



Asset Description Metadata Schema (ADMS)

W3C Working Group Note 01 August 2013

This version:

<http://www.w3.org/TR/2013/NOTE-vocab-adms-20130801/>

Latest published version:

<http://www.w3.org/TR/vocab-adms/>

Previous version:

<http://www.w3.org/TR/2013/NOTE-vocab-adms-20130528/>

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The vocabulary defined in this document is also available in these non-normative formats: [RDF/XML](#) and [Turtle](#).

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Abstract

ADMS is a profile of DCAT, used to describe *semantic assets* (or just 'Assets'), defined as highly reusable metadata (e.g. xml schemata, generic data models) and reference data (e.g. code lists, taxonomies, dictionaries, vocabularies) that are used for eGovernment system development.

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The only changes made since the [previous version](#) of this document concern the [acknowledgements](#) section. No substantive changes have been made.

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1. Introduction

This section is non-normative.

ADMS, the Asset Description Metadata Schema, is a profile of DCAT [[DCAT](#)] for describing so-called *Semantic Assets* (or just 'Assets'), that is, highly reusable metadata (e.g. xml schemata, generic data models) and reference data (e.g. code lists, taxonomies, dictionaries, vocabularies) that are used for eGovernment system development [[TOGD](#)]. Someone searching for an Asset is likely to have different needs, priorities and expectations than someone searching for a dataset in a data catalog and these differences are reflected in ADMS. In particular, users seeking an Asset are likely to be searching for a document — something they can open and read

using familiar desktop software, as opposed to something that needs to be processed. Of course this is a very broad generalization. If a code list is published as a SKOS Concept scheme then it is both an Asset and a dataset and it can be argued that all Assets are datasets. Therefore the difference in *user expectation* is at the heart of what distinguishes ADMS as a profile of DCAT. A further distinction between DCAT and ADMS can be made in that DCAT is *designed to facilitate interoperability between data catalogs*, i.e. the catalog itself is at the heart of the vocabulary. ADMS is focused on the assets within a catalog.

2. Conformance

As well as sections marked as non-normative, all authoring guidelines, diagrams, examples, and notes in this specification are non-normative. Everything else in this specification is normative.

The key words **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**, **RECOMMENDED**, **MAY**, and **OPTIONAL** in this specification are to be interpreted as described in [[RFC2119](#)].

A data interchange, however that interchange occurs, is conformant with ADMS if:

- it uses terms (classes and properties) from ADMS in a way consistent with their semantics as defined in this specification;
- it does **not** use terms from other vocabularies **instead** of ones defined in this vocabulary that could reasonably be used (use of such terms in **addition** to ADMS is permissible)..

A conforming data interchange:

- **MAY** include terms from other vocabularies;
- **MAY** use only a subset of ADMS terms.

An **ADMS profile** is a specification for data interchange that adds additional constraints. Such additional constraints in a profile **MAY** include (but are not limited to):

- a minimum set of required terms;
- classes and properties for additional terms not covered in ADMS;
- controlled vocabularies or URI sets as acceptable values for properties;
- specific concrete protocols, formats, and syntaxes.

ADMS is technology-neutral and a publisher may use any of the terms defined in this document encoded in any technology although RDF and XML are preferred.

3. Namespaces

This section is non-normative.

The namespace for ADMS is <http://www.w3.org/ns/adms#>. However, it should be noted that ADMS makes extensive use of terms from other vocabularies, in particular Dublin Core [[DC11](#)]. It re-uses and subclasses DCAT wherever possible and therefore defines a minimal set of classes and properties of its own. A full set of namespaces and prefixes used in this document is shown in the table below.

Prefix	Namespace
adms	http://www.w3.org/ns/adms#
dcat	http://www.w3.org/ns/dcat#
dcterms	http://purl.org/dc/terms/
foaf	http://xmlns.com/foaf/0.1/
schema	http://schema.org/
rdfs	http://www.w3.org/2000/01/rdf-schema#
skos	http://www.w3.org/2004/02/skos/core#
v	http://www.w3.org/2006/vcard/ns#
wdrs	http://www.w3.org/2007/05/powder-s#
xhv	http://www.w3.org/1999/xhtml/vocab#

4. Vocabulary Overview

This section is non-normative.

ADMS is intended as a model that facilitates federation and co-operation. Like DCAT, ADMS has the concepts of a repository (catalog), assets within the repository that are often conceptual in nature, and accessible realizations of those assets, known as distributions. An asset may have zero or multiple distributions. As an example, a W3C namespace document can be considered to be a Semantic Asset that is typically available in multiple distributions, typically one or more machine processable versions and one in HTML for human consumption. An asset without any distributions is effectively a concept with no tangible realization, such as a planned output of a working group that has not yet been drafted.

ADMS is an RDF vocabulary with an RDF schema available at its namespace <http://www.w3.org/ns/adms>. The original ADMS specification published by the European Commission [[ADMS1](#)] includes an XML schema that also defines all the controlled vocabularies and cardinality constraints associated with the original document.

4.1 Example

This example provides a quick overview of how ADMS might be used to represent a Semantic Asset Repository and its assets.

Examples in this document are serialized in [Turtle](#).

First, the repository description:

```
:Repository a adms:AssetRepository ;
  dcterms:created "1947-02-07"^^xsd:date ;
  dcterms:description "A complete catalog of code lists and standards created by the Exemplary Standards Body"@en ;
  dcterms:publisher <http://example.com/data#org> ;
  dcterms:title "The Exemplary Standards Body Catalog"@en .
```

This assumes that the Exemplary Standards Body is described at <http://example.com/data#org>.

Next, an Asset. We'll create an imaginary code list called 'Fruit I like' for our example:

- apples
- pears
- oranges
- peaches

We might describe this Asset thus:

```
1  :Fruit_02 a adms:Asset ;
2    dcterms:created "1999-05-24" ;
3    dcterms:description "Fruits that are found to be generally liked by most people." ;
4    dcterms:publisher <http://example.com/data#org> ;
5    dcterms:title "Fruit I like"@en ;
6    adms:status <http://purl.org/adms/status/Completed> ;
7    dcterms:type <http://purl.org/adms/assettype/CodeList> ;
8    adms:previous :Fruit_01 ;
9    adms:last :Fruit ;
10   dcat:distribution :Fruit_02.csv ;
11   dcat:distribution :Fruit_02.xml .
```

This provides the creation date (line 2), description (line 3), publisher (line 4) and a title (line 5) for the Asset. The status of the Asset is given in line 6 using one of the values made available in the original ADMS specification [[ADMS1](#)]. Likewise the type of Asset in line 7. In line 8 we can see that there was a previous version of this asset (Fruit_01) and that the latest version can be found by appending 'Fruit' to the data's root (line 9).

This Asset has two distributions linked in lines 11 and 12. One of these might be described thus:

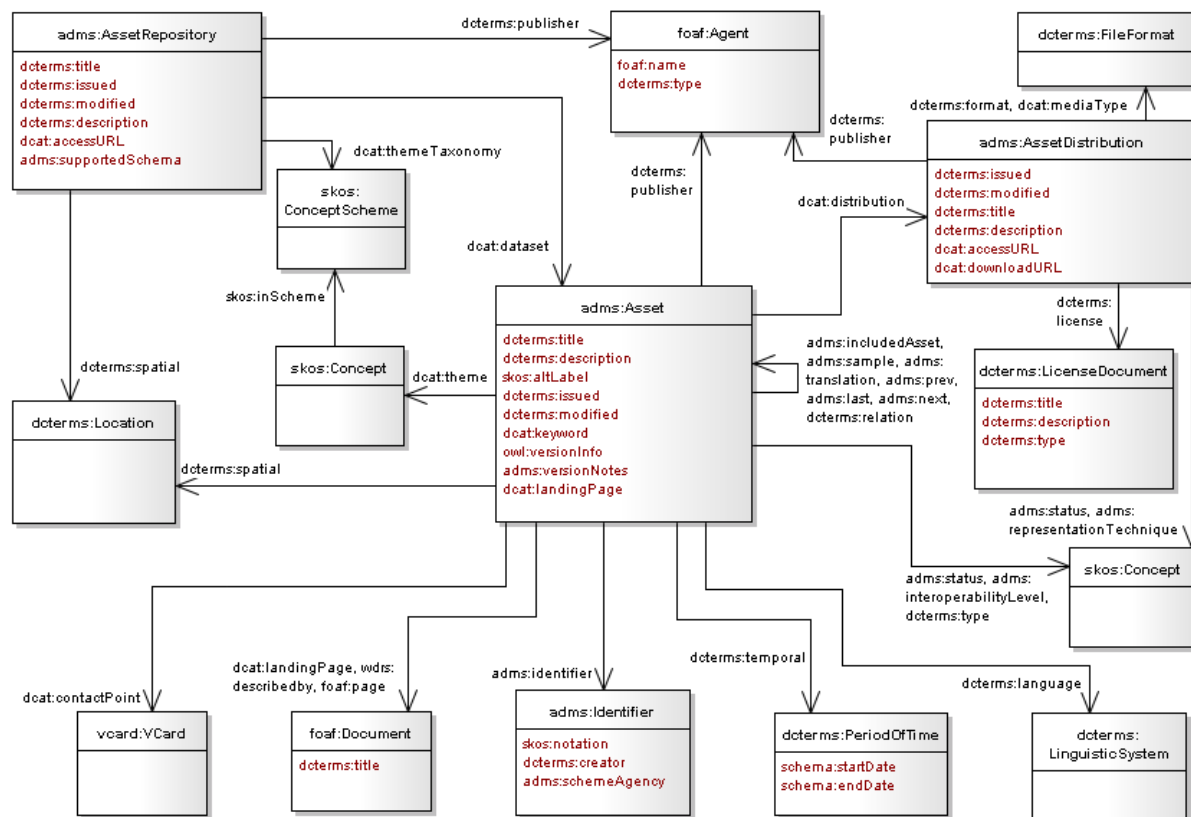
```
:Fruit_02.xml a adms:AssetDistribution ;
  dcterms:description "XML encoding of Fruits that are found to be generally liked by most people." ;
  dcterms:license <http://creativecommons.org/licenses/by/3.0/> ;
  dcterms:format <http://purl.org/NET/mediatypes/application/xml> .
```

This is a very simple description of the Asset Distribution that just gives its description, format, and license. In this example we've used Ed Summers' media types application to provide a URI for the XML MIME type [[EDSU](#)]

The missing triple from this example is the one that includes the Asset in the Repository. This is done with a simple triple:

```
:Repository dcat:dataset :Fruit_02 .
```

5. The ADMS Domain Model



UML model of ADMS classes and properties

The classes and properties are described in the following sub-sections

5.1 The Primary Concepts

5.1.1 Asset Repository

adms:AssetRepository

A system or service that provides facilities for storage and maintenance of descriptions of Assets and Asset Distributions, and functionality that allows users to search and access these descriptions. An Asset Repository will typically contain descriptions of several Assets and related Asset Distributions.

adms:AssetRepository is a sub class of dcat:Catalog

5.1.2 Asset

adms:Asset

An abstract entity that reflects the intellectual content of the asset and represents those characteristics of the asset that are independent of its physical embodiment. This abstract entity combines the FRBR entities *work* (a distinct intellectual or artistic creation) and *expression* (the intellectual or artistic realization of a work) [[FRBR](#)].

Assets can be versioned. Every time the intellectual content of an asset changes, the result is considered to be a new asset that can be linked to previous and next versions of the Asset.

The physical embodiment of an Asset is called an Asset Distribution. A particular Asset may have zero or more Distributions.

`adms:Asset` is a sub class of `dcat:Dataset`

Assets are included in Repositories using DCAT's `dcat:dataset` property.

5.1.3 Asset Distribution

adms:AssetDistribution

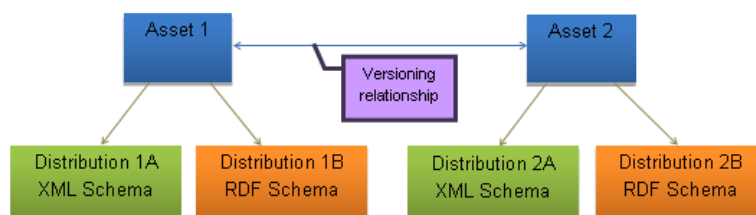
A particular physical embodiment of an Asset, which is an example of the FRBR *entity manifestation* (the physical embodiment of an expression of a work).

A Distribution is typically a downloadable computer file (but in principle it could also be a paper document or API response) that implements the intellectual content of an Asset.

A particular Distribution is associated with one and only one Asset, while all Distributions of an Asset share the same intellectual content

in different physical formats.

Distributions themselves are not versioned. If Distribution 1A is the manifestation of Asset 1 and Distribution 2A is the manifestation of Asset 2, a version relationship will be expressed between Asset 1 and Asset 2, not between Distribution 1A and Distribution 2A. For an illustration of two Assets that each have two Distributions (representations in different formats) see the diagram below.



The relationship between versioned Assets and their Distributions

`adms:AssetDistribution` is a sub class of `dc:Distribution`

Assets are linked to Asset Distributions using DCAT's `dc:distribution` property.

Examples of the relationship between Assets and Asset Distributions are:

An Asset without an Asset Distribution

Even before an Asset is finalized, a description of what it will be can often be made; for example, a description of it can be written, the publisher is already known as is the language. A link to the distribution, the physical document, can only be made when the work is done; until that time, the Asset will have no Distribution associated with it.

An Asset and Asset Distribution embedded in a single file

Some Assets, such as technical specifications, have some characteristics that are related to the intellectual content such as its description, its language and its version, and some characteristics that are related to the file itself such as its location (if its identifier is not a URL), its format and the usage conditions. In such cases, a single entity is *both* an Asset *and* an Asset Distribution. Even so, best practice is to assert the Asset → Asset Distribution relationship (i.e. to point to itself) so that queries looking for that relationship will still return a result.

An Asset with multiple Asset Distributions

It is common for a single work to be expressed in multiple formats. For example, RDF documents are often serialized in RDF/XML, Turtle and triples, each of which would be a discrete Distribution.

5.2 The Secondary Concepts

In addition to the primary concepts, ADMS includes a number of secondary or supporting concepts:

5.2.1 Asset Type

`skos:Concept`

The classification of an Asset according to a controlled vocabulary, e.g. code list, metadata schema. Use `dc:terms:type` to link an Asset to an Asset Type.

5.2.2 Contact Information

`v:VCard`

A contact point for further information about an Asset. Use `dc:contactPoint` to link an Asset to a VCard.

5.2.3 Documentation

`foaf:Document`

Any document that further describes an Asset or gives guidelines for its use. See `dc:landingPage`, `wdrs:describedby` and `foaf:page`.

5.2.4 File Format

`dc:terms:FileFormat`

The technical format in which a Distribution is available, e.g. PDF, XSD etc. See also `representation technique`, `dc:terms:format` and `dc:mediaType`.

5.2.5 Geographical Coverage

`dc:terms:Location`

The country or region to which an Asset or Repository applies, linked using `dc:terms:spatial`.

5.2.6 Identifier

`adms:Identifier`

This is based on the UN/CEFACT Identifier class. [[UNCEFACT](#)] which consists of:

- a content string which is the identifier;
- an optional identifier for the identifier scheme;
- an optional identifier for the version of the identifier scheme;
- an optional identifier for the agency that manages the identifier scheme.

In ADMS this is expressed using the `adms:Identifier` class with the following properties:

- the content string should be provided using [skos:notation](#) , datatyped with the identifier scheme (including the version number if appropriate);
- use [dcterms:creator](#) to link to a class that represents the agency that manages the identifier scheme and/or [adms:schemaAgency](#) to provide the name of the agency as a literal;
- it may also be useful to provide further properties such as [dcterms:issued](#) to provide the date on which the identifier was issued.

An important point to note is that properties of `adms:Identifier` are properties of the Identifier, not the resource that it identifies or the agency that issued it.

5.2.7 Interoperability Level

`skos:Concept`

The interoperability level (e.g. legal, organizational, political etc.) of the Asset, linked using [adms:interoperabilityLevel](#) . The interoperability level may be taken from a list of levels such as that of the European Interoperability Framework [[EIF2](#)].

5.2.8 Language

`dcterms:LinguisticSystem`

The language of an Asset if it contains textual information, e.g. the language of the terms in a controlled vocabulary or the language in which a specification is written, linked using [dcterms:language](#)

5.2.9 License

`dcterms:LicenseDocument`

The conditions or restrictions that apply to the use of a Distribution, e.g. whether it is in the public domain, or that some restrictions apply such as attribution being required, or that it can only be used for non-commercial purposes etc. Linked using [dcterms:license](#)

5.2.10 Period of time

`dcterms:PeriodOfTime`

The time period relevant for an Asset, e.g. for its validity. Linked from a Semantic Asset using [dcterms:temporal](#) . The time period can be specified using [schema:startDate](#) and [schema:endDate](#) .

5.2.11 Publisher

`dcterms:Agent`

The organization making a Repository, Asset or Distribution available, linked using [dcterms:publisher](#) .

5.2.12 Representation Technique

`skos:Concept`

The machine-readable language in which a Distribution is expressed. This is more fine-grained than [file format](#) , for example "Word 2003", linked using [representationTechnique](#) . See also [dcterms:format](#) and [dcat:mediaType](#) .

This concept indicates that one of the files in an Asset Distribution is expressed in the Representation Technique. There may also be other files in the Distribution that are expressed in other Representation Techniques or even files that are not representations at all.

5.2.13 Status

`skos:Concept`

An indication of the maturity of an Asset or Distribution, linked using [adms:status](#) .

5.2.14 Theme

`skos:Concept`

The sector that an Asset applies to, e.g. "law" or "environment". Best practice is to use terms from a controlled vocabulary expressed as a SKOS Concept Scheme and linked from the Asset using [dcat:theme](#) .

5.2.15 Theme Taxonomy

skos:ConceptScheme

A controlled vocabulary that contains terms that are used as Themes for the Assets in a Repository, linked from the Repository using [dcat:themeTaxonomy](#).

NB The original ADMS specification supports the provision of a description of the metadata about an Asset, including its publisher and language (i.e. the human language in which the metadata is expressed, irrespective of the language used in the Asset itself). The DCAT concept of a Catalog Record can be used for this purpose and so is not detailed in this document.

5.3 Properties and Relationships

In the following sub-sections, we set out the properties and relationships (object type properties) used in ADMS. These are listed in alphabetical order, irrespective of namespace.

5.3.1 dcat:accessURL

Any kind of URL that gives access to an Asset Repository or Asset Distribution, e.g. a landing page, download, feed URL, SPARQL endpoint etc. Use `dcat:accessURL` when you do not have information on which it is or when it is definitely not a download.

Object Type Property	dcat:accessURL
Range	rdfs:Resource
Usage note	<ul style="list-style-type: none"> the value is a URL. If the distribution(s) are accessible only through a landing page (i.e. direct download URLs are not known), then the landing page link SHOULD be duplicated as <code>accessURL</code> on a distribution (see also dcat:landingPage).

5.3.2 skos:altLabel

An alternative name for the Asset.

Datatype Property	skos:altLabel
Range	rdfs:Literal

5.3.3 dcat:contactPoint

Links an asset to a contact point from where further information about an Asset can be obtained.

Object Type Property	dcat:contactPoint
Range	v:VCard

5.3.4 dcterms:creator

Used in ADMS to link an [adms:Identifier](#) to a [dcterms:Agent](#) (equivalent class [foaf:Agent](#))

Object Type Property	dcterms:creator
Range	dcterms:Agent

5.3.5 dcat:dataset

Used to link an Asset Repository to an Asset.

Object Type Property	dcat:dataset
Domain	dcat:Catalog
Range	dcat:Dataset

5.3.6 wdrs:describedby

The main documentation or specification of the Asset

Object Type Property	wdrs:describedby
Range	rdfs:Resource
Usage note	See also dcat:landingPage , foaf:page

5.3.7 dcterms:description

A description of the Asset, Asset Repository or Asset Distribution.

Datatype Property	dcterms:description
Range	rdfs:Literal

5.3.8 dcat:distribution

Links an Asset to an implementation in a particular format.

Object Type Property	dcat:distribution
Domain	dcat:Dataset
Range	dcat:Distribution

5.3.9 dcat:downloadURL

This is a direct link from an Asset Distribution to a downloadable file in a given format, e.g. CSV file or RDF file. The format is described by the distribution's dcterms:format and/or dcat:mediaType.

Object Type Property	dcat:downloadURL
Range	rdfs:Resource .

5.3.10 schema:endDate

Used in ADMS to define the end of a period of time during which an Asset is valid or applicable.

Datat Type Property	schema:endDate
Range	

	rdfs:Literal which should be typed, typically with <code>xsd:date</code> .
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5.3.11 dcterms:format

The file format of the distribution.

Object Type Property	dcterms:format
Range	dcterms:MediaTypeOrExtent
Usage note	dcat:mediaType should be used if the type of the distribution is defined by IANA . Suitable values for <code>dcterms:format</code> include URLs as used in the example . See also adms:representationTechnique .

5.3.12 adms:identifier

Links a resource to an `adms:Identifier` class.

Object Type Property	adms:identifier
Range	adms:Identifier

5.3.13 adms:includedAsset

An Asset that is contained in the Asset being described, e.g. when there are several vocabularies defined in a single document.

Object Type Property	adms:includedAsset
Domain	adms:Asset
Range	adms:Asset

5.3.14 adms:interoperabilityLevel

The interoperability level for which the Asset is relevant.

Object Type Property	adms:interoperabilityLevel
Domain	adms:Asset
Range	skos:Concept

5.3.15 dcterms:issued

Date of formal issuance (e.g., publication) of the Asset, Asset Repository or Asset Distribution.

Datatype Property	dcterms:issued
Range	rdfs:Literal using the relevant ISO 8601 Date and Time compliant string and typed using the appropriate XML Schema datatype [XMLSCHEMA-2]

5.3.16 dcat:keyword

A word, phrase or tag to describe the Asset.

Datatype Property	dcat:keyword
Range	rdfs:Literal

5.3.17 dcat:landingPage

A Web page that can be navigated to in a Web browser to gain access to the Asset, its distributions and/or additional information.

Object Type Property	dcat:landingPage
Range	foaf:Document
Usage note	If the Asset Distribution(s) are accessible only through a landing page (i.e. direct download URLs are not known), then the landing page link should be duplicated as accessURL on a distribution.

5.3.18 dcterms:language

The language of the Asset

Object Type Property	dcterms:LinguisticSystem
Range	rdfs:Resource Resources defined by the Library of Congress (1 , 2) SHOULD be used. If an ISO 639-1 (two-letter) code is defined for language, then its corresponding IRI SHOULD be used; if no ISO 639-1 code is defined, then IRI corresponding to the ISO 639-2 (three-letter) code SHOULD be used.

5.3.19 adms:last

A link to the current or latest version of the Asset.

Object Type Property	adms:last
Sub property of	xhv:last
Range	rdfs:Resource

5.3.20 dcterms:license

Links to the conditions or restrictions for (re-)use of the Asset Distribution.

Object Type Property	dcterms:license
Range	dcterms:LicenseDocument .
Usage note	If multiple licenses are given, these licenses apply to all files in the Asset Distribution.

5.3.21 dcat:mediaType

The media type of the distribution as defined by [IANA](#) .

Object Type Property	dcat:mediaType
Range	dcterms:MediaTypeOrExtent .
Usage note	This property SHOULD be used when the media type of the distribution is defined in IANA , e.g. <code>text/csv</code> otherwise dcterms:format MAY be used with different values. See also adms:representationTechnique .

5.3.22 dcterms:modified

Date of the latest update of the Asset, Asset Repository or Asset Distribution.

Datatype Property	dcterms:modified
Range	rdfs:Literal using the relevant ISO 8601 Date and Time compliant string and typed using the appropriate XML Schema datatype [XMLSCHEMA-2]

5.3.23 adms:next

A link to the next version of the Asset.

Object Type Property	adms:next
Sub property of	xhv:next
Range	rdfs:Resource

5.3.24 skos:notation

Used in ADMS to provide the actual identifier string as a property of an [adms:Identifier](#)

Data Type Property	skos:notation
Range	rdfs:Literal which should be typed.

5.3.25 adms:prev

A link to the previous version of the Asset.

Object Type Property	adms:prev
Sub property of	xhv:prev
Range	rdfs:Resource

5.3.26 dcterms:publisher

Links an Asset, Asset Repository or Asset Distribution to the publishing foaf:Agent.

Object Type	dcterms:publisher
--------------------	-----------------------------------

Property	
Range	foaf:Agent

5.3.27 foaf:page

Links to documentation that contains information related to the Asset.

Object Type Property	foaf:page
Range	foaf:Document
Usage note	See also dcat:landingPage , wdrs:describedby

5.3.28 dcterms:relation

A link between two Assets that are related in some (unspecified) way.

Object Type Property	dcterms:relation
Range	rdfs:Resource

5.3.29 adms:representationTechnique

More information about the format in which an Asset Distribution is released. This is different from the file format as, for example, a ZIP file (file format) could contain an XML schema (representation technique).

Object Type Property	adms:representationTechnique
Range	skos:Concept
Usage note	See also dcterms:format and dcat:mediaType .

5.3.30 adms:sample

Links to a sample of an Asset (which is itself an Asset).

Object Type Property	adms:sample
Range	adms:Asset

5.3.31 adms:schemaAgency

The name of the agency that issued the identifier.

Data Type Property	adms:schemaAgency
Domain	adms:Identifier
Range	rdfs:Literal

5.3.32 dcterms:spatial

The geographic region to which the Asset or Asset Repository applies.

Object Type Property	dcterms:spatial
Range	dcterms:Location

5.3.33 schema:startDate

Used in ADMS to define the start of a period of time during which an Asset is valid or applicable.

Datat Type Property	schema:startDate
Range	rdfs:Literal which should be typed, typically with <code>xsd:date</code> .

5.3.34 adms:status

The status of the Asset in the context of a particular workflow process.

Object Type Property	adms:status
Range	skos:Concept

5.3.35 adms:supportedSchema

A schema according to which the Asset Repository can provide data about its content, e.g. ADMS.

Datatype Property	adms:supportedSchema
Range	adms:Asset

5.3.36 dcterms:temporal

The time period to which the Asset applies, e.g. its validity.

Object Type Property	dcterms:temporal
Range	dcterms:PeriodOfTime

5.3.37 dcat:theme

The theme or sector to which the Asset applies.

Object Type Property	dcat:theme
Sub property of	dcterms:subject
Range	skos:Concept

5.3.38 dcat:themeTaxonomy

The SKOS Concept Scheme used to classify an Asset Repository's assets.

Object Type Property	<u>dcat:themeTaxonomy</u>
Range	<u>skos:ConceptScheme</u>

5.3.39 dcterms:title

A name given to the Asset, Asset Repository or Asset Distribution.

Datatype Property	<u>dcterms:title</u>
Range	<u>rdfs:Literal</u>

5.3.40 adms:translation

Links Assets that are translations of each other.

Object Type Property	<u>adms:translation</u>
Range	<u>rdfs:Resource</u>

5.3.41 dcterms:type

This property is used to point to the specific type of publisher, Asset and License Document. In each case the type should be provided using a controlled vocabulary encoded as a SKOS Concept.

Object Type Property	<u>dcterms:type</u>
Range	Formally <u>rdfs:Resource</u> but <u>skos:Concept</u> SHOULD be used.

5.3.42 owl:versionInfo

A version number or other designation of the Asset.

Annotation Property	<u>owl:versionInfo</u>
Range	<u>rdfs:Literal</u>

5.3.43 adms:versionNotes

A description of changes between this version and the previous version of the Asset.

Datatype Property	<u>adms:versionNotes</u>
Range	<u>rdfs:Literal</u>

A. Acknowledgements

ADMS was first developed by and [published](#) by the European Commission [ISA Programme](#). Contributors included representatives of

Member States of the European Union, operators of national repositories, standardization bodies and independent experts whose work was published in April 2012 [ADMS1]. That document includes the history and motivation behind the development of ADMS, as well as the business need and usage scenario for it.

Further development and review has been undertaken by the [Government Linked Data Working Group](#) (GLD WG). This version of ADMS builds on the original work in a broader, global context. It also includes some changes to the original version made as a result of implementation experience, particularly on the European Commission's [Joinup Platform](#).

B. References

B.1 Normative references

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[XMLSCHEMA-2]

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B.2 Informative references

[ADMS1]

[ADMS 1.0](#) European Commission ADMS (link is to a page offering various downloadable files in a variety of formats). URL: <http://joinup.ec.europa.eu/asset/adms/release/100>

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[\(PDF\) Core Components Data Type Catalogue Version 3.1](#) UNECE United Nations Economic Commission for Europe. UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT). URL: <http://www.unece.org/fileadmin/DAM/cefact/codesfortrade/CCTS/CCTS-DTCatalogueVersion3p1.pdf>