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# Europeana and (many) linked open vocabularies

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# Context

- Europeana is a service that aggregates data from the cultural heritage sector in Europe.
  - libraries, museums, archives and audio-visual archives
  - <http://www.europeana.eu/>
- Provides a portal for users to access that data
  - Metadata, previews and links to source
- Will make the metadata freely available for anyone to re-use
  - under Creative Commons Zero (CC0) -public domain dedication
- Enriches data, provides tools
  - Link to data from other sites, embed on wikipedia, API
- Makes data available as Linked Open Data (experimentally)
  - <http://data.europeana.eu/>



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# Solving a problem of data integration

- Europeana is aggregating data from the cultural heritage sector in Europe.
  - Each domains is using its specific metadata standards and vocabularies
    - Athena for museums with Lido
    - APEnet for Archives with EAD
- Until now.. the Europeana Semantic Elements (ESE)
  - represents lowest common denominator for object metadata
  - forces interoperability
  - flat model, mostly with text string values
  - one-to-one principle violated
  - major drawback: richness of the original metadata is lost



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# First steps for providing semantics enabled services

- Enrichment of the data with selected vocabularies and datasets:
  - DBpedia
  - Geonames
  - GEMET
  - Enrichment process based on a selection of Dublin Core elements
- Europeana needs to have access to open resources



# First steps for providing semantics enabled services



View item at  
[Biblioteca Nacional de Portugal](#) -   
[National Library of Portugal](#)

Format: 1 gravura ; cromolitografia ; ;  
Dim. da comp. sem letra: 20,5x21,1  
cm : alphabet of Title: Latin

## Labradora de l Oporto ; A. Pe

Creator: [Gimenez Manuel](#)

Contributor: [Perea y Rojas](#)

Date: [1872, 1876] ; [1875]

Geographic coverage: Sp

Type: Two-dimensional gr

Subject: 39(469.121)"18"(

Description: Páez Ríos, El

bibliographic level: Monogr

Data provider: [Biblioteca N](#)

Provider: [The European Li](#)

Where ▾

Place Label: españa ; la madre de  
patria ; hispania ;    ; spain ;  
Ἰσπανία ; kingdom of spain ;  
espagne ; hiszpania ; spagna ;  
spanyolország ; reino de españa ;  
spania ; estado español ;  
spanien ; spanyol ; la piel de toro ;  
španielsko ; hesperia ; ispanija ;  
spanje ; іспанія ; испания ;  
španělsko ; spanish state ;  
hispaania ; espanha ; es ;  
španija ; espanja

Place Term:

<http://sws.geonames.org/2510769/>



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# Re-building the service on rich metadata format

- The Europeana Data Model (EDM) provides a new environment
  - Provides an open environment for Cultural Heritage data
- Re-use OAI ORE for organization of metadata about an object
  - Distinguish between the real world **object** (painting, book, program) and its **digital representation**
  - And the **object** and the **metadata record** describing the object
  - Supports several statements per resources
- EDM gives support for contextual resources (semantic layer)
- Re-use existing standards
  - OAI-ORE
  - Dublin Core
  - SKOS...



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# Requirements for Linked Open Vocabulary

## Access and maintenance

- Vocabularies should be technically available and documented
  - Organisational support is key
- Vocabularies should be well-connected together
  - Key to avoid duplication and redundancy
- Elements sets should address specific requirements instead of semantic specifications
- The necessity of a map of the vocabulary landscape
  - Linked Open vocabularies: <http://labs.mondeca.com/datasets/lov>
  - Open Metadata Registry: <http://metadataregistry.org>



# Requirements for Linked Open Vocabulary Tools

→ MINT: <http://mint.image.ece.ntua.gr/>

Define your mappings and when you are done click the 'Finished' button below to make them available to the rest of the users in your organization.  
*\*Mapping relations are automatically saved every time you edit, delete or create a new one.*

Finished Preview Summary

The screenshot displays the MINT tool interface with three main panels:

- Source Schema:** A tree view of the 'museumdatWrap' schema, including elements like '@schemaLocation', '@langencoding', '@lang', 'museumdat', 'descriptiveMetadata', 'objectClassificationWrap', 'identificationWrap', 'descriptionWrap', 'eventWrap', 'indexingEventWrap', 'indexingEventSet', 'eventType', 'indexingDates', 'earliestDate', 'latestDate', 'indexingActorSet', 'nameActorSet', 'nameActor', 'roleActor', 'indexingLocationWrap', 'indexingLocationSet', 'nameLocationSet', 'relationWrap', and 'administrativeMetadata'.
- Mappings:** A table defining relationships between source and target elements:

Source Element	Mapping Type	Target Element
wasPresentAt:	structural	
happenedAt:		
place:		Athens
placeResource:		http://dbped...
occuredAt:		
startDate:	unmapped	
endDate:		museumdat latestDate
timeSpanResource:	unmapped	
agentWasPresentAt:	structural	
physThWasPresentAt:	structural	
infResWasPresentAt:	structural	
- Target Schema:** A list of target schema elements including Aggregation, undefined, Europeana, DC, DCTerms, Events (highlighted), Related, undefined, Aggregated CHO, undefined, and Web Resources.

Red arrows point from labels 'Import's schema structure', 'Mappings', and 'Target schema' to their respective panels in the interface.



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# References

Doerr, M., Gradmann, S., Hennicke, S., Isaac, A., Meghini, C., Van de Sompel, H. The Europeana Data Model (EDM). 76th IFLA General Conference and Assembly, 10-15 August, 2010, Gothenburg, Sweden.

<http://www.ifla.org/files/hq/papers/ifla76/149-doerr-en.pdf>

Europeana. Europeana Data Model Primer (2011). Available at <http://pro.europeana.eu/edm-documentation>

Europeana. Europeana Semantic Elements Specification (2011) Available at <http://pro.europeana.eu/technical-requirements>

Isaac, A. Waites, W., Young, J., Zeng, M., Library Linked Data Incubator Group: Datasets, Value Vocabularies, and Metadata Element Sets. W3C Incubator Group Report, 25 October 2011: <http://www.w3.org/2005/Incubator/lld/XGR-lld-vocabdataset/>





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**Thank you**

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