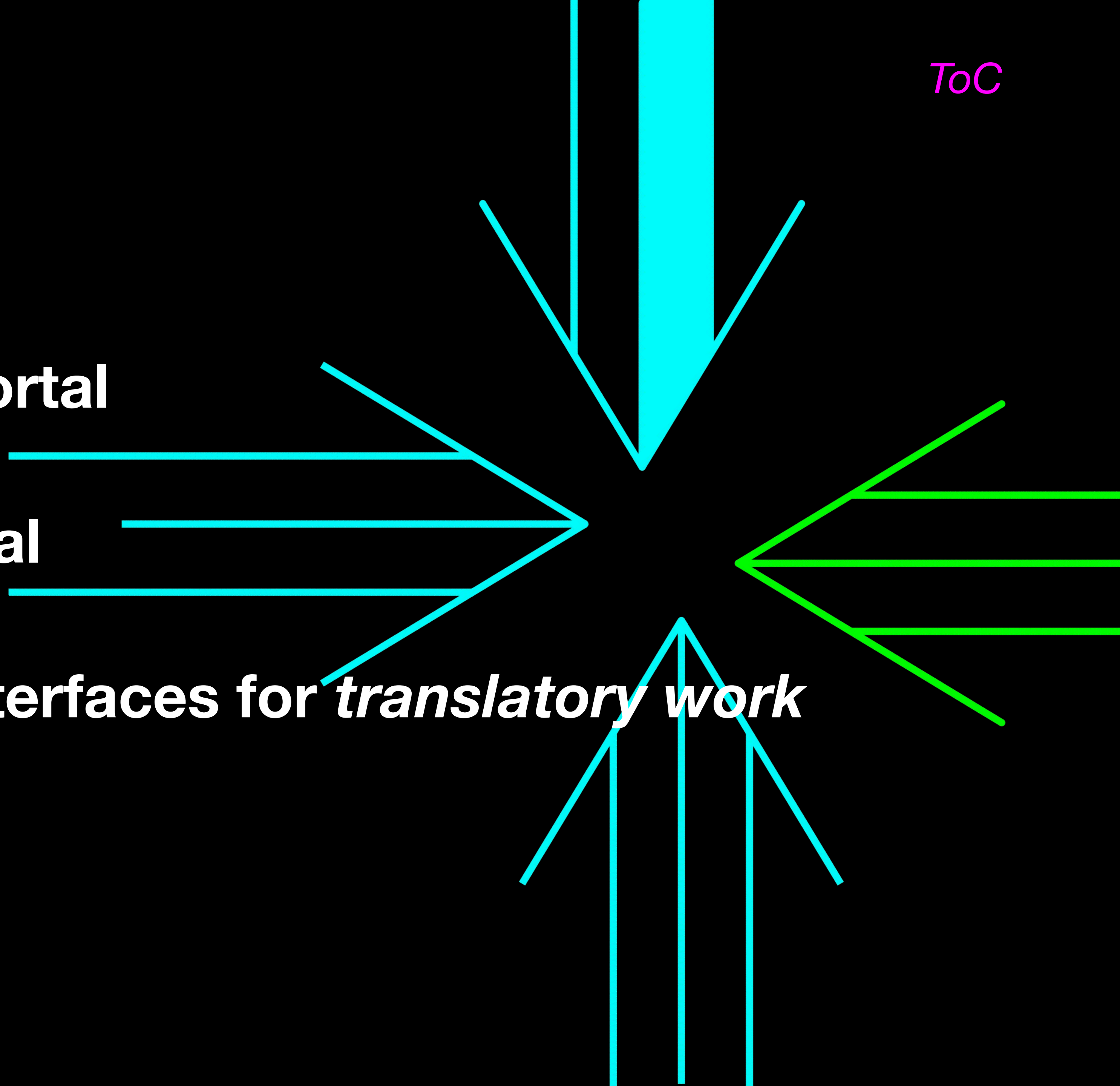


The Polifonia portal: a confluence of user stories, research pilots, data management and knowledge graph technology

Andrea Scharnhorst, Femmy Admiraal, Peter van Kranenburg, Christophe Guillotel-Nothmann, Paul Mulholland

DARIAH Annual event 2021, Interfaces, September 7-9, 2021, On-line



- **About Polifonia**
 - **Vision(s) of Polifonia's portal**
 - **Stakeholders of the portal**
 - **Making of the portal - interfaces for *translatory work***
 - **Summary**
- 

Domain: Musical Heritage & Artificial Intelligence



Project lunch date: January 1st, 2021



Duration: 40 months



Partners in the consortium: 10



Total grant: ~3M €



Call topic
DT-TRANSFORMATIONS-12-2018-2020:
Curation of digital assets and advanced digitization Research and Innovation Action

PILOTS as corner stones

Note that there is a variety of content providers, sources (data, metadata, formats); the connecting thread is semantic web-technology (knowledge graphs) - POLIFONIA covers texts (about/around music), scores (music notation) and sound. The pilots are of different character: They are data, method, tool and audience driven.

Preserving musical heritage through knowledge graphs



Bells

Bell structures are widespread both in urban and rural areas. They contribute to the distinctive shape of a landscape, to defining its soundscape and play as markers of daily, festive and ritual times...



Organs

The history of pipe organs is rich and diverse, and highly interrelated to economic, religious and artistic contexts. Currently, the information about building practices and characteristics of ~2000 Dutch...

Managing musical heritage collections through knowledge graphs



Facets

Music libraries currently lacks well-founded information retrieval tools. This pilot will design a faceted search engine (FSE) for music score collections, supporting explorations and discovery of scores...



Interlink

In order to answer research questions, musical heritage scholars need to combine diverse datasets (music scores, audiovisual materials, metadata) from European digital music libraries and audiovisual archives...

Studying musical heritage through (interlinked) knowledge graphs



Child

This pilot will build a knowledge graph of the historical experience of music in childhood, using life writing (letters, diaries, memoirs, travel writing) and other historical texts as sources for adult...

[Learn More →](#)



Musicbo

Music has always played a central role in the city of Bologna. Nevertheless, its musical heritage is only partly known and enjoyed compared to its full potential. This pilot will create multilingual (English,...

[Learn More →](#)



Tunes

The digital music collection of the Meertens Instituut (Amsterdam) includes thousands of melodies from Dutch popular culture, spanning a period of more than five centuries. To trace possible international...



Tonalities

The modal-tonal organisation of Western music is decisive for its inner coherence, its dramatic plot and, ultimately, for its artistic meaning. This pilot develops tools for the modal-tonal identification,...

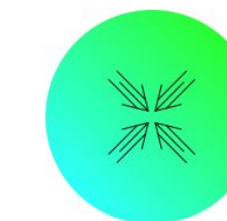
Interacting with musical heritage knowledge graphs



Access

The aim of this use case is to co-design, develop and evaluate wearable haptic technology to enable people who are Deaf or hearing impaired to engage as audience members in live performances.

[Learn More →](#)



Meetups

This pilot focuses on supporting music historians and teachers by providing a Web tool that enables the exploration and visualisation of encounters between people in the musical world in Europe from c.1800...

Visions on the POLIFONIA Portal

Registry

MH resources, including but not limited to all collections used and produced in the project

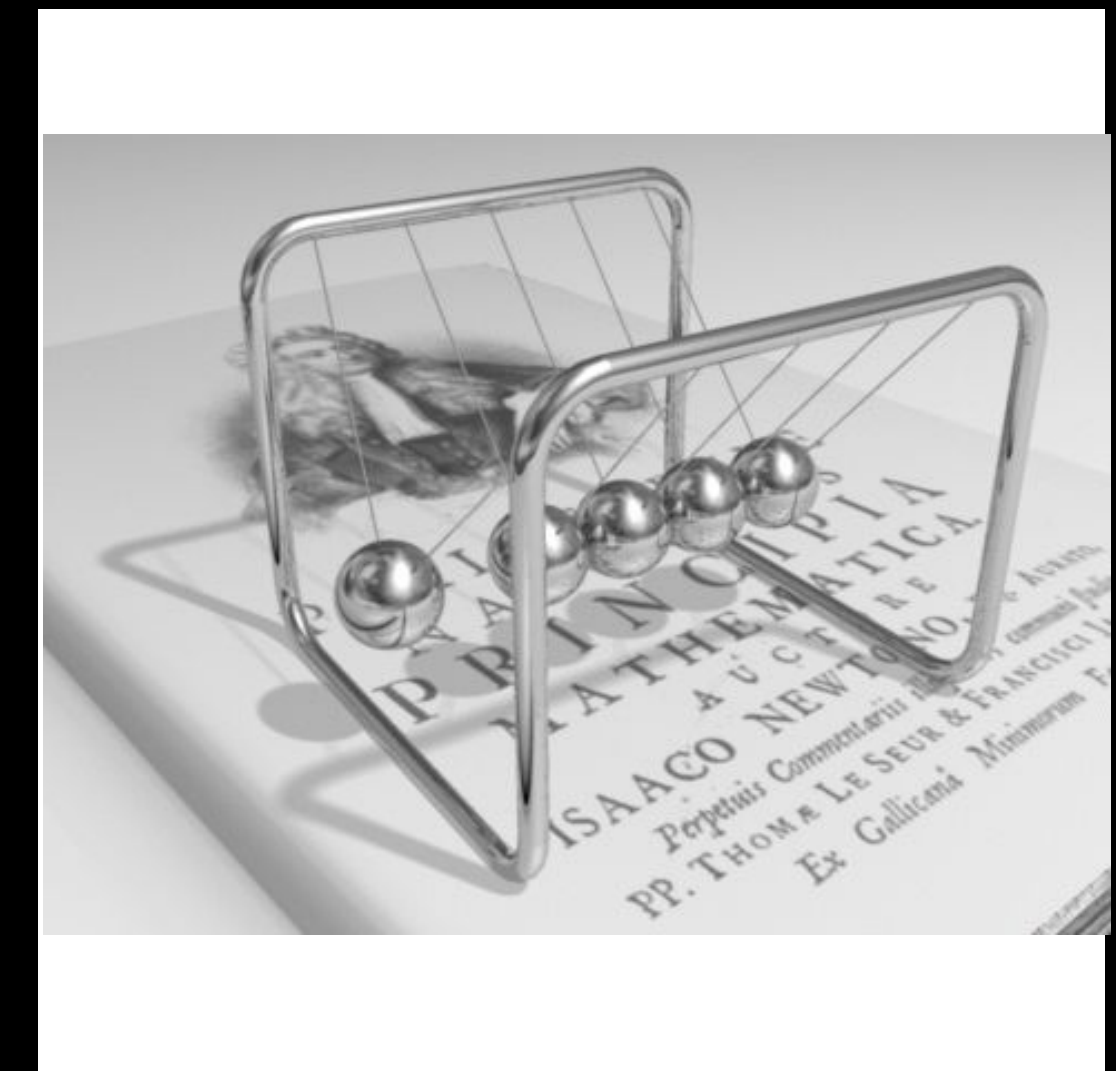
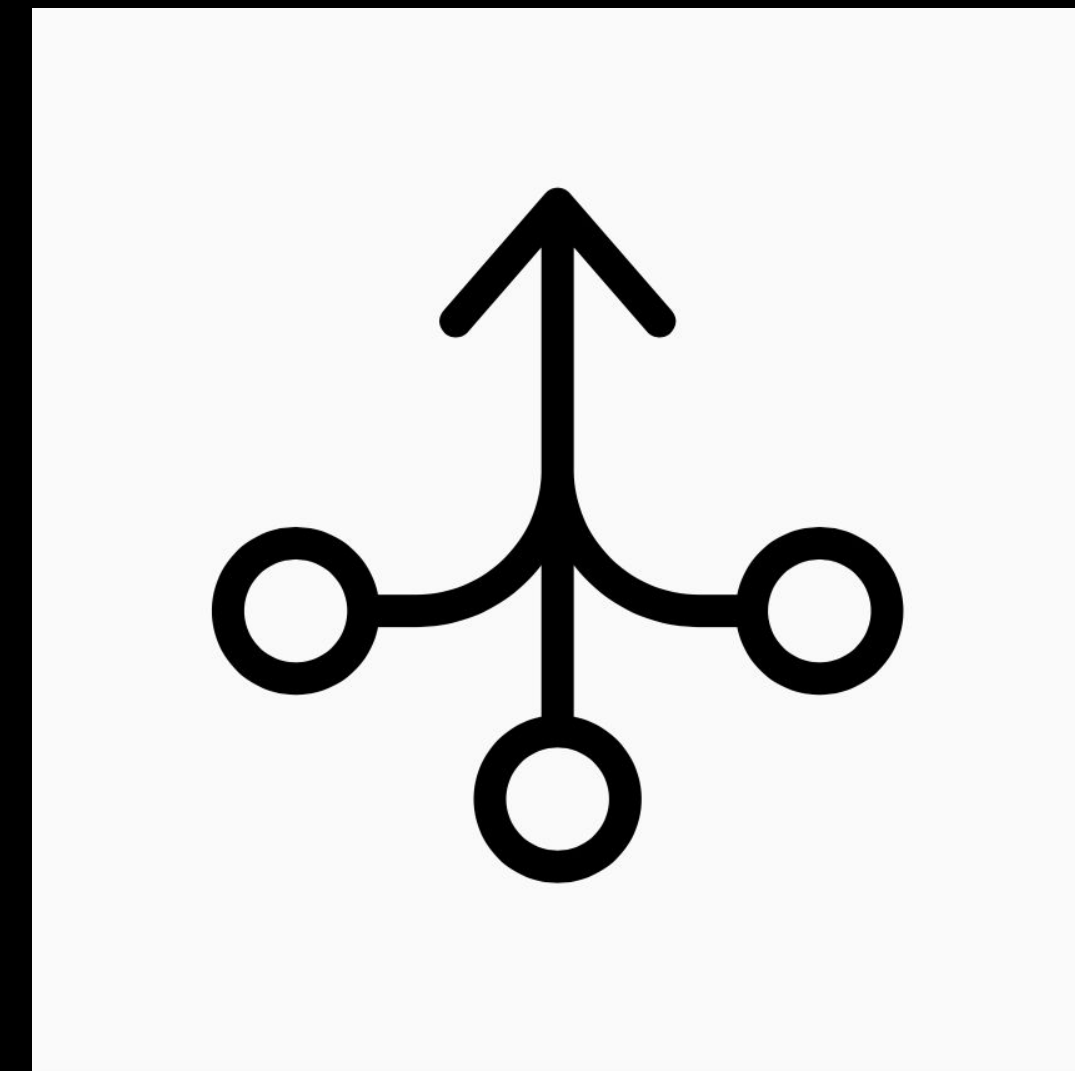
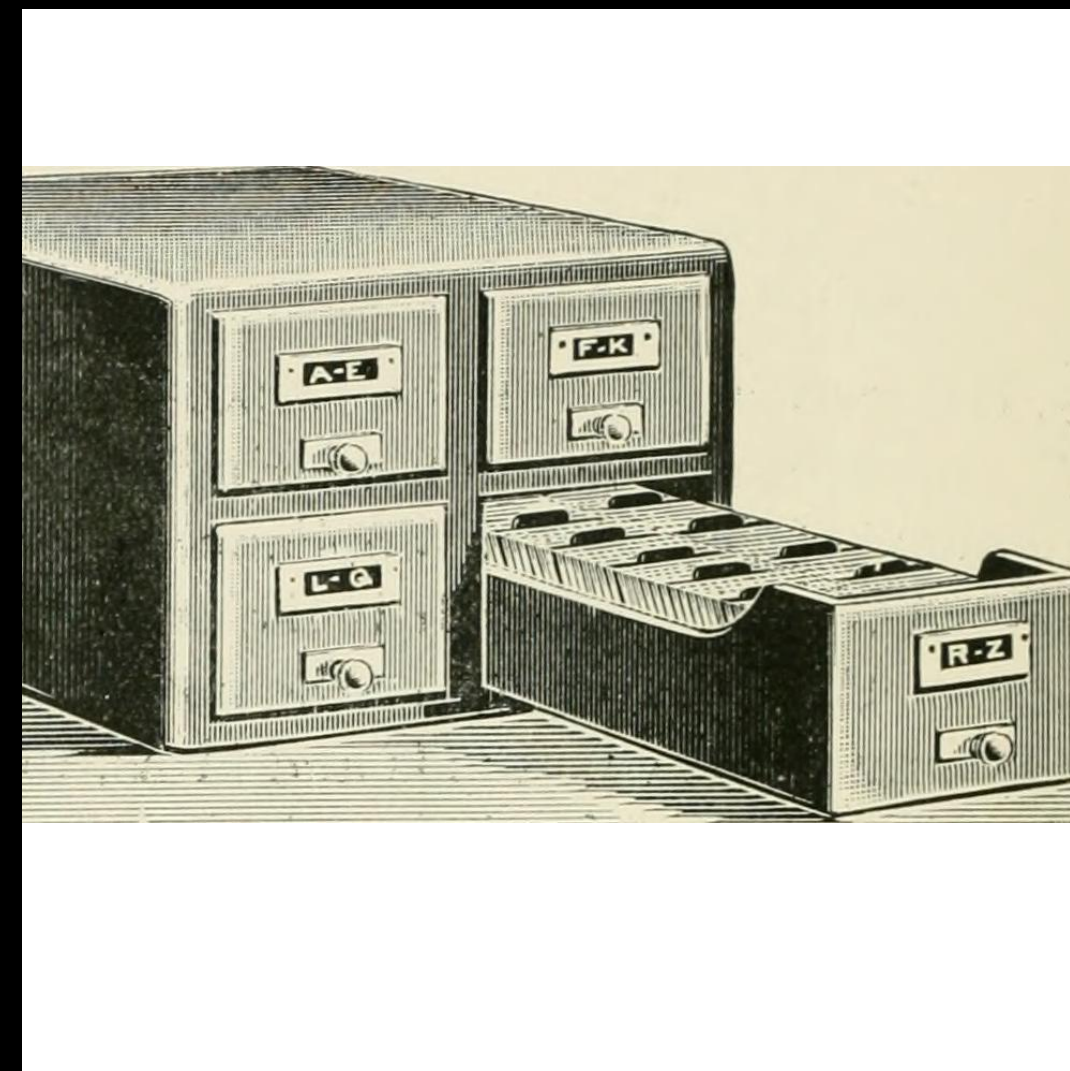
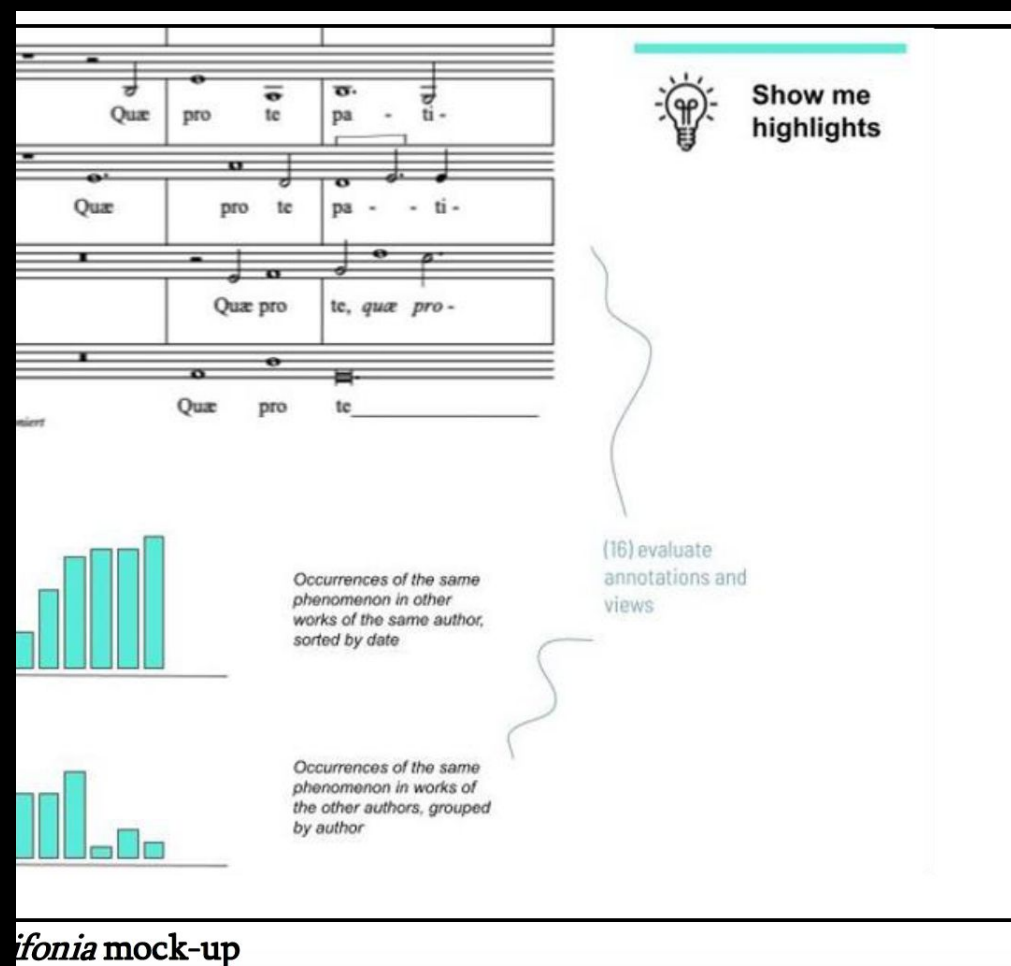
Aggregator

of digital musical heritage collections: extending musoW, a **catalogue** of Musical Data on the Web

Demonstrator

- Methods for continuous indexing of MH resources,
- Methods for automatic and semiautomatic generation of metadata according to the Polifonia ontologies,
- Methods for searching, querying, browsing MH resources

From finding sources to deep analysis



Credits: https://commons.wikimedia.org/wiki/File:Newtons_cradle_animation_book.gif

Stakeholders of the POLIFONIA Portal

Stakeholders

In the
consortium

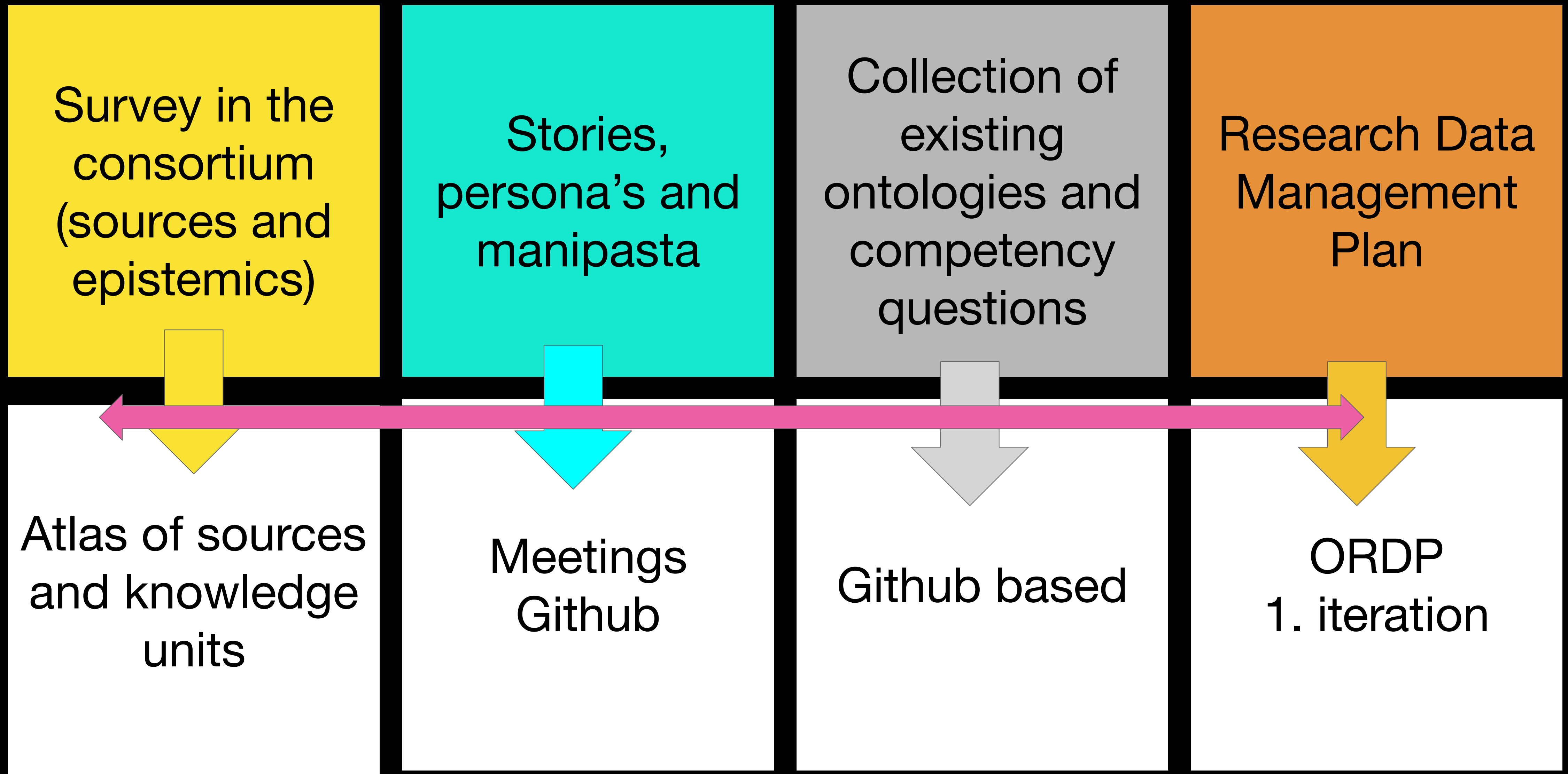
Associated with
the consortium

Wider public

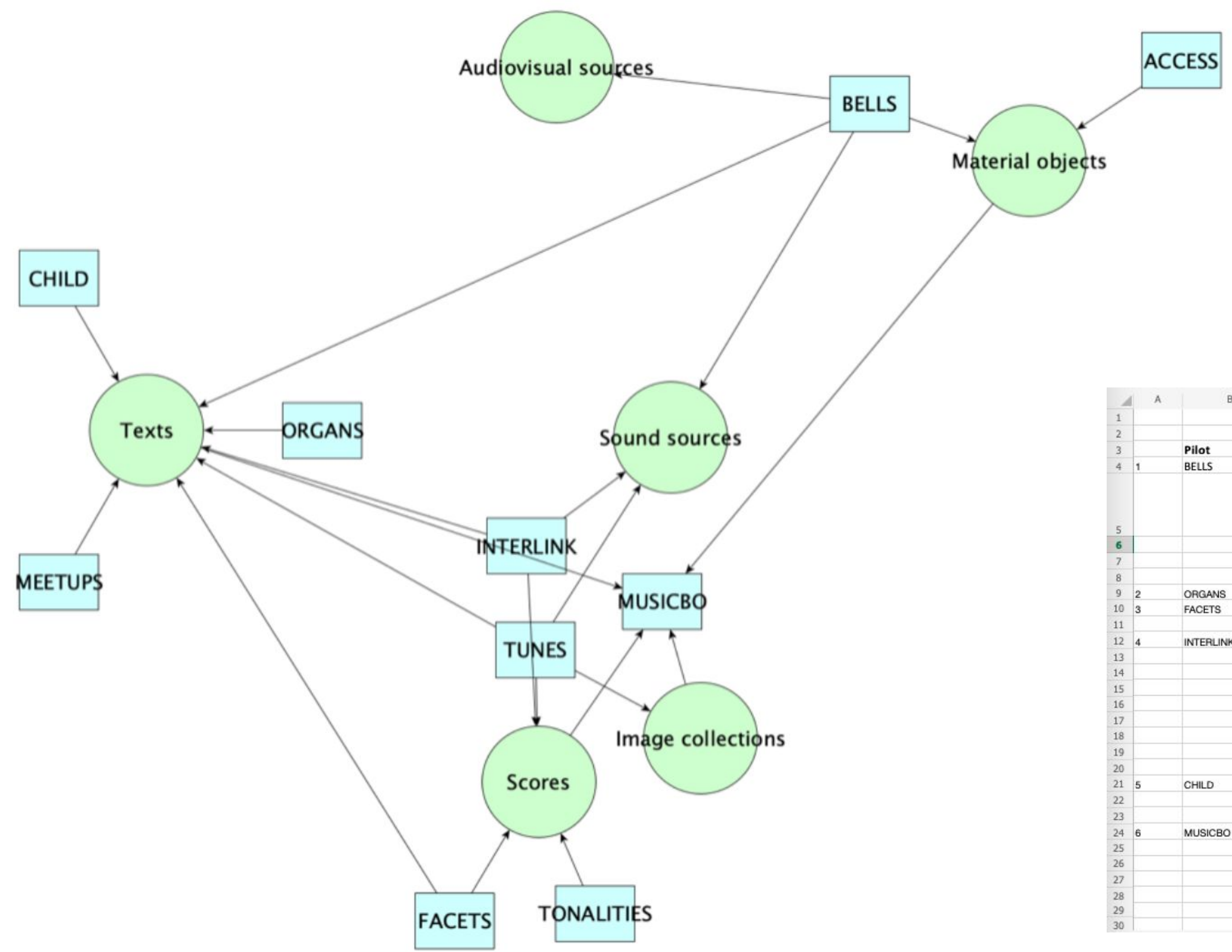
*Pilots - researchers,
archivists
from different
humanities fields
Knowledge
engineers*

*Cultural heritage
institutions*

*Consumers of
Music
(Children, People
with hearing
disabilities)*



The Atlas of Polifonia and the Polifonia Ecosystem



Overview of Data types

	A	B	C	D	E	F	G	H	I	J
		Pilot	Source	Link/reference	File size (estimate)	Metadata format	File format(s)	Access rights	Licence/copyright	API
1		BELLs	General Catalogue of Cultural Assets	http://www.iccd.beniculturali.it				open	CC BY-SA 4.0 (data and content)	
5			Patrimonio Culturale Immateriale (cata	http://paci.iccd.beniculturali.it/iccd/cards/ricerca/				Open	CC BY-SA 4.0 (data and content)	
6			Campanologia.it	https://www.campanologia.it/			html	Open	copyright	
7			Campane.org	http://www.campane.org/			html	Open	copyright	
8			Linee guida per la tutela del Patrimonic	http://www.archeobologna.beniculturali.it/pdf/Pn8,2MB	8,2 MB	N/A	pdf	OA	copyright author	N/A
9	2	ORGANS	Het Historische Orgel in Nederland(195	https://vu.on.worldcat.org/oclc/782207831		N/A	doc, wp5	restricted	copyright NiVO	N/A
10	3	FACETS	Neuma digital library	http://neuma.huma-num.fr/			MusicXML, MEI, ly, png, pdf	registered users	copyright NiVO	yes
11			Irish Traditional Music Archive (Port col	http://port.itma.ie/welcome						
12	4	INTERLINK	Dutch Song Database	www.liederenbank.nl			**kern, midi, pdf, png, jpg, IOA		CC BY-NC-SA 3.0	no
13			Stichting Omroep Muziek catalogue	http://muziekschatten.nl						
14			Musopen	https://musopen.org/						
15			CLARIAH MediaSuite	https://mediasuite.clariah.nl/						
16			Common Thesaurus for Audiovisual Ar	https:// old.datahub.io/dataset/gemeenschappelijke-thesaurus-audiovisuele-archieven						
17			Neuma digital library	http://neuma.huma-num.fr/			MusicXML MEI, ly, png, pdf	registered users		yes
18			Irish Traditional Music Archive (Port col	http://port.itma.ie/welcome						
19			Irish Traditional Music Archive (LITMUS	https://www.itma.ie/litmus						
20			RISM Catalog of Musical Sources	https://rism.info						
21	5	CHILD	Listening Experience Database	https://led.kmi.open.ac.uk						
22			Internet Archive	https://archive.org						
23			Project Gutenberg	https://www.gutenberg.org						
24	6	MUSICBO	Lessico Beni Culturali	http://corpora.lessicobeniculturali.net/					CC BY-NC-SA 4.0	
25			Grove Online Dictionary	https://www.oxfordmusiconline.com/				registered users	copyright Oxford University Press	no
26			Retrospective Index to Music Periodica	https://www.ripm.org/?page=ROAoverview						
27			Internet Archive Open Library	https://openlibrary.org/						
28			Gallica	https://gallica.bnf.fr						
29			Biblioteca Universitaria di Bologna	https://bub.unibo.it/it/bub-digitale						
30			Biblioteca della Musica	http://www.bibliotecamusica.it/cmbm/scripts/easpari/src.com.asp						

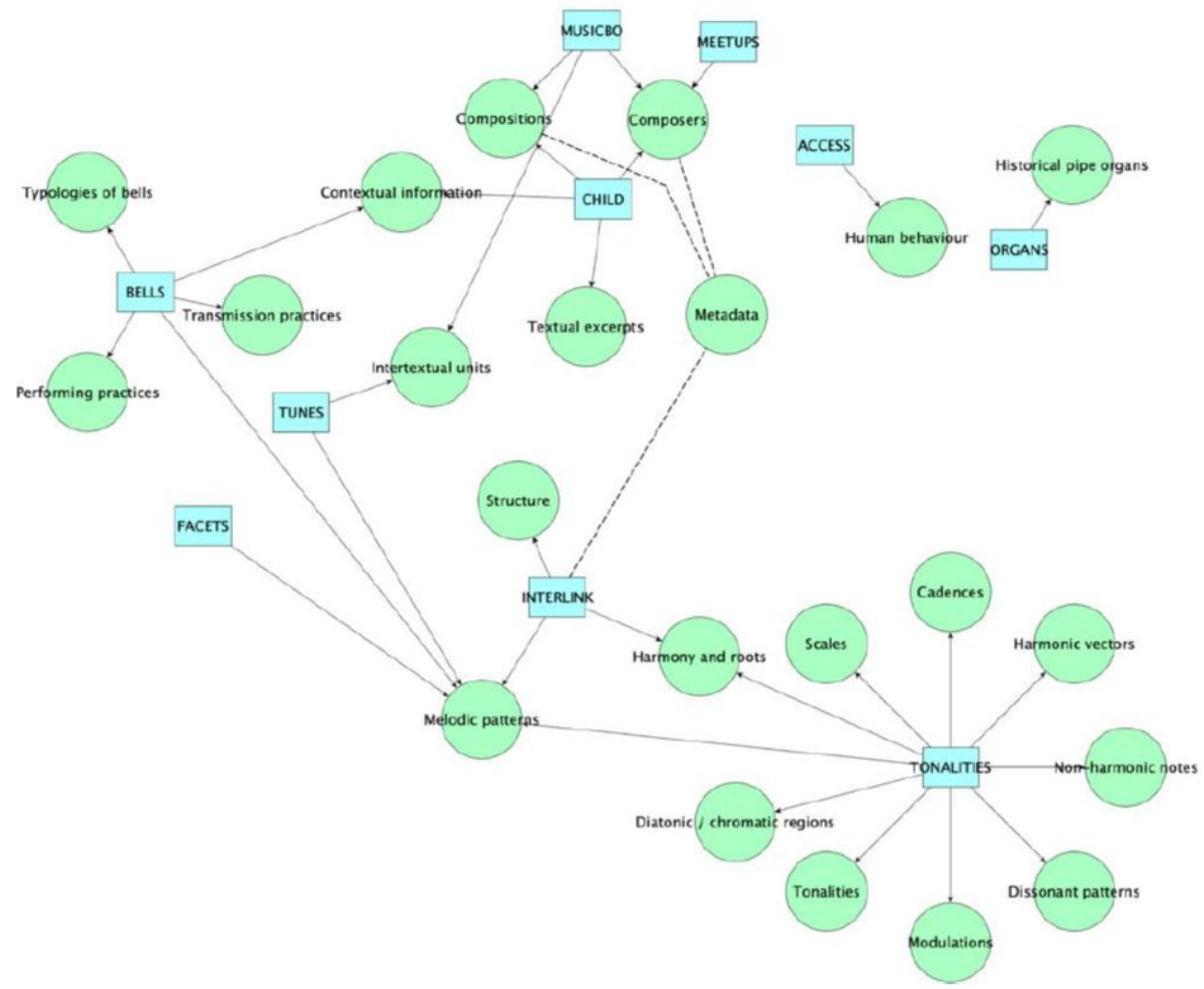


Diagram 2: Survey – Knowledge units investigated by the pilots

Characterization of existing data 1	Metadata: What formats are used?
MUSICBO	n/a
TONALITIES	RDF, Turtle, Filemaker, CSV
CHILD	RDF
MEETUPS	RDF
ACCESS	n/a
BELLS	XML, RDF, MAG and other formats
INTERLINK	TXT, MIDI, Filemaker, CSV, XML
FACETS	MIDI
ORGANS	n/a
TUNES	CSV, Filemaker, XML, TXT, HTML

Characterization of existing data 2	Metadata: What standards are used?
MUSICBO	n/a
TONALITIES	CIDOC-CRM, CRMdig, LRMoo, DCTERMS
CHILD	n/a
MEETUPS	n/a
ACCESS	n/a
BELLS	ArCo, Unimarc
INTERLINK	n/a
FACETS	MEI, MusicXML
ORGANS	n/a
TUNES	n/a

Characterization of existing data 3	Datasets: What formats are used?
MUSICBO	Relational database; R
TONALITIES	XML, PNG, PDF, Filemaker, TXT, JSON
CHILD	RDF
MEETUPS	RDF
ACCESS	n/a
BELLS	JPEG, TIFF, XML, RDF,
INTERLINK	TAR, GZIP, RDF, N-trip
FACETS	MIDI, PNG, PDF
ORGANS	DOC, DOCX, WPS
TUNES	MIDI, PDF, PNG, JPG, Filemaker, JSON, HTM

Characterization of existing data 4	Datasets: What standards are used?
MUSICBO	n/a
TONALITIES	MEI, MusicXML, LY, KERN
CHILD	n/a
MEETUPS	n/a
ACCESS	n/a
BELLS	n/a
INTERLINK	MusicXML, MEI, MARC-XML, LY
FACETS	MEI, MusicXML, LY
ORGANS	n/a
TUNES	MusicXML, MEI, MARC-XML, Essen associative code, ABC, HUMDRUM, LY, KERN

Interoperability 1	Please list the controlled vocabularies, taxonomies, thesaurus, ontologies, etc. that you will use in your pilot
MUSICBO	CIDOC-CRM; FRBRoo;
TONALITIES	Too early to say
CHILD	Too early to say
MEETUPS	Too early to say
ACCESS	n/a
BELLS	ArCo Ontologies ICCD Vocabulary for Musical
INTERLINK	MIDI ontologies, MIDI instrument taxonomies
FACETS	--
ORGANS	We have a thesaurus of organ terms.
TUNES	Not yet clear

Interoperability 2	Please indicate if you existing knowledg systems or if you p specific
MUSICBO	
TONALITIES	Create new ones, for a
CHILD	Too early to say
MEETUPS	Too early
ACCESS	n/a
BELLS	We plan to expand ArCo ICCD Vocabularies and
INTERLINK	MIDI ontologies, Chor structure ontologies, i
FACETS	We will probably do b works from WP2 on o
ORGANS	If there exists a KO syst
TUNES	Probably a specific on TUNES pilot, but also f the project related wit

Table 4: Survey – Characterisation of existing data and interoperability

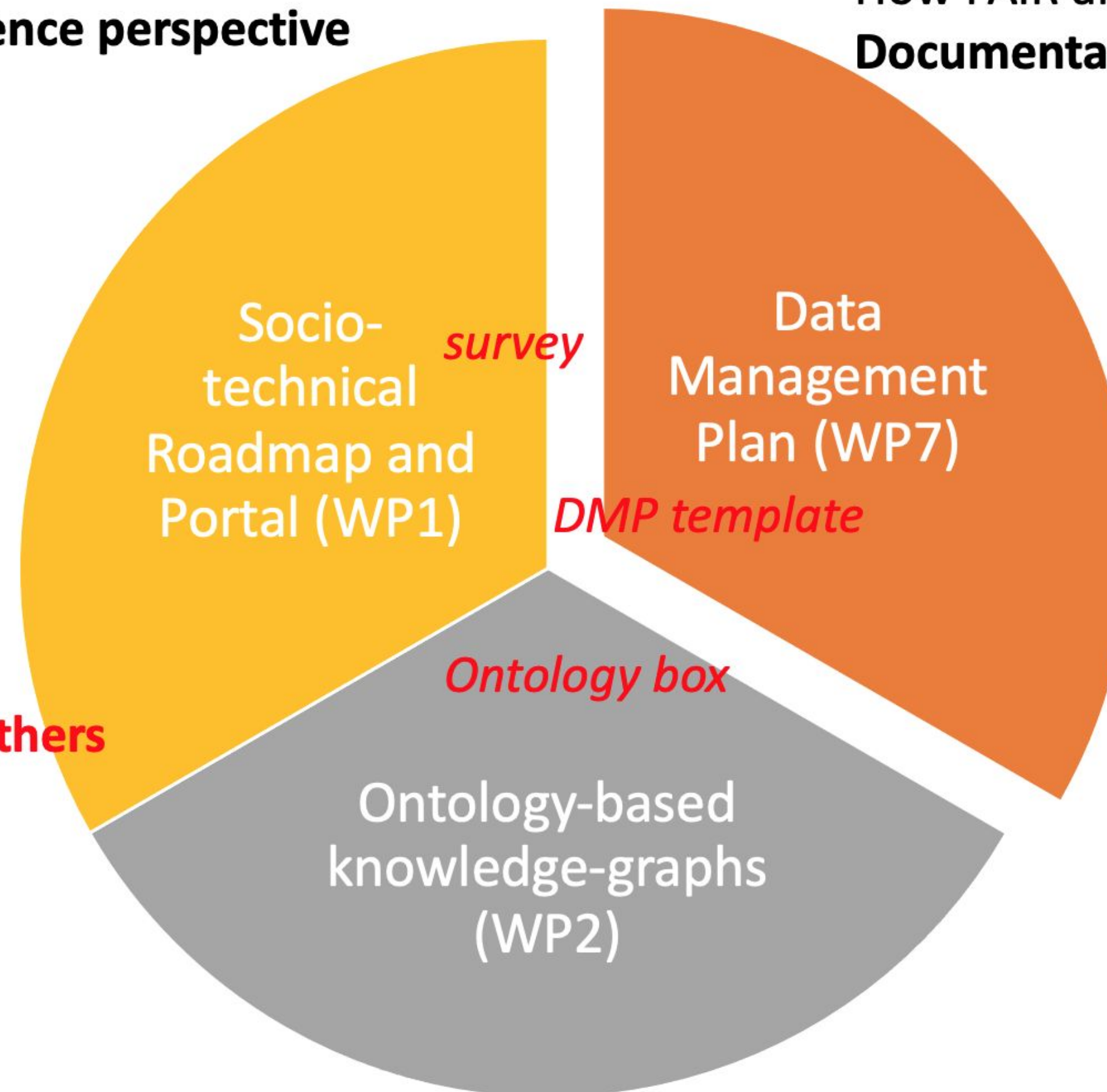
Stories and their summaries	Persona	Pilot
Sources cross analysis: Compile information about the composer Giacomo Antonio Perti from a range of sources	Carolina: Music historian	MUSICBO
Social history: Understanding the social history of brass band music	David: Music historian	MEETUPS
Sound practice and restoration: Drawing up a restoration plan for a belfry	Keoma: Architect	BELLS
Music and childhood: Historical understanding children's experiences of music	Ortenz: Music historian	CHILD
Musical social network: Analysing meetings between musicians and composers across time and space		MEETUPS
Identification of intangible elements: Understanding the transmission of intangible heritage related to campanology	Patrizia: Ethnoanthropologist	BELLS
Conflicting theoretical interpretations: Identifying and analysing conflicting modal interpretations	Sethus: Music theorist	TONALITIES
Musicians and their environment: Understanding socio-historical influences on music creation	Sophia: Musicologist and musician	MEETUPS
Europeana platform: Creating an online exhibition of the interconnectedness of European 20th Century folk music	William: Curator of the Europeana platform	INTERLINK

What would you like to do with *sources*?
Epistemological/research/audience perspective

What are your *sources*? How you them?
How FAIR are they now/future?
Documentation/bibliographic perspective

All three sectors share some Information, all provide different ways to 'record' shared and specific information.

- ⇒ **Close collaboration**
- ⇒ **'translatory work' (explain each others terminology)**



How do you order your sources? What would you like to ask if all sources are connected (comptency questions)?
Knowledge organisation/semantic web perspective

- The making of the portal is interwoven with the organisation of the knowledge exchange *inside* of the project.
 - Qualitative methods are applied to further specify the needs inside of the consortium.
 - Output as Portal versions but also the RDM are envisioned as iterative events.
- Challenges lie in the alignment of bottom-up and top-down approaches and the continuous re-negotiations inside of the project.
 - Visualisations, tabular overviews, archetypical stories, personatas and workflows act as interfaces for the *translatory work* among different epistemological frameworks and research goals.
- The POLIFONIA Portal as the final interface to resources and methods emerges from a journey of the consortium accompanied by temporal interfaces.

Let us know your experiences with
interfaces used in a process of
interdisciplinary work!

Thanks

