

LinkedMusic

Project Meeting IV

13 December 2025



Ichiro Fujinaga

Music Technology Area, Schulich School of Music
McGill University



LinkedMusic: Key Concepts

- ❖ Be able to search across various music databases from one website
- ❖ Universal Music Instrument Lexicon (formerly known as Virtual Instrument Museum)
 - ❖ Create a crowd-sourced website
 - ❖ Images and recordings of musical instruments
 - ❖ Name of the instrument in the local language
 - ❖ Basically a front-end for displaying and editing musical instrument data on Wikidata
- ❖ Funded for 7 years (2022–2029): \$3.2M
 - ❖ SSHRC Partnership Grant
 - ❖ FRQSC Research Team Support Grant
 - ❖ McGill University

LinkedMusic: Co-Investigators (7)

- ❖ Jennifer Bain
(Dalhousie University)
- ❖ Houman Behzadi (McGill)
- ❖ Julie Cumming (McGill)
- ❖ Debra Lacoste
(Dalhousie University)
- ❖ Audrey Laplante
(Université de Montréal)
- ❖ Cory McKay
(Marianopolis College)
- ❖ Laurent Pugin (RISM-Digital)

LinkedMusic: Collaborators (18)

- ❖ Rachelle Chiasson-Taylor
(Library and Archives Canada)
- ❖ Julia Craig-McFeely
(Oxford University)
- ❖ Jürgen Diet
(Bavarian State Library)
- ❖ Robin Desmeules (McGILL)
- ❖ Simon Dixon
(Queen Mary, University of London)
- ❖ Jon Dunn (Indiana University)
- ❖ Andrew Hankinson (RISM Digital)
- ❖ Johannes Kepper
(University of Paderborn)
- ❖ Kevin Kishimoto
(Stanford University)
- ❖ David Lewis
(Goldsmiths, University of London)
- ❖ Jonathan Manton (Yale University)
- ❖ Kevin Page (University of Oxford)
- ❖ Alastair Porter (UPF / MetaBrainz)
- ❖ Jenn Riley (McGill)
- ❖ Patrick Savage (Keio University)
- ❖ David Weigl (University of Music and Performing Arts Vienna)
- ❖ Susan Weiss
(Johns Hopkins University)
- ❖ Frans Wiering
(University of Utrecht)

LinkedMusic: Partners (9)

- ❖ Bavarian State Library
(Jürgen Diet /
Bernhard Lutz)
- ❖ British Library
- ❖ Calcul Québec
- ❖ Dalhousie University
(Jennifer Bain)
- ❖ MetaBrainz Foundation
(Alastair Porter)
- ❖ RISM Digital
(Laurent Pugin)
- ❖ Université de Montréal
(Audrey Laplante)
- ❖ University of Oxford
(Julia Craig-McFeely)
- ❖ University of Waterloo
(Debra Lacoste)

Advisory Board Members

- ❖ Tina Frühauf (RILM: Répertoire International de Littérature Musicale) (Barbara Dobbs McKenzie (retired))
- ❖ Perry Roland (University of Virginia)
- ❖ Rob Sanderson (Yale University)
- ❖ Xavier Serra (University of Pompeu Fabra)

People

❖ Project Manager

❖ Vi-An Tran

❖ Postdoctoral Fellows

❖ Anna de Bakker

❖ Junjun Cao

❖ Graduate Students

❖ Hanwen Zhang

❖ Kyrie Bouressa

❖ Kun Fang

❖ Zih-Syuan Lin

❖ Lucas March

❖ Liam Pond

❖ Yu-Chia Kuo

❖ Mai Lyn Puittinen

❖ Caroline Guo

❖ Linnea Kirby

❖ Pouya Mohseni

❖ Undergraduate Students

❖ Sichen Meng

❖ Antoine Phan

❖ Sébastien Chow

❖ Simon Ngassam

❖ Researchers

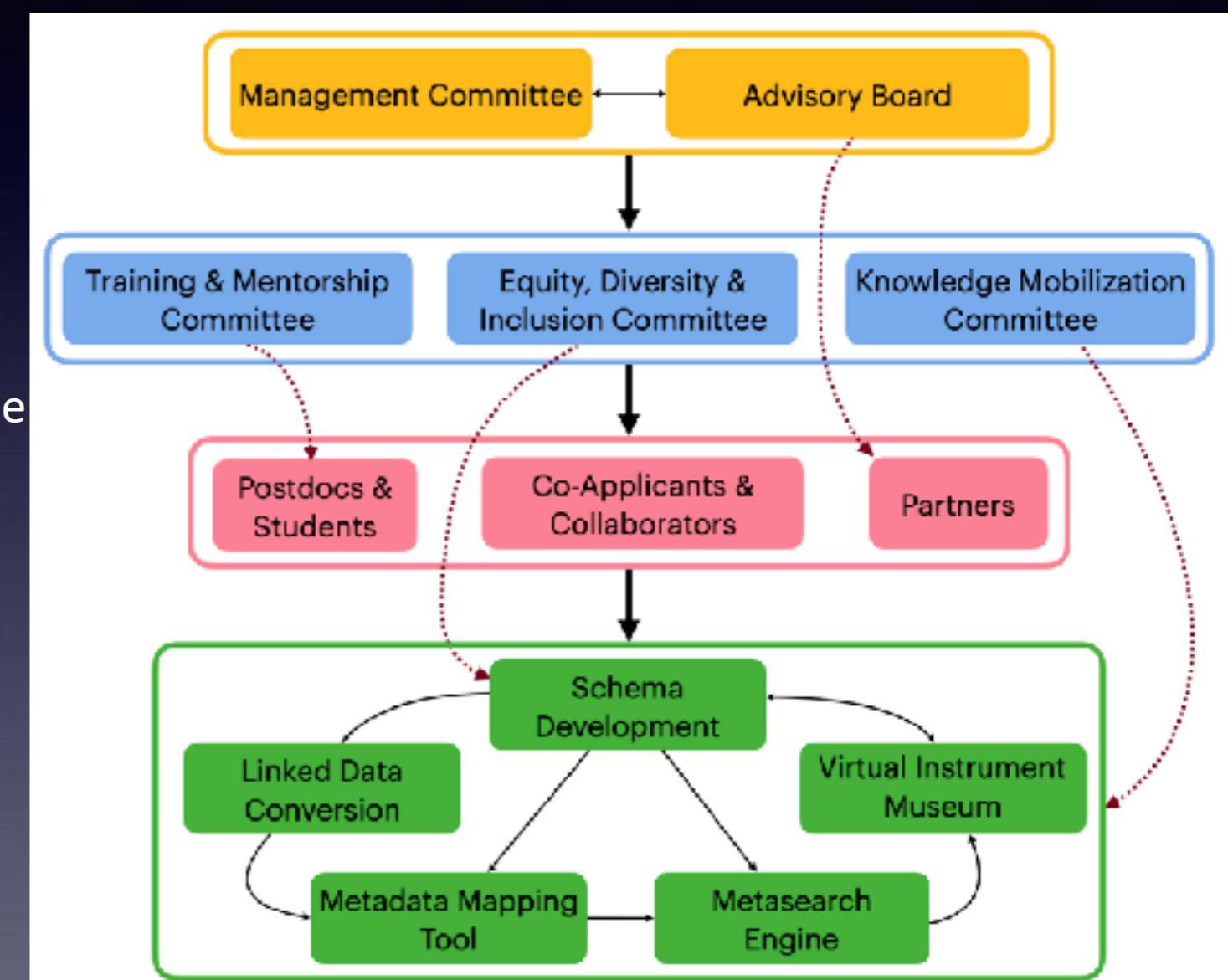
❖ Dylan Hillerbrand

❖ Geneviève Gates-Panneton

❖ Yinan Zhou

LinkedMusic Committees

- ❖ Training and Mentorship Committee
 - ❖ Chair: Anna de Bakker
 - ❖ Jennifer Bain
 - ❖ Laurent Pugin
 - ❖ Hanwen Zhang
- ❖ Equity, Diversity, and Inclusion Committee
 - ❖ Chair: Julie Cumming
 - ❖ Houman Behzadi
 - ❖ Robin Desmeules
 - ❖ Lucas March
- ❖ Knowledge Mobilization Committee
 - ❖ Debra Lacoste
 - ❖ Susan Weiss
 - ❖ Julia Craig-McFeely
 - ❖ Kyrie Bouressa



Agenda for Today

- ❖ 09:00–09:45 Introductions (Ichiro Fujinaga)
- ❖ 09:45–10:30 LinkedMusic Update (Liam Pond)
- ❖ 10:30–11:00 Coffee Break
- ❖ 11:00–11:30 Interactive NLQ2SPARQL agent (Junjun Cao)
- ❖ 11:30–12:00 Bernard Lutz: The musicnn project
- ❖ 12:00–12:30 An update on Linked RISM (Andrew Hankinson and Laurent Pugin)
- ❖ 12:30–13:30 Lunch (provided)
- ❖ 13:30–14:30 UMIL update (Kun Fang, Mai Lyn Puittinen, and Kyrie Bouressa)
- ❖ 14:30–15:30 Integrating RISM API as a Linked Data: Introduction (Kevin Page, David Lewis, and Andrew Hankinson)
- ❖ 15:30–16:00 Coffee Break and Committee meetings
- ❖ 16:00–17:00 Integrating RISM API as a Linked Data: Continuation

- ❖ 19:00 Dinner at Kim Fung (1111 Rue Saint-Urbain, 2nd floor)

LinkedMusic Project Meeting III

26 October 2024: McGill University, Montreal



LinkedMusic Workshop VI

2 June 2025: St George's, University of London
at the Music Encoding Conference



LinkedMusic Workshop VII

6 July 2025 in Salzburg, Austria at the IAML Congress



Papers published in the past year

- ❖ Fujinaga, Ichiro. 2025. “Integrating Online Music Databases: The LinkedMusic Project.” *Musical Brainfood, “Musicology in the Age of Artificial Intelligence, Part 2,”* 19 (1).
- ❖ Fujinaga, Ichiro. 2025. “Sustainable Archiving of Music Databases through RDF and NLQ2SPARQL.” In *Proceedings of the 12th International Conference on Digital Libraries for Musicology*, 100–104. Seoul, Korea.
- ❖ Pond, Liam, and Ichiro Fujinaga. 2025. Teaching LLMs music theory with in-context learning and chain-of-thought prompting: Pedagogical strategies for machines. In *Proceedings of the 17th International Conference on Computer Supported Education*, 1: 671–681.

Presentations (1)

- ❖ Sixth Joint Meeting Acoustical Society of America and Acoustical Society of Japan, Honolulu, Hawaii, 3 December 2025. *LinkedMusic Project: A Progress Report*.
- ❖ 1st Workshop on Large Language Models for Music & Audio (LLM4MA), Seoul, Korea, 26 September 2025. "SESEMMI for LinkedMusic: Democratizing Access to Musical Archives via Large Language Models." By Liam Pond with Linnea Kirby, Sichen Meng, Simon Ngassam, Sébastien Chow, Dylan Hillerbrand, and Ichiro Fujinaga.
- ❖ International Society for Music Information Retrieval Conference: Late-breaking Demo Session, Seoul, Korea, 25 September 2025. *Integrating Music Databases with Linked Data* with Junjun Cao, Kyrie Bouressa, Hanwen Zhang, Kun Fang, Liam Pond, Yu-Chia Kuo, Mai Lyn Puittinen, Caroline Guo, Hong Van Pham, Yueqiao Zhang, Antoine Phan, Linnea Kirby, Sébastien Chow, Simon Ngassam, Sichen Meng, Geneviève Gates-Panneton, Yinan Zhou, Dylan Hillerbrand, Andrew Hankinson, and Anna de Bakker. Poster.
- ❖ Forum for Information Technology (FIT) 2025, Hokkaido University of Science, Sapporo, Japan, 4 September 2025. *LinkedMusic Project: Integrating Music Databases*.
- ❖ International Association of Music Libraries, Archives and Documentation Centres (IAML), Salzburg, Austria, 9 July 2025. *LinkedMusic Project: Integrating Online Music Databases* with Junjun Cao.

Presentations (2)

- ❖ Twenty-Third International Conference on New Directions in the Humanities, Hilo, Hawaii, 26 June 2025. *LinkedMusic Project: Integrating Music Databases*.
- ❖ Music Symposium 2025, Waseda University, Tokyo, Japan, 13 June 2025. *LinkedMusic Project: Integrating Online Music Databases*. Poster.
- ❖ Digital Humanities Summer Institute, Université de Montréal, 26 May 2025. Plenary Talk: *On the Virtues of Lazy Machines*.
- ❖ CIRMMT Workshop: Societal, Creative and Research Impacts of Data-driven Approaches to Music, McGill University, 18 March 2025. *The LinkedMusic Project*.
- ❖ Vitrine HN / DH Showcase 2025, McGill University, 17 January 2025. *LinkedMusic Project: Integrating Online Music Databases* with Junjun Cao.
- ❖ The 1st Workshop on Utilizing AI/ML to Enhance Information Extraction, Organization, and Retrieval from Large-scale Archival Collections, Hong Kong University, Hong Kong, 20 December 2024. *Sustainable Archiving of Music Databases through RDF and NLQ2SPARQL Frameworks* with Junjun Cao.

Midterm Report to SSHRC: Submitted!

2025-10-31

Anna de Bakker

Kyrie Bouressa and Debra Lacoste

Products	Number Planned (in Milestone Report)	Number Developed	Number Planned (for second half)
Presentations	5	93	50
Interviews (broadcast or text)	0	0	0
Peer-reviewed journal articles (open access)	3	19	10
Peer-reviewed journal articles (subscription based)	2	0	2
Edited journal issues	0	0	0
Books (including edited books)	0	0	0
Book chapters	1	3	1
Entries (dictionary and encyclopedia)	0	0	0
Conference publications	5	34	17

The Persephone Initiative

Anna de Bakker and Kyrie Bouressa

- ❖ Digital Research Alliance of Canada (DRAC) Grant
- ❖ Special Funding Opportunity: Research Software AI
- ❖ Announced 2025-10-06
- ❖ Eligibility: Must have a DRAC account
- ❖ Submitted 2025-11-14
- ❖ Issue Award Notification: 2026-01-15
- ❖ If awarded: 2026-04-01 to 2027-03-31 (\$121,256)

LinkedMusic.ca

Google Translated to: [Chinese \(Simplified\)](#) Show original

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LinkedMusic

我们新成立的 LinkedMusic Partnership 的目标是通过元数据架构（用于组织数据库中存储的信息的结构）链接音乐数据库。这将大大有助于将在线音乐搜索提升到与当前基于文本的资源相同的复杂程度，使我们能够回答有关音乐以及音乐如何与人类创造力、社会、文化和历史互动的基本问题。

我们的目标包括：

- 制定全面的国际音乐元数据模式
- 开发映射工具，将现有的元数据模式映射到我们的新模式上
- 索引聚合元数据，以便同时搜索各个数据库

如需了解更多信息，请联系 [Ichiro Fujinaga](#)。

L'objectif de notre nouveau partenariat LinkedMusic est de lier des bases de données musicales par des schémas de métadonnées, des structures d'organisation de l'information stockées dans une base de données. Ce projet contribuera grandement à amener la recherche de musique en ligne au même niveau de sophistication que la recherche de ressources textuelles, nous permettant ainsi de répondre à des questions fondamentales sur la musique et comment elle interagit avec la créativité, la société, la culture et l'histoire humaines.

Nos objectifs incluent :

Goals of LinkedMusic Project

- ❖ Make musical information accessible to more people in the world
- ❖ Be able to search across various music databases from one website
- ❖ Make musical queries available in languages other than English

Challenges in Integrating Databases

- ❖ Schema (how data is structured) mismatch
 - ❖ Different headings, e.g., Songs vs Tracks
- ❖ Semantic inconsistencies
 - ❖ Artist vs Performer
 - ❖ Genre differences: What is “Folk music”?
- ❖ Integration complexities
 - ❖ Determining matching records
 - ❖ “Ludwig van Beethoven” vs “Beethoven, Ludwig van”
 - ❖ Who is “Parker”?

UMIL (Universal Musical Instrument Lexicon)

Formerly known as VIM (Virtual Instrument Museum)

- ❖ Name of musical instruments may be needed for query
- ❖ Music instrument names varies across languages and cultures
- ❖ A way to translate musical instrument names in as many language as possible
- ❖ User-friendly interface to populate musical instruments in Wikidata

**Hornbostel-Sachs
Classification**

1 - Idiophones	43
2 - Membranophones	9
3 - Chordophones	61
4 - Aerophones	61
5 - Electrophones	4
Unclassified	84

More facet search coming...

INSTRUMENT LIST

English

Instrument name language

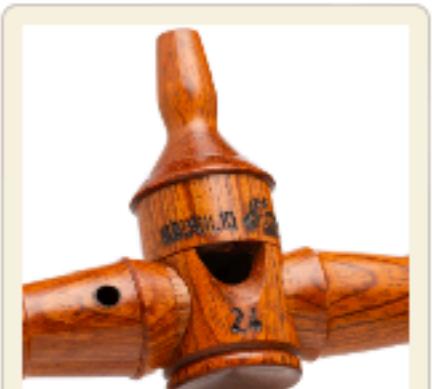
Tambourine



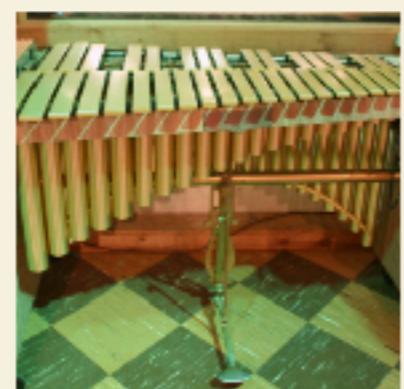
Triangle



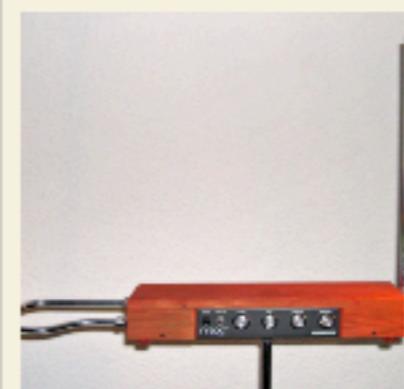
Zill



Whistle



Vibraphone



Theremin



Hurdy-Gurdy



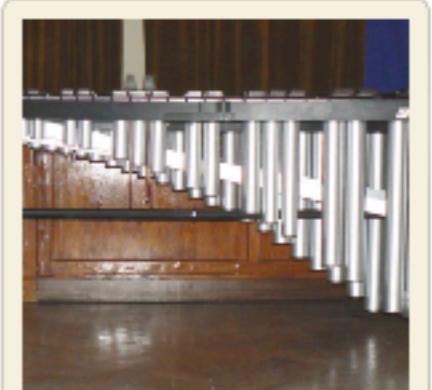
Snare Drum



Tabla

Transposing
Instrument

Pan Flute



Marimba

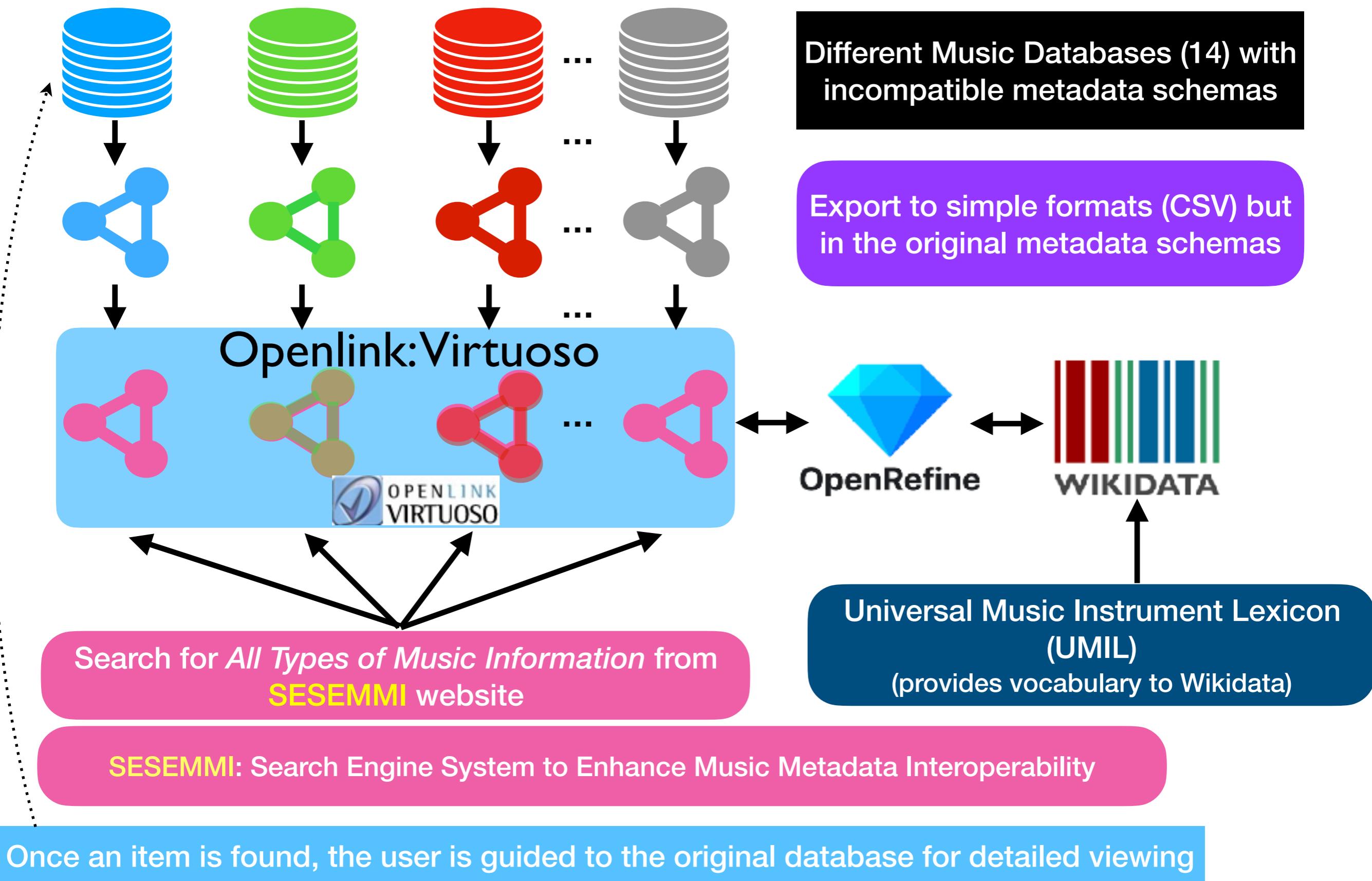
Initial 14 Databases

1. SIMSSA DB
2. Cantus Ultimus
3. Cantus Database
4. DIAMM
5. RISM
6. Cantus Index
7. Canadian Chant Database
8. Global Jukebox
9. DTL1000 (Dig That Lick)
10. MusicBrainz
11. AcousticBrainz
12. CritiqueBrainz
13. ListenBrainz
14. MOTET Database
(Jennifer Thomas)
- + 15. TheSession.org

Our Overall Process

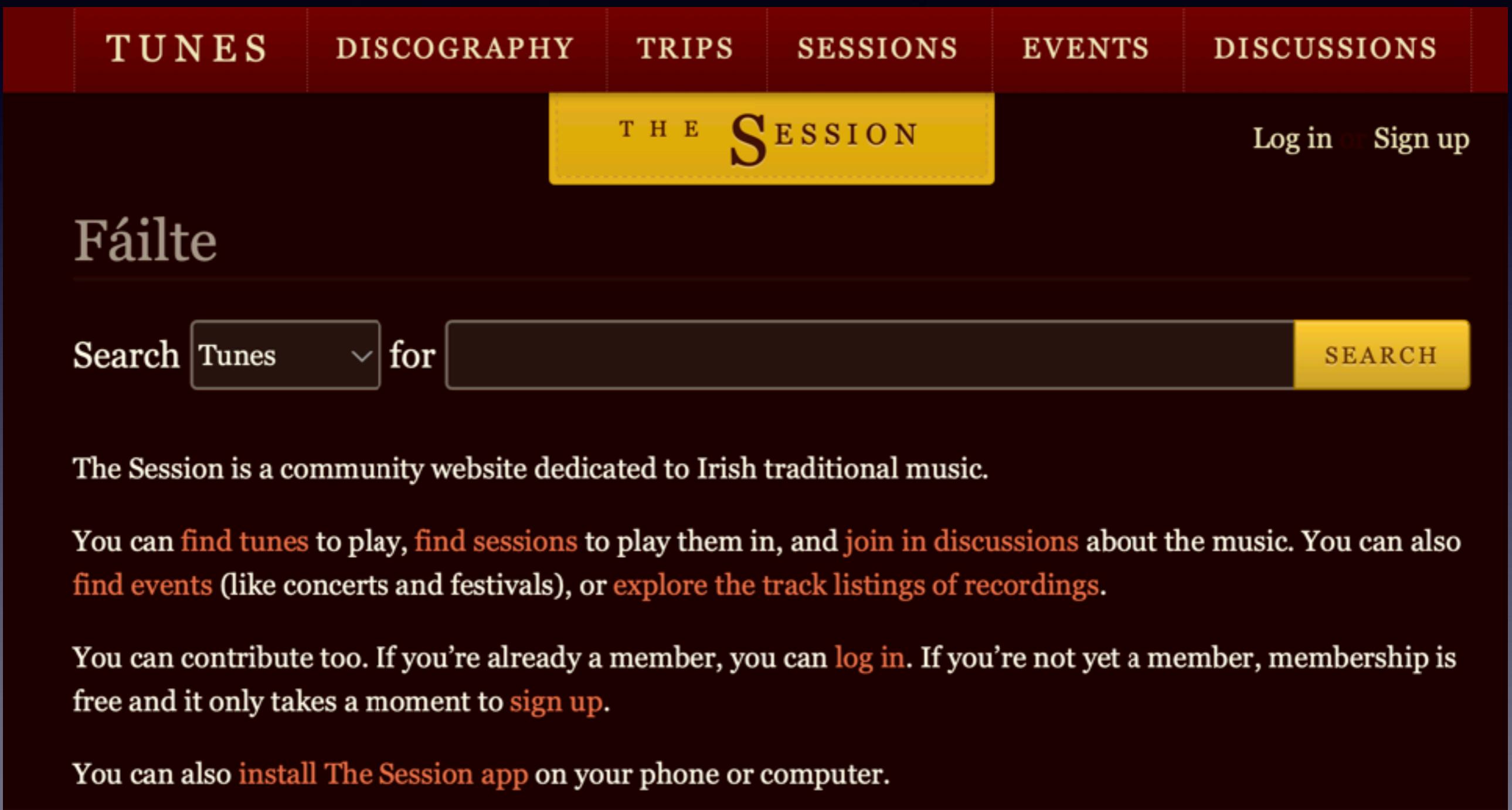
1. Convert various databases into flat files (CSV or JSON-LD)
2. Reconcile (convert) schema (properties) and entities (name, place, title, etc.) to Wikidata URIs using OpenRefine 
3. Store the results in OpenLink Virtuoso graph database (RDF/Linked Data) 
4. Use SPARQL for queries

LinkedMusic Overall Process: Virtuoso Version



Example: The Sessions Database

Database of Traditional Irish Music sessions



The screenshot shows the homepage of The Session website. At the top, there is a navigation bar with links: TUNES, DISCOGRAPHY, TRIPS, SESSIONS, EVENTS, and DISCUSSIONS. The 'SESSIONS' link is highlighted with a yellow background and a black border. Below the navigation bar, the text 'THE SESSION' is displayed in a large, serif font. To the right of this, there are links for 'Log in' and 'Sign up'. The main content area features a dark background with white text. It starts with 'Fáilte' (Welcome). Below it is a search bar with the placeholder 'Search Tunes' and a dropdown arrow, followed by a text input field and a yellow 'SEARCH' button. The main text on the page reads: 'The Session is a community website dedicated to Irish traditional music. You can find tunes to play, find sessions to play them in, and join in discussions about the music. You can also find events (like concerts and festivals), or explore the track listings of recordings. You can contribute too. If you're already a member, you can log in. If you're not yet a member, membership is free and it only takes a moment to sign up. You can also install The Session app on your phone or computer.'

Fáilte

Search Tunes for

The Session is a community website dedicated to Irish traditional music.

You can **find tunes** to play, **find sessions** to play them in, and **join in discussions** about the music. You can also **find events** (like concerts and festivals), or **explore the track listings** of recordings.

You can contribute too. If you're already a member, you can **log in**. If you're not yet a member, membership is free and it only takes a moment to **sign up**.

You can also **install The Session app** on your phone or computer.

1. Export the database to text files

Portion of a CSV file of events in Sessions Database

events_id	event	dtstart	dtend	venue	address	town	area	country
https://thesession.org/events/3310	-	1900-01-01 00:00:00	1900-01-01 00:00:00	-		Ober-Kainsbach	Hessen	Germany
https://thesession.org/events/11	Colm Gannon, Sean McKeon And John Blake	2006-06-07 09:30:00	2006-06-07 12:00:00	The Goalpost	226 Water Street	Quincy	Massachusetts	USA
https://thesession.org/events/5	Brid O'Donohue	2006-06-09 08:00:00	2006-06-09 00:00:00	Glór	Causeway Link	Ennis	Clare	Ireland
https://thesession.org/events/6	National Celtic Festival	2006-06-09 19:00:00	2006-06-12 15:00:00	Various Venues		Portarlington	Victoria	Australia
https://thesession.org/events/7	The Irish Connections Festival	2006-06-09 19:00:00	2006-06-11 00:00:00	Irish Cultural Centre	200 New Boston Drive	Canton	Massachusetts	USA
https://thesession.org/events/19	Louisville Irish Fest	2006-06-10 11:00:00	2006-06-11 06:00:00	Belvedere/River Front Plaza		Louisville	Kentucky	USA
https://thesession.org/events/4	élan Concert (feat Damien Mullane And Sam Proctor)	2006-06-10 20:00:00	2006-06-10 23:30:00	Irish Cultural Centre	5 Black's Road	Hammersmith	London	England
https://thesession.org/events/2	Edel Fox And Rogan O'Flaherty	2006-06-10 21:30:00	2006-06-10	The Crosses Of Annagh		Miltown Malbay	Clare	Ireland

2. Convert to linked data

Assign each item to an URI (Universal Resource Identifier)
using OpenRefine and Wikidata

town	area	country
Ober-Kainsbach	Hessen	Germany



town	town_wiki	area	area_wiki	country	country_wiki
Ober-Kainsbach Choose new match	https://www.wikidata.org/wiki/Q2008827	Hesse Choose new match	https://www.wikidata.org/wiki/Q1199	Germany Choose new match	https://www.wikidata.org/wiki/Q183

3. Store as **text files (archive)**

- ❖ Convert the CSV file with URI to flattened RDF (Resource Description Framework), e.g.:
 - ❖ Turtle
 - ❖ JSON-LD
 - ❖ N-Quads
- ❖ Also known as RDF serialization
- ❖ To be stored in a long-term archive

4. Import into an RDF graph database

We use an open-source software called Virtuoso



Other open-source examples include:



5. Query using natural languages (1)

Usually RDF database is queried using SPARQL (SPARQL Protocol and RDF Query Language)

The screenshot shows the SPARQL Query Editor interface. At the top, there is a navigation bar with links for 'SPARQL Query Editor', 'About', 'Tables', 'Conductor', 'Facet Browser', and 'Permalink'. Below the navigation bar, there is a section for 'Default Data Set Name (Graph IRI)' with an empty input field. Underneath, there is a large 'Query Text' area with a blue border, containing a single vertical line character '|'. At the bottom, there is a 'Results Format' dropdown set to 'HTML', and two buttons: 'Execute Query' (in blue) and 'Reset'.

5. Query using natural languages (2)

Example query: “Find sessions that took place in Greece”

TUNES DISCOGRAPHY TRIPS SESSIONS EVENTS DISCUSSIONS

Sessions

Search for sessions on in

Searching for sessions in “Greece”

1. [The Lucky Sparrow Irish Pub](#), Athens, Athens, Greece
Added by [Athens Irish Festival](#) 9 months ago.

2. [The Dubliner](#), Thessaloniki, Makedonia, Greece
Added by [lukegarry](#) 3 years ago. Updated 2 months ago.

5. Query using natural languages (3)

Example query: “**Find sessions that took place in Greece**”

Equivalent SPARQL code:

```
PREFIX wd: <http://www.wikidata.org/entity/>
```

```
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
```

```
SELECT ?session
WHERE {
  ?session rdf:type thesession:sessions .
  ?session wdt:P17 wd:Q41 .
}
```

Comment: P17 is the country property and Q41 is Greece in Wikidata

5. Query using natural languages (4)

Inserting the SPARQL query in Virtuoso

SPARQL Query Editor About Tables ▾ Conductor Facet Browser Permalink

Default Data Set Name (Graph IRI)
`http://sample/thesession/reconciled`

Extensions: cxml save to dav sponge User: SPARQL

Query Text

```
PREFIX wd: <http://www.wikidata.org/entity/>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>

SELECT ?session
WHERE {
    ?session rdf:type thesession:sessions .
    ?session wdt:P17 wd:Q41 .
}
```

Results Format `HTML` ▾

Execute Query **Reset**

5. Query using natural languages (5)

Executing the SPARQL query in Virtuoso

SPARQL | HTML5 table

session

<https://thesession.org/sessions/7243>

<https://thesession.org/sessions/8020>

7243	The Dubliner	Katouni 16	Thessaloniki
8020	The Lucky Sparrow Irish Pub	Triptolemou 44	Athens

But we cannot ask general users to create
SPARQL queries!

5. Query using natural languages (6)

ChatGPT to the rescue!

I have an RDF database reconciled with Wikidata.

It contains
country it \

Create a c }
in Greece.

```
PREFIX wd: <http://www.wikidata.org/entity/>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>

SELECT ?session
WHERE {
    ?session rdf:type thesession:sessions .
    ?session wdt:P17 wd:Q41 .
```

This prompt produces the correct SPARQL code!
(most of the time)

Features of LinkedMusic (1)

- ❖ By converting a database to an RDF graph database, we can search the database with natural language queries
- ❖ Currently we have integrated seven musical databases with 383 million RDF triples
- ❖ Because we use ChatGPT, we can make queries in many different natural languages:

“ギリシャで行われたコンサートを探してください”

Features of LinkedMusic (2)

- ❖ We can even make queries that were not possible with the original web interface
- ❖ Furthermore, because we **reconciled** with Wikidata, we can query with concepts that were not defined in the original database: “Find women composers”
- ❖ Because RDF graphs can be stored as text files, we can easily archive them for long-term preservations



“The Persephone Initiative”

Future Directions

- ❖ Improve our prompts so that ChatGPT makes fewer errors
- ❖ Prompt Engineering
- ❖ Ask ChatGPT to create a web interface on the fly (e.g., Val Town)
- ❖ Sorting and facets capabilities

LinkedMusic Team @McGill: Summer 2025



Sichen Meng
Yu-Chia Kuo
Linnea Kirby
Liam Pond
Kyrie Bouressa
Yueqiao Zhang

Yinan Zhou
Andrew Hankinson
Ichiro Fujinaga
Antoine Phan
Simon Ngassam
Sebastien Chow

Dylan Hillerbrand
Lucas March
Mai Lyn Puittinen

Not in the photo:
*Anna de Bakker
Hanwen Zhang
Kun Fang
Gen Gates-Panneton*

Acknowledgements



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada



Schulich School of Music
École de musique Schulich

DDMAL

DISTRIBUTED DIGITAL MUSIC
ARCHIVES & LIBRARIES LAB



Centre for Interdisciplinary Research
in Music Media and Technology

*Fonds
de recherche*

Québec



Digital Research
Alliance of Canada

Alliance de recherche
numérique du Canada



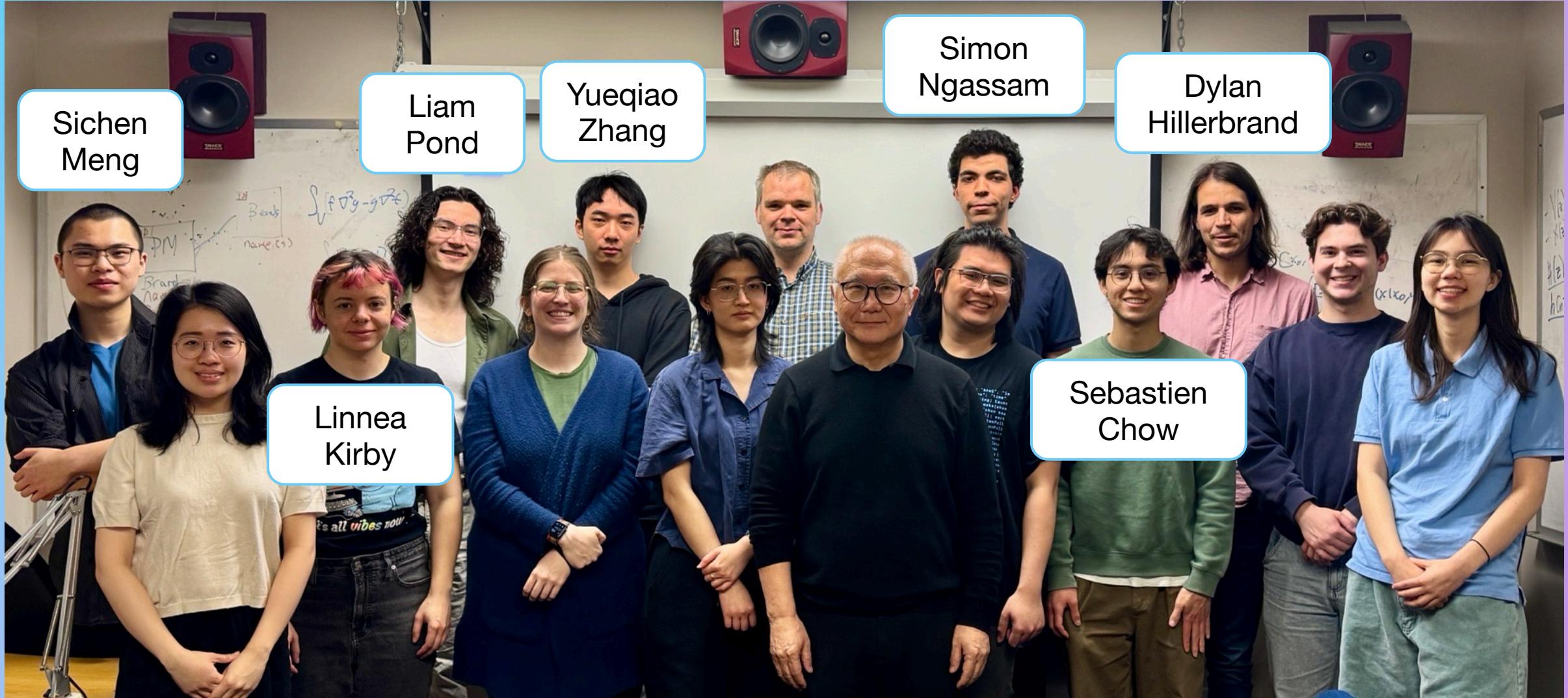
Calcul Québec

These slides were created with the help from ChatGPT, Claude, and Gemini,
collectively known as Chappie.

LinkedMusic Update

May 2025 – Present

Presented by Liam Pond



Not pictured: Junjun Cao

Overview

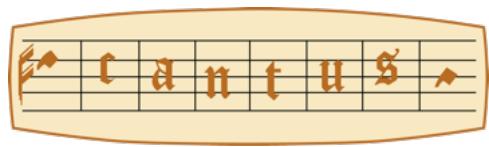
- Status in May 2025
- Standardized data ingestion pipeline
- Database-specific challenges and insights
- NLQ2SPARQL experiments
- Future work — future datasets, NLQ2SPARQL

Status in May 2025



- Fetched and cleaned data
- Partially reconciled, none fully ingested
- MusicBrainz converted to RDF
- Experimented with NLQ2SPARQL in the browser

Status Today



SIMSSA
Database



The Global Jukebox



Dig That Lick 1000



CANTUS INDEX

- 10 reconciled databases
- ~383 million RDF triples in Virtuoso
- Standardized ingestion pipeline
- Systematic empirical investigation of NLQ2SPARQL
- 30 Wiki pages, READMEs for each database

Data Ingestion Pipeline

Data Ingestion

- Simple so far (large public databases)
- Occasionally had to scrape websites (DIAMM)
- Could be challenging in the future for niche or dead databases (Persephone Initiative)

Data Cleaning

- Modifying or flattening database structure
- Standardizing formatting, **not** correcting metadata

Examples:

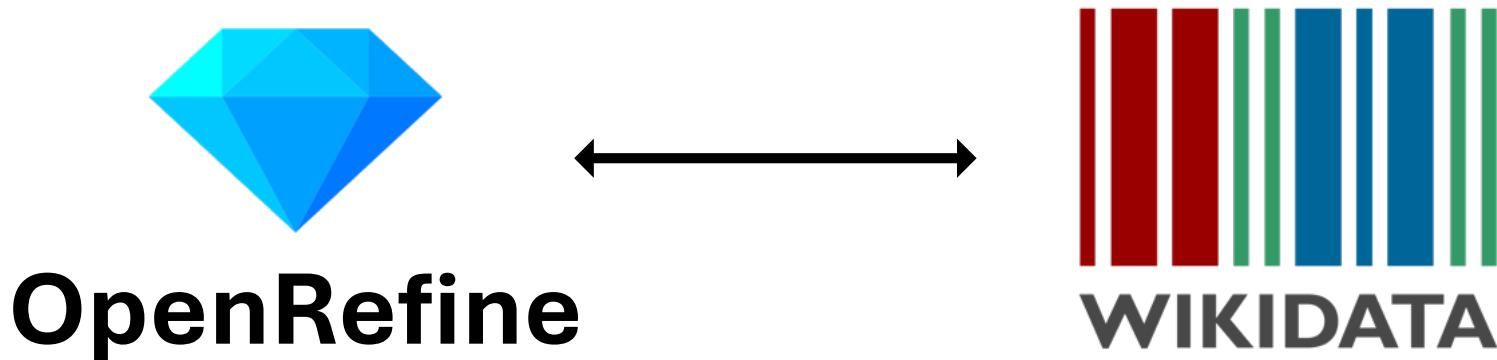
- Standardized dates instead of raw strings
- Splitting fields with multiple entities
- Expanding abbreviated instruments

Data Cleaning

Artists: Horace Silver (p), Joe Calloway (b), Stan Getz (ts),
Walter Bolden (dr)

Artist	Instrument
Horace Silver	Piano
Joe Calloway	Bass
Stan Getz	Tenor Saxophone
Walter Bolden	Drums

Reconciliation: OpenRefine



- 99% confidence threshold for automatic reconciliation
- Manual verification otherwise
- P2888: Exact match
- String literals if entities are not in Wikidata

RDF Conversion

Principles

- No blank nodes or qualifiers
- For data with multiple values in multiple languages, specify the language where possible
- Store the most specific information (e.g., venue/city of an event)

RDF Conversion

Which property should I use?

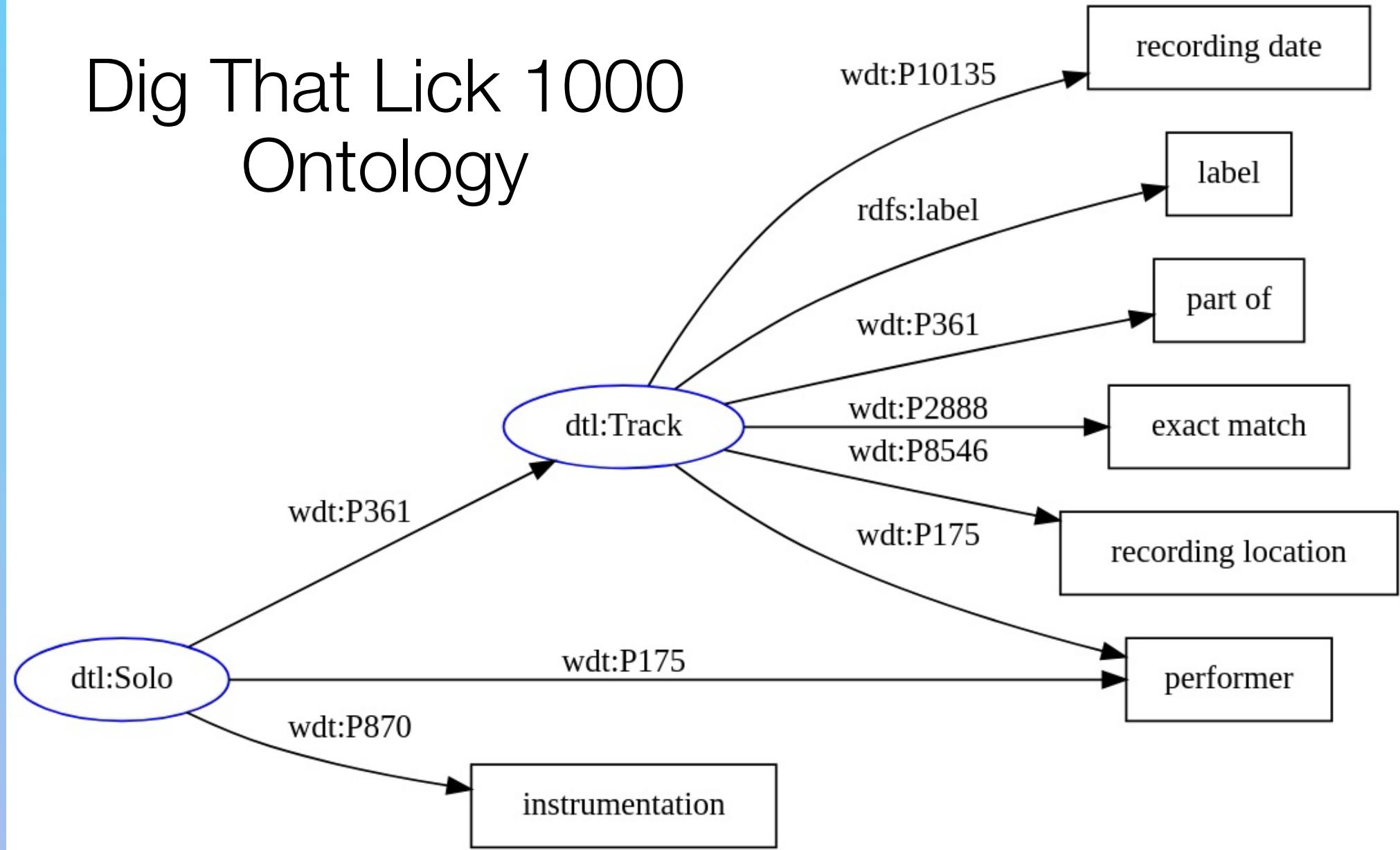
- Most precise, unless it is rarely used
- Use the same datatypes as Wikidata for dates, coordinates, etc.
- Respect the domain/range (e.g., P647 “Drafted by”)
- Verify object vs. data properties (point to an object or a literal)
- Direction matters

Linked Data Server: OpenLink Virtuoso

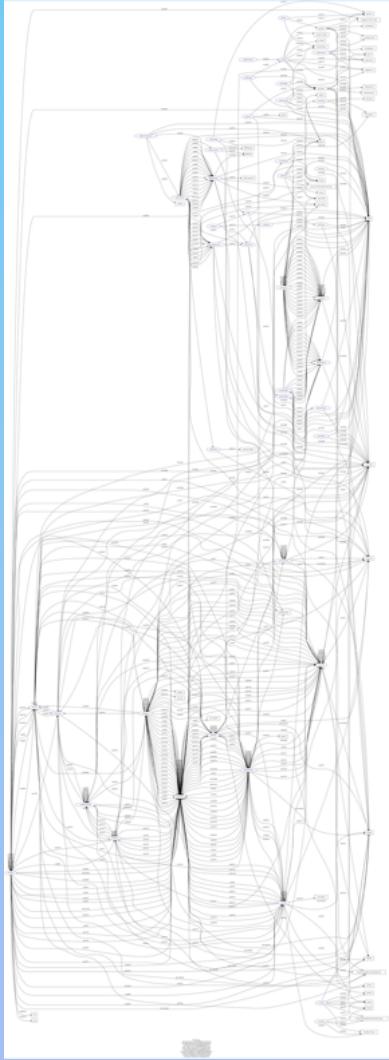


- Multi-model virtual database and web server
- SPARQL endpoint
- Two instances on Arbutus Cloud (Digital Research Alliance Canada)
- Production server at virtuoso.simssa.ca
- Staging server at virtuoso.staging.simssa.ca
- Staging runs locally in our lab via a tunnel, requires McGill VPN to access

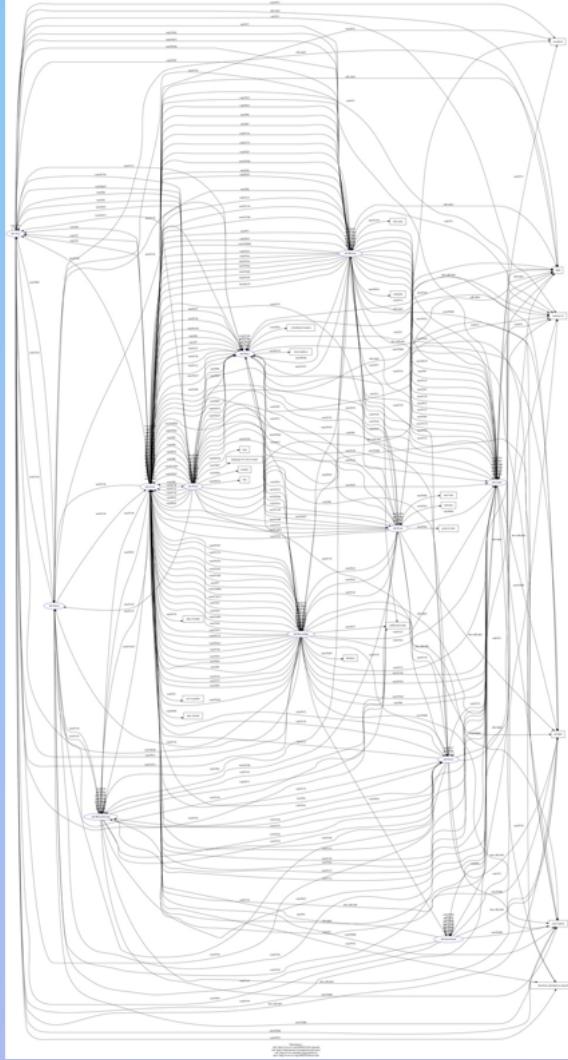
Dig That Lick 1000 Ontology



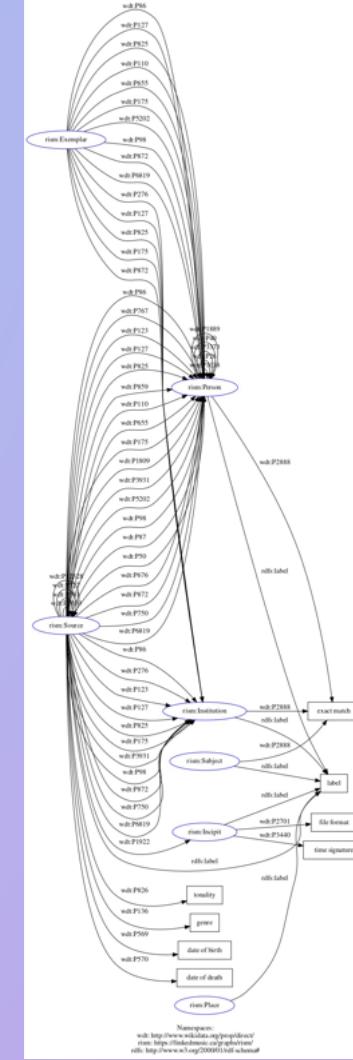
LinkedMusic



MusicBrainz



RISM



Credit:
Simon Ngassam

Documentation and Repository Structure

- Refactored to a database-centric structure
- README and documentation folder for each database
- 30 Wiki pages, custom sidebar

The screenshot shows a GitHub repository named 'linkedmusic-datalake'. It's a public repository with 7 branches and 0 tags. The main branch is selected. The repository has 1,665 commits. Recent commits include:

- SCN-MNG Merge pull request #452 from DDMAL/issue--#379 (ab46a80 · 2 months ago)
- Merge branch 'main' into restructure to incorporate dtl an... (4 months ago)
- refactor(cantusindex): reorganize cid fetching logic for be... (3 months ago)
- chore: Moved the database READMEs to be in database/R... (4 months ago)
- Merge branch 'main' into restructure to incorporate dtl an... (4 months ago)

This screenshot shows a custom sidebar for managing datasets. It includes the following sections:

- Home**
- Project Status**
- Current Pipeline for Adding a New Dataset**
- Data Ingestion**
 - [Backing Up Data](#)
 - [Virtual Environment Setup and Activation](#)
 - [Data Reconciliation Guidelines](#)
 - [OpenRefine Tips](#)
 - [RDF Conversion Guidelines](#)
 - [Enumerating RDF Triples](#)
- Virtuoso**
 - [Working with Virtuoso](#)
 - [Virtuoso Setup Guide](#)
 - [How to SSH into Virtuoso](#)
 - [Restarting Virtuoso](#)
 - [Importing and Updating Data on Virtuoso](#)
 - [ISQL \(Virtuoso\)](#)

Credit:
Linnea Kirby 16

Database-Specific Challenges

The Session

Junjun Cao, Sebastien Chow, Linnea Kirby,
Sichen Meng, Yueqiao Zhang

- Traditional Irish music
- Data fetched from a GitHub repo with CSVs (scraped artist URLs)
- Low-frequency artists kept as string literals
- What to do about “Key: A mixolydian?”
 - “Key: A minor” exists in Wikidata
 - Could reconcile “Tonality: A” and “Mode: Mixolydian”
 - Create “Key: A mixolydian” in Wikidata?
- When should we create Wikidata entities?



- Digital Image Archive of Medieval Music
- Web scraper for data ingestion
- “Saw and described manuscript” → P61 “Discoverer or inventor”
- “Binder” → P170 “Creator”
- “Copied at” → P1071 “Location of creation”
- “Witnessed document” → unmapped
- Wikidata does not distinguish “commissioned by” and “commissioned for”



- High ambiguity in performers (e.g., Joe Thomas: American jazz trumpeter)

URI Issues

- Solo IDs in the CSV don't match IDs on the website
- URIs for DTL solos go to dtl.org not dig-that-lick.hfm-weimar.de



Dig That Lick 1000

Welcome!

Books and eBooks by the Director

DARKNESS TO LIGHT

Christian Ministry



Founded July 1991

Thanking the LORD for over 30 years of ministry

By Gary F. Zeolla

‘... to open their eyes [in order] to turn [them] back from **darkness** [i.e., falsehood and unrighteousness] **to light** [i.e., truth and righteousness] and [from] the authority of Satan to God, [in order for] them to receive forgiveness of sins and an inheritance among the ones having been sanctified by faith in Me’ (Acts 26:18; g.).

- High ambiguity in performers (e.g., Joe Thomas: American jazz trumpeter)

URI Issues

- Solo IDs in the CSV don't match IDs on the website
- URIs for DTL solos go to dtl.org not dig-that-lick.hfm-weimar.de
- Solos are part of tracks, tracks have the metadata
- Tracks don't have URIs



Dig That Lick 1000

MusicBrainz

Junjun Cao, Simon Ngassam, Yueqiao Zhang

- ~355 million RDF triples, currently 92.7% of LinkedMusic
- High-quality API, mostly reconciled with Wikidata already
- Release status (e.g., album)
 - Q18609099 “Withdrawal” is exclusively related to sports
 - Q2352928 “Expunged” is about destroying criminal records



- Many packaging types unreconciled (e.g., paper sleeve, Digifile)
- “Slim jewel case” → Q1023101 “Jewel case”
- P767 “Contributor to the creative work or subject” used 33 times
 - Used for photographer, mixer, audio engineer, event booking person, etc.
- If a user asks for photographers, an LLM might naively return all people reconciled to P767



N W Central Africa

Centre Reg, Cameroon

Africa | Central Africa

Bamyo

Culture

Area

Song

Culture: Bedzan

Cameroon

Ntui

Nkoteng

Yaoundé

Mbalmayo

Akonolinga

Lomié

Ebolowa

Sangméléma

Kribi

Edéa

Douala

Buea

Kumba

Mbouda

Foumban

Bamenda

Wum

Kumbo

Mamfe

Abakaliki

Okpoma

Enugu

Nguru

Enugu

Abakaliki

Okpoma

Wum

Kumbo

Bamenda

Tibati

Ngaoundal

Bozoum

Bossangoa

Cultures

Bedzan

Songs

Mbwe Nan

Rossembélé

Lengbu

Ndondon

Kpereba

Papi

Mgbenye

+

-



Reset Map

Clear Culture

Bedzan

Mbwe Nan

0:32

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© Association For Cultural Equity.



The Global Jukebox

Linnea Kirby

- Culture rather than country-oriented
- Locations like “N W Central Africa” don’t map nicely with Wikidata
- Did not include encodings
 - Primary function of an ensemble (e.g., ritual, funerary, war)
 - Gender composition (male, female, children, any)
 - Prominence of low back vowels in a song
- Excluded Parlametrics — dataset of conversational recordings

The Global Jukebox

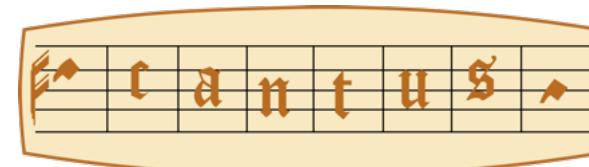
- RISM is in RDF, but we need CSVs to reconcile with OpenRefine
- Split because files were too big
- Gave blank nodes hashes to fix issues tracking them across files

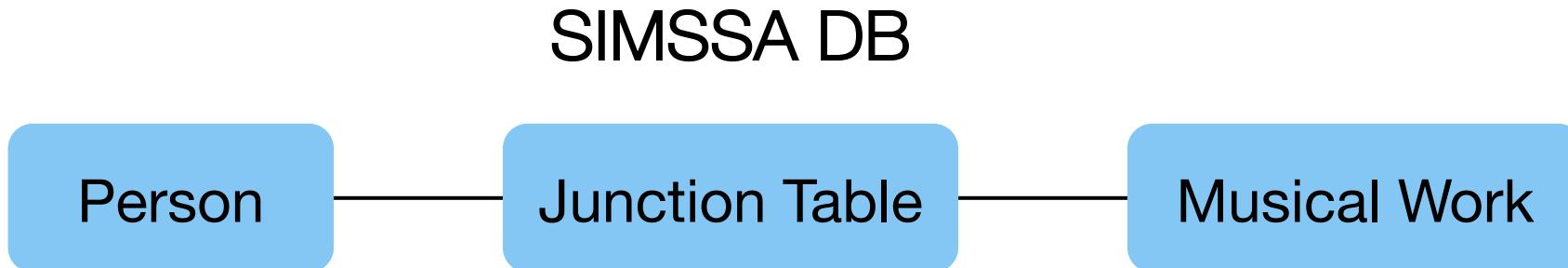


Cantus Database

Sichen Meng

- What Wikidata property should link chants to feasts?
- P366: “Has use” is broad
 - Book has use reading
 - 1,1-dimethylhydrazine has use rocket propellant
- P9215: “Set during recurring event” is for fictional works
 - Home Alone (movie) is set during Christmas
- Should we create highly specialized properties?
- Are obscure properties useful if no one else uses them?





Role:
Writer/composer

- SQL view created for each role
- Roles pivoted into columns
- Avoids blank nodes and reification (RDF triple about a triple)

Cantus Index

Sichen Meng

- List of all Cantus Index chant IDs, mapped to JSON files
- JSON files merged to create a CSV
- Straightforward!

AcousticBrainz

Liam Pond

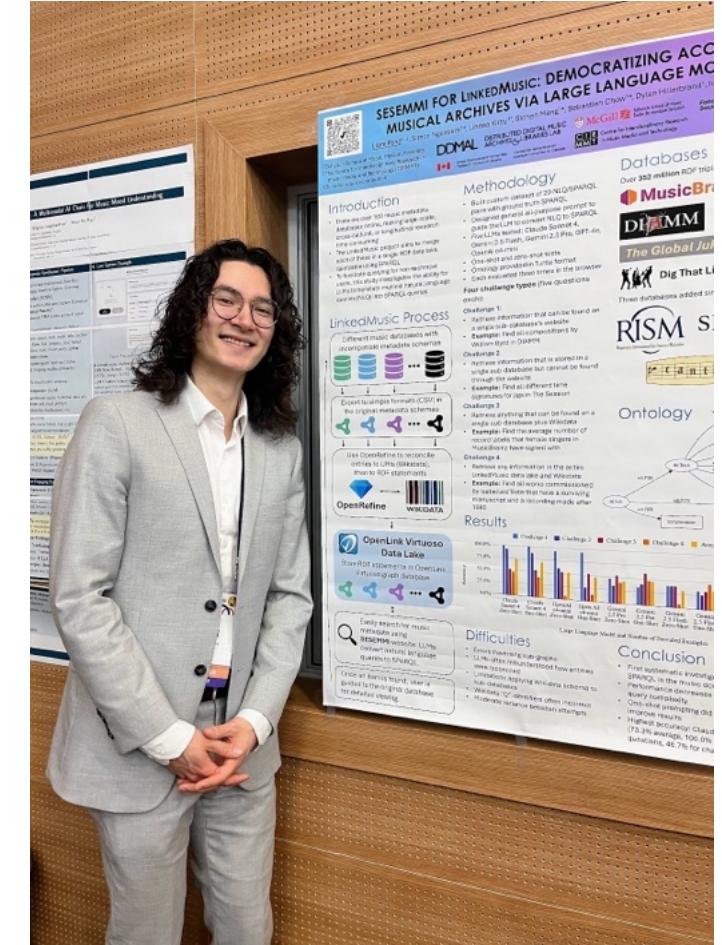
- Low-level data automatically determined with Essentia for songs in MusicBrainz (e.g., spectral centroid, MFCCs, zero-crossing rate)
- High-level data computed based on the low-level data (e.g., key, beats per minute, danceability)
- Kept full high-level data, partial low-level data (3GB compressed vs. 589GB)



NLQ2SPARQL

NLQ2SPARQL

- Can LLMs turn natural language queries into SPARQL?
- Multilingual, enables conversation, lowers barriers to entry
- Systematic empirical study of work started by Junjun Cao
- Short paper accepted to LLM4MA (Daejeon, South Korea)



Methodology

- Custom dataset of 20 ground truth NLQ/SPARQL pairs
- Four challenge types, five questions each (one per sub-database)
- General prompt to guide conversion between NLQ and SPARQL
- Claude Sonnet 4, Gemini 2.5 Flash, Gemini 2.5 Pro, GPT-4o, OpenAI o4-mini
- Zero- and one-shot (number of examples)
- Full ontology provided in Turtle format
- Evaluated three times each in the browser



Dig That Lick 1000



The Global Jukebox

Question Challenge Types

Challenge 1:

Single sub-database

Challenge 2:

Single sub-database + expanded search

Challenge 3:

Single sub-database + Wikidata

Challenge 4:

Anything in LinkedMusic

Example 1

Find all compositions by William Byrd in DIAMM

Question Challenge Types

Challenge 1:

Single sub-database

Challenge 2:

Single sub-database + expanded search

Challenge 3:

Single sub-database + Wikidata

Challenge 4:

Anything in LinkedMusic

Example 2

Find all different time signatures
for jigs in The Session

Question Challenge Types

Challenge 1:

Single sub-database

Challenge 2:

Single sub-database + expanded search

Challenge 3:

Single sub-database + Wikidata

Challenge 4:

Anything in LinkedMusic

Example 3

Find the average number of record labels that female singers in MusicBrainz have signed with

Question Challenge Types

Challenge 1:

Single sub-database

Challenge 2:

Single sub-database + expanded search

Challenge 3:

Single sub-database + Wikidata

Challenge 4:

Anything in LinkedMusic

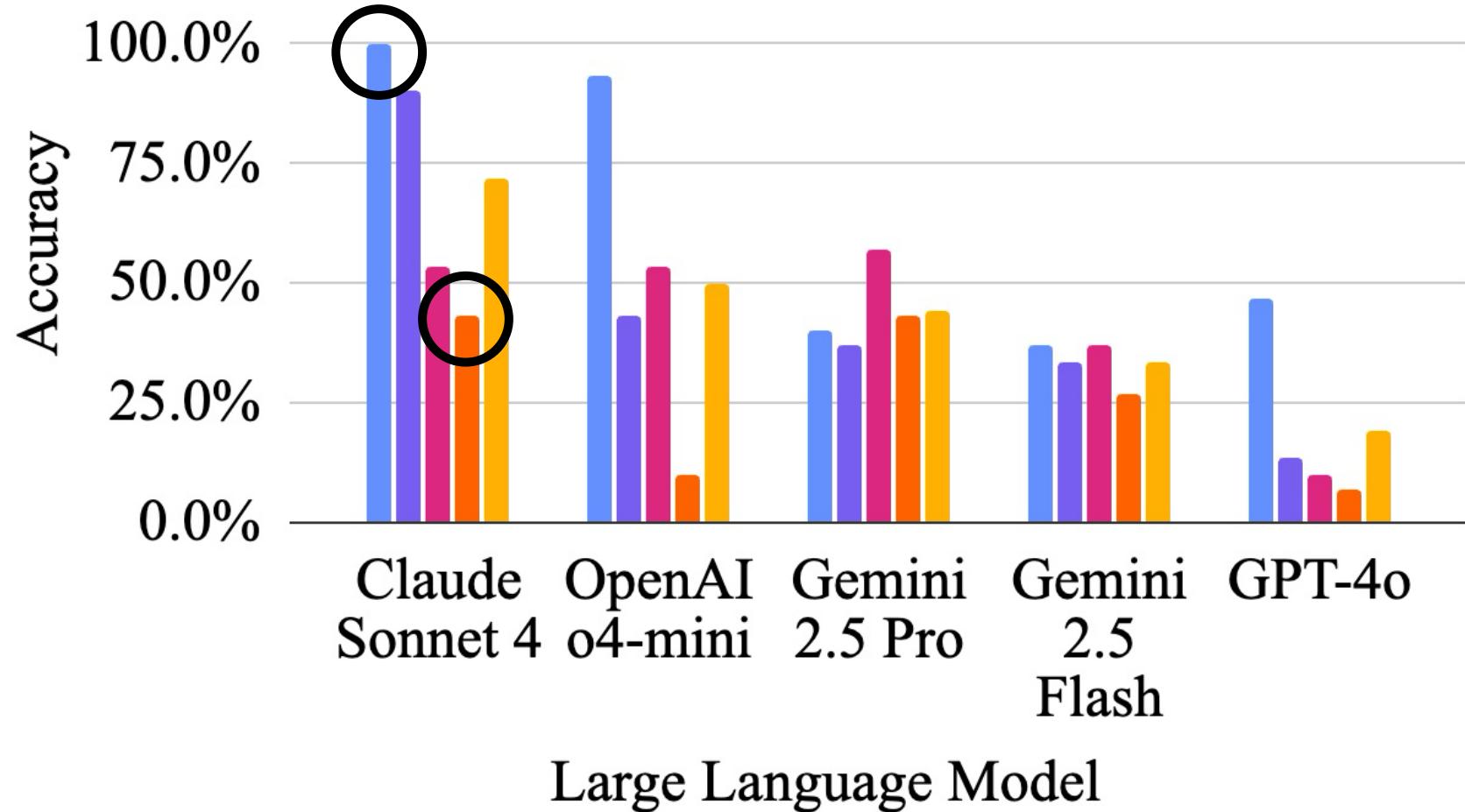
Example 4

Find all works commissioned by Isabella d'Este that have a surviving manuscript and a recording made after 1980

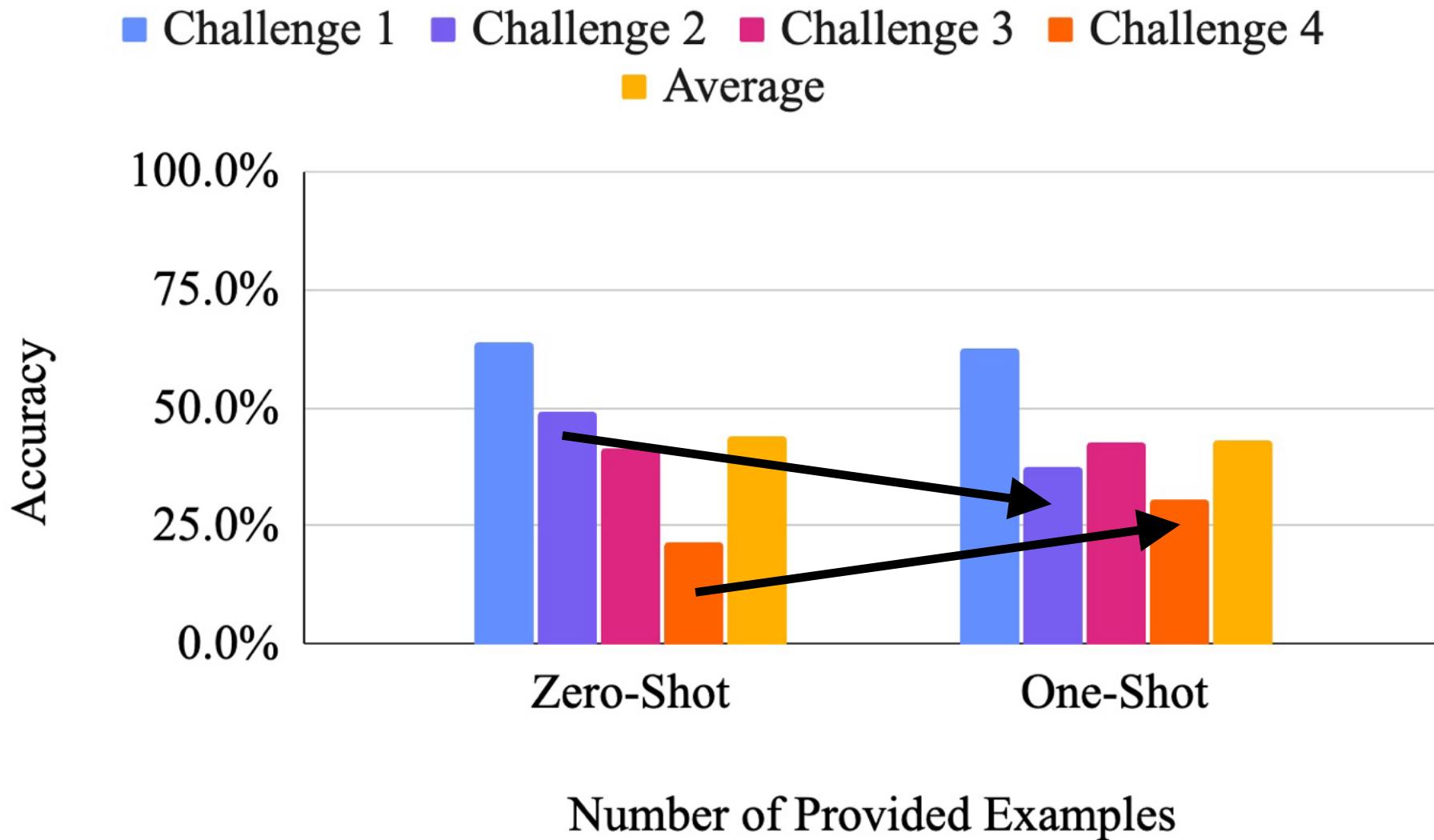
Results

Average Accuracy for Four Challenge Types by LLM

■ Challenge 1 ■ Challenge 2 ■ Challenge 3 ■ Challenge 4
■ Average



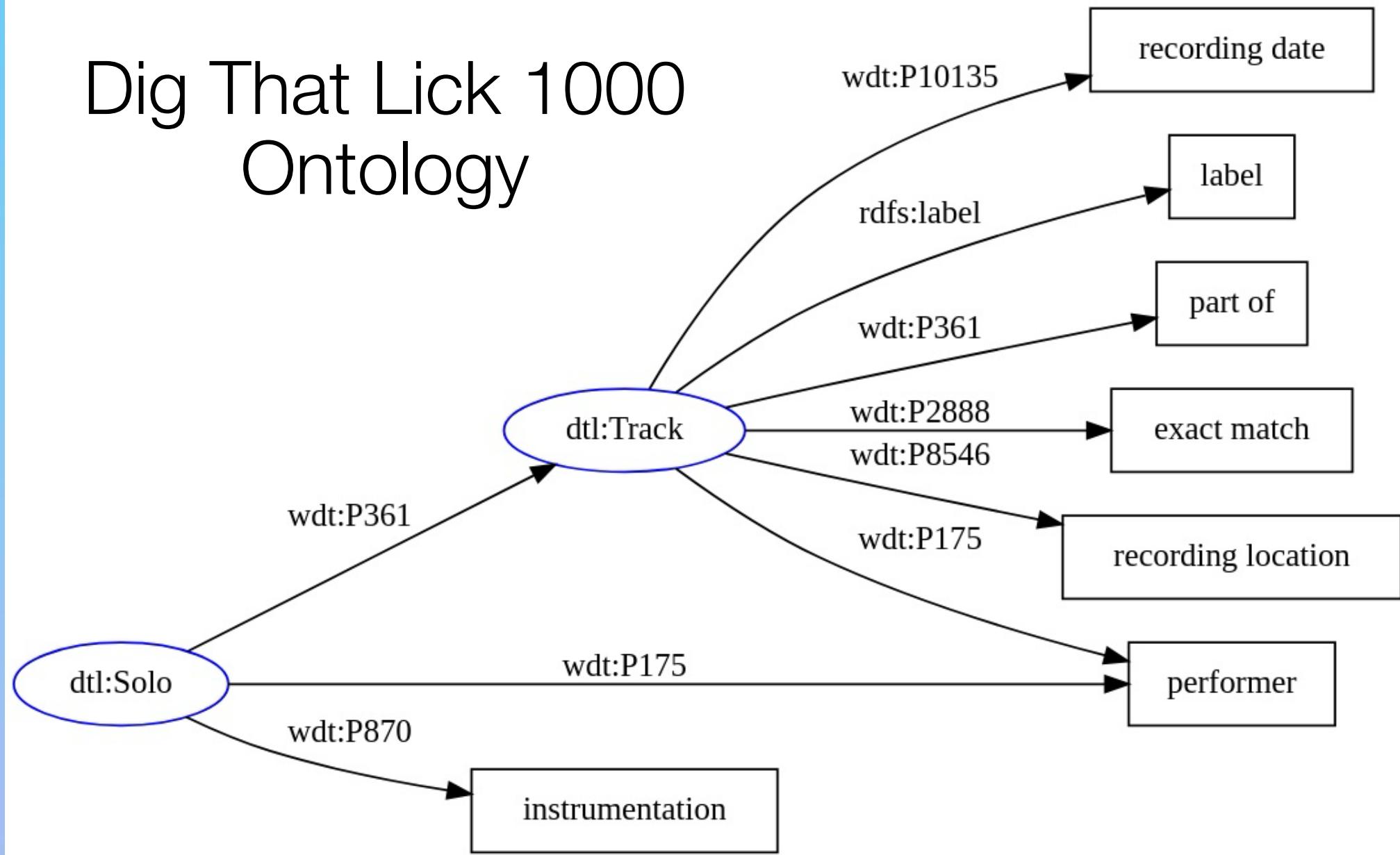
Average Accuracy for Four Challenge Types by Number of Provided Examples



Difficulties

- LLMs often misunderstood how entities were reconciled
- Limitations applying Wikidata schema to sub-databases
- Wikidata “Q” identifiers often incorrectly retrieved
- Moderate variance between attempts
- Errors traversing subgraphs

Dig That Lick 1000 Ontology

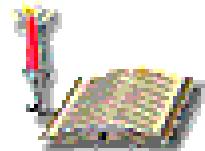


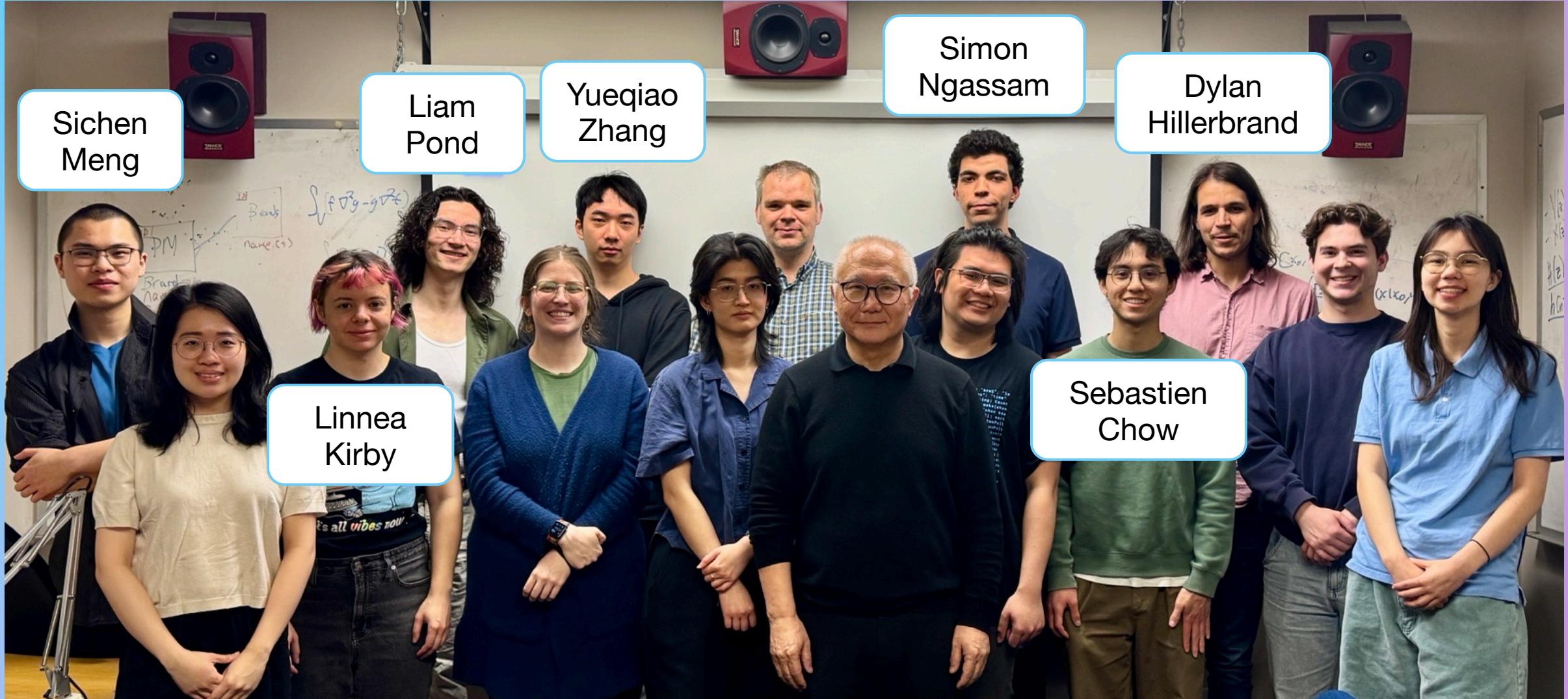
NLQ2SPARQL Conclusion

- First systematic investigation of NLQ to SPARQL in music
- Performance decreases significantly with query complexity
- One-shot prompting did not consistently improve results
- Highest accuracy: Claude Sonnet 4 zero-shot
 - 73.3% average
 - 100.0% for Challenge 1 questions
 - 46.7% for Challenge 4 questions

Future Work

- Future databases – please give suggestions!
- Adding entities to Wikidata
- Going over existing databases again
- Implementing NLQ2SPARQL agent
- Front end
- Persephone Initiative





Not pictured: Junjun Cao

Interactive NLQ2SPARQL Agent:

Using Chinese Traditional Music
Knowledge Base as an Example

Junjun Cao (Shaojun Si)

- Previous Postdoctor Researcher (2024–2025)
for DDMAL, McGill University
- Music Knowledge Engineering & DH Lab,
China Recording Corporation, Beijing



looking back to 2024:

Leveraging ChatGpt for Natural Language Query to SPARQL on Virtuoso

--Using TheSession, Wikidata, MusicBrainz as example



Issue: If the ontology (OWL) is (growing) oversized, LLM,
more difficult to concentrate for accurate SPARQL generation

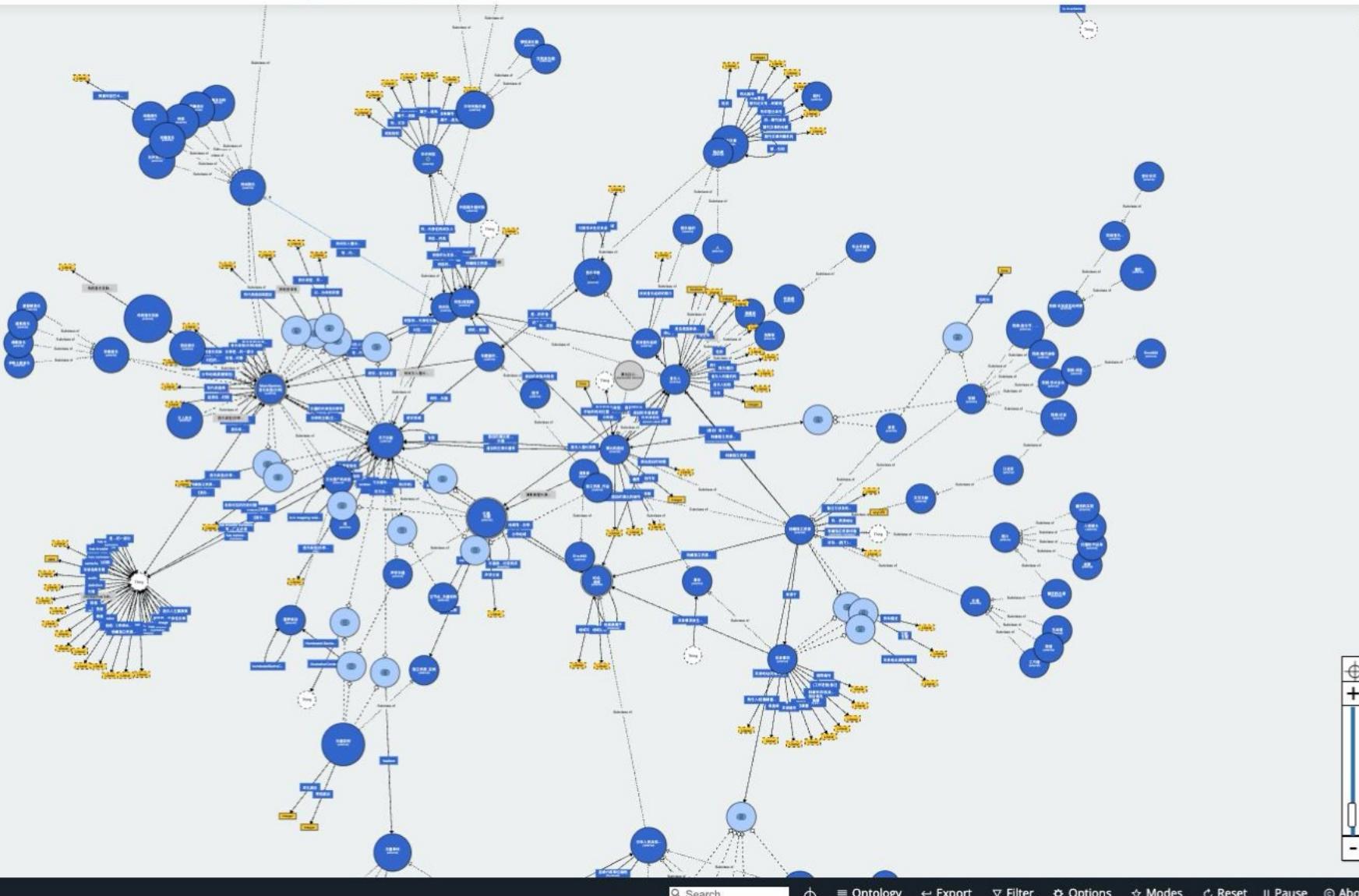


Web Ontology Language (OWL) in graph visualization



音乐类型(乐种) 乐器库 特藏独立资源_作品 元数据本体 知识图谱 AI助手 关于我们

WebOWL
1.1.7



No title available

https://lib.ccgmusic.edu.cn/ontologies/oriental_instrument&music
Version: 2.0 highlighting Oriental Instruments

Author(s): 蔡军军 (中国音乐学院中国音乐研究基地), 中国音乐学院图书馆技术部、数字人文工作坊全体成员; 麦吉尔大学音乐科技系分布式数字音乐档案和图书馆实验室
LinkedMusic 项目组 (提供支持)

Language: en

▼ Description

1.以中国音乐学院图书馆“中华传统音乐文化资源库”的实践为基础，尤其结合其“影像志”特点，进行基础本体方案设计；再结合传统音乐文化关联多领域的特点，构建相应类、关系和语义约束方式。如涉及乐种、乐器、民族主题词表，及对曲目、乐人、地域、文字文献等领域的语义关联。该方案将有利于传统音乐分类研究和垂直领域的知识检索，且具有音乐地理学、音乐人类学社群分析等方向上的应用前景。2.相关论文可参考《中国传统音乐知识库的元数据本体构建研究》（《数字人文研究》，2022年第4期）。3.联系我们：①邮 箱：allenmusedh@gmail.com; 529360500@qq.com ②微 信：MuseOH 4.关于versionInfo: 该版本是在原有的乐元数据本体之上扩展而形成的，即 2.0 版，针对武汉大学文化遗产智能计算实验室（教育部）开放基金课题“基于东方乐器”的音乐类文化遗产知识图谱构建研究”而设计。特此注明 5.关于命名空间前缀：在相应的本体列表展示页面，有若干命名空间及其前缀未能展示，即原有在于采用 http://而非 http://，列示如下：(5.1) PREFIX dbo: (5.2) PREFIX dbpedia-owl: dbo 和 dbpedia-owl 同指一个命名空间，gn 和 geonames 也同指一个命名空间

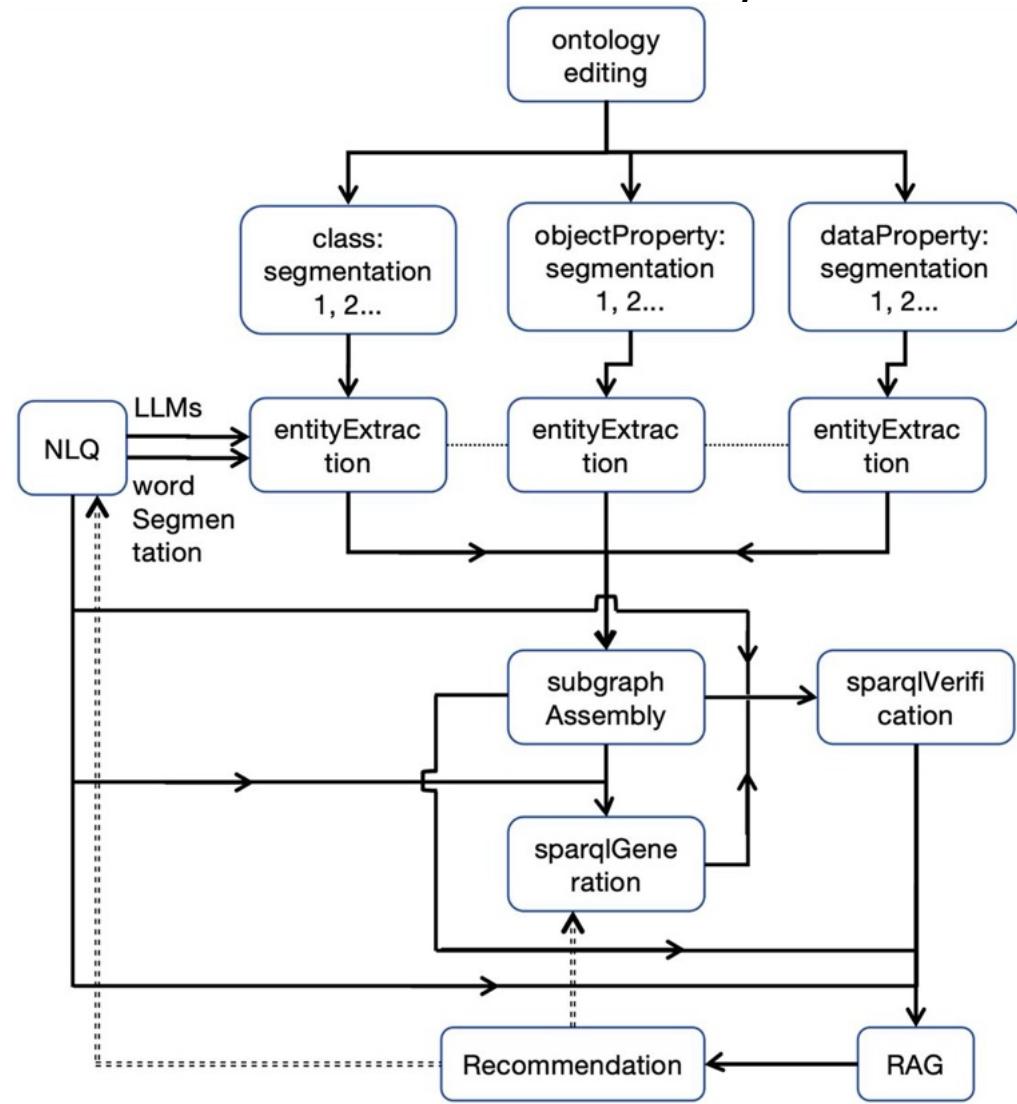
► Metadata

► Statistics

► Selection Details

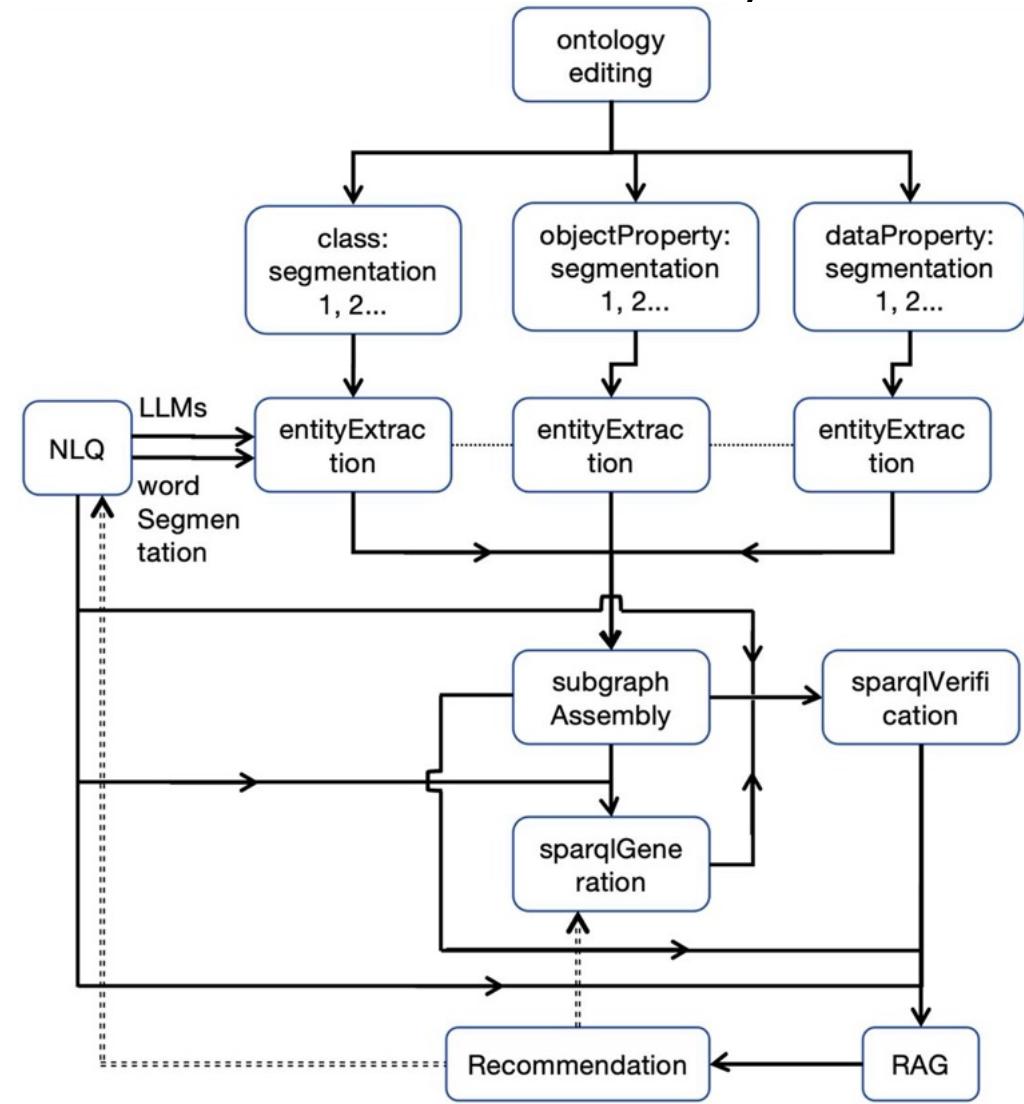
Solution: "ontology subgraph" detection/extraction/re-assembly

- 1. ontology segmentation
- 2. “entity” extraction
 - find the classes and properties(relation) in the NLQ and match them in the ontology entities vocabulary list
 - implicit entities detection from NLQ
- 3. subgraph re-assembly



Solution: "ontology subgraph" detection/extraction/re-assembly

- 4. SPARQL generation and verification
- 5. Retrieval Augmented Generation (RAG) or Generation Augmented Retrieval (GAR)
- 6. ontology subgraph neighborhood based recommendation





中国音乐学院
CHINA CONSERVATORY OF MUSIC

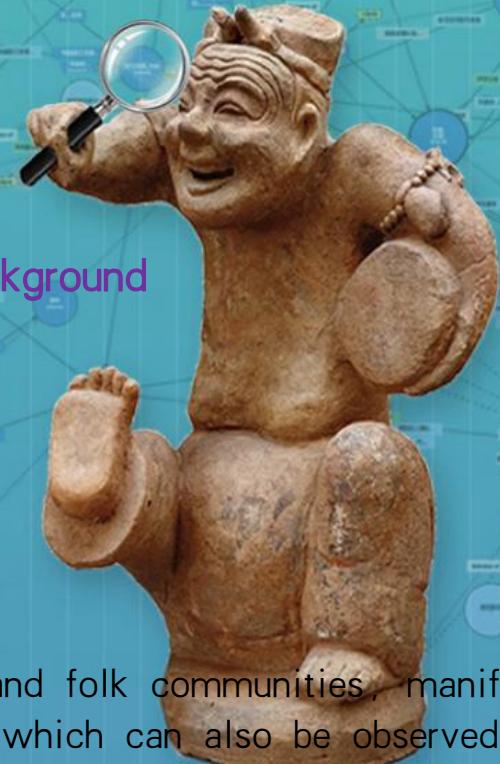
Library

Type of music (music) Instrument library Specially Collected Independent Resources - Works ▾ Metadata ontology ▾
Knowledge graph ▾ The AI Assistant About Us

中華傳統音樂文化知識庫

中国传统音乐，来自宫廷、文人、宗教、民间，又有歌曲、说唱、歌舞、戏曲、器乐等形态，还可以从族性、乐器、地理、宗派等角度观照。探索“知识网络”中的各式群落，一同领略音乐文化的异彩纷呈……

the global/holistic ontology: background



translation: Chinese traditional music comes from the ancient courts, literati circles, religious groups and folk communities, manifesting in forms as songs, narrative rap (speech-song fusion), singing-dancing integration, instrumental music, which can also be observed from viewpoints as ethnicity, instrumentation, geography and factions. Let's explore various communities within the "knowledge network", reveling in their dazzling multiplicity.

NLQ to SPARQL Interactive Chat

 Reset

Chinese Traditional Music Knowledge Base Intelligent Question Answering System v2.0 (Multi-turn Dialogue + Complete Results)

 Welcome to the interactive SPARQL query system! (Fixed version)

New features :

- 💡 Complete **5-part result** : Query results, SPARQL, Ontology, RAG analysis, and recommendations.
- 💬 Intelligent **multi-turn dialogue** : Follow-up questions do not require re-execution of the workflow.
- ⚡ **Fast Response** : Context-based conversations take only 3-5 seconds

You can :

- 🔍 Raising questions about natural language in traditional Chinese music
- 💬 Provide clarification, comments, or further requests (no need to search again)
- 🔄 Reset the conversation and start a new topic

Example question:

What are some plucked string instruments in traditional Chinese music?

Enter your question or feedback here... (The first question will execute the full workflow; subsequent conversations will be based on context for quick responses)

 send

💡 Tip: Press Ctrl+Enter to send quickly | The first question takes about 30-60 seconds, and subsequent conversations take about 3-5 seconds.

In the dialogue (based on the question: "Where is the "Donbla" (...)")

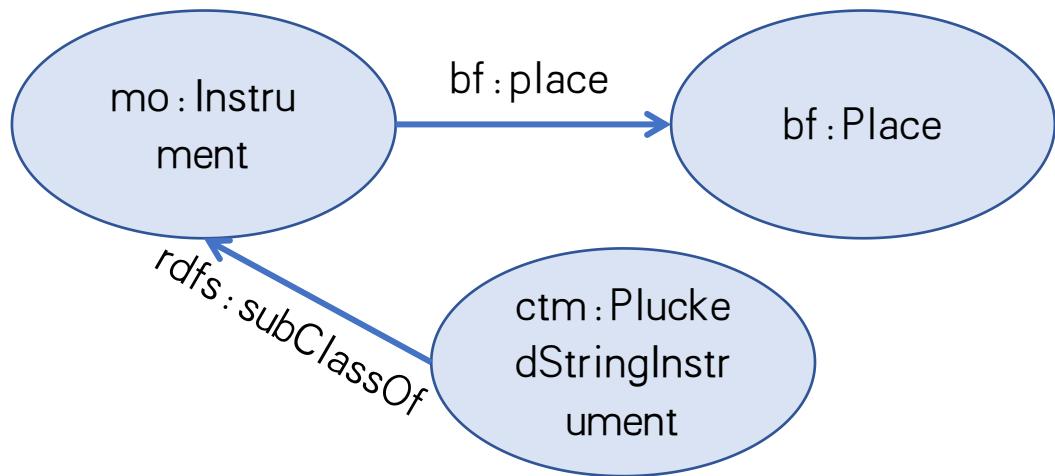
Solution: "ontology subgraph" detection/extraction/re-assembly

- example
- 1. 东不拉这种乐器分布在哪里?
- Where is the instrument dombra distributed?
- 2. 东不拉分布在哪里?
- Where is the dombra distributed?
--implicit entities detection
- 2.1 卡龙(ka long)分布在哪里? -LLM may not know what ka long is
- Where is the ka long distributed?

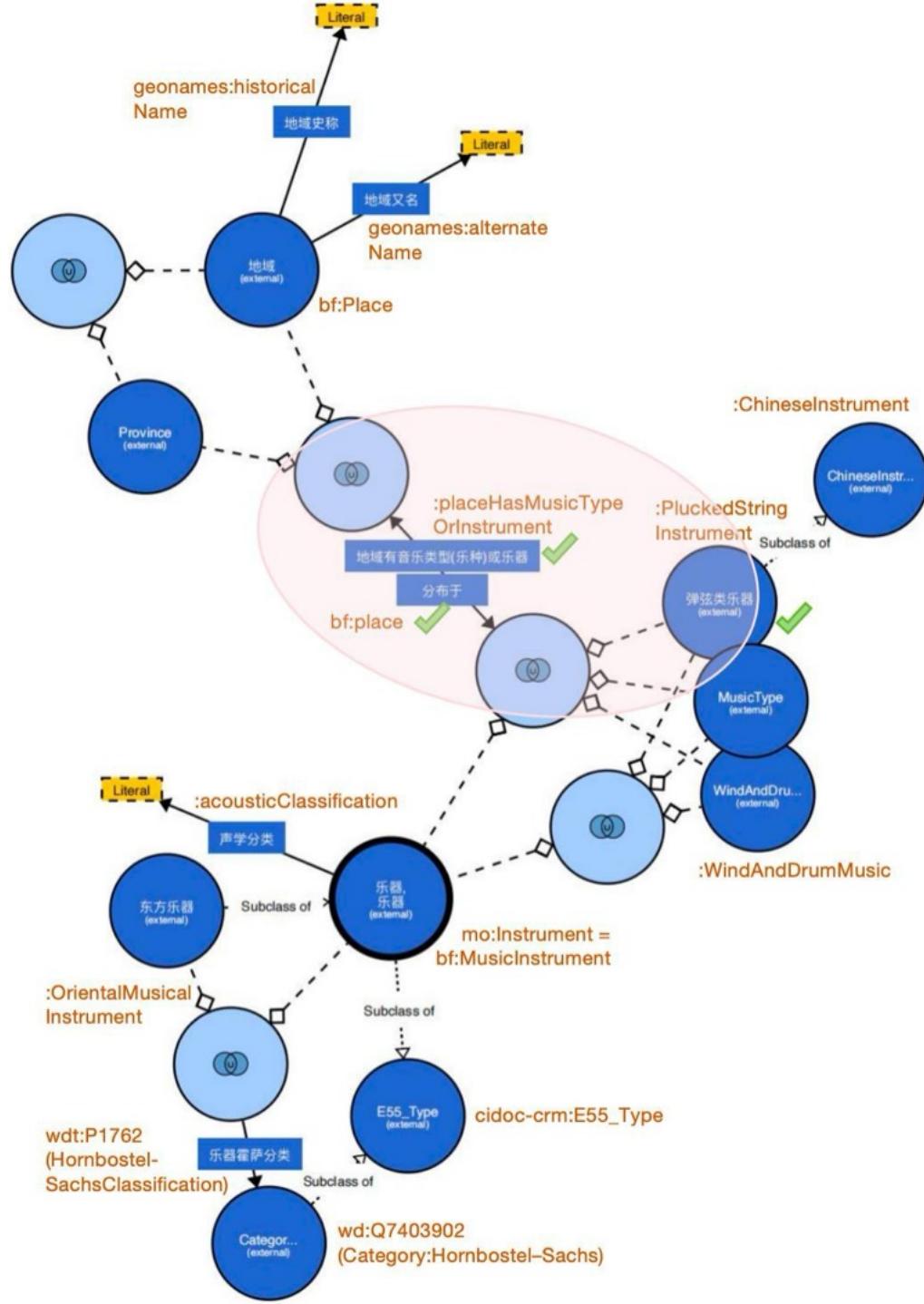


Solution: "ontology subgraph" detection/extraction/re-assembly

- example
- 3. 东不拉分布在哪里; 其所分布的地域还有哪些弹弦类乐器?
- Where is the dombra distributed, and what other plucked-string instruments are found in those regions?



You can ask above in one go
or through interaction.
agent webpage 1



```

define input:inference 'urn:owl:ccmusicrules0913' # activating Reasoning

PREFIX bf: <http://id.loc.gov/ontologies/bibframe/>
PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT
DISTINCT ?dombra ?dombraLabel ?place ?placeLabel ?otherInstrument ?otherInstrumentLabel

WHERE { # Find the dombra instrument
?dombra a ctm:PluckedStringInstrument;
rdfs:label ?dombraLabel .
FILTER(CONTAINS(?dombraLabel, "东不拉"))

?dombra bf:place ?place . # Get the place where dombra is distributed
?place rdfs:label ?placeLabel .

# Find other plucked string instruments in the same place
?otherInstrument a ctm:PluckedStringInstrument;
bf:place ?place ; rdfs:label ?otherInstrumentLabel .

# Exclude the dombra itself
FILTER(?otherInstrument != ?dombra)}

```



Distribution:

Gansu Province (甘肃省)

Jiuquan City (酒泉市)

Aksai Kazakh Autonomous County

(阿克塞哈萨克自治县)

Qinghai Province (青海省)

Xinjiang Uygur /'wi:gər/

Autonomous Region

(新疆维吾尔自治区)

Hami City

(哈密市)

...

Other Plucked String Instruments:

Rawap (热瓦普)

ka long (卡龙)

Dutar (独它尔)

Comz (考姆兹)

...

Instructions for use of reasoning

(1) Adding DEFINE input:inference 'urn:owl:ccmusicrules0913' to the beginning of any SPARQL query code will activate the ontology-based inference function, thereby achieving the data completion effect.

(2) Adding DEFINE input:same-as "yes" to the beginning of any SPARQL query code can also activate knowledge reasoning based on instance equivalence relations.

SPARQL query example

0. Main entity thesaurus display (for reference in other searches)

- [0.1 Search for all music genres \(song types\)](#)

Exact match reference for other queries

- [0.2 Search for all musical instrument names](#)

Exact match reference for other queries

- [0.3 Query all region names](#)

Exact match reference for other queries

- [0.4 Search all ethnic groups](#)

Exact match reference for other queries

- [0.5 Query all \(musicians\)](#)

Exact match reference for other queries

1. Database Overview, Exploring Internal Structure

- [1.1 Querying Database Size](#)

That is the total number of

Click to view the preset namespaces.

```

① 1 define input:inference 'urn:owl:ccmusicrules0913'
2 ▾ PREFIX bf: <http://id.loc.gov/ontologies/bibframe/>
3 PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>
4 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
5 SELECT DISTINCT ?dombra ?dombraLabel ?place ?placeLabel ?otherInstrument ?
   otherInstrumentLabel
6 ▾ WHERE { # Find the dombra instrument
7   ?dombra a ctm:PluckedStringInstrument ;
8     rdfs:label ?dombraLabel .
9   FILTER ( CONTAINS ( ?dombraLabel , "Dombra" ) )
10  ?dombra bf:place ?place . # Get the place where dombra is distributed
11  ?place rdfs:label ?placeLabel .
12  # Find other plucked string instruments in the same place
13  ?otherInstrument a ctm:PluckedStringInstrument ;
14    bf:place ?place ; rdfs:label ?otherInstrumentLabel .
15  # Exclude the dombra itself

```

Table Raw Response

Showing 1 to 32 of 32 entries

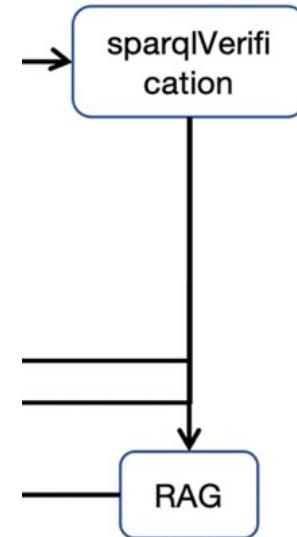
dombra	dombraLabel	place	placeLabel	other Instruments	otherInstrumentLabel
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/Ap14b2sWvtbAyBf4	"kao mu zi" ®py
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/fMBz2JUYLHdX6a44	"du ta er" ®py
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/8apavLthm62nngD8	"duo lang re wa pu" ®
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/s4Tzj0a8WxSl2712	"re bu pu" ®py
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/TpbRHwukiP069WOI	"fei te ke na" ®py
https://lib.ccmusic.edu.cn/data/instrument/xp3jGESf7vn-MUqlO	Dombra	https://lib.ccmusic.edu.cn/data/place/65000	Xinjiang Uygur Autonomous Region	https://lib.ccmusic.edu.cn/data/instrument/7s5MjjqCGGHCdh9g	"re wa pu" ®py

Mutual Complementation of Knowledge Graph and LLM: RAG+GAR

- prompt for **RAG + GAR**:

```
'''Based on a natural language question: {question},  
and the related ontology snippet (subgraph): {turtle_output},  
and the subsequent SPARQL query: {sparql_query},  
from visiting a SPARQL endpoint we retrieved the result,  
part of which is shown as: {sparql_results_for_prompts}.
```

...



- (1) If the result is too large, please conduct statistic analysis for summary
- (2) If the result is too small or even empty, please expand the retrieval scope using SPARQL keywords (syntax) OPTIONAL, UNION, | operator...'''

Ontology Subgraph Neighbourhood Based Recommendation

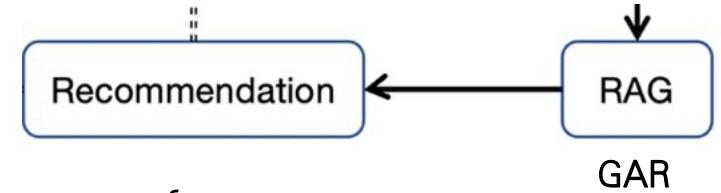
'''Based on a natural language question: {question} ...

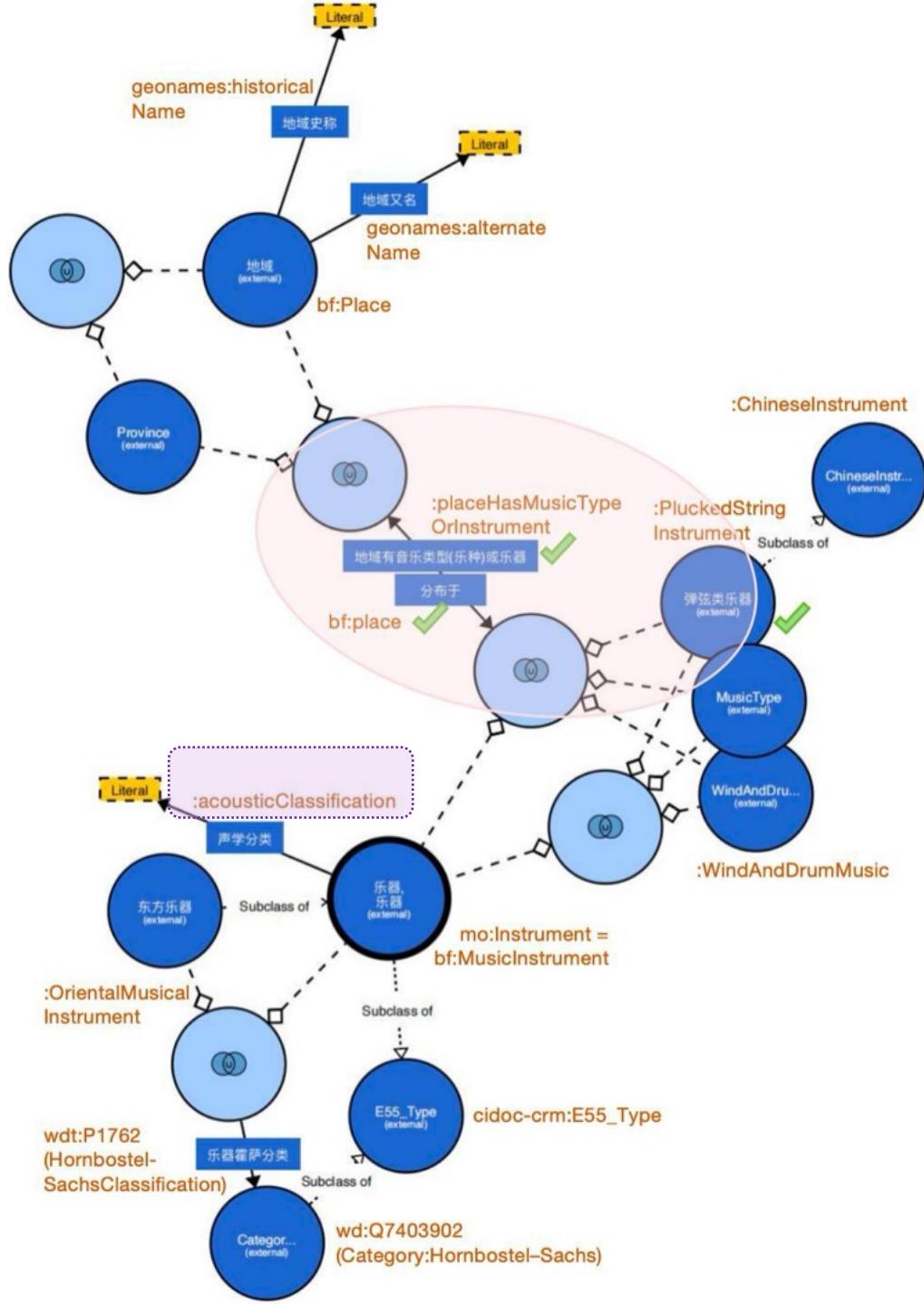
Please recommend other potential SPARQL query patterns:

These are tips of generating the recommendations, only for your reference:

1. **Identify the classes and properties in the ontology snippet that are used in the existing SPARQL query;
2. **Determine their current relationships and position in the ontology snippet;
3. **Expand to other adjacent classes or properties in the ontology snippet to recommend other possible query patterns that can yield more results;
 - **This idea is regarding the ontology as a graph/network, and the recommendation is to explore other nodes (classes or properties) that are connected/adjacent to the ones embodied in the existing SPARQL query.

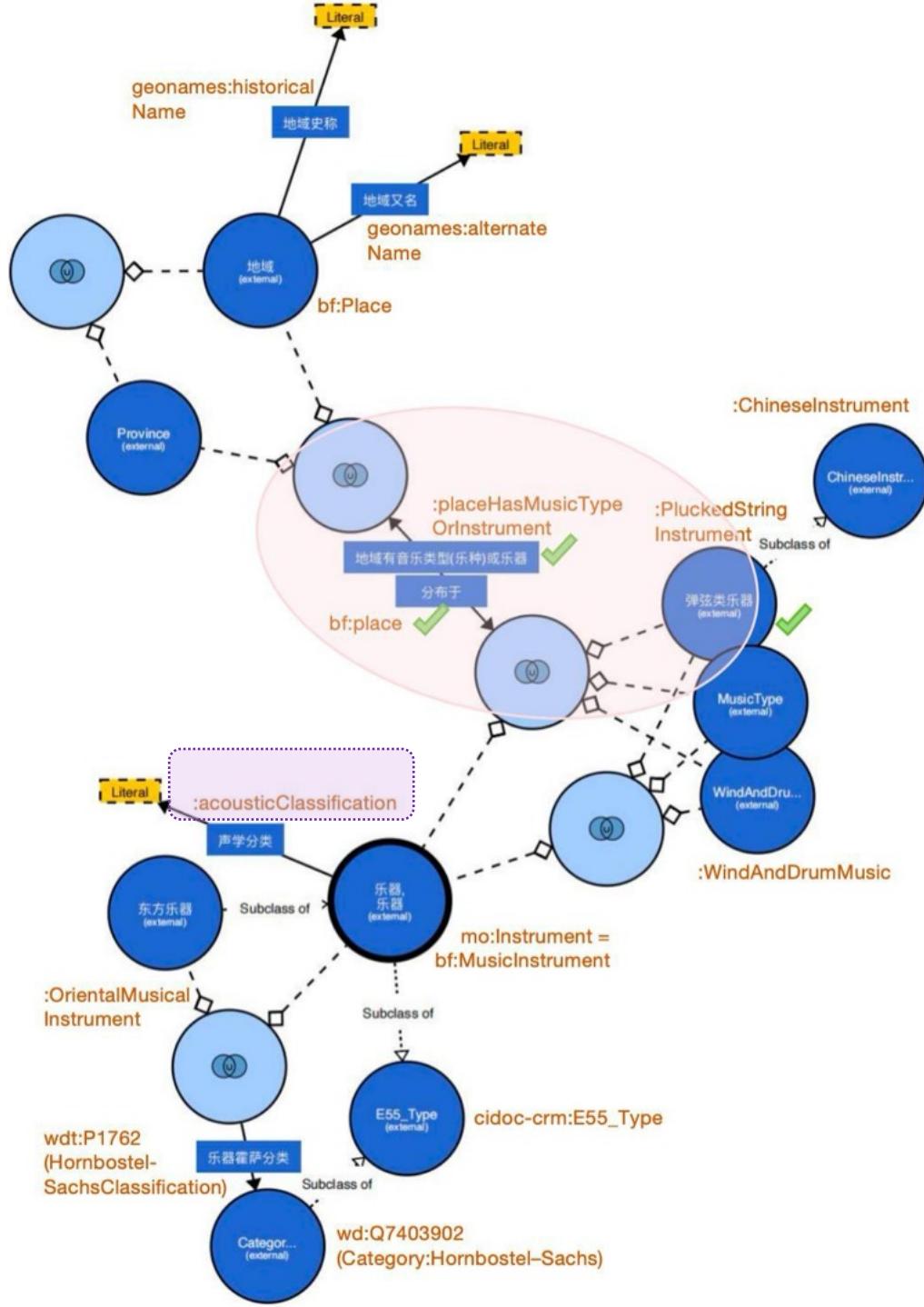
Return several SPARQL query patterns, along with the corresponding natural language questions, in a structured format. '''





- recommended Q&A pairs
 - What **acoustic classification** does 东不拉 (Dombra) belong to, and what other instruments are in the same acoustic classification? **Hornbostel–Sachs Classification**
 - In the areas where Dongbula is distributed, besides plucked string instruments, what other types of instruments are there?
 - What music types or genres exist in the regions where Dongbula is distributed?
 - What wind and drum music exists in the regions where Dongbula is distributed?
-

The pros and cons :



```

define input: inference 'urn:owl:ccmusicrules0913'
PREFIX bf: <http://id.loc.gov/ontologies/bibframe/>
PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>
PREFIX mo: <http://purl.org/ontology/mo/>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT
DISTINCT ?acousticClass ?acousticClassLabel ?otherInstrument ?otherInstrumentLabel
WHERE {
  # Identify the instrument Dombra and its Hornbostel–SachsClassification
  ?dongbula ctm:nameOfMusicTypeOrInstrument "东不拉" ;
    wdt:P1762 ?acousticClass .

  # Retrieve the label(s) of that acoustic classification
  OPTIONAL { ?acousticClass rdfs:label ?acousticClassLabel . }

  # Find other instruments within the same acoustic classification
  ?otherInstrument wdt:P1762 ?acousticClass ;
    rdfs:label ?otherInstrumentLabel .

  # Exclude the Dombra itself
  FILTER(?otherInstrument != ?dongbula)
  ORDER BY ?otherInstrumentLabel
}

```

Instructions for use of reasoning

(1) Adding DEFINE input:inference

'urn:owl:ccmusicrules0913' to the beginning of any SPARQL query code will activate the ontology-based inference function, thereby achieving the data completion effect.

(2) Adding DEFINE input:same-as "yes"

to the beginning of any SPARQL query code can also activate knowledge reasoning based on instance equivalence relations.

SPARQL query example

0. Main entity thesaurus display (for reference in other searches)

- [0.1 Search for all music genres \(song types\)](#)

Exact match reference for other queries

- [0.2 Search for all musical instrument names](#)

Exact match reference for other queries

- [0.3 Query all region names](#)

Exact match reference for other queries

- [0.4 Search all ethnic groups](#)

Exact match reference for other queries

- [0.5 Query all \(musicians\)](#)

Exact match reference for other queries

Click to view the preset namespaces.

```
① 1 define input:inference 'urn:owl:ccmusicrules0913'
 2 PREFIX bf: <http://id.loc.gov/ontologies/bibframe/>
 3 PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>
 4 PREFIX mo: <http://purl.org/ontology/mo/>
 5 PREFIX wdt: <http://www.wikidata.org/prop/direct/>
 6 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 7 SELECT DISTINCT ?acousticClass ?acousticClassLabel ?otherInstrument ?otherInstrumentLabel
 8 WHERE {
 9   # Identify the instrument Dombra and its Hornbostel-SachsClassification
10   ?dongbula ctm:nameOfMusicTypeOrInstrument "东不拉" ;
11     wdt:P1762 ?acousticClass .
```

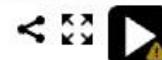


Table Raw Response

Showing 1 to 143 of 143 entries

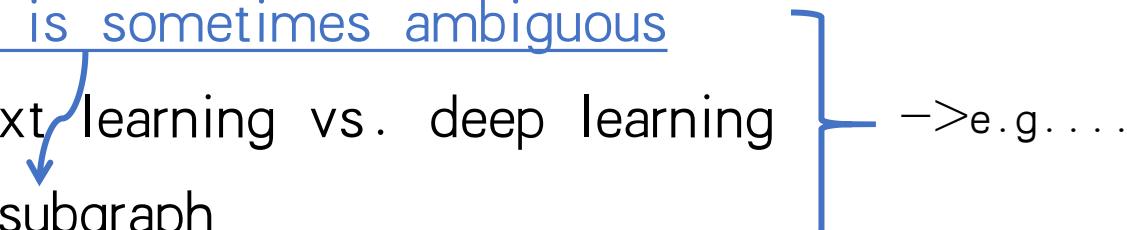
Search: Show All

	acousticClass	acousticClassLabel	other Instruments	otherInstrumentLabel
1	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/N79jx6849l3PMvO1	Seven Strings
2	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/xFSxqwH4UYnfHImg	Seven-stringed zither
3	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/XWv7aDGGqLxMv4Bk	Sanxian
4	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/8UtXDe6FUC7Ecx1G	Musical bow
5	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/t5e32p26goTsiARM	Yunhe
6	3_String Instruments_6 Pizzicato	3_String Instruments_6 Pizzicato	https://lib.ccmusic.edu.cn/data/instrument/Ca2w4dnWU5QIZ3TD	Five strings

The Pros and Cons

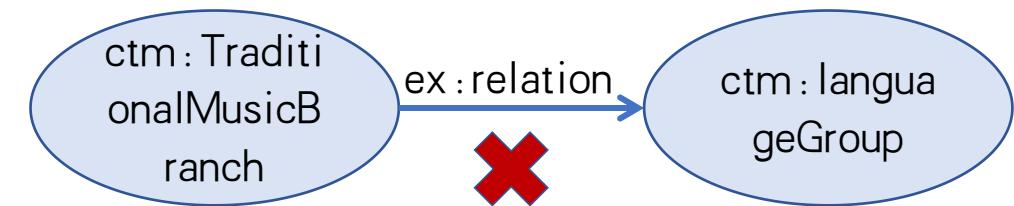
- 1. **pros:**
- (1) suitable for graph traversal/"chain-hop" query; for RDF datalake with expanding schema
- e.g., 苗族有哪些民间乐人，他们擅长什么乐种？那么这些乐种又会涉及什么乐器，它们的霍萨声学分类情况又如何……
- What folk musicians are there among the *Miao* ethnic group people and what kinds of music genre (MusicType) do they specialize in? Then what instruments are involved in these music genres, and what is the Hornbostel—Sachs acoustic classification of them...
- (2) transparency vs. intransparency/halucination —— see the following "ontology graph traversal based knowledge inference" —— *cliffhanger*
—— embodied in fore-mentioned RAG's prompt
- 2. **cons:** (1) only applicable in RDF with OWL... What if there is no ontology in an RDF database? (2) e.g., RISM: metadata with lots of nested structure —— *cliffhanger*

Workflow_Robustness enhancement->Interactive NLQ2SPARQL Agent

- Why do we need recommendation?
 - Why do we need interaction?
 - (1) The question happens to have no answer --- embarrassing
 - (2) Human's natural language question (NLQ) is sometimes ambiguous
 - (3) The necessity of "deeper seek": in-context learning vs. deep learning
 - (4*) incompleteness of the ontology (OWL) subgraph
 - core mechanism /'mekənizəm/ :
 - We prompt copilot as an agent to develop another agent, featuring context accumulation and **in-context learning**
- 

Workflow_Robustness enhancement->Interactive NLQ2SPARQL Agent

- (2)(3)(4)->What's the relationship of Branch and Language Group?
(translated as: 支脉和语族有什么关系?)
the clear version of the question:



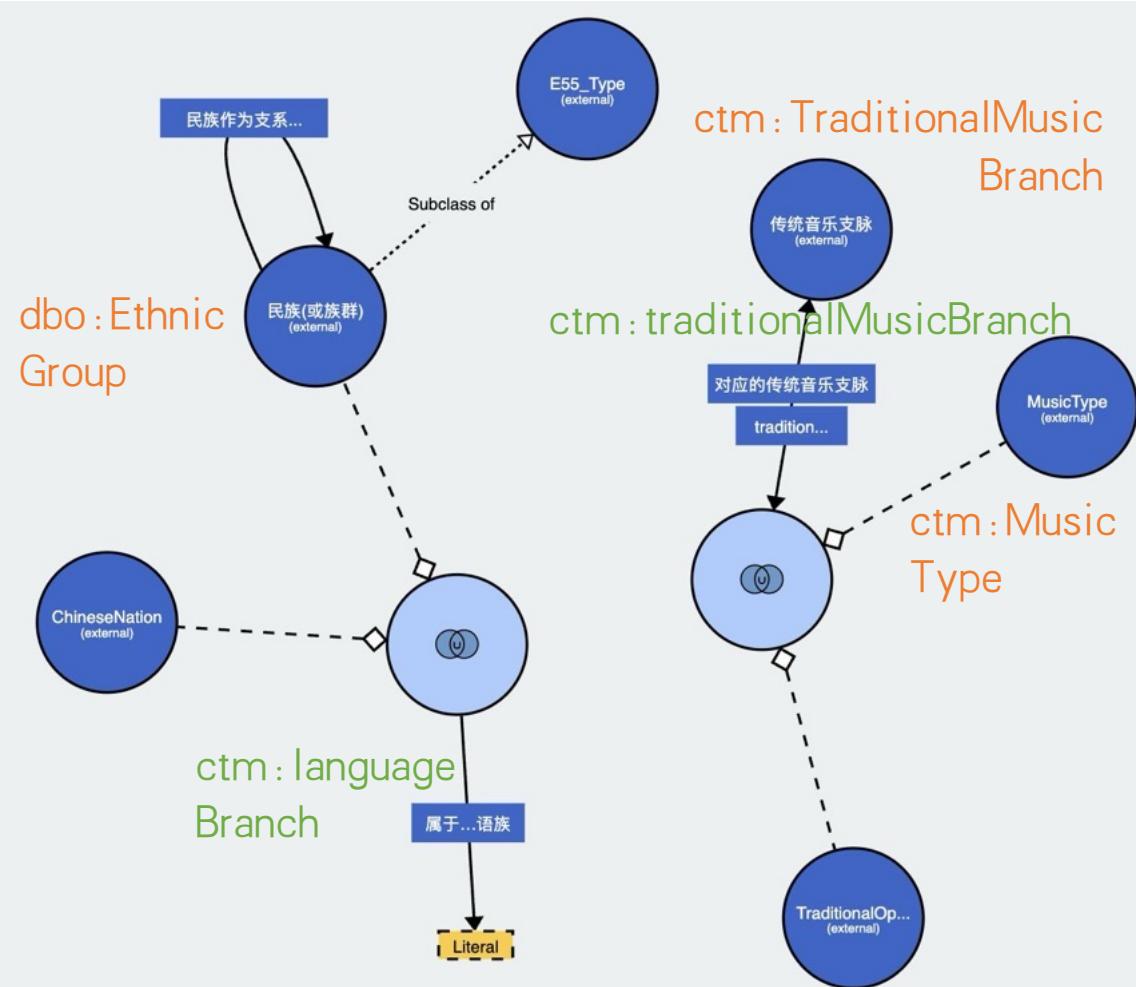
In the context of Chinese traditional musicology, what's the corresponding relationship between a “traditional music branch” and a “language group”(also known as language branch) which an ethnic group belongs to?

- Music Branch: a geography-cultural perspective for Chinese traditional music classification, e.g., Qinghai-Tibet plateau branch, Pamir branch. [22]
- Language Group: an ethnic-language perspective for classification, e.g. Tibeto-burman language group, Turkic language group (branch)

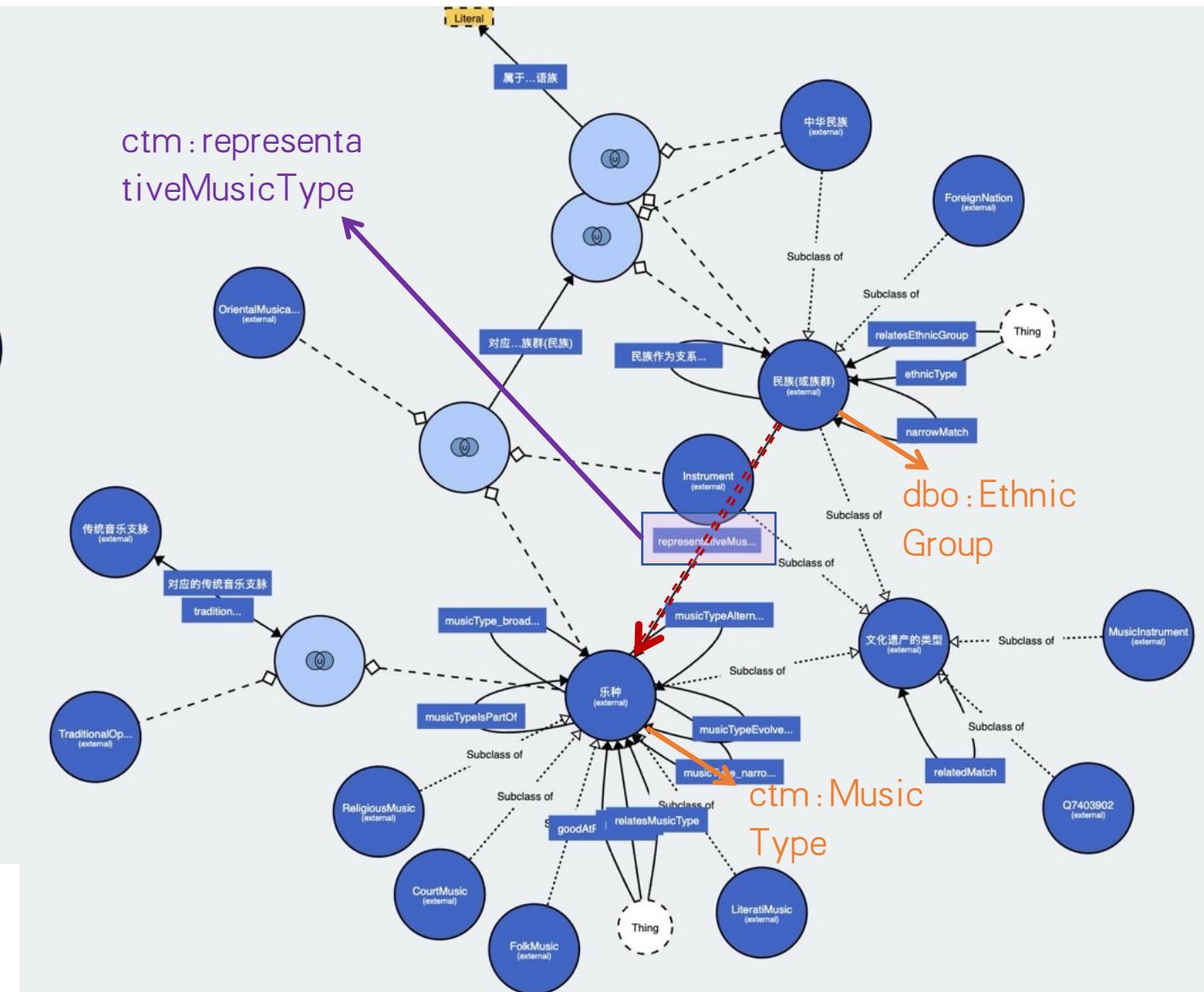
/'bɜːrmən/

/'tɜːrkɪk/

LLM: Knowledge Inference Based on OWL Graph Structure

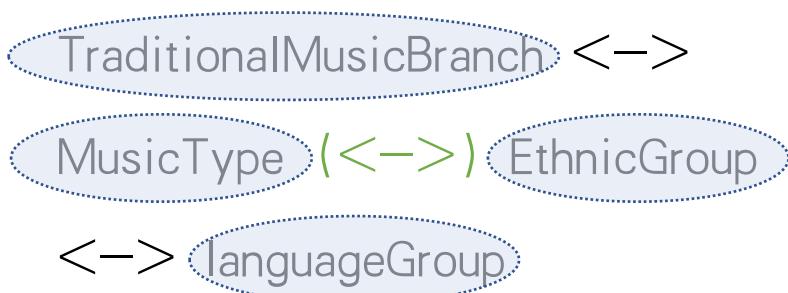


using BF shortest path algorithm → ontology
subgraph connectivity enhancement → inference:



Interactive NLQ2SPARQL Agent

- 案例: What's the relationship of Branch and Language Group?
- inference frame:



```
define input : inference 'urn:owl:ccmusicrules0913'
PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>
PREFIX dbpedia-owl: <https://dbpedia.org/ontology/>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
# Query the relationship between traditional music branches (branch) and language families (languageBranch), using musical genres (MusicType) as a bridging entity between the two
SELECT
DISTINCT ?branch ?branchLabel ?languageBranch ?ethnicGroup ?ethnicGroupLabel
WHERE { # 乐种关联到传统音乐支脉
?musicType ctm:traditionalMusicBranch ?branch .
# 乐种关联到民族/族群
?musicType ctm:ethnicGroup ?ethnicGroup .
# 民族/族群具有语族属性
?ethnicGroup ctm:languageBranch ?languageBranch .
# 获取支脉的标签、民族/族群的标签
OPTIONAL { ?branch rdfs:label ?branchLabel . }
OPTIONAL { ?ethnicGroup rdfs:label ?ethnicGroupLabel . }}
```

Interactive NLQ2SPARQL Agent

- 案例: What's the relationship of Branch and Language Group?
- interaction — deeper seek :
- Could u compile statistics on the frequency of MusicType that are jointly associated with each branch and language group? This would allow me to calculate the strength of the correspondence between them.

The strength of correlation

```
define input : inference 'urn:owl:ccmusicrules0913'  
PREFIX ctm:  
<https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>  
PREFIX dbpedia-owl: <https://dbpedia.org/ontology/>  
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
SELECT ?branch ?branchLabel ?languageBranch  
      (COUNT(DISTINCT ?musicType) AS ?musicTypeCount)  
WHERE { # MusicType -> Branch  
       ?musicType ctm:traditionalMusicBranch ?branch .  
       # MusicType -> EthnicGroup  
       ?musicType ctm:ethnicGroup ?ethnicGroup .  
       # EthnicGroup -> languageBranch(EthnicGroup)  
       ?ethnicGroup ctm:languageBranch ?languageBranch .  
       # obtaining the labels  
       OPTIONAL { ?branch rdfs:label ?branchLabel . } }  
GROUP BY ?branch ?branchLabel ?languageBranch  
ORDER BY DESC(?musicTypeCount) ?branchLabel ?languageBranch
```



Instructions for use of reasoning

(1) Adding DEFINE input:inference 'urn:owl:ccmusicrules0913' to the beginning of any SPARQL query code will activate the ontology-based inference function, thereby achieving the data completion effect.

(2) Adding DEFINE input:same-as "yes" to the beginning of any SPARQL query code can also activate knowledge reasoning based on instance equivalence relations.

SPARQL query example

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Exact match reference for other queries

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Exact match reference for other queries

- [0.3 Query all region names](#)

Exact match reference for other queries

- [0.4 Search all ethnic groups](#)

Exact match reference for other queries

- [0.5 Query all \(musicians\)](#)

Exact match reference for other queries

Click to view the preset namespaces.

```
① 1 define input:inference 'urn:owl:ccmusicrules0913'  
2 PREFIX ctm: <https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#>  
3 PREFIX dbpedia-owl: <https://dbpedia.org/ontology/>  
4 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
5 SELECT ?branch ?branchLabel ?languageBranch  
6     ( COUNT ( DISTINCT ?musicType ) AS ?musicTypeCount )  
7 WHERE { # MusicType -> Branch  
8     ?musicType ctm:traditionalMusicBranch ?branch .  
9     # MusicType -> EthnicGroup  
10    ?musicType ctm:ethnicGroup ?ethnicGroup .  
11    # EthnicGroup -> languageBranch(languageGroup)  
12    ?ethnicGroup ctm:languageBranch ?languageBranch .  
13    # obtaining the labels  
14 OPTIONAL { ?branch rdfs:label ?branchLabel . }  
15 GROUP BY ?branch ?branchLabel ?languageBranch  
16 ORDER BY DESC ( ?musicTypeCount ) ?branchLabel ?languageBranch
```



Table



Showing 1 to 30 of 30 entries

Search: Show All entries

branch	branchLabel	languageBranch	musicTypeCount
1 https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#Branch_YunnanAndGuangxiAndGuizhou_Dieqiang	Yunnan-Guizhou-Guangxi branch - Di-Qiang branch	Tibeto-Burman language family	"185" ^xsd:integer
2 https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#Branch_YunnanAndGuangxiAndGuizhou_Baiyue	Yunnan-Guizhou-Guangxi branch - Baiyue branch	Zhuang-Dong language family	"87" ^xsd:integer
3 https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#Branch_Tarim	Tarim branch	Turkic language family	"70" ^xsd:integer
4 https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#Branch_TibetPlateau	Branch of the Qinghai-Tibet Plateau	Tibeto-Burman language family	"60" ^xsd:integer
5 https://lib.ccmusic.edu.cn/ontologies/chinese_traditional_music#Branch_Wuling	Wuling branch	Miao-Yao language family	"34" ^xsd:integer

Digital Humanities Application : correspondence between geo music branches and language branches / language families

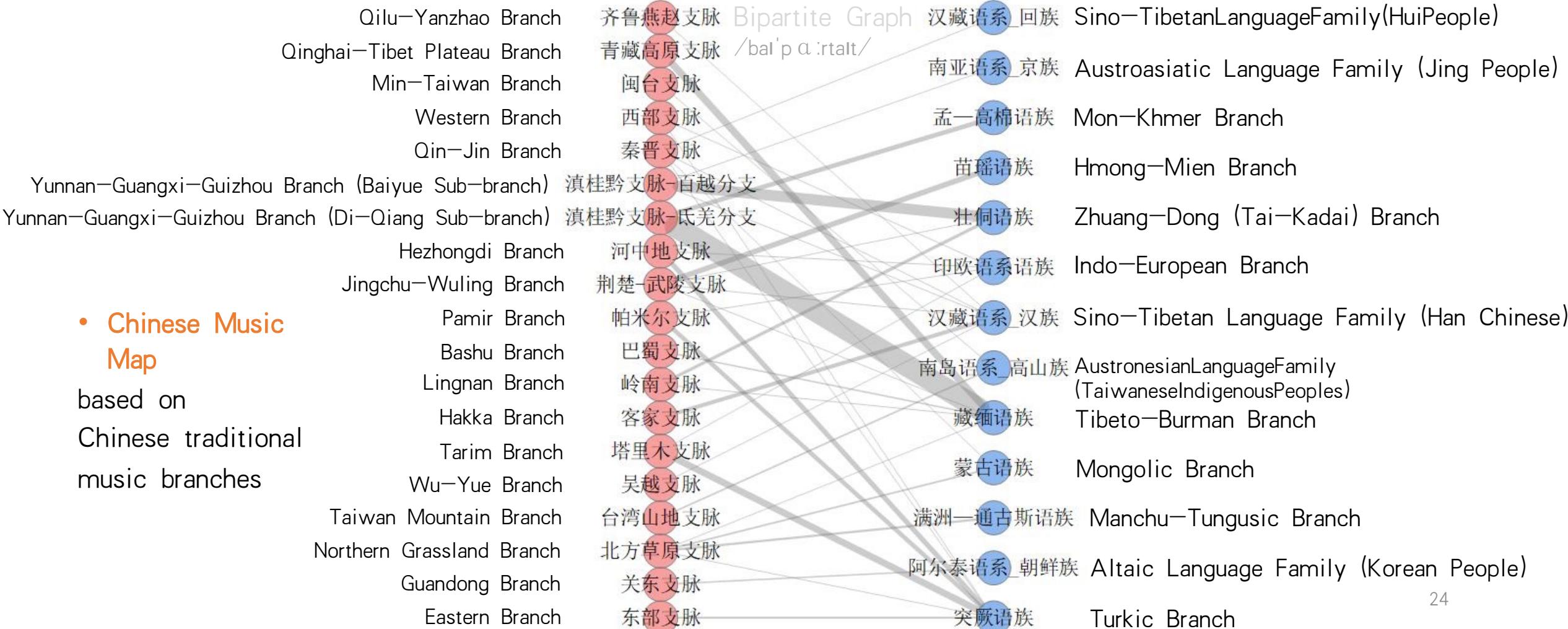


Table

Raw Response



retrieved data can be downloaded as RDF



Digital Humanities Application

- Chinese music map based on Traditional music branches



Observation

- LLMs are getting more and more concentrated and robust--despite facing a growing ontology
 - --**race** between LLMs and sophistication of knowledge base schema/ontology
 - We may overthrow “ontology subgraph extraction” process...
- literature review :“for those database without schema”...

prompt types	database type	NO. of shots	technology feature
RDF instance snippets	oversized, unknown schema	1-shot or few-shots	algorithm & computing—strength-oriented
example pairs of NLQ&SPARQL	e.g. XML—featured RISM	1-shot or few-shots	similarity matching between the given NLQ and the existing pairs of NLQ&SPARQL; vector database
“Schema”	with schema or latent schema	0-shots	knowledge—representation—oriented

about LinkedMusic, Future Work or Suggestion

- Datalake from >14 databases with their respective schemas
- automatically extract ontology for any member database of LinkedMusic, using **VOID** (Vocabulary of Interlinked Datasets), which can be useful for describing the relationships among graphs within a datalake
- We don't have to face a giant schema/ontology for any individual database, so an **interactive federal—query NLQ2SPARQL agent** may be the future approach

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SESSION

Find a session named "Hurley's Irish Pub" (2024 October 26)

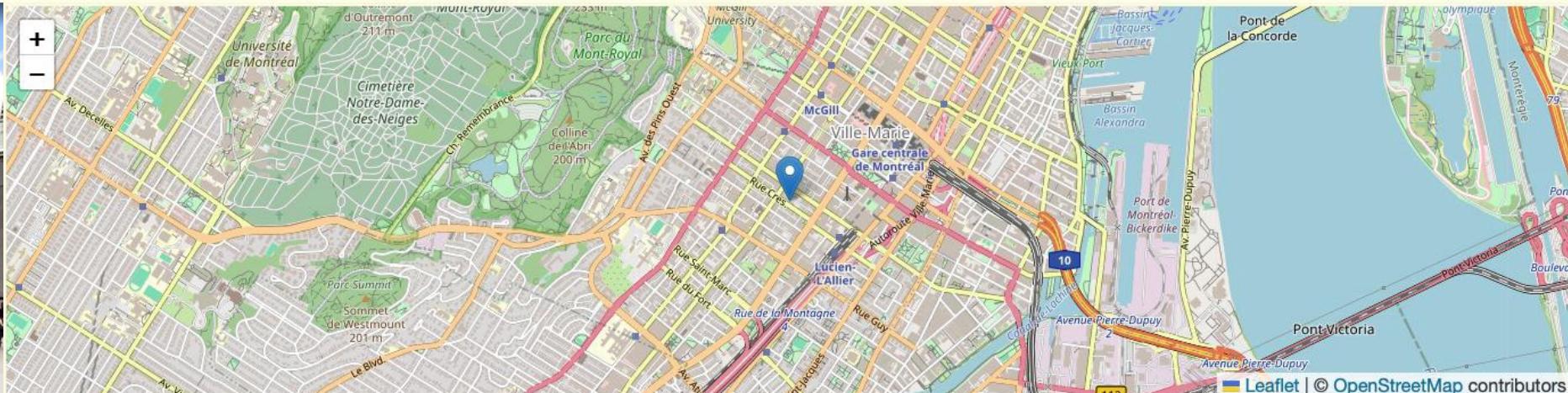
Hurley's Irish Pub

[SHARE](#)

1225 Crescent Street, Montreal, Quebec, Canada

Added by [Loa](#) 21 years ago.

Last updated with a comment by [GW](#) 9 months ago.



nearby members

nearby sessions

nearby events

Hurley's Irish Pub

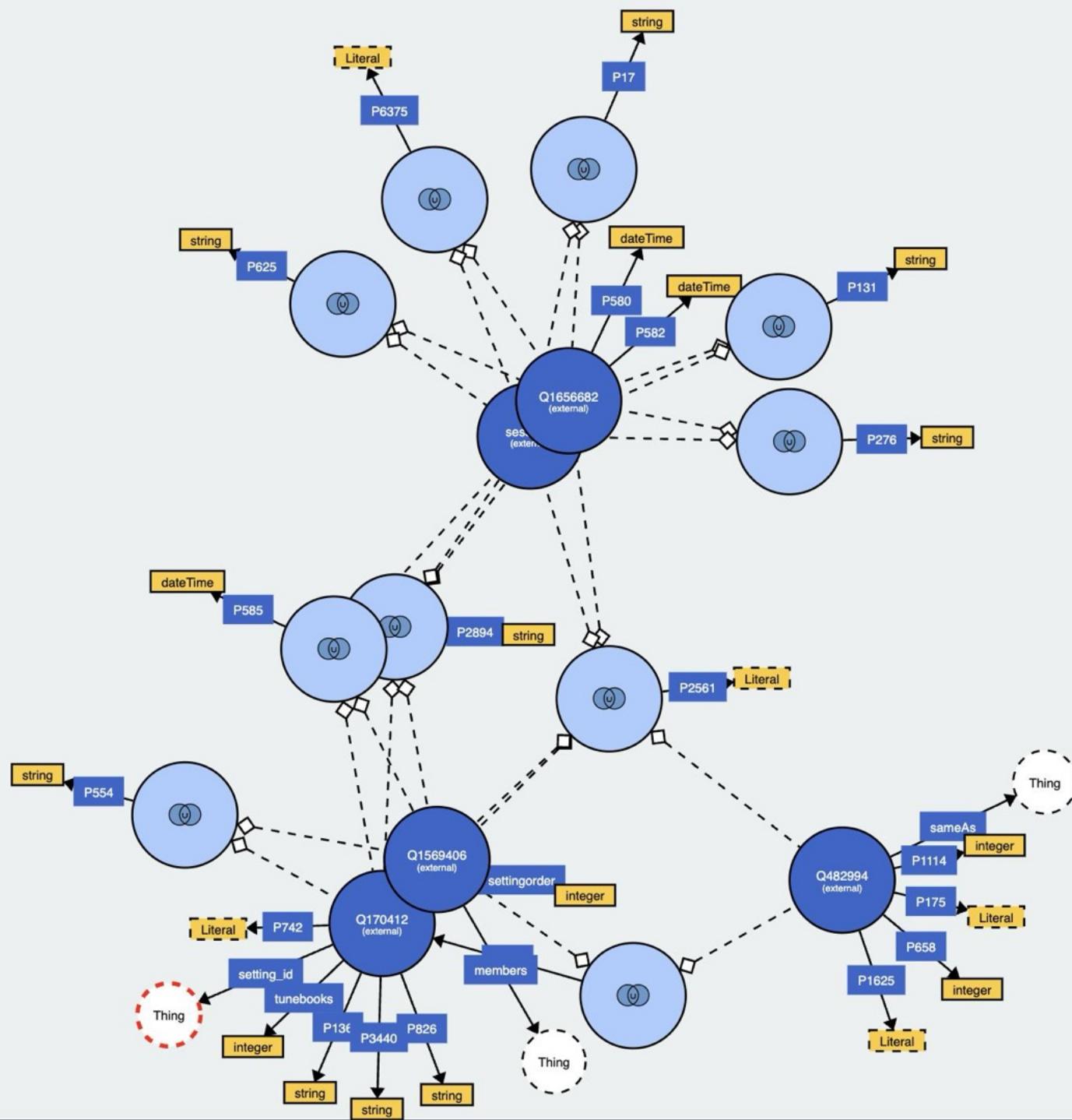
Schedule: Saturday, Tuesday.

Telephone: [514.861.4111](tel:514.861.4111)

Website: <http://www.hurleysirishpub.com/>

Latest: "<https://www.siamsa.org/en/sessions>"

↳ Posted by [GW](#) 9 months ago.



- → after reconciliation with Wikidata, TheOntologyFor TheSession
- `unionOf` classes
 - light blue circles with “U”
- `owl:objectProperty`
 - between 2 nodes
- `owl:dataProperty`
 - yellow squares
- `owl:Thing`

Thanks and best wishes to members
of DDMAL and LinkedMusic!

Specail thanks to Ichiro Fujinaga
and Jenn Riley!

ESEA (East—and—Southeast—Asian) Traditional Music
Knowledge Base and Its Ontology—Subgraph—Driven
NLQ2SPARQL Intelligent Question—Answering System.
Cataloguing and Classification, 2025

Junjun Cao (Shaojun Si)
Email : alienmusedh@gmail.com



Interactive NLQ2SPARQL Agent (Other NLQ Tests)

1. Which ethnic groups belong to China's musical system while also belonging to other musical systems?
2. Does Fujian Nanyin involve any special collections in our library/museum? If so, which instruments might those resources relate to?
3. In the southeastern region of China, which ethnic minorities have which music types/genres? What are the distribution areas of these genres, and which other instruments are found in those areas?
4. Which musicians specialize in which music types (genres)? Please return no more than 20 records, sorted in descending order by the number of genres each musician specializes in (i.e., most genres at the top).
5. Among instruments, which are associated with the Xinjiang Uyghur (/ˈwi:gʊər/) Autonomous Region or [China's broader Northwest](#), especially plucked-string instruments (you may also consider this from the perspective of the Hornbostel – Sachs classification)?
6. What acoustic differences (e.g., in terms of Hornbostel – Sachs categories) might exist between instruments of ethnic groups belonging to the Tibeto–Burman branch and those belonging to the Kra – Dai (Zhuang – Dong) branch?

Interactive NLQ2SPARQL Agent (Other NLQ Tests)

1. 有哪些民族既属于中国音乐体系，又属于其他音乐体系？
2. 福建南音是否涉及我馆的某些特藏资源，若有，这些资源有可能涉及什么乐器？
3. 我国东南地区的少数民族有哪些音乐类型_乐种，这些乐种的分布地域各是什么，而这些分布地域又还有哪些其他的乐器？
4. 有哪些乐人擅长哪些音乐类型(乐种)？请返回给我不超过20条数据，并按照擅长乐种的数目做降序列出，即擅长乐种数量最多的排在最前面。
5. 我想看看乐器中，哪些是涉及新疆维吾尔自治区（地域）或中国的大西北地区的，尤其是它的弹拨乐器（也可以考虑从霍萨分类法的角度来考察）。
6. 属于藏缅语族的民族的乐器和属于壮侗语族的民族的乐器在声学特征（如霍萨分类方面）上可能有什么差异？

The musiconn Project

Current Insights and Future Directions

Bernhard Lutz (Bavarian State Library)

What is musiconn? What is FID?

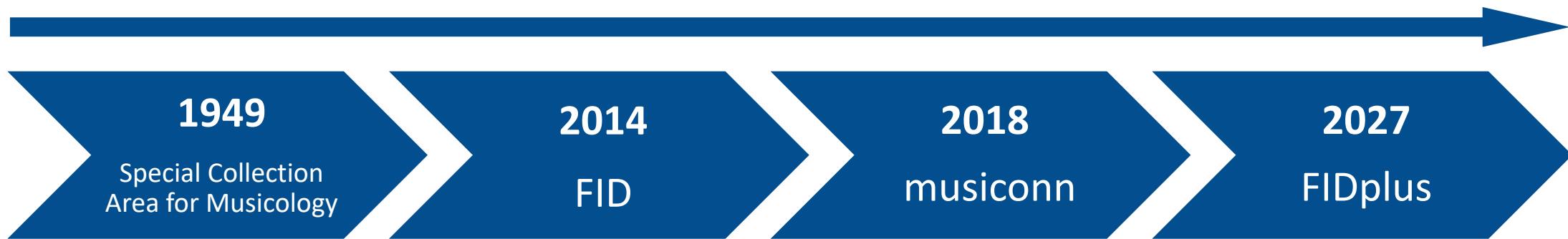
- musiconn is the brand name of the FID Musicology
- FID stands for *Fachinformationsdienst* (= Specialized Information Service)
- The musiconn project has been run jointly by **Bavarian State Library (BSB)** and the **Saxon State and University Library Dresden (SLUB)** since 2018

Funded by



Deutsche
Forschungsgemeinschaft
German Research Foundation

Milestones in the provision of research literature and information infrastructure for musicology in Germany



Funded by

DFG Deutsche
Forschungsgemeinschaft
German Research Foundation

What's new with FIDplus?

- After **12 years** (the longest possible duration of funding), the **FID format is running out**
- The new FIDplus program now offers **funding without temporal restrictions**, with an evaluation taking place every five years
- The requirement is that the **services are solid and mature**

Funded by



Deutsche
Forschungsgemeinschaft
German Research Foundation

What are the tasks of musicconn?

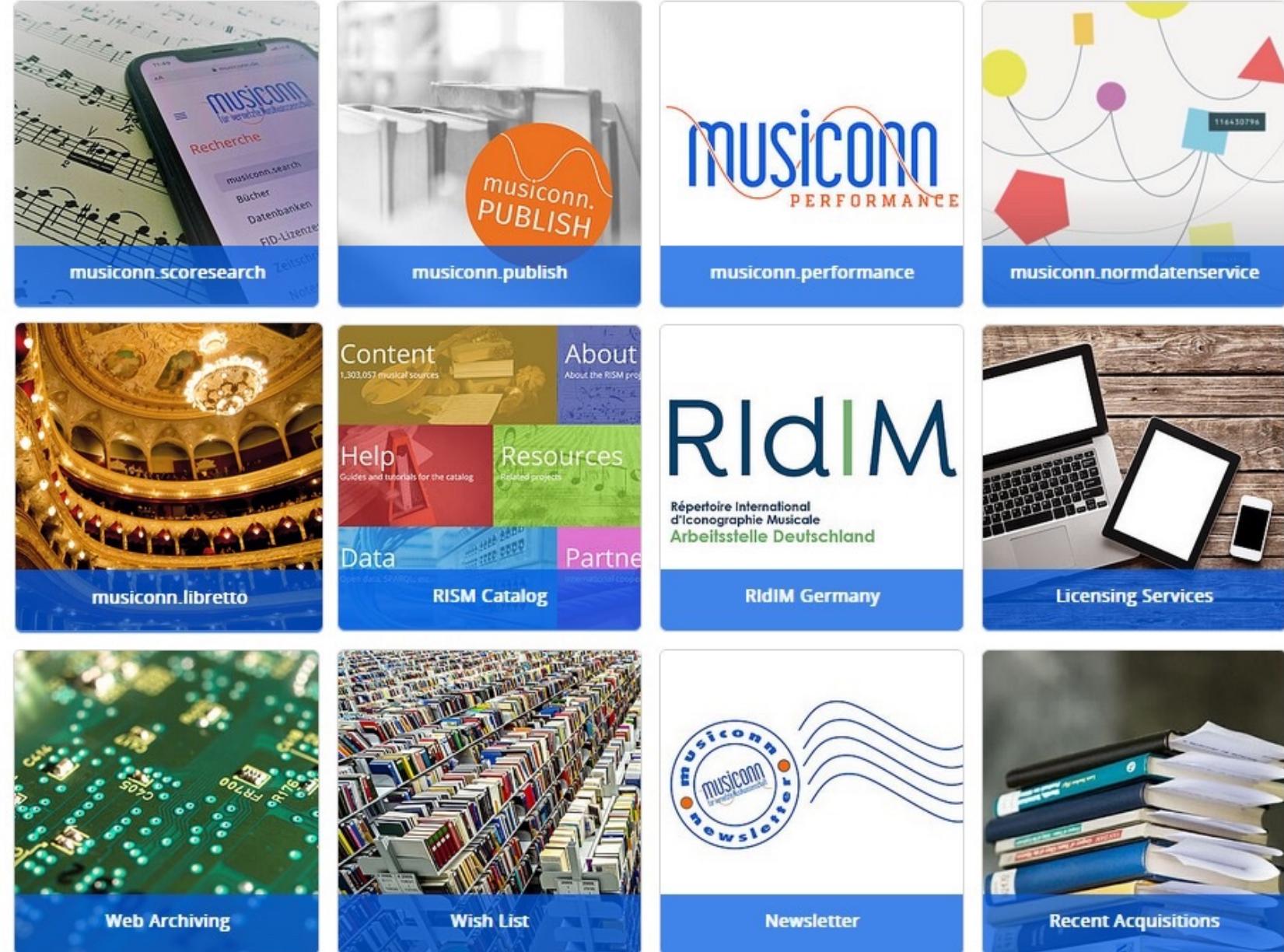
Acquisition of conventional and electronic media by the BSB

- Books, journals, and sheet music
- Electronic journals and databases



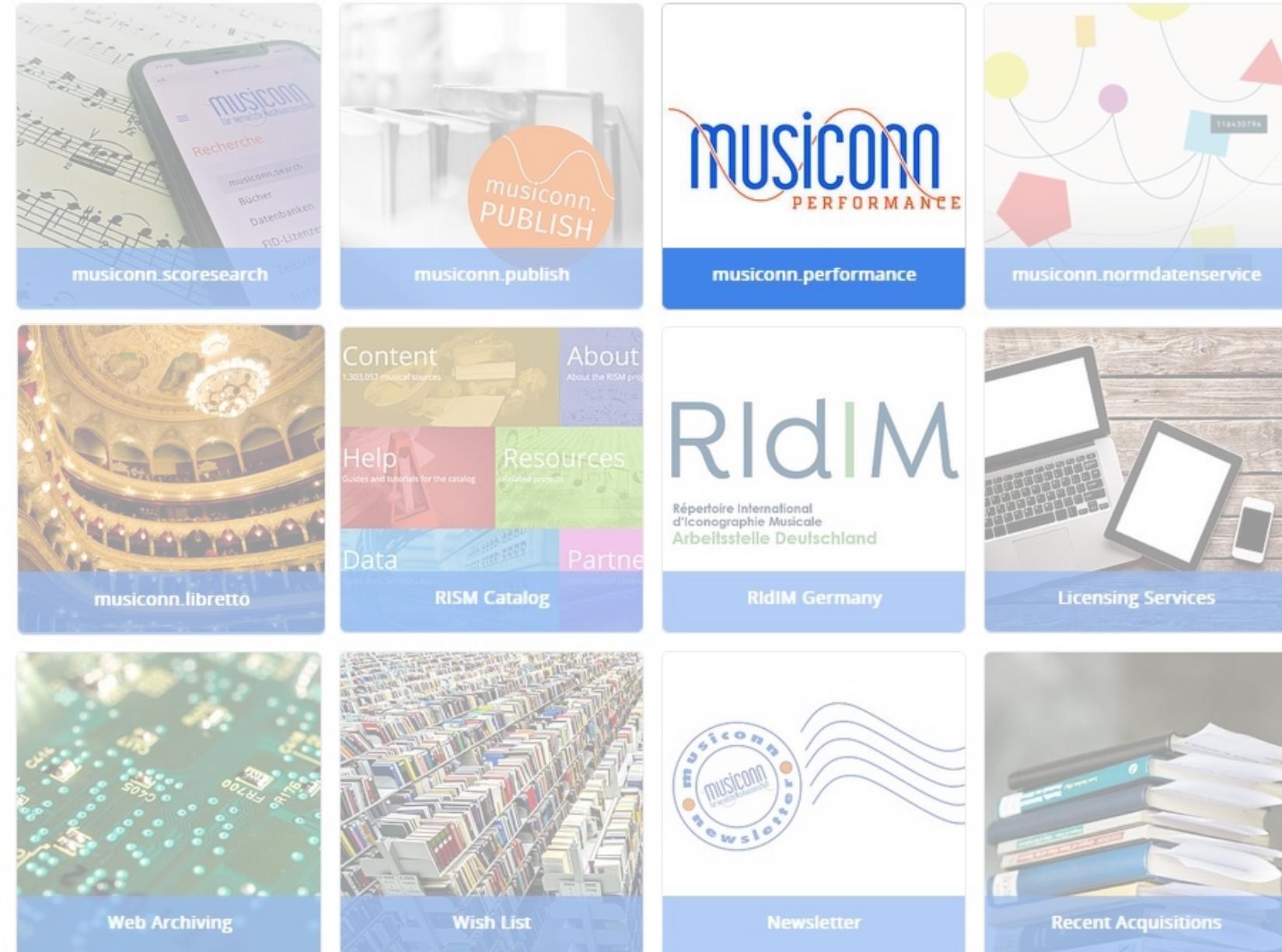
What are the tasks of musiconn?

Provision of a technical information infrastructure for musicological research in Germany



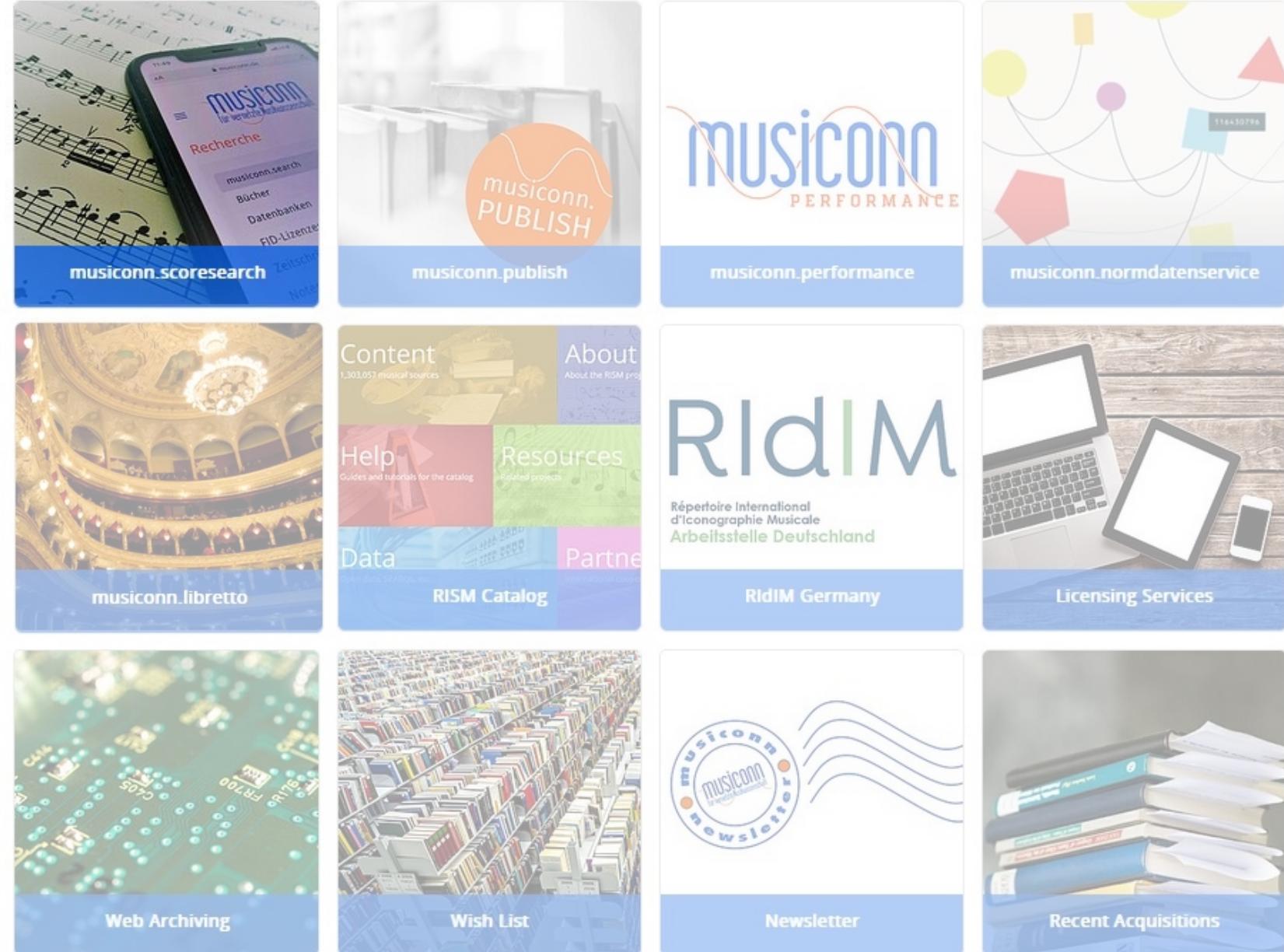
What are the tasks of musiconn?

Provision of a technical
information
infrastructure for
musicological research
in Germany



What are the tasks of musiconn?

Provision of a technical
information
infrastructure for
musicological research
in Germany



musiconn.search

Search in musiconn.search

Advanced search



Portal of the Specialized Information Service for Musicology (FID Musicology)



Search



Services



Community



Publish

New musiconn Newsletter

Our new newsletter is now available!

It reports on new services and offers, our conference participations, and news from the team, among other things.

Enjoy reading!

musiconn.search is getting a new data source!

With the work and source data from the Digital Archive of Medieval Music (DIAMM), our subject-specific catalog is being expanded by more than 4,000 sources, including the works they contain. DIAMM comprehensively records handwritten polyphonic...

[Further news](#)

openbiblio.social@musiconn

Josephine Spemann)
18.10. 14:30-16
Hörsaal 1.03Tagungsprogramm: t1p.de/hjm7t

16.10.2025, 19:19:02



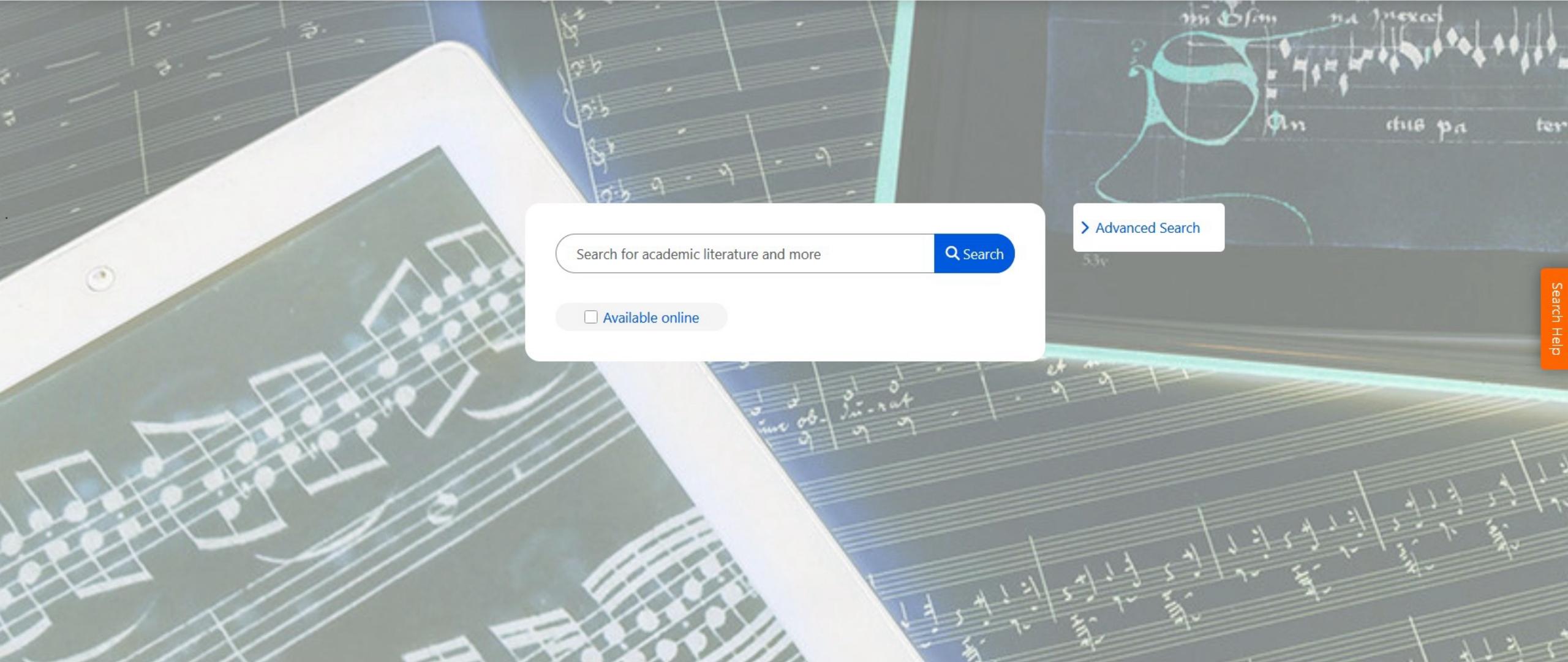


musicconn.search

- Simultaneous search in currently 18 databases on music and musicology
- Solr® index, web application via the  **vufind**® discovery system
Search. Discover. Share.
- Mapping of data using a specific FID-XML
- Integrated full-text search
- Integrated Mirador Viewer (IIIF)
- Display of authority data via LDBrowser

All Data Sources

- ① Austrian National Library, Music Catalogue (336386)
- ① BASE: Search Engine for Academic Resources (5979)
- ① Bavarian Musicians, Dictionary (27693)
- ① Berlin State Library, Music catalogue (578803)
- ① British Library: Music Prints (1097998)
- ① DBIS (Database Information System) (265)
- ① DIAMM (Digital Image Archive of Medieval Music) (4619)
- ① EZB (Electronic Journals Library) (1099)
- ① German Music Archive, Music Prints and Sound Carriers (797530)
- ① Historical Scores of the Bavarian State Opera (9765)
- ① Music Literature on-line, Bibliography (475755)
- ① Musical sources of the Library of Congress (270000)
- ① MusicOPAC at BSB (912255)
- ① OLC-SSG: Journals, Tables of Content (212646)
- ① Petrucci Music Library, IMSLP (101430)
- ① RIdIM (Music iconography) (24771)
- ① RISM (International Inventory of Musical Sources) (1599714)
- ① Web Resources of musiconn (3284)



Search for academic literature and more

 [Search](#) [Available online](#)

musiconn.search – future directions

- Enhancement of musiconn.search in the area of music notation-based search entries
- Potential integration of additional data sources based on our modifiable FID-XML
- AI-based further developments in the areas of data curation, index optimization, and user guidance



musiconn.performance

- Repository for musical events and related data on works, people, places, and institutions
 - `musicconn.performance` currently contains almost 160,000 records on source-documented musical performances from over twenty different research projects



KIK - KOMPONISTINNEN IM KONZERT

How is the data entered?

- Transfer of existing data sets from completed research projects
- Direct entry of concert data into musicconn.performance by project partners of the scientific community



FRANKFURTER
MUSEUMSGESELLSCHAFT



musiconn.performance, ein Angebot des Fachinformationsdienstes
Musikwissenschaft, dient der komfortablen Recherche nach musikalischen
Aufführungen und vernetzt die Forschungsdaten und -ergebnisse verschiedenster
Partner.

 Suche[suchen](#)

Unsere Datenbank beinhaltet gegenwärtig mehr als **161.755 Datensätze** zu
musikalischen Aufführungen und assoziierten Personen, Werken und
Aufführungsstätten.



PERSONEN



KÖRPERNSCHAFTEN



ORTE



WERKE



EREIGNISSE



QUELLEN

musiconn.performance - further directions

- Provision of a *Datalab*
 - Experimental environment for data retrieval and data analysis
 - Implementation of a musiconn.performance API
- Provision of a *Toolkit*
 - Compilation of suitable digital humanities tools: Data cleaning, Data visualization, Network analysis, Data extraction and structuring



musiconn.scoresearch

- musiconn.scoresearch offers you a program to search for melodies in selected digitized music prints
- Over 159,000 individual scans as searchable OMR files
- Implementation of music recognition using proprietary SmartScore software
- Repertoire: Works from the 18th & 19th centuries



Find transposed results Exact search only

[Imprint](#) | [Privacy policy](#) | [Accessibility](#)

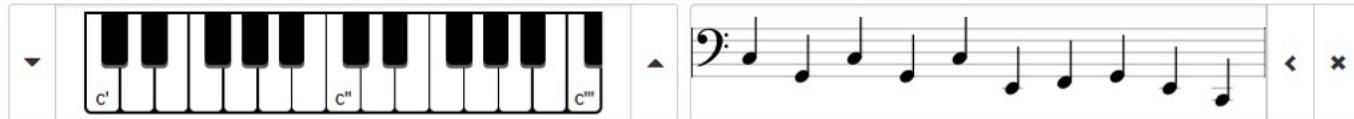


BSB Bayerische
Staatsbibliothek
Information for Excellence

Funded by
DFG Deutsche
Forschungsgemeinschaft
German Research Foundation

Your visit to this website is currently being monitored by Matomo Web Analytics. The tracking is completely anonymous and serves the continuous improvement of this website.

[Click this link to disable tracking \(opt out\)](#)



Find transposed results Exact search only

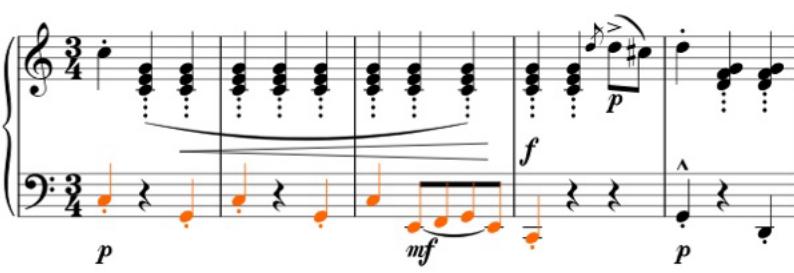
Search

Collection
Franz Liszt (1)
Ludwig van Beethoven (1)
Composer
Beethoven, Ludwig van, (1)
Liszt, Franz, (1)
Year of publication
1862 (1)
1926 (1)
Time range
1860 - 1879 (1)
1920 - 1939 (1)

Results (2) Searched pitches:  Searched intervals: 

1. [Musikalische Werke, 2,7: Verschiedene Werke für Pianoforte zu zwei Händen, Pg.11](#)
 Liszt, Franz
 Leipzig : Breitkopf & Härtel

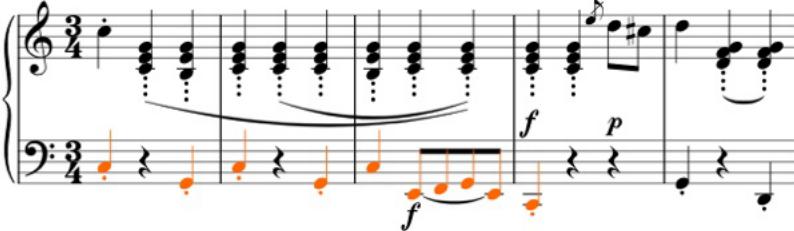
Part 1



 [Read Online](#)  [Preview](#)  [MusicXML](#)  [Play](#)

2. [Beethoven's Werke, 165 = Serie 17: Variationen für das Pianoforte: 33 Veränderungen über einen Walzer von A. Diabelli : op. 120, Pg.3](#)
 Beethoven, Ludwig <>van<>, Beethoven, Ludwig van
 Leipzig : Breitkopf und Härtel

Part 1



Current developments

- Transition from MusicXML to MEI (in progress)
- Expansion of the repertoire to include music sources from the 16th & 17th centuries
- Approximately 1,800 music sources from the Bavarian State Library
- Use of the OMR software MuRET developed at the University of Alicante as part of a cooperation with the group of Prof. David Rizo
- MuRET training by the musiconn team

MURET

Bayerische Staatsbibliothek / Second test run / 1616_1617_Venetis_Ricciardo_Amadino / 15.jpg

Logout as silvana

Enlarge image preview

Bounding box Strokes Handle: 2 5 Default mensural, printed

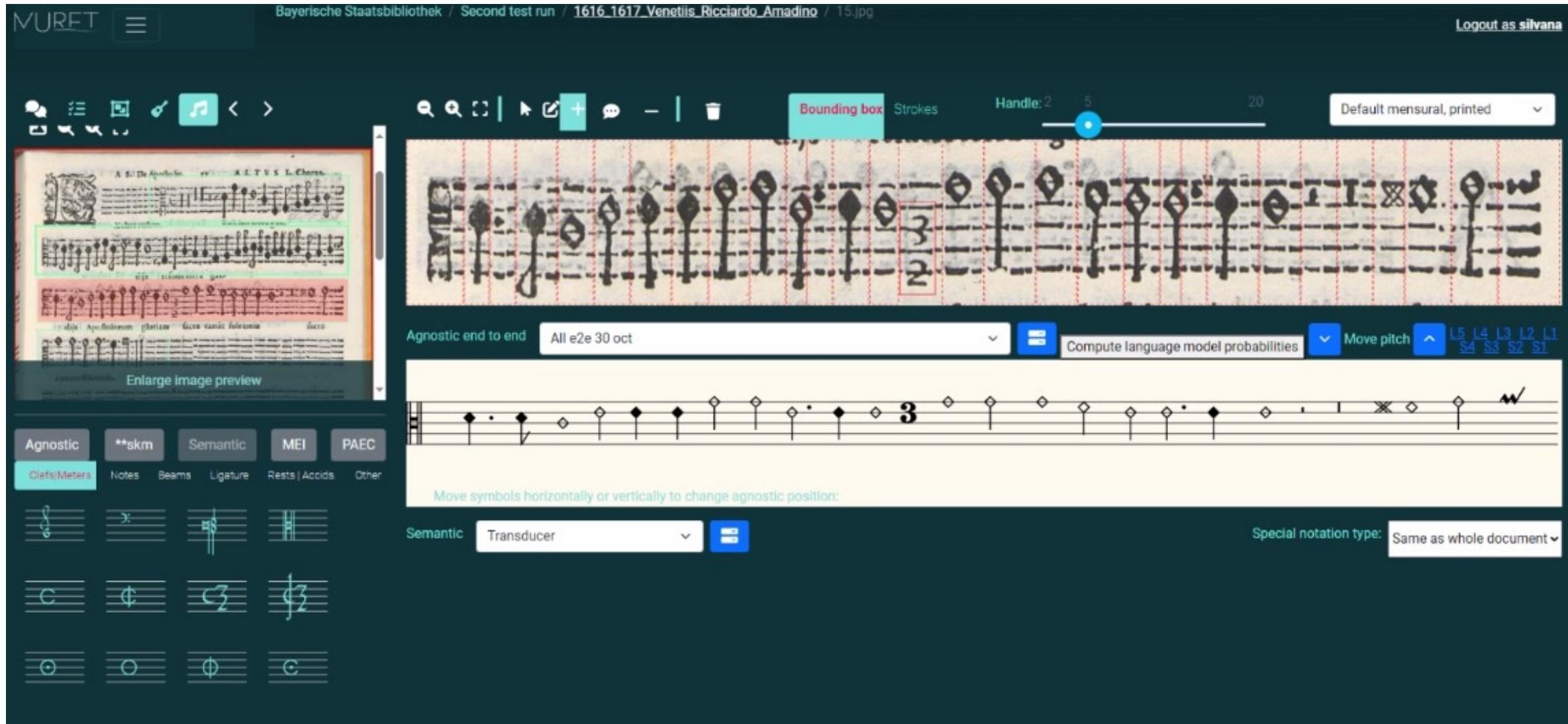
Agnostic **skm Semantic MEI PAEC

Clefs/Meters Notes Beams Ligature Rests Accids Other

Move symbols horizontally or vertically to change agnostic position:

Semantic Transducer Special notation type: Same as whole document

Agostic end to end All e2e 30 oct Compute language model probabilities Move pitch L5 L4 L3 L2 L1 S4 S3 S2 S1



Suche Über das Projekt Hilfe Kontakt DE | EN

Transponierte Ergebnisse finden Nur exakte Ergebnisse finden Suchen

Ihre Filter: Muret X

Kollektion
Muret (8)

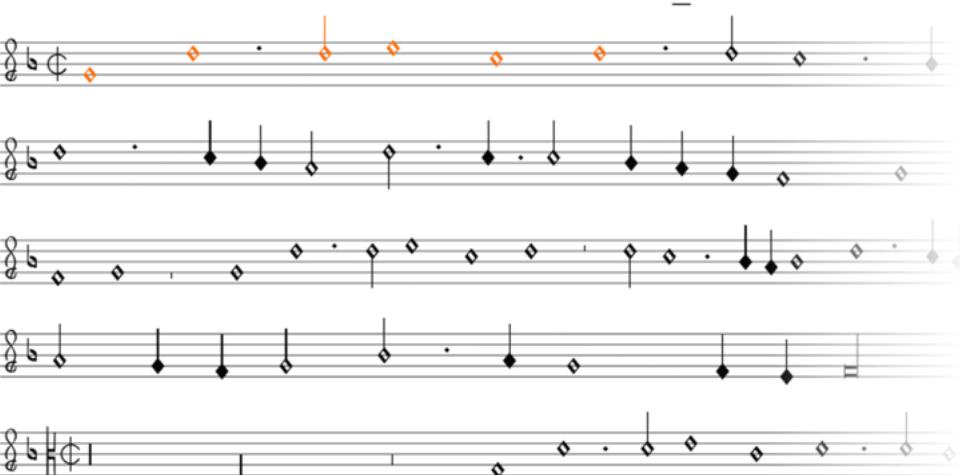
Komponist
Publikationsjahr
1510 (8)

Zeitraum
1500 - 1519 (8)

Ergebnisse (8)
1. 9 Sacred songs - BSB Mus.ms. 65, [without title], S.8
1510-1530 (1520c)

bsb00079132_8

Stimme 1




D-Mbs Mus.ms. 65

musiconn.scoresearch – future directions

- Integration of OMR data into digitization workflows
- Repertoire expansion with data from other libraries and academic edition projects
- Publication of our MEI parser
- Improvement of search and filter options

Further information on our website
www.musicconn.de

Get in touch with us
info@musicconn.de

Bernhard Lutz (Bavarian State Library)

UMIL: Universal Musical Instrument Lexicon

December 13

LinkedMusic Project Meeting 2025

Presented by:

Geneviève Gates-Panneton, Kun Fang, Kyrie Bouressa,

Mai Lyn Puittinen, Pouya Mohseni, Yu-Chia Kuo, Zih-Syuan Lin



Part One: Overview

Presenter: Kun Fang

What is UMIL (Universal Musical Instrument Lexicon)?

- We collect **musical instrument data**.
- We specially focus on **multilingual support**.
- We provide a simple, user-friendly way to **contribute** instrument data to Wikidata.



921

Instruments

625

Languages

31,017

Names

19

Editors

Thanks to all the contributors for developing, testing, or providing suggestions and ideas !

Yinan Zhou, Dylan Hillerbrand, Kun Fang, Mai Lyn Puittinen, Antoine Phan,
Geneviève Gates-Panneton, Kyrie Bouressa, Anna de Bakker, Yu-Chia Kuo, Pouya Mohseni,
Caroline Guo, Zih-Syuan Lin, Andrew Hankinson

Why we need UMIL?



- Wikidata has huge but fragmented musical instrument data.
- It's hard to browse all instruments at once.
- For new contributors, it may require steep learning curve.
- Without an account, editing privileges are limited.

However, UMIL is designed to solve these issues...



- UMIL is a one-stop platform for browsing all instruments at once.
- UMIL supports instrument view in any language.
- Most importantly, UMIL makes it easier and more convenient for everyone to contribute — No Wikidata account needed

What we have in UMIL so far...

- Browsing all instruments in any language.
- Support HBS classification, and fuzzy search...
- Main feature: users can add new names/aliases to existing instruments.

The screenshot displays the UMIL application interface. On the left, there's a sidebar titled "Active Filters" with a search bar containing "Search: 'clog fiddle'" and a dropdown for "HBS: Chordophones". Below it is the "Hornbostel-Sachs Classification" section, which lists categories: 1 - Idiophones (0), 2 - Membranophones (0), 3 - Chordophones (14), 4 - Aerophones (0), and 5 - Electrophones (0). A note at the bottom says "More facet search coming...".

The main area is titled "INSTRUMENT LIST" and shows "Showing 1 to 14 of 14 entries". It features a grid of instrument cards. One card for a "Clog Fiddle | Clog Violin | Träskofiol" is shown with an image of the instrument. Another card for a "Trumpet" is open in a modal window. The modal window has fields for "Language" (Type to search), "Name" (Enter name), and "Source" (Enter source), along with a "Wikidata ID" field set to Q8338. A button at the bottom of the modal says "Add another row".

At the bottom of the screen, there are navigation buttons for "Ventiltrompete", "Hardingfele", and "Publish".

What we're going to talk about today...

- **Part Two: Add-Instrument-Name Workflow** (*Presenter: Mai Lyn Puittinen*)
- **Part Three: Issues with Instrument Taxonomy and Classification in UMIL**
(Presenter: Kyrie Bouressa)
- **Part Four: Challenges & Open Discussion** (*Presenter: Pouya Mohseni, Zih-Syuan Lin, Yu-Chia Kuo, Mai Lyn Puittinen, Geneviève Gates-Panneton*)

Part Two: Add-Instrument-Name Feature

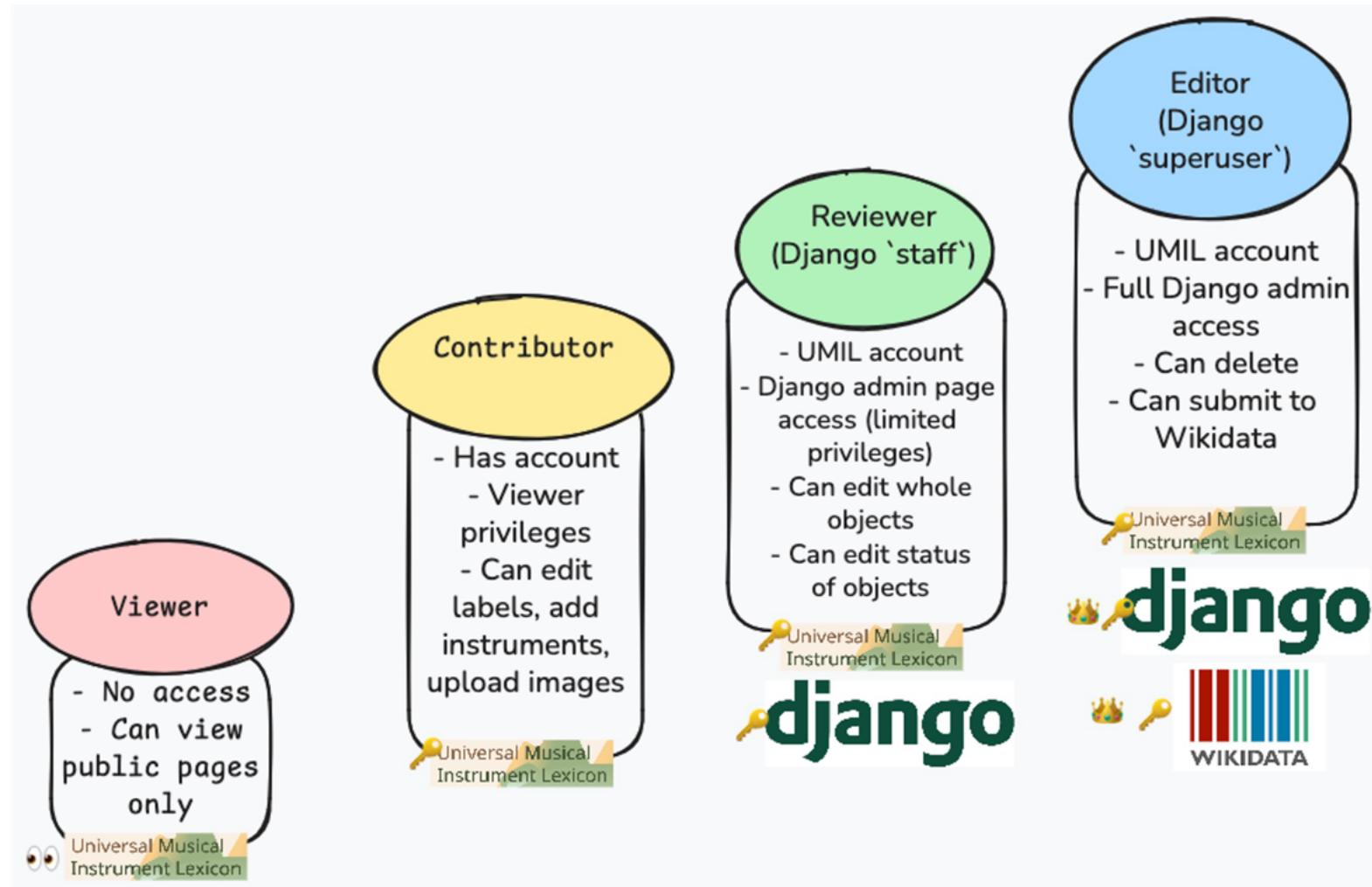
Presenter: Mai Lyn Puittinen

UMIL: Add-Instrument Name Feature

Development of Backend Name Verification Workflow

13 December 2025
LinkedMusic Project Meeting 2025
Mai Lyn Puitinen

Defining UMIL's Users



Viewer

Guitar

Wikidata ID	Q6607																											
Hornbostel-Sachs Classification	321.322-5-6																											
MIMO Classification	3237																											
Instrument Names in Different Languages	<table><thead><tr><th>Language</th><th>Name</th><th>Alias</th><th>Source</th></tr></thead><tbody><tr><td>French</td><td>guitare</td><td></td><td>Wikidata</td></tr><tr><td>Norwegian Bokmål</td><td>gitar</td><td>Gitar</td><td>Wikidata</td></tr><tr><td>Italian</td><td>chitarra</td><td></td><td>Wikidata</td></tr><tr><td>Russian</td><td>гитара</td><td>Шестиструнная гитара Семиструнная гитара</td><td>Wikidata</td></tr><tr><td>English</td><td>guitar</td><td></td><td>Wikidata</td></tr></tbody></table>				Language	Name	Alias	Source	French	guitare		Wikidata	Norwegian Bokmål	gitar	Gitar	Wikidata	Italian	chitarra		Wikidata	Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata	English	guitar		Wikidata
Language	Name	Alias	Source																									
French	guitare		Wikidata																									
Norwegian Bokmål	gitar	Gitar	Wikidata																									
Italian	chitarra		Wikidata																									
Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata																									
English	guitar		Wikidata																									
	View all languages			Add Instrument Name																								

- Most basic
- View capability only
- Can only view public pages
- Can only view verified names

Contributor

Guitar

Wikidata ID	Q6607																											
Hornbostel-Sachs Classification	321.322-5-6																											
MIMO Classification	3237																											
Instrument Names in Different Languages	<table><thead><tr><th>Language</th><th>Name</th><th>Alias</th><th>Source</th></tr></thead><tbody><tr><td>French</td><td>guitare</td><td></td><td>Wikidata</td></tr><tr><td>Norwegian Bokmål</td><td>gitar</td><td>Gitar</td><td>Wikidata</td></tr><tr><td>Italian</td><td>chitarra</td><td></td><td>Wikidata</td></tr><tr><td>Russian</td><td>гитара</td><td>Шестиструнная гитара Семиструнная гитара</td><td>Wikidata</td></tr><tr><td>English</td><td>guitar</td><td></td><td>Wikidata</td></tr></tbody></table>				Language	Name	Alias	Source	French	guitare		Wikidata	Norwegian Bokmål	gitar	Gitar	Wikidata	Italian	chitarra		Wikidata	Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata	English	guitar		Wikidata
Language	Name	Alias	Source																									
French	guitare		Wikidata																									
Norwegian Bokmål	gitar	Gitar	Wikidata																									
Italian	chitarra		Wikidata																									
Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata																									
English	guitar		Wikidata																									
	View all languages																											

Verification Status ⓘ	Actions
Verified	Delete
Add Instrument Name	

- Has UMIL account
- Can submit new instrument names
- Can submit new images
- Can submit new instruments
- Cannot edit/delete items outside of their own
- Can only view public pages
- Can view all names and their verification status

Reviewer

Django administration

WELCOME, REVIEWER_1. VIEW SITE / CHANGE PASSWORD / LOG OUT

Home > Instruments > Instrument names > guitar (English) - Q6607

Start typing to filter...

INSTRUMENTS

Instrument names

Change instrument name

guitar (English) - Q6607

HISTORY

Verification status: Verified

Status of the name entry

Umlil label

Is this the label for the instrument? If true, it will be used as the main name.

Instrument: Q6607

Language: English

Name: guitar

Source name: Wikidata

Who or what called the instrument this?

Contributor: ddmal

User who contributed this name

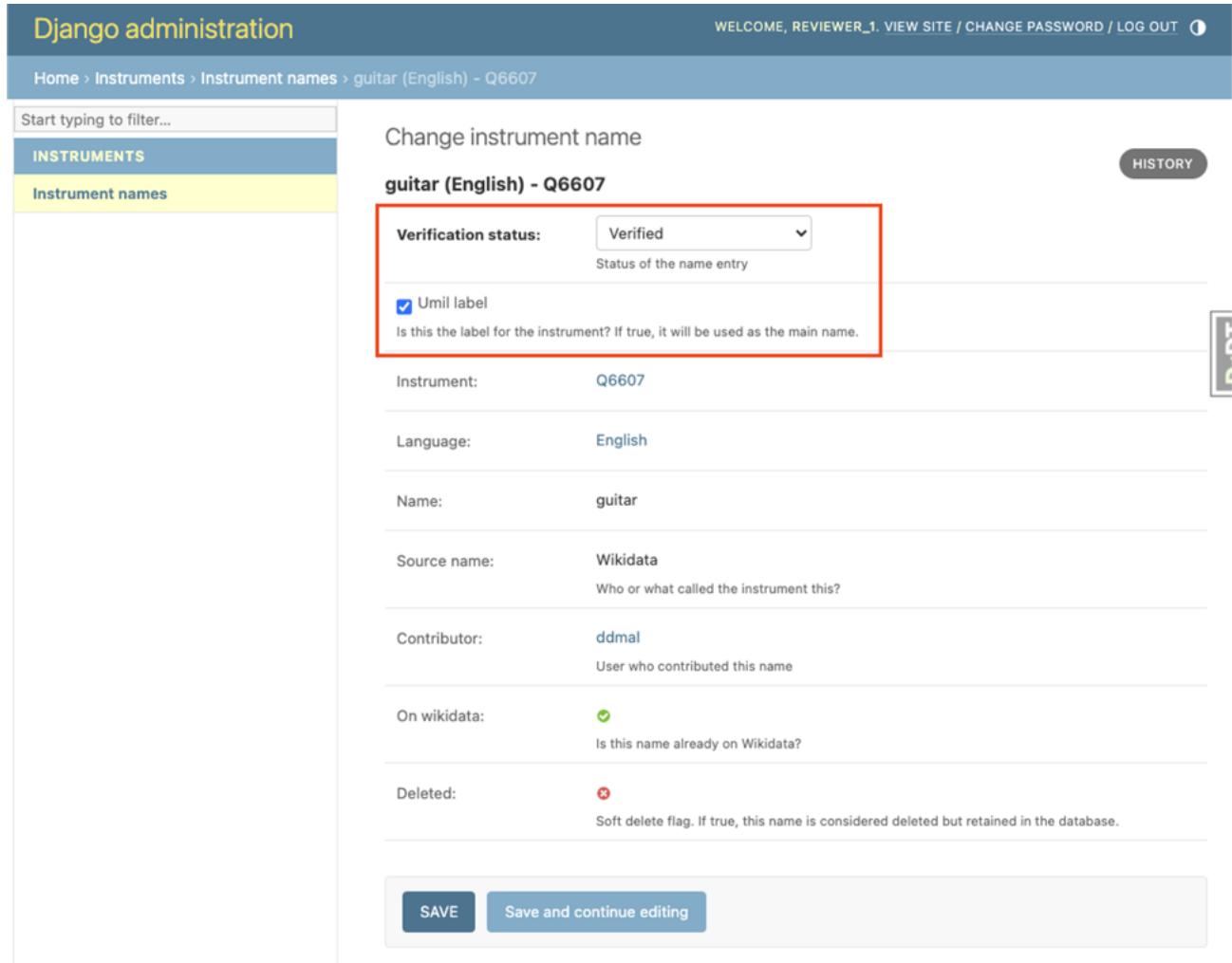
On wikidata:

Is this name already on Wikidata?

Deleted:

Soft delete flag. If true, this name is considered deleted but retained in the database.

SAVE Save and continue editing



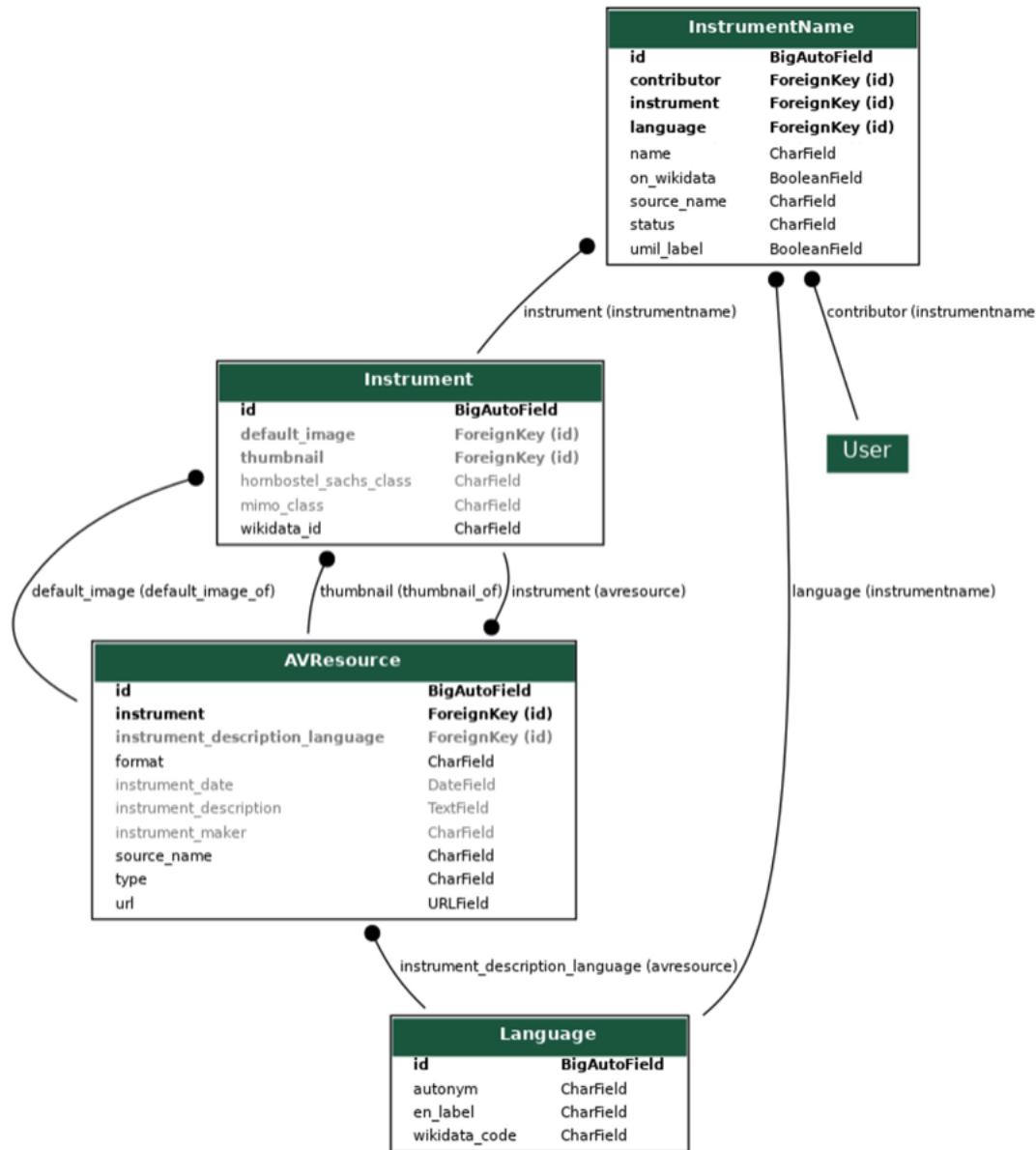
- Has UMIL account
- **Has Django access (staff)**
- Has Contributor powers
- Can edit the **verification_status** of an inject
- Can edit the **umil_label** of an inject
- Sets verification status of and investigates contributed items

Editor

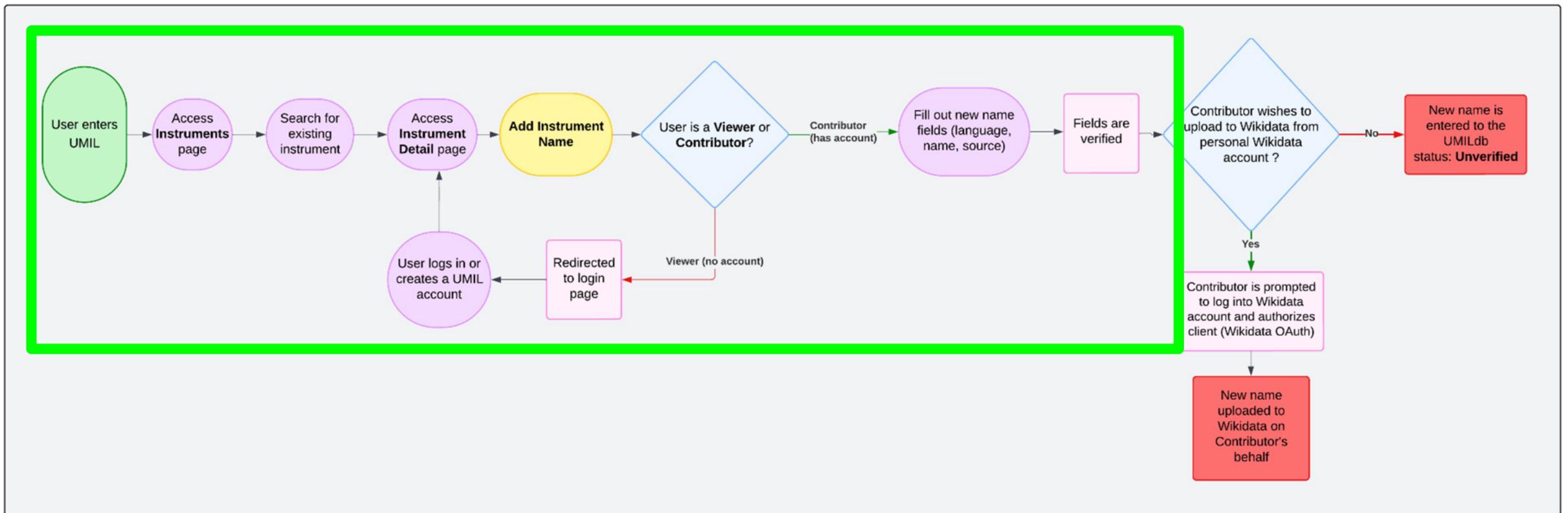
UMIL Instruments About **Upload**

- Has a UMIL account
- **Has Django access (full)**
- Has all Reviewer powers
- Can delete any item
- Can submit new names to Wikidata

UMIL Database



Adding New Name: Contributor Experience



Adding New Name: Contributor Experience

The screenshot shows a web application interface for managing instrument names. At the top, there's a navigation bar with links for "UMIL", "Instruments", and "About". To the right of the navigation are search, user profile, and language selection ("English") buttons.

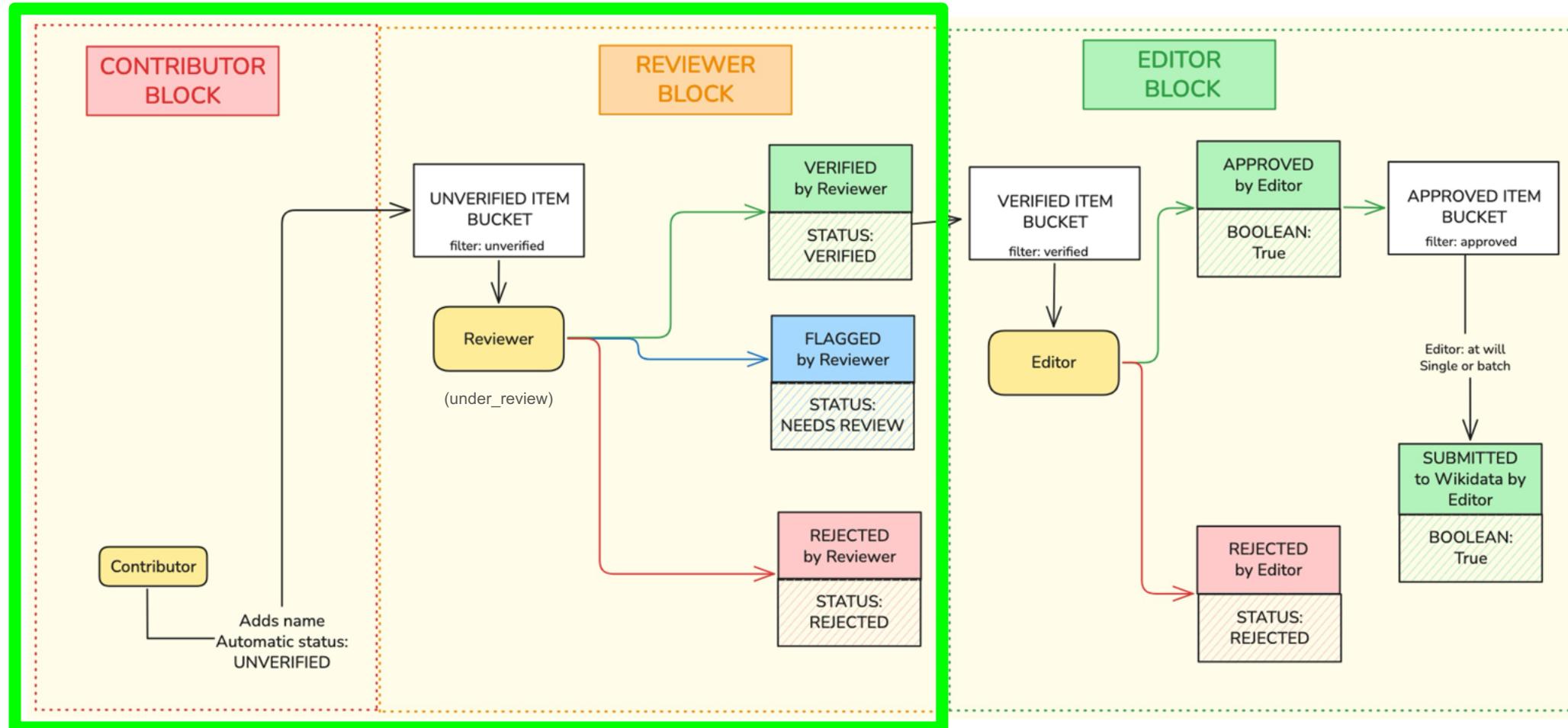
The main content area is titled "Add New Name for Guitar (wikidata ID:Q6607)". It contains three input fields: "Language" (with a placeholder "Type to search"), "Name" (with a placeholder "Enter name"), and "Source" (with a placeholder "Enter source"). Below these fields is a green button labeled "Add another row".

At the bottom of the page, there's a table with the following data:

Language	Name	Wikidata	Status	Action
English	guitar	гитара Семиструнная гитара	Verified	Delete
English	guitar	Wikidata	Verified	Delete

Below the table, there are buttons for "View all languages" and "Add Instrument Name". A large green "Publish" button is located on the right side of the table.

Backend Verification Workflow



Backend Verification Workflow

Change instrument name

گیت (Persian) - Q3038392

Instrument: Q3038392   

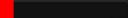
Language: Persian    

Name: گیت

Source name: The Encyclopedia of Musical Instruments of Ir
Who or what called the instrument this?

Verification status: Unverified 

- Umlil label
- Is this the label for the instrument?

Contributor: 

- User who contributed this name

On wikidata
Is this name already on Wikidata?

Frontend Verification Status Column

Guitar

Wikidata ID	Q6607						
Hornbostel-Sachs Classification	321.322-						
MIMO Classification	3237						
Instrument Names in Different Languages	<table border="1"><tr><td>Languages</td></tr><tr><td>French</td></tr><tr><td>Norwegian</td></tr><tr><td>Italian</td></tr><tr><td>Russian</td></tr><tr><td>English</td></tr></table> View all languages	Languages	French	Norwegian	Italian	Russian	English
Languages							
French							
Norwegian							
Italian							
Russian							
English							

Verification Status

X

Status	Description
Verified	The instrument name has been reviewed and approved by an admin.
Under Review	The instrument name is under review by an admin.
Unverified	The instrument name has not yet been reviewed.
Rejected	The instrument name has been reviewed and rejected by an admin.

Add Instrument Name

Instrument Status ⓘ	Actions
d	Delete

Part Three: Instrument Taxonomy and Classification Issues

Presenter: Kyrie Bouressa

Issues with Instrument Taxonomy and Classification in UMIL

LinkedMusic Project Meeting IV 2025
Kyrie Bouressa

It's hard to figure out
instrument **labels**
versus **aliases**. These
are our thoughts and
current steps.



Hardanger fiddle



Violin
Fiddle



Double Bass
Contrabass

Instrument Taxonomy in UMIL

How do we determine what is a unique instance of an instrument, versus an alternative or additional name for an instrument?

What kind of open, broad guidance can we establish for ourselves and for our users?

Note: all examples in this presentation are pulled from lab discussion and issues discussed on GitHub, if you're curious about our larger discussions on these topics

We don't want:

- Brands
 - Gibson-vs-Fender
 - YAMAHA PSR-EW425, etc
- Individuals' instruments; discovered instruments
 - JS Bach's harpsichord
 - Tutankhamun's trumpets (Q2539852)
- Synthesizers, samplers (etc) variants
 - Roland SP-404; Geddy Lee Minimoog Model D
 - Pinned for later; beyond the scope of where UMIL is currently
 - Requires deep modification to suit Hornbostel-Sachs (HBS) and other hierarchies/classification:
 - HBS: Moog Satellite 523.1 = 511.11 + 512.121 + 512.13*1 + 514.11 1 + 514.122 + 514.21 *1
 - “The more information added, the more accurate the description will be. Even just mentioning the number of oscillators, noise generators, and filters of the Synthi 100 will drastically reduce the number of matching devices.”
 - (Weisser & Quanten 2019) **Do we want that level of detail?**

We do want: Relationships

- Using an instrument classification system like Hornbostel-Sachs (HBS) helps group and find instruments
 - Classified by what vibrates to produce sound (body, membrane, cord, air, electric signal)
- Tags
 - Material (wood, metal, plastic)
 - Method of playing (plucked, bowed, blown)
 - Event (wedding, funeral, birthday)
 - Genres or types (jazz, khyal)
 - Place (continent, country, group)
- “In close connection to” or “related to” field
 - Ex.: Connects an instrument deployed solely for weddings to its generic instance



Thumb piano



Nyonganya

Instrument	Alias	MIMO Classification (Musical Instrument Museum Online)	HBS	In close connection to ("different from"?)
Nyonganya	Nyonga Nyonga	128	122.1 + 112	thumb piano (mbira)

Things to consider

Hornbostel-Sachs (HBS) classifies instruments by their method of sound production (what is vibrating to produce sound), and their shape*

- Eurocentric
 - Does not account for function, role, material, or genre/type which, dependent on context, may indicate an entirely separate instrument concept in one culture than another; e.g., an instrument used only in weddings, versus a very similar if not nearly identical version of that instrument used elsewhere; or an instrument made of metal is wholly different from one made of wood

We want to avoid prescription, duplication, and exclusion.

Where's the line?

Guidance for us, guidance for users

- Range, register, morphology, method of playing, method of sound production.
 - $\frac{3}{5}$ met to be considered a different instrument > alias?
- Association with specific functions in a genre or type
- Affiliated with specific events
 - Weddings, birthdays, funerals, religious events
- Flowcharts to help users make upper level HBS classifications

Alignment with Wikidata

- A Wikidata user may be making what appears to be a duplicate entry of a musical instrument because they feel the current entry does not reflect their context
 - UMIL is potentially uniquely positioned to help with this issue?
- Gen will talk shortly about additional Wikidata oddness

**Does anyone have
any ideas, questions,
or comments?**

Thank you for your time!

Part Four: Challenges (1)

Presenter: Pouya Mohseni

RTL (Right-To-Left) Display

UMIL is multilingual, but several UI components were originally designed assuming LTR (left-to-right) scripts. When using RTL (right-to-left) languages, inconsistencies appear.

Language-specific content includes:

- Original entries (instrument name, aliases, sources)
- Translated components of the website

Current Issues

1. Interaction with Google translate
2. Displaying mixed-direction tables
3. Multiple scripts for one language
4. Direction for instrument sources

Guitar						
Wikidata ID	Q6607					
Hornbostel-Sachs	321.322-5-6					
Classification						
MIMO Classification	3237					
Instrument Names in Different Languages	Language	Name	Alias	Source	Verification S	
Old English	Gytärre			Wikidata	Verified	
Aragonese	Guitarra			Wikidata	Verified	
Arabic		قيثارة		Wikidata	Verified	
Egyptian Arabic		جيتار		Wikidata	Verified	
Armenian	guitarra			Wikidata	Verified	

Figure 1. Instrument detail interface

Add New Name for Guitar (wikidata ID:Q6607)

Language	Name	Source
ar	گیتار	Enter source
Add another row		
Publish		

Figure 3. Interface for adding new name

Kurdish (Q36368)	
writing system	<p>Latin script statement is subject of</p> <p>uses</p> <p>0 references</p>
	<p>Kurdish in Latin script</p> <p>Kurdish Latin Script</p>
	<p>Arabic alphabet statement is subject of</p> <p>Kurdish in Arabic script</p>

Figure 2. Different scripts for one language

Part Four: Challenges (2)

Presenter: Zih-Syuan Lin

Language Disambiguation

- Wikidata's language system is comprehensive but flat
- When adding names, the interface offers no guidance for choosing among variants
- Do we assume the contributor's choice is appropriate, or do we want clearer conventions to guide these decisions?

Han-script variants		Romanization & dialect variants	
Wikidata Code	Language Name	Wikidata Code	Language Name
zh	Chinese	hak	Hakka Chinese
lzh	Literary Chinese	nan	Minnan
zh-hans	Simplified Chinese	nan-latn-pehoeji	Minnan (Peh-oe-ji Romanization)
zh-hant	Traditional Chinese	nan-latn-tailo	Minnan (Tai-lo Romanization)
zh-classical	Classical Chinese Literary Chinese	zh-min-nan	Minnan (Chinese Min Nan)
zh-cn	Chinese (China)
zh-hk	Chinese (Hong Kong)		
zh-mo	Chinese (Macau)		
zh-my	Chinese (Malaysia)		
yue	Cantonese		
nan-hant	Minnan (Traditional Han script)		
...	...		

An example for Minnan
Han script: 因為當初是
Pēh-ōe-jī: In-uī tong-tshoo sī
Tai-lo Romanization: In-uī tong-tshoo sī

Part Four: Challenges (3)

Presenter: Yu-Chia Kuo

Difficulties When Adding New Instrument Names

1. Repeated manual entry for translations with the same source

Languages that share the same reference (e.g., Chinese varieties) still require separate submissions, resulting in unnecessary repetitive work.

2. Source update limitations

The system retains only the earliest submitted source: later updates or corrections cannot replace it leading to the loss of more reliable sources.

Add New Name for Violin (wikidata ID:Q8355) X

Language	Name	Source
Type to search	Enter name	Enter source

Add another row **Publish**

Future Work

1. Multi-language entry support

- Allow adding several related languages in a single submission when they share the same source.

2. Better visibility and verification

- Highlight or pin the active language row for easier confirmation.
- Extend verification tags to aliases for clearer provenance tracking.

3. Improve source preservation

- Enable updating multiple sources for the same name.

The screenshot shows the UMIL application interface. At the top, there is a navigation bar with links for "UMIL", "Instruments", and "About". A search bar and a user profile icon are also present. To the right of the search bar, a dropdown menu labeled "English" is highlighted with a red box and arrow, indicating the current active language. The main content area displays information about a "Violin". It includes Wikidata ID (Q8355), Hornbostel-Sachs Classification (321.322-71), and MIMO Classification (3564). Below this, a table lists instrument names in different languages. The table has columns for Language, Name, Alias, Source, Verification Status (with a red box around it), and Actions. The "English" row is highlighted with a red box. The "Name" column for English is "violin", and the "Alias" column is "fiddle". The "Source" column is "Wikidata", and the "Verification Status" column contains a green button labeled "Verified". The "Actions" column has a "Delete" button. Other rows in the table show names in French, German, Italian, and Korean, each with their respective verification status and delete actions. At the bottom of the table, there is a link "View all languages" and a button "Add Instrument Name".

Language	Name	Alias	Source	Verification Status	Actions
French	violon		Wikidata	Verified	Delete
German	Violine	Geige	Wikidata	Verified	Delete
English	violin	fiddle	Wikidata	Verified	Delete
Italian	violino		Wikidata	Verified	Delete
Korean	바이올린		Wikidata	Verified	Delete

Part Four: Challenges (4)

Presenter: Mai Lyn Puittinen

Deleting Names

- Entries should be preserved in the database even if they are deleted from view on UMIL.
- **Solution:** create **Deleted** boolean flag attribute for each Instrument Name.
- A Deleted Instrument Name will remain in the UMIL database but is no longer displayed on the UMIL frontend (regardless of status).
- Deleted Instrument Names will not be considered for Wikidata Upload.

Deleting Names: Considering UMIL labels

- On Wikidata, there may be more than one instrument name in a language.
 - The most common name/first name added is considered the instrument's LABEL.
 - Additional names are considered as ALIAS.
- UMIL labels are displayed as the title of the Instrument Detail page.
- **Problem:** if a contributor chooses to delete their name that is a umil_label, there must be some sort of automation that reassigns umil_label to the earliest alias (umil_label = false) in that language.
- If there is no other **verified** names available, a placeholder label must be displayed on the detail page.
- Complex problem to consider changes freely done on the backend.

Deleting Names: Considering UMIL labels

UMIL Instruments About Search... English

Guitar

Wikidata ID	Q6607				
Hornbostel-Sachs Classification	321.322-5-6				
MIMO Classification	3237				
Instrument Names in Different Languages	Language	Name	Alias	Source	Verification Status ⓘ Actions
	French	guitare		Wikidata	Verified Delete
	Norwegian Bokmål	gitar	Gitar	Wikidata	Verified Delete
	Italian	chitarra		Wikidata	Verified Delete
	Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata	Verified Delete
	English	guitar		Wikidata	Verified Delete

[View all languages](#) [Add Instrument Name](#)

Image

[View image in full size](#)

Rejected: Inappropriate

- Although we want to let contributors know what names have been rejected to prevent repeated attempts, it is not ideal to continue displaying “names” that contain inappropriate words.
- **Solution:** create another verification status of **rejected: inappropriate** or some adjacent naming, and only display these names to the contributor that added them.
 - Alternatively, never display these names and routinely delete them from the database

Wikidata Interaction: Upload Page

The workflow for uploading verified NEW names to wikidata has been outlined, however is not implemented.

- Only accessible to Editors
- Displays all Verified names NOT on_wikidata
- Allows Editor to edit verification status or delete entry
- Publish to Wikidata prompts for Editor to log into their personal Wikidata account

New Verified Names

Language	Name	Alias	Source	Verification Status ⓘ	Actions
French	guitare		Wikidata	Verified	Delete
Norwegian Bokmål	gitar	Gitar	Wikidata	Verified	Delete
Italian	chitarra		Wikidata	Verified	Delete
Russian	гитара	Шестиструнная гитара Семиструнная гитара	Wikidata	Verified	Delete
English	guitar		Wikidata	Verified	Delete

Publish to Wikidata

What is a source?

- When a Contributor adds a name, they must include the source from where the name comes from.
- Currently, **source** is a text box where the contributor can type whatever they want.
- **Consider:** specifying source categories so that UMIL data maintainers can better understand where our names are coming from and whether these sources are valid.
- **Problem:** as we aim to collect names that are not particularly well documented, how can we categorize specific sources that are from family (“mom”, “grandpa”)?
- Should we have categories and then allow a contributor to further specify?

Part Four: Challenges (5)

Presenter: Geneviève Gates-Panneton

Instrument entries on Wikidata that we do not want

Two relevant issues:

When transferring entries from Wikidata to UMIL - Avoid transferring entries we don't want

When inputting new instruments in UMIL - Avoid repeating these same mistakes

Duplicate entries

Two entries for the same instrument

ngombi (Q3339324)					
Item Discussion					
central African arched harp					
▼ In more languages					
Configure					
Language	Label	Description	Also known as		
default for all languages	No label defined	—			
English	ngombi	central African arched harp			
Māori	No label defined	No description defined			
Catalan	ngombi	instrument de corda			
Persian	نگومبی	چنگ قوس‌دار آفریقایی			
French	ngombi	harpe arquée d'Afrique centrale			
Hebrew	No label defined	כלי פריטה			
Hungarian	ngombi	közép-afrikai ívhárfa			
Norwegian Nynorsk	Ngombi	No description defined			
Russian	Нгомби	Музыкальный инструмент			
Fewer languages					

ngombi (Q3339324)
central African arched harp
7 statements, 7 sitelinks - 20:41, 25 October 2025
Edmond Ngombi (Q28718176)
7 statements, 1 sitelink - 12:19, 31 March 2024
Ngombi (arched Harp) (Q116413065)
ngombi (arched Harp) at the Metropolitan Museum of Art (MET, 89.4.3527)
7 statements, 0 sitelinks - 01:55, 23 July 2024
Lius Alombah Ngombi (Q131490093)
lawyer in Cameroon
4 statements, 0 sitelinks - 23:06, 7 February 2025
Ngômbi (Q105072195)
Musical Instrument
4 statements, 0 sitelinks - 16:21, 25 January 2021

Ngômbi (Q105072195)					
Item Discussion					
Musical Instrument					
▼ In more languages					
Configure					
Language	Label	Description	Also known as		
default for all languages	No label defined	—			
English	Ngômbi	Musical Instrument			
Māori	No label defined	No description defined			
German	Ngômbi	Musikinstrument	Harmonica, Accordéon Duala, Littoral Cameroun		
French	Ngômbi	Instrument de musique			
Fewer languages					

Overly vague entries

Entries that are more of an instrument description or characteristic than an instrument itself

transposing instrument (Q217306)

[Item](#) [Discussion](#)

instrument for which music is conventionally written transposed to a different pitch
transposing musical instrument | transposing instruments

[edit](#)

[▼ In more languages](#)

[Configure](#)

Language	Label	Description	Also known as
default for all languages	No label defined	—	
English	transposing instrument	instrument for which music is conventionally written transposed to a different pitch	transposing musical instrument transposing instruments
Māori	No label defined	No description defined	

[All entered languages](#)

Statements

instance of	type of musical instrument	edit
	▼ 0 references	+ add reference
		+ add value

Dubious electrophones

Electrophones that aren't actually played, or that are a component of a larger instrument

sound module (Q715223)

Item [Discussion](#)

electronic musical instrument without a human-playable interface, operated using an externally connected device, e.g. a MIDI controller

 [edit](#)

[▼ In more languages](#)

[Configure](#)

Language	Label	Description	Also known as
default for all languages	No label defined	—	
English	sound module	electronic musical instrument without a human-playable interface, operated using an externally connected device, e.g. a MIDI controller	
Māori	No label defined	No description defined	

[All entered languages](#)

Factual errors

Entries that contain a mistake in the instrument description or aliases

Ennanga (Q5375216)

Item Discussion

a wooden zither used in Uganda

nnanga | Enanga | Nanga

[edit](#)

▼ In more languages

Configure

Language	Label	Description	Also known as
default for all languages	No label defined	—	
English	Ennanga	a wooden zither used in Uganda	nnanga Enanga Nanga
Māori	No label defined	No description defined	
German	Ennanga	No description defined	Nnanga
French	ennanga	No description defined	
Hungarian	ennanga	ugandai ívhárfa	
Italian	enanga	strumento musicale ugandese, della famiglia delle arpe	nnanga

[Fewer languages](#)

Statements

subclass of

arched harps

[edit](#)

Thank you!

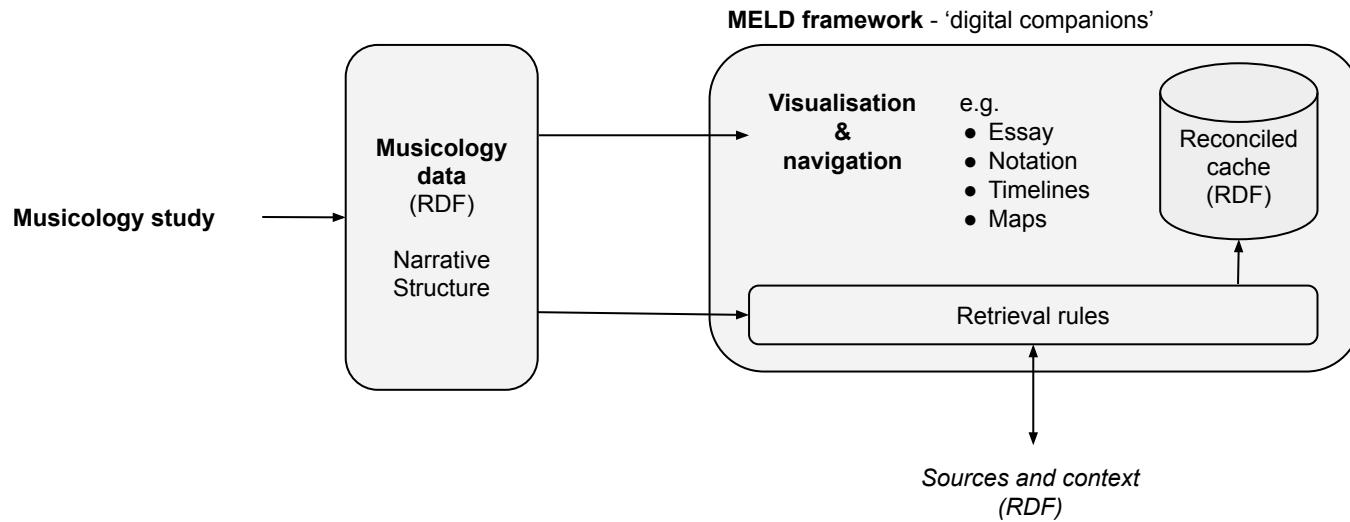
Agenda: Integrating the RISM API in Linked Data applications

1. Intro, explanation, and demo of the RISM API
2. Specific opportunities for integrating RISM API as a Linked Data provider
 - o Examples from Oxford projects (Elgar, DELTA)
 - o Examples from LinkedMusic, others?

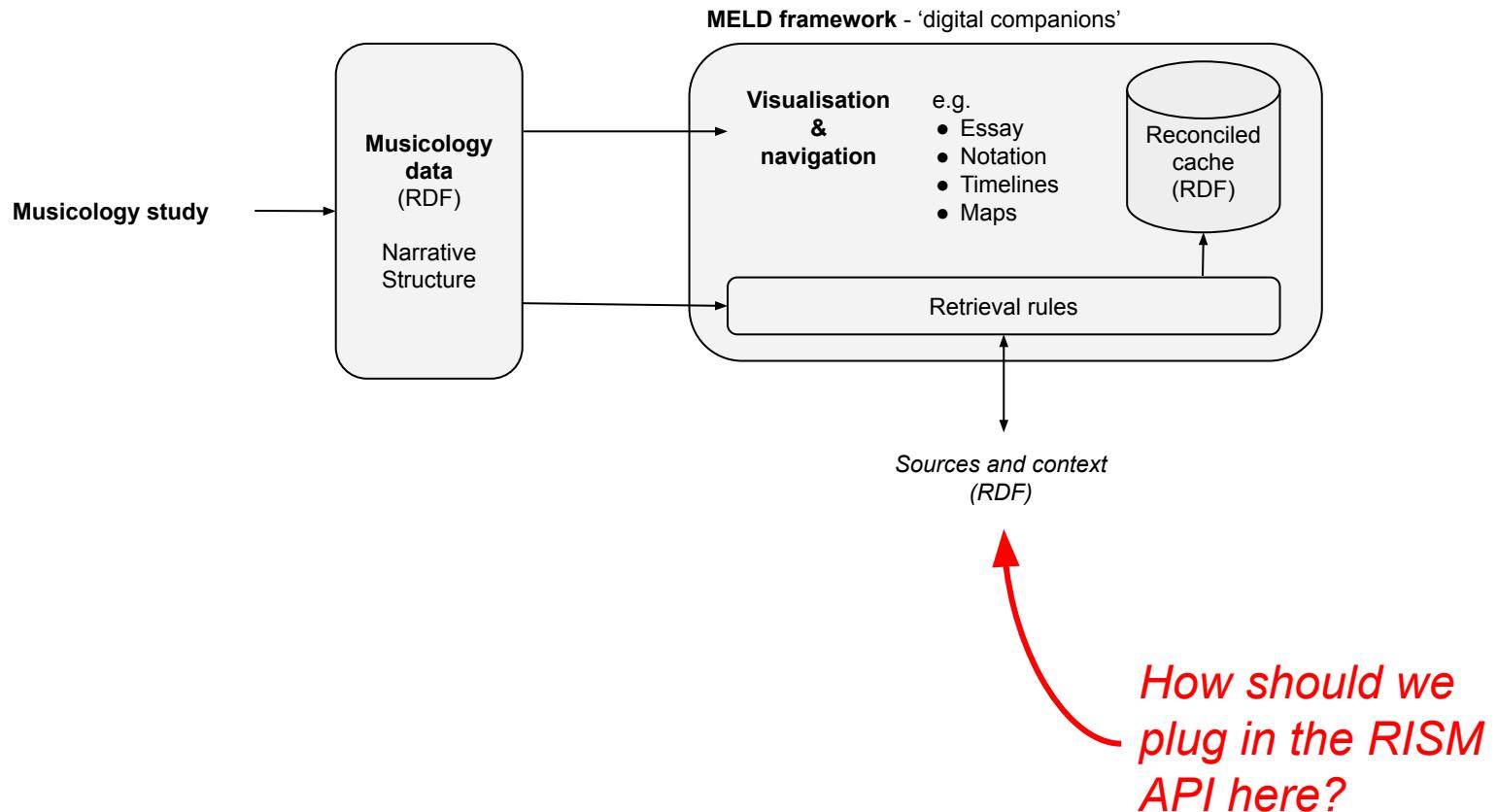
Objective: sufficiently characterise examples to scope implementation approach(es), and identify participants for ongoing collaboration

3. Workshop how this might be realised in practice (tomorrow)
 - o Exploration of API solutions,
 - o Identify any barriers/blockers/improvements, including data coverage, ontology alignment etc.
 - o Iterate towards workable solutions/trials/plans for short-/mid-/long-term implementation.

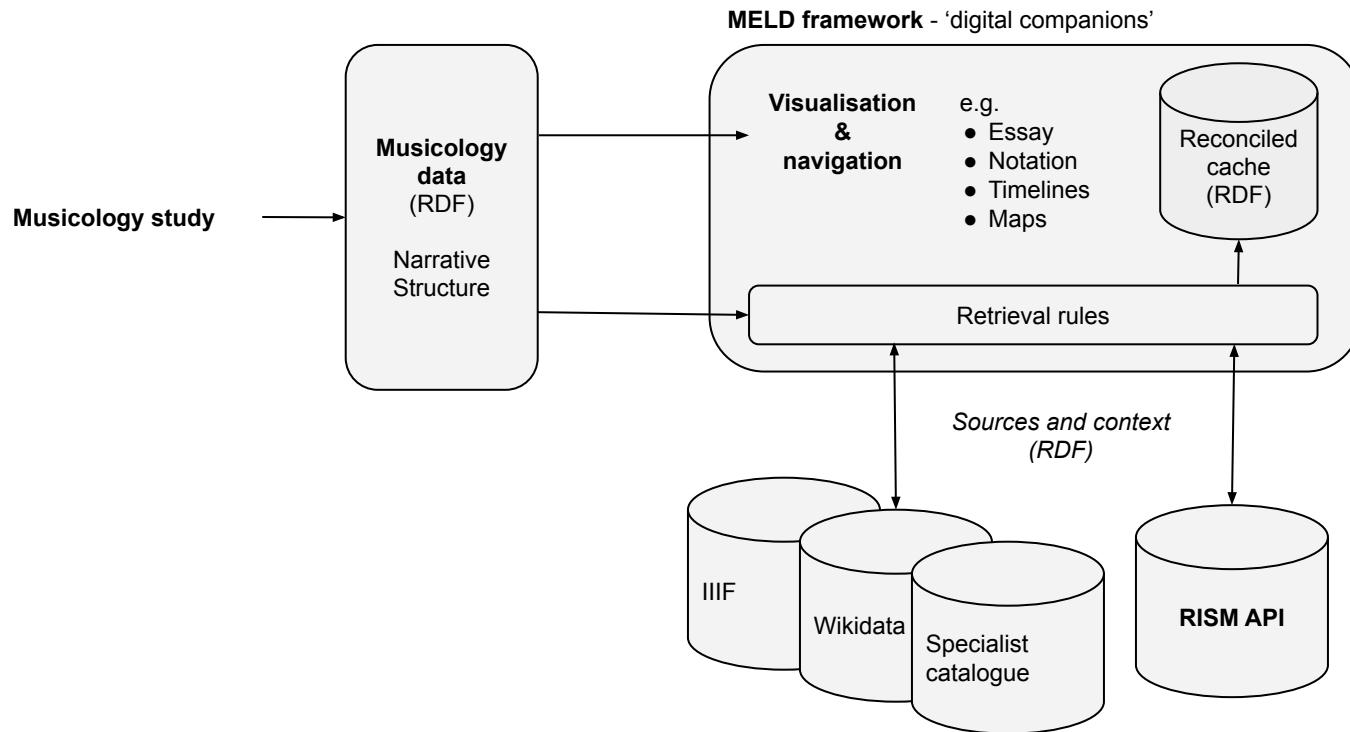
Objective: leave with an outline plan and shared confidence this is achievable

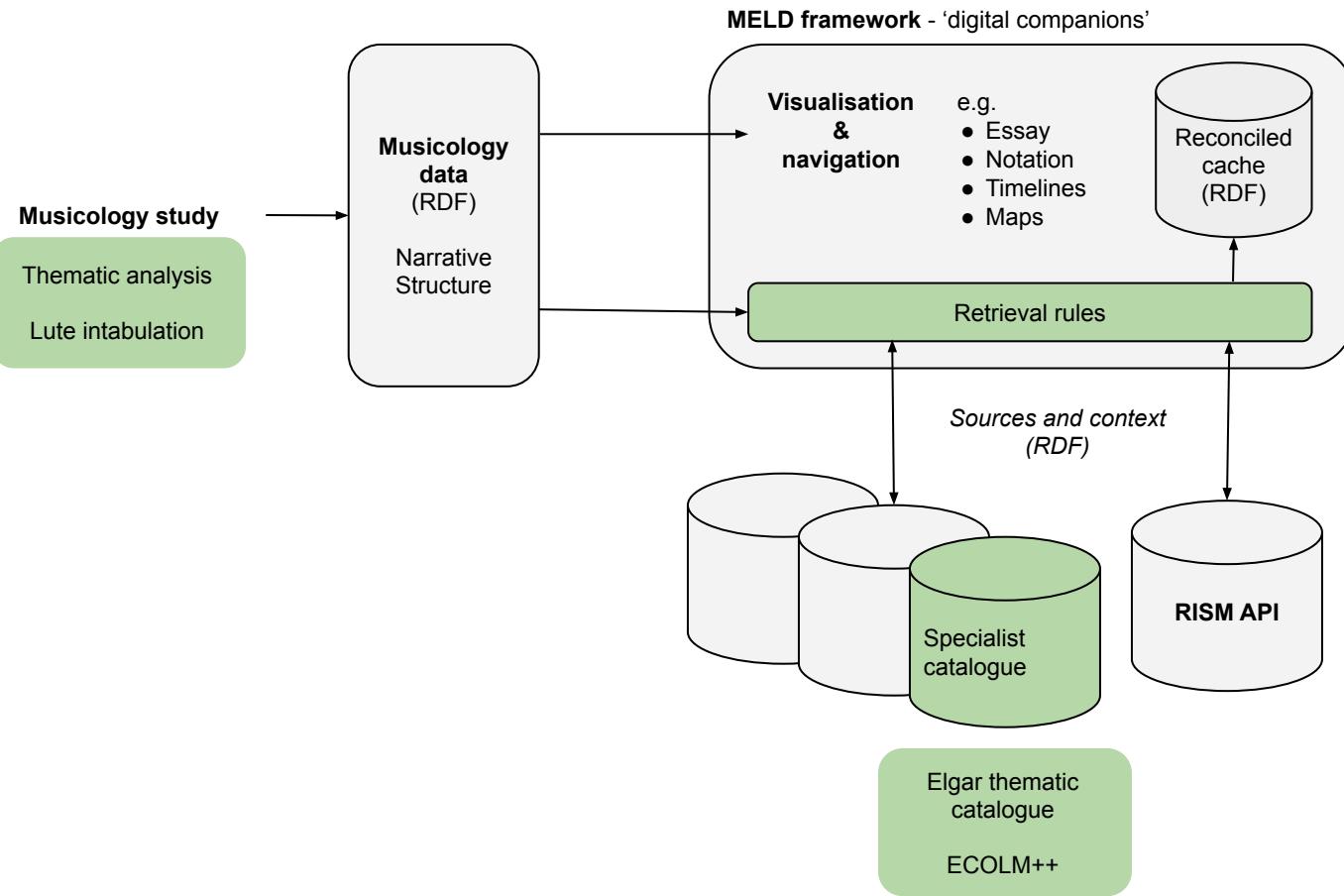


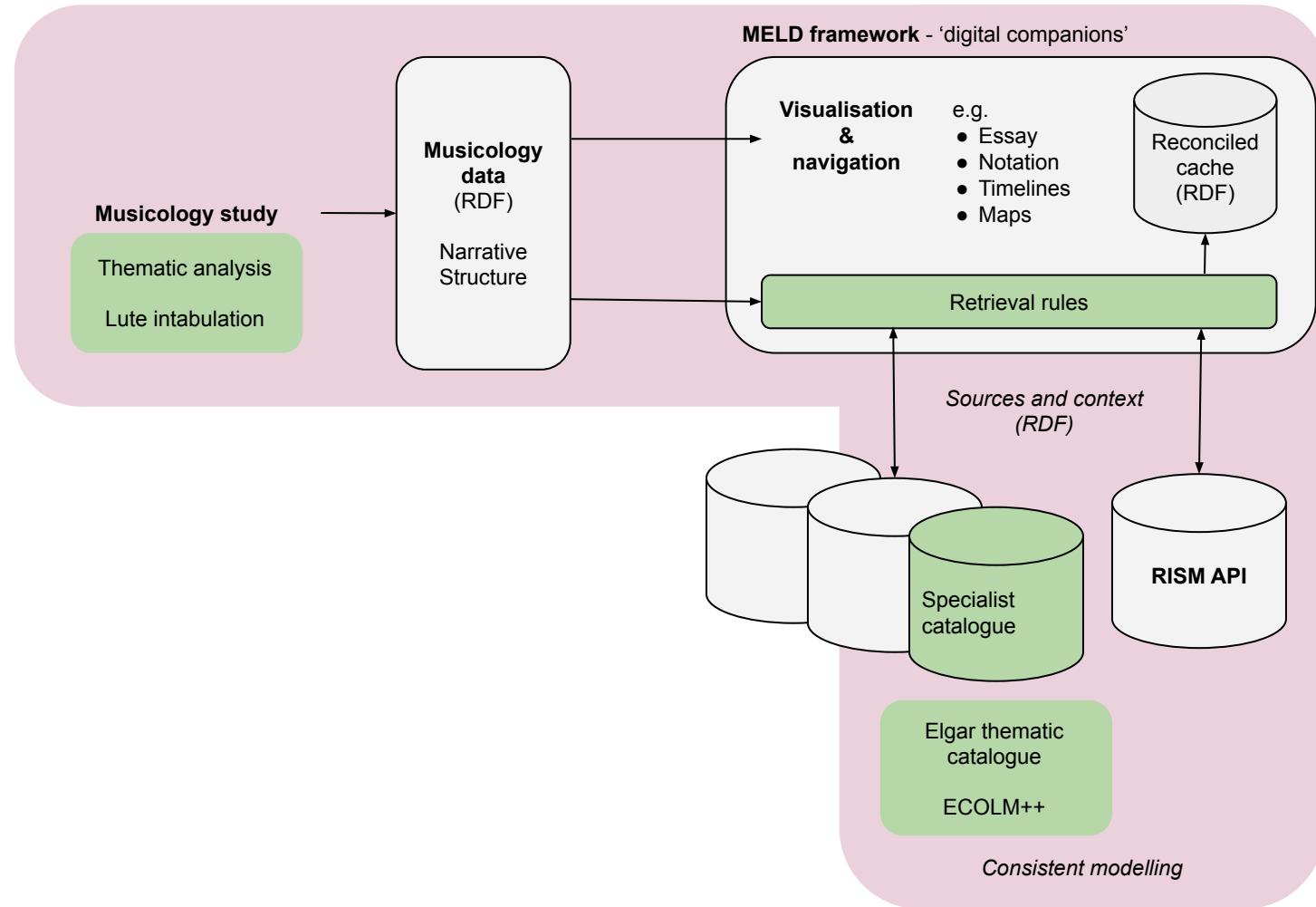
1. Consuming RISM API data in a Linked Data Application

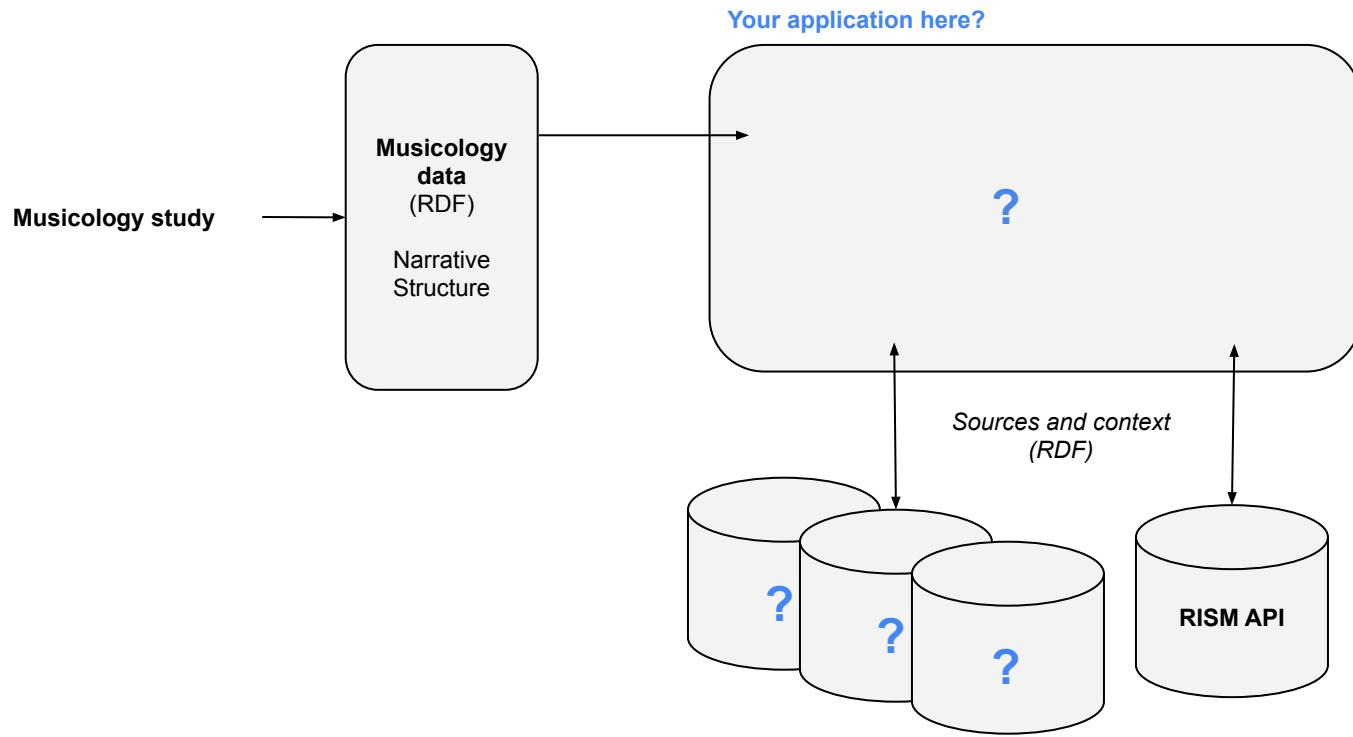


1. Consuming RISM API data in a Linked Data Application

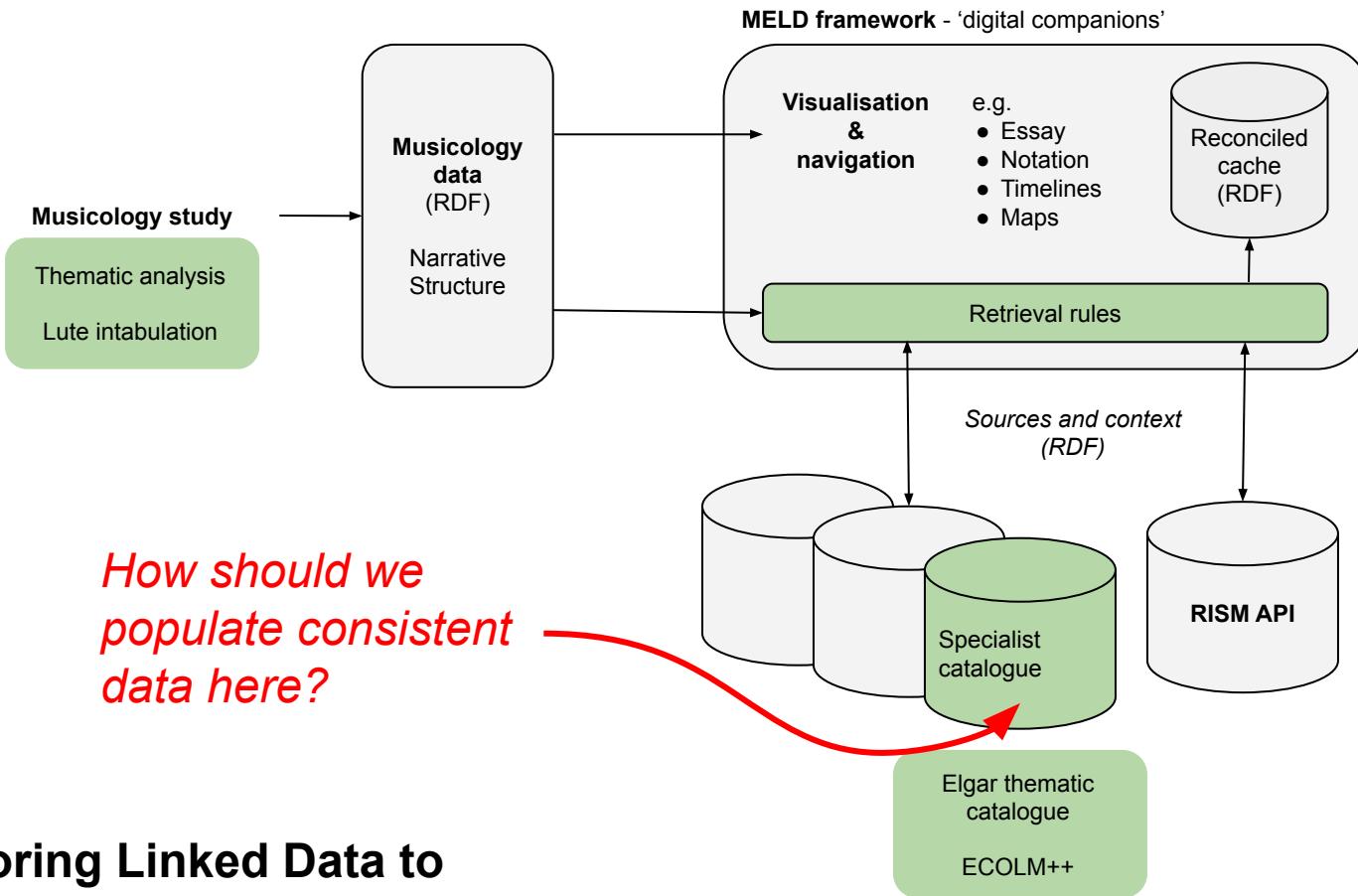






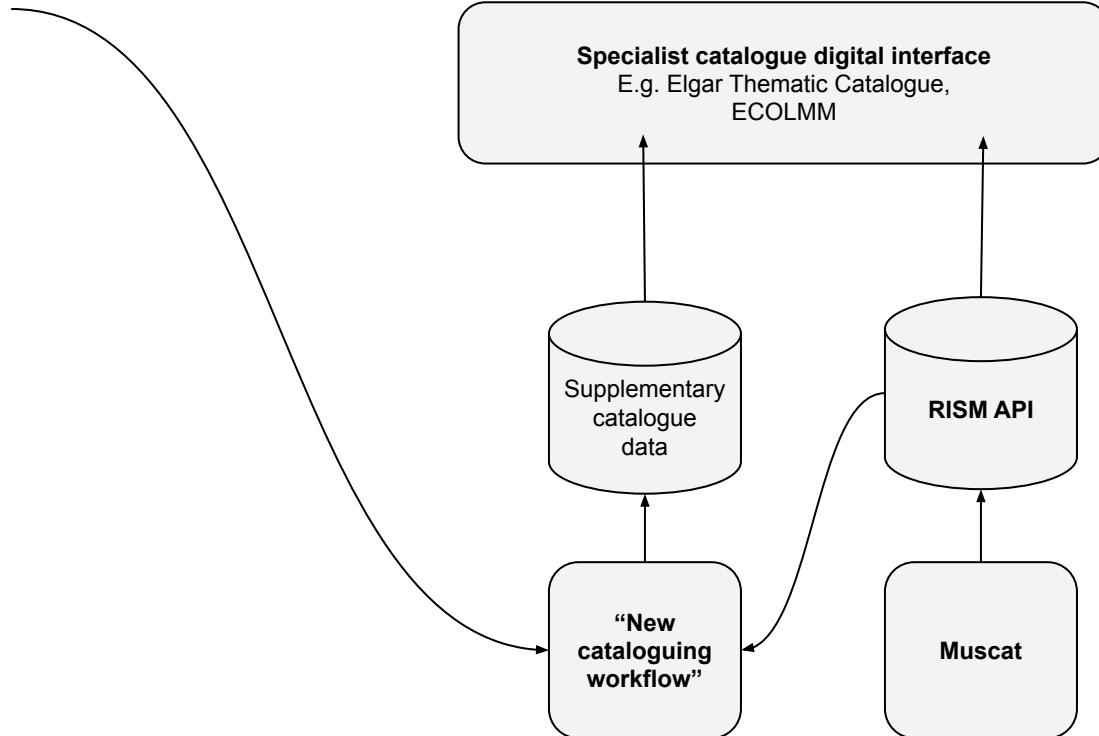


2. Authoring Linked Data to supplement RISM API data



2. Authoring Linked Data to supplement RISM API data

Musicology study



Musicology study

Thematic analysis
Lute intabulation

Specialist catalogue digital interface

E.g. Elgar Thematic Catalogue,
ECOLMM

Supplementary catalogue data

RISM API

“New cataloguing workflow”

Muscat

Consistent modelling

