



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 Replaced <code>dm2e: <http://onto.dm2e.eu/schemas/dm2e/0.3/></code> with <code>dm2e: <http://onto.dm2e.eu/schemas/dm2e/></code>
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	<ul style="list-style-type: none"> - Deleted <code>dm2e:titleTransliteration</code> and <code>dm2e:subtitleTransliteration</code>. Please use <code>dcterms:alternative</code> instead (as well as for transcriptions). - Reintegrated <code>dcterms:provenance</code>. This is needed for mixed provenance data. - Added range <code>edm:TimeSpan</code> for <code>dcterms:issued</code>. - Replaced <code>fabio:Page</code> with <code>dm2e:Page</code>.
Version 1.1 Rev 0.4	05.07.13	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - Replaced <code>korbo:hasAnnotableVersionAt</code> with <code>dm2e:hasAnnotableVersionAt</code>; changed its superproperty from <code>edm:isShownAt</code> to <code>edm:hasView</code>. - Changed scope note of <code>dm2e:hasAnnotableVersion</code>. - Corrected URL schemes of contextual classes. - Changed scope note and constraints of <code>dc:format</code>. - Changed version number in the DM2E schema namespace. - Added explanation on namespace

				<p>versioning.</p> <ul style="list-style-type: none"> - Updated document description. - Added properties dm2e:support and dm2e:cover.
Version 1.1 Rev 0.5	22.07.13	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - Corrected edm:ProvidedCHO, ore:Aggregation and skos:Concept examples. - Added table information at the right sight.
Version 1.1 Rev 0.6	09.09.13	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - 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). - Added dm2e:scopeNote to dcterms:hasPart and dcterms:isPartOf. - Deleted the dm2e specialisations of edm:isDerivativeOf (dm2e:isDerivativeOfCHO and dm2e:isDerivativeOfWebResource) - Added dm2e:scopeNote to edm:isDerivativeOf. - Added conditions to edm:Place, edm:ProvidedCHO, edm:WebResource and edm:TimeSpan.
Version 1.1 Rev 0.7	17.10.13	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - Changed range and constraints of dc:subject.
Version 1.1 Rev 0.8	21.10.13 22.10.13	Julia Iwanowa	UBER	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Added dcterms:medium (domain edm:ProvidedCHO) - 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:dateOfTermination (domain foaf:Organization) - Changed dm2e:scopeNote of edm:happenedAt (domain edm:Event) -

				<p>Renamed property dm2e:writtenAreaDimensions into dm2e:writtenAreaDimension</p> <ul style="list-style-type: none"> - Changed constraint of dcterms:issued, dcterms:extent, dm2e:pageDimensions, dm2e:writtenAreaDimension (domain edm:ProvidedCHO) to repeatable - Added range rdf:Literal to edm:currentLocation (domain edm:ProvidedCHO) - Replaced dcterms:rightsHolder with the EDM property dc:rights (domain edm:WebResource) - Updated dm2e:scopeNote for edm:rights
Version 1.1 Rev 1.0	4.12.13	Julia Iwanowa	UBER	<ul style="list-style-type: none"> - Incorporated Feedback from Antoine Isaac - Changed the namespace <i>dcterms</i> into <i>dc</i> in following cases: title, description, creator, contributor - Changed the definition of the dc:language regarding RFC 3306 - Changed the standard for language tags regarding the RFC 3306 - Changed all xsd:dateTime to xsd:date - Added dm2e:origin and dm2e:modeOfAcquisition as subproperties of dcterms:provenance - Added crm:P79F.beginning_is_qualifed_by and crm:P80F.end_is_qualified_byproperties to edm:TimeSpan - Changed the superproperty of painter, patron and translator from dcterms:creator into dc:contributor - Added dcterms:temporal as subproperty of dc/dcterms:coverage - Added a short definition on how to use language tags - 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	<ul style="list-style-type: none"> - Incorporated Feedback from Doron Goldfarb - Incorporated Feedback from Antoine Isaac - Added new properties to foaf:Person and to foaf:Organization - rdaGr2:otherDesignationAssociatedWithThePerson, bibo:suffixName - Added three new properties to dm2e:Work (fabio:hasSubtitle, fabio:hasSequenceIdentifier, fabio:hasCreator) - 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 - Reversed xsd:dateTime (SPARQL doesn't support xsd:date) - Added dm2e:levelOfHierarchy property to edm:ProvidedCHO - 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	<ul style="list-style-type: none"> - Added edm:Place, edm:Timespan and skos:Concept as ranges to edm:hasMet - Removed rdf:Literal and xsd:dateTime from the range restriction on dc:date with the domain edm:Agent - Removed owl:sameAs and bibo:suffixName from foaf:Person and foaf:Organization and added them as generic properties to edm:Agent - Removed properties from dm2e:Work - Added property dm2e:genre (domain edm:ProvidedCHO) - Added property bibo:number (domain edm:ProvidedCHO) - Added dm2e:displayLevel to edm:ProvidedCHO - Added dc:creator to skos:Concept (temporary solution) - Added skos:label, skos:prefLabel and skos:note to edm:Event
Version 1.1 Rev 1.2	21.01.14	Julia Iwanowa	UBER	<ul style="list-style-type: none"> - Changed range to dm2e:genre into skos:Concept - Added dc:type as super property to dm2e:genre
Version 1.1 Rev 1.3	11.02.14	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - Added range edm:Place to dc:subject - Added property prism:startingPage to edm:ProvidedCHO - Moved dm2e:displayLevel from edm:ProvidedCHO to ore:Aggregation - Made skos:prefLabel mandatory in all contextual classes - Added a sentence to the edm:isShownBy scope note - Added constraint to edm:isShownBy - Changed model namespaces - Added text to the introduction of section 3
Version 1.1 Rev 1.3	13.02.14	Julia Iwanowa	UBER	<ul style="list-style-type: none"> - Changed the range of bibo:number from xsd:integer into xsd:int - Changed the range of dm2e:displayLevel from rdfs:Literal into xsd:boolean with only small written letters for "true" and "false" - Extended the definition of dm2e:displayLevel for the value "true" - Added constraint to <i>edm:object</i>
Version 1.1 Rev 1.4	24.02.14	Evelyn Dröge	UBER	<ul style="list-style-type: none"> Incorporated Feedback from DG - dc:subject repeatable - Deleted additional constraints for edm:isShownBy and edm:object ("mandatory if dm2e:displayLevel is true edm:isShownBy and/or edm:object must be provided") - Deleted prism:startingPage

<p>Version 1.1 Rev 1.5</p>	<p>25.02.14 26.02.14 03.03.14</p>	<p>Evelyn Dröge</p>	<p>UBER</p>	<ul style="list-style-type: none"> - Changed dm2e:scopeNote of dm2e:displayLevel - Removed equivalent property from bibo:numPages (DG) - Changed range of bibo:number, bibo:numPages and dm2e:levelOfHierarchy to xsd:unsignedInt (KB, DG) - Changed range and dm2e:scopeNote of crm:P79F.beginning_is_qualified_by and crm:P80F.end_is_qualified_by (DG). - Linked "Recommendations for the RDF representation of DM2E metadata" - Removed dc:description as superproperty of dm2e:genre - added superproperty edm:hasMet to dcterms:rightsHolder - added superproperty edm:hasMet to dc:creator (analogue to EDM) - added superproperty dc:description to dm2e:incipit and dm2e:explicit - removed superproperty dcterms:coverage from dcterms:spatial, dm2e:publishedAt and dcterms:temporal - removed superproperty bibo:identifier from bibo:isbn and bibo:issn - removed range rdf:Literal from edm:currentLocation - changed range of dm2e:shelfmarkLocation from rdf:Literal to edm:Place - removed superproperty edm:hasView from dcterms:tableOfContents - changed superproperty of dm2e:honoree, dm2e:mentioned, dm2e:misattributed, dm2e:patron from edm:isRelatedTo to edm:hasMet - removed superclass fabio:Book from bibo:Book - removed superclasses foaf:document and bibo:document from dm2e:document - removed superclass bibo:Periodical from bibo:Journal and its equivalent class fabio:Journal - removed superclass bibo:PersonalCommunicationDocument from bibo:Letter - removed superclass fabio:Expression from dm2e:Page - moved dm2e:Photo from edm:PhysicalThing to foaf:Image (subclass of edm:NonInformationResource) - added superproperty skos:note to bibo:suffixName - changed superproperty of dm2e:influencedBy from dc:relation to edm:hasMet - corrected typo in edm:NonInformationResource - added superclass edm:PhysicalThing in edm:PhysicalThing subclasses table - removed superclass fabio:Expression from fabio:Article and fabio:chapter
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				<ul style="list-style-type: none"> - removed superclass bibo:Collection from bibo:Series - added mime-types to edm:object (KB) - added mime-types for edm:object to dc:format (KB) - changed range of bibo:numVolumes and bibo:volume to xsd:unsignedInt (recommended) (DG) - added bibo:Issue (subclass of dm2e:Document) (KB) - changed restriction of dm2e:incipit and dm2e:explicit to repeatable (DG) - changed restriction of bibo:number - added superproperty dc:description to bibo:number - changed scopeNote of dc:creator - changed scopeNote of dc:date - dm2e:hasAnnotatableVersionAt is now repeatable
Version 1.1 Rev 1.6	05.03.14	Evelyn Dröge	UBER	<ul style="list-style-type: none"> - new property dm2e:holdingInstitution (domain CHO) (KS) - changed scopeNote of edm:currentLocation (KS) - changed range from dm2e:shelfmarkLocation to literal (KS) - changed superproperty of dm2e:shelfmarkLocation (ED) - new property dm2e:writtenAt (domain CHO) (KS) - made dm2e:publishedAt and dm2e:printedAt repeatable (DG) - changed scopeNote of dcterms:spatial (ED) - changed URI description (collection into dataset)
Version 1.1	06.03.14	Evelyn Dröge Julia Iwanowa	UBER	Consolidation of Version 1.1

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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 <i>(Berlin State Library)</i>
UBER	Humboldt-Universität zu Berlin <i>(Humboldt University Berlin)</i>
UIB	Universitetet i Bergen <i>(University of Bergen)</i>
UMA	Universität Mannheim <i>(University of Mannheim)</i>

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-ORE² 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 vocabulary³ 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/
```

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 library⁵. 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.

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 syntax⁶ 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/
```

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 RFC3066¹⁰ and RFC5646¹¹ which strongly suggest using an ISO-639-1 2-character code and only if it not exist to switch to a ISO-639-2 3-character code¹². 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 Congress¹³ and can be found at: http://www.loc.gov/standards/iso639-2/php/code_list.php.void:Dataset

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:providedCHOs* 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 <i>void:Dataset</i> that a document is a part of."	mandatory not repeatable

Table 1: dm2e:DataResource.

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

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 <i>edm:aggregatedCHO</i> connects the <i>ore:Aggregation</i> with exactly one <i>edm:ProvidedCHO</i> . 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." 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 <i>edm:provider</i> holds the name or identifier of the organisation (<i>foaf:Organization</i> , 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, <i>edm:provider</i> 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)." Comment: "Together with <i>edm:dataProvider</i> this property allows the names of organisations at different points in a data supply chain to be differentiated and	mandatory not repeatable

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

			<p>is recorded in <i>edm:dataProvider</i>. The values in <i>edm:provider</i> and <i>edm:dataProvider</i> can be the same.</p> <p>In the context of DM2E the value for <i>edm:provider</i> is always <code>dm2edata:agent/dm2e/DM2E</code>.</p>	<p>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 <i>edm:provider</i> is the name of aggregator or project. The name of the content holder can be recorded in <i>edm:dataProvider</i>. 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 <i>edm:Agent</i>, 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)."</p>	
edm:dataProvider	foaf:Organization	dcterms:provenance	<p>The property <i>edm:dataProvider</i> holds the name or identifier of the organisation (<i>foaf:Organization</i>, 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.</p>	<p>Definition: "The name or identifier of the organisation who contributes data indirectly to an aggregation service (e.g. Europeana)."</p> <p>Comment: "Together with <i>edm:provider</i> this property allows the names of organisations at different points in a data supply</p>	mandatory not repeatable

				<p>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 <i>edm:provider</i> is the name of aggregator or project. The name of the content holder can be recorded in <i>edm:dataProvider</i>. 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 <i>edm:Agent</i>, 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)."</p>	
dcterms:rightsHolder	edm:Agent	dcterms:provenance	The property <i>dcterms:rightsHolder</i> 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 <i>edm:rights</i> holds	Definition: "Information about	mandatory

			<p>copyright information pertaining to all digital objects (<i>edm:WebResource</i>) given by <i>edm:hasView</i> or one of its subproperties. If a digital object (<i>edm:WebResource</i>) holds an additional copyright information given by <i>dc:rights</i> then this more specific copyright information has priority. Otherwise the value given in <i>edm:rights</i> 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.</p>	<p>usage and access rights of the digital objects indicated in <i>isShownBy</i> and <i>isShownAt</i>."</p> <p>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/available-rights-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 <i>edm:object</i> and the small previews (thumbnails) on the portal."</p>	not repeatable
edm:hasView	edm:WebResource	ore:aggregates	<p>The property <i>edm:hasView</i> holds the URL of an <i>edm:WebResource</i> which shows, depicts or otherwise contains any kind of view of the <i>edm:ProvidedCHO</i>.</p>	<p>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 <i>edm:EuropeanaObject</i>) or an aggregation contributed by a content provider. In order to</p>	optional repeatable

				<p>capture both these cases, the domain of <i>edm:hasView</i> is <i>ore:Aggregation</i> and its range is <i>edm:WebResource</i>."</p> <p>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 <i>edm:hasView</i>."</p>	
edm:isShownBy	edm:WebResource	edm:hasView	<p>The property <i>edm:isShownBy</i> holds the URL of an <i>edm:WebResource</i> which leads to a "plain" image with any kind of view of the <i>edm:ProvidedCHO</i>. "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.</p> <p>Either <i>edm:isShownBy</i> or <i>edm:isShownAt</i> must be provided.</p>	<p>Definition: "An unambiguous URL reference to the digital object on the provider's web site in the best available resolution/quality. See also <i>edm:isShownAt</i>."</p> <p>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</p>	<p>mandatory (either <i>edm:isShownBy</i> or <i>edm:isShownAt</i>) not repeatable</p>

				navigation tools it can be entered in <i>edm:isShownBy</i> ."	
edm:isShownAt	edm:WebResource	edm:hasView	<p>The property <i>edm:isShownAt</i> holds the URL of an <i>edm:WebResource</i> 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).</p> <p>Either <i>edm:isShownBy</i> or <i>edm:isShownAt</i> must be provided.</p>	<p>Definition: "An unambiguous URL reference to the digital object on the provider's website in its full information context. See also <i>edm:isShownBy</i>."</p> <p>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 <i>edm:isShownAt</i> 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)."</p>	<p>mandatory (either <i>edm:isShownBy</i> or <i>edm:isShownAt</i>) not repeatable</p>
edm:object	edm:WebResource	edm:hasView	<p>The property <i>edm:object</i> holds the URL of an <i>edm:WebResource</i> 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 <i>edm:isShownBy</i>.</p> <p>If you provide an <i>edm:object</i> it is mandatory to add one of the following MIME types with</p>	<p>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 <i>edm:isShownBy</i>."</p> <p>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</p>	<p>not mandatory but strongly recommended not repeatable</p>

			<p>dc:format to the edm:WebResource:</p> <ul style="list-style-type: none"> • image/png • image/jpeg • image/gif • image/tiff • 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	<p>The property <i>dm2e:hasAnnotatableVersionAt</i> 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</p> <ul style="list-style-type: none"> • text/html-named-content • text/plain • text/html • image/gif • image/jpeg • 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 <i>dcterms:created</i> 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 <i>dcterms:modified</i> 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 <i>dcterms:creator</i> 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." Comment: "Examples of a Creator include a person, an organization, or a service."	optional repeatable
dc:contributor	edm:Agent	edm:hasMet	The property <i>dc:contributor</i> 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." 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/BTEEn/Ms-114> ;
edm:hasView <http://www.wittgensteinsource.org/texts/BTEEn/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

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.” 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 <i>dc:type</i> , 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 <i>dc:format</i> if appropriate.”	mandatory not repeatable
dc:type	edm:PhysicalThing	edm:hasType	The property <i>dc:type</i> provides a	Definition: “The nature or genre of	mandatory

	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 <i>edm:PhysicalThing</i> and <i>skos:Concept</i> respectively. At least one <i>dc:type</i> 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 <i>dc:title</i> gives the main title of the CHO. It is mandatory to provide either a <i>dc:title</i> or a <i>dc:description</i> for the CHO.	"A name given to the resource."	mandatory (either <i>dc:title</i> or <i>dc:description</i>) 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 <i>dc:title</i> or <i>dc:description</i>) 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 <i>dm2e:origin</i> or <i>dm2e:modeOfAcquisition</i> .	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
<i>dm2e:origin</i>	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
<i>dm2e:modeOfAcquisition</i>	rdf: Literal with optional language tag (in RFC 3066, see section 3.2)	dcterms:provenance	The property <i>dm2e:modeOfAcquisition</i> 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

				the original analog or born digital object."	
dc: language	rdf: Literal	edm: hasType	The property <i>dc: language</i> holds the most prominent language of the CHO. If an <i>edm: type</i> 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 <i>dc: language</i> 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 <i>edm: type</i> "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 <i>dm2e: publishedAt</i> , <i>dme2e: printedAt</i> or <i>dm2e: writtenAt</i> 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 <i>edm:WebResource</i> 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. 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." 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." 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 <i>bibo:number</i> is used to store the page number of each CHO from type <i>dm2e:Page</i> . 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

	<i>otherwise:</i>) rdf: Literal			of documents (usually a series, periodical, etc.)."	
bibo: volume	xsd: unsignedInt (<i>recommended, otherwise:</i>) 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 <i>edm: isSimilarTo</i> , 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

				<p>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 <i>edm:isDerivativeOf</i>."</p>	
dcterms:isVersionOf	edm:ProvidedCHO	edm:isDerivativeOf	cf. original scope note	<p>Definition: "A related resource of which the described resource is a version, edition, or adaptation."</p> <p>Comment: "Changes in version imply substantive changes in content rather than differences in format."</p>	optional repeatable
dcterms:hasVersion	edm:ProvidedCHO	-	cf. original scope note	<p>Definition: "A related resource that is a version, edition, or adaptation of the described resource."</p>	optional repeatable
dcterms:hasPart	edm:ProvidedCHO	dc:relation	<i>dcterms:hasPart</i> 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. <i>edm:ProvidedCHO</i> <i>dcterms: hasPart</i> <i>edm:ProvidedCHO</i> .	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	<i>dcterms: isPartOf</i> 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. <i>edm:ProvidedCHO</i> <i>dcterms: isPartOf</i> <i>edm:ProvidedCHO</i> .	"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
dm2e: levelOfHierarchy	xsd:int	-	The Top-Level-CHO must contain the number "1" as value of the <i>dm2e:levelOfHierarchy</i> 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	<i>edm:isNextInSequence</i> relates two same-level CHOs in a ordered sequence. The two CHOs are part of the same resource. For example, if a CHO <i>x</i> from <i>rdf:type dm2e:Manuscript</i> consist of two CHOs <i>y1</i> and <i>y2</i> from <i>rdf:type fabio:Chapter</i> , then the relation between them should be described by the following triple: <i>y2-CHO-URI edm:isNextInSequence y1-CHO-URI</i>	Definition: " <i>edm:isNextInSequence</i> 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: " <i>isNextInSequence</i> 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

<p>edm:isRelatedTo</p>	<p>rdf: Literal with optional language tag (in RFC 3066, see section 3.2)</p>	<p>-</p>	<p>Any other related resource.</p>	<p>Definition: “<i>edm:isRelatedTo</i> 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.”</p> <p>Comment: “Querying <i>edm:isRelatedTo</i> corresponds to a typical retrieval by keyword, as supported by web search engines; but it also allows more, as the objects of <i>edm:isRelatedTo</i> statements can be fully-fledged resource such as concepts, documents, etc.”</p>	<p>optional repeatable</p>
<p>edm:hasMet</p>	<p>edm: Agent edm: Event edm: Place edm: Timespan skos: Concept</p>	<p>dc: relation</p>	<p>Unites properties with the range <i>edm:Agent</i> like <i>dc:creator</i> or <i>dc:contributor</i>.</p>	<p>Definition: “<i>edm:hasMet</i> 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.</p>	<p>optional repeatable</p>

				<p>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.”</p> <p>Comment: “<i>edm:hasMet</i> 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 <i>dc:creator</i>, <i>dc:publisher</i>, <i>dc:contributor</i>, <i>dc:date</i>. To this end, any such properties should be declared to be a (direct or indirect) subproperty of <i>edm:hasMet</i>.”</p>	
owl:sameAs	rdf:Resource	-	Two URIs describing the identical CHOs can be interlinked with each other via the <i>owl:sameAs</i> property.	<p><i>Definition</i>: “The built-in OWL property <i>owl:sameAs</i> links an individual to an individual. Such an <i>owl:sameAs</i> statement indicates that two URI references actually refer to the same thing: the</p>	optional repeatable

				individuals have the same "identity".	
dm2e: pageDimension	rdf: Literal	dcterms: extent	Page size. Please do also note the unit that was used.	-	optional repeatable
dm2e: writtenArea 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 repeatable
dm2e: refersTo	foaf: Person edm: ProvidedCHO	dcterms: references	A person or CHO that is explicitly or implicitly referred to in the (textual) CHO.	-	optional repeatable
dm2e: wasStudiedBy	edm: Agent	edm: hasMet	The CHO was studied by an agent.	-	optional repeatable
dm2e: wasTaughtBy	edm: Agent	edm: hasMet	The CHO was taught by an agent.	-	optional repeatable
dc: creator	edm: Agent	edm: hasMet	The property <i>dcterms: creator</i> 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." Comment: "Examples of a Creator include a person, an organization, or a service."	optional 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." 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 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." 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

			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:WebResources* 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." 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." 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:) optional repeatable

			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.	<p>Definition: "Use for the name of the rights holder of this digital representation if possible or for more general rights information. [...]"</p> <p>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 <i>edm:rights</i>. [...]"</p>	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.	<p>Definition: "This property captures a narrower notion of derivation than <i>edm:isSimilarTo</i>, 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."</p>	optional repeatable

				<p>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 <i>edm:isDerivativeOf</i>."</p>	
dcterms:created	edm:TimeSpan xsd:dateTime rdf:Literal	dc:date	cf. original scope note	<p>Definition: "Date of creation of the resource."</p>	optional repeatable
edm:rights	edm:WebResource	dc:rights	<p>The property <i>edm:rights</i> holds copyright information pertaining to all digital objects (<i>edm:WebResource</i>) given by <i>edm:hasView</i> or one of its subproperties. If a digital object (<i>edm:WebResource</i>) holds an additional copyright information given by <i>dc:rights</i> then this more specific copyright information has priority. Otherwise the value given in <i>edm:rights</i> at the Aggregation is the default value for digital object attached to this Aggregation. The</p>	<p>Definition: "Information about usage and access rights of the digital objects indicated in <i>isShownBy</i> and <i>isShownAt</i>."</p> <p>Comment: "The value in this element is a URL constructed according to the specifications in the "Specifications of the controlled values for <i>edm:rights</i>". The URLs are constructed by adding a code indicating the copyright status of an object to the domain name where that status is</p>	not mandatory but strongly recommended not repeatable

			<p>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.</p>	<p>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 <i>edm:object</i>. In order to allow organisations to manage the provision of this element, <i>edm:rights</i> has an obligation level of "recommended" in this version of EDM. It will be changed to "Mandatory" in a later version."</p>	
dcterms:hasPart	edm:WebResource	dc:relation	<p><i>dcterms:hasPart</i> 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. <i>edm:WebResource</i> <i>dcterms:hasPart</i> <i>edm:WebResource</i>.</p>	<p>"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."</p>	optional repeatable
dcterms:isPartOf	edm:WebResource	dc:relation	<p><i>dcterms:isPartOf</i> 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. <i>edm:WebResource</i> <i>dcterms:isPartOf</i> <i>edm:WebResource</i>.</p>	<p>"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."</p>	optional repeatable
edm:isNextInSequence	edm:WebResource	dc:relation	<p>Can be used if a CHO has several parts of CHOs or WebResources in a sequence.</p>	<p>Definition: "<i>edm:isNextInSequence</i> 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."</p> <p>Comment: "<i>isNextInSequence</i></p>	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."	
--	--	--	--	--	--

Table 5: edm:WebResource.

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 <i>foaf:Document</i> , <i>dm2e:Document</i> 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 <i>bibo:Manuscript</i> .	-
dm2e:Page	edm:PhysicalThing	ProvidedCHO of type page. A sheet of paper. Can be part of another CHO, e.g. <i>dm2e:Manuscript</i> .	-

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.” 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 <i>skos:hiddenLabel</i>).”	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 <u>Equivalent to:</u> 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." 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: " <i>edm:hasMet</i> 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

				<p>participate in any role.”</p> <p>Comment: “<i>edm:hasMet</i> 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 <i>dc:creator</i>, <i>dc:publisher</i>, <i>dc:contributor</i>, <i>dc:date</i>. To this end, any such properties should be declared to be a (direct or indirect) subproperty of <i>edm:hasMet</i>.”</p>	
edm:isRelatedTo	rdf:Literal	-	Any other related resource.	<p>Definition: “<i>edm:isRelatedTo</i> 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</p>	optional repeatable

				<p>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."</p> <p>Comment: "Querying <i>edm:isRelatedTo</i> corresponds to a typical retrieval by keyword, as supported by web search engines; but it also allows more, as the objects of <i>edm:isRelatedTo</i> statements can be fully-fledged resource such as concepts, documents etc."</p>	
dc:date	edm:TimeSpan edm:Event	edm:hasMet	A significant date associated with this resource. The date should be described with <i>edm:Event</i> .	<p>Definition: "A point or period of time associated with an event in the lifecycle of the resource."</p> <p>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]."</p>	optional repeatable
dc:identifier	rdf:Literal	-	Identifier of the resource.	<p>Definition: "An unambiguous reference to the resource within a given context."</p> <p>Comment: "Recommended best practice is to identify the resource by means of a string conforming to a formal identification system."</p>	optional repeatable

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 CHO can be interlinked with each other via the <i>owl: sameAs</i> property.	<i>Definition:</i> "The built-in OWL property <i>owl: sameAs</i> links an individual to an individual. Such an <i>owl: sameAs</i> 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: dateOfEstablishment	edm:TimeSpan xsd:date 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:date 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: otherDesignationAssociatedWith	rdf:Literal	-	Additional names.	Definition: “A term other than a title that is associated with a	optional not repeatable

thTheCorporateBody				person's name."	
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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 <u>Equivalent to:</u> 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." Comment: "This class is a domain of <i>edm:wasPresentAt</i> ."
edm:Event	edm: NonInformationResource <u>Equivalent to:</u> 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)." 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 <u>Equivalent to:</u> 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)." Comment: "Physical things are identified by the content provider or by Europeana at enrichment time. This class is the domain of <i>edm: realizes</i> ."
edm: Place	edm: NonInformationResource <u>Equivalent to:</u> 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)." 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 <i>edm: happenedAt</i> ."
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 <i>edm:occurredAt</i> . 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 Headings²⁴ and the AAT²⁵." (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 <i>skos:hiddenLabel</i>)."	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, <i>skos:notation</i> is used with a typed literal in the object position of the triple."	
skos:broader	rdf:Literal	-	URI of the broader concept.	<p>Definition: "Relates a concept to a concept that is more general in meaning."</p> <p>Scope Note: "By convention, <i>skos:broader</i> is only used to assert an immediate (i.e. direct) hierarchical link between two conceptual resources."</p>	optional repeatable
skos:narrower	rdf:Literal	-	URI of the narrower concept.	<p>Definition: "Relates a concept to a concept that is more specific in meaning."</p> <p>Scope Note: "By convention, <i>skos:broader</i> is only used to assert an immediate (i.e. direct) hierarchical link between two conceptual resources."</p>	optional repeatable
skos:inScheme	URI-Resource	-	The URI of a concept scheme.	<p>Definition: "Relates a resource (for example a concept) to a concept scheme in which it is included."</p> <p>Scope Note: "A concept may be a member of more than one concept scheme."</p>	optional repeatable
owl:sameAs	rdf:Resource	-	Two URIs describing the identical CHOs can be interlinked with each other via the <i>owl:sameAs</i> property.	<p><i>Definition:</i> "The built-in OWL property <i>owl:sameAs</i> links an individual to an individual. Such an <i>owl:sameAs</i> statement indicates</p>	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 <i>dc:creator</i> 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 <i>edm:ProvidedCHOs</i> .	<p>Definition: "An entity primarily responsible for making the resource."</p> <p>Comment: "Examples of a Creator include a person, an organization, or a service."</p>	optional repeatable

Table 13: skos:Concept.

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. <i>dm2e:Manuscript</i> .	-
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.	<p>Definition: "An alternative lexical label for a resource."</p> <p>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 <i>skos:hiddenLabel</i>)."</p>	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.	<p>Definition: "A general note, for any purpose."</p> <p>Scope Note: "This property may be used directly, or as a super-property for more specific note types."</p>	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.	<p>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."</p>	optional repeatable
dcterms:hasPart	edm:Place	dc:relation	<i>dcterms:hasPart</i> 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. <i>edm:Place dcterms:hasPart edm:Place</i> .	"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	<i>dcterms:isPartOf</i> 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. <i>edm: Place dcterms: isPartOf edm:Place</i> .	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 <i>owl:sameAs</i> property.	<i>Definition:</i> "The built-in OWL property <i>owl:sameAs</i> links an individual to an individual. Such an <i>owl:sameAs</i> 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 <i>skos:hiddenLabel</i>)."	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	<i>dcterms:hasPart</i> 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. <i>edm:TimeSpan</i> <i>dcterms:hasPart edm:TimeSpan</i> .	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	<i>dcterms:isPartOf</i> 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. <i>edm:TimeSpan</i> <i>dcterms:isPartOf edm:TimeSpan</i> .	"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”.		
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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 <u>Equivalent to:</u> 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." 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." 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." Equivalent property: <i>P4_has_timespan (CIDOC CRM)</i>	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

	see section 3.2)			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 <i>skos:hiddenLabel</i>)."	
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

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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