

# The openWEMI Idea

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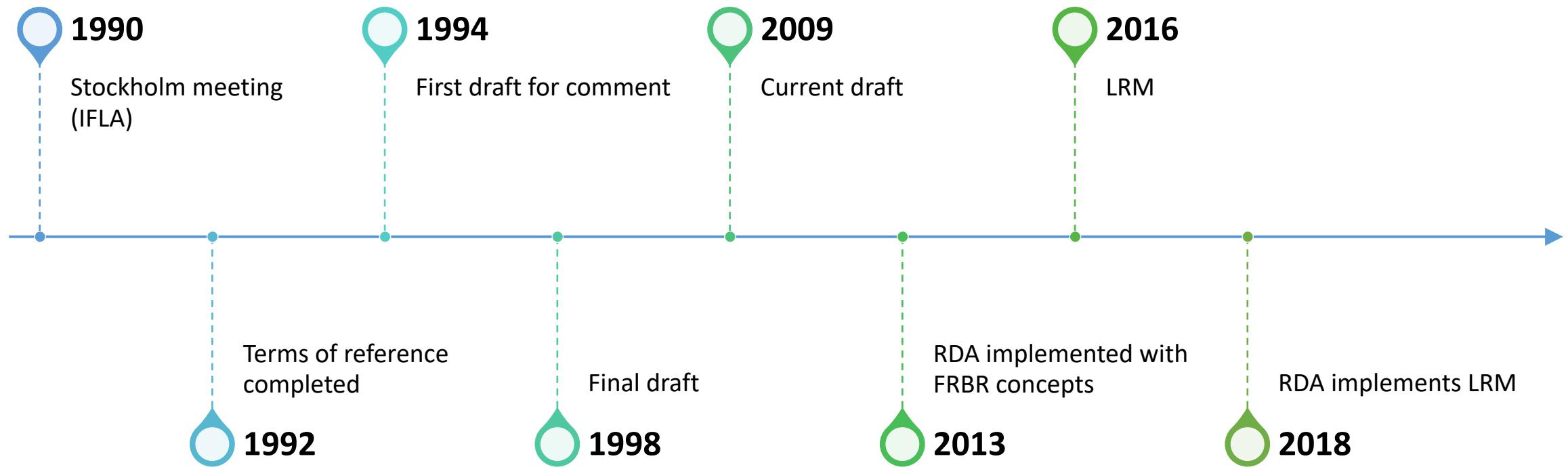
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June, 2022

# WEMI



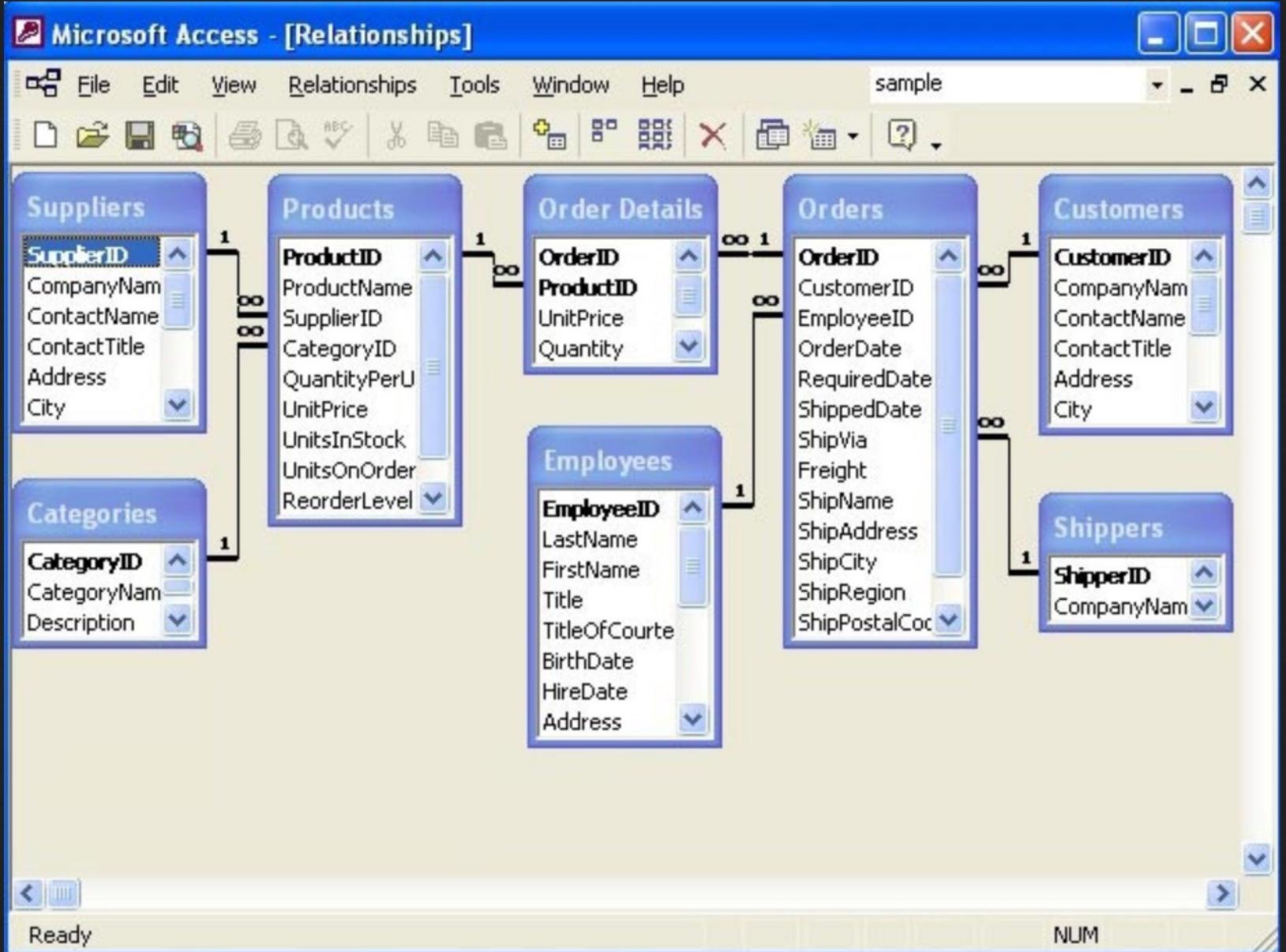
# Timeline of FRBR/LRM



2 primary influences, both from the 1990's

Relational  
database  
design

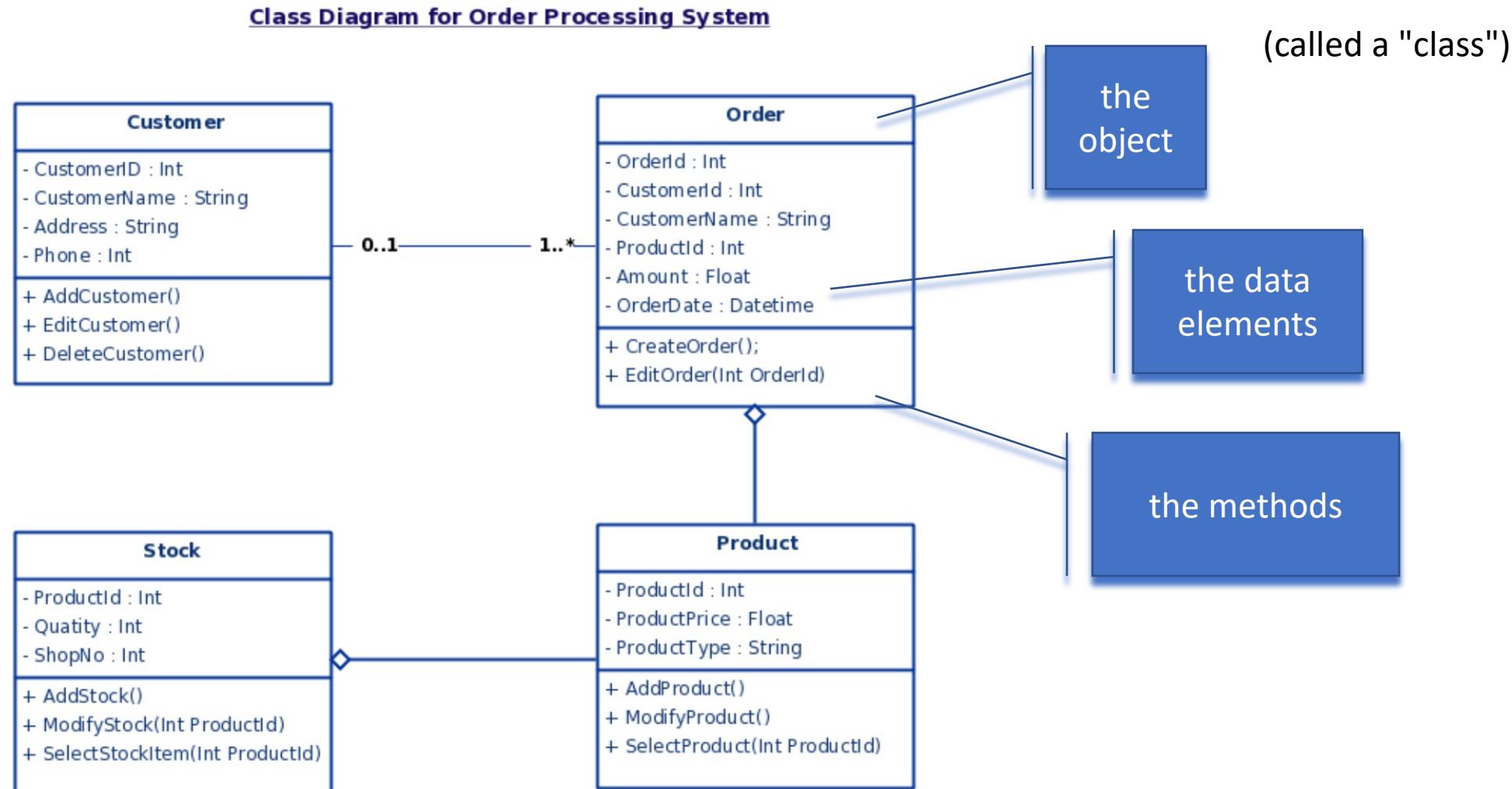
Object-  
oriented data  
design



# Relational Database Design

Boxes here are called "tables"

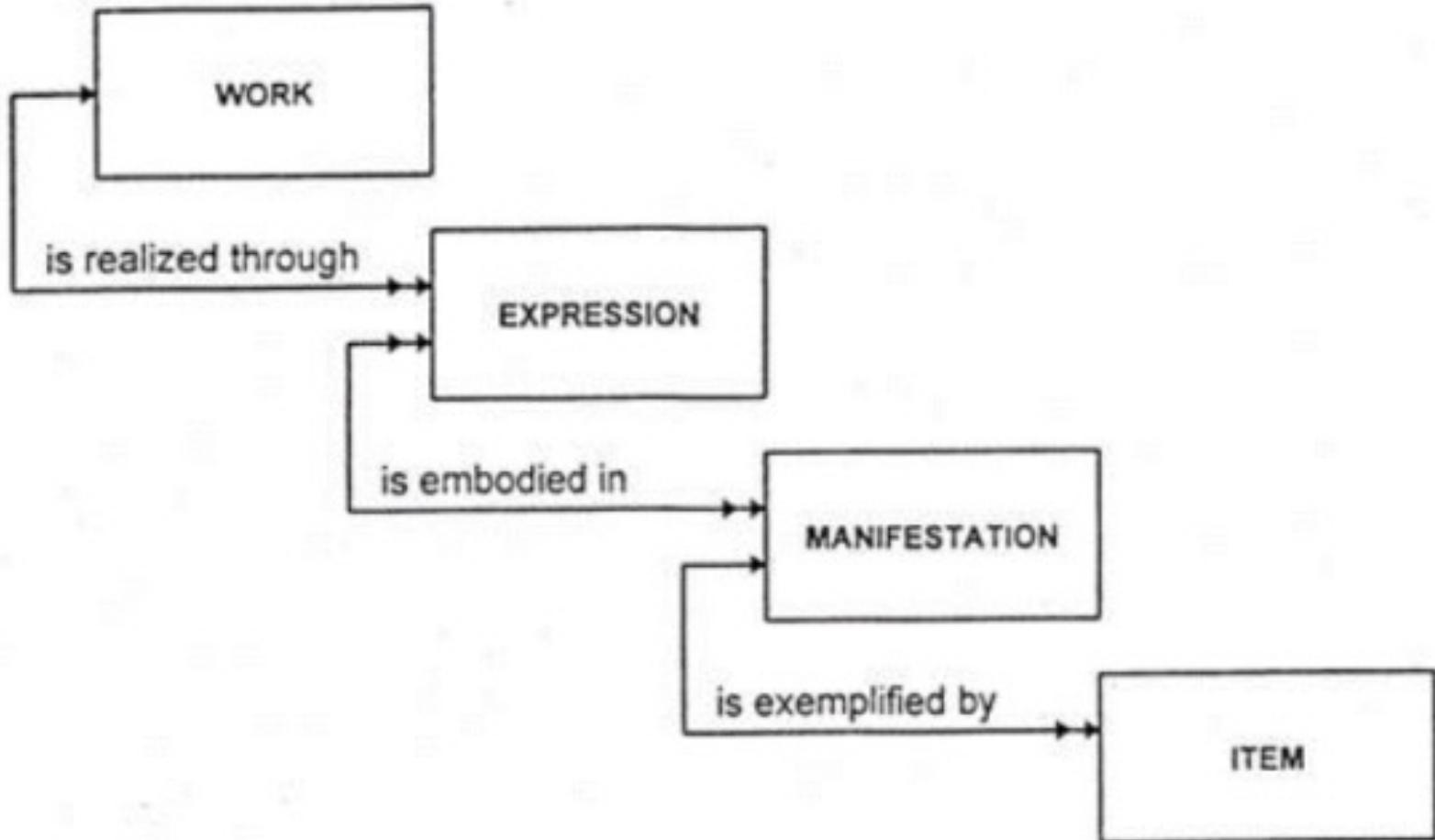
# Object-oriented design



# Some general principles of RDBMS/00

- Objects/tables do not overlap
- Each data element is valid for only one object/table
- Avoid redundancy
- Data elements and relationships are fixed by the model
  - no ad-libbing!

# FRBR-LRM WEMI



# Library Reference Model (LRM)

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Language	LRM-E3-A6	LRM-E3	Expression
Language	LRM-E6-A3	LRM-E6	Agent
Language	LRM-E9-A7	LRM-E9	Nomen

The entities *work*, *expression*, *manifestation*, *item* are disjoint

# openWEMI in the era of RDF

- RDF class concepts
- Classes do not define properties; properties define classes
- Classes are not disjoint



# Sample of non- traditional uses of WEMI concepts

FaBiO – FRBR-aligned Bibliographic Ontology

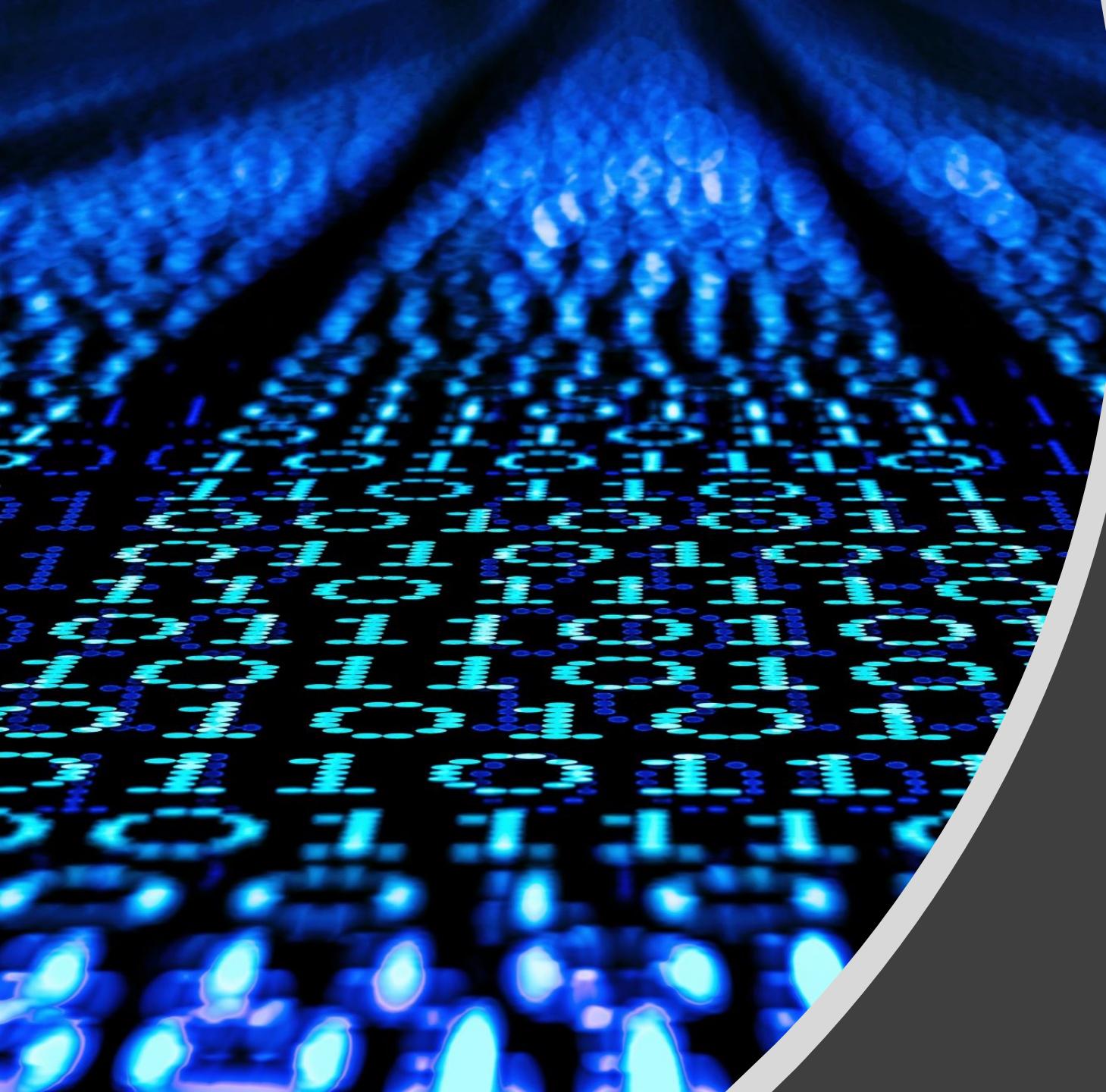
Akoma-Ntoso – Use of FRBR entities to describe legal document versions

FRIR – Functional Requirements of Information Resources

The Music Ontology

Colon classification

Fast Fashion Ontology



FRBR/WEMI  
as code

# Expression of Core FRBR Concepts in RDF

(at vocab.org)

Term Name	Type	Definition
<a href="#">Concept</a>	class	An abstract idea or notion.
<a href="#">CorporateBody</a>	class	An organization or group of individuals and/or other organizations.
<a href="#">Endeavour</a>	class	Any of the products of artistic or creative endeavour.
<a href="#">Event</a>	class	An action or occurrence.
<a href="#">Expression</a>	class	A realization of a single work usually in a physical form.
<a href="#">Item</a>	class	An exemplar of a single manifestation.
<a href="#">Manifestation</a>	class	The physical embodiment of one or more expressions.
<a href="#">Object</a>	class	A tangible or material thing.
<a href="#">Person</a>	class	A living or dead individual.
<a href="#">Place</a>	class	A location.
<a href="#">ResponsibleEntity</a>	class	One responsible for the creation, production, distribution or maintenance of artistic or creative content.
<a href="#">Subject</a>	class	Something that may serve as the subject of a work.
<a href="#">Work</a>	class	An abstract notion of an artistic or intellectual creation.

<a href="#">abridgement</a>	property	An abridgment of an expression.
<a href="#">abridgementOf</a>	property	An expression that is abridged.
<a href="#">adaption</a>	property	An adaption of a work or expression.
<a href="#">adaptionOf</a>	property	A work or expression that is adapted.
<a href="#">alternate</a>	property	An alternative to a manifestation.
<a href="#">alternateOf</a>	property	A manifestation that is alternated.
<a href="#">arrangement</a>	property	An arrangement of an expression.
<a href="#">arrangementOf</a>	property	An expression that is arranged.
<a href="#">complement</a>	property	A complement to a work or expression.
<a href="#">complementOf</a>	property	A work or expression that is complemented.
<a href="#">creator</a>	property	An entity in some way responsible for the creation of a work.
<a href="#">creatorOf</a>	property	A work that was in some way created by of an entity.
<a href="#">embodiment</a>	property	A manifestation that embodies an expression.
<a href="#">embodimentOf</a>	property	An expression that is embodied by a manifestation.

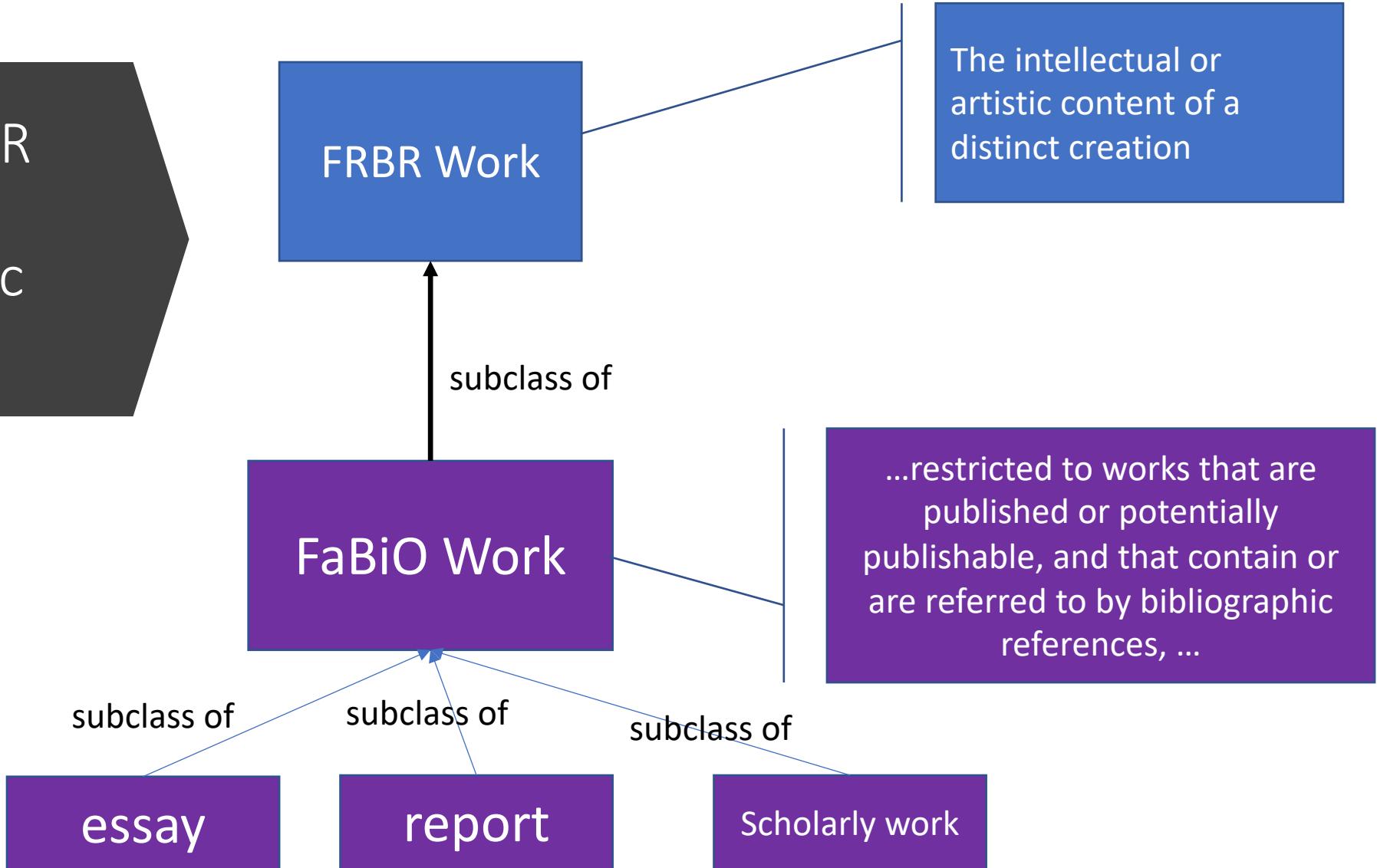
## Class: Item

**Definition:** An exemplar of a single manifestation.

This class corresponds to the FRBR group one entity 'Item'.

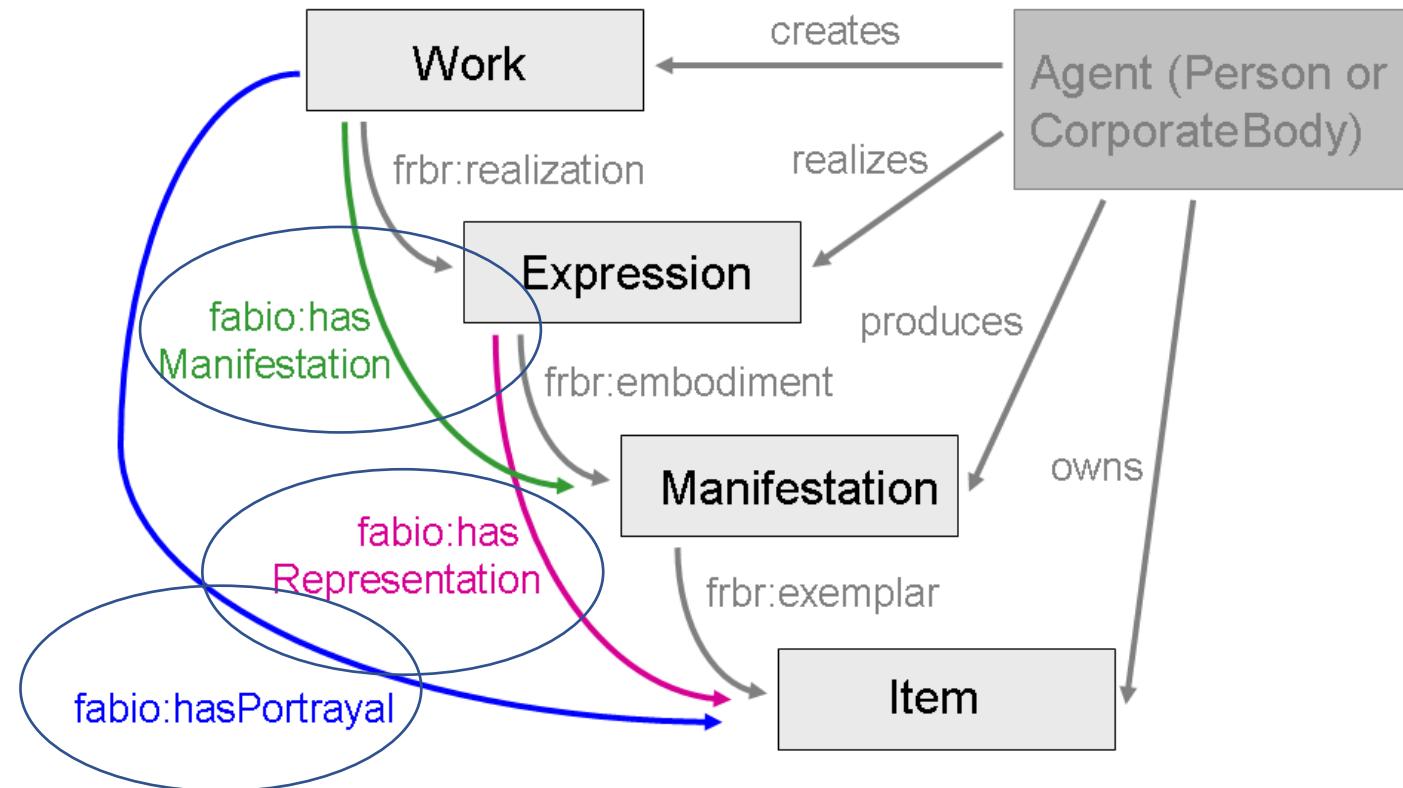
URI:	<a href="http://purl.org/vocab/frbr/core#Item">http://purl.org/vocab/frbr/core#Item</a>
Label:	item
Subclass of	<a href="#">frbr:Endeavour</a>
Disjoint with	<a href="#">frbr:Work</a> , <a href="#">frbr:Expression</a> and <a href="#">frbr:Manifestation</a>
Paraphrase (experimental)	A <a href="#">frbr:Item</a> is something that, amongst other things, is a <a href="#">frbr:Endeavour</a> but is not a <a href="#">frbr:Work</a> and is not a <a href="#">frbr:Expression</a> and is not a <a href="#">frbr:Manifestation</a>

# FaBiO – FRBR Aligned Bibliographic Ontology



# FaBiO – FRBR Aligned Bibliographic Ontology

New Work-Expression-Manifestation-Item relationships in FaBiO



Reciprocals: frbr:realizationOf      frbr:embodimentOf      frbr:exemplarOf  
fabio:isManifestationOf      fabio:isRepresentationOf      fabio:isPortrayalOf

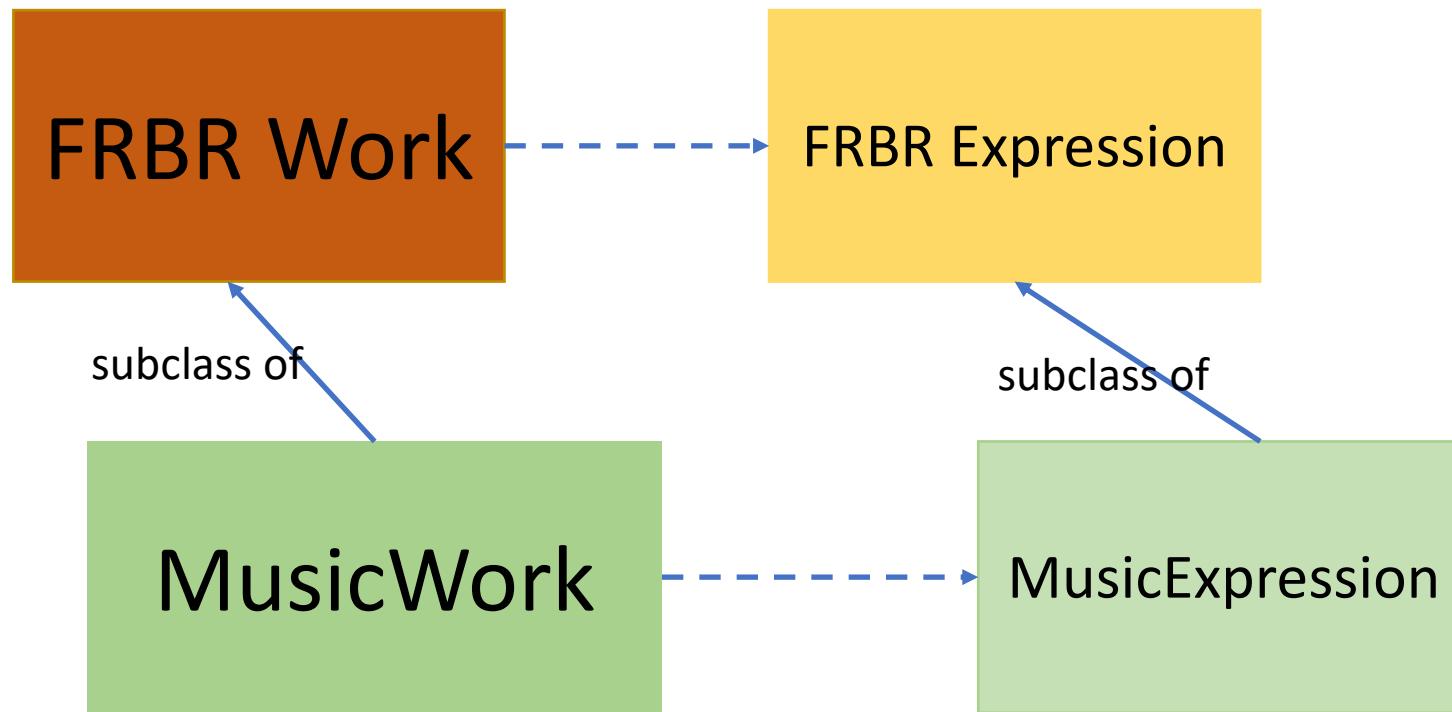
# The Music Ontology

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<b>URI:</b>	<a href="http://purl.org/ontology/mo/MusicalWork">http://purl.org/ontology/mo/MusicalWork</a>
<b>Label:</b>	musical work
<b>Status:</b>	stable
<b>Subclasses:</b>	<a href="#">Movement</a>
<b>Parent Class:</b>	<a href="http://purl.org/vocab/frbr/core#Work">http://purl.org/vocab/frbr/core#Work</a>
<b>Properties:</b>	<a href="#">arranged_in</a> , <a href="#">composed_in</a> , <a href="#">iswc</a> , <a href="#">movement</a> , <a href="#">opus</a> , <a href="#">lyrics</a>

# The Music Ontology

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# The Music Ontology

- Berceuses
- Cadenzas
- Canons (Music)
- Cantatas
- Canzonas (Instrumental music)
- Capriccios (Music)
- Carnatic music
- Chamber music
- Chinese operas
- Chorale preludes
- Concert etudes
- Concertos
- Dastgāhs
- Dialogues (Music)
- Dumky (Art music)
- Fanfares
- Fantasias (Music)
- Finales (Music)
- Fugues
- Gagaku
- Hát à đào
- Hát bội
- Heike biwa
- Hindustani music
- Hira gasy
- Honkyoku

<b>URI:</b>	<a href="http://purl.org/ontology/mo/MusicalWork">http://purl.org/ontology/mo/MusicalWork</a>
<b>Label:</b>	musical work
<b>Status:</b>	stable
<b>Subclasses:</b>	<a href="#">Movement</a>
<b>Parent Class:</b>	<a href="http://purl.org/vocab/frbr/core#Work">http://purl.org/vocab/frbr/core#Work</a>
<b>Properties:</b>	<a href="#">arranged_in</a> , <a href="#">composed_in</a> , <a href="#">iswc</a> , <a href="#">movement</a> , <a href="#">opus</a> , <a href="#">lyrics</a>



## Akoma-Ntoso – an XML schema for legal documentation

```
<xsd:sequence>
  <xsd:element ref="FRBRWork"/>
  <xsd:element ref="FRBRExpression"/>
  <xsd:element ref="FRBRManifestation"/>
  <xsd:element ref="FRBRIItem" minOccurs="0" maxOccurs="1"/>
</xsd:sequence>

<xsd:sequence>
  <xsd:element ref="FRBRthis"/>
  <xsd:element ref="FRBRuri" minOccurs="1" maxOccurs="unbounded"/>
  <xsd:element ref="FRBRalias" minOccurs="0" maxOccurs="unbounded"/>
  <xsd:element ref="FRBRdate" minOccurs="1" maxOccurs="unbounded"/>
  <xsd:element ref="FRBRAuthor" minOccurs="1" maxOccurs="unbounded"/>
  <xsd:element ref="componentInfo" minOccurs="0" maxOccurs="1"/>
  <xsd:element ref="preservation" minOccurs="0" maxOccurs="1"/>
</xsd:sequence>
```

# Functional Requirements of Information Resources

Work 1

Expression 1

Manifestation 1

URL 1  
URL 2  
<http://a.org/csv>  
<http://b.org/csv>

Manifestation 2

<http://b.org/raw.ttl>

Manifestation 3

<http://b.org/raw.rdf>

Work 2

Expression 2

Manifestation 4

<http://b.org/enhanced.ttl>

◀— was\_derived\_from —▶

# Ranganathan's Colon Classification

—  
Book numbers

## FRBR

- Work
- Expression
- Manifestation
- Item

## CC

- Classification number
- Language, Form
- Year of publication, volume, supplement (parts)
- Copy number

# Fast Fashion Ontology

## FRBR

- Work
- Expression
- Manifestation
- Item

## FFO

- style
- item
- stock-keeping unit
- piece

Bring on openWEMI

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# “raw” WEMI

Work

Expression

Manifestation

Item

# “raw” WEMI

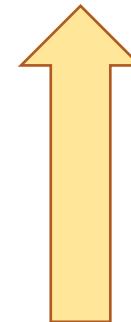
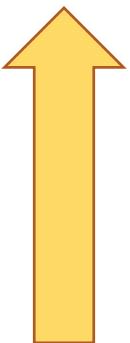
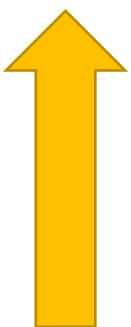
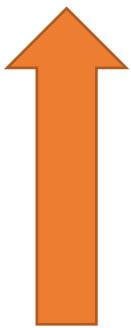


Work

Expression

Manifestation

Item



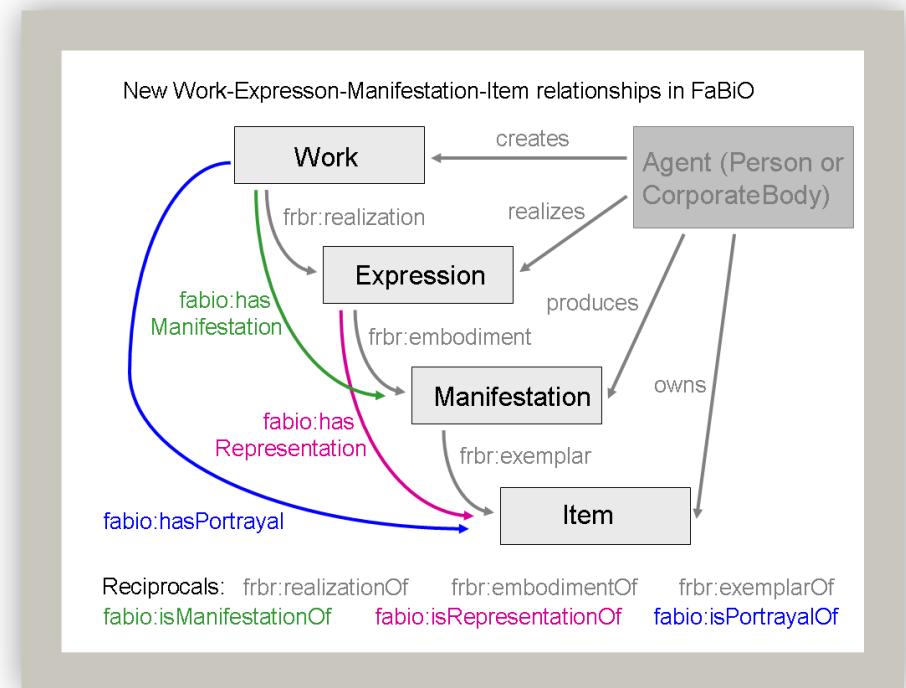
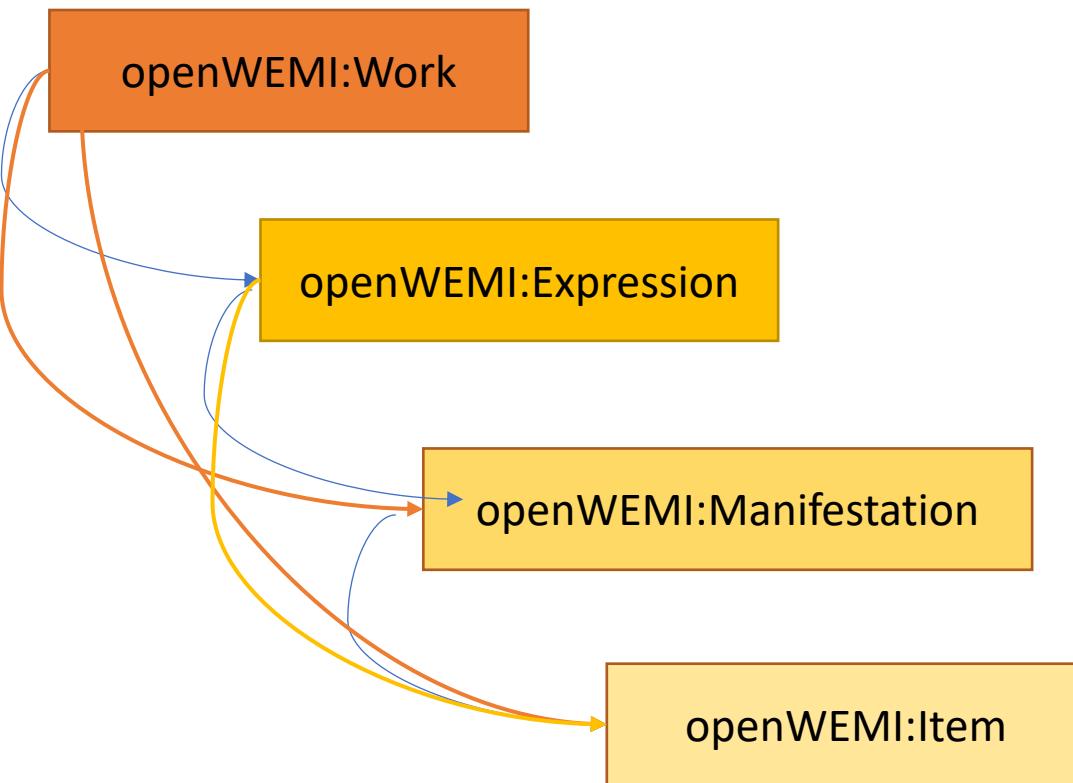
The  
concept  
of  
creation

The  
creation  
expressed

The  
creation  
made  
manifest

The specific  
instance of a  
creation

# openWEMI as a diagram



# openWEMI\*

\* h/t Adrian Pohl

any entity can be iterative (e.g. a work of a work)

any entity can have relationships/links to any other entity

no entity has an inherent dependency on any other entity

any entity can be used alone or in concert with other entities

no entities are disjoint

anyone can define additional entities or subclasses

individual profiles using the model may recommend or limit attributes and relationships, but the model itself will not have restrictions

openWEMI:work

openWEMI:  
expression

openWEMI:  
manifestation

openWEMI:  
item

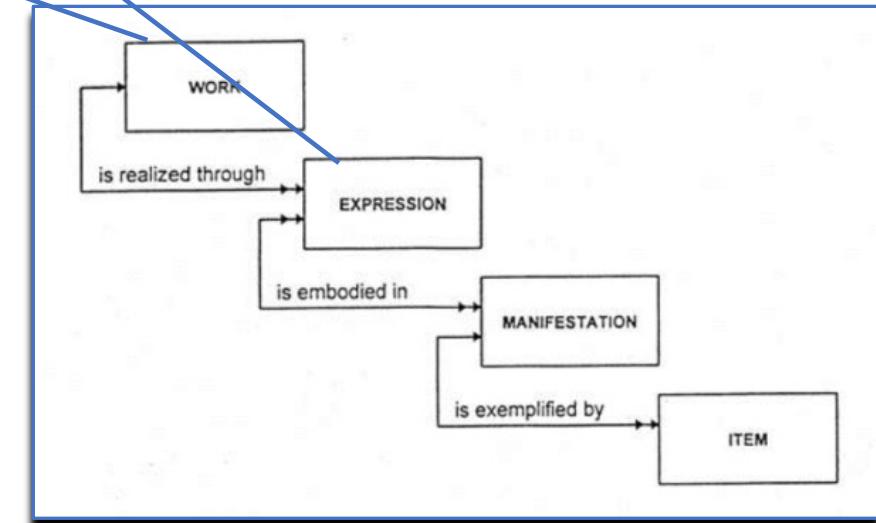
Etc.

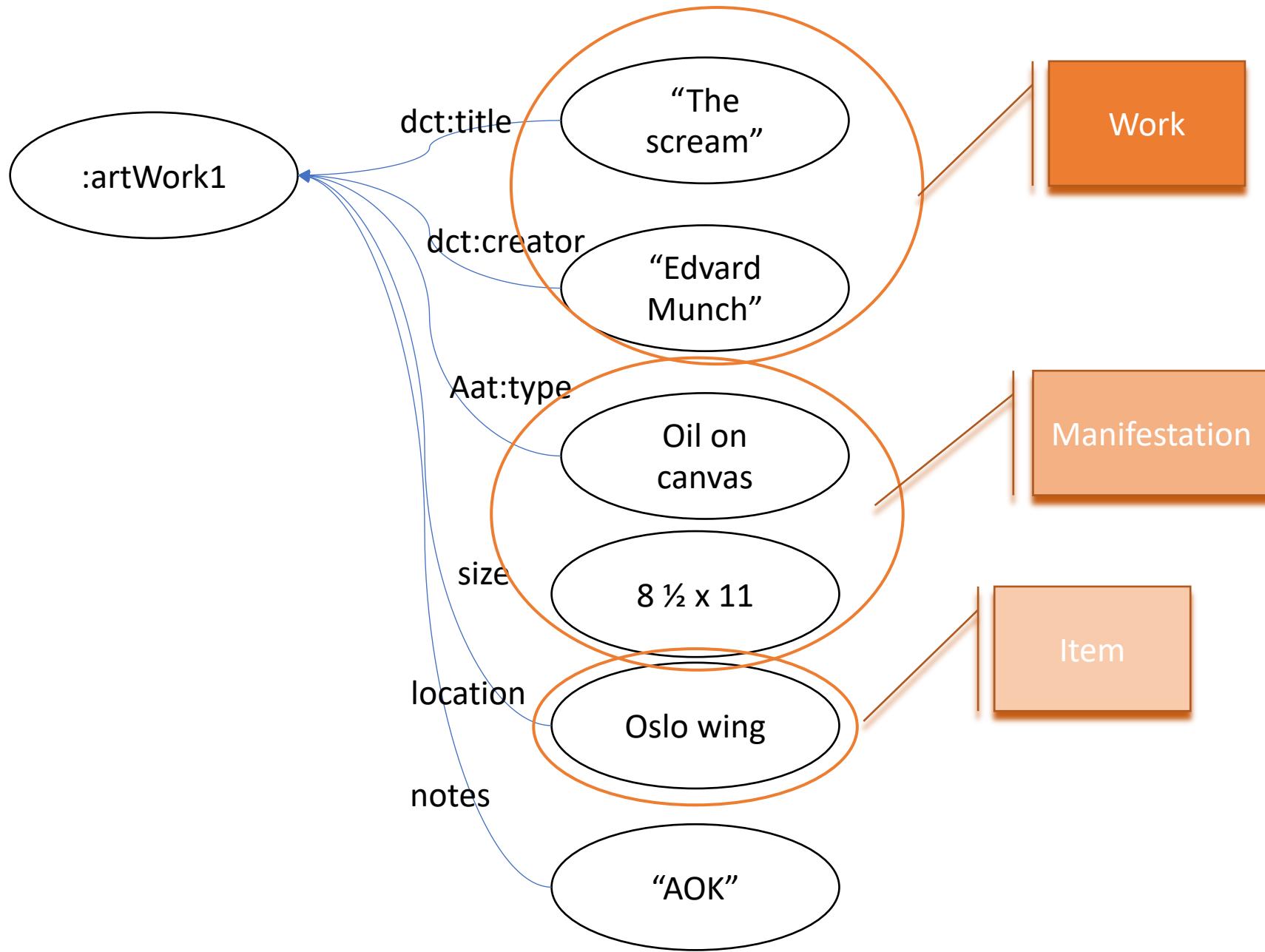
FaBiO Work

Music Work

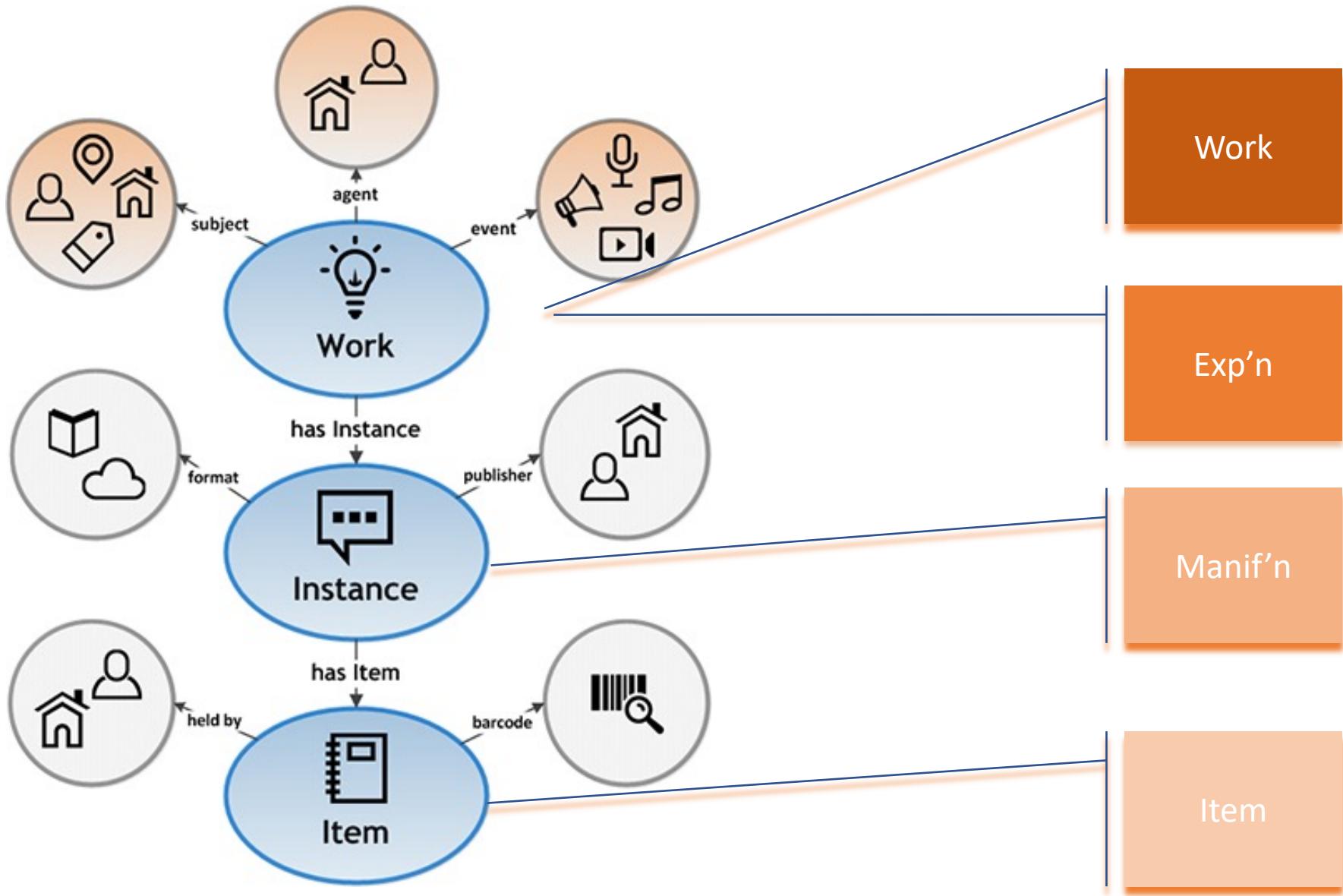
Akoma Work

FRIR Work





# BIBFRAME





An idea of an outline

## Four classes

- Work
- Expression
- Manifestation
- Item

It has these properties which define the primary relationships between WEMI:

- expresses (range: Work)
- manifests (range: Work or Expression)
- instantiates (range: Work or Expression or Manifestation)



# Now a Dublin Core Working Group

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Join the mailing list (low traffic) to keep up to date:

<https://lists.dublincore.org/mailman/listinfo/openwemi>

Work is being done on github:

<https://github.com/dcmi/openwemi>

# Other possibilities

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A super-class, like the FRBRcore  
“Endeavour”

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WEMI as SKOS concepts

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Etc. (See  
<https://github.com/dcmi/openwemi/issues>)

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Add others if you see some

# Thank you and links

- <http://purl.org/spar/fabio/>
- <http://www.akomantoso.org/> (also: <https://github.com/oasis-open/legaldocml-akomantoso/>)
- [http://tw.rpi.edu/media/2012/02/07/d641/EX\\_ISSI-2011-09-0138.R1\\_McCusker.pdf](http://tw.rpi.edu/media/2012/02/07/d641/EX_ISSI-2011-09-0138.R1_McCusker.pdf) (FRIR)
- <http://musicontology.com/specification/>
- <https://jlis.it/index.php/jlis/article/view/361> (Colon Class)
- <http://vocab.org/frbr/core> (broken, use archive.org)
- <http://kcoyle.blogspot.com/2019/01/frbr-without-fr-or-br.html>
- <http://kcoyle.net/beforeAndAfter/c10-978-0-8389-1364-2.pdf>
- <https://journal.code4lib.org/articles/16491>