Audio Ontologies for Intangible Cultural Heritage

Mary Ann Tan[1,2], Etienne Posthumus[1], Harald Sack[1,2]

[1] FIZ Karlsruhe – Leibniz Institute for Information Infrastructure, Germany
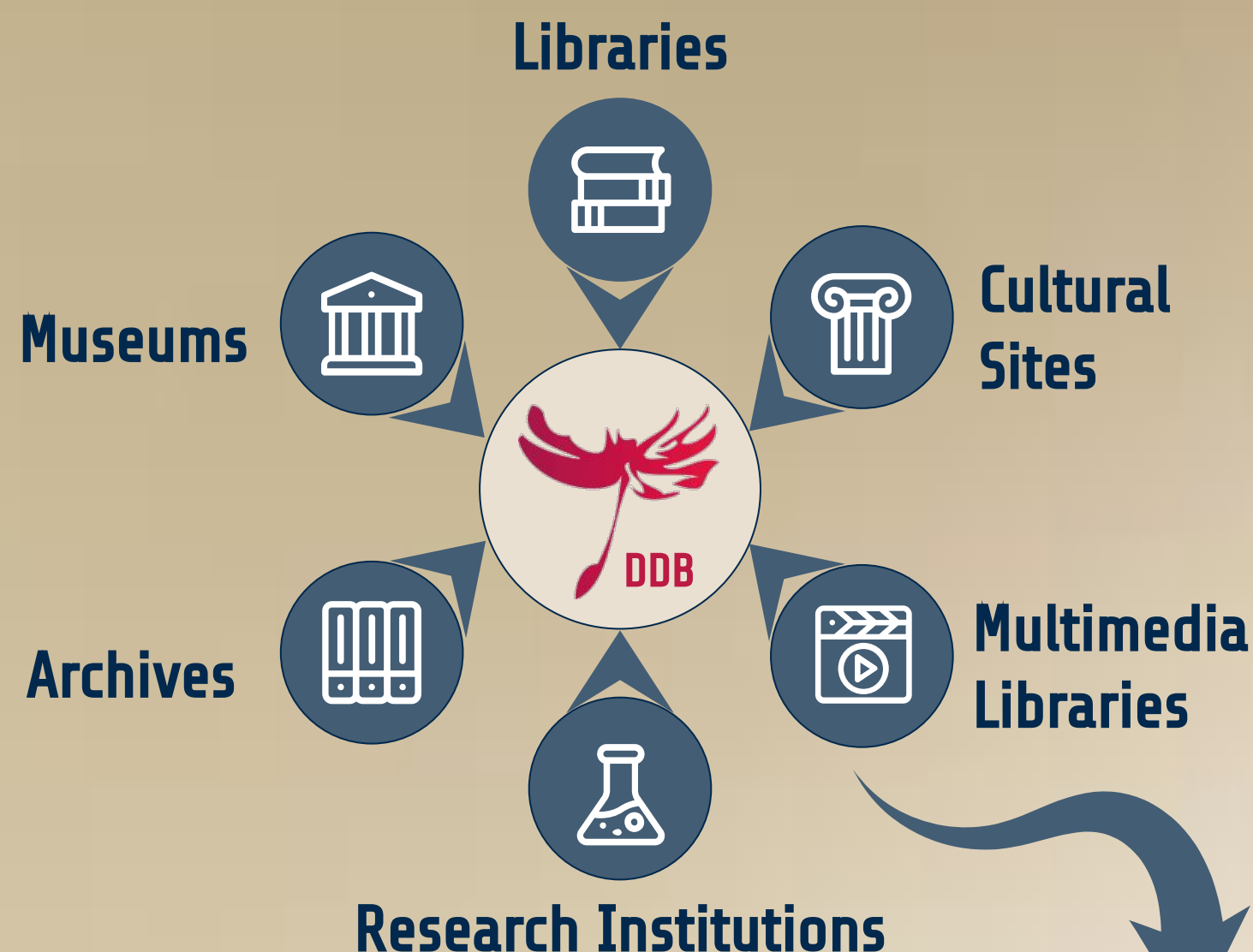[2] Karlsruhe Institute of Technology, Institute AIFB, Germany

CHALLENGES

Deutsche Digitale Bibliothek (DDB)

- Germany's cultural heritage portal
- c.a. 41M objects from 500 institutions
- Knowledge Graph creation
- Extends Europeana Data Model (EDM)

Libraries

Cultural Sites

Museums

Multimedia Libraries

Archives

Research Institutions

DDB

DDB's Audio Collection

- intangible cultural heritage
- diverse classification
  - creative work
  - intellectual content
  - mundane recordings

"Do-Re-Mi", which ontologies for the DDB?

DDB-KG

SOLUTION

Functional Requirements for Bibliographic Records (FRBR)

- standard for online library catalogs

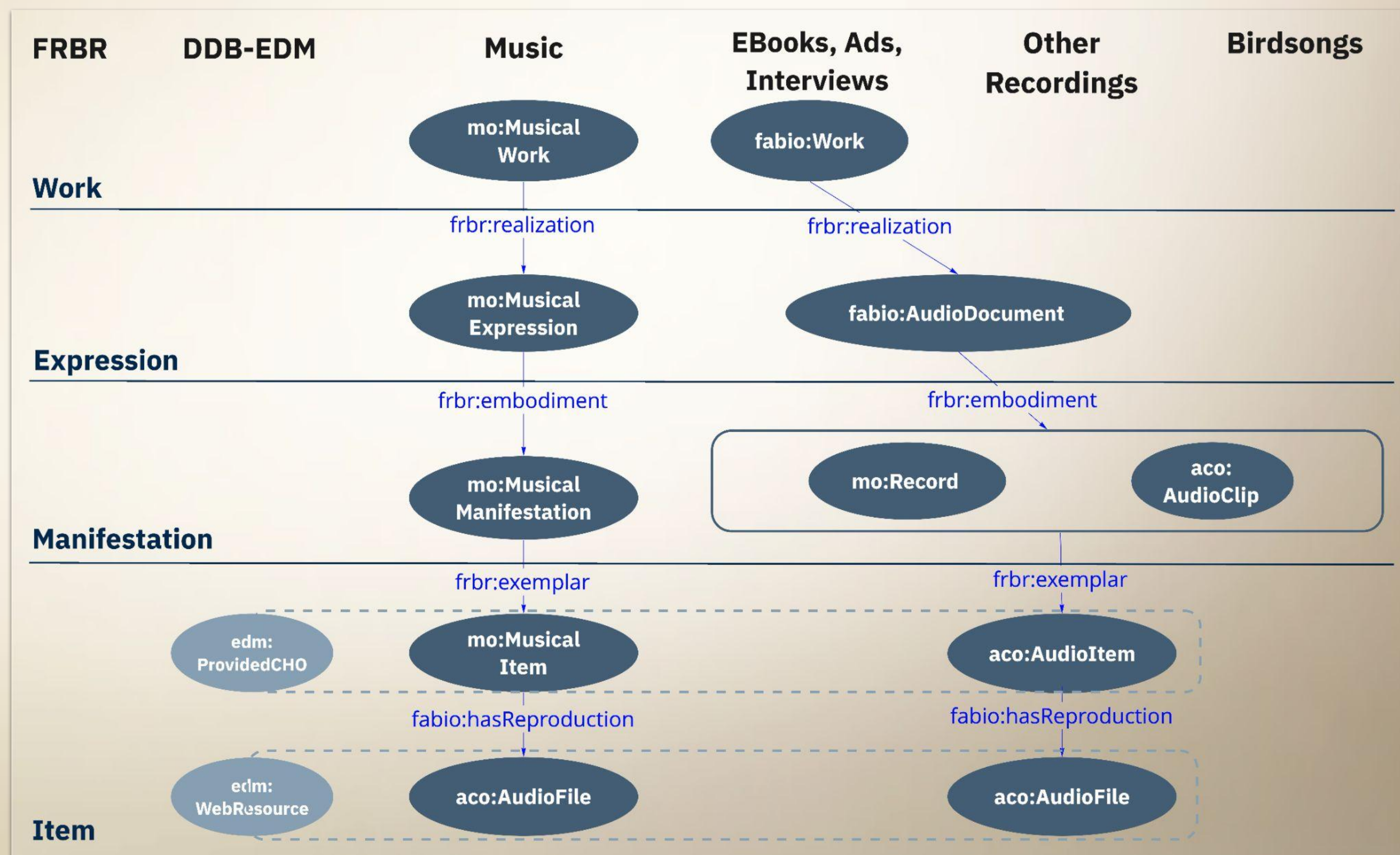**FRBR-Aligned Bibliographic Ontology (FaBiO)**

- Peroni and Shotton, 2012
- for library metadata publication

Music Ontology (MO)

- Raimond et al., 2007
- event-based ontology for musical production workflow and editorial metadata

Audio Commons Ontology (ACO)

- Ceriani et al., 2018
- event-based ontology for audio content in web repositories

FRBR	DDB-EDM	Music	EBooks, Ads, Interviews	Other Recordings	Birdsongs
Work		mo:Musical Work	fabio:Work		
		frbr:realization	*frbr:realization*		
Expression		mo:Musical Expression	fabio:AudioDocument		
		frbr:embodiment	*frbr:embodiment*		
Manifestation		mo:Musical Manifestation	mo:Record	aco:AudioClip	
		frbr:exemplar	*frbr:exemplar*		
Item	edm:ProvidedCHO	mo:Musical Item	aco:AudioItem		
		fabio:hasReproduction	*fabio:hasReproduction*		
	edm:WebResource	aco:AudioFile	aco:AudioFile		

CONCLUSION

- FRBR-based ontologies for interoperability.
- Alignment from DDB-EDM to FRBR, FaBiO, MO, and ACO.
- Adaptation of audio ontologies from event-centric to object-centric modeling paradigm.

References

1. Ceriani M, Fazekas G (2018) Audio commons ontology: A data model for an audio content ecosystem. In: Vrandečić D, Bontcheva K, Suárez-Figueroa MC, Presutti V, Celino I, Sabou M, Kaffee LA, Simperl E (eds) The Semantic Web – ISWC 2018, Springer International Publishing, Cham, pp 20–35, https://doi.org/10.1007/ 978-3-030-00668-6_2
2. Peroni S, Shotton D (2012) FaBiO and CiTO: Ontologies for describing bibliographic resources and citations. Journal of Web Semantics 17:33–43, https://doi.org/10. 2139/ssrn.3198992
3. Raimond Y, Abdallah S, Sandler M, Giasson F (2007) The Music Ontology. In: Proceedings of the 8th International Conference on Music Information Retrieval, ISMR 2007, Vienna, Austria, September 23-27, 2007, Austrian Computer Society, pp 417–422

Image of a woman in a library listening to music from Shutterstock (https://shutr.bz/3Pyjs4N)

Acknowledgements

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Which ontology
  to model them all,
    to find them,
      to bring them all,
        and in the
          knowledge graph
            bind them?

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DDB-KG

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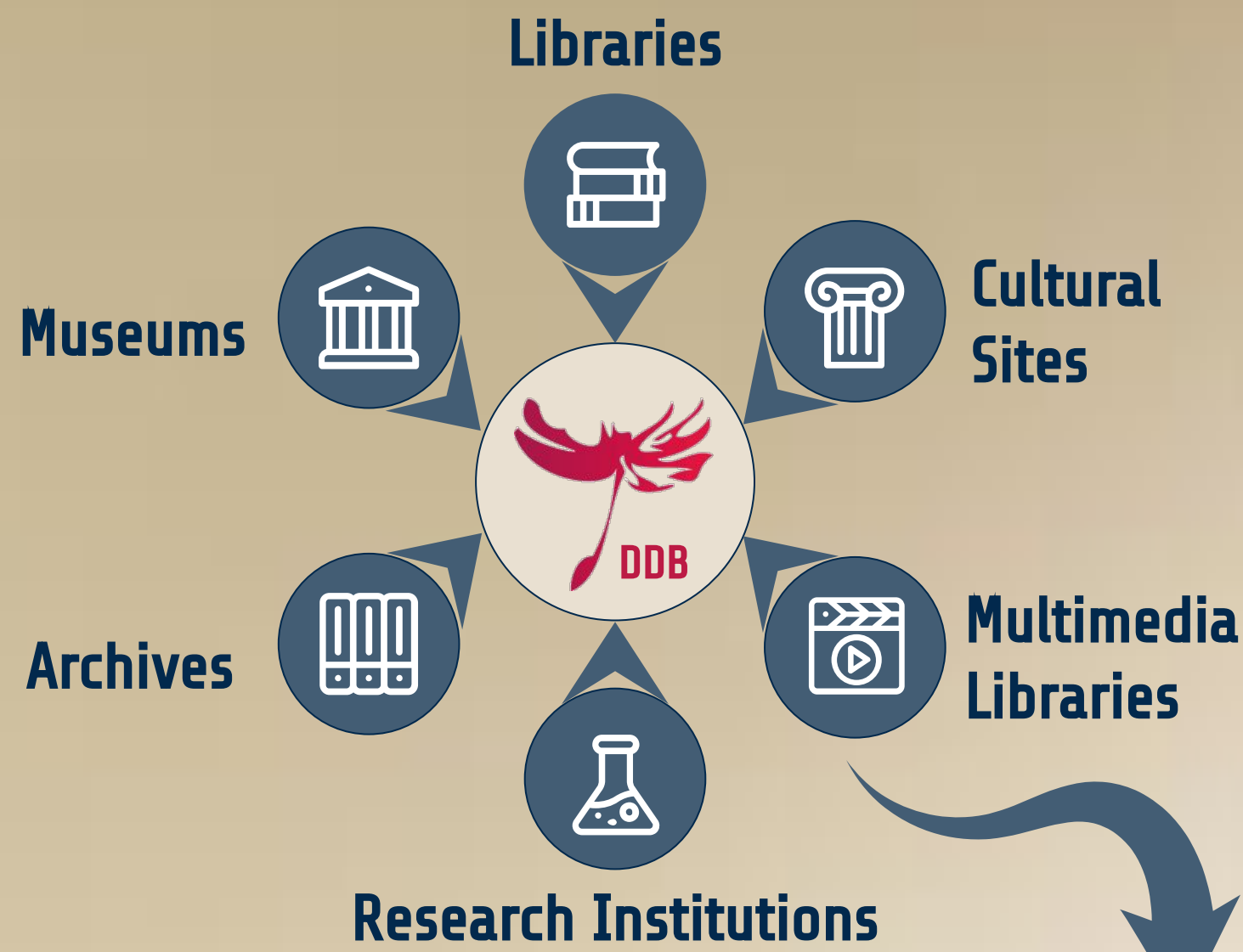### FRBR-Aligned Bibliographic Ontology (FaBiO)
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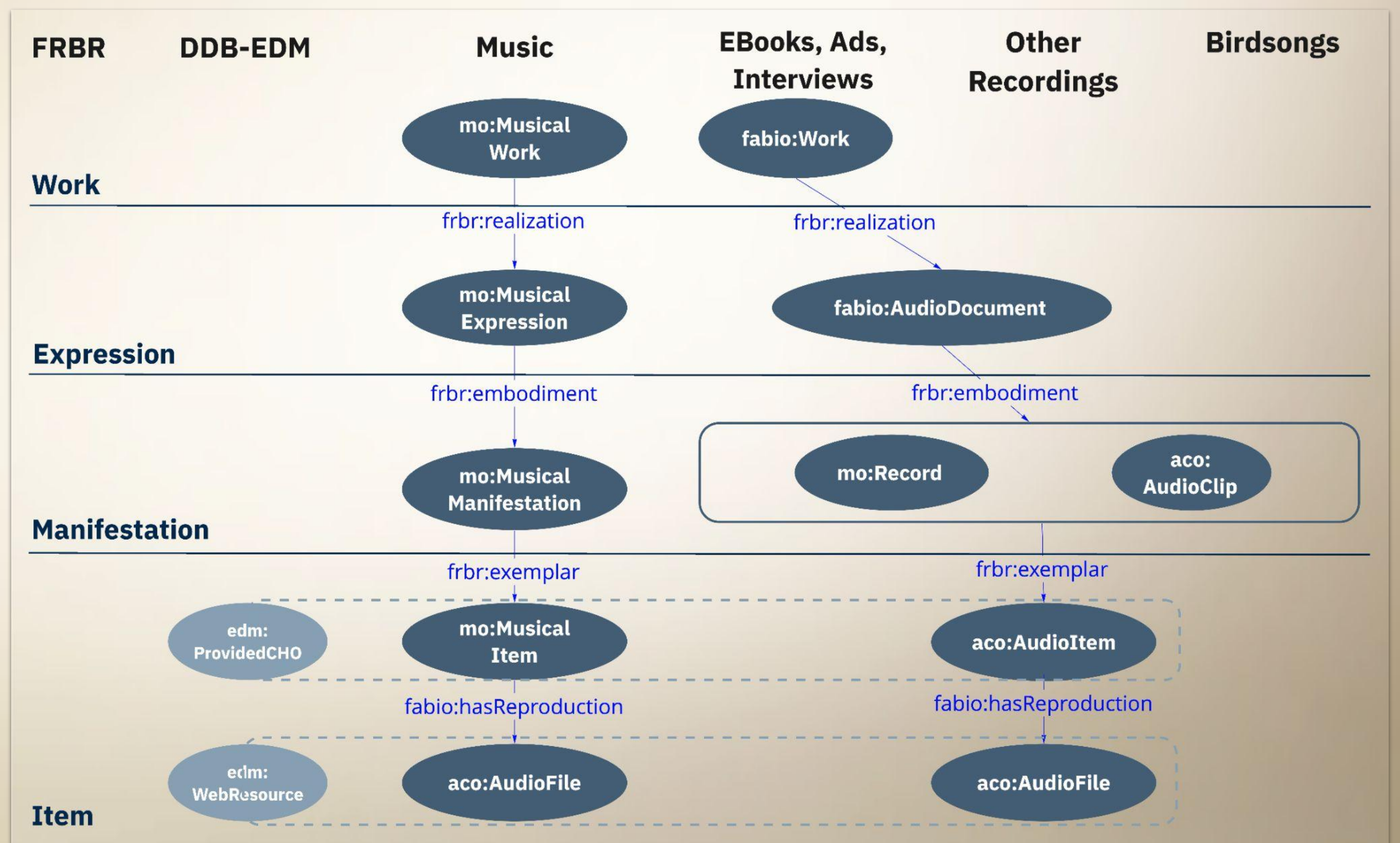
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