# TECHNICAL SPECIFICATION

**Project Acronym:** DM2E

**Grant Agreement number:** ICT-PSP-297274

**Project Title:** Digitised Manuscripts to Europeana

# DM2E Model V 1.1 Specification

**Revision:** Version 1.1, final revision

**Authors:**

Evelyn Dröge (UBER)
Julia Iwanowa (UBER)
Steffen Hennicke (UBER)
Kai Eckert (UMA)

With contributions from Marko Knepper (UBFFM), Doron Goldfarb (ONB), Christian Bizer (UMA), Antoine Isaac (Europeana), Kilian Schmidtner (SBB), Esther Guggenheim (EAJC) and Konstantin Baierer (EL).

| Project co-funded by the European Commission within the ICT Policy Support Programme | | |
|---|---|---|
| Dissemination Level | | |
| P | Public | |

## Revision History

| Revision | Date | Author | Organisation | Description |
|---|---|---|---|---|
| Version 0.1 | 22.10.12 | Julia Iwanowa Evelyn Dröge Steffen Hennicke | UBER | First EDM+ v0.1 |
| Version 0.2 | 04.12.12 | Evelyn Dröge | UBER | Added additional provider requirements from the Vienna workshops and feedback from Antoine Isaac. |
| Version 0.3 | 26.02.13 | Kai Eckert | UMA | Overview section, explanation of the overall architecture of the model, connection of ORE and VoID. |
| Version 1.0 | 15.04.13 | Julia Iwanowa Evelyn Dröge Steffen Hennicke Kai Eckert | UBER UMA | Consolidation of the first operational version v1.0<br><br>Replaced `dm2e: <http://onto.dm2e.eu/schemas/dm2e/0.3/>` with `dm2e: <http://onto.dm2e.eu/schemas/dm2e/>` |
| Version 1.1 Rev 0.1 | 02.05.13 | Julia Iwanowa | UBER | Incorporated Feedback from Kilian Schmidtner (SBB). |
| Version 1.1 Rev 0.2 | 24.05.13 | Julia Iwanowa | UBER | Input from Doron Goldfarb (ONB): Corrections to the URI schema at Place and Event and Timespan. |
| Version 1.1 Rev 0.3 | 17.06.13 | Evelyn Dröge | UBER | - Deleted dm2e:titleTransliteration and dm2e:subtitleTransliteration. Please use dcterms:alternative instead (as well as for transcriptions).<br>- Reintegrated dcterms:provenance. This is needed for mixed provenance data.<br>- Added range edm:TimeSpan for dcterms:issued.<br>- Replaced fabio:Page with dm2e:Page. |
| Version 1.1 Rev 0.4 | 05.07.13 | Evelyn Dröge | UBER | - Replaced korbo:hasAnnotableVersionAt with dm2e:hasAnnotatableVersionAt; changed its superproperty from edm:isShownAt to edm:hasView.<br>- Changed scope note of dm2e:hasAnnotatableVersion.<br>- Corrected URL schemes of contextual classes.<br>- Changed scope note and constraints of dc:format.<br>- Changed version number in the DM2E schema namespace.<br>- Added explanation on namespace |

| | | | | versioning.<br>- Updated document description.<br>- Added properties dm2e:support and dm2e:cover. |
|---|---|---|---|---|
| Version 1.1 Rev 0.5 | 22.07.13 | Evelyn Dröge | UBER | - Corrected edm:ProvidedCHO, ore:Aggregation and skos:Concept examples.<br>- Added table information at the right sight. |
| Version 1.1 Rev 0.6 | 09.09.13 | Evelyn Dröge | UBER | - Deleted the dm2e specialisations of dcterms:hasPart and dcterms:isPartOf (dm2e:hasPartCHO, dm2e:hasPartTimeSpan, dm2e:hasPartWebResource, dm2e:hasPartPlace, dm2e:isPartOfCHO, dm2e:isPartOfTimeSpan, dm2e:isPartOfWebResource, dm2e:isPartOfPlace).<br>- Added dm2e:scopeNote to dcterms:hasPart and dcterms:isPartOf.<br>- Deleted the dm2e specialisations of edm:isDerivativeOf (dm2e:isDerivativeOfCHO and dm2e:isDerivativeOfWebResource)<br>- Added dm2e:scopeNote to edm:isDerivativeOf.<br>- Added conditions to edm:Place, edm:ProvidedCHO, edm:WebResource and edm:TimeSpan. |
| Version 1.1 Rev 0.7 | 17.10.13 | Evelyn Dröge | UBER | - Changed range and constraints of dc:subject. |
| Version 1.1 Rev 0.8 | 21.10.13 22.10.13 | Julia Iwanowa | UBER | - Updated references and EDM definitions: Added class and properties equivalences that are mentioned in the Definition of the Europeana Data Model elements, Version 5.2.4, renamed "Definition Note" into "Comment" and updated the section according to the Definition of the Europeana Data Model elements, Version 5.2.4 |
| Version 1.1 Rev 0.9 | 19.11.13 | Evelyn Dröge | UBER | - Added dcterms:medium (domain edm:ProvidedCHO)<br>- Added ranges edm:TimeSpan and rdf:Literal to dcterms:created (domain edm:WebResource); edm:TimeSpan to dcterms:modified and dcterms:created (domain ore:Aggregation); edm:TimeSpan to dc:date (domain edm:Agent), edm:TimeSpan to rdaGr2:dateOfBirth and rdaGr2:dateOfDeath (domain foaf:Person), edm:TimeSpan to rdaGr2:dateOfEstablishment and rdaGr2:dataOfTermination (domain foaf:Organization)<br>- Changed dm2e:scopeNote of edm:happenedAt (domain edm:Event) - |

| | | | | Renamed property dm2e: writtenAreaDimensions into dm2e: writtenAreaDimension<br>- Changed constraint of dcterms:issued, dcterms:extent, dm2e:pageDimensions , dm2e:writtenAreaDimension (domain edm:ProvidedCHO) to repeatable<br>- Added range rdf:Literal to edm:currentLocation (domain edm:ProvidedCHO) - Replaced dcterms:rightsHolder with the EDM property dc:rights (domain edm:WebResource)<br>- Updated dm2e:scopeNote for edm:rights |
|---|---|---|---|---|
| Version 1.1 Rev 1.0 | 4.12.13 | Julia Iwanowa | UBER | - Incorporated Feedback from Antoine Isaac<br>- Changed the namespace *dcterms* into *dc* in following cases: title, description, creator, contributor<br>- Changed the definition of the dc:language regarding RFC 3306<br>- Changed the standard for language tags regarding the RFC 3306<br>- Changed all xsd:dateTime to xsd:date<br>- Added dm2e:origin and dm2e:modeOfAcquisition as subproperties of dcterms:provenance<br>- Added crm:P79F.beginning_is_qu alified_by and crm:P80F.end_is_qualified _byproperties to edm:TimeSpan<br>- Changed the superproperty of painter, patron and translator from dcterms:creator into dc:contributor<br>- Added dcterms:temporal as subproperty of dc/dcterms:coverage<br>- Added a short definition on how to use language tags<br>- Changed all ISO 639-2 3-character codes from the examples into ISO 639-1 2-character codes |
| Version 1.1 Rev 1.0 | 16.12.13 | Julia Iwanowa | UBER | - Incorporated Feedback from Doron Goldfarb<br>- Incorporated Feedback from Antoine Isaac<br>- Added new properties to foaf:Person and to foaf:Organization -<br>rdaGr2:otherDesignationAssociatedWithThe Person, bibo:suffixName<br>- Added three new properties to dm2e:Work (fabio:hasSubtitle, fabio:hasSequenceIdentifier, fabio:hasCreator)<br>- Reversed the definition of the range for dc:subject to rdf:Resource (with rdf:type skos:Concept, edm:Agent, edm:TimeSpan ect. ) and changed to mandatory<br>- Reversed xsd:dateTime (SPARQL dosn't support xsd:date)<br>- Added dm2e:levelOfHierarchy property to edm:ProvidedCHO<br>- Added owl:sameAs to edm:ProvidedCHO, edm:Agent, foaf:Person, foaf:Organization, |

| | | | | - Added additional range to dcterms:references – dm2e:Work |
|---|---|---|---|---|
| Version 1.1 Rev 1.1 | 7. – 20. 01.14 | Evelyn Dröge Julia Iwanowa | UBER | - Added edm:Place, edm:Timespan and skos:Concept as ranges to edm:hasMet<br>- Removed rdf:Literal and xsd:dateTime from the range restriction on dc:date with the domain edm:Agent<br>- Removed owl:sameAs and bibo:suffixName from foaf:Person and foaf:Organization and added them as generic properties to edm:Agent<br>- Removed properties from dm2e:Work<br>- Added property dm2e:genre (domain edm:ProvidedCHO)<br>- Added property bibo:number (domain edm:ProvidedCHO)<br>- Added dm2e:displayLevel to edm:ProvidedCHO<br>- Added dc:creator to skos:Concept (temporary solution)<br>- Added skos:label, skos:prefLabel and skos:note to edm:Event |
| Version 1.1 Rev 1.2 | 21.01.14 | Julia Iwanowa | UBER | - Changed range to dm2e:genre into skos:Concept<br>- Added dc:type as super property to dm2e:genre |
| Version 1.1 Rev 1.3 | 11.02.14 | Evelyn Dröge | UBER | - Added range edm:Place to dc:subject<br>- Added property prism:startingPage to edm:ProvidedCHO<br>- Moved dm2e:displayLevel from edm:ProvidedCHO to ore:Aggregation<br>- Made skos:prefLabel mandatory in all contextual classes<br>- Added a sentence to the edm:isShownBy scope note<br>- Added constraint to edm:isShownBy<br>- Changed model namespaces<br>- Added text to the introduction of section 3 |
| Version 1.1 Rev 1.3 | 13.02.14 | Julia Iwanowa | UBER | - Changed the range of bibo:number from xsd:integer into xsd:int<br>- Changed the range of dm2e:displyLevel from rdfs:Literal into xsd:boolean with only small written letters for "true" and "false"<br>- Extended the definition of dm2e:displayLevel for the value "true"<br>- Added constraint to *edm:object* |
| Version 1.1 Rev 1.4 | 24.02.14 | Evelyn Dröge | UBER | Incorporated Feedback from DG<br>- dc:subject repeatable<br>- Deleted additional constraints for edm:isShownBy and edm:object ("mandatory if dm2e:displayLevel is true edm:isShownBy and/or edm:object must be provided")<br>- Deleted prism:startingPage |

| Version 1.1 Rev 1.5 | 25.02.14 26.02.14 03.03.14 | Evelyn Dröge | UBER | - Changed dm2e:scopeNote of dm2e:displayLevel<br>- Removed equivalent property from bibo:numPages (DG)<br>- Changed range of bibo:number, bibo:numPages and dm2e:levelOfHierarchy to xsd: unsignedInt (KB, DG)<br>- Changed range and dm2e:scopeNote of crm:P79F.beginning_is_qualified_by and crm:P80F.end_is_qualified_by (DG).<br>- Linked"Recommendations for the RDF representation of DM2E metadata"<br>- Removed dc:description as superproperty of dm2e:genre<br>- added superproperty edm:hasMet to dcterms:rightsHolder<br>- added superproperty edm:hasMet to dc:creator (analogue to EDM)<br>- added superproperty dc:description to dm2e:incipit and dm2e:explicit<br>- removed superproperty dcterms:coverage from dcterms:spatial, dm2e:publishedAt and dcterms:temporal<br>- removed superproperty bibo:identifier from bibo:isbn and bibo:issn<br>- removed range rdf:Literal from edm:currentLocation<br>- changed range of dm2e:shelfmarkLocation from rdf:Literal to edm:Place<br>- removed superproperty edm:hasView from dcterms:tableOfContents<br>- changed superproperty of dm2e:honoree, dm2e:mentioned, dm2e:misattributed, dm2e:patron from edm:isRelatedTo to edm:hasMet<br>- removed superclass fabio:Book from bibo:Book<br>- removed superclasses foaf:document and bibo:document from dm2e:document<br>- removed superclass bibo:Periodical from bibo:Journal and its equivalent class fabio:Journal<br>- removed superclass bibo:PersonalCommunicationDocument from bibo:Letter<br>- removed superclass fabio:Expression from dm2e:Page<br>- moved dm2e:Photo from edm:PhysicalThing to foaf:Image (subclass of edm:NonInformationResource)<br>- added superproperty skos:note to bibo:suffixName<br>- changed superproperty of dm2e:influencedBy from dc:relation to edm:hasMet<br>- corrected typo in edm:NonInformationResource<br>- added superclass edm:PhysicalThing in edm:PhysicalThing subclasses table<br>- removed superclass fabio:Expression from fabio:Article and fabio:chapter |

| | | | | |
|---|---|---|---|---|
| | | | | - removed superclass bibo:Collection from bibo:Series<br>- added mime-types to edm:object (KB)<br>- added mime-types for edm:object to dc:format (KB)<br>- changed range of bibo:numVolumes and bibo:volume to xsd:unsignedInt (recommended) (DG)<br>- added bibo:Issue (subclass of dm2e:Document) (KB)<br>- changed restriction of dm2e:incipit and dm2e:explicit to repeatable (DG)<br>- changed restriction of bibo:number<br>- added superproperty dc:description to bibo:number<br>- changed scopeNote of dc:creator<br>- changed scopeNote of dc:date<br>- dm2e:hasAnnotatableVersionAt is now repeatable |
| Version 1.1 Rev 1.6 | 05.03.14 | Evelyn Dröge | UBER | - new property dm2e:holdingInstitution (domain CHO) (KS)<br>- changed scopeNote of edm:currentLocation (KS)<br>- changed range from dm2e:shelfmarkLocation to literal (KS)<br>- changed superproperty of dm2e:shelfmarkLocation (ED)<br>- new property dm2e:writtenAt (domain CHO) (KS)<br>- made dm2e:publishedAt and dm2e:printedAt repeatable (DG)<br>- changed scopeNote of dcterms:spatial (ED)<br>- changed URI description (collection into dataset) |
| Version 1.1 | 11.03.14 | Evelyn Dröge Julia Iwanowa | UBER | Consolidation of Version 1.1 |

# Contents

## List of Tables

## List of Abbreviations

| | |
|---|---|
| CHO | Cultural Heritage Object |
| DM2E | Digitised Manuscripts to Europeana |
| DM2E v1.0 | First operational version of the Data Model of the Digitised Manuscripts to Europeana project |
| EDM | Europeana Data Model |
| GLAM | Galleries, Libraries, Archives and Museums |
| SBB | Staatsbibliothek zu Berlin *(Berlin State Library)* |
| UBER | Humboldt-Universität zu Berlin *(Humboldt University Berlin)* |
| UIB | Universitetet i Bergen *(University of Bergen)* |
| UMA | Universität Mannheim *(University of Mannheim)* |

Please note that some translations of institution names are unofficial and do only serve a better understanding of the corresponding abbreviation.

# 1 Document Description

The following specification document describes the DM2E model v1.1 in its final revision. It is built on the first operational version of the model (DM2E v1.0) and is the current specialisation of the *Europeana Data Model* (EDM) made by the *Digitised Manuscripts to Europeana* project (DM2E)[1].

The first part of the document describes the overall architecture of the model. The DM2E model makes use of so-called *Named Graphs* (Carroll et al., 2005) which extend an RDF triple with a fourth element. OAI-ORE[2] as basis of EDM is preserved but the proxies are removed. For provenance tracking, the relation of published documents and underlying datasets is made explicit by using the VoID vocabulary[3] instead.

In the second part of the document, classes and properties of the model are described. Tables with properties were created for all important classes in the DM2E model. The sections 3.1 and 3.2 describe the recommendations about using of dc, dcterms and language tags. The sections 3.3 to 3.5 include elements of the upper part of the model which will not be part of the individual mapping process of the provider. Sections 3.6 to 3.19 deal with classes and properties that are used to describe Cultural Heritage Objects and surrounding resources.

The DM2E ontology schema namespace, which is used for referencing classes and properties, has the following format:

```
http://onto.dm2e.eu/schemas/dm2e/
```

The namespace for the individuals described by the ontology (i.e., its actual content) is:

```
http://data.dm2e.eu/data/
```

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[1] DM2E project website: http://www.dm2e.eu/ [23.04.2013].
[2] OAI-ORE: http://www.openarchives.org/ore/ [23.04.2013].
[3] Vocabulary of Interlinked Datasets (VoID): http://vocab.deri.ie/void [23.04.2013].

## 2 Overview

The DM2E model is a specialisation of the *Europeana Data Model* (EDM)[4] for the domain of handwritten manuscripts. The EDM has been developed within the Europeana v1.0 project as an RDF-based data model for describing rich metadata records for Europeana, the European digital library[5]. It can handle huge metadata record collections represented by heterogeneous metadata standards that have to be accessible via the same platform. The EDM covers *Cultural Heritage Objects* (CHOs) that are collected and delivered to Europeana by diverse cultural heritage institutions. The model is as generic as possible and can be specialised for domain-specific descriptions like it is the case in DM2E. The DM2E model has been developed regarding the requirements of the projects' data providers. These requirements have been collected and analysed during the first year of the project.

Linked Data is the paradigm that drives the whole DM2E infrastructure. The DM2E model reflects this by explicitly defining classes for datasets and published data resources. This way, the meta-level of resource descriptions becomes a first-class member of the data model and can be used for annotations and provenance tracking.

Handling resource descriptions from different providers is a key issue for cultural heritage or memory institutions like galleries, libraries, archives and museums (GLAM). Descriptions need an own identity, for instance to provide provenance information. The EDM uses OAI-ORE as underlying framework to address this issue, i.e., proxy resources are created for each provided Cultural Heritage Object (*edm:ProvidedCHO*) and descriptive statements are assigned to these proxy resources. Aggregations (*ore:Aggregation*) are used to link the proxies to the provided CHOs and as subject of additional statements, like license information. Web resources, as digitisations of the resources, are also linked to the aggregation. For Linked Data, different mechanisms, principles and best-practices exist to provide information about descriptions (Eckert, 2012). The DM2E model uses the EDM as basis, but aims for a better integration with common Linked Data principles. DM2E translates the Linked Data principles to well-defined concepts that can be used for data modelling.

The DM2E model follows two motivations:

1. A statement within DM2E is identified consistently, i.e., it is possible to make statements about statements that have been delivered on the Web. Additionally, the said statement can be identified in other Web documents that are representations of the same data, i.e., contain the identical statement, but it is not confused with the same (but not identical) statement found in a different context.

2. In metadata practice, we often have meta-information that does not refer to a single statement and cannot be easily mapped to a strict set of RDF statements, as contained in a *Named Graph* (Carroll et al., 2005). They can be put as "statements about a description". In EDM, such a description is captured by using *ore:Aggregation*, an abstract concept. In RDF, the description of a resource is not abstract; it is a graph of RDF statements about the resource. We want to meet the requirements of the metadata practitioners without violating the Linked Data and RDF principles. At the same time, we want to be as close to these principles as possible, without missing a requirement that exists in particular in DM2E.

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[4] EDM documentation: http://pro.europeana.eu/edm-documentation [02.05.2013].
[5] Europeana website: http://www.europeana.eu/ [02.05.2013].

In DM2E, descriptions of resources can be found on three different levels:

1. **Cultural Heritage Objects:** The actual objects that are described primarily by data providers.

2. **Aggregations:** An abstract resource representing a single resource description by one provider.

3. **Datasets/Data Resources:** The representation of RDF graphs that are created from the input data delivered by the data providers. A data resource is an RDF graph that is provided on the Web. Typically, it represents a subgraph of a dataset.

Each level is a meta-level of the former level. CHOs are the real world objects, aggregations represent the metadata of CHOs from the providers' perspective, the datasets and data resources represent actual RDF representations from DM2E's perspective. CHOs and Aggregations are taken from EDM and partly specialised in section 3. The datasets are described using the VoID vocabulary, the data resources are used to connect VoID and OAI-ORE, based on Linked Data principles.

## 2.1 Datasets

Datasets are identified by an URI and belong to the class *void:DataSet*. A *void:Dataset* is a set of RDF triples that are created from the data of a single data provider. The content of a dataset in DM2E is stable. Typically, a dataset is created from the transformation of one or more files of the data provider. A new transformation of the same files results in a new dataset. When dereferenced, a description of the dataset is provided, including provenance information and links to different versions.

## 2.2 Data Resources

Data resources belong to the class *dm2e:DataResource* and contain an RDF graph in an arbitrary serialisation. When dereferenced, the RDF data is directly delivered. The URI MUST NOT be changed. A *dm2e:DataResource* is a subclass of *foaf:Document* and is linked to a dataset by *void:inDataset*. A special data resource is the *ore:ResourceMap* that provides a description of an *ore:Aggregation* according to the OAI-ORE data model. A *ore:ResourceMap* is linked to an aggregation by *ore:describes*.

The classes *void:Dataset* and *dm2e:DataResource* are automatically generated by the DM2E ingestion platform. Thus, they do not have to be considered during the mappings of the delivered metadata records. The intermediate version of the ingestion platform is finished and currently tested.

## 2.3 Data Consumption and Provenance

Any DM2E data that is accessible on the Web is provided as a *dm2e:DataResource* that is associated with a *void:DataSet*. Provenance is tracked on dataset level. Therefore, a client that consumes DM2E data MUST ensure that the connection of RDF statements to datasets remains intact. A simple implementation will store the statements in a Named Graph using the dataset URI and discard the information of the URI where the data was actually fetched from. This is especially important for the annotation of RDF statements. They are always identified via the URIs of the subject, the predicate, the object and the

dataset. This way, it is ensured that annotations on different data resources can be combined.

# 3  Definitions of Classes and Properties

The following section provides detailed information on classes and properties that are reused or created by DM2E. Tables with properties were created for all important classes in the DM2E model.

The tables have the following columns: "Property" or "Class", "Range", "Subproperty of" or "Subclass of", "DM2E scope note", "Original scope note" and "Constraints". The column "Range" is only used when properties are described and indicates which ranges can be used for it. If more than one range is shown, the range on top is the recommended one. If the range is a class which is a superclass of more specific subclasses, the subclasses can be used as well. Please do always use the most specific class for your mappings.

Properties in red have been created by DM2E (indicated by the namespace prefix "dm2e") whereas properties in blue are taken from an existing ontology. Properties and classes that are not in a special colour are part of the EDM but can have a special DM2E description which may differ from the original one. In order to provide a better readability and clarity, the turtle syntax[6] was used for all included examples. The mapping examples are based on the TEI file *Ms-114_OA.xml*[7] from the Wittgenstein Archive of the University of Bergen which was extended by some additionally invented properties in order to provide rich mapping examples.

The column "DM2E Scope Note" holds a description for the use of the property or class in the context of DM2E. These descriptions are kept as informal as possible. This property is named *dm2e:scopeNote* in the RDF representation of the model. The column "Original Scope Note" holds the original definitions and scope notes of properties reused from existing ontologies. These descriptions support the explanations in the "DM2E Scope Note" column in a more formal way. For EDM properties, the definitions have been derived from the Definition of the Europeana Data Model elements, Version 5.2.4 (2013).

The DM2E ontology schema namespace, which is used for referencing classes and properties, has the following format:

```
http://onto.dm2e.eu/schemas/dm2e/
```

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[6] For detailed information, please visit the Turtle W3C recommendation document: http://www.w3.org/TR/turtle/ [23.04.2013].
[7] TEI-XML file provided by the Wittgenstein Archive of the University of Bergen: http://wab.uib.no/cost-a32_xml/Ms-114_OA.xml [23.04.2013].

The namespace for the individuals described by the ontology (i.e., its actual content) is:

```
http://data.dm2e.eu/data/
```

## 3.1 Use of *dc* or *dcterms* namespace

The use of properties from the *dc*[8] or the *dcterms*[9] namespaces within the DM2E Model is based on the recommendations provided by Europeana and defined in the Europeana Data Model (Definition of the Europeana Data Model v5.2.4, 2013:38). If there are two possible *dc* or *dcterms* properties that can be used, always take the one which is defined in the *dc* namespace. In all other cases the *dcterms* property should be taken into account.

## 3.2 Definition and use of language tags

The current version of the DM2E model has changed the recommendation how to use language tags and follows now the language representation standards RFC3066[10] and RFC5646[11] which strongly suggest using an ISO-639-1 2-charcater code and only if it not exist to switch to a ISO-639-2 3-character code[12]. Furthermore, language tags should be used whenever language information is available, but they are **not mandatory** anymore. This would avoid an overflow of undetermined language tags. For more information see the excerpt from http://tools.ietf.org/html/bcp47. A list of two- and three-character language codes for the representation of names of languages is published by the Library of Congress[13] and can be found at: http://www.loc.gov/standards/iso639-2/php/code_list.php.void:Dataset

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[8] Definition of the Dublin Core Element Set: http://dublincore.org/documents/dces/ [04.12.2013].
[9] Definition of the DCMI Metadata Terms: http://dublincore.org/documents/dcmi-terms/ [04.12.2013].
[10] Technical documentation on representing language tags: http://www.rfc-editor.org/rfc/rfc3066.txt [09.12.2013].
[11] Technical documentation on representing language tags: http://tools.ietf.org/html/bcp47 [09.12.2013].
[12] "When a language has both an ISO 639-1 2-character code and an ISO 639-2 3-character code, you MUST use the tag derived from the ISO 639-1 2-character code. When a language has no ISO 639-1 2-character code, and the ISO 639-2/T (Terminology) code and the ISO 639-2/B (Bibliographic) code differ, you MUST use the Terminology code. NOTE: At present, all languages for which there is a difference have 2-character codes, and the displeasure of developers about the existence of 2 code sets has been adequately communicated to ISO. So this situation will hopefully not arise."
[13] Library of Congress: http://www.loc.gov/index.html [09.12.2013].

A *void:Dataset* represents a stable version of an RDF graph that contains descriptions of *ore:Aggregations* and *edm:providedCHO*s of one data provider. A dataset is typically not directly accessed. If dereferenced, a 303 redirect to an RDF description of the dataset is performed (NOT to the content of the dataset).

**Namespaces**
```
void:       <http://rdfs.org/ns/void#> .
```

## 3.3 dm2e:DataResource

Subclass of:          *foaf:Document*[14]
Known subclass:       *ore:ResourceMap*[15]

A data resource is a non-abstract information resource that provides RDF data. Therefore, it is a specialisation of a *foaf:Document*. In DM2E, every *dm2e:DataResource* is connected to a *void:Dataset* by means of *void:inDataset*.

**Namespaces**
```
void:       <http://rdfs.org/ns/void#> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
```

| Property | Range | DM2E Scope Note | Original Scope Note | Constraints |
|---|---|---|---|---|
| void:inDataset | void:Dataset | The dataset that contains the RDF statements provided via this data resource. | *"in dataset* – Points to the *void:Dataset* that a document is a part of." | **mandatory** **not** repeatable |

Table 1: dm2e:DataResource.

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[14] Definition of the FOAF vocabulary: http://xmlns.com/foaf/spec/ [21.10.2013].
[15] Definition of the OAI-ORE vocabulary: http://www.openarchives.org/ore/1.0/vocabulary.html [21.10.2013].

## 3.4  ore:ResourceMap

Subclass of:          *dm2e:DataResource*

An *ore:ResourceMap* is a special *dm2e:DataResource* that contains statements about a single *ore:Aggregation* and the aggregated resources (which are of the class *edm:WebResource* or and *edm:ProvidedCHO*, or their respective subclasses).

**Namespaces**
```
ore:        <http://www.openarchives.org/ore/terms/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraints |
|---|---|---|---|---|---|
| ore:describes | ore:Aggregation | - | - | Definition: "This relationship asserts that the subject (a Resource Map) describes the object (an Aggregation)." | **mandatory not** repeatable |

Table 2: ore:ResourceMap.

## 3.5  ore:Aggregation

Subclass of:          *dcmitype:Collection*[16]

The class *ore:Aggregation* aggregates Web resources (*edm:WebResource*) as well as CHOs (*edm:ProvidedCHO*). Additionally, it can provide information about the data provider, metadata rights etc. As *ore:Aggregation* is an abstract resource, there will be a 303 redirect to an *ore:ResourceMap* that contains the RDF description of the aggregation and the CHO. The definition of *ore:Aggregation* within the EDM specification (Version 5.2.4) includes the following description: "A set of related resources (Aggregated Resources), grouped together such that the set can be treated as a single resource. This is the entity described within the ORE interoperability framework by a Resource Map." and "This class plays a central role in EDM, as it serves to group together all important elements of cultural heritage objects contributed by the content providers. Aggregations are used in Europeana to represent the complex constructs that are provided

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[16] Definition of the DCMI Type vocabulary: http://purl.org/dc/dcmitype/ [21.10.2013].

by contributors. An aggregation is associated to the object that it is about, by the property edm:aggregatedCHO ″ (Definition of the Europeana Data Model 2013:7-8).

**Namespaces**

```
edm:        <http://www.europeana.eu/schemas/edm/> .
dc:         <http://purl.org/dc/elements/1.1/> .
dcterms:    <http://purl.org/dc/terms/> .
pundit:     <http://purl.org/pundit/ont/ao#> .
ore:        <http://www.openarchives.org/ore/terms/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraints |
|---|---|---|---|---|---|
| edm: aggregatedCHO | edm:ProvidedCHO | ore:aggregates dc:subject P129_is_about (CIDOC CRM)[17] | The property *edm:aggregatedCHO* connects the *ore:Aggregation* with exactly one *edm:ProvidedCHO*. The property expresses what the Aggregation is about. | Definition: "This property associates an ORE aggregation with the cultural heritage object(s) (CHO for short) it is about." <br><br> Comment: "This property indicates the CHO(s) an aggregation is about. It supports several operations regarding the discovery and management of CHOs." | **mandatory** **not** repeatable |
| edm:provider | foaf:Organization | edm:hasMet | The property *edm:provider* holds the name or identifier of the organisation (*foaf:Organization*, see below) that provided the data, i.e. the aggregation, to Europeana. Note that this organisation does not necessarily own the original or digitised object. Typically, *edm:provider* is an aggregator. The owner of the metadata record | Definition: "The name or identifier of the organisation who delivers data directly to an aggregation service (e.g. Europeana)." <br><br> Comment: "Together with *edm:dataProvider* this property allows the names of organisations at different points in a data supply chain to be differentiated and | **mandatory** **not** repeatable |

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[17] Definition of the CIDOC CRM vocabulary: http://www.cidoc-crm.org/rdfs/cidoc_crm_v5.1-draft-2013May.rdfs [21.10.2013].

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| | | | is recorded in *edm:dataProvider*. The values in *edm:provider* and *edm:dataProvider* can be the same.<br><br>In the context of DM2E the value for *edm:provider* is always `dm2edata:agent/`*dm2e/*`DM2E`. | recorded for search and display purposes. In the Europeana context this will be the name of the organisation that sends the data to Europeana, and this is not necessarily the institution that holds or owns the original or digitised object. Where data is being supplied by an aggregator or project *edm:provider* is the name of aggregator or project. The name of the content holder can be recorded in *edm:dataProvider*. If the content holder supplies data directly to Europeana then the name should also appear in this Property. Although the range of this property is given as *edm:Agent*, organization names should be provided as an ordinary text string until a Europeana authority file for organisations has been established. At that point providers will be able to send an identifier from the file instead of a text string. The name should be in the original language(s)." | |
| edm:dataProvider | foaf:Organization | dcterms: provenance | The property *edm:dataProvider* holds the name or identifier of the organisation (*foaf:Organization*, see below) that provided and owns the source metadata record for this aggregation. Note that this organisation does not necessarily own the physical object which is described in the metadata record. | Definition: "The name or identifier of the organisation who contributes data indirectly to an aggregation service (e.g. Europeana)."<br><br>Comment: "Together with *edm:provider* this property allows the names of organisations at different points in a data supply | **mandatory**<br>**not** repeatable |

| | | | | chain to be differentiated and recorded for search and display purposes. In the Europeana context this will be the name of the organisation that sends the data to Europeana, and this is not necessarily the institution that holds or owns the original or digitised object. Where data is being supplied by an aggregator or project *edm:provider* is the name of aggregator or project. The name of the content holder can be recorded in *edm:dataProvider*. If the content holder supplies data directly to Europeana then the name should also appear in this Property. Although the range of this property is given as *edm:Agent*, organization names should be provided as an ordinary text string until a Europeana authority file for organisations has been established. At that point providers will be able to send an identifier from the file instead of a text string. The name should be in the original language(s)." | |
|---|---|---|---|---|---|
| dcterms:rightsHolder | edm:Agent | dcterms: provenance | The property *dcterms:rightsHolder* holds the name or identifier of the agent (a person or organisation) who owns or manages the rights of the physical object (the CHO) which is described in the source metadata record. | Definition: "A person or organization owning or managing rights over the resource." | optional repeatable |
| edm:rights | edm:WebResource | dc:rights | The property *edm:rights* holds | Definition: "Information about | **mandatory** |

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| | | | copyright information pertaining to all digital objects (*edm:WebResource*) given by *edm:hasView* or one of its subproperties. If a digital object (*edm:WebResource*) holds an additional copyright information given by *dc:rights* then this more specific copyright information has priority. Otherwise the value given in *edm:rights* at the Aggregation is the default value for digital object attached to this Aggregation. The four main types of rights statements in Europeana are: Public Domain Mark, CCO 1.0, Rights Reserved Statements and Unknown. The list of the all available licensing rights supported by Europeana can be found here: http://pro.europeana.eu/available-rights-statements. | usage and access rights of the digital objects indicated in *isShownBy* and *isShownAt.*"<br><br>Comment: "To support discovery by associated rights and access permissions this property will hold the URI of a rights statement. In the context of Europeana the value must come from the set defined at http://pro.europeana.eu/availablerights-statements. The URIs consist of a code indicating the legal status of an object (e.g. "publicdomain") attached to the domain name where that status is defined (e.g. creativecommons.org or europeana.eu). For users of Europeana.eu this information on rights may apply to several digital objects, e.g. the preview specified in *edm:object* and the small previews (thumbnails)on the portal." | **not** repeatable |
| edm:hasView | edm:WebResource | ore:aggregates | The property *edm:hasView* holds the URL of an *edm:WebResource* which shows, depicts or otherwise contains any kind of view of the *edm:ProvidedCHO*. | Definition: "This property relates a ORE aggregation about a CHO with a web resource providing a view of that CHO. Examples of view are: a thumbnail, a textual abstract and a table of contents. The ORE aggregation may be a Europeana aggregation, in which case the view is an object owned by Europeana (i.e., an instance of *edm:EuropeanaObject*) or an aggregation contributed by a content provider. In order to | optional repeatable |

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| | | | | capture both these cases, the domain of *edm:hasView* is *ore:Aggregation* and its range is *edm:WebResource*."<br><br>Comment: "This property enables associating an aggregation about a CHO with the possibly many and heterogeneous views of that CHO. This is required since Europeana may collect several such views in order to support browsing of its resources. In addition, it allows the integration of all properties used in content providers' descriptions that capture the notion of view in the sense outlined above. To this end, any such properties should be declared to be a (direct or indirect) subproperty of *edm:hasView*." | |
| edm:isShownBy | edm:WebResource | edm:hasView | The property *edm:isShownBy* holds the URL of an *edm:WebResource* which leads to a "plain" image with any kind of view of the *edm:ProvidedCHO*. "Plain" image means that the image must be without any information context, for example, the URL points to a plain JPG-image. The image should not be embedded in a viewer.<br><br>Either *edm:isShownBy* or *edm:isShownAt* must be provided. | Definition: "An unambiguous URL reference to the digital object on the provider's web site in the best available resolution/quality. See also *edm:isShownAt*."<br><br>Comment: "This property will contain a URL that will be active in the Europeana interface. It will lead users to the digital object on the provider's website where they can view or play it. The digital object needs to be directly accessible by the URL and reasonably independent at that location. If the URL includes short copyright information or minimal | **mandatory** (either *edm:isShownBy* or *edm: isShownAt* ) **not** repeatable |

| | | | | | |
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| | | | | navigation tools it can be entered in *edm:isShownBy.*" | |
| edm:isShownAt | edm:WebResource | edm:hasView | The property *edm:isShownAt* holds the URL of an *edm:WebResource* which leads to a view of the digital object on the provider's website in its full information context (e.g. in a viewer application).<br><br>Either *edm:isShownBy* or *edm:isShownAt* must be provided. | Definition: "An unambiguous URL reference to the digital object on the provider's website in its full information context. See also *edm:isShownBy.*"<br><br>Comment: "This property will contain a URL that will be active in the Europeana interface. It will lead users to the digital object displayed on the provider's web site in its full information context. Use *edm:isShownAt* if you display the digital object with extra information (such as header, banner etc). Also use it for digital objects embedded in HTML pages (even where the page is extremely simple)." | **mandatory** (either *edm:isShownBy* or *edm: isShownAt*) **not** repeatable |
| edm:object | edm:WebResource | edm:hasView | The property *edm:object* holds the URL of an *edm:WebResource* which leads to a thumbnail representing the digital object or, if there is no such thumbnail, the URL of the digital object in the best resolution available on the website of the data provider from which a thumbnail could be generated. This will often be the same URL as given in *edm:isShownBy*.<br>If you provide an edm:object it is mandatory to add one of the following MIME types with | Definition: "The URL of a suitable source image in the best resolution available on the web site of the data provider from which small images could be generated for use in a portal. This will often be the same URL as given in *edm:isShownBy.*"<br><br>Comment: "The specifications for suitable source images and details of their use and processing in Europeana can be found in the Europeana Portal Image Policy. Please consult that document | not mandatory but **strongly recommended** **not** repeatable |

| | | | dc:format to the edm:WebResource: <br>• image/png <br>• image/jpeg <br>• image/gif <br>• image/tiff <br>• application/pdf | before entering a URL in this metadata element. Note that there is no requirement to provide an image in any other format than those readily available on the providers' website. A default icon corresponding to the Europeana type of object will be displayed if no other can be created." | |
|---|---|---|---|---|---|
| dm2e:hasAnnotatableVersionAt | edm:WebResource | edm:hasView | The property dm2e:*hasAnnotatableVersionAt* holds an URL which leads to an HTML representation or to an image of the content, i.e. of the CHO aggregated by the current Aggregation. The URL of the HTML content or image file must be stable. The type of the WebResource must be further specified as <br>• text/html-named-content <br>• text/plain <br>• text/html <br>• image/gif <br>• image/jpeg <br>• image/png | - | not mandatory but **strongly recommended** repeatable |
| dm2e:displayLevel | xsd:boolean "true" or "false" | - | The property with the value "true" should be added to the Level-CHO that should be displayed via the search engine. To all other Part-CHO the value is "false". | - | **mandatory not** repeatable |
| dcterms:created | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | The property *dcterms:created* holds the creation date and time of the aggregation, i.e. the original source metadata record. | Definition: "Date of creation of the resource." | optional repeatable |

| dcterms:modified | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | The property *dcterms:modified* holds the modification date and time of the aggregation, i.e. the original source metadata record. | Definition: "Date on which the resource was changed." | optional repeatable |
|---|---|---|---|---|---|
| dc:creator | edm:Agent | edm:hasMet | The property *dcterms:creator* holds the name or identifier of the agent (a person or organisation) who created the aggregation, i.e. the original metadata record, or CHO (possibly its author). | Definition: "An entity primarily responsible for making the resource." <br><br> Comment: "Examples of a Creator include a person, an organization, or a service." | optional repeatable |
| dc:contributor | edm:Agent | edm:hasMet | The property *dc:contributor* holds the name or identifier of the agent (a person or organisation) who contributed to the creation of the aggregation, i.e. the original source metadata record. | Definition: "An entity responsible for making contributions to the resource." <br><br> Comment: "Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity." | optional repeatable |

Table 3: ore:Aggregation.

## URI Scheme

All *ore:Aggregation* entities are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/aggregation/[provider]/[dataset]/[identifier]
```

## ore:Aggregation example

```
dm2edata:aggregation/uib/wittgenstein/Ms-114
        a ore:Aggregation ;
        edm:aggregatedCHO dm2edata:item/uib/wittgenstein/Ms-114 ;
        edm:dataProvider
```

```
               dm2edata:agent/uib/wittgenstein/Wittgenstein_Archives_at_the_University_of_Bergen_(WAB)_Ms-
            114 ;
         edm:provider dm2edata:agent/dm2e/DM2E ;
         edm:rights <http://creativecommons.org/publicdomain/mark/1.0/> ;
         edm:isShownAt <http://www.wittgensteinsource.org/texts/BTEn/Ms-114> ;
         edm:hasView <http://www.wittgensteinsource.org/texts/BTEn/Ms-114_d> ;
         edm:object <http://www.wittgensteinsource.org/uploads/flexip_scraps/Facsimile-331.jpg> ;
         dm2e:displayLevel "false"^^xsd:boolean ;
         dcterms:created "2002-10-10T00:01:01"^^xsd:dateTime ;
         dcterms:modified "2002-10-10T00:01:01"^^xsd:dateTime ;
         dm2e:hasAnnotatableVersionAt <http://www.wittgensteinsourcevps.org/Ms-114,iv%5B1%5D_n.html> ;
         dc:creator <http://data.dm2e.eu/data/agent/uib/wittgenstein/Alois_Pichler> ;
         dc:contributor <http://data.dm2e.eu/data/agent/uib/wittgenstein/Vemund_Olstad> .

dm2edata:item/uib/wittgenstein/Ms-114
     a dm2e:Manuscript .

dm2edata:agent/uib/wittgenstein/Wittgenstein_Archives_at_the_University_of_Bergen_(WAB)
     a dm2e:Archive ;
     skos:prefLabel "Wittgenstein Archives at the University of Bergen (WAB)" .

dm2edata:agent/uib/wittgenstein/Alois_Pichler
     a foaf:Person ;
     skos:prefLabel "Alois Pichler" .

dm2edata:agent/dm2e/DM2E
     a foaf:Organization ;
     skos:prefLabel "DM2E" .
```

## 3.6 edm:ProvidedCHO

Subclass of:          *rdfs:Resource*[18]

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[18] Definition of the RDFS vocabulary: http://www.w3.org/TR/rdf-schema/ [22.10.2013].

The EDM Definitions 5.2.4 describes the *edm:ProvidedCHO* as follows: "This class comprises the Cultural Heritage objects that Europeana collects descriptions about." (Definition of the Europeana Data Model elements, 2013:13).

The resource representing the described CHO must be an instance of *edm:ProvidedCHO*.

## Namespaces

```
edm:        <http://www.europeana.eu/schemas/edm/> .
dc:         <http://purl.org/dc/elements/1.1/> .
dcterms:    <http://purl.org/dc/terms/> .
bibo:       <http://purl.org/ontology/bibo/> .
pro:        <http://purl.org/spar/pro/> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| edm:type | rdf:Literal | dc:type | The Europeana material type of the resource. Must be one of the following Europeana types (in upper case): TEXT, VIDEO, SOUND, IMAGE, 3D. | Definition: "The Europeana material type of the resource." <br><br> Comment: "To support discovery based on the broad type of an object this property will hold a term from a controlled vocabulary. As well as recording the original type values in *dc:type*, providers are asked to map from the local type terminology to controlled vocabulary terms used in Europeana. Associated with the 3D value in this property, "3D-PDF" should be used as the value in *dc:format* if appropriate." | **mandatory** <br> **not** repeatable |
| dc:type | edm:PhysicalThing | edm:hasType | The property *dc:type* provides a | Definition: "The nature or genre of | **mandatory** |

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| | skos:Concept | | specific type that applies to the CHO. By type, we mean either a physical form (e.g. book) or logical form (e.g. paragraph) as they are specified as subclasses of *edm:PhysicalThing* and *skos:Concept* respectively. At least one *dc:type* must be provided. | the resource." Comment: "Recommended best practice is to use a controlled vocabulary such as the DCMI Type Vocabulary [DCMITYPE]. To describe the file format, physical medium, or dimensions of the resource, use the Format element." | repeatable |
| dc:title | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The property *dc:title* gives the main title of the CHO. It is mandatory to provide either a *dc:title* or a *dc:description* for the CHO. | "A name given to the resource." | **mandatory** (either *dc:title* or *dc:description*) repeatable |
| dm2e:subtitle | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:title | Any form of a subtitle. | - | optional repeatable |
| dcterms:alternative | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:title | An alternative name for the resource. Should not be used for subtitles in DM2E. Can be used if title and subtitle are in one field. | Definition: "An alternative name for the resource." Comment: "The distinction between titles and alternative titles is application-specific." | optional repeatable |
| dm2e:incipit | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | dc:description | Opening words of a manuscript. | - | optional repeatable |
| dm2e:explicit | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | dc:description | Final words of a manuscript. | - | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| dc:description | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | - | cf. original scope note | Definition: "An account of the resource." Comment: "Description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource." | **mandatory** (either *dc:title* or *dc:description*) repeatable |
| dcterms:provenance | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | - | Is used for mixed provenance data that cannot be mapped to the properties *dm2e:origin* or *dm2e:modeOfAcquisition*. | Definition: "A statement of any changes in ownership and custody of the resource since its creation that are significant for its authenticity, integrity, and interpretation." Comment: "The statement may include a description of any changes successive custodians made to the resource." | optional repeatable |
| dm2e:origin | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | dcterms:provenance | Provenance information about the origin of the physical CHO (analogue MAB field 664aa1). | | optional repeatable |
| dm2e:modeOf Acquisition | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | dcterms:provenance | The property *dm2e:modeOfAcquisition* holds meta data about the acquisition of the CHO (analogue to MAB field 664ba1). | | optional repeatable |
| dcterms:medium | rdf:Literal with optional language tag (in RFC 3066, see section 3.2 ) | dc:format | cf. original scope note | Definition: "The material or physical carrier of the CHO. *<dcterms:medium>metal</dcterms:medium>*" Comment: "This is the medium of | optional repeatable |

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| | | | | the original analog or born digital object." | |
| dc:language | rdf:Literal | edm:hasType | The property *dc:language* holds the most prominent language of the CHO. If an *edm:type* property with the value "TEXT" has been given, it is mandatory to provide at least one language of the CHO. If several languages are present in the CHO then repeat *dc:language* for each language. Regarding the RFC 3306 recommendations, the ISO 639-1 2-character code should be used for this property. When a language has no 2-character code, and there are two different ISO-2 3-character codes, the ISO 639-2/T (Terminology) code should be added. | Definition: "A language of the resource." Comment: "Recommended best practice is to use a controlled vocabulary such as RFC 4646 [RFC4646]." | **mandatory** (for CHOs of *edm:type* "TEXT") repeatable |
| dcterms:issued | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | Date of publication (of the described CHO, usually the original one). | Definition: "Date of formal issuance (e.g., publication) of the resource." | optional repeatable |
| dcterms:spatial | edm:Place | dc:coverage | This property can be used for not further specified places. If the place of publication, printing or writing should be indicated, use *dm2e:publishedAt*, *dme2e:printedAt* or *dm2e:writtenAt* instead. This property should be used for unspecified or not exactly defined spatial characteristics of the CHO itself. | Definition: "Spatial characteristics of the resource." | optional repeatable |
| dcterms:temporal | edm:TimeSpan | dc:coverage | Temporal characteristics of the | Definition: "Temporal | optional |

| | xsd:dateTime rdf:Literal | | CHO. This property should be used for unspecified or not exactly defined temporal characteristics of the CHO itself. | characteristics of the resource." | repeatable |
|---|---|---|---|---|---|
| dm2e:publishedAt | edm:Place edm:WebResource | dc:coverage | The place of a physical publication or the *edm:WebResource* of a Web publication. | - | optional repeatable |
| dm2e:printedAt | edm:Place | dcterms:spatial | Indicates the place where the CHO was printed. | - | optional repeatable |
| dm2e:writtenAt | edm:Place | dcterms:spatial | Indicates the place where the CHO was written. | - | optional repeatable |
| dc:identifier | rdf:Literal | - | Identifier of the resource. | Definition: "An unambiguous reference to the resource within a given context." Comment: "Recommended best practice is to identify the resource by means of a string conforming to a formal identification system." | optional repeatable |
| bibo:isbn | rdf:Literal | dc:identifier | The ISBN number for the CHO of type book. | - | optional **not** repeatable |
| bibo:issn | rdf:Literal | dc:identifier | The ISSN number for the CHO of type journal. | - | optional **not** repeatable |
| dm2e:callNumber | rdf:Literal | dc:identifier | The call number for some archival item. | - | optional **not** repeatable |
| edm: | edm:Place | dcterms:spatial | Current geographic location of the | Definition: "The geographic | optional |

| | | | | | |
|---|---|---|---|---|---|
| currentLocation | | Equivalent to: geo:location[19], P55_has_current_location (CIDOC CRM). | physical CHO. | location and/or name of the repository, building, site, or other entity whose boundaries presently include the resource." <br><br> Comment: "Current locations are used for the contextualization of resources and for answering "where" queries." | **not** repeatable |
| dm2e: holdingInstitution | foaf:Organization | edm:hasMet | The institution holding the physical CHO, e.g. a specific library. | - | optional **not** repeatable |
| dm2e: shelfmarkLocation | rdf:Literal | dc:description | Shelfmark location from the CHO. | - | optional **not** repeatable |
| dc:rights | edm:WebResource | - | URL of a resource describing licensing rights of the CHO. | Definition: "Information about rights held in and over the resource." <br><br> Comment: "Typically, rights information includes a statement about various property rights associated with the resource, including intellectual property rights." | optional repeatable |
| dcterms: rightsHolder | edm:Agent | edm:hasMet | The person or institution that holds the copyright. | Definition: "A person or organization owning or managing rights over the resource." | optional repeatable |
| dc:subject | skos:Concept edm:Agent edm:Place edm:TimeSpan | edm:isRelatedTo | Subject of the CHO. Can be taken from another vocabulary. May also relate to a person, concept, place or timespan that is the subject of a CHO. The mapped metadata | Definition: "The topic of the resource." <br><br> Comment: "Typically, the subject will be represented using | not mandatory but **strongly recommended** repeatable |

[19] Definition of the GEO vocabulary: http://www.w3.org/2003/01/geo/wgs84_pos# [21.10.2013].

| | | | describes content-based information. | keywords, key phrases, or classification codes. Recommended best practice is to use a controlled vocabulary." | |
|---|---|---|---|---|---|
| dm2e:genre | skos:Concept | dc:type | Genre of the CHO, in German "Formschlagworte". Examples: schoolbook, letter collection. | | optional repeatable |
| dcterms:extent | rdf:Literal | dc:format | cf. original scope note | Definition: "The size or duration of the resource." | optional repeatable |
| dm2e: levelOfGenesis | rdf:Literal | dc:description | The property holds additional information about the genesis of the CHO. Sometimes there are unfinished works or there are only drafts. This could be described more detailed here. | - | optional **not** repeatable |
| bibo:numPages | xsd:unsignedInt *(recommended, otherwise:)* rdf:Literal | dcterms:extent | cf. original scope note | Definition: "The number of pages contained in a document." | optional **not** repeatable |
| bibo:pages | rdf:Literal | dc:description | cf. original scope note | Definition: "A string of non-contiguous page spans that locate a Document within a Collection. Example: 23-25, 34, 54-56. [...]" | optional **not** repeatable |
| bibo:number | xsd:unsignedInt *(recommended, otherwise:)* rdf:Literal | dc:description | The property *bibo:number* is used to store the page number of each CHO from type *dm2e:Page.* On the higher Level-CHOs can be added the normalized form of the number. | Definition: "A generic item or document number. Not to be confused with issue number." | optional **not** repeatable |
| bibo:numVolumes | xsd:unsignedInt *(recommended,* | dcterms:extent | cf. original scope note | Definition: "The number of volumes contained in a collection | optional **not** repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | *otherwise:)* rdf:Literal | | | of documents (usually a series, periodical, etc.)." | |
| bibo:volume | xsd:unsignedInt *(recommended, otherwise:)* rdf:Literal | dc:identifier | cf. original scope note | Definition: "A volume number." | optional **not** repeatable |
| dcterms: tableOfContents | rdf:Literal | dc:description | Any kind of table of contents for the CHO. | Definition: "A list of subunits of the resource." | optional repeatable |
| dc:format | rdf:Literal | edm:hasType | cf. original scope note | Definition: "The file format, physical medium, or dimensions of the resource." Comment: "Examples of dimensions include size and duration. Recommended best practice is to use a controlled vocabulary such as the list of Internet Media Types [MIME]." | optional repeatable |
| edm:isDerivativeOf | edm:ProvidedCHO | edm:isSimilarTo | Original version (in case of CHOs) or a related resource (in case of WebResources) from which this object has been derived in whole or in part. | Definition: "This property captures a narrower notion of derivation than *edm:isSimilarTo*, in the sense that it relates a resource to another one, obtained by reworking, reducing, expanding, parts or the whole contents of the former, and possibly adding some minor parts. Versions have an even narrower meaning, in that it requires common identity between the related resources. Translations, summaries, abstractions etc. do not qualify as versions, but do qualify as derivatives." | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Comment: "This property enables associating resources that are one the derivation of the other. This is required since Europeana may collect descriptions about resources and their derivations. It also supports browsing of resources by derivation. Finally, it allows the integration of all properties used in content providers' descriptions that capture the notion of derivation in the sense outlined above, such as those capturing versioning, translations and abstractions. To this end, any such properties should be declared to be a (direct or indirect) sub-property of *edm:isDerivativeOf.*" | |
| dcterms: isVersionOf | edm:ProvidedCHO | edm:isDerivativeOf | cf. original scope note | Definition: "A related resource of which the described resource is a version, edition, or adaptation." Comment: "Changes in version imply substantive changes in content rather than differences in format." | optional repeatable |
| dcterms: hasVersion | edm:ProvidedCHO | - | cf. original scope note | Definition: "A related resource that is a version, edition, or adaptation of the described resource." | optional repeatable |
| dcterms:hasPart | edm:ProvidedCHO | dc:relation | *dcterms:hasPart* can be used to | "This term is intended to be used | optional |

| | | | | | |
|---|---|---|---|---|---|
| | | | indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm:ProvidedCHO dcterms: hasPart edm:ProvidedCHO*. | with non-literal values as defined in the DCMI Abstract Model[20]. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | repeatable |
| dcterms:isPartOf | edm:ProvidedCHO | dc:relation | *dcterms:isPartOf* can be used to indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm:ProvidedCHO dcterms: isPartOf edm:ProvidedCHO*. | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | optional repeatable |
| <span style="color:red">dm2e: levelOfHierarchy</span> | xsd:int | - | The Top-Level-CHO must contain the number "1" as value of the *dm2e:levelOfHierarchy* property. All bottom hierarchy levels must be mark by incremental adding +1. For example Second-Level-CHO "2" and so on. | - | optional **not** repeatable |
| edm: isNextInSequence | edm:ProvidedCHO | dc:relation | *edm:isNextInSequence* relates two same-level CHOs in a ordered sequence. The two CHOs are part of the same resource. For example, if a CHO *x* from *rdf:type dm2e:Manuscript* consist of two CHOs *y1* and *y2* from *rdf:type fabio:Chapter*, then the relation between them should be described by the following triple: *y2*-CHO-URI *edm:isNextInSequence* *y1*-CHO-URI | Definition: "*edm:isNextInSequence* relates two resources S and R that are ordered parts of the same resource A, and such that S comes immediately after R in the order created by their being parts of A." Comment: "*isNextInSequence* supports browsing through the parts of resources, by establishing the correct order. It also supports proper displaying of the information, when order matters, | optional repeatable |

---

[20] DCMI Abstract Model: http://dublincore.org/documents/abstract-model/ [06.01.2014].

| | | | | | |
|---|---|---|---|---|---|
| | | | | such as in hierarchically structured objects." | |
| dcterms:references | edm:ProvidedCHO | dc:relation | Another CHO referenced in the content of this CHO. | Definition: "A related resource that is referenced, cited, or otherwise pointed to by the described resource." | optional repeatable |
| dm2e:condition | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Contains a description of the CHOs condition. | - | optional **not** repeatable |
| dm2e:watermark | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Contains a description of a watermark which the CHO carries. | - | optional **not** repeatable |
| dm2e:illustration | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Generic description of illustrations in the CHO. | - | optional repeatable |
| dm2e:restoration | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Contains information about the restoration status of the CHO. | - | optional repeatable |
| dm2e:support | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Description of the type of material of the physical CHO. | | optional repeatable |
| dm2e:cover | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | dc:description | Description of the cover of the CHO, e.g. the cover's type of material. | | optional repeatable |

| edm:isRelatedTo | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Any other related resource. | Definition: "*edm:isRelatedTo* is the most general contextual property in EDM. Contextual properties have typically to do either with the things that have happened to or together with the object under consideration, or what the object refers to by its shape, form or features in a figural or encoded form. For sake of simplicity, we include in the contextual relationships also the scholarly classification, which may have either to do with the role and cultural connections of the object in the past, or its kind of structure, substance or contents as it can be verified at present."<br><br>Comment: "Querying *edm:isRelatedTo* corresponds to a typical retrieval by keyword, as supported by web search engines; but it also allows more, as the objects of *edm:isRelatedTo* statements can be fully-fledged resource such as concepts, documents, etc." | optional repeatable |
| --- | --- | --- | --- | --- | --- |
| edm:hasMet | edm:Agent<br>edm:Event<br>edm:Place<br>edm:Timespan<br>skos:Concept | dc:relation | Unites properties with the range *edm:Agent* like *dc:creator* or *dc:contributor*. | Definition: "*edm:hasMet* relates a resource with the objects or phenomena that have happened to or have happened together with the resource under consideration. We can abstractly think of history and the present as a series of "meetings" between people and other things in space-time. | optional repeatable |

| | | | | | |
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| | | | | Therefore we name this relationship as the things the object "has met" in the course of its existence. These meetings are events in the proper sense, in which other people and things participate in any role."<br><br>Comment: "*edm:hasMet* allows for querying historical relationships without specifying simultaneous correlations to other things, such as the specific constellations of people and things at a particular event. It allows for "who, when, where, what" queries, without specifying if the "who" matches the "when", such as a (fictitious) object made by Praxiteles and found in 1865. In addition, it supports the integration of all properties used within the descriptions contributed by content providers to Europeana that capture the notion of meeting in the sense outlined above, such as *dc:creator*, *dc:publisher*, *dc:contributor*, *dc:date*. To this end, any such properties should be declared to be a (direct or indirect) subproperty of *edm:hasMet*." | |
| owl:sameAs | rdf:Resource | - | Two URIs describing the identical CHOs can be interlinked with each other via the *owl:sameAs* property. | *Definition*: "The built-in OWL property *owl:sameAs* links an individual to an individual. Such an *owl:sameAs* statement indicates that two URI references actually refer to the same thing: the | optional repeatable |

| | | | | | |
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| | | | | individuals have the same "identity"." | |
| dm2e:<br>pageDimension | rdf:Literal | dcterms:extent | Page size. Please do also note the unit that was used. | - | optional<br>repeatable |
| dm2e:writtenArea<br>Dimension | rdf:Literal | dcterms:extent | Size of writing or the part of the page where something is actually written. Please do also note the unit that was used. | - | optional<br>repeatable |
| dm2e:refersTo | foaf:Person<br>edm:ProvidedCHO | dcterms:references | A person or CHO that is explicitly or implicitly referred to in the (textual) CHO. | - | optional<br>repeatable |
| dm2e:<br>wasStudiedBy | edm:Agent | edm:hasMet | The CHO was studied by an agent. | - | optional<br>repeatable |
| dm2e:<br>wasTaughtBy | edm:Agent | edm:hasMet | The CHO was taught by an agent. | - | optional<br>repeatable |
| dc:creator | edm:Agent | edm:hasMet | The property *dcterms:creator* holds the name or identifier of the agent (a person or organisation) who created the aggregation, i.e. the original metadata record, or CHO (possibly its author). | Definition: "An entity primarily responsible for making the resource."<br><br>Comment: "Examples of a Creator include a person, an organization, or a service." | optional<br>repeatable |
| dc:publisher | edm:Agent | edm:hasMet | Publisher of the CHO. Can be a person or an institution. | Definition: "An entity responsible for making the resource available."<br><br>Comment: "Examples of a Publisher include a person, an organization, or a service. Typically, the name of a Publisher should be used to indicate the entity." | optional<br>repeatable |

| dm2e:artist | foaf:Person | dc:creator | An artist that has created (e.g. painted) the CHO. | - | optional repeatable |
|---|---|---|---|---|---|
| pro:author | foaf:Person | dc:creator | The author of the CHO. | Definition: "The role a person has of authorship of some material (for example a document)." | optional repeatable |
| dm2e:composer | foaf:Person | dc:creator | The person that has composed a CHO (e.g. a letter). Can be the same as the person who wrote the letter, but can also be a different person, e.g. someone who has dictated but not wrote the letter. | - | optional repeatable |
| dc:contributor | foaf:Person | edm:hasMet | A person that is responsible for making contributions to the resource. | Definition: "An entity responsible for making contributions to the resource."<br><br>Comment: "Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity." | optional repeatable |
| dm2e:copyist | foaf:Person | edm:hasMet | Someone who copied a CHO. | - | optional repeatable |
| bibo:editor | foaf:Person | edm:hasMet | cf. original scope note | Definition: "A person having managerial and sometimes policy-making responsibility for the editorial part of a publishing firm or of a newspaper, magazine, or other publication." | optional repeatable |
| dm2e:honoree | foaf:Person | edm:hasMet | An honoured person for whom the CHO is published or created. | - | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| pro:illustrator | edm:Agent | dc:creator | Someone who has made the illustrations of a CHO. | Definition: "The role of an agent that illustrates a document." | optional repeatable |
| dm2e:mentioned | edm:Agent | edm:hasMet | A person or institution that is explicitly mentioned in the (textual) CHO. | - | optional repeatable |
| dm2e:portrayed | foaf:Person | dm2e:mentioned | A person that is portrayed in the (textual or painted) CHO by its creator. | - | optional repeatable |
| dm2e:misattributed | edm:Agent | edm:hasMet | A person or institution that is mentioned as the creator of the CHO although he or it is not the creator. | - | optional repeatable |
| dm2e:owner | edm:Agent | edm:hasMet | Indicates the ownership of a CHO. | - | optional repeatable |
| dm2e:previousOwner | edm:Agent | edm:hasMet | A person or an institution that has owned the CHO before. | - | optional repeatable |
| dm2e:painter | foaf:Person | dc:contributor | A painter. In the manuscript context especially used in works of the 16th and 17th century (rare books). | - | optional repeatable |
| dm2e:patron | foaf:Person | edm:hasMet | A person who is honoured within the text. | - | optional repeatable |
| pro:printer | edm:Agent | edm:hasMet | A person or institution who printed the CHO. In the manuscript context especially used in works of the 16th and 17th century (rare books). | Definition: "The role of an agent involved in printing documents, either a company providing printing services or an individual engaged in the process of printing documents." | optional repeatable |
| dm2e:principal | edm:Agent | edm:hasMet | A person or an institution that | - | optional |

| | | | | | |
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| | | | gave the order to create the CHO. | | repeatable |
| bibo:recipient | edm:Agent | edm:hasMet | cf. original scope note | Definition: "An agent that receives a communication document." | optional repeatable |
| dm2e:sponsor | edm:Agent | edm:hasMet | A person or an institution who has sponsored (parts) of the CHOs creation. | - | optional repeatable |
| pro:translator | edm:Agent | dc:contributor | A person or institution that translated the CHO. | Definition: "The role of an agent that translates a document into another language." | optional repeatable |
| dm2e:writer | foaf:Person | dc:creator | A person who has written a CHO, e.g. a letter. | - | optional repeatable |

Table 4: edm:ProvidedCHO.

## URI Scheme

All *edm:ProvidedCHO* entities are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/item/[provider]/[dataset]/[identifier]
```

## edm:ProvidedCHO example

```
dm2edata:item/uib/wittgenstein/Ms-114
    a edm:ProvidedCHO ;
    dc:type dm2e:Manuscript ;
    edm:type "TEXT" ;
    dc:title "Philosophische Grammatik"@de ;
    dcterms:alternative
        "Wittgenstein Nachlass MS 114: Ms-114.xml - A machine-readable transcription" ;
    dm2e:subtitle "Philosophische Grammatik"@de ;
    dcterms:alternative "Volume Ms-114, X., Philosophische Grammatik (1932 and 1933)"@de ;
    dc:description
```

```
                 "Volume Ms-114, X., Philosophische Grammatik (1932 and 1933): This manuscript consists of two
                 distinct texts. The first part is not paginated by Wittgenstein. The second, paginated 1-228 is
                 continued in the first part of Ms-115 and is partially revised in Ms-140. Page 21r includes a
                 section containing 3 typescript remarks pasted-in. -- The manuscript is written in ink with
                 typescript paste-ins in a hardback notebook containing 146 leaves with text on both sides of 203 x
                 330 mm inside a binding measuring 217 x 335 mm that shows some sign of repair to the binding. The
                 language of the manuscript is German. The original is in the Wren Library, Trinity College
                 Cambridge."@en ;
        dc:language "en" ;
        dcterms:issued "2002-10-10T01:01:01"^^xsd:dateTime ;
        dc:identifier "Ms-114" ;
        bibo:isbn "978-3-86680-192-9" ;
        dc:rights <http://creativecommons.org/licenses/by-nc/3.0/> ;
        dc:creator dm2edata:agent/uib/authority_gnd/118634313 ;
        dc:subject dm2edata:concept/uib/wittgenstein/philosophy_of_language .

dm2edata:agent/uib/authority_gnd/118634313
        a foaf:Person ;
        skos:prefLabel "Ludwig Wittgenstein" ;
        owl:sameAs <http://d-nb.info/gnd/118634313> .

dm2edata:concept/uib/wittgenstein/philosophy_of_language
        a skos:Concept ;
        skos:prefLabel "Philosophy of Language"@en ;
        skos:inScheme <http://philpapers.org/> .
```

## 3.7 edm:WebResource

Subclass of:          *edm:InformationResource*

According to the EDM Definitions 5.2.4, *edm:WebResource*s are "Information Resources that have at least one Web Representation and at least a URI." (Definition of the Europeana Data Model elements, 2013:14).

The resource, which resembles any kind of view of the described CHO, is an instance of the class *edm:WebResource*. There must be at least one *edm:WebResource* for each CHO. This mandatory *edm:WebResource* is connected to *ore:Aggregation* via *edm:isShownBy* or *edm:isShownAt*.

**Namespaces**

```
edm:        <http://www.europeana.eu/schemas/edm/> .
dc:         <http://purl.org/dc/elements/1.1/> .
dcterms:    <http://purl.org/dc/terms/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| dc: description | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | | cf. original scope note | Definition: "An account of the resource." <br><br> Comment: "Description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource." | optional repeatable |
| dc:format | rdf:Literal | edm:hasType | Format of the Web resource, e.g. PDF, HTML or JPG. If **annotatable content** is described, please use one of the following specifications: "text/html-named-content" for HTML content as specified by Pundit, "text/plain" for plain text content, "text/html" for websites with text and images, or "image/gif", "image/jpeg" resp. "image/png" for Image files. If **edm:object** is described, please use one these MIME types: "image/png", " image/jpeg", "image/gif", "image/tiff" for image | Definition: "The file format, physical medium, or dimensions of the resource." <br><br> Comment: "Examples of dimensions include size and duration. Recommended best practice is to use a controlled vocabulary such as the list of Internet Media Types [MIME]." | **mandatory** (for the annotatable resources, otherwise: ) <br><br> optional repeatable |

| | | | | | |
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| | | | files or "application/pdf" for pdf. See the technical specification "DM2E Annotatable Content" or the "Recommendations for the RDF representation of DM2E metadata" for further information. | | |
| dc:rights | edm:Agent rdf:Literal | - | Holds the name or identifier of the agent (a person or organisation) who owns or manages the rights of the digital representation of the CHO. | Definition: "Use for the name of the rights holder of this digital representation if possible or for more general rights information. […]" Comment: "This is a free text property and should be used for information about intellectual property rights or access arrangements that is additional to the controlled value provided in *edm:rights*. […]" | optional repeatable |
| edm:isDerivativeOf | edm:ProvidedCHO | edm:isSimilarTo | Original version (in case of CHOs) or a related resource (in case of WebResources) from which this object has been derived in whole or in part. | Definition: "This property captures a narrower notion of derivation than *edm:isSimilarTo*, in the sense that it relates a resource to another one, obtained by reworking, reducing, expanding, parts or the whole contents of the former, and possibly adding some minor parts. Versions have an even narrower meaning, in that it requires common identity between the related resources. Translations, summaries, abstractions etc. do not qualify as versions, but do qualify as derivatives." | optional repeatable |

| | | | | Comment: "This property enables associating resources that are one the derivation of the other. This is required since Europeana may collect descriptions about resources and their derivations. It also supports browsing of resources by derivation. Finally, it allows the integration of all properties used in content providers' descriptions that capture the notion of derivation in the sense outlined above, such as those capturing versioning, translations and abstractions. To this end, any such properties should be declared to be a (direct or indirect) sub-property of *edm:isDerivativeOf*." | |
|---|---|---|---|---|---|
| dcterms:created | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | cf. original scope note | Definition: "Date of creation of the resource." | optional repeatable |
| edm:rights | edm:WebResource | dc:rights | The property *edm:rights* holds copyright information pertaining to all digital objects (*edm:WebResource*) given by *edm:hasView* or one of its subproperties. If a digital object (*edm:WebResource*) holds an additional copyright information given by *dc:rights* then this more specific copyright information has priority. Otherwise the value given in *edm:rights* at the Aggregation is the default value for digital object attached to this Aggregation. The | Definition: "Information about usage and access rights of the digital objects indicated in *isShownBy* and *isShownAt*."<br><br>Comment: "The value in this element is a URL constructed according to the specifications in the "Specifications of the controlled values for *edm:rights*". The URLs are constructed by adding a code indicating the copyright status of an object to the domain name where that status is | not mandatory but **strongly recommended not** repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | | | four main types of rights statements in Europeana are: Public Domain Mark, CCO 1.0, Rights Reserved Statements and Unknown. The list of the all available licensing rights supported by Europeana can be found here: http://pro.europeana.eu/available-rights-statements. | defined. The domain will be either the europeana.eu domain or the creativecommons.org domain. For users of Europeana.eu this copyright information also applies to the preview specified in *edm:object*. In order to allow organisations to manage the provision of this element, *edm:rights* has an obligation level of "recommended" in this version of EDM. It will be changed to "Mandatory" in a later version." | |
| dcterms:hasPart | edm:WebResource | dc:relation | *dcterms:hasPart* can be used to indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm:WebResource dcterms: hasPart edm:WebResource.* | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | optional repeatable |
| dcterms:isPartOf | edm:WebResource | dc:relation | *dcterms:isPartOf* can be used to indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm:WebResource dcterms: isPartOf edm:WebResource.* | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | optional repeatable |
| edm: isNextInSequence | edm:WebResource | dc:relation | Can be used if a CHO has several parts of CHOs or WebResources in a sequence. | Definition: "*edm:isNextInSequence* relates two resources S and R that are ordered parts of the same resource A, and such that S comes immediately after R in the order created by their being parts of A." Comment: "*isNextInSequence* | optional repeatable |

| | | | | supports browsing through the parts of resources, by establishing the correct order. It also supports proper displaying of the information, when order matters, such as in hierarchically structured objects." | |
|---|---|---|---|---|---|

<div align="center">Table 5: edm:WebResource.</div>

**edm:WebResource example**

```
<http://www.wittgensteinsource.org/Ms-114_f>
    a edm:WebResource ;
    dc:description "Facsimile view"@en ;
    dc:format "text/html" ;
    edm:rights <http://creativecommons.org/publicdomain/zero/1.0/> .
```

## 3.8  edm:PhysicalThing: Subclasses

**Namespaces**

```
edm:        <http://www.europeana.eu/schemas/edm/> .
bibo:       <http://purl.org/ontology/bibo/> .
fabio:      <http://purl.org/spar/fabio/> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Class | Subclass of | DM2E Scope Note | Original Scope Note |
|---|---|---|---|
| bibo:Book | dm2e:Document | cf. original scope note | Definition: "A written or printed work of fiction or nonfiction, usually on sheets of paper fastened or bound together within covers." |

| fabio:Cover | edm:PhysicalThing | ProvidedCHO of type cover. Can be part of another CHO, e.g. a book. | Definition: "A protective covering used to bind together the pages of a document or the first, informative, page of a digital document." |
|---|---|---|---|
| dm2e:Document | edm:PhysicalThing | ProvidedCHO of type document. Unlike *foaf:Document*, *dm2e:Document* refers to a physical document. | - |
| dm2e:File | edm:PhysicalThing | Archival item. | - |
| bibo:Issue | dm2e:Document | An issue of a journal. | "Something that is printed or published and distributed, esp. a given number of a periodical." |
| bibo:Journal | dm2e:Document | cf. original scope note | Definition: "A periodical of scholarly journal Articles." |
| bibo:Letter | dm2e:Document | cf. original scope note | Definition: "A written or printed communication addressed to a person or organization and usually transmitted by mail." |
| dm2e:Manuscript | dm2e:Document | ProvidedCHO of type manuscript, e.g. Wittgensteins brown book. Not equivalent to *bibo:Manuscript*. | - |
| dm2e:Page | edm:PhysicalThing | ProvidedCHO of type page. A sheet of paper. Can be part of another CHO, e.g. *dm2e:Manuscript*. | - |

Table 6: edm:PhysicalThing subclasses.

## 3.9 edm:Agent

Subclass of:           *edm:NonInformationResource*
Equivalent class:      *E39_Actor* (CIDOC CRM)

"This class comprises people, either individually or in groups, who have the potential to perform intentional actions for which they can be held responsible." (Definition of the Europeana Data Model elements, 2013:9).

**Namespaces**

```
edm:        <http://www.europeana.eu/schemas/edm/> .
skos:       <http://www.w3.org/2004/02/skos/core#> .
dc:         <http://purl.org/dc/elements/1.1/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| skos:prefLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The preferred name of the agent, preferably in a normalised form. Only one preferred label per language tag is allowed! | Definition: "The preferred lexical label for a resource, in a given language." | **mandatory not** repeatable (max 1 per language tag) |
| skos:altLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | An alternative name, e.g. a former name or the name in another form. | Definition: "An alternative lexical label for a resource."<br><br>Example: "Acronyms, abbreviations, spelling variants, and irregular plural/singular forms may be included among the alternative labels for a concept. Misspelled terms are normally included as hidden labels (see *skos:hiddenLabel*)." | optional repeatable |
| skos:note | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Information related to the resource that cannot be modelled with other properties of the class. | Definition: "This property may be used directly, or as a super-property for more specific note types." | optional repeatable |
| skos:hiddenLabel | rdf:Literal with optional language tag (in RFC 3066, | - | Non-standard forms of the name, e.g. misspellings. | Definition: "A lexical label for a resource that should be hidden when generating visual displays of | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | see section 3.2) | | | the resource, but should still be accessible to free text search operations." | |
| edm:wasPresentAt | edm:Event | dc:relation<br><br>Equivalent to: P121_was_present _at (CIDOC CRM). | An event where the agent was present at. | Definition: "This property associates the people, things or information resources with an event at which they were present."<br><br>Comment: "This property is useful for two kinds of discoveries: 1. discoveries concerning persons (who query) since it relates a person to the events in which the person has taken part. 2. discoveries concerning things or information resources (what query) since it relates an artifact to the events in which the artifact has been involved In addition, it can be used to browse specific events." | optional repeatable |
| edm:hasMet | edm:Agent | dc:relation | An agent that the current agent has met. | Definition: "*edm:hasMet* relates a resource with the objects or phenomena that have happened to or have happened together with the resource under consideration. We can abstractly think of history and the present as a series of "meetings" between people and other things in space-time. Therefore we name this relationship as the things the object "has met" in the course of its existence. These meetings are events in the proper sense, in which other people and things | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | | | | participate in any role." Comment: "*edm:hasMet* allows for querying historical relationships without specifying simultaneous correlations to other things, such as the specific constellations of people and things at a particular event. It allows for "who, when, where, what" queries, without specifying if the "who" matches the "when", such as a (fictitious) object made by Praxiteles and found in 1865. In addition, it supports the integration of all properties used within the descriptions contributed by content providers to Europeana that capture the notion of meeting in the sense outlined above, such as *dc:creator*, *dc:publisher*, *dc:contributor*, *dc:date*. To this end, any such properties should be declared to be a (direct or indirect) subproperty of *edm:hasMet*." | |
| edm:isRelatedTo | rdf:Literal | - | Any other related resource. | Definition: "*edm:isRelatedTo* is the most general contextual property in EDM. Contextual properties have typically to do either with the things that have happened to or together with the object under consideration, or what the object refers to by its shape, form or features in a figural or encoded form. For sake of simplicity, we include in the contextual relationships also the scholarly | optional repeatable |

| | | | | classification, which may have either to do with the role and cultural connections of the object in the past, or its kind of structure, substance or contents as it can be verified at present." | |
| | | | | Comment: "Querying *edm:isRelatedTo* corresponds to a typical retrieval by keyword, as supported by web search engines; but it also allows more, as the objects of *edm:isRelatedTo* statements can be fully-fledged resource such as concepts, documents etc." | |
| dc:date | edm:TimeSpan edm:Event | edm:hasMet | A significant date associated with this resource. The date should be described with *edm:Event*. | Definition: "A point or period of time associated with an event in the lifecycle of the resource." | optional repeatable |
| | | | | Comment: "Date may be used to express temporal information at any level of granularity. Recommended best practice is to use an encoding scheme, such as the W3CDTF profile of ISO 8601 [W3CDTF]." | |
| dc:identifier | rdf:Literal | - | Identifier of the resource. | Definition: "An unambiguous reference to the resource within a given context." | optional repeatable |
| | | | | Comment: "Recommended best practice is to identify the resource by means of a string conforming to a formal identification system." | |

| | | | | | |
|---|---|---|---|---|---|
| bibo:suffixName | rdf:Literal | skos:note | Persons names or notations about organisations including counting, for example Johannes Paul, I. | Definition: "The suffix of the name." | optional repeatable |
| owl:sameAs | rdf:Resource | | Two URIs describing the identical CHOs can be interlinked with each other via the *owl:sameAs* property. | *Definition*: "The built-in OWL property *owl:sameAs* links an individual to an individual. Such an *owl:sameAs* statement indicates that two URI references actually refer to the same thing: the individuals have the same "identity"." | optional |

Table 7: edm:Agent.

DM2E has created a lot of properties in *edm:ProvidedCHO* with the range *edm:Agent*, partly as subproperties of *dc:creator*. See the *edm:ProvidedCHO* specification for details.

**URI Scheme**

All *edm:Agent* entities created by DM2E are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/agent/[provider]/{[dataset]}/[identifier]
```

The identifier within the curly brackets is optional.

**edm:Agent example**

```
dm2edata:agent/uib/wittgenstein/12536
    a vivo:University ;
    skos:prefLabel "University of Bergen"@en ;
    skos:altLabel "Universitetet i Bergen"@no ;
    edm:begin "1946-01-01T01:01:01"^^xsd:dateTime .
```

## 3.10 edm:Agent: Subclasses

*edm:Agent* subclasses in the DM2E model.

**Namespaces**
```
edm:        <http://www.europeana.eu/schemas/edm/> .
foaf:       <http://xmlns.com/foaf/0.1/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Class | Subclass of | DM2E Scope Note | Original Scope Note |
|-------|-------------|-----------------|---------------------|
| foaf:Person | edm:Agent | cf. original scope note | "The Person class represents people. Something is a Person if it is a person. We don't nitpic about whether they're alive, dead, real, or imaginary. The Person class is a subclass of the Agent class, since all people are considered 'agents' in FOAF." |
| foaf:Organization | edm:Agent | cf. original scope note | "The Organization class represents a kind of Agent corresponding to social institutions such as companies, societies etc." |

Table 8: edm:Agent subclasses.

## 3.11 foaf:Person

Subclass of:        *foaf:Agent*
                    *edm:Agent*

"The Person class represents people. Something is a Person if it is a person. We don't nitpic about whether they're alive, dead, real, or imaginary. The Person class is a subclass of the Agent class, since all people are considered 'agents' in FOAF." (FOAF Vocabulary Specification 0.98).

**Namespaces**

```
foaf:       <http://xmlns.com/foaf/0.1/> .
rdaGr2:     <http://RDVocab.info/ElementsGr2/> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

Additional properties to those that are inherited by *edm:Agent*:

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| rdaGr2:gender | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The gender of the person. | Definition: "The gender with which a person identifies." | optional **not** repeatable |
| rdaGr2: professionOrOccupation | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The profession or occupation in which the person works or has worked. | Definition: "A profession or occupation in which a person works or has worked." | optional repeatable |
| rdaGr2: biographicalInformation | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Information related to the biography of the agent. | Definition: "Information pertaining to the life or history of a person." | optional repeatable |
| rdaGr2:dateOfBirth | edm:TimeSpan xsd:dateTime rdf:Literal | - | The date the person was born. | Definition: "The year a person was born. Date of birth may also include the month and day of the person's birth." | optional **not** repeatable |
| rdaGr2: dateOfDeath | edm:TimeSpan xsd:dateTime rdf:Literal | - | The date the person died. | Definition: "The year a person died. Date of death may also include the month and day of the person's death." | optional **not** repeatable |
| rdaGr2:otherDesignationAssociatedWithThePerson | rdf:Literal | - | Additional names. | Definition: "A term other than a title that is associated with a person's name." | optional **not** repeatable |

| dm2e:influencedBy | foaf:Person | edm:hasMet | Another agent by which the agent was influenced. | - | optional repeatable |
|---|---|---|---|---|---|
| dm2e:studentOf | foaf:Person | edm:hasMet | A teacher of the agent. | - | optional repeatable |

Table 9: foaf:Person.


## 3.12 foaf:Organization

Subclass of:        *foaf:Agent*
                    *edm:Agent*

"The Organization class represents a kind of Agent corresponding to social institutions such as companies, societies etc." (FOAF Vocabulary Specification 0.98).

**Namespaces**
```
rdaGr2:      <http://RDVocab.info/ElementsGr2/> .
foaf:        <http://xmlns.com/foaf/0.1/> .
dm2edata:    <http://data.dm2e.eu/data/> .
```

Additional properties to those that are inherited by *edm:Agent*:

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| rdaGr2: dateOfEstablishme nt | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | The date the institution was established. | Definition: "The date on which a corporate body was established or founded." | optional **not** repeatable |
| rdaGr2: dateOfTermination | edm:TimeSpan xsd:dateTime rdf:Literal | dc:date | The date the institution was terminated. | Definition: "The date on which a corporate body was terminated or dissolved." | optional **not** repeatable |
| rdaGr2:otherDesig nationAssociatedWi | rdf:Literal | - | Additional names. | Definition: "A term other than a title that is associated with a | optional **not** repeatable |

| thTheCorporateBody | | | | person's name." | |
|---|---|---|---|---|---|

Table 10: foaf:Organization.

## 3.13 foaf:Organization: Subclasses

*foaf:Organization* subclasses in the DM2E model.

**Namespaces**
```
foaf:        <http://xmlns.com/foaf/0.1/> .
vivo:        <http://vivoweb.org/ontology/core#> .
dm2e:        <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:    <http://data.dm2e.eu/data/> .
```

| Class | Subclass of | DM2E Scope Note | Original Scope Note |
|---|---|---|---|
| dm2e:Archive | foaf:Organization | Archives are places where public records and other historical documents are preserved. | - |
| vivo:Library | foaf:Organization | cf. original scope note | Short Definition: "A collection of any materials, for study and enjoyment, which has been systematically arranged." |
| vivo:Museum | foaf:Organization | cf. original scope note | Short Definition: "A building or place where works of art, scientific specimens, or other objects of permanent value are kept and displayed." |
| vivo:University | foaf:Organization | cf. original scope note | Short Definition: "An institution of higher education and research, which grants academic degrees in a variety of subjects, and provides both undergraduate education and postgraduate education." |

Table 11: foaf:Organization subclasses.

## 3.14 edm:NonInformationResource: Subclasses

*edm:NonInformationResource* subclasses in the DM2E model.

**Namespaces**
```
edm:        <http://www.europeana.eu/schemas/edm/> .
skos:       <http://www.w3.org/2004/02/skos/core#> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:   <http://data.dm2e.eu/data/> .
foaf:       <http://xmlns.com/foaf/0.1/> .
```

| Class | Subclass of | DM2E Scope Note | Original Scope Note |
|---|---|---|---|
| edm:Agent | edm: NonInformationResource<br><br>Equivalent to: E39_Actor (CIDOC CRM). | cf. original scope note | Definition: "This class comprises people, either individually or in groups, who have the potential to perform intentional actions for which they can be held responsible."<br><br>Comment: "This class is a domain of *edm:wasPresentAt*." |
| edm:Event | edm: NonInformationResource<br><br>Equivalent to: E4_Period (CIDOC CRM), Event (FRBR)[21], Temporality (ABC Harmony)[22]. | cf. original scope note | Definition: "An event is a change of states in cultural, social or physical systems, regardless of scale, brought about by a series or group of coherent physical, cultural, technological or legal phenomena! (E5 Event in CIDOC CRM) or a "set of coherent phenomena or cultural manifestations bounded in time and space" (E4 Period in CIDOC CRM)."<br><br>Comment: "Events are identified either by the content provider or by Europeana enrichment at ingestion time." |

---

[21] Definition of the FRBR vocabulary: http://purl.org/vocab/frbr/core# [22.10.2013].
[22] Definition of the ABC Harmony vocabulary: http://metadata.net/harmony/abc# [22.10.2013].

| foaf:Image | foaf:Document edm:NonInformationResource | cf. original scope note | Definition: "The class Image is a subclass of Document corresponding to those documents which are images. Digital images (such as JPEG, PNG, GIF bitmaps, SVG diagrams etc.) are examples of Image." |
|---|---|---|---|
| dm2e:Photo | foaf:Image | ProvidedCHO of type photo. | - |
| edm:PhysicalThing | edm:NonInformationResource<br><br>Equivalent to: E18_Physical_Thing (CIDOC CRM). | cf. original scope note | Definition: "A persistent physical item such as a painting, a building, a book or a stone. Persons are not items. This class represents cultural heritage objects known to Europeana to be physical things (such as Mona Lisa) as well as all physical things Europeana refers to in the descriptions of cultural heritage objects (such as the Rosetta Stone)."<br><br>Comment: "Physical things are identified by the content provider or by Europeana at enrichment time. This class is the domain of edm:realizes." |
| edm:Place | edm:NonInformationResource<br><br>Equivalent to: Place (FRBR, ABC Harmony), dol:space-region (DOLCE[23]), E53_Place(CIDOC CRM). | cf. original scope note | Definition: "An "extent in space, in particular on the surface of the earth, in the pure sense of physics: independent from temporal phenomena and matter" (CIDOC CRM)."<br><br>Comment: "Places are identified by the content provider and named according to some vocabulary or local convention, and possibly normalized by Europeana at enrichment or at ingestion time. This class is the range of property edm:happenedAt." |
| edm:TimeSpan | edm:NonInformationResource | cf. original scope note | Definition: "The class of "abstract temporal extents, in the sense of Galilean physics, |

[23] The DOLCE-Lite ontology: http://www.loa.istc.cnr.it/ontologies/DOLCE-Lite.owl [22.10.2013].

| | | | |
|---|---|---|---|
| | Equivalent to: Time (ABC Harmony, E52 Time-Span (CIDOC CRM), dol:time-interval. | | having a beginning, an end and a duration" (CIDOC CRM)." Comment: "This class is the range of *edm:occurredAt*. Time spans are identified by the content provider or by Europeana at enrichment time." Europeana Note: "Time spans are identified by the content provider or by Europeana at enrichment time." |
| dm2e:Collection | edm: NonInformationResource | The collection of CHOs as provided by a data provider. | - |
| skos:Concept | edm: NonInformationResource | cf. original scope note | Definition: "A SKOS concept can be viewed as an idea or notion; a unit of thought. However, what constitutes a unit of thought is subjective, and this definition is meant to be suggestive, rather than restrictive. The notion of a SKOS concept is used to refer to specific ideas or meanings established within a knowledge organization system and describe their conceptual structure." Comment: "Concepts are used for the contextualization of resources." |

Table 12: edm:NonInformationResource subclasses.

## 3.15 skos:Concept

Subclass of:        *edm:NonInformationResource*

"A unit of thought or meaning that comes from an organised knowledge base (such as subject terms from a thesaurus or controlled vocabulary) where URIs or local identifiers have been created to represent each concept. In the cultural heritage world there are many

such controlled vocabularies such as the Library of Congress Subject Headings[24] and the AAT[25]." (Europeana Data Model Mapping Guidelines, 2013:28).

**Namespaces**
```
skos:       <http://www.w3.org/2004/02/skos/core#> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| skos:prefLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The preferred name of the concept, preferably in a normalised form. Only one preferred label per language tag is allowed! | Definition: "The preferred lexical label for a resource, in a given language." | **mandatory not** repeatable (max 1 per language tag) |
| skos:altLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | An alternative name, e.g. a former name or the name in another form. | Definition: "An alternative lexical label for a resource." Example: "Acronyms, abbreviations, spelling variants, and irregular plural/singular forms may be included among the alternative labels for a concept. Misspelled terms are normally included as hidden labels (see *skos:hiddenLabel*)." | optional repeatable |
| skos:notation | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | If available: A notation of the concept. | Definition: "A notation, also known as classification code, is a string of characters such as "T58.5" or "303.4833" used to uniquely identify a concept within the scope of a given concept scheme." | optional repeatable |

---

[24] The Library of Congress Subject Headings (LCSH): http://id.loc.gov/authorities/subjects.html [22.10.2013].
[25] Art & Architecture Thesaurus® Online (AAT): http://www.getty.edu/research/tools/vocabularies/aat/index.html [22.10.2013].

| | | | | | |
|---|---|---|---|---|---|
| | | | | Scope Note: "By convention, *skos:notation* is used with a typed literal in the object position of the triple." | |
| skos:broader | rdf:Literal | - | URI of the broader concept. | Definition: "Relates a concept to a concept that is more general in meaning."<br><br>Scope Note: "By convention, *skos:broader* is only used to assert an immediate (i.e. direct) hierarchical link between two conceptual resources." | optional repeatable |
| skos:narrower | rdf:Literal | - | URI of the narrower concept. | Definition: "Relates a concept to a concept that is more specific in meaning."<br><br>Scope Note: "By convention, *skos:broader* is only used to assert an immediate (i.e. direct) hierarchical link between two conceptual resources." | optional repeatable |
| skos:inScheme | URI-Resource | - | The URI of a concept scheme. | Definition: "Relates a resource (for example a concept) to a concept scheme in which it is included."<br><br>Scope Note: "A concept may be a member of more than one concept scheme." | optional repeatable |
| owl:sameAs | rdf:Resource | - | Two URIs describing the identical CHOs can be interlinked with each other via the *owl:sameAs* property. | *Definition*: "The built-in OWL property *owl:sameAs* links an individual to an individual. Such an *owl:sameAs* statement indicates | optional |

| | | | | | |
|---|---|---|---|---|---|
| | | | | that two URI references actually refer to the same thing: the individuals have the same "identity"." | |
| dc:creator | edm:Agent | edm:hasMet | The property *dc:creator* holds the name or identifier of the agent (a person or organisation) who created the concept. This property can e.g. be used for referenced objects which are not modelled as *edm:ProvidedCHO*s. | Definition: "An entity primarily responsible for making the resource."<br><br>Comment: "Examples of a Creator include a person, an organization, or a service." | optional repeatable |

<div align="center">Table 13: skos:Concept.</div>

**URI Scheme**

All *skos:Concept* entities created by DM2E are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/concept/[provider]/{[dataset]}/[identifier]
```

The identifier within the curly brackets is optional.

**skos:Concept example**

```
dm2edata:concept/uib/wittgenstein/philosophy_of_language
     a skos:Concept ;
     skos:prefLabel "Philosophy of Language"@en ;
     skos:inScheme <http://philpapers.org/> .
```

## 3.16 skos:Concept: subclasses

*skos:Concept* subclasses in the DM2E model.

**Namespaces**
```
bibo:       <http://purl.org/ontology/bibo/> .
fabio:      <http://purl.org/spar/fabio/> .
skos:       <http://www.w3.org/2004/02/skos/core#> .
dm2e:       <http://onto.dm2e.eu/schemas/dm2e/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Class | Subclass of | DM2E Scope Note | Original Scope Note |
|-------|-------------|-----------------|---------------------|
| dm2e:Work | skos:Concept | A non-physical piece of work of an agent, e.g. the theoretical concept of a manuscript. | - |
| fabio:Article | skos:Concept | cf. original scope note | Definition: "The realization of a piece of writing on a particular topic." |
| fabio:Chapter | skos:Concept | cf. original scope note | Definition: "A defined document section, forming part of or intended for inclusion within a larger document, usually with its own title or chapter number. Different chapters within a document such as a book or a report may each be independently authored, or may all be authored by a single individual or group of authors." |
| dm2e:Paragraph | skos:Concept | Concept of type paragraph. Can be part of another (textual) CHO, e.g. *dm2e:Manuscript*. | - |
| dm2e:Publication | skos:Concept | Concept of type publication. | - |
| bibo:Series | skos:Concept | A collection of documents, based on some shared aspects, like a topic or provenance etc. | Definition: "A loose, thematic, collection of Documents, often Books." |

Table 14: skos:Concept subclasses.

## 3.17 edm:Place

Subclass of:        *edm:NonInformationResource*
Equivalent classes:  *Place* (FRBR, ABC Harmony), *dol:space-region*, *E53_Place* (CIDOC CRM)

"An 'extent in space, in particular on the surface of the earth, in the pure sense of physics: independent from temporal phenomena and matter' (CIDOC CRM)" (Definition of the Europeana Data Model elements, 2012:13).

### Namespaces

```
edm:        <http://www.europeana.eu/schemas/edm/> .
wgs84_pos:  <http://www.w3.org/2003/01/geo/wgs84_pos#> .
skos:       <http://www.w3.org/2004/02/skos/core#> .
dcterms:    <http://purl.org/dc/terms/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| wgs84_pos:lat | rdf:Literal | - | The latitude of a place (decimal degree). | Definition: "The WGS84 latitude of a SpatialThing (decimal degrees)." | optional **not** repeatable |
| wgs84_pos:long | rdf:Literal | - | The longitude of a place (decimal degree). | Definition: "The WGS84 longitude of a SpatialThing (decimal degrees)." | optional **not** repeatable |
| wgs84_pos:alt | rdf:Literal | - | The altitude of a place (decimal metres above the reference). | Definition: "The WGS84 altitude of a SpatialThing (decimal meters above the local reference ellipsoid)." | optional **not** repeatable |
| skos:prefLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The preferred name of the place, preferably in a normalised form. Only one preferred label per language tag is allowed! | Definition: "The preferred lexical label for a resource, in a given language." | **mandatory not** repeatable (max 1 per language tag) |

| skos:altLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | An alternative name, e.g. a former name or the name in another form. | Definition: "An alternative lexical label for a resource." Example: "Acronyms, abbreviations, spelling variants, and irregular plural/singular forms may be included among the alternative labels for a concept. Misspelled terms are normally included as hidden labels (see *skos:hiddenLabel*)." | optional repeatable |
|---|---|---|---|---|---|
| skos:note | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Information related to the resource that cannot be modelled with other properties of the class. | Definition: "A general note, for any purpose." Scope Note: "This property may be used directly, or as a super-property for more specific note types." | optional repeatable |
| skos:hiddenLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Non-standard forms of the name, e.g. misspellings. | Definition: "A lexical label for a resource that should be hidden when generating visual displays of the resource, but should still be accessible to free text search operations." | optional repeatable |
| dcterms:hasPart | edm:Place | dc:relation | *dcterms:hasPart* can be used to indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm:Place dcterms: hasPart edm:Place*. | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | optional repeatable |
| dcterms:isPartOf | edm:Place | dc:relation | *dcterms:isPartOf* can be used to indicate that a resource is part of the current resource. It can only | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of | optional repeatable |

| | | | | | |
|---|---|---|---|---|---|
| | | | be used for the same type of objects, e.g. *edm: Place dcterms: isPartOf edm:Place*. | December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | |
| owl:sameAs | rdf:Resource | | Two URIs describing the identical CHOs can be interlinked with each other via the *owl:sameAs* property. | *Definition*: "The built-in OWL property *owl:sameAs* links an individual to an individual. Such an *owl:sameAs* statement indicates that two URI references actually refer to the same thing: the individuals have the same "identity"." | optional |

Table 15: edm:Place.

**URI Scheme**

All *edm:Place* entities created by DM2E are identified by an URL with the following scheme:

```
http://data.dm2e.eu/data/place/[provider]/{[dataset]}/[identifier]
```

The identifier within the curly brackets is optional.

## 3.18 edm:TimeSpan

Subclass of:          *edm:NonInformationResource*
Equivalent classes:  *Time* (ABC Harmony), *E52_Time-Span* (CIDOC CRM), *dol:time-interval*

"The class of 'abstract temporal extents, in the sense of Galilean physics, having a beginning, an end and a duration' (CIDOC CRM)" (Definition of the Europeana Data Model elements, 2012:14).

## Namespaces

```
edm:        <http://www.europeana.eu/schemas/edm/> .
skos:       <http://www.w3.org/2004/02/skos/core#> .
dcterms:    <http://purl.org/dc/terms/> .
dm2edata:   <http://data.dm2e.eu/data/> .
crm:        <http://www.cidoc-crm.org/cidoc-crm/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| skos:prefLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The preferred name of the timespan. | Definition: "The preferred lexical label for a resource, in a given language." | **mandatory not** repeatable (max 1 per language tag) |
| skos:altLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | An alternative name, e.g. a former name or the name in another form. | Definition: "An alternative lexical label for a resource." Example: "Acronyms, abbreviations, spelling variants, and irregular plural/singular forms may be included among the alternative labels for a concept. Misspelled terms are normally included as hidden labels (see *skos:hiddenLabel*)." | optional repeatable |
| skos:note | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Information related to the resource that cannot be modelled with other properties of the class. | Definition: "A general note, for any purpose." Scope Note: "This property may be used directly, or as a super-property for more specific note types." | optional repeatable |
| dcterms:hasPart | edm:TimeSpan | dc:relation | *dcterms:hasPart* can be used to indicate that a resource is part of the current resource. It can only | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of | optional repeatable |

| | | | | be used for the same type of objects, e.g. *edm:TimeSpan dcterms:hasPart edm: TimeSpan*. | December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | |
|---|---|---|---|---|---|---|
| dcterms:isPartOf | edm:TimeSpan | dc:relation | *dcterms:isPartOf* can be used to indicate that a resource is part of the current resource. It can only be used for the same type of objects, e.g. *edm: TimeSpan dcterms:isPartOf edm: TimeSpan*. | "This term is intended to be used with non-literal values as defined in the DCMI Abstract Model. As of December 2007, the DCMI Usage Board is seeking a way to express this intention with a formal range declaration." | optional repeatable |
| edm:begin | xsd:dateTime rdf:Literal | edm:isRelatedTo | The beginning of a timespan. | Definition: "This property denotes the start date of a period of time." | optional **not** repeatable |
| edm:end | xsd:dateTime rdf:Literal | edm:isRelatedTo | The end of a timespan. | Definition: "This property denotes the end date of a period of time." | optional **not** repeatable |
| crm:P79F.beginning_is_qualified_by | rdf:Literal | | This property is used to indicate the certainty of a timespan, in this case its beginning. Use "uncertainty_data" or "uncertainty_granularity" to indicate the type of uncertainty. More information can be found in the "Recommendations for the RDF representation of DM2E metadata"[26]. | Definition: "Qualifying information about the start of the timespan – such as degree of certainty, precision, source etc." | optional repeatable |
| crm:P80F.end_is_qualified_by | rdf:Literal | | This property is used to indicate the certainty of a timespan, in this case its end. Use "uncertainty_data" or "uncertainty_granularity" to indicate the type of uncertainty. | Definition: "Qualifying information about the end of the timespan – such as degree of certainty, precision, source etc." | optional repeatable |

[26] Recommendations for the RDF representation of DM2E metadata: http://wiki.dm2e.eu/File:Dm2e_mapping_recommendations.pdf (25.02.2014).

| | | | More information can be found in the "Recommendations for the RDF representation of DM2E metadata". | | |
|---|---|---|---|---|---|

Table 16: edm:TimeSpan.

**URI Scheme**

All *edm:TimeSpan* entities created by DM2E are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/timespan/[provider]/{[dataset]}/[identifier]
```

The identifier within the curly brackets is optional.

## 3.19 edm:Event

Subclass of:          *edm:NonInformationResource*
Equivalent classes:  E4_Period (CIDOC CRM), Event (FRBR), Temporality (ABC Harmony)

"An event is a change 'of states in cultural, social or physical systems, regardless of scale, brought about by a series or group of coherent physical, cultural, technological or legal phenomena' (E5 Event in CIDOC CRM) or a 'set of coherent phenomena or cultural manifestations bounded in time and space' (E4 Period in CIDOC CRM)." (Definition of the Europeana Data Model elements, 2013:11).

Note that Europeana does not support event-based modelling to date (October 2013).

**Namespaces**
```
edm:        <http://www.europeana.eu/schemas/edm/> .
dm2edata:   <http://data.dm2e.eu/data/> .
```

| Property | Range | Subproperty of | DM2E Scope Note | Original Scope Note | Constraint |
|---|---|---|---|---|---|
| edm:happenedAt | edm:Place | dc:relation<br><br>Equivalent to: P7_took_place_at (CIDOC CRM). | Connects an event to the place where this event happened at. | Definition: "This property associates an event with the place at which the event happened."<br><br>Comment: "This property is useful for supporting discoveries concerning places (where query) since it relates a place to the events which happened at that place. In addition, it can be used to browse specific events." | optional repeatable |
| edm:occurredAt | edm:TimeSpan | dc:relation | Connects an event to a time span which overlaps with the occurrence of that event. The occurrence in time of an event may overlap with 0 to many disjoint time spans, and a time span may have 0 to many events whose occurrences overlap with it. | Definition: "This property associates an event to the smallest known time span that overlaps with the occurrence of that event."<br><br>Comment: "This property is useful for discoveries concerning time (when query, time-line browsing) since it relates a time span to the events that occurred at that time. In addition, it can be used to browse specific events."<br><br>Equivalent property: *P4_has_timespan (CIDOC CRM)* | optional repeatable |
| skos:prefLabel | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | The preferred name of the event. | Definition: "The preferred lexical label for a resource, in a given language." | **mandatory not** repeatable (max 1 per language tag) |
| skos:altLabel | rdf:Literal with optional language tag (in RFC 3066, | - | An alternative name, e.g. a former name or the name in another form. | Definition: "An alternative lexical label for a resource." | optional repeatable |

| | | | | Example: "Acronyms, abbreviations, spelling variants, and irregular plural/singular forms may be included among the alternative labels for a concept. Misspelled terms are normally included as hidden labels (see *skos:hiddenLabel*)." | |
| --- | --- | --- | --- | --- | --- |
| | see section 3.2) | | | | |
| skos:note | rdf:Literal with optional language tag (in RFC 3066, see section 3.2) | - | Information related to the resource that cannot be modelled with other properties of the class. | Definition: "A general note, for any purpose." <br><br> Scope Note: "This property may be used directly, or as a super-property for more specific note types." | optional repeatable |

Table 17: edm:Event.

**URI Scheme**

All *edm:Event* entities created by DM2E are identified by an URI with the following scheme:

```
http://data.dm2e.eu/data/event/[provider]/{[dataset]}/[identifier]
```

The identifier within the curly brackets is optional.

# References

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