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ADMS Application Profile for solutions on Joinup
Version 2.01

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1 INTRODUCTION

This document contains the Application Profile used for the aggregation of information about interoperability assets (controlled vocabularies, metadata schemas) and software solutions by the federated repositories[1] on the Joinup platform, online collections of interoperability solutions maintained by European public administrations, businesses and citizens.

1.1 Background

The Asset Description Metadata Schema, version 1.00[2] was developed on 2011-2012 by the ADMS Working Group following the Process and Methodology for Developing Core Vocabularies[3] under the European Commission's ISA programme[4]. It was reviewed by representatives of the Member States of the European Union, publishers of Public Sector Information (PSI), and by other interested parties. ADMS was published as a Working Group Note[5] by the Government Linked Data Working Group[6] of the World Wide Web Consortium (W3C). The ADMS namespace document[7] is published by W3C, generated from the associated Resource Description Framework (RDF) schema.

In 2013, an extended ADMS specification was developed as the ADMS Application Profile for Joinup[8]. This application profile aimed to extend the use of ADMS, originally envisaged for the description of semantic interoperability assets, to also support description of other types of interoperability solutions, covering the political, legal, organisational and technical interoperability layers defined by the European Interoperability Framework[9].

From implementation experience with the Application Profile in the years since 2013, it became clear that a revision of the original ADMS-AP was necessary to streamline the specification and to modify some of its elements.

1.2 Scope

The revision of the Application Profile takes into account all issues related to the implementation of version 1.0 of the ADMS-AP. The resulting Application Profile, version 2.0 of ADMS-AP, tries as much as possible to remain backwards compatible with ADMS-AP 1.0. Exceptions are possible where elements of ADMS-AP 1.0 were not used or in cases where changes were considered to be necessary.

At the same time, ADMS-AP 2.0 aims to be, as much as possible, interoperable with the general DCAT Application Profile for data portals in Europe, DCAT-AP version 1.1[10], with

[1] https://joinup.ec.europa.eu/catalogue/repository
[2] https://joinup.ec.europa.eu/asset/adms/asset_release/adms
[3] https://joinup.ec.europa.eu/elibrary/document/isa-deliverable-process-and-methodology-developing-core-vocabularies
[4] http://ec.europa.eu/isa/
[5] http://www.w3.org/TR/vocab-adms/
[6] http://www.w3.org/2011/gld/
[7] http://www.w3.org/ns/adms
[8] https://joinup.ec.europa.eu/asset/adms/asset_release/adms-application-profile-joinup
[9] http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf
[10] https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/dcat-ap-v11

the objective to make it easy to share descriptions created under ADMS-AP 2.0 with data portals, such as the European Data Portal[11], that are able to process DCAT-AP 1.1.

1.3 Structure

The structure of the document is as follows:

In section 2, the methodology of the work towards the revision of ADMS-AP is outlined.

Section 3 contains an overview of the specific terminology used in the specifications.

Section 4 explains the link between the Joinup content model and the ADMS-AP specifications.

An UML class diagram of the Application Profile is presented in section 5.

Section 6 contains a description of the classes in the Application Profile.

In section 7, the properties for each of the classes are specified.

The controlled vocabularies to be used with several of the properties are listed in section 8.

In section 9, the requirements for conformance with the Application Profile are specified.

Section 10 lists the participants in this activity.

Further information is included in the annexes

Annex I contains a log of the changes that were made to version 1.0.

Annex II is a quick reference with all classes and properties on a single page.

[11] http://www.europeandataportal.eu/

2 METHODOLOGY

2.1 Stakeholder invitation

The process started with an invitation to the main stakeholders to participate in the revision and communicate any issues they were aware of. The participants in this activity are listed in section 10.

2.2 Change requests

The change requests received are publicly visible in the Joinup issue tracker at https://joinup.ec.europa.eu/asset/adms_revsion/issue/all.

2.3 Review

Discussion among the stakeholders took place on the Joinup issue tracker. Under a description of the issue as submitted by a stakeholder, the discussion and the consensus reached are visible in the comments section.

Further discussion took place on the subscriber-only mailing list with a public archive at http://joinup.ec.europa.eu/mailman/archives/adms_revsion/.

2.4 Publication

Based on the consensus reached by the participants, this document is published on Joinup.

3 OVERVIEW AND TERMINOLOGY

In the following sections, classes and properties are grouped under headings 'mandatory', 'recommended' and 'optional'. These terms have the following meaning.

- **Mandatory class**: a receiver of data MUST be able to process information about instances of the class; a sender of data MUST provide information about instances of the class.
- **Recommended class**: a receiver MUST be able to process information about instances of the class; a sender SHOULD provide the information if it is available.
- **Optional class**: a receiver MUST be able to process information about instances of the class; a sender MAY provide the information but is not obliged to do so.
- **Mandatory property**: a receiver MUST be able to process the information for that property; a sender MUST provide the information for that property.
- **Recommended property**: a receiver MUST be able to process the information for that property; a sender SHOULD provide the information for that property if it is available.
- **Optional property**: a receiver MUST be able to process the information for that property; a sender MAY provide the information for that property but is not obliged to do so.

The meaning of the terms MUST and MAY in this section and in the following sections are as defined in RFC2119[12]. In the given context, the term "processing" means that receivers must accept incoming data and transparently provide these data to applications and services. It does neither imply nor prescribe what applications and services finally do with the data (parse, convert, store, make searchable, display to users, etc.).

The table below lists the namespace prefixes that are used in the following sections with the corresponding namespaces URIs.

Namespace prefix	Namespace URI
adms	http://www.w3.org/ns/adms#
dcat	http://www.w3.org/ns/dcat#
dct	http://purl.org/dc/terms/
foaf	http://xmlns.com/foaf/0.1/
owl	http://www.w3.org/2002/07/owl#
rdfs	http://www.w3.org/2000/01/rdf-schema#
schema	http://schema.org/
skos	http://www.w3.org/2004/02/skos/core#
spdx	http://spdx.org/rdf/terms#
v	http://www.w3.org/2006/vcard/ns#
xsd	http://www.w3.org/2001/XMLSchema#

[12] IETF. RFC2119. Key words for use in RFCs to Indicate Requirement Levels. http://www.ietf.org/rfc/rfc2119.txt

4 USAGE NOTE ON ADMS-AP

This section explains the link between the Joinup content model and the ADMS-AP specifications. The Joinup content model represents a solution as part of a hierarchy. Each solution belongs to a collection and has releases and distributions. A definition of each term can be found below:

1. **Collection:** A collection is defined by Joinup as a catalogue of interoperability solutions and other content items around a common topic or domain. Collections are the main collaborative space around which information is organised and users can share their content and engage their community.
2. **Solution:** A solution on Joinup is a framework, tool, or service either hosted directly on Joinup or federated from third-party repositories.
3. **Release:** The release contains the distribution(s) of the different versions or packages of a solution.
4. **Distribution:** A distribution is typically a downloadable computer file that implements the intellectual content of solutions and can have different physical formats. A particular distribution is associated in Joinup with one and only one solution.

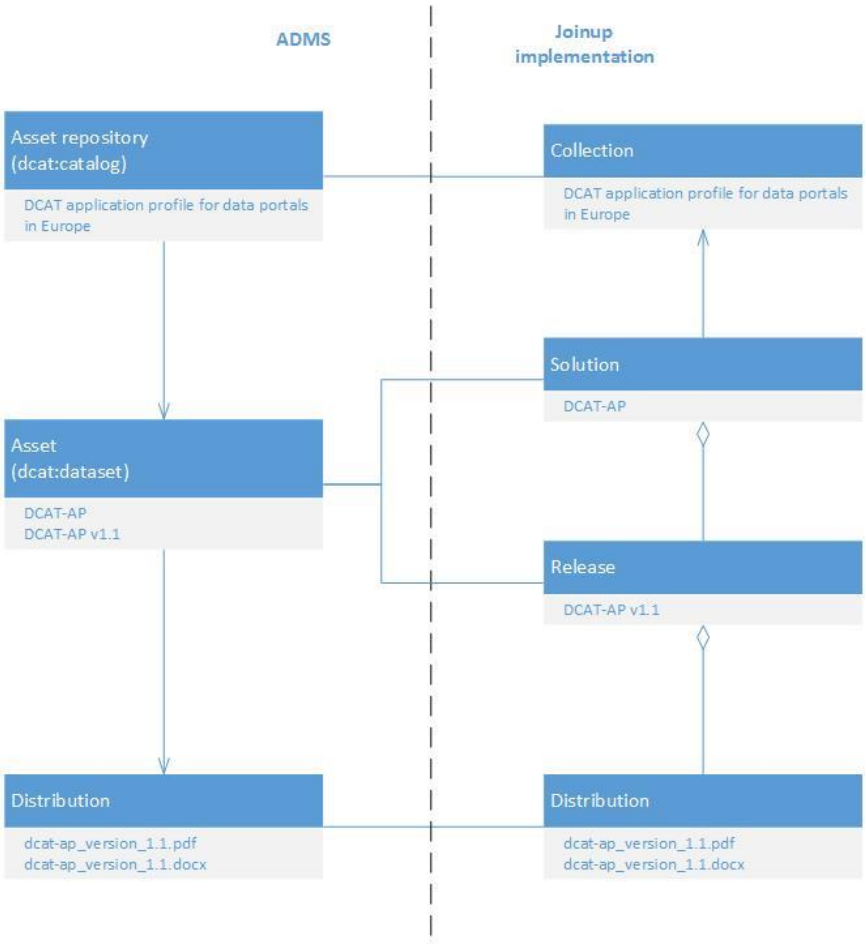

Figure 1: Conceptual model and implementation of the example

Figure 1 provides a visual representation of the link between ADMS-AP (on the left) and the Joinup content model (on the right). The DCAT-AP v1.1 release is used as example to better explain how ADMS-AP can be used to describe the solution hierarchy on Joinup.

To describe this hierarchy, three classes from ADMS-AP are used.

- **Asset Repository (dcat:Catalog)** is used to annotate a collection.
- **Asset (dcat:Dataset)** is used to annotate a solution and its releases.
- **Asset Distribution (dcat:Distribution)** is used to annotate a distribution.

The **dct:hasVersion** is used to describe the relation from the solution level to the release whereas **dct:isVersionOf** is used for the inverse relationship.

4.1 Example

As an example, we describe Figure 1 using ADMS-AP:

1. **Collection**: "DCAT application profile for data portals in Europe"[13] is the collection of all the DCAT-AP solutions on Joinup. According to the ADMS-AP, the DCAT application profile for data portals in Europe uses *dcat:Catalog*.
2. **Solution**: "DCAT-AP"[14] is the name of the solution that is part of that collection. According to ADMS-AP, the solution uses *dcat:Dataset*.
3. **Release**: DCAT-AP has several releases such as DCAT-AP v1.0, DCAT-AP v1.1, DCAT-AP v1.x... According to ADMS-AP, the DCAT-AP release uses *dcat:Dataset*. Note that the range of the class is the same as the solution. Therefore, the difference between a solution and a release according to ADMS-AP is made by the property *dct:isVersionOf*. For instance, the release "DCAT-AP v1.1" [15] is described in RDF as a *dcat:Dataset*, whose property *dct:isVersionOf* contains the URI of the solution "DCAT-AP".
4. **Distributions**: DCAT-AP v1.1 contains two distributions:
    a. dcat-ap_version_1.1.pdf[16]; and
    b. dcat-ap_version_1.1.docx[17]

According to ADMS-AP, each distribution is modelled in RDF as dcat:Distribution.

Table 1 presents in detail the RDF/XML representation of the example. The table only contains excerpts of the file; not all the mandatory classes/properties are included on it.

[13] https://joinup.ec.europa.eu/asset/dcat_application_profile/home
[14] https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/dcat-ap-v11
[15] https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/dcat-ap-v11
[16] https://joinup.ec.europa.eu/catalogue/distribution/dcat-ap-version-11
[17] https://joinup.ec.europa.eu/catalogue/distribution/dcat-ap-version-11-0

Table 1: RDF/XML example usage on Joinup

RDF/XML example

```
<rdf:Description rdf:about=".../asset/dcat_application_profile/description">
   <rdf:type rdf:resource="dcat:Catalog"/>
   <dct:title xml:lang="en">DCAT application profile for data portals in Europe</dct:title>
   <dct:description xml:lang="en">The DCAT Application Profile for data portals (DCAT-AP) is a
specification based on the Data Catalogue vocabulary (DCAT) for describing public sector datasets in
Europe. Its basic use case is to enable cross-data portal search for data sets and make public sector data
better searchable across borders and sectors. This can be achieved by the exchange of descriptions of
datasets among data portals.</dct:description>
   <dcat:dataset rdf:about=".../asset/dcat_application_profile/asset/DCAT-AP" />
</rdf:Description>


<rdf:Description rdf:about=".../asset/dcat_application_profile/asset/DCAT-AP">
   <rdf:type rdf:resource="dcat:Dataset"/>
   <dct:title xml:lang="en">DCAT-AP</dct:title>
   <dct:description xml:lang="en">The DCAT Application Profile for data portals (DCAT-AP) is a
specification based on the Data Catalogue vocabulary (DCAT) for describing public sector datasets in
Europe.</dct:description>
</rdf:Description>


<rdf:Description rdf:about=".../asset/dcat_application_profile/asset/DCAT-AP/v1.1">
   <rdf:type rdf:resource="dcat:Dataset"/>
   <dct:title xml:lang="en">DCAT-AP v1.1</dct:title>
   <dct:description xml:lang="en">Release of the DCAT-AP. Version 1.1 of the
specifications.</dct:description>
   <dct:isVersionOf rdf:resource=".../asset/dcat_application_profile/asset/DCAT-AP" />
   <dcat:distribution rdf:resource=".../asset/dcat_application_profile/asset/DCAT-AP/v1.1/PDF" />
   <dcat:distribution rdf:resource=".../asset/dcat_application_profile/asset/DCAT-AP/v1.1/DOC" />
</rdf:Description>


<rdf:Description rdf:about=".../asset/dcat_application_profile/asset/DCAT-AP/v1.1/PDF">
   <rdf:type rdf:resource="dcat:Distribution"/>
   <dct:title xml:lang="en">dcat-ap_version_1.1.pdf</dct:title>
   <dcat:accessURL rdf:resource=".../system/files/project/dcat-ap_version_1.1_0.pdf" />
   <dct:license rdf:resource=".../category/licence/isa-open-metadata-licence-v11" />
</rdf:Description>


<rdf:Description rdf:about=".../asset/dcat_application_profile/asset/DCAT-AP/v1.1/DOC">
   <rdf:type rdf:resource="dcat:Distribution"/>
   <dct:title xml:lang="en">dcat-ap_version_1.1.docx</dct:title>
   <dcat:accessURL rdf:resource=".../system/files/project/dcat-ap_version_1.1_0.docx" />
   <dct:license rdf:resource=".../category/licence/isa-open-metadata-licence-v11" />
</rdf:Description>
```

5 UML CLASS DIAGRAM

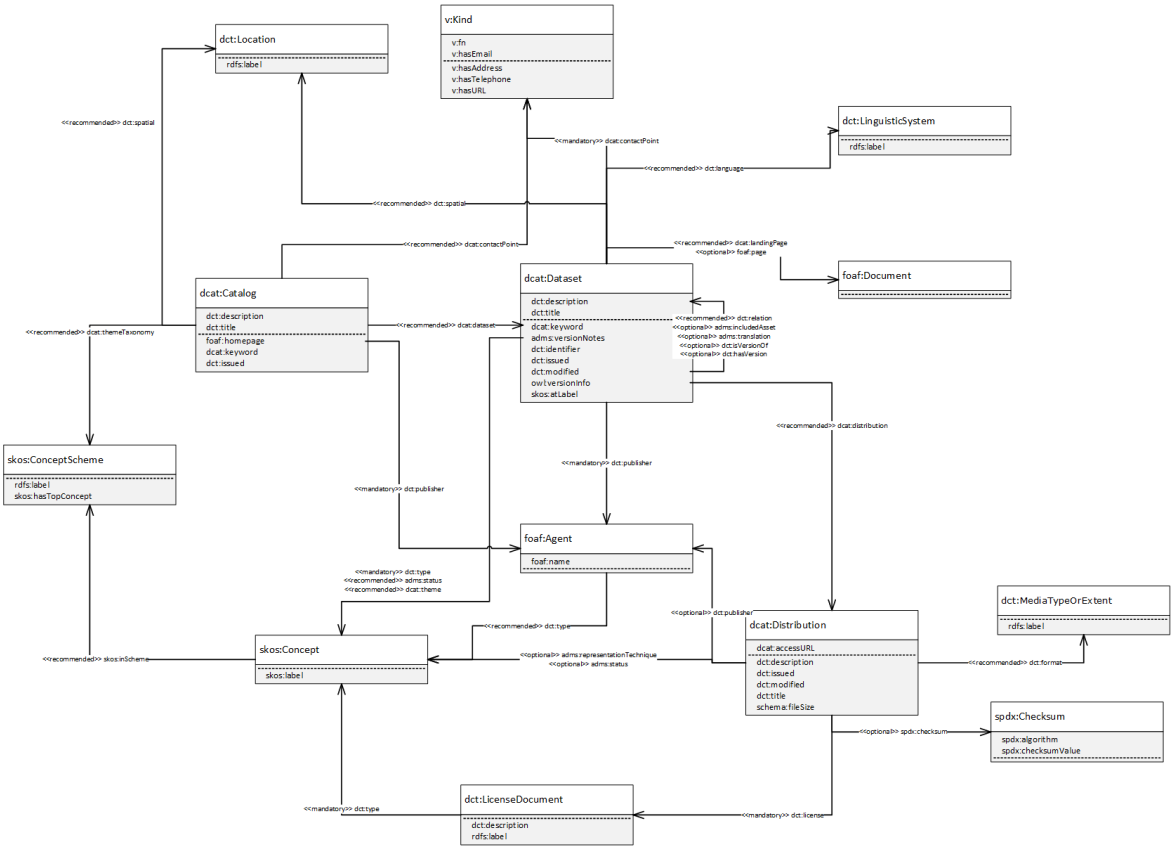

Figure 2: ADMS Application Profile UML Class Diagram

6 APPLICATION PROFILE CLASSES

6.1 Mandatory classes

These classes include the Asset class and all classes that appear as the range of mandatory properties in the description of instances of the Asset class.

Class name	Usage note for the Application Profile	URI
Asset	Abstract entity that reflects the intellectual content of an Asset and represents those characteristics that are independent of its physical embodiment. This abstract entity combines the FRBR[18] entities work (a distinct intellectual or artistic creation) and expression (the intellectual or artistic realization of a work). The physical embodiment of an Asset is called an Asset Distribution. A particular Asset may have zero or more Distributions.	dcat:Dataset
Asset Type	Classification of an Asset according to a controlled vocabulary.	skos:Concept
Contact Information	Contact point for further information about an Asset.	v:Kind
Publisher	Organisation that makes information available.	foaf:Agent

6.2 Recommended class

The Asset Distribution class is classified as Recommended to allow for cases where an Asset does not have a physical embodiment, such as when a description of an Asset is made before the physical file is available, or when the Asset description is maintained after the physical file has been removed. 'Recommended' in this case means that the data provider MUST provide a description of the Asset Distribution when it exists.

Class name	Usage note for the Application Profile	URI
Asset Distribution	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. For the properties to be used with this class see section 7.2.	dcat:Distribution

6.3 Optional classes

These classes include the Asset Repository class and all classes that appear as the range of recommended and optional properties in the description of instances of the Asset class, as well as classes that appear as the range of all properties in the description of instances of all other classes.

Class name	Usage note for the Application Profile	URI
Asset Repository	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.	dcat:Catalog
Checksum	Independently reproducible mechanism that permits unique identification of a specific Software Package.	spdx:Checksum
Documentation	Document that further describes an Asset or gives guidelines for its use.	foaf:Document
Geographical Coverage	Country or region to which an Asset or Repository applies.	dct:Location
Interoperability Level	Interoperability level (e.g. legal, organizational, political etc.) of an Asset.	skos:Concept
Language	Language of an Asset that contains textual information, e.g. the language of the terms in a controlled vocabulary or the language in which a document is written.	dct:LinguisticSystem
Licence	Conditions or restrictions that apply to the use of a Repository or 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.	dct:LicenseDocument
Media Type	Technical format in which a Distribution is available, e.g. PDF, XSD etc.	dct:MediaTypeOrExtent
Representation Technique	Machine-readable language in which a Distribution is expressed.	skos:Concept
Status	Indication of the maturity of an Asset or a Distribution	skos:Concept
Theme	Concept or subject to which an Asset applies, e.g. "law" or "environment".	skos:Concept
Theme Taxonomy	Controlled vocabulary that contains terms that are used as Themes for the Assets in a Repository.	skos:ConceptScheme

7 PROPERTIES PER CLASS

7.1 Asset, dcat:Dataset

7.1.1 Mandatory properties

Property	Range	Usage note	Card.
dcat:contactPoint	v:Kind	contact point for further information about the Asset, where errors can be reported or suggestions can be made	1..n
dct:description	rdfs:Literal	descriptive text for the Asset	1..n
dct:publisher	foaf:Agent	organisation making the Asset available; the publisher is the Agent that publishes the Asset, not the Agent that publishes the metadata about it	1..n
dct:title	rdfs:Literal	name of the Asset	1..n
dct:type	skos:Concept	type of the Asset, using a controlled vocabulary (see section 8.1)	1..n

7.1.2 Recommended properties

Property	Range	Usage note	Card.
dcat:distribution	dcat:Distribution	implementation of the Asset in a particular format	0..n
dcat:keyword	rdfs:Literal	word of phrase to describe the Asset	0..n
dcat:landingPage	foaf:Document	Web page that provides access to the asset, its releases, distributions and/or additional information. It is intended to point to a landing page at the original asset provider, not to a page on a site of a third party, such as a catalogue or repository	0..1
dcat:theme	skos:Concept	theme or sector to which the Asset applies, using a controlled vocabulary (see section 8.1)	0..n
dct:language	dct:LinguisticSystem	language of the Asset, or language supported by software, using a controlled vocabulary (see section 8.1)	0..n
dct:relation	rdfs:Resource	related resource, in particular a related asset	0..n
dct:spatial	dct:Location	geographic region or jurisdiction to which the Asset applies, using a controlled vocabulary (see section 8.1)	0..n

7.1.3 Optional properties

Property	Range	Usage note	Card.
adms:includedAsset	dcat:Dataset	an Asset that is contained in the Asset being described	0..n
adms:status	skos:Concept	status of the Asset in the context of a particular workflow process, using a controlled vocabulary (see section 8.1)	0..1

Property	Range	Usage note	Card.
adms:translation	dcat:Dataset	translation of the Asset	0..n
adms:versionNotes	rdfs:Literal	description of changes between this version and the previous version of the Asset	0..1
dct:identifier	rdfs:Literal	main identifier for the Asset, e.g. the URI or other unique identifier in the context of the Repository.	0..n
dct:issued	rdfs:Literal typed as xsd:dateTime	date of formal issuance of this version of the Asset	0..1
dct:isVersionOf	dcat:Dataset	an Asset that is the solution of which this Asset is a release (see section 4)	0..1
dct:hasVersion	dcat:Dataset	an Asset that is a release of this Asset (see section 4)	0..n
dct:modified	rdfs:Literal typed as xsd:dateTime	date of latest update of Asset	0..1
foaf:page	foaf:Document	documentation that contains information related to the asset	0..n
owl:versionInfo	rdfs:Literal	version number or other designation of the Asset	0..n
skos:altLabel	rdfs:Literal	alternative name for the Asset	0..n

7.2 Asset Distribution, dcat:Distribution

7.2.1 Mandatory properties

Property	Range	Usage note	Card.
dcat:accessURL	rdfs:Resource	URL of the Distribution	1..n
dct:license	dct:LicenseDocument	conditions or restrictions for (re)use of the Distribution; if there are multiple licences, the most 'open' one should be given. Whenever relevant, the URIs under the concept scheme identified by http://purl.org/adms/OSIlicence/ can be used	1..1

7.2.2 Recommended properties

Property	Range	Usage note	Card.
dct:format	dct:MediaTypeOrExtent	media type of the Distribution, using a controlled vocabulary (see section 8.1)	0..1

7.2.3 Optional properties

Property	Range	Usage note	Card.
adms:representationTechnique	skos:Concept	language in which the Distribution is expressed, using a controlled vocabulary (see section 8.1) Note: this is different from the file format, e.g. a ZIP file (file format) could contain an XML schema (representation technique)	0..1

Property	Range	Usage note	Card.
adms:status	skos:Concept	status of the Distribution in the context of a particular workflow process, using a controlled vocabulary (see section 8.1)	0..1
dct:description	rdfs:Literal	descriptive text for the Distribution	0..n
dct:issued	rdfs:Literal typed as xsd:dateTime	date of formal issuance of the Distribution	0..1
dct:modified	rdfs:Literal typed as xsd:dateTime	date of latest update of the Distribution	0..1
dct:publisher	foaf:Agent	organisation making the Distribution available; the publisher is the Agent that publishes the Distribution, not the Agent that publishes the metadata about it	0..n
dct:title	rdfs:Literal	name of the Distribution	0..n
schema:fileSize	rdfs:Literal	size of the file of the distribution	0…1
spdx:checksum	spdx:checksum	checksum of the distribution	0…1

7.3 Asset Repository, dcat:Catalog

7.3.1 Mandatory properties

Property	Range	Usage note	Card.
dct:description	rdfs:Literal	descriptive text for the Repository	1..n
dct:publisher	foaf:Agent	organisation making the Repository available; the publisher is the Agent that publishes the Repository, not the Agent that publishes the metadata about it	1..1
dct:title	rdfs:Literal	name of the Repository	1..n

7.3.2 Recommended properties

Property	Range	Usage note	Card.
dcat:contactPoint	v:Kind	contact point for further information about the Repository	0..n
dcat:dataset	dcat:Dataset	an Asset included in the Repository	0..n
dcat:themeTaxonomy	skos:ConceptScheme	Concept Scheme used to classify an Asset Repository's assets, using a controlled vocabulary (see section 8.1)	0..n
dct:spatial	dct:Location	geographic region or jurisdiction to which the Repository applies, using a controlled vocabulary (see section 8.1)	0..n
foaf:homepage	foaf:Document	web page that gives access to the Repository	0..1

7.3.3 Optional properties

Property	Range	Usage note	Card.
dcat:keyword	rdfs:Literal	word of phrase to describe the Repository	0..n

Property	Range	Usage note	Card.
dct:issued	rdfs:Literal typed as xsd:dateTime	date of formal issuance of the Repository	0..n

7.4 Asset Type, skos:Concept

7.4.1 Recommended properties

Property	Range	Usage note	Card.
skos:label	rdfs:Literal	label for the Asset Type	0..n
skos:inScheme	skos:ConceptScheme	concept scheme in which the Asset Type is included	0..n

7.5 Checksum, spdx:Checksum

7.5.1 Mandatory properties

Property	Range	Usage note	Card.
spdx:algorithm	spdx:checksumAlgorithm_sha1	SHA-1 is the only supported algorithm	1..1
spdx:checksumValue	rdfs:Literal typed as xsd:hexBinary	lower case hexadecimal encoded digest value produced using a specific algorithm	1..1

7.6 Contact Information, v:Kind

7.6.1 Mandatory properties

Property	Range	Usage note	Card.
v:fn	rdfs:Literal	full name of the contact	1..n
v:hasEmail	v:Email	e-mail address where comments and question for an Asset or Repository can be sent	1..n

7.6.2 Optional properties

Property	Range	Usage note	Card.
v:hasAddress	v:Address	full address of the contact	0..n
v:hasTelephone	rdfs:Literal	telephone number of the contact	0…n
v:hasURL	rdfs:Literal	webpage of the contact	0…n

7.7 Geographical Coverage, dct:Location

7.7.1 Recommended properties

Property	Range	Usage note	Card.
rdfs:label	rdfs:Literal	name of the Location	0..n

7.8 Interoperability Level, skos:Concept

7.8.1 Recommended properties

Property	Range	Usage note	Card.
skos:label	rdfs:Literal	label for the Interoperability Level	0..n
skos:inScheme	skos:ConceptScheme	concept scheme in which the Interoperability Level is included	0..n

7.9 Language, dct:LinguisticSystem

7.9.1 Recommended properties

Property	Range	Usage note	Card.
rdfs:label	rdfs:Literal	name of the Language	0..n

7.10 Licence, dct:LicenseDocument

7.10.1 Mandatory properties

Property	Range	Usage note	Card.
dct:type	skos:Concept	type of the licence, using a controlled vocabulary (see section 8.1)	1..1

7.10.2 Recommended properties

Property	Range	Usage note	Card.
dct:description	rdfs:Literal	description of the Licence	0..n
rdfs:label	rdfs:Literal	label for the Licence	0..n

7.11 Media Type, dct:MediaTypeOrExtent

7.11.1 Recommended properties

Property	Range	Usage note	Card.
rdfs:label	rdfs:Literal	label for the File Format	0..n

7.12 Publisher, foaf:Agent

7.12.1 Mandatory property

Property	Range	Usage note	Card.
foaf:name	rdfs:Literal	name of the person or organisation	1..n

7.12.2 Recommended properties

Property	Range	Usage note	Card.
dct:type	skos:Concept	the type of publisher	0…n

7.13 Representation Technique, skos:Concept

7.13.1 Recommended properties

Property	Range	Usage note	Card.
skos:label	rdfs:Literal	label for the Representation Technique	0..n
skos:inScheme	skos:ConceptScheme	concept scheme in which the Representation Technique is included	0..n

7.14 Status, skos:Concept

7.14.1 Recommended properties

Property	Range	Usage note	Card.
skos:label	rdfs:Literal	label for the Status	0..n
skos:inScheme	skos:ConceptScheme	concept scheme in which the Status is included	0..n

7.15 Theme, skos:Concept

7.15.1 Recommended properties

Property	Range	Usage note	Card.
skos:label	rdfs:Literal	label for the Theme	0..n
skos:inScheme	skos:ConceptScheme	concept scheme in which the Theme is included	0..n

7.16 Theme Taxonomy, skos:ConceptScheme

7.16.1 Recommended properties

Property	Range	Usage note	Card.
rdfs:label	rdfs:Literal	name of the Theme Taxonomy	0..n
skos:hasTopConcept	rdfs:Literal	concept that is the top level of the Theme Taxonomy	0..n

8 CONTROLLED VOCABULARIES

8.1 Controlled vocabularies to be used

In the table below, properties are listed with controlled vocabularies that MUST be used.

Property URI	Used for Class	Vocabulary	Vocabulary URI
adms:representationTechnique	Asset Distribution	ADMS Representation Technique Vocabulary	http://purl.org/adms/representationtechnique/
adms:status	Asset, Asset Distribution	ADMS Status vocabulary	http://purl.org/adms/status/
dcat:mediaType	Asset Distribution	MDR File Type Name Authority List[19]	http://publications.europa.eu/resource/authority/file-type
dcat:theme	Asset	Dataset Theme Vocabulary	http://publications.europa.eu/resource/authority/data-theme; the values to be used for this property are the URIs of the concepts in the vocabulary.
dcat:themeTaxonomy	Asset Repository	Dataset Theme Vocabulary	Fixed value: http://publications.europa.eu/resource/authority/data-theme; the value to be used for this property is the URI of the vocabulary itself, i.e. the concept scheme, not the URIs of the concepts in the vocabulary.
dct:language	Asset	MDR Languages Named Authority List	http://publications.europa.eu/resource/authority/language
dct:spatial	Asset, Asset Repository	MDR Countries Named Authority List[20], MDR Places Named Authority List[21]	http://publications.europa.eu/resource/authority/country, http://publications.europa.eu/resource/authority/place/
dct:type	Asset	EIRA vocabulary	https://joinup.ec.europa.eu/svn/eia/taxonomy/EIRA_SKOS.rdf
dct:type	Licence Document	ADMS Licence Type vocabulary	http://purl.org/adms/licencetype/; use only one of the four terms :PublicDomain, :OSIcompliant, :NonOSIcompliant, :UnknownIPR
dct:type	Publisher	ADMS Publisher Type vocabulary	http://purl.org/adms/publishertype/

[19] Publications Office of the EU. Metadata Registry. Authorities. File types. http://publications.europa.eu/mdr/authority/file-type/
[20] Publications Office of the EU. Metadata Registry. Authorities. Countries. http://publications.europa.eu/mdr/authority/country/
[21] Publications Office of the EU. Metadata Registry. Authorities. Places. http://publications.europa.eu/mdr/authority/place/

8.2 Other controlled vocabularies

In addition to the proposed common vocabularies in section 8.1, further region or domain-specific vocabularies MAY be used. While those may not be recognised by general implementations of the Application Profile, they may serve to increase interoperability across applications in the same region or domain. Examples are the full set of concepts in Eurovoc[22], the CERIF standard vocabularies[23], the Dewey Decimal Classification[24] and numerous other schemes.

Such vocabularies and classifications can be used if they are defined as SKOS[25] Concept Schemes where the classification terms (modelled as SKOS Concepts) can be referenced by their URIs.

[22] http://eurovoc.europa.eu/
[23] http://www.eurocris.org/Uploads/Web%20pages/CERIF-1.5/CERIF1.5_Semantics.xhtml
[24] OCLC. Dewey Summaries as Linked Data. http://www.oclc.org/dewey/webservices.en.html and http://dewey.info/
[25] W3C. Simple Knowledge Organization System Reference. http://www.w3.org/TR/skos-reference/

9 CONFORMANCE STATEMENT

9.1 Provider requirements

In order to conform to this Application Profile, an application that provides metadata MUST:

- For all instances of the mandatory Asset class, provide data for at least the mandatory properties specified in section 7.1.1
- For all instances of the recommended Asset Distribution class, if available, provide data for at least the mandatory properties specified in section 7.2.1
- For all instances of the optional Asset Repository class, provide data for at least the mandatory properties specified in section 7.3.1
- For all instances of the optional Checksum class, provide data for at least the mandatory properties specified in section 7.5.1
- For all instances of the mandatory Contact Information class, provide data for at least the mandatory property specified in section 7.6.1
- For all instances of the optional Licence class, provide data for at least the mandatory property specified in section 7.10
- For all instances of the mandatory Publisher class, provide data for at least the mandatory property specified in section 7.12.1
- In addition to the mandatory properties, any of the recommended and optional properties defined in chapter 7 MAY be provided.
- For the properties listed in the table in section 8.1, the associated controlled vocabularies MUST be used. Additional controlled vocabularies MAY be used.

In addition to the classes and properties specified in section 7, other classes and properties MAY be used by an application without breaking conformance to this application profile.

9.2 Receiver requirements

In order to conform to this Application Profile, an application that receives metadata MUST be able to:

- Process information for all classes specified in section 6.
- Process information for all properties specified in section 7.
- Process information for all controlled vocabularies specified in section 8.1.

"Processing" means that receivers must accept incoming data and transparently provide these data to applications and services. It does neither imply nor prescribe what applications and services finally do with the data (parse, convert, store, make searchable, display to users, etc.).

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Annex I CHANGE LOG

The table below summarises the changes applied to the current release of the ADMS-AP.

URI	Type	Action	Description	Issue
dcat:Dataset	Mandatory class	Updated	*Updated* An asset was declared as dcat:Dataset and not adms:Asset.	CR42
dcat:Distribution	Recommended class	Updated	*Updated* An asset distribution was declared as dcat:Distribution rather than adms:AssetDistribution. Removed statement about backwards compatibility.	CR42
dcat:Catalog	Optional class	Updated	*Updated* A catalogue of assets was declared as dcat:Catalog and not adms:AssetRepository. Removed statement about backwards compatibility.	CR42
qb:Dataset	N.A.	Deleted	*Deleted* Removed the optional class qb:Dataset because it was only used for ADMS.SW.	
dct:MediaTypeOrExtent	Optional class	Updated	*Updated* URI: dct:FileFormat -> dct:MediaTypeOrExtent	CR29
skos:Concept	N.A.	Deleted	*Deleted* The optional classes *Intended Audience, Locale*, *Operating System*, *Programming Language* and *User Interface Type* were removed because they were only used for ADMS.SW.	
admssw:SoftwarePackage	N.A.	Deleted	*Deleted* The optional class Software Package was removed.	CR33
admssw:SoftwareProject	N.A.	Deleted	*Deleted* The optional class Software Project was removed.	CR31
admssw:SoftwareRelease	N.A.	Deleted	*Deleted* The optional class Software Release was removed.	CR32

URI	Type	Action	Description	Issue
admssw:SoftwareRepository	N.A.	Deleted	*Deleted* The optional class Software Repository was removed because it was not used.	
foaf:Agent	Mandatory class	Updated	*Updated* The class Publisher was replaced by definition by the class Agent, as it covers the only agent role in the profile.	CR35
v:kind	Mandatory class	Updated	*Updated* Updated from optional to mandatory class.	
skos:Concept	Optional class	Updated	*Updated* Updated from mandatory to optional class.	
dct:PeriodOfTime	Optional class	Deleted	*Deleted* Class was no longer used after deletion of dct:temporal	CR14
foaf:name	Mandatory property (Agent)	Updated	*Updated* Cardinality: 0..n -> 1..n	CR36
dcat:contactPoint	Mandatory property (Asset)	Updated	*Updated* Range: v:VCard -> v:Kind. This was an error in the revision draft ADMS-AP v0.08.	
dcat:ContactPoint	Mandatory property (Asset)	Updated	*Updated* Cardinality: 0..1 -> 1..n	CR9
dcat:theme	Recommended property (Asset)	Updated	*Updated* Cardinality: 1..n -> 0..n	CR20
adms:status	Optional property (Asset)	Updated	*Updated* Changed from recommended to optional.	CR23
dct:modified	Optional property (Asset)	Updated	*Updated* Cardinality: 1..1 -> 0..1 Changed from recommended to optional.	CR11
dct:publisher	Mandatory property (Asset)	Updated	*Updated* Updated the definition: the publisher is the Agent that publishes the asset or solutions, not the Agent that publishes the metadata about it.	CR35

URI	Type	Action	Description	Issue
dcat:distribution	Recommended property (Asset)	Updated	*Updated* Redefined. Removed statement about backwards compatibility.	
dcat:keyword	Recommended property (Asset)	Updated	*Updated* Redefined. Removed statement about backwards compatibility.	
dcat:landingPage	Recommended property (Asset)	Updated	*Updated* Redefined: The landing page is the web page that provides access to the asset, its releases, distributions and/or additional information. It is intended to point to a landing page at the original asset provider, not to a page on a site of a third party, such as a catalogue or repository.	CR12, CR13
dct:language	Recommended property (Asset)	Updated	*Updated* Cardinality: 0..1 -> 0..n Redefined: it is the language of the Asset, or language supported by software, using a controlled vocabulary.	CR15
dct:identifier	Optional property (Asset)	Updated	*Updated* URI: adms:identifier -> dct:identifier This property is the main identifier for the Asset, e.g. the URI or other unique identifier in the context of the Repository.	CR16
dct:hasVersion and dct:isVersionOf	Optional properties (Asset)	Added	*Added* These properties express the relationship between solution and release (see section 4)	CR21
adms:last	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR21
adms:next	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR21
adms:prev	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR21
adms:sample	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR19

URI	Type	Action	Description	Issue
wrds:describedBy	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR17
admssw:metrics	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR18
dct:temporal	N.A.	Deleted	*Deleted* The property was deleted from the Asset class.	CR14
adms:interoperabilityLevel	N.A.	Deleted	*Deleted* The property was deleted from the Asset class as it can be derived from the Asset Type.	CR10
adms:status	Optional property (Asset Distribution)	Updated	*Updated* Changed from recommended to optional.	CR23
dcat:downloadURL	N.A.	Deleted	*Deleted* The property was deleted from the Asset Distribution class.	CR26
dcat:mediaType	N.A.	Deleted	*Deleted* The property was deleted from the Asset Distribution class.	CR27
dct:format	Recommended property (Asset Distribution)	Updated	*Updated* Changed from optional to recommended. It is the media type of the Distribution, using a controlled vocabulary.	CR28
dct:license	Recommended property (Asset Distribution)	Updated	*Updated* If there are multiple licences, the most 'open' one should be given. Whenever relevant, the URIs under the concept scheme identified by http://purl.org/adms/OSIlicence/ can be used. *Updated 2* The property was made Mandatory.	CR22, CR30
dct:issued	Optional property (Asset Distribution)	Updated	*Updated* Cardinality: 0..n -> 0..1	CR25
admssw:tagURL	N.A.	Deleted	*Deleted* The property was deleted from the Asset Distribution class.	CR24

URI	Type	Action	Description	Issue
schema:FileSize	Optional property (Asset Distribution)	Updated	*Updated* Range: schema:fileSize -> rdfs:Literal. This was an error in ADMS-AP v1.0. Schema.org defines Text as the expected value type (https://schema.org/fileSize) which is equivalent to rdfs:Literal.	
dct:publisher	Optional property (Asset Distribution)	Updated	*Updated* Updated the definition: the publisher is the Agent that publishes the asset or solutions, not the Agent that publishes the metadata about it.	CR35
dct:publisher	Mandatory property (Asset Repository)	Updated	*Updated* Cardinality: 1..n -> 1..1 Updated the definition: the publisher is the Agent that publishes the asset or solutions, not the Agent that publishes the metadata about it.	CR2, CR35
foaf:homepage	Recommended property (Asset Repository)	Updated	*Updated* URI: dcat:assetURL -> foaf:homepage. It is the web page that gives access to the Repository. Range: foaf:Documentation -> foaf:Document. This was an error in the revision draft ADMS-AP v0.08.	CR5
dcat:contactPoint	Recommended property (Asset Repository)	Updated	*Updated* Cardinality: 1..n -> 0..n Changed from mandatory to recommended. Range: v:VCard -> v:Kind. This was an error in the revision draft ADMS-AP v0.08.	CR1
dcat:themeTaxonomy	Recommended property (Asset Repository)	Updated	*Updated* Removed statement about backwards compatibility.	CR7
dct:modified	N.A.	Deleted	*Deleted* The property was deleted from the Asset Repository class.	CR6

URI	Type	Action	Description	Issue
adms:supportedSchema	N.A.	Deleted	*Deleted* The property was deleted from the Asset Repository class. It could be described as an asset. The ADMS-AP schemas can be published and described by Joinup.	CR3
dcat:keyword	Optional property (Asset Repository)	New	*New* It is the word of phrase to describe the Repository.	CR8
skos:label	Recommended property (Asset Type)	Updated	*Updated* Changed from rdfs:label to skos:label for classes that are defined as skos:Concept.	
v:hasAddress	Optional property (Contact Information)	Updated	*Updated* Changed from recommended to optional. Changed to v: instead of vcard: to align with the namespace prefixes in section 3.	CR37
v:fn	Optional property (Contact Information)	Updated	*Updated* Changed from recommended to mandatory to conform to Vcard specification. Changed to v: instead of vcard: to align with the namespace prefixes in section 3.	CR37
v:hasTelephone	Optional property (Contact Information)	Updated	*Updated* Changed from recommended to optional. Changed to v: instead of vcard: to align with the namespace prefixes in section 3.	CR37
v:hasURL	Optional property (Contact Information)	Updated	*Updated* Changed from recommended to optional. Changed to v: instead of vcard: to align with the namespace prefixes in section 3.	CR37
dct:title	Optional property (Contact Information)	Deleted	*Deleted* It was not clear to which 'document' this title applied	
skos:label	Recommended property (Interoperability level)	Updated	*Updated* Changed from rdfs:label to skos:label for classes that are defined as skos:Concept.	

URI	Type	Action	Description	Issue
skos:inScheme	N.A.	Deleted	*Deleted* The property was deleted from the Language, Licence and MediaType as these classes are not defined as skos:Concept.	
skos:label	Recommended property (Representation Technique)	Updated	*Updated* Changed from rdfs:label to skos:label for classes that are defined as skos:Concept.	
skos:label	Recommended property (Status)	Updated	*Updated* Changed from rdfs:label to skos:label for classes that are defined as skos:Concept.	
skos:label	Recommended property (Theme)	Updated	*Updated* Changed from rdfs:label to skos:label for classes that are defined as skos:Concept.	
admssw:intendedAudience	Controlled vocabulary	Deleted	*Deleted* The controlled vocabulary was removed because it was only used for ADMS.SW.	
admssw:locale	Controlled vocabulary	Deleted	*Deleted* The controlled vocabulary was removed because it was only used for ADMS.SW.	
admssw:programmingLanguage	Controlled vocabulary	Deleted	*Deleted* The controlled vocabulary was removed because it was only used for ADMS.SW.	
admssw:userInterfaceType	Controlled vocabulary	Deleted	*Deleted* The controlled vocabulary was removed because it was only used for ADMS.SW.	
dcat:theme	Controlled vocabulary (Asset)	Updated	*Updated* The controlled vocabulary for an Asset theme will use the Dataset Theme Vocabulary (http://publications.europa.eu/resource/authority/data-theme), the values to be used for this property are the URIs of the concepts in the vocabulary.	CR38

URI	Type	Action	Description	Issue
dct:type	Controlled vocabulary (Asset)	New	The Asset Type vocabulary of ADMS has been extended to cover all interoperability levels as well as to take on board a maximum of relevant concepts from the EIA building blocks. This resulted in the Solution Type vocabulary (http://purl.org/adms/solutiontype/). *Updated* The controlled vocabulary for Asset Type has been updated to use the EIRA vocabulary. The Solution Type has been deleted.	CR40, CR10
adms:interoperabilityLevel	Controlled vocabulary (Asset)	Deleted	*Deleted* The controlled vocabulary has been removed for Asset as the property was deleted.	CR10
adms:status	Controlled vocabulary (Software project)	Deleted	*Deleted* The controlled vocabulary has been removed for Software Project as the class was deleted.	CR31
dcat:theme	Controlled vocabulary (Software project)	Deleted	*Deleted* The controlled vocabulary for a Software Project theme has been removed as the class has been deleted.	CR31
dcat:themeTaxonomy	Controlled vocabulary (Asset Repository)	Updated	*Updated* The controlled vocabulary for an Asset Repository theme will use the Dataset Theme Vocabulary (http://publications.europa.eu/resource/authority/data-theme), the value to be used for this property is the URI of the vocabulary itself, i.e. the concept scheme, not the URIs of the concepts in the vocabulary.	CR38
dct:format	Controlled vocabulary (Asset Distribution)	Deleted	*Deleted* The controlled vocabulary has been removed.	

URI	Type	Action	Description	Issue
dct:type	Controlled vocabulary (Licence Document)	Updated	*Updated* Only one of the four terms http://purl.org/adms/licencetype/PublicDomain, http://purl.org/adms/licencetype/OSIcompliant, http://purl.org/adms/licencetype/NonOSIcompliant, http://purl.org/adms/licencetype/UnknownIPR should be used for the type of the Licence Document.	CR34
schema:operatingSystem	Controlled vocabulary (Software project)	Deleted	*Deleted* The controlled vocabulary for a Software Project theme has been removed as the class has been deleted.	CR31

Further changes:

- Removed namespaces prefixes that were only used for ADMS.SW or were no longer used: doap, qb, rad, swid, trove, wdrs.
- Updated the quick reference in annex II.
- Removed the following provider requirements:
    - "For all instances of the optional Identifier class, provide data for at least the mandatory property specified in section 7.12.1" (i.e. mandatory properties of the Licence).
    - "For all instances of the optional Software Package class, provide data for at least the mandatory properties of the Asset Distribution class specified in section 7.3.1" (i.e. mandatory properties of the Asset Distribution).
    - "For all instances of the optional Software Project class, provide data for at least the mandatory properties specified in section 7.24.1" (i.e. mandatory properties of the Software Project).
    - "For all instances of the optional Software Release class, provide data for at least the mandatory properties of the Asset class specified in section 7.2.1" (i.e. mandatory properties of the Asset).
- Added DCAT subclass statements to Asset (Dataset), Asset Distribution (Distribution) and Asset Repository (Catalog).
- Changed the text for the Contact Information in section 9.1 to indicate it is a mandatory class.
- Added a bullet point for the Publisher class in section 9.1.

Annex II QUICK REFERENCE

Class	Class URI	Mandatory prop.	Recommended prop.	Optional prop.
Asset	dcat:Dataset	dcat:contactPoint dct:description dct:publisher dct:title dct:type	adms:status dcat:distribution dcat:keyword dcat:landingPage dcat:theme dct:language dct:relation dct:spatial	adms:includedAsset adms:translation adms:versionNotes dct:identifier dct:issued dct:isVersionOf dct:hasVersion dct:modified foaf:page owl:versionInfo skos:altLabel
Asset Distribution	dcat:Distribution	dcat:accessURL dct:license	dct:format	adms:representationTechnique adms:status dct:description dct:issued dct:modified dct:publisher dct:title schema:fileSize spdx:checksum
Asset Repository	dcat:Catalog	dct:description dct:publisher dct:title	dcat:contactPoint dcat:dataset dcat:themeTaxonomy dct:spatial foaf:homepage	dcat:keyword dct:issued
Asset Type	skos:Concept		skos:label skos:inScheme	
Checksum	spdx:Checksum	spdx:algorithm spdx:checksumValue		
Contact Information	v:Kind	v:fn v:hasEmail		v:hasAddress v:hasTelephone v:hasURL
Geographical Coverage	dct:Location		rdfs:label	
Interoperability Level	skos:Concept		skos:label skos:inScheme	
Language	dct:LinguisticSystem		rdfs:label	
Licence	dct:LicenseDocument	dct:type	dct:description rdfs:label	
Media Type	dct:MediaTypeorExtent		rdfs:label	
Publisher	foaf:Agent	foaf:name	dct:type	
Representation Technique	skos:Concept		skos:label skos:inScheme	
Status	skos:Concept		skos:label skos:inScheme	
Theme	skos:Concept		skos:label skos:inScheme	
Theme Taxonomy	skos:ConceptScheme		rdfs:label skos:hasTopConcept	

Annex III CHANGE LOG VERSION 2.01

The table below summarises the changes applied to version 2.0 of the ADMS-AP.

URI	Type	Action	Description	Issue
spdx:algorithm	Mandatory property (Checksum)	Updated	*Updated* URI: algorithm -> spdx:algorithm. This was an error in the ADMS-AP v2.0.	
spdx:checksumValue	Mandatory property (Checksum)	Updated	*Updated* URI: checksumValue -> spdx:checksumValue. This was an error in the ADMS-AP v2.0.	
owl	Namespace	Added	The owl namespace was not identified. http://www.w3.org/2002/07/owl#	