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D5.3: Further development of the Europeana Data Model

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REVISION HISTORY AND STATEMENT OF ORIGINALITY

Revision History

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This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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1. Introduction and Scope

1.1. Introduction

“Task 5.4: Operational data model

Maintain and update the model. Create new requirements, when required, to support technical and data related changes needed in the portal and the repository. The changes should support the operational functions of the Europeana portal and services, and will be made in connection with the R&D work on refining EDM carried out in WP7. D5.3 Further development of the European Data model (EDM)”¹

The development and implementation of the Europeana Data Model² has been a learning process for all involved, both internally and externally: the R&D and development staff at Europeana had to take a theoretical model and translate this into a functioning implementation; the aggregation team had to understand the practical implications of harvesting and processing the data; the data providers and aggregators had to understand the relationship of their local data to the new and complex model. Contributing projects, both technical and content-based, were defining needs and requirements that had to be accommodated. There has been an on-going process of developing the model as outcomes of these activities became clear.

1.2. Scope

The EDM has been developed throughout the course of the project with the addition or modification of properties and classes (as reflected in the documentation and web resources). The principal sources of the changes were the need to support implementation internally, the on-going R&D work in WP7 and the prototyping activity undertaken with certain projects. This report summarises the changes in the model over the course of that time.

2. Developments in the Europeana Data Model

Europeana v2 started in October 2011 and at that time the data model in use was ESE. During the course of the project the transition was made to EDM. EDM was (and is) being implemented incrementally so only a subset of the classes and properties defined in the specification were available for use in the first instance. This subset has been expanded during the course of the project as it became technically feasible to do so, and due to feedback from partners. This ongoing work has resulted in further development of the model to meet the requirements of the Europeana service and its partners.

There were three main sources driving development of the model: firstly, making the transition from a theoretical model to an operational model; secondly, input from and prototyping work with partner projects; thirdly, targeted development from Technical and Network Task Forces. A fourth source manifested itself during the course of the project: other initiatives started to use EDM and needed some minor changes to make this possible.

¹ Europeana Version 2 Description of Work, WP5, Task 5.3 Description,

² <http://pro.europeana.eu/edm-documentation>

2.1. Implementing an operational model

The process of implementing the theoretical model as the foundation of an operational system resulted in several changes to EDM:

- Addition of the edm:ProvidedCHO class arising from the need to assign a type to the central node in the EDM pattern. It is the range of edm:aggregatedCHO and can be the subject of statements such as edm:isRelatedTo or more specific properties.
- Addition of edm:EuropeanaProxy to differentiate internal proxies from provider proxies.
- Addition of edm:begin and edm:end as generic start and finish dates for edm:Agent and edm:Timespan.
- Addition of edm:preview to link to the preview generated and stored by Europeana.
- Addition of edm:collectionName to associate all objects belonging to one dataset as provided to Europeana.

2.2. Prototyping with partner projects and input from other initiatives

Projects started to map their data to EDM and produce datasets to submit to Europeana. Working with them the R&D and Aggregation teams were able to identify and make appropriate changes in EDM.

- Addition of edm:ugc property to indicate that an object was sourced from a user, as opposed to coming from a more traditional type of collection. This property could then be used to support portal filtering functionality. This was particularly significant for Europeana 1914-1918³.
- The addition of the fifth edm:type “3D”. This was a requirement from the CARARE⁴ project which has 3D models of archaeological objects. This was paired with the recommendation to add “3D-PDF” as a value in dc:format to help users view the object.
- Inclusion of dcterms:created as a property of edm:WebResource at the request of Europeana Libraries⁵. This project also urged the general expansion of the number of properties for this class which happened at a later date.
- Early prototyping with MIMO⁶ data necessitated the selection of the rdf structure to be used. The chosen structure requires a unique identifier for each resource (class) in a record. MIMO also urged the selection of properties for the contextual entities because they were creating online resources for their vocabularies.
- Several projects are defining specialisations of EDM to meet the specific requirements of their source formats. This may result in further development of EDM and will certainly result in adaptation of the portal and other services to allow the specialisations to be exploited.
- Amendments to various aspects of properties, such as the definitions or constraints, as usage demonstrated the need.
- Extension of EDM to incorporate classes and properties needed to describe collections. The development of a collection profile is motivated by the need to make Europeana data more readily accessible at the collection level and is carried out in conjunction with CIRSS at the University of Illinois⁷ and in discussion with the Digital Public Library of America (DPLA)⁸.

³ <http://www.europeana1914-1918.eu/en>

⁴ <http://www.carare.eu>

⁵ <http://pro.europeana.eu/europeana-libraries-edm>

⁶ <http://www.mimo-international.com>

⁷ <http://cirssweb.lis.illinois.edu/index.php>

⁸ <http://dp.la>

- Extension of EDM to incorporate classes and properties needed to describe datasets. The development of this profile is largely motivated by the requirements of Europeana Inside to query specific aspects of the data.
- Extension of EDM to incorporate classes and properties needed to describe organisations. The development of this profile is largely motivated by the requirements of Europeana Inside to query specific aspects of the data and providing organisations.
- Adaptation of EDM to handle additional aspects rights statements, in particular, the temporal aspects of IPR.

2.3. Developments from Task Force recommendations

2.3.1. Hierarchical objects Task Force⁹

This task force made recommendations to adjust the implementation of several EDM properties to make it possible to represent hierarchical objects. These changes were made to the model:

- For the ProvidedCHO class: to make edm:isNextInSequence and dcterms:isPartOf repeatable
- For the WebResource class: to allow the use of dcterms:isPartOf, an restrict the values use dcterms:hasPart to references (for hierarchical objects).
- For contextual classes: implement dcterms:hasPart and dcterms:isPartOf for Agents; to implement edm:isNextInSequence for Place, TimeSpan and Event classes.

2.3.2. EDM – FRBRoo Application Profile Task force¹⁰

This task force made a mapping from FRBRoo to EDM and defined an application profile that could be used. No actual changes to EDM were defined, but it specified how FRBRoo concepts could be translated into an EDM representation.

2.3.3. EDM Mappings, Refinements and Extensions Task Force¹¹

This task force is gathering documentation relating to mappings, refinement and extension that have been made to EDM by various projects applying EDM to their data. This work is on-going and as yet now changes have been made to EDM as a result. Should commonalities appear it is likely that EDM be adjusted accordingly.

2.3.4. Multilingual and Semantic Enrichment Strategy Task Force¹²

This task force is analysing controlled vocabularies, collections and metadata fields in the context of enriching data. The work is on-going and may result in changes to EDM to accommodate their recommendations.

2.3.5. The Metadata Quality Task Force¹³

This Europeana Network Task Force is focussing on strategies to improve the quality of data in Europeana. The work is on-going and it is likely that recommendations will result in changes to aspects of the model and the documentation supporting its implementation.

⁹ <http://pro.europeana.eu/web/network/europeana-tech/-/wiki/Main/Taskforce+on+hierarchical+objects>

¹⁰ <http://pro.europeana.eu/web/network/europeana-tech/-/wiki/Main/Task+Force+EDM+FRBRoo>

¹¹ <http://pro.europeana.eu/web/network/europeana-tech/-/wiki/Main/Task+force+on+EDM+mappings+refinements+and+extensions>

¹² <http://pro.europeana.eu/web/network/europeana-tech/-/wiki/Main/Task+force+multilingual+semantic+enrichment>

¹³ Link not yet available

2.4. Other initiatives using EDM

As EDM became more widely known outside Europeana and its family of projects, other international initiatives started to use it in their own applications. A request was received from the DPLA⁸ to generalise three of our properties so they were more widely applicable. The EDM definitions mentioned Europeana in the text. These references were removed from three properties (edm:country, edm:dataProvider and edm:provider) to make them more generally applicable.

3. Conclusion

Europeana v2 started with a data model defined by experts in the field of interoperable metadata. It has been further developed in the process of implementation as an operational model in the Europeana system and according to the requirements of providing partners.