5. DCS Business Object Ontology

The DCS operates on a set of object models called Business Objects. This section enumerates the types of Business Objects and describes the relationships supported amongst them. In addition to the specified relationships, relationships that do not violate the described cardinalities/constraints may be captured through a generic relationship mechanism.

For data packaging purposes, each object type can be represented as a ORE Resource Map under the resource map profile explained here. The tables for each object type indicate the mapping between the properties and relationships of the object models and their corresponding ORE ReM representations. Some properties and relationships are not included in the ReMs; therefore, they have no ORE-ReM representation.

5.1. Project Model

Project

Usage

Generally speaking, a Project is meant to align with a topic or area of sponsored research (e.g. a grant, or faculty research project). It records information important to data managers, such as the sponsors of a project, the administrators (e.g. the Principle Investigators and/or their proxies), and the beginning and end dates of the research project.

Model

Property	Cardinality	ORE-ReM representation	Usage
Id	(1,1)	dcterms:identifier	Generated by the system during ingest (via package ingest) or creation (via the DCS Front End)
Name	(1,1)	dcterms:title	Brief textual title for the Project
Description	(1,1)	dcterms:description	Textual description of the Project
Funding Entity	(0,1)		Identifies funder
Numbers	(0,*)		Award or other funding "numbers".
Principal Investigators	(0,*)		Identities (names) of principal investigators
Publisher	(1,1)		
Start Date	(1,1)		The start date of the Project
End Date	(0,1)		The end date of the Project
Storage Allocated	(1,1)		Storage space allotted to the Project in the system

Storage Used	(1,1)		Storage space taken up by the Project's data.

Relationship name	Cardinality	Targets	ORE-ReM representation	Usage
hasMember	(0,*)	Collection	ore:aggregates	Represents the relationship between the Project and its children Collections.

5.2. Collection Model

Usage

A Collection is an aggregation of Data Items (or simply, Items). The Collection maintains metadata that pertain to the aggregated Items and the Collection itself. Collections may be published and cited. Collections can contain multiple sub-collections. A Collection belongs to a single Project.

Model

Property	Cardinality	ORE-ReM representation	Usage
Id	(1,1)	dcterms:identifier ore:similarTo	Generated by the system during ingest (via package ingest) or creation (via the DCS Front End)
Alternate Id	(0,*)	dcterms:identifier	Alternate Id for the Collection
Title	(0,1)	dcterms:title	Short title of the collection
Summary	(0,1)	dcterms:description	A summary description of the Collection's content
Discipline	(0,*)	dcterms:subject	A term of a vocabulary identifying the discipline which the Collection is associated with
Citable Locator	(0,*)	datacons:citableLocator	Unique id which could be used to cite the Collection and its content.
Creator	(0,*)	dcterms:creator	Contain information about the Collection's creator(s)
Creator Name	(0,1)	dcterms:creator/foaf:name	Cardinality is per creator
Creator Phone	(0,*)	dcterms:creator/foaf:phone	Cardinality is per creator
Creator Email	(0,*)	dcterms:creator/foaf:mbox	Cardinality is per creator
Creator Page	(0,*)	dcterms:creator/foaf:page	Cardinality is per creator
Contact		scoro:contact_person	Contain information about the designated point of contact for the Collection
Contact Name	(0,1)	scoro:contact_person/foaf:name	Cardinality is per contact
Contact Phone	(0,*)	scoro:contact_person/foaf:phone	Cardinality is per contact
Contact Email	(0,*)	scoro:contact_person/foaf:mbox	Cardinality is per contact
Publication Date	(0,1)	dcterms:issued	Date on which the Collection is published
Create Date	(1,1)	dcterms:created	Date on which the Collection was first created
Modified Date	(1,1)	dcterms:modified	Date on which the Collection's information is updated
Deposit Date	(1,1)		Date on which the Collection is deposited - system generated upon ingest
Depositor Id	(1,1)		Identifier of the user who deposited the Collection - system generated upon ingest

Relationship name	Cardinality	Targets	ORE-ReM	Usage
hasMember	(0,*)	Collection OR Data Item	ore:aggregates	Represents the relationship between a Collection and its children Collection or its children Data Items
isMemberOf	(1,1)	Collection OR Project	ore:isAggregatedBy dcterms:isPartOf	Represents the relationship between a Collection and its containing Collection or Project
hasMetadata	(0,*)	MetadataFile		Represents the relationship between a Collection and its MetadataFile

5.3. Data Item model

Usage

Data Items (Items) are the unit of deposit, and serve as a container for describing the file or files contained therein. Items must be deposited to a Collection; currently an Item can only be a member of a single Collection, and they cannot be moved between Collections. In this release, Data Items contain multiple data files.

Model

Property	Cardinality	ORE-ReM representation	Usage
Id	(1,1)	dcterms:identifier ore:similarTo	Generated by the system during ingest (via package ingest) or creation (via the DCS Front End)
Alternate Id	(0,*)	dcterms:identifier	Alternate Ids of the Data Item
Name	(0,1)	dcterms:title	A descriptive label of the Data Item
Description	(0,1)	dcterms:description	A summary description of the Data Item's content
Citable Locator	(0,*)	datacons:citableLocator	Unique id which could be used to cite the Data Item and its content.
Content Model	(0,*)	dcterms:conformsTo	Content models to which a given manifestation of a Data Item conforms.
Creator	(0,*)	dcterms:creator	Contain information about the Data Item creator(s)
Creator Name	(0,1)	dcterms:creator/foaf:name	Cardinality is per creator
Creator Phone	(0,*)	dcterms:creator/foaf:phone	Cardinality is per creator
Creator Email	(0,*)	dcterms:creator/foaf:mbox	Cardinality is per creator
Creator Page	(0,*)	dcterms:creator/foaf:page	Cardinality is per creator
Contact		scoro:contact_person	Contain information about the designated point of contact for the Data Item
Contact Name	(0,1)	scoro:contact_person/foaf:name	Cardinality is per contact
Contact Phone	(0,*)	scoro:contact_person/foaf:phone	Cardinality is per contact
Contact Email	(0,*)	scoro:contact_person/foaf:mbox	Cardinality is per contact
Create Date	(1,1)	dcterms:created	Date on which the Data Item was first created
Modified Date	(1,1)	dcterms:modified	Date on which the Data Item's information is updated
Deposit Date	(1,1)		Date on which the Data Item is deposited
Depositor Id	(1,1)		Identifier of the user who deposited the Data Item

Relationship name	Cardinality	Targets	ORE-ReM representation	Usage
hasMember	(0,*)	Data File	ore:aggregates	Represents the relationship between a Data Item and its children Data Files
isMemberOf	(1,1)	Collection	ore:isAggregatedBy dcterms:isPartOf	Represents the relationship between a Data Item and its containing Collection
hasMetadata	(0,*)	MetadataFile		Represents the relationship between a Data Item and its MetadataFile

5.4. Data File model

Usage

Date File, an encapsulation of a bytestream, is the most granular unit of data. Data File has to be contained by a Data Item when being deposited into the system. Data File can only be a member of one Data Item.

Model

Property	Cardinality	ORE-ReM representation	Usage
Id	(1,1)	dcterms:identifier ore:similarTo	Generated by the system during ingest (via package ingest) or creation (via the DCS Front End)
Name	(0,1)	opmv:hasFileName	File system name of the file
Title	(0,1)	dcterms:title	A description label for the File
Description	(0,1)	dcterms:description	A summary description of the File's content
Format	(0,*)	dcterms:format dcterms:conformsTo	Information regarding the format of the File, such as mimetypes, xml schemas, etc.
Size	(0,1)	opmv:hasSize dcterms:extent	Size of the bytestream contain in the File, system generated property
Fixity	(0,1)		Checksum value of the File's bytestream
Create Date	(1,1)	dcterms:created	Date on which the File was first created
Modified Date	(1,1)	dcterms:modified	Date on which the File's information is updated
Deposit Date	(1,1)		Date on which the File is deposited
Depositor Id	(1,1)		Identifier of the user who deposited the File

Relationship name	Cardinality	Targets	ORE-ReM representation	Usage
isMemberOf	(1,1)	Data Item	ore:isAggregatedBy dcterms:isPartOf	Represents the relationship between a Data File and its containing Data Items

5.5. Metadata File model

Usage

Metadata File, an encapsulation of a bytestream, are used to further describe another object (including another Metadata File). Metadata File can only describe ONE other object and can only be deposited as part of the higher level object it (Collection, DataItem) described. Currently a Metadata File cannot describe a Project, but we expect to support this relationship in future releases.

Model

Property	Cardinality	ORE-ReM representation	Usage
Id	(1,1)	dcterms:identifier ore:similarTo	Generated by the system during ingest (via package ingest) or creation (via the DCS Front End)
Name	(0,1)	opmv:hasFileName	File system name of the file
Title	(0,1)	dcterms:title	A description label for the File
Description	(0,1)	dcterms:description	A summary description of the File's content
Format	(0,*)	dcterms:format dcterms:conformsTo	Information regarding the format of the File, such as mimetypes, xml schemas, etc.
Size	(0,1)	opmv:hasSize dcterms:extent	Size of the bytestream contain in the File, system generated property
Fixity	(0,1)		Checksum value of the File's bytestream
Create Date	(1,1)	dcterms:created	Date on which the File was first created
Modified Date	(1,1)	dcterms:modified	Date on which the File's information is updated
Deposit Date	(1,1)		Date on which the File is deposited
Depositor Id	(1,1)		Identifier of the user who deposited the File

Relationship name	Cardinality	Targets	ORE-ReM representation	Usage
isMetadataFor	(1,1)	Collection or Data Item	fedora-rels-ext:isMetadataFor	Represents the relationship between a Data File and its Metadata Files