

europeana
think culture

Introduction to the Europeana Data Model (EDM)

A Collaborative Effort

Europeana v1.0 WP3

- Ca. 60 participants
- Many presentations in the Europeana network and beyond
- Evolving specifications available since 2009

Cross-community development

- Involving library, archive and museum experts



A Collaborative Effort

Original principle: make Europeana ready to ingest metadata that is closer to specific community concerns

Europeana & partners can develop EDM “profiles” upon which everyone could build specific functionality

→ Based on best practices from sector or domain level

EDM is consolidated with partners who reuse it

→ Europeana providers, Digital Public Library of America (DPLA), CARARE...



Metadata interoperability challenges

→ Needs:

- Accommodate different data models
- Accommodate domain specific requirements
- Avoid losing data and keep the best granularity
- Coexist with the original data



EDM rationale: the issues to start with

- Initial model: Europeana Semantic Elements (ESE)
 - Based on simple unqualified Dublin Core + Europeana-specific fields
 - Represents lowest common denominator for object metadata
 - Forces interoperability
 - Convert datasets to a “flat” data representation
 - Loss of richness of the original data



ESE record example

dc:identifier	02-Lemba-Lakkous-Lady.tif
dc:title	Stone figurine
dc:subject	Cyprus--Antiquities
dc:description xml:lang="en"	Stone vessel from Choirokoitia with embossed decoration.
dc:publisher	Cyprus Archaeological Museum
dc:type	Image
dc:format	image/tiff
dcterms:temporal	mid 3rd millenium B.C.
dc:rights	Cyprus Archaeological Museum
dc:title	Λίθινο ειδώλιο
dc:description	Λίθινο ειδώλιο από τη θέση Λέμπα ...
Europeana:provider	Cyprus Library
Europeana:type	IMAGE
Europeana:rights	http://creativecommons.org/licenses/by/3.0/nl/
Europeana:dataProvider	Cyprus Archaeological Museum
Europeana:isShownBy	http://www.mcw.gov.cy/mcw/da/da.nsf/All/8308A7AB9CA6CB5EC22574CC003FF5E1/\$file/02-Lemba-Lakkous-Lady.jpg?OpenElement
Europeana:uri	http://www.europeana.eu/resolve/record/00000/E2AAA3C6DF09F9FAA6F951FC4C4A9CC80B5D4154
Europeana:country	cyprus
Europeana:language	gr



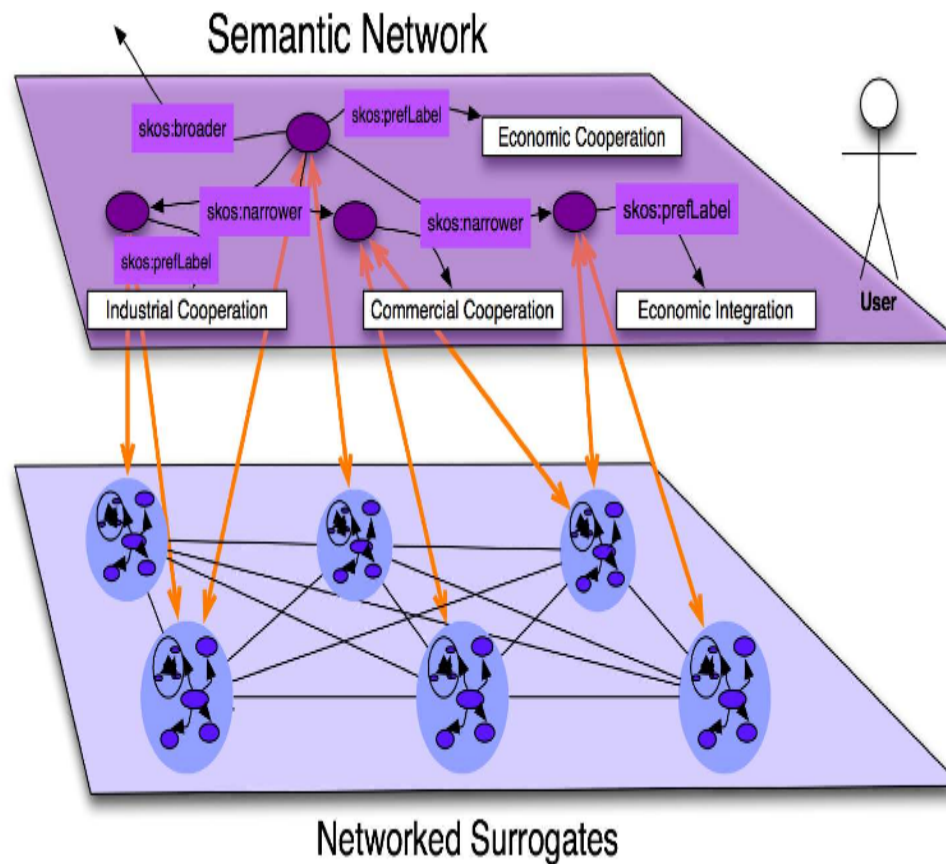
EDM rationale: requirements

- Richer metadata - finer granularity
- 1. Distinguish “provided objects” (painting, book, movie, etc.) from their digital representations**
- 2. Distinguish an object from its metadata record**
- 3. Allow multiple records for a same object, containing potentially contradictory statements about it**
- 4. Support for objects that are composed of other objects**
- 5. Be compatible with different levels of description
generic/interoperable vs specific/domain centered



Provide more semantics to the data

- A semantic layer on top of Cultural Heritage objects



Provide more semantics to the data

- Semantic layer provides more context to the metadata
- Allow the representation of specific relationships
 - Aboutness
 - Similarity between objects
 - Part-whole relation, representation, derivation...
- Promote the re-use of external resources (via Linked Data)



EDM rationale: principles

- Compatibility with different levels of description
- 1. Allow different levels of granularity
- 2. Allow the specification of domain-specific application profiles
- 3. Enable the re-use of existing standards



EDM basis

- OAI ORE (Open Archives Initiative Object Reuse & Exchange) for organizing an object's metadata and digital representation(s)
- Dublin Core for descriptive metadata
- SKOS (Simple Knowledge Organization System) for conceptual vocabulary representation
- CIDOC-CRM for event and relationships between objects

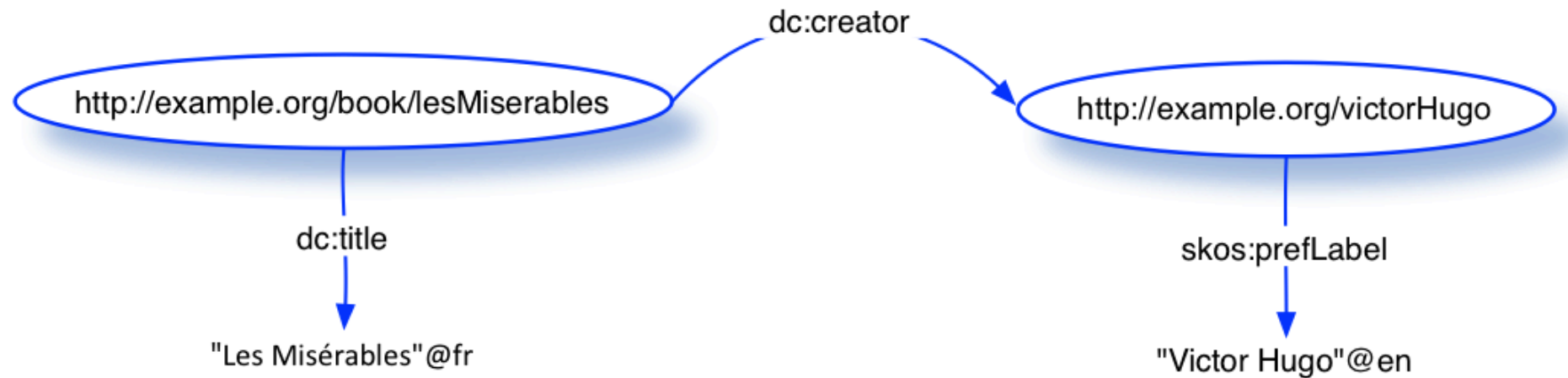


- Adopt Semantic (CIDOC CRM) representation (Open Archives Initiative / RDF)
 - Re-use and mix different vocabularies together
 - Preserve original data and still allow for interoperability



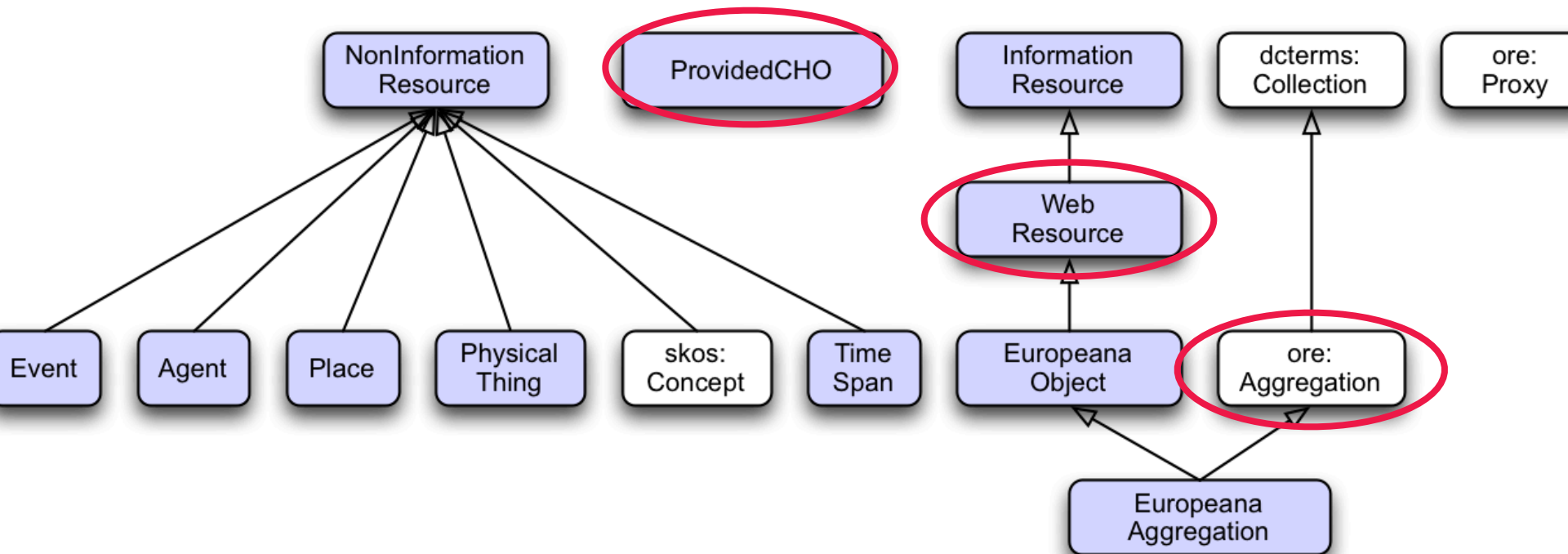
Resource Description Framework (RDF)

→ “Les Misérables” was written by Victor Hugo



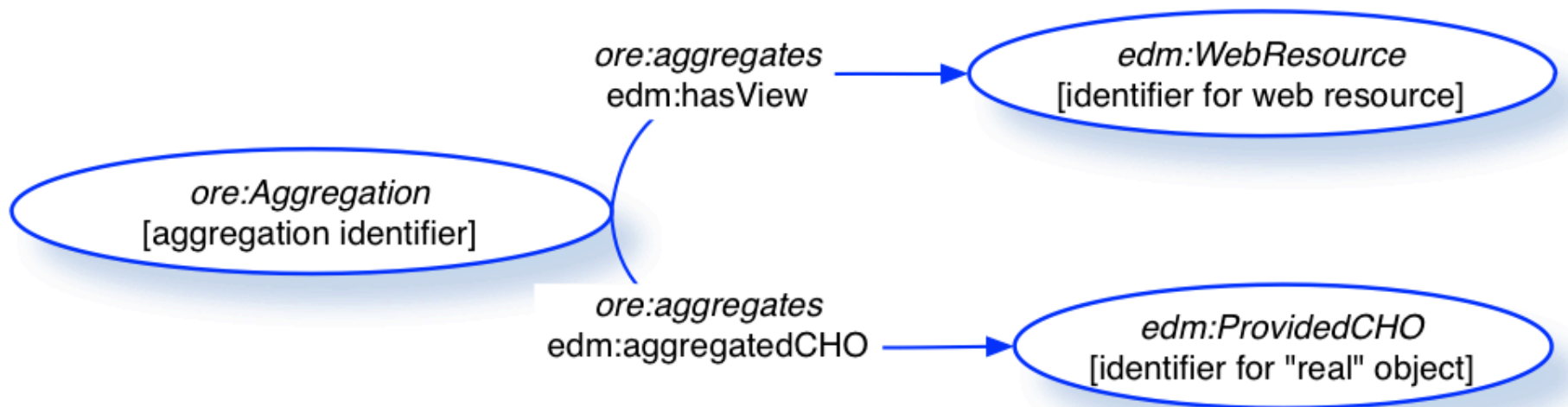
EDM main classes

Groups of things that have common properties, e.g., web resources.



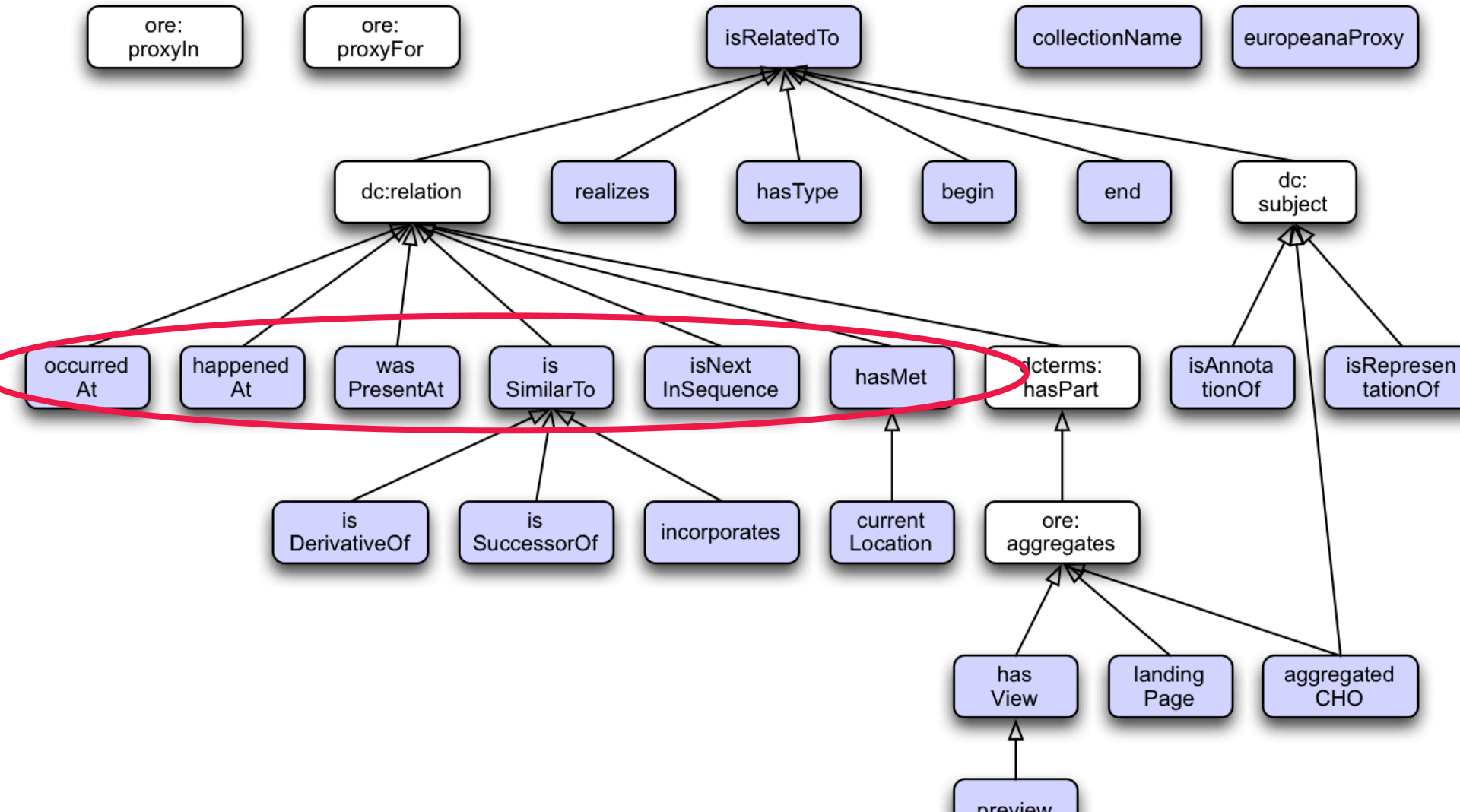
EDM basic pattern

- A data provider submits to Europeana a “bundle” of an object and its digital representation(s)





EDM main properties


Attributes or characteristics of resources, *descriptive* and *contextual* properties.





An example



 Attribution-NonCommercial-ShareAlike 

View item at
[Cité de la musique](#) 

 Share

 Cite on Wikipedia

Clavecin

Description: 2 claviers : C / E à C^{'''}, 45 notes * 3 rangs de Cordes : 2 x 8" + 1 x 4" * Table en épicéa (?) * T * Collection Geneviève Thibault de Chambure

Creator: <http://www.mimo-db.eu/InstrumentMaker/Person/593>;
Cristofori

Coverage: <http://sws.geonames.org/3176959/>

Date: fin 17e

Type: <http://www.mimo-db.eu/InstrumentsKeywords/2251>;
<http://www.mimo-db.eu/HornbostelAndSachs/6461>

Identifier: #CM:0161930

Data provider: Cité de la musique

Provider: MIMO - Musical Instrument Museums Online

Providing country: MUL

[Auto-generated tags](#) ▶

Search also for:

Title
[Clavecin](#) (1308)

Who
[Cristofori](#) (46)

Provider
[Cité de la musique](#) (23075)
[MIMO - Musical Instrument Museums Online](#) (36390)



Descriptive metadata for a cultural heritage object

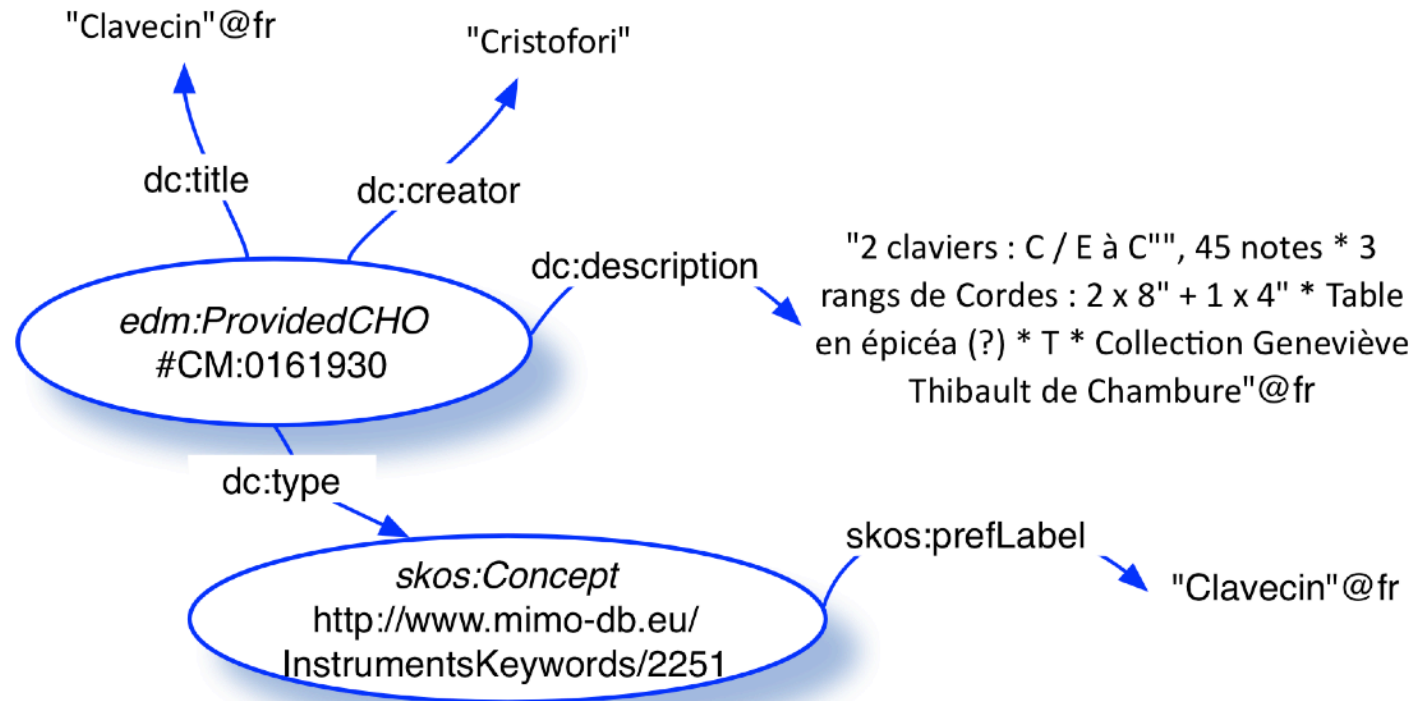
The ProvidedCHO is the cultural heritage object which is the subject of the package of data that has been submitted to Europeana.

Properties:

dc:contributor, dc:creator, dc:date, dc:format, dc:identifier, dc:language, dc:publisher, dc:relation, dc:source, dcterms:alternative, dcterms:extent, dcterms:temporal, dcterms:medium, dcterms:created, dcterms:provenance, dcterms:issued, dcterms:conformsTo, dcterms:hasFormat, dcterms:isFormatOf, dcterms:hasVersion, dcterms:isVersionOf, dcterms:hasPart, dcterms:isPartOf, dcterms:isReferencedBy, dcterms:references, dcterms:isReplacedBy, dcterms:replaces, dcterms:isRequiredBy, dcterms:requires, dcterms:tableOfContents, edm:isNextInSequence, edm:isDerivativeOf, edm:currentLocation...



Provided CHO example



Digital representations of the object

One or more WebResources are provided for the cultural heritage object.

Properties:

dc:rights

edm:rights

dc:format

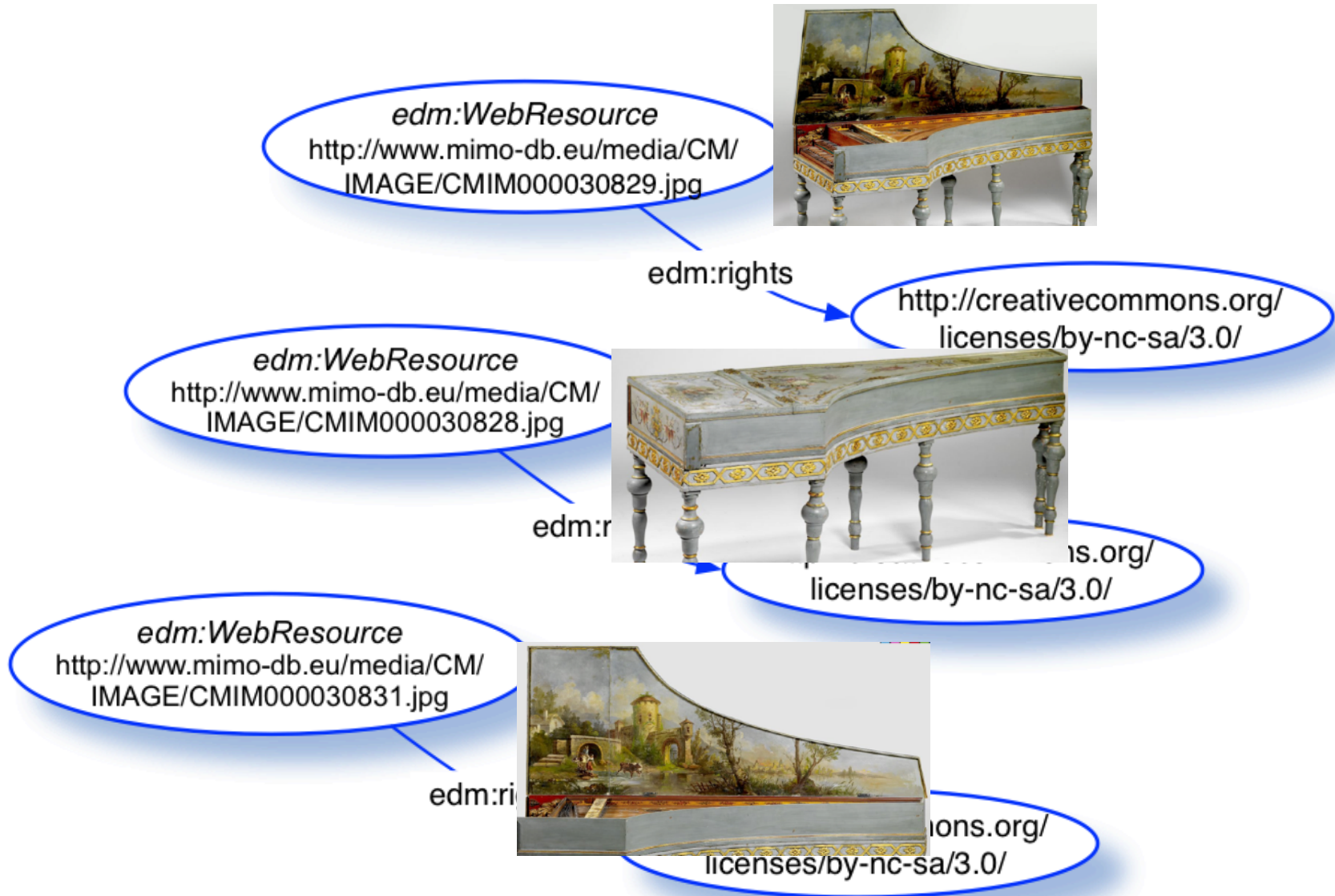
dc:description

dcterms:isPartOf

edm:isNextInSequence...



Web Resource example



Aggregations organize data of a provider

The Aggregation represents the set of related resources about one real object contributed by one provider.

It carries the metadata that is about the whole set

Mandatory:

edm:aggregatedCHO

edm:dataProvider

edm:isShownBy or edm:isShownAt

edm:provider

edm:rights

Optional:

edm:hasView

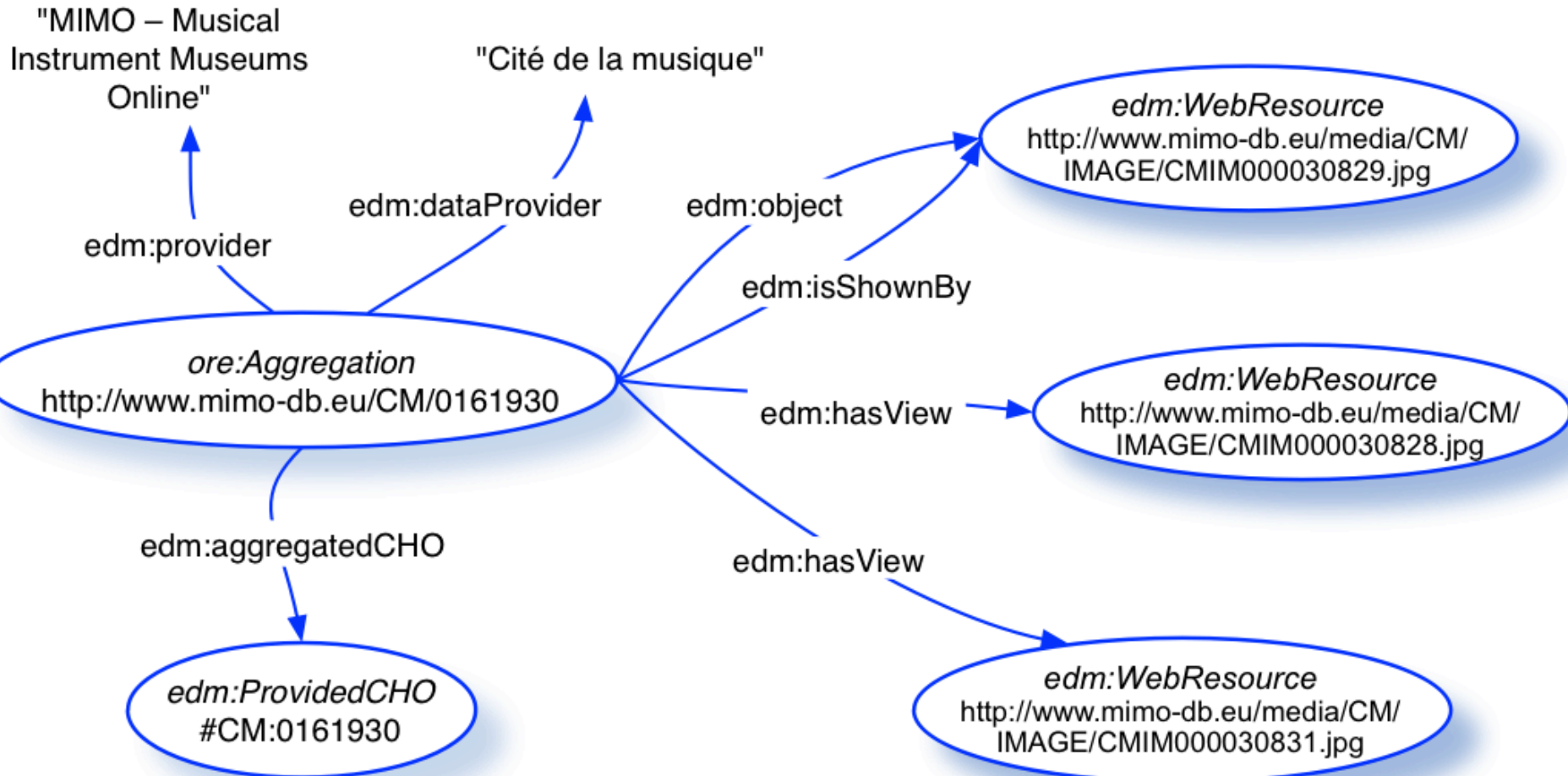
edm:object

dc:rights

edm:ugc



Aggregation example



Contextual entities

Representing (real-world) entities related to a provided object as fully fledged resources, not just strings

edm:Agent

foaf:name

skos:altLabel

rdaGr2:biographicalInformation

rdaGr2:dateOfBirth

skos:Concept

skos:prefLabel

skos:altLabel

skos:broader

skos:related

skos:definition....

edm:TimeSpan

skos:prefLabel

dcterms:isPartOf

edm:begin

edm:end

....

edm:Place

wgs84_pos:lat

wgs84_pos:long

skos:prefLabel

skos:note

dcterms:isPartOf....



Place example

Dolní Kounice

From Wikipedia, the free encyclopedia

Dolní Kounice (Czech pronunciation: [ˈdɔlɲiː ˈkounɪtsɛ]; German: *Kanitz*) is a small town in the South Moravian Region of the Czech Republic. It has around 2,400 inhabitants.



ore:Aggregation
http://store.carare.eu/uid/iid:
1655549/HA:PamFond/1978155

edm:aggregatedCHO

edm:ProvidedCHO
HA:PamFond/1978155

dcterms:spatial

edm:Place
iid:1655549/SP.1

skos:prefLabel

"Dolní Kounice"@cz

wgs84_pos:lat

"16.46590854"

wgs84_pos:long

"49.07024077"

Object centric & Event centric description

Object centric approaches focuses on the object described information comes in the form of statements that provide a direct linking between the object and its features

Event-centric approaches consider that descriptions of objects should focus on characterizing the various events in which objects have been involved.

The idea is that it will lead to establishing richer networks of entities—by representing the events that constitute an object's history—than with the object-centric approach. This approach underlies models such CIDOC-CRM



Object centric & event centric description

Amphora of Tuthmosis III

Identifier: Λ2409

Classification: Amphora



Event: Type: Excavation

Agent: Stylianos Alexiou

Date: 1951, October

Place: Katsampas, Tomb of the "blue coffin", Heraklion

Event: Type: Deposition

Place: Katsampas, Tomb of the "blue coffin", Heraklion

Period: LMIII A1 (14th century BC)

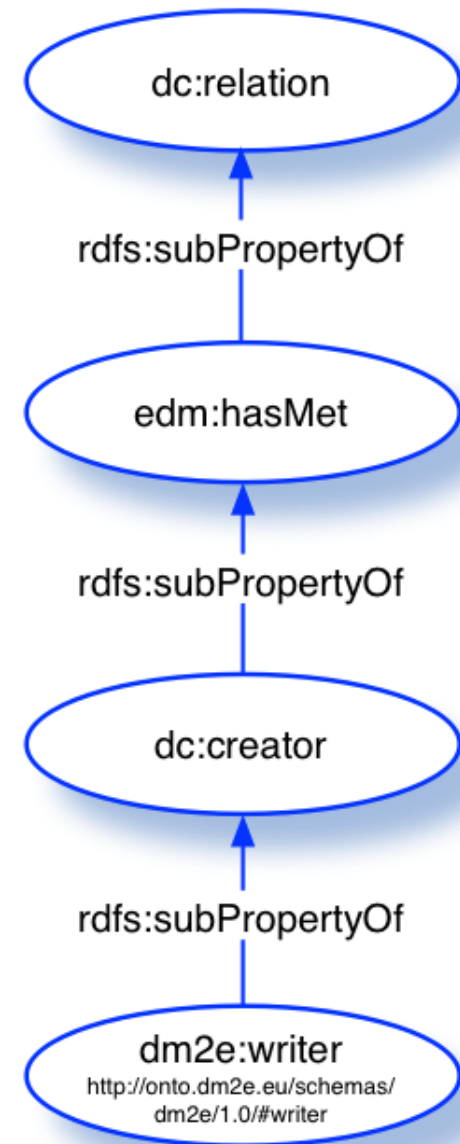


A flexible model: object and events



A flexible model: different semantic grains

- EDM uses specialisation of classes and properties.
- It will enable the definition of “Applications profiles” answering to the need of specific communities.



A flexible model: example

`ex1:object/000PE025604 ex1:schema/historicalNote "commandé par le florentin Francesco del Giocondo, époux de Mona Lisa entre 1503 et 1506"@fr .`

`ex1:schema/historicalNote rdfs:subPropertyOf dcterms:description .`

`ex1:object/000PE025604 dcterms:description "commandé par le florentin Francesco del Giocondo, époux de Mona Lisa entre 1503 et 1506"fr .`



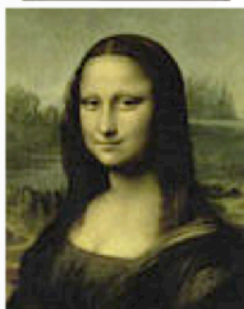
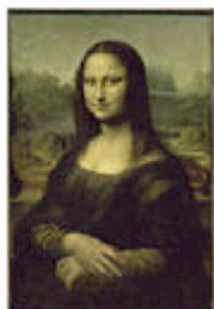
→ More advanced modeling



EDM and “Proxies”

- Describing the provided object as seen from the perspective of a specific provider.
- Europeana needs proxies internally in situations where
 - There are duplicate cultural heritage objects, from different providers, each with its own metadata
 - Adding its own data about a resource (enrichment)
 - In order to keep each provider’s metadata distinct
 - And keep Europeana metadata distinct from the providers’ metadata





© 2007 Musée du Louvre / Angèle Dequier

Domaine **peinture**

Type d'objet **tableau**

Titre **PORTRAIT DE MONA LISA (1479-1528) ; DITE LA JOCONDE**

Auteur/exécutant **LEONARDO DI SER PIERO DA VINCI ; VINCI Léonard de (dit)**

Précision auteur/exécutant **Vinci, 1452 ; Amboise, 1519**

Ecole **Italie**

Période création/exécution **1er quart 16e siècle**

Millésime création/exécution **1503 entre ; 1506 et**

Genèse **oeuvre en rapport ; reproduit en gravure**

Historique **commandé par le florentin Francesco del Giocondo, époux de Mona Lisa entre 1503 et 1506 ; nombreuses copies dont une conservée au Louvre ; gravé par Fauchery, par Filhol, par Landon**

Matériaux/techniques **peinture à l'huile ; bois**

Mesures **77 H ; 53 L**

Sujet représenté **portrait (Mona Lisa, femme, à mi-corps, de trois-quarts, assis, accoudé, laaia. Italien) : fond de paysage (montagne. rocher. cours d'eau. pont.**

Leonardo di ser Piero DA VINCI, dit Léonard de Vinci

Vinci, 1452 - Amboise, 1519

Portrait de Lisa Gherardini, épouse de Francesco del Giocondo, dite Monna Lisa, la Gioconda ou la Joconde

Vers 1503 - 1506

Peint à Florence

Bois (peuplier)

H. : 0,77 m. ; L. : 0,53 m.

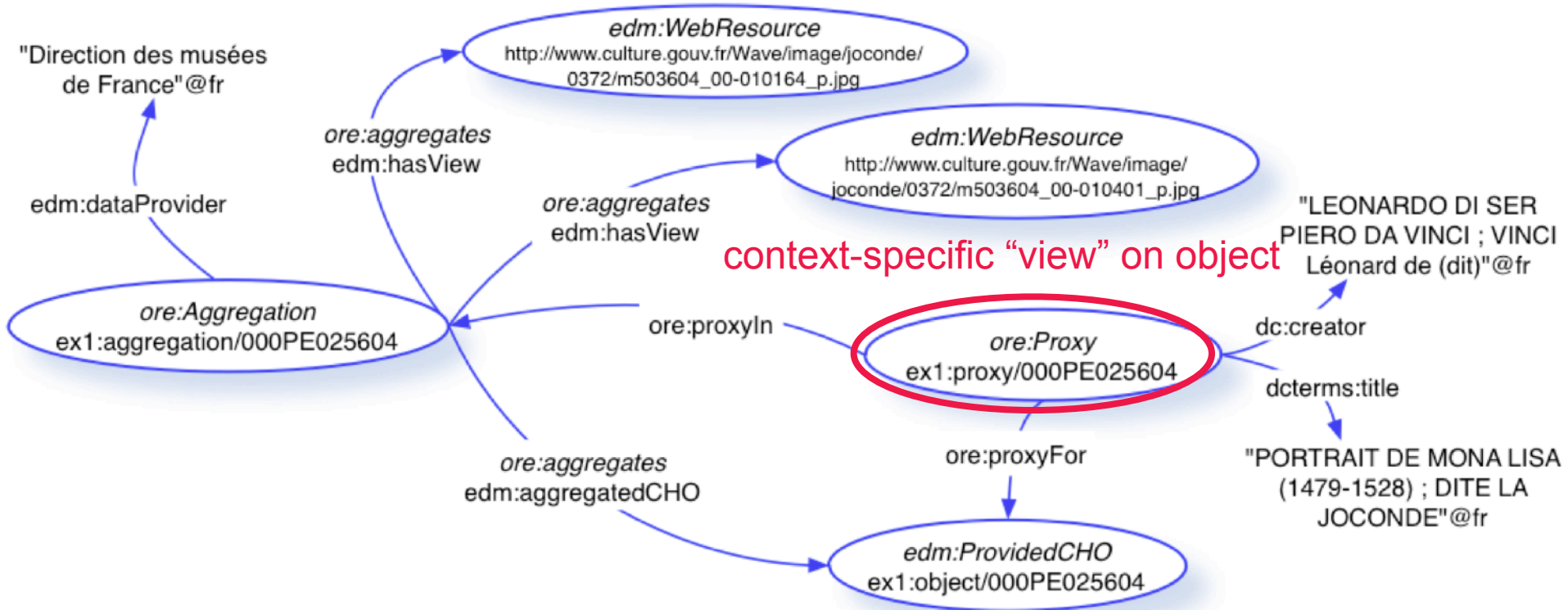
Acquis par François Ier en 1518

Département des Peintures

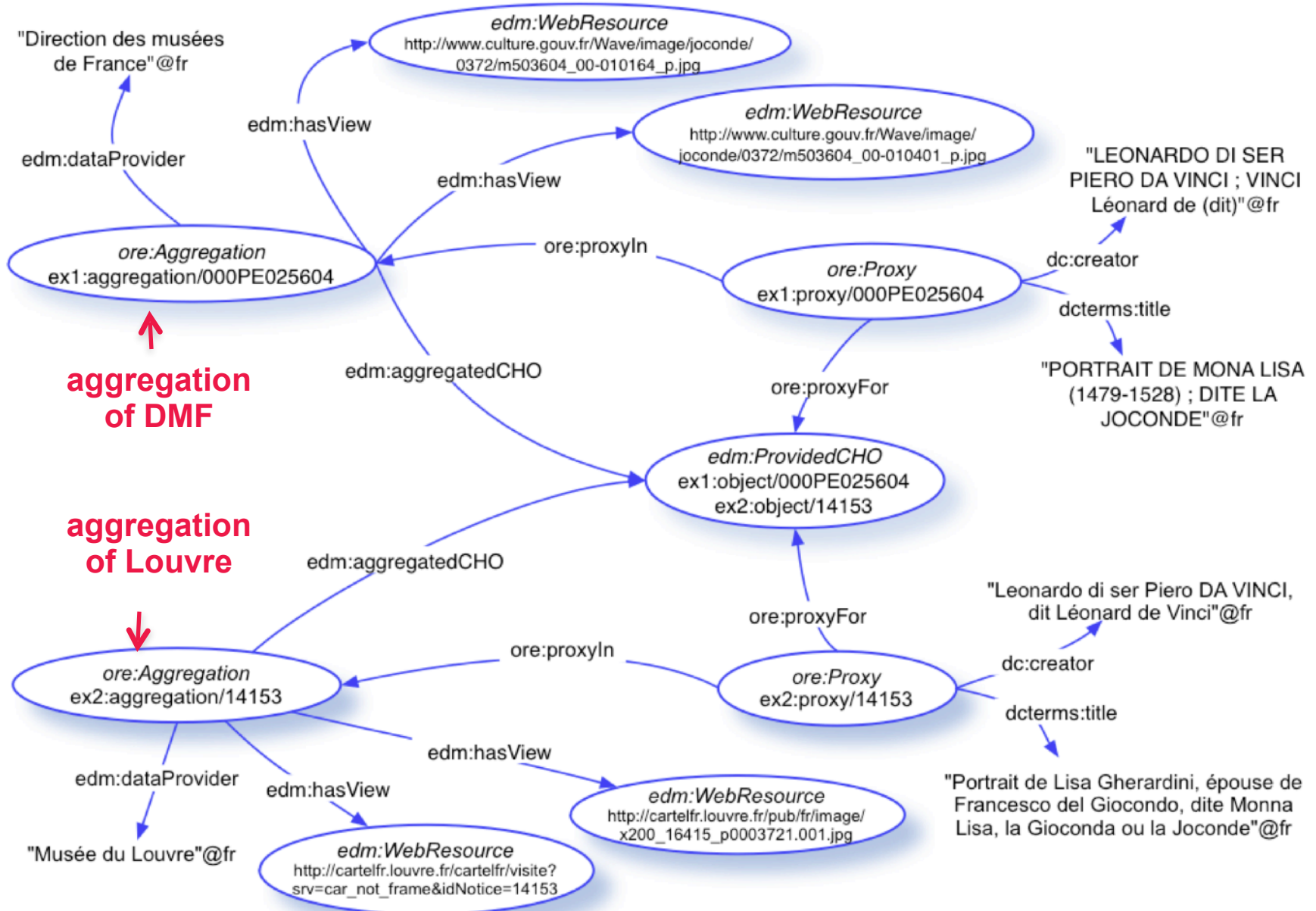
INV. 779



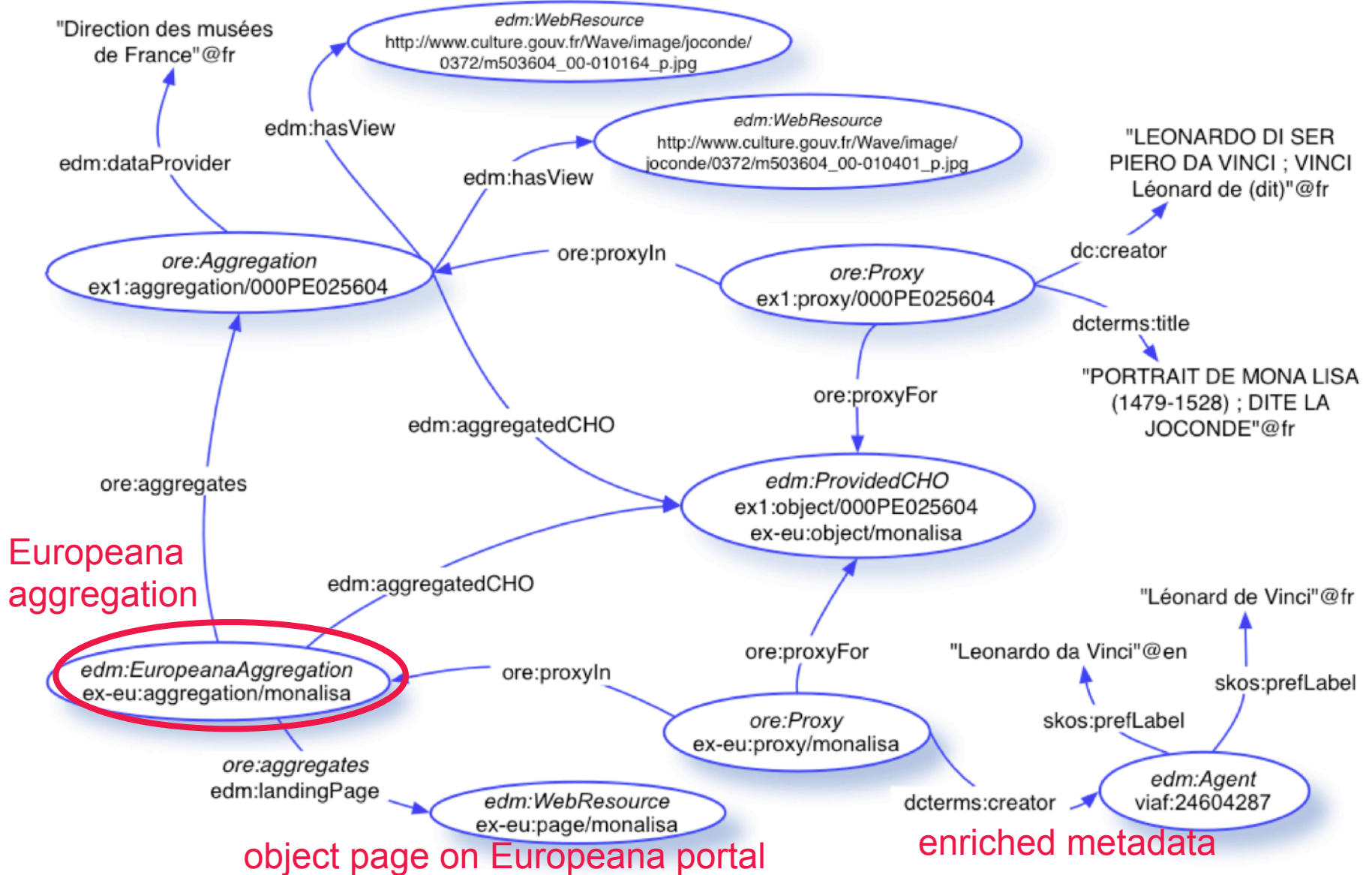
Context-specific metadata for an object



One provider = one aggregation + one proxy



Europeana also provides processed/enriched metadata



Advanced modeling in EDM


Relations between provided objects

- Complex (hierarchical) objects
- Derivation and versioning



Hierarchical objects in EDM

Kaartboek van de hoogheemraadschappen van Rijnland, Delfland, Schieland, gemeten...



Metadata Context

Metadata

Collectie / Archief
Kaartcollectie Binnenland Hingman

Reportage / Serie
[onbekend]

Beschrijving
Kaartboek van de hoogheemraadschappen van Rijnland, Delfland, Schieland, gemeten en in kaart gebracht door Mr. Floris Balthasar.

Datum
{ "" }

Locatie
Zuid-Holland

Fotograaf
Floris Balthasar

Materiaalsoort
Koperdruk

Nummer toegang
bekijk toegang 4.VTH

Vorige | Volgende



Hierarchical objects in EDM



Complete version at: http://semanticweb.cs.vu.nl/europeana/browse/list_resource?r=http://purl.org/collections/apenet/proxy-4_VTH-ATLASSEN_EN_KAARTBOEKEN-F&raw=true



Applications of EDM

- Europeana Portal
- Europeana Linked open Data pilot (data.europeana.eu)
- Europeana API
- Provision of EDM data: MIMO, CARARE, HOPE projects
- EDM re-use at the Digital Public Library of America, Smithsonian Institute
- EDM extensions at projects: German Digital Library, Europeana Fashion, Digital Manuscripts to Europeana
- EDM mapping to Schema.org



Documentation

→ Main documentation:

EDM Definition

EDM Primer

EDM Mapping guidelines for data providers

These slides:

<http://pro.europeana.eu/edm-documentation>

→ Other resources:

EDM case studies:

<http://pro.europeana.eu/case-studies-edm>

EDM object templates & XML schema:

<http://europeanalabs.eu/wiki/EDMXMLSchema>

