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Sur des approches d'alignemement semi automatique

Antoine Isaac

Atelier : Données liées et données à lier : quels outils pour quels alignements ?

Mardi 10 juillet 2018, BnF

Quadruplettes à Buffalo
Agence de presse Meurisse
1909, National Library of France
France, Public Domain

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Pourquoi suis-je là ?

- Alignment semi-automatique de vocabulaires
  - STITCH
  - TELplus
  - EuropeanaConnect
- SKOS et implementations
  - RAMEAU, LCSH etc.
- Library Linked Data
- Europeana

Linking subject labels in Cultural Heritage Metadata to MIMO vocabulary using CultuurLINK

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Tom Miles| **The British Library**
Aude Lima| **Centre de Recherche en Ethnomusicologie**
Ariane Néroulidis, Véronique Ginouvès| **Maison Méditerranéenne des Sciences de l'Homme**
Dimitra Atsidis, Maarten Brinkerink| **Netherlands Institute for Sound and Vision**
Michiel Hildebrand| **Spinque B.V.**
Sergiu Gordea| **Austrian Institute of Technology**

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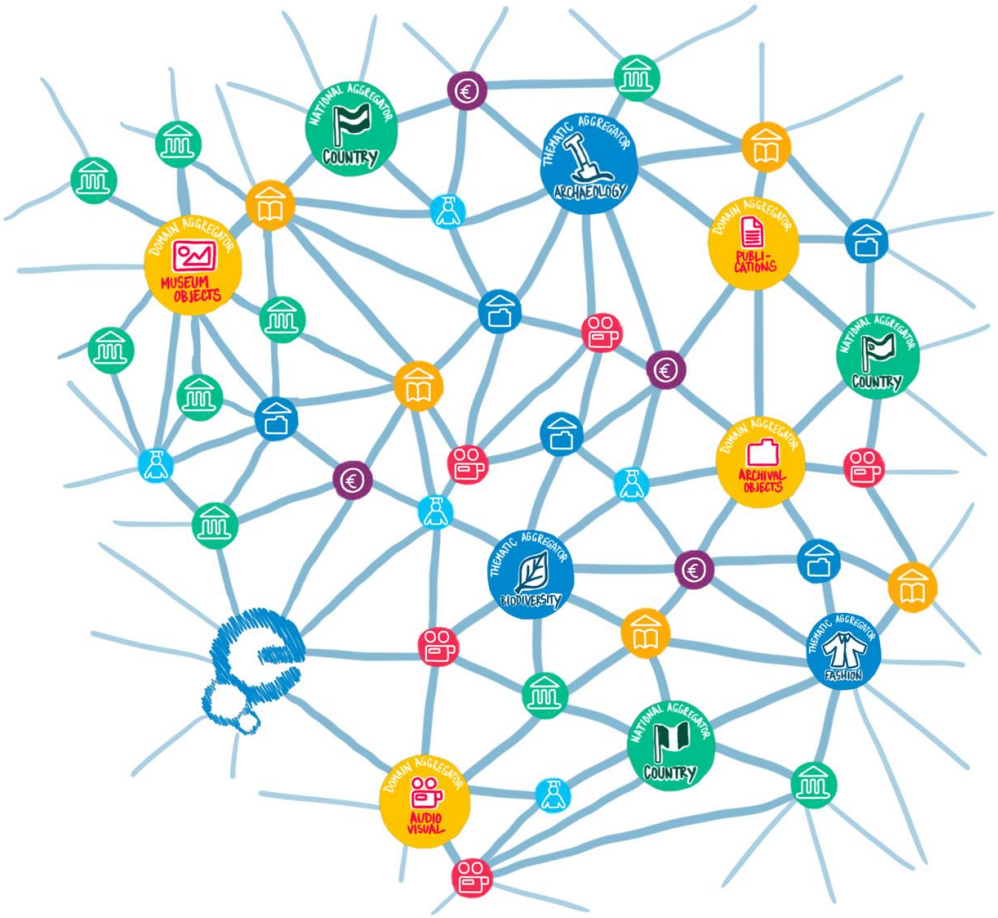
Europeana?



We aggregate metadata:

- *Over 50M objects*
- *From 3,500 libraries, archives, museums*
- *From all EU countries*
- *In about 50 languages*
- *Huge amount of references to places, agents, concepts*

[Europeana aggregation infrastructure](#)
Europeana| CC BY-SA

The Europeana Sounds project

Europeana Sounds aims to increase the amount of audio content available via Europeana

- *also improving geographical and thematic coverage*

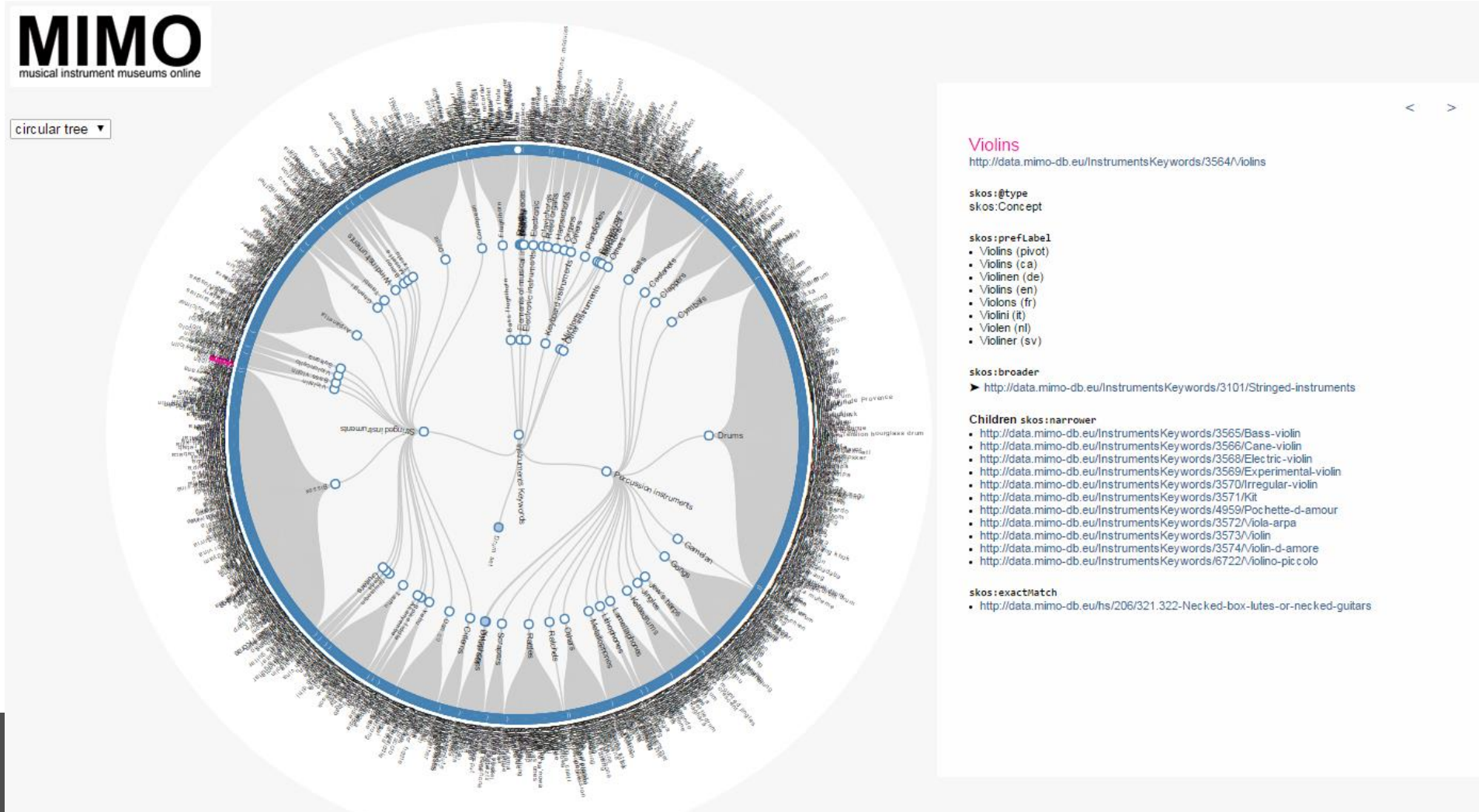
Apart from aggregation, it improves discovery and use of audio content, by enriching metadata through innovative methods

Our experiment

- Evaluate the use of a semi-automatic tool for a concrete vocabulary alignment case
- Assess the coverage of the MIMO vocabulary for enriching Europeana Sounds datasets

The MIMO Vocabulary

- A multilingual controlled vocabulary of musical instruments
- Developed by the Musical Instruments Museums Online project that gathers some of Europe's most important musical instruments museums

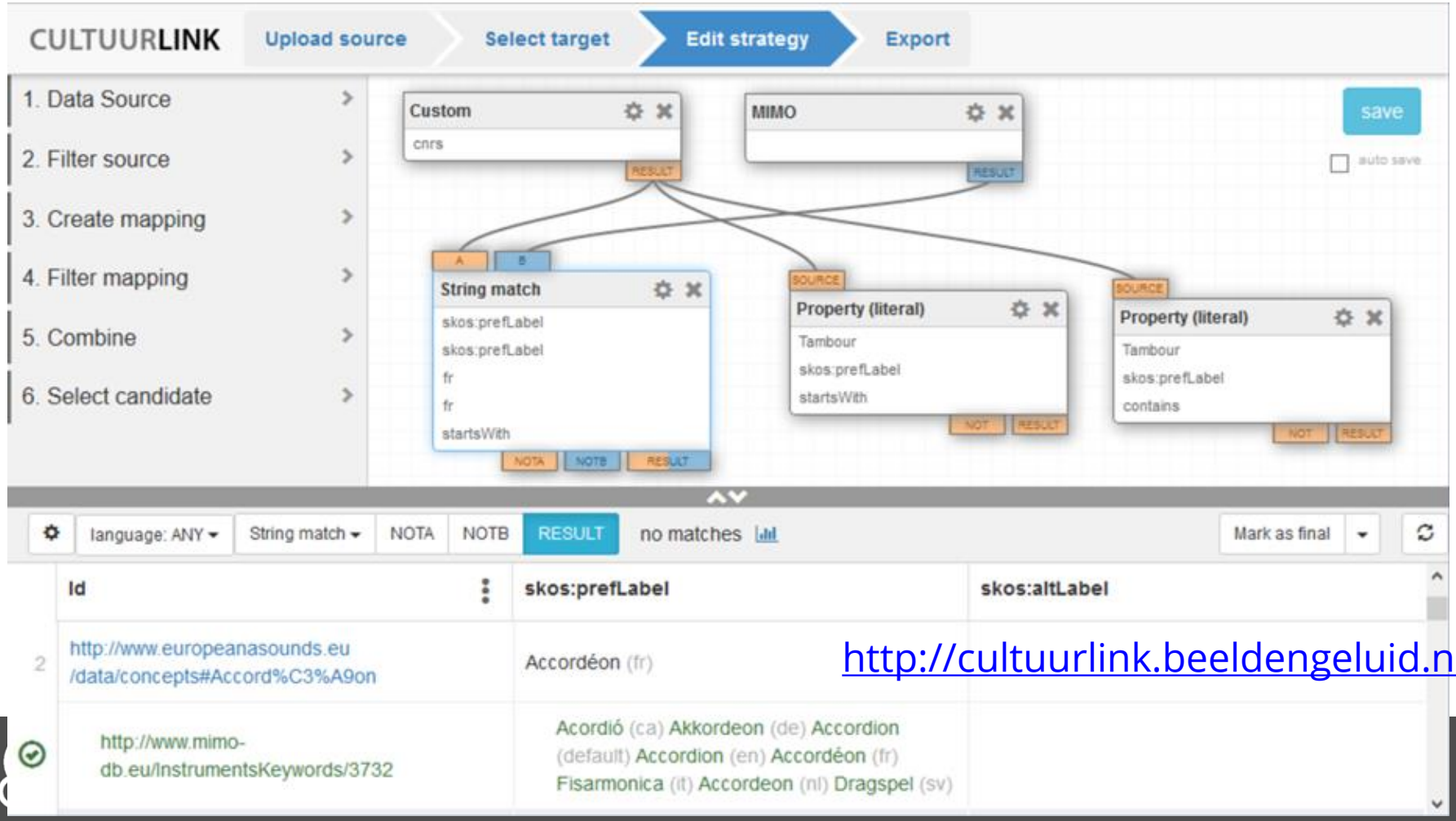


Why MIMO?

- A significant part of Europeana Sounds collections refer to musical instruments and MIMO has good coverage of them
  - Gathers a total of 3121 musical instruments
  - Contains terms in 8 different languages (English, French, Polish, Catalan, Dutch, Italian, Swedish, German)
  - Based on established classification (Hornbostel-Sachs)
- Technically available on the Web
  - Follows the Linked Data best practices and recipes (RDF, SKOS, content negotiation)
- Openly available (CCO)
- Used in the DOREMUS project

What is CultuurLINK?

- Semi-automatic vocabulary alignment tool
- Based on a prototype from EuropeanaConnect
- Online service freely available



http://cultuurlink.beeldengeluid.nl

Participants and their collections

- British Library (BL)
  - selection of Asian instruments (**1,099 records**) from the "Colin Huehns Asia Collection"
  - selection from the "Peter Cooke Uganda Collection" (**1,312 records**)
  - the "Keith Summers English Folk Music Collection" (**1,326 records**)

- Centre de Recherche en Ethnomusicologie (CREM)
  - test collection of **36 records** published in the CD "Musical Instruments of the World"

- Maison Méditerranéenne des Sciences de l'Homme (MMSH)
  - collection of **25 records** about folk music

- Netherlands Institute of Sound and Vision (NISV)
  - collection of **6,608 records** containing commercial 78 rpm records from different genres like light music, classical music and opera.

What have we done?

For each collection we:

- extracted a SKOS vocabulary out of the subject terms found in the object metadata
- set-up a session on CultuurLINK
- asked participants to perform the alignments
- collected and assessed the alignments and feedback from the participants

Concept definition obtained from the MMSH dataset

```
<skos:ConceptScheme
      rdf:about="http://www.europeanasounds.eu/data/mmsh/concepts#ConceptScheme">
</skos:ConceptScheme>
<skos:Concept rdf:ID="grelot">
    <skos:inScheme rdf:resource="#ConceptScheme"/>
    <skos:prefLabel>grelot</skos:prefLabel>
    <skos:note rdf:resource="http://mint-
projects.image.ntua.gr/data/sounds/http://phonotheque.mmsh.huma-
num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9800"/>
    <skos:note rdf:resource="http://mint-
projects.image.ntua.gr/data/sounds/http://phonotheque.mmsh.huma-
num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9775"/>
    <skos:note rdf:resource="http://mint-
projects.image.ntua.gr/data/sounds/http://phonotheque.mmsh.huma-
num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9801"/>
    <skos:note rdf:resource="http://mint-
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num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9768"/>
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num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9798"/>
    <skos:note rdf:resource="http://mint-
projects.image.ntua.gr/data/sounds/http://phonotheque.mmsh.huma-
num.fr/dyn/portal/index.seam?page=alo&amp;aloId=9788"/>
</skos:Concept>
```

Text found in dc:subject

URIs of the records are kept as skos:notes

The alignments obtained from CultuurLINK

```
<rdf:RDF
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:owl="http://www.w3.org/2002/07/owl#"
    xmlns:skos="http://www.w3.org/2004/02/skos/core#" >
  <rdf:Description rdf:about="http://www.europeanasounds.eu/data/concepts#guitare">
    <skos:exactMatch rdf:resource="http://www.mimo-db.eu/InstrumentsKeywords/3237"/>
    <owl:differentFrom rdf:resource="http://www.mimo-db.eu/InstrumentsKeywords/5137"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://www.europeanasounds.eu/data/concepts#flûte">
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  </rdf:Description>
  <rdf:Description rdf:about="http://www.europeanasounds.eu/data/concepts#grelot">
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  </rdf:Description>
  <rdf:Description rdf:about="http://www.europeanasounds.eu/data/concepts#ban">
    <owl:differentFrom rdf:resource="http://www.mimo-db.eu/InstrumentsKeywords/2498"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://www.europeanasounds.eu/data/concepts#violon">
    <skos:exactMatch rdf:resource="http://www.mimo-db.eu/InstrumentsKeywords/3573"/>
  </rdf:Description>
</rdf:RDF>
```
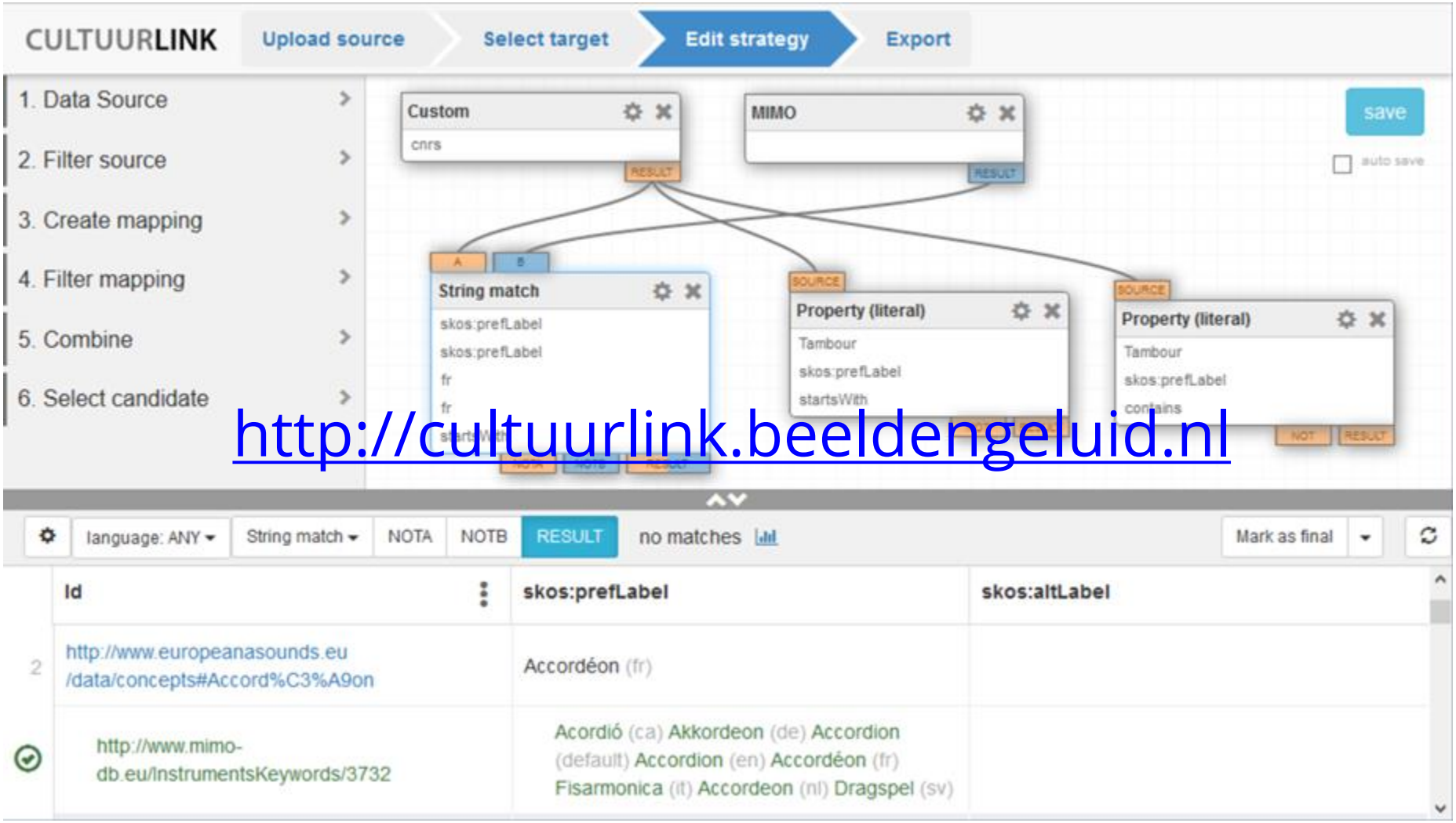

Subject term

MIMO concept

Alignments identified by the data provider for this subject

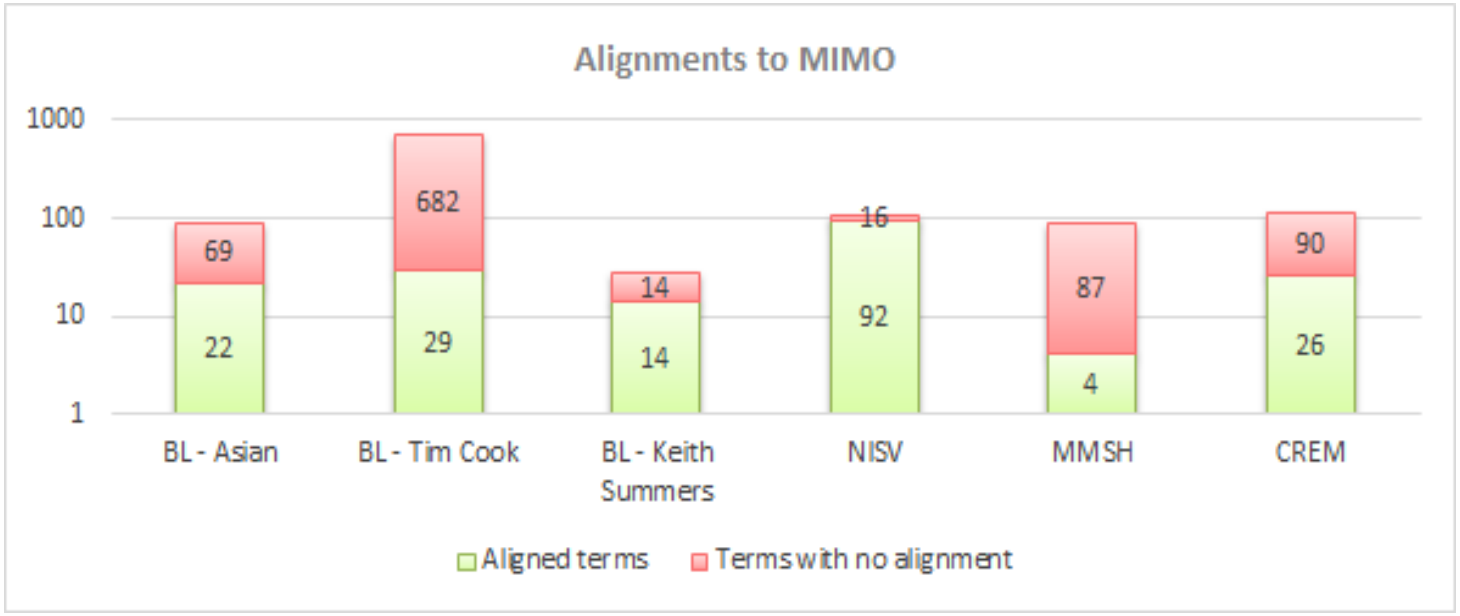
Quick demo

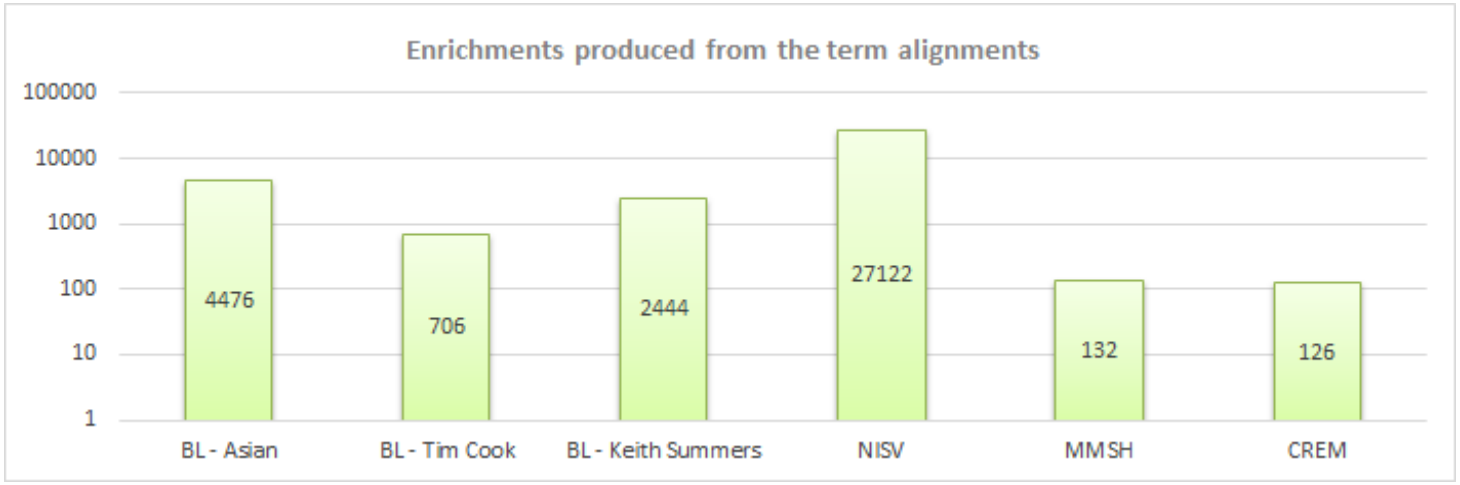


Why CultuurLINK?

- Users can play with different alignment strategies
  - users can define and combine strategies that apply different techniques or parameters of one technique
  - the tool facilitates experimentation to discover new alignments between two vocabularies
- Manual control
  - alignments are identified automatically but strategies are designed by users
  - users can decide which alignments are correct and can assign a specific meaning (e.g. skos:exactMatch, skos:related, skos:broadMatch)
- (Relatively) user-friendly
  - allows non-technical savvy users to easily perform fairly complex tasks

Quantitative results





Findings (1/2)

- Applying exact string matching of preferred labels is sufficient to align 50% of subjects
- Polysemy hurts, as usual, leading to incorrect alignments
  - e.g. “ban” or “zang” which means singing or song matching the instrument “zang”, a sort of cymbals or clapper bells
- Match labels across languages turned out be successful for finding matches based on vernacular terms
  - but it also increased the number of irrelevant alignments

Findings (1/2)

- More elaborate strategies were useful to discover more alignments:
  - less restrictive string matching like “contains”, “startsWith” or fuzzy matching both with distance 1 or 2 can surface broader/narrower relations
  - stemming enables aligning e.g. “Trompet” with “Trompetten” and “Accordeon” with “Accordeons” (in Dutch)
  - the “NOT A” functionality was found crucial to iteratively refine the strategy

- Using such strategies also revealed some quality issues in the source metadata, such as: misspellings and doubtful terms

What about MIMO?

Participants found that MIMO had great features:

- good coverage of musical instruments and good language coverage compared to their local vocabulary
- simple hierarchy, practical for non musicologists
- updated families treating both electronic instruments and tools that are presented in contemporary music
- helpful concept definitions

It also has weak points:

- centred on occidental classical music structure
- lacks concepts to describe voice (texture, mechanism, etc.)

Pourquoi est-ce intéressant?

L'alignment semi-automatique tel que supporté par CultuurLINK permet d'envisager :

- La considération d'une expertise de domaine, à l'intérieur ou à l'extérieur des institutions (nichesourcing)
- Le passage à l'échelle
- Une flexibilité en termes des techniques d'alignement employées
- La vérification du contenu et de la pertinence des vocabulaires à aligner

Wikidata Mix’n’Match

Concours de cycles nautiques sur le lac d’Enghien : Berregent piloté par Austerling

Agence de presse Meurisse

1914, National Library of France

France, Public Domain

Mix’n’Match

- Un outil de validation d’alignements de vocabulaires vers Wikidata

https://tools.wmflabs.org/mix-n-match/

- Les correspondances potentielles sont calculées par l’outil lors du chargement du vocabulaire
- Elles peuvent être validées par n’importe quel membre de la communauté Wikidata

- Nous encourageons nos partenaires à aligner leurs vocabulaires avec Wikidata en l’utilisant:

https://pro.europeana.eu/page/get-your-vocabularies-in-wikidata
(Sandra Fauconnier, Valentine Charles, Liam Wyatt)

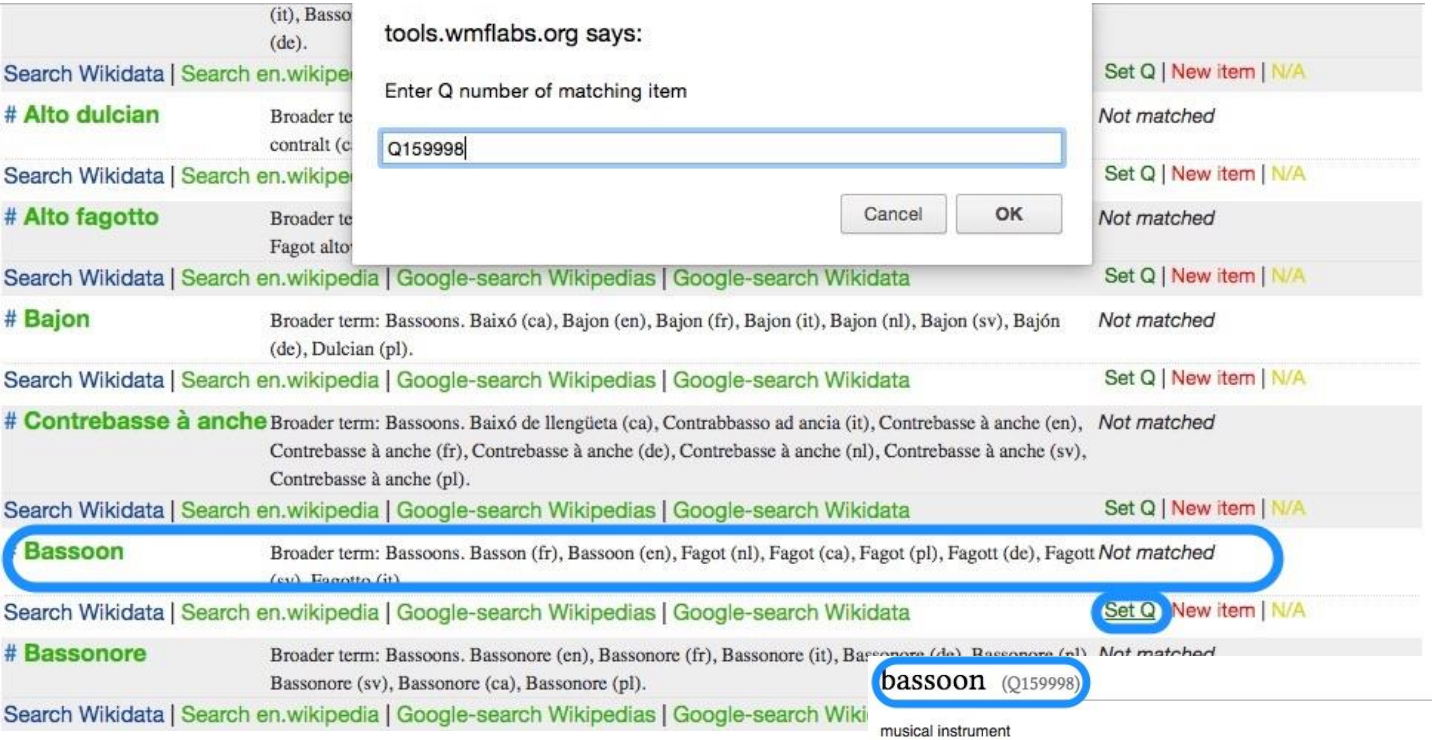
Mix’n’Match et MIMO – les étapes (1/3)

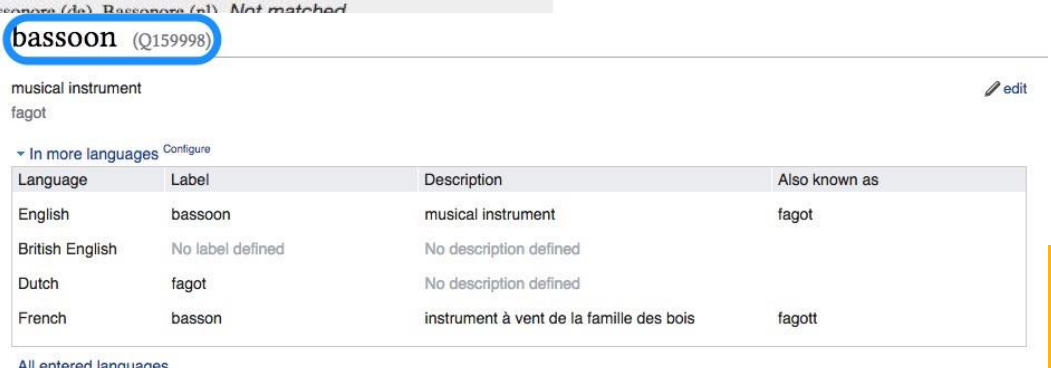
- Convertir la hierarchie du vocabulaire MIMO en simple liste de termes
- Importer dans Mix’n’Match
- Définir une propriété Wikidata pour les résultats de l’alignement
- Valider manuellement les correspondances produites automatiquement (142)

# Ghichak	Broader term: Fiddles. Ghičak (de), Ghichak (en), Ghichak (fr), Ghichak (it), Ghichak (nl), Ghichak (sv), Ghichak (ca), Ghichak (pl).	*Automatically matched*
Ghaychak [Q1521728]	Musical instrument;	Confirm | Remove

Mix'n'Match et MIMO – les étapes (2/3)

- Ajouter d'éventuelles correspondances manquantes





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Mix’n’Match et MIMO – les étapes (3/3)

- Ajouter des précisions aux entités Wikidata correspondant aux concepts de MIMO, par example en rajoutant les liens hiérarchiques

- Créer de nouveaux (types d’)instruments pour combler les lacunes de Wikidata

https://tools.wmflabs.org/mix-n-match/#/catalog/391

Flowers
Anonymous
1700-1799, Rijksmuseum
Netherlands, Public Domain

Thank you!

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#AllezCulture

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