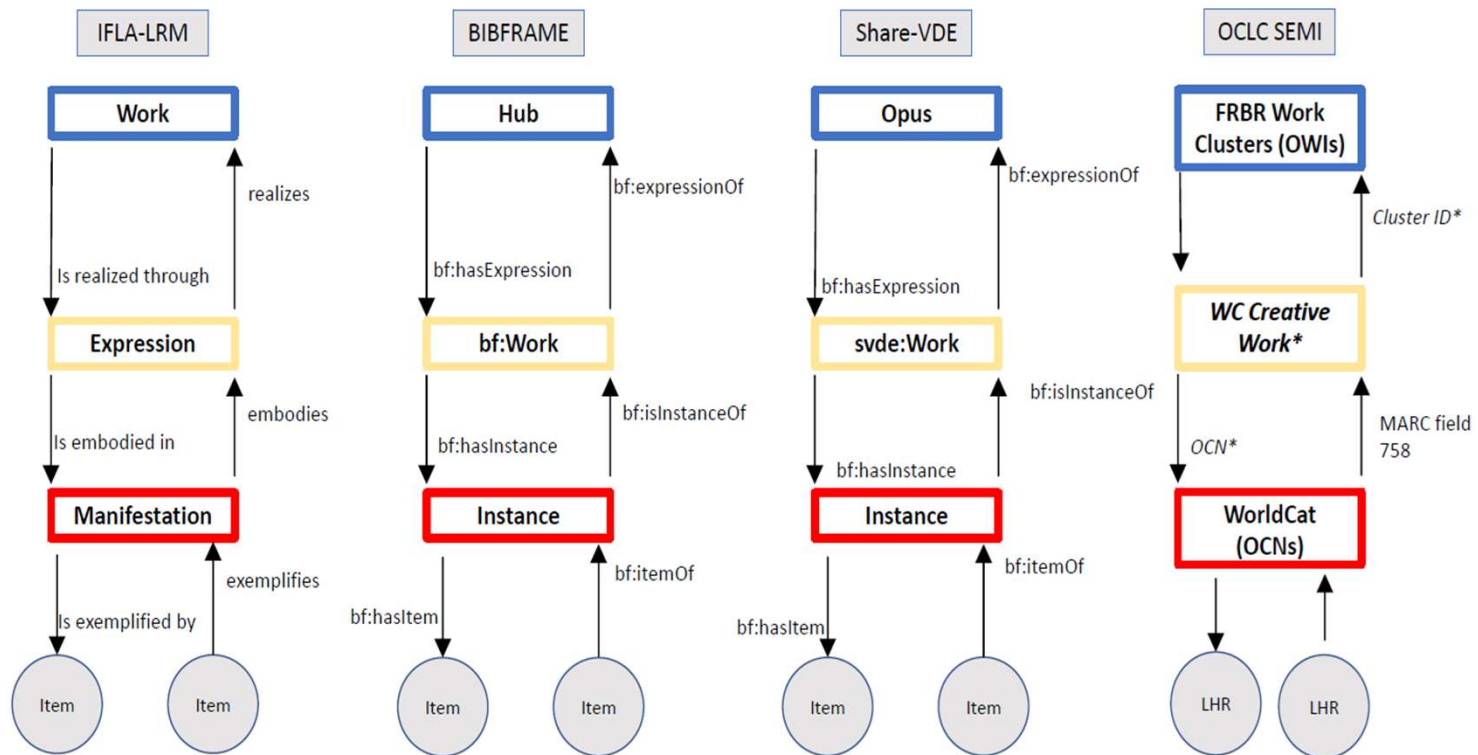
- Lack of the ontology/data model that the entire library community can agreed upon
- Difficulty with converting MARC records
- Lack of tools supporting end-to-end library workflows (from data creation to discovery)
- Lack of ways to (easily) illustrate the benefits of linked data

Linked data implementation - possibilities



- Harmonization of data models
- Increasing sources of linked data from libraries
- Linked data tools and services

Harmonization of library linked data models

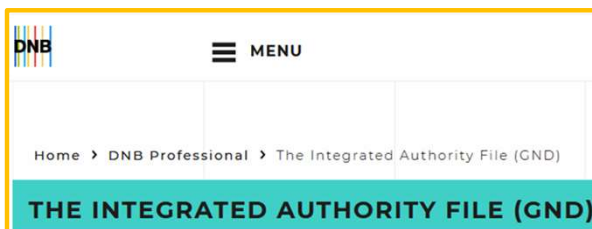
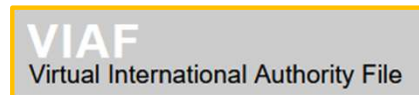


*not the final name/mechanism



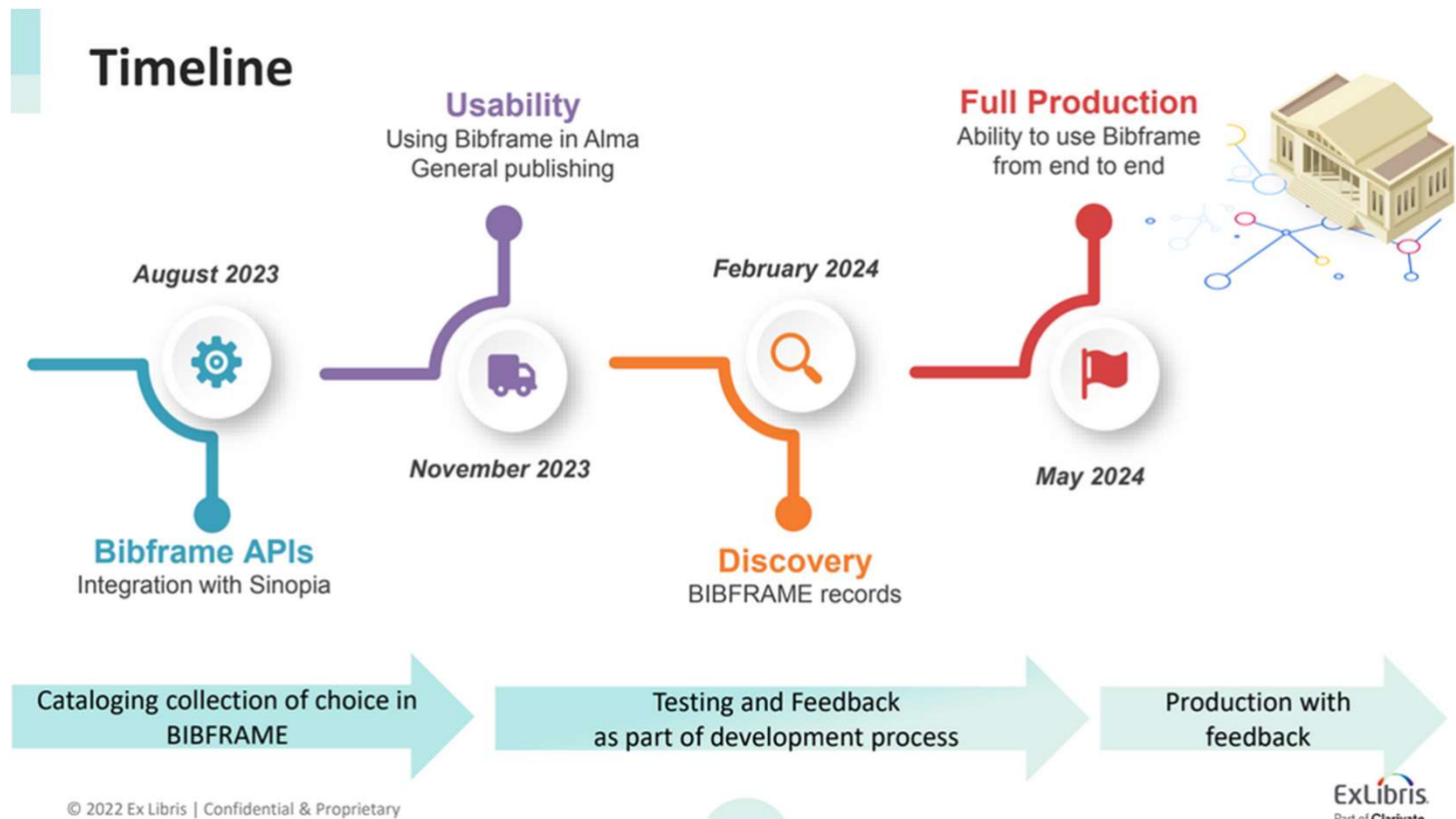
Courtesy of Nathan Putnam, OCLC

Library data published as linked data



National Library of Sweden

Ex Libris linked data services



EBSCO's linked data service

bibliograph

Enhance the portability, visibility and value of your library's catalog so users can explore and access resources from anywhere on the web. EBSCO BiblioGraph also connects catalogs within a graph and enriches with data from authoritative sources.

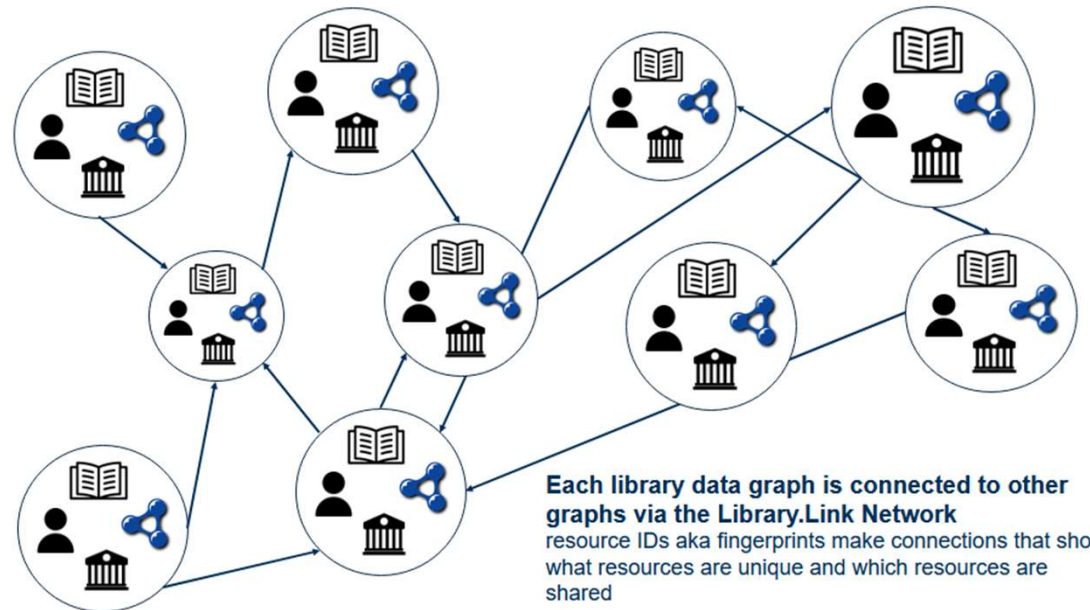
How do libraries use Library.Link?



Transform bib records to BIBFRAME

Borrow Actions and Library Linked Data at EBSCO

Graphics: <https://www.ebsco.com/linked-data> EBSCO



13 Borrow Actions and Library Linked Data at EBSCO

EBSCO

Slides courtesy of Gloria Gonzalez

Share-VDE: linked data for libraries

Main services provided:

- enriching MARC records with URIs
- converting MARC to RDF using the BIBFRAME vocabulary and other ontologies as needed;
- supporting a linked data discovery platform;
- providing entity editors for working with data directly.



Search for people, original works and publications

e.g. Jules Verne or Around the world in 80 days

[Advanced search](#)

Explore Share-VDE member libraries' linked open data entities created in
BIBFRAME

[← Back to search](#)

[Top](#)

[Key Information](#)

[Entity Subtypes](#)

[Significant Dates](#)

[External Sources](#)

[Related Places](#)

[View](#)

Koenraad Debackere

[Copy URI](#)

Entity ID: E39PBJpjdxDQQ8MvyHJWQWYQMP

Entity Type: Person

Description: Belgian university professor

Key Information

Language of Content	Entity Label	Description
English	Koenraad Debackere	Belgian university professor
German	Koenraad Debackere	
Spanish	Koenraad Debackere	profesor universitario belga

Sinopia: Linked data editor

SINOPIA

Latest news
Sinopia Version 3.17.54 highlights
For complete release notes see the [Sinopia help site](#).

- Language detection and suggestion
- Sinopia/Symphony integration for Stanford users
- Templates are included in Sinopia search
- Can set literal field to default to current date or userID

Login to the Linked Data Editor

User name

Password

[Forgot Password](#) [Request Account](#)

_Serial Work (BIBFRAME) **WORK**

Contribution (Creator/Contributor)

- > Title Information
- Form of Work
- Date of Work
- Place of Origin of the Work
- > ISSN Identifiers
- (Geographic) Coverage of the Content
- (Time) Coverage of the Content
- Intended Audience
- > Notes about the Work
- > Summary
- Subject of the Work
- > Classification numbers
- Content Type ●

Contribution (Creator/Contributor)

Contribution

Property: <http://id.loc.gov/ontologies/bibframe/contribution>
Class: <http://id.loc.gov/ontologies/bibframe/Contribution>

+ Add Contributor (only one per contribution node!)
+ Add Relationship Designator (RDA Appendix I)

Primary Contribution

Property: <http://id.loc.gov/ontologies/bibframe/contribution>
Class: <http://id.loc.gov/ontologies/bflc/PrimaryContribution>

+ Add Primary Contributor ⓘ
+ Add Relationship Designator (RDA Appendix I)

Title Information*

Other linked data programs at this conference

Monday

- Authority linking with identifiers: lessons learned on a major configuration change (2:40–3:10 PM)
- A bookmarklet based application to interface the Alma Metadata Editor with the IdRef authority Web application (3:10–3:40 PM)

Tuesday

- Linked Data Library Ecosystem powered by AI (4:10–4:40 PM)
- Exploring Linked Open Data capabilities at the European Parliament Library (4:50–5:20 PM)

Wednesday

- Linked Open Data Community of Practice Open Meeting (9:40–10:10 AM)
- LOD-enabled library systems for the future: A librarian's perspective (10:20–10:50 AM)

Thursday

- The new BIBFRAME creation API for Alma (9:35-10:05 AM)
- Getting started in Sinopia. A linked data editor for metadata creation and reuse (3:05-3:35 PM)

Resources

Berners-Lee, Tim. Linked Data - design issues.

<https://www.w3.org/DesignIssues/LinkedData.html>

Berners-Lee, T., Hendler, J., & Lassila, O. (2001). The Semantic Web. *Scientific American*, 284(5), 34–43.

Bibliograph: <https://www.ebsco.com/products/bibliograph>

Chiarelli, A. URL, URI, URN: What's the difference? Auth0 - Blog:

<https://auth0.com/blog/url-uri-urn-differences/>

ETH-Bibliothek ,“Max Frisch”:

https://eth.swisscovery.slsp.ch/permalink/41SLSP_ETH/lshl64/alma990065108490205503

GND Linked Data Service:

https://www.dnb.de/EN/Professionell/Metadatendienste/Datenbezug/LDS/lds_node.html

Resources

OCLC FAST (Faceted Application of Subject Terminology): <http://fast.oclc.org/>

Palladio, Stanford University: <http://hdlab.stanford.edu/palladio>

Schrader, B. (2022). What's the Difference Between an Ontology and a Knowledge Graph? *Enterprise Knowledge*
<https://enterprise-knowledge.com/whats-the-difference-between-an-ontology-and-a-knowledge-graph/>

Share-VDE: linked data for libraries: https://wiki.share-vde.org/wiki/Main_Page

Sinopia: <https://sinopia.io/>

UCLA Research guides: Semantic Web and Linked Data <https://guides.library.ucla.edu/semantic-web>

University of Pittsburgh Guides: Metadata & Discovery @ Pitt: Linked Data and the Semantic Web.
<https://pitt.libguides.com/metadatadiscovery/linked-data>

VIAF (Virtual International Authority File): <https://viaf.org/>

WorldCat Entities: <https://id.oclc.org/worldcat/entity>



Q&A

Thank you

Catherine Grove (c-
grove@northwestern.edu)

Hans Schürmann
(hans.schuermann@slsp.ch)

Xiaoli Li (xlli@ucdavis.edu)

