



D1.1 – ADMS DRAFT SPECIFICATION

Deliverable

JOINING UP GOVERNMENTS



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PwC EU Services

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This draft specification can be downloaded from the ISA website:

<http://joinup.ec.europa.eu/asset/adms/release/08>

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1. BACKGROUND AND OBJECTIVES

1.1 ABOUT THE ISA PROGRAMME

This specification has been created as part of Action 1.1 of the Interoperability solutions for European public administrations (ISA) programme of the European Commission (EC). This programme funds initiatives to foster the efficient and effective cross-border electronic interactions between European public administrations. Action 1.1 of this programme is targeted towards improving the semantic interoperability of European e-Government systems. Action 1.1 attempts to address these by encouraging the sharing and reuse of semantic assets. As part of Action 1.1, the ISA Programme maintains a repository of semantic interoperability assets on Joinup, the ISA integrated collaborative platform.

1.2 TERMINOLOGY

This document uses the following terminology:

Semantic interoperability is defined as the ability of information and communication technology (ICT) systems and the business processes they support to exchange data and to enable the sharing of information and knowledge: *Semantic Interoperability enables systems to combine received information with other information resources and to process it in a meaningful manner* (European Interoperability Framework 2.0¹). It aims at the mental representations that human beings have of the meaning of any given data.

A **semantic interoperability asset** is defined as a collection of reference data items that are used for eGovernment metadata and the sharing of which among administrations would contribute to increased interoperability across organisational and geographic boundaries.

This definition is sufficiently broad to allow the inclusion of descriptions of various types of data to be included and managed in asset repositories. Possible types are for example specifications, guideline documents, metadata schemas, code lists, controlled vocabularies, and references to various types of things in the real world, such as organisations, people and places.

1.3 LEVELS OF DATA

This document distinguishes four levels of data:

1. eGovernment Data: primary data resources such as documents, services, software, datasets
2. eGovernment Metadata: descriptions of those primary information resources such as metadata records or statements in databases that provide information about what the data are and how they can be used.

¹ http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf

3. Semantic Interoperability Assets: reference data that are being used in eGovernment metadata such as the ones mentioned in the previous section 1.2.
4. Semantic Interoperability Assets Descriptions: descriptions of assets that can be contained in and made available from the semantic interoperability repositories.

The focus of Action 1.1 of the ISA Programme is on the semantic interoperability assets. ADMS is proposed as a description schema for the descriptions mentioned under the fourth level in the list above, and is intended to facilitate the federation of repositories of interoperability assets.

1.4 A MODEL FACILITATING FEDERATION

ADMS is intended as a model that facilitates federation and co-operation. It is not the primary intention that repository owners redesign or convert their current systems and data to conform to ADMS, but rather that ADMS can act as a common layer among repositories that want to exchange data.

In parallel to the public comment period of this specification, examples of this mapping from existing repositories to ADMS will be developed in collaboration with the owners of these repositories.

On the other hand, there is nothing prohibiting developers of new repositories, or owners of existing repositories if they so desire, to build systems that do allow the creation and maintenance of asset descriptions in an ADMS-compliant format.

The model described in this document is, as much as possible, technology-neutral so it can be implemented using different technologies. In section 7 of the specification, information will be provided on how to implement the model in RDF and XML.

2. APPROACH

The work on ADMS builds on the work that was initiated in December 2010 under Action 1.1 of the ISA Programme. The interim result of Phase 1 was published on the SEMIC.EU site as version 0.6a² which was open for public comment in March and April 2011. The comments that were made in that public comment period are being taken into account in this deliverable.

In particular, the UML diagrams of version 0.6a were used as the starting point for developing the conceptual model in section 5. Furthermore, the Use Cases in section 4 have been informed by the use cases considered in version 0.6a.

The development process of ADMS is based the methodology for the development of core vocabularies described in the document “Process and methodology for Core Vocabularies”³. One of the basic considerations of that methodology is that semantic elements will re-use existing vocabularies where possible. This will be the leading principle in the description of RDF and XML schemas in section 7.

This deliverable has been developed with the help of the ADMS Working Group and reviewed by the ADMS Review Group. These groups consist of a mix of representatives of the EU Member States and external experts invited by the European Commission. The members of both groups are listed in section 10 Acknowledgements.

After iterative development of the drafts of this document, a public comment period will take place in order to give interested parties the opportunity to review the specification and provide comments for improvement. After that, the document is submitted for endorsement by the EU Member States.

The specification will then be used as the basis for a pilot implementation of a federation of asset repositories.

² In December 2011, the SEMIC.EU platform was migrated to Joinup. Version 0.6a of the ADMS specification is now available at <https://joinup.ec.europa.eu/asset/adms/release/06>

³ <https://joinup.ec.europa.eu/library/document/isa-deliverable-process-and-methodology-developing-core-vocabularies>

3. RELATED WORK

Several related activities have been identified as sources for the specification. Consideration has been given to:

- Ontology Metadata Vocabulary (OMV⁴)
- Networked Knowledge Organization Systems/Services (NKOS⁵)
- CEN eGov-Share⁶
- UN/CEFACT⁷
- Data Catalog Vocabulary (DCAT⁸)
- Vocabulary of Interlinked Datasets (VOID⁹)
- ISO/IEC 24706¹⁰

These related activities have informed the definition of the concepts, properties and relationships that are presented in section 5 Conceptual model.

⁴ <http://omv2.sourceforge.net/>

⁵ <http://nkos.slis.kent.edu/>

⁶ <http://www.cen.eu/CEN/sectors/sectors/iss/workshops/Pages/wsegovshare.aspx>

⁷ <http://live.unece.org/cefact/index.html>

⁸ http://www.w3.org/egov/wiki/Data_Catalog_Vocabulary

⁹ <http://vocab.deri.ie/void>, <http://www.w3.org/TR/void/>

¹⁰ <http://metadata-stds.org/24706/index.html>

4. USE CASE

Business need: e-Government system developers can benefit from *reusing* semantic assets. One of the barriers to reuse is the lack of information about semantic assets. To overcome this barrier, they need to be able to easily *explore* [FRSAD¹¹], *find*, *identify*, *select*, and *obtain* [FRBR¹²] semantic assets developed in *different* EU Member States, or other countries and organisations and originally catalogued or located in many *different* locations:

- to **explore** the semantic assets that are available in a particular subject area and to explore the relationships between semantic assets in order to understand the structure of a subject area and its terminology;
- to **find** semantic assets that correspond to the user's stated search criteria (i.e., to locate either a single semantic asset or a set of semantic assets in *multiple* repositories or catalogues as the result of a search using an attribute or relationship of the semantic asset);
- to **identify** a semantic asset (i.e., to confirm that the semantic asset described corresponds to the semantic asset sought, or to compare two or more semantic asset with similar characteristics in *multiple* repositories or catalogues);
- to **select** a semantic asset that is appropriate to the user's needs (i.e., to choose an semantic asset that meets the user's requirements with respect to content, format, etc., or to reject a semantic asset as being inappropriate to the user's needs);
- to **obtain** access to the semantic asset described (i.e., to access an entity electronically through an online connection).

Usage scenario: *Working on a new e-Government project, a user is interested in a specific semantic asset, for example a list of delicts for the European Arrest Warrant project.*

- **Without ADMS:** The user consults various semantic asset repositories and catalogues. To find, identify, select, and obtain semantic assets the user will be faced with a variety of user interface designs, different metadata, different languages, classification schemas, different access credentials and usage rights; etc.;
- **With ADMS:** The user consults one of the federated ADMS-enabled repositories or catalogues. To find, identify, and select semantic assets, the user is able to retrieve information about semantic assets hosted or documented in multiple repositories and catalogues. To obtain the semantic asset, the user is directed to the URL on the repository of origin or another location where the semantic asset can be retrieved.

Derived requirements: The ADMS must specify:

- The *minimal subset* (the ADMS Core) of metadata that must be exposed to federation partners and that are needed for the most frequent search cases;
- A subset of recommended metadata extensions;
- How to deal with multilingual properties;
- How to expose or exchange the metadata (the preferred API to exchange metadata descriptions).

¹¹ <http://www.ifla.org/en/node/1297>

¹² <http://www.ifla.org/publications/functional-requirements-for-bibliographic-records>

Similar to the [FRBR] the table below contains a list of conceivable asset metadata properties and relationships. Plotted against each property and relationship are the five generic user tasks (i.e., explore, find, identify, select, and obtain). The symbols used in the tables (■ □ ○) indicate the relative value of each attribute or relationship in supporting a specific user task focused on a particular entity. The symbol ■ signifies that an attribute or relationship is highly important for supporting the designated task; the symbol □ signifies moderate importance; and the symbol ○ signifies relatively low importance. The absence of a symbol indicates that the attribute or relationship has no discernible relevance to that particular user task or sub-task. The properties and relationships greyed out have not been included in the ADMS conceptual model.

To **explore** semantic assets, high importance is attributed to metadata properties and relationships that allow exploring a set of related semantic assets that share common characteristics in a particular subject area (domain, subject, spatial coverage, interoperability level, related regulation, repository of origin, publisher type, and core concept). Medium importance is given to metadata properties and relationships that in more restricted cases will be used to explore a set of linked or similar semantic assets or a set of related information sources (publisher, related project, used by).

To **find** semantic assets, high importance is attributed to metadata properties and relationships that serve to identify a semantic asset (title, alternative title, identifier, publisher, version, and URI) and that are typically used as a primary search term (multilingual description, keyword). Medium importance is given to properties and relationships that are useful subdivisions of search results (subject, spatial coverage, format, asset type), that are useful secondary search criteria (domain) or that will serve to direct the user from one entity to another entity (related asset, translation, is replaced by etc.). Low importance is given to properties and relationships that under limited circumstances can be used to qualify a search (core concepts and concepts).

To **identify** semantic assets, high importance is attributed to metadata properties and relationships that serve to identify a semantic asset (title, identifier, publisher, version, and URI) and that differentiate semantic assets that have common characteristics (created, modified, replaced by, format, asset type, status). Medium importance is given to metadata that in specified circumstances will serve to differentiate semantic assets (domain, subject, spatial coverage, status, licence class, usage).

To **select** semantic assets, high importance is attributed to metadata properties and relationships that are a significant indicator of the asset's content (format, asset type, core concept, concept, status) or that may signal requirements for viewing or reusing the asset (licence, language). Medium importance is attributed to metadata that only in specific cases indicate an asset's content (domain, subject, spatial coverage, usage).

To **obtain** semantic assets, high importance is attributed to metadata properties and relationships that serve to identify a semantic asset (title, identifier, publisher, version, and URI) to differentiate semantic assets that have common characteristics (created, modified, format, replaced by, asset type) and to locate the source from which the semantic asset (release) may

be obtained (access URL, repository of origin) in the majority of the cases. Medium importance is given to metadata that in specified circumstances will serve to differentiate semantic assets.

<i>Metadata category</i>	<i>Metadata property or relationship</i>	<i>Description</i>	<i>Explore</i>	<i>Find</i>	<i>Identify</i>	<i>Select</i>	<i>Obtain</i>
descriptive metadata	name	the title of the semantic asset		■	■		■
	alternative name	the alternative name		■			
	description	descriptive text		■	■		
	keyword	word/phrase that describes the asset		■			
	identifier	any identifier for the asset		■	■		■
	ID	uniform resource identifier		■	■		■
	version	version number of the asset		■	■		■
	<i>related asset</i>	assets related to the asset			□		
	current version	most current version of the asset			□	□	□
	next version	next version of the asset					□
	previous version	previous version of the asset					□
	release	a release of the asset					□
applicability	domain	the domain of the semantic asset	■	□		□	
	subject	a pre-defined list of subjects	■	□		□	
	spatial coverage	geographic region in which the asset applies	■	□		□	
	Interoperability level	level according to the European Interoperability Framework (EIF 2.0) ¹³ that an Asset is related to	■	□	■		
	related regulation	related regulations from which the asset is derived.	■				
provenance	repository of origin	repository or catalogue that contains the primary description of the semantic asset	■	■			
	publisher	organisation responsible for the publication of the semantic asset	□	■	■		■
	publisher type	the kind of publisher	■				
	date of creation	date of creation			■		
	date of last modification	date of last modification			■		
	development project	development project as part of which the semantic asset was developed	□				

¹³ http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf

<i>Metadata category</i>	<i>Metadata property or relationship</i>	<i>Description</i>	<i>Explore</i>	<i>Find</i>	<i>Identify</i>	<i>Select</i>	<i>Obtain</i>
format	format	format in which an asset is released	■	□	■	■	
	asset type	type of the asset	■	□	■	■	
availability	licence	A legal document giving official permission to do something with a Resource				■	
	licence class	the class of licences that govern (re-)use of releases (e.g. BSD)	■		□		
	license type	coarse type of rights and obligations that come with the license					
	status	status in the context of a particular workflow process			□	■	
	translation	a translated version of the asset			□		
	language	language of the asset			□	□	
	accessibility	access URL	URL of the semantic asset (release)				
documentation		documentation of the asset					○
sample		a sample of the asset					○
homepage		an associated web page					□
usage	used by	the organisations that use the asset	□		□	□	
	used in dataset	the dataset that uses the asset			□	□	
	used in public service	the electronic public service in which the semantic asset is used			□	□	
	implemented by software asset	the software asset that uses the semantic asset			□	□	
defined concepts	core concept	any core concept that the asset (implicitly) relates to	■	○			
	included item	the concept that the asset includes		○		■	
statistics	#concepts	the number of concepts defined by the asset (includes individual concepts)					
	#relationships	the number of relationships defined by the asset					
	#properties	the number of properties defined by the asset					
	#downloads	the number of downloads of the asset (release)					

5. CONCEPTUAL MODEL

5.1 DOMAIN MODEL

In the context of federation of repositories of Semantic Interoperability Assets, a number of concepts are relevant. The primary concepts to be described by ADMS are the following:

A **Repository** is a system or service that provides facilities for storage and maintenance of descriptions of Assets and Releases, and functionality that allows users to search and access these descriptions. A Repository will typically contain descriptions of several assets and related releases.

An **Asset** represents the conceptual content of a resource, in particular of an Interoperability Asset as defined in section 1.2 (for example a specification, code list, metadata schema, a register of organisations etc.). A particular Asset may have zero or more Releases in different formats.

A **Release** is a particular representation or concretisation of an Asset in the form of a downloadable computer file that implements the intellectual content of an Asset. A particular Release is associated with one Asset.

As a concrete example of the relationship between an asset and its releases, consider this specification of ADMS: the current section describes the conceptual model of the semantic elements and their relationships (the Asset), while the schemas that will be developed in section 7 are the representations or concretisations of the model in schemas that can be downloaded and integrated in software (the Releases). The two schemas (one RDF schema and one XML schema) are two releases of the Asset.

In addition to these primary concepts, there are a number of secondary or supporting concepts:

- **Asset Type:** classification of an Asset according to a controlled vocabulary, e.g. code list, metadata schema
- **Documentation:** document that further describes an Asset or give guidelines for its use
- **Domain:** government sector that an Asset or Repository applies to, e.g. “law” or “environment” according to a controlled vocabulary
- **Example Asset:** sample of an Asset that a user can look at to determine whether or not it is relevant for their purposes
- **File Format:** technical format in which a Release is available , e.g. PDF for a document, XML for a schema
- **Geographical Coverage:** country or region to which an Asset or Repository applies
- **Included Item:** item that is contained in an Asset, e.g. if the Asset is a controlled vocabulary, this could be one of the vocabulary terms

- **Interoperability Level:** level according to the European Interoperability Framework (EIF 2.0)¹⁴ for which an Asset is relevant
- **Language:** language of an Asset if it contains textual information, e.g. the language of the terms in a controlled vocabulary or the language that a specification is written in
- **License:** conditions or restrictions that apply to the use of a Release, e.g. whether it is in the public domain, or that some restrictions apply like in cases attribution is required, or the Asset can only be used for non-commercial purposes etc.
- **Publisher:** organisation responsible for a Repository, Asset or Release
- **Status:** indication of the maturity of an Asset or Release
- **Subject:** theme or subject of an Asset, e.g. “elections” or “immigration” according to a general or domain specific controlled vocabulary

5.2 UML DIAGRAM

The model presented in the next figure shows the various concept types with their relationships and the descriptive information for the three main concepts Repository, Asset and Release.

The concepts, properties and relationships are described in more detail below the diagram.

¹⁴ http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf

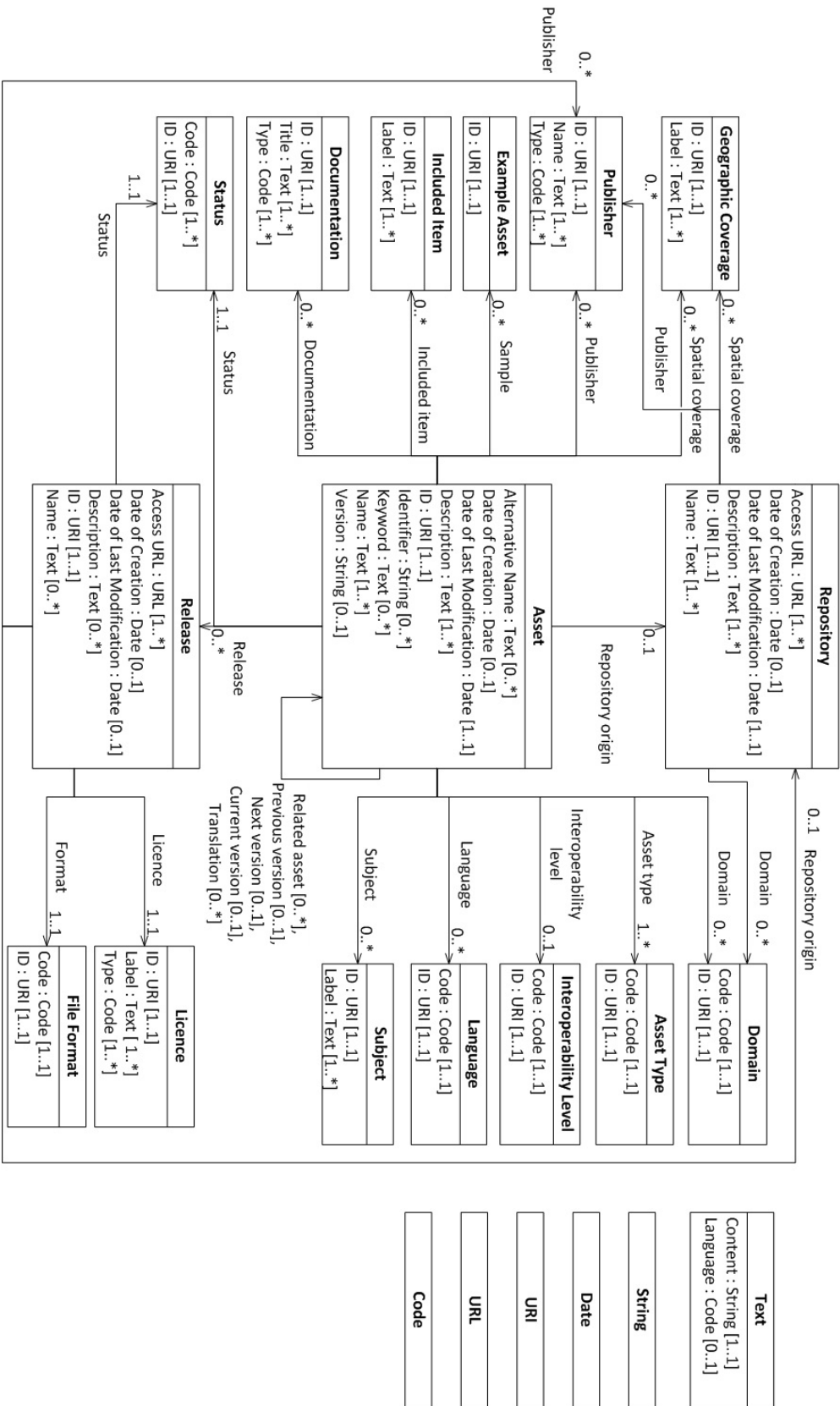


Figure 1: ADMS Conceptual Model

5.3 DATA TYPES

The following data types are used in the model:

<i>Data type</i>	<i>Description</i>
Code	String; value from a code list (see for examples section 6)
Date	String; syntax conforming to W3CDTF (Date and Time Format) ¹⁵
String	String of UNICODE characters
Text	Complex type consisting of a content string (data type String) and an optional language code (data type Code)
URI	String; syntax conforming to RFC 3986 ¹⁶
URL	String; syntax conforming to RFC 1738 ¹⁷

5.4 MAIN CONCEPTS

<i>Concept</i>	<i>Description</i>
Asset	the class of conceptual Interoperability Assets
Release	the class of representations or concretisations of Assets in a particular format
Repository	the class of repositories that contain descriptions of Assets and Releases

5.4.1 Concept: Asset

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Alternative Name	alternative name for the Asset. Note: this information may be used to provide additional access points, e.g. allowing indexing of any acronyms, nicknames, shorthand notations or other identifying information under which a user might expect to find the Asset	0..*
Date of Creation	creation date of this version of the Asset	0..1
Date of Last Modification	date of latest update of Asset	1..1
Description	descriptive text for the Asset	1..*
ID	URI for the Asset	1..1
Identifier	any identifier for the Asset	0..*
Keyword	word or phrase to describe the Asset	0..*
Name	name of the Asset. Note: in cases that an Asset has parallel names, for example if more than one official name exists, or if an organisation or country has more than one official language, this field can be repeated for all name variants	1..*
Version	version number or other designation of the Asset	0..1

¹⁵ <http://www.w3.org/TR/NOTE-datetime>

¹⁶ <http://www.ietf.org/rfc/rfc3986.txt>

¹⁷ <http://www.ietf.org/rfc/rfc1738.txt>

<i>Relationship</i>	<i>Description</i>	<i>Cardinality</i>
Asset type	type of the Asset	1..*
Current version	current or latest version of the Asset	0..1
Documentation	further documentation of the Asset	0..*
Domain	domain or sector to which the Asset applies	0..*
Included item	item that is contained in the Asset (e.g. a concept in a controlled vocabulary)	0..*
Interoperability level	interoperability level that the Asset is relevant for	0..1
Language	language of the Asset	0..*
Next version	newer version of the Asset	0..1
Previous version	older version of the Asset	0..1
Publisher	organisation responsible for the publication of the Asset	0..*
Related asset	unspecified relationship between Assets	0..*
Release	implementation of the Asset in a particular format	0..*
Repository origin	Repository that contains the primary description of the Asset	0..1
Sample	sample of the Asset	0..*
Spatial coverage	geographic region or jurisdiction to which the Asset applies	0..*
Subject	subject or theme that the Asset covers	0..*
Status	status of the Asset in the context of a particular workflow process	1..1
Translation	translation of the Asset	0..*

5.4.2 Concept: Release

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Access URL	URL of the Release Note: more than one URL may be available, for example if mirror sites are maintained.	1..*
Date of Creation	creation date of the Release	0..1
Date of Last Modification	date of latest update of the Release	0..1
Description	descriptive text for the Release	0..*
ID	URI for the Release	1..1
Name	name of the Release	0..*

<i>Relationship</i>	<i>Description</i>	<i>Cardinality</i>
Format	format in which the Release is available (e.g. PDF, XML, RDF/XML, HTML)	1..1
Licence	conditions or restrictions for (re-)use of the Release	1..1
Publisher	organisation responsible for the publication of the Release	0..*
Repository origin	Repository that contains the primary description of the Release	0..1
Status	status of the Release in the context of a particular workflow process	1..1

5.4.3 Concept: Repository

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Access URL	URL of the Repository	1..*
Date of Creation	creation date of the Repository	0..1
Date of Last Modification	date of latest update of the Repository	1..1
Description	descriptive text for the Repository	1..*
ID	URI for the Repository	1..1
Name	name of the Repository Note: in cases that a Repository has parallel names, for example if more than one official name exists, or if an organisation or country has more than one official language, this field can be repeated for all name variants	1..*

<i>Relationship</i>	<i>Description</i>	<i>Cardinality</i>
Domain	domain or sector to which the Repository applies	0..*
Publisher	organisation responsible for the publication of the Repository	0..*
Spatial coverage	geographic region or jurisdiction to which the Repository applies	0..*

5.5 SECONDARY OR SUPPORTING CONCEPTS

<i>Concept</i>	<i>Description</i>
Asset Type	the class of types of Assets that can be included in a repository
Documentation	the class of documents that describe an Asset
Domain	the class of domains/sectors relevant for eGovernment interoperability (e.g. law, environment) covered by an Asset or Repository
Example Asset	the class of samples of Assets
File Format	the class of technical formats that a Release can be available in (e.g. the set of tags defined by IANA media types)
Geographic Coverage	the class of geographic locations or jurisdictions to which an Asset or Repository applies
Included Item	the class of items that are contained in Assets
Interoperability Level	the class of interoperability levels according to EIF 2.0
Language	the class of languages of Assets (e.g. the set of tags defined by IETF RFC5646)
Licence	the class of licences that govern (re-)use of Releases (e.g. Creative Commons, EU Public Licence)
Publisher	the class of organisations (agencies, companies etc.) that are or were responsible for an Repository, Asset or Release
Status	the class of statuses, e.g. whether an Asset or Release is published, under construction etc.
Subject	the class of subjects or themes to which an Asset relates

5.5.1 Concept: Asset Type

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6 for recommendation on values	1..1
ID	URI identifying the Asset Type	1..1

5.5.2 Concept: Documentation

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Documentation	1..1
Title	Title of the Documentation Note: Documentation may have more than one title, e.g. in different languages	1..*
Type	Value from a list of controlled terms; see section 6 for recommendation on values	1..*

5.5.3 Concept: Domain

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6 for recommendation on values	1..1
ID	URI identifying the Domain	1..1

5.5.4 Concept: Example Asset

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Example Asset	1..1

5.5.5 Concept: File Format

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6	1..1
ID	URI identifying the File Format	1..1

5.5.6 Concept: Geographic Coverage

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Geographic Coverage	1..1
Label	Text label for the Geographic Coverage	1..*

5.5.7 Concept: Included Item

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Included Item	1..1
Label	Text label for the Included Item	1..*

5.5.8 Concept: Interoperability Level

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6	1..1
ID	URI identifying the Interoperability Level	1..1

5.5.9 Concept: Language

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6	1..1
ID	URI identifying the Language	1..1

5.5.10 Concept: Licence

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Licence	1..1
Label	Text label for the Licence	1..*
Type	Value from a list of controlled terms; see section 7	1..*

5.5.11 Concept: Publisher

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Publisher	1..1
Name	Name of the organisation responsible for the Asset or Repository Note: A Publisher may have one of more Names, e.g. if the organisation has names in different languages as may be the case in countries with more than one official language	1..*
Type	Value from a list of controlled terms; see section 6	1..*

5.5.12 Concept: Status

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
Code	Value from a list of controlled terms; see section 6	1..1
ID	URI identifying the Status	1..1

5.5.13 Concept: Subject

<i>Property</i>	<i>Description</i>	<i>Cardinality</i>
ID	URI identifying the Subject	1..1
Label	Text label for the Subject	1..*

5.6 MULTILINGUAL CONSIDERATIONS

One of the crucial characteristics of the environment in which ADMS will be deployed is that it is intended to support interoperability in a multilingual environment. The following aspects are relevant:

- The content of Assets, as far as they contain textual information, will be produced in different languages; for example, codes in a code list or labels for terms in a controlled vocabulary may be based on a particular language such as is the case for the various language versions of EuroVoc.
- Repositories, Assets and Releases are created, maintained and described in different languages; for example, a repository in Germany will contain descriptions in German; a Belgian registry may contain descriptions in Dutch or French or both.
- Users of the information will have different linguistic and cultural backgrounds and may expect to be able to search in their own language and find material both in their own and in other languages.

While the conceptual model of ADMS described in the previous paragraphs does not explicitly address the potential requirements for multilingual deployment in a federation of repositories, it does contain a number of capabilities to enable the support of multilingual environments.

First of all, all properties that are intended to contain “human-readable text” are defined with data type Text, which is a complex type consisting of text content and an optional language code.

Secondly, all such properties are repeatable, which allows the provision of different language versions with the appropriate language code.

The model does not attempt to declare any of the possible language versions the “main version” to allow flexibility on the side of the user interface in deciding which version to show to the user. If a content provider has provided parallel language versions in the metadata, a multilingual user interface would have the option to match user preferences with one of the available language versions.

The model is also silent on the source of translated information. Parallel language versions may be supplied by the content provider or be generated by automated translation tools.

Apart from the facilities provided for “human-readable text” as outline above, many of the concepts in the model are defined as having data type Code. Data of this type is intended to be language-independent. The meaning of the codes in a code list may be provided in multiple languages. For the code lists recommended for use with ADMS, see section 6.

6. CONTROLLED VOCABULARIES

The section identifies a number of controlled vocabularies to be used for specific concepts in the ADMS model. In this section, the term “vocabulary” is used as shorthand for various types of controlled vocabularies, including taxonomies (collections of controlled category labels or notations representing concepts in a hierarchical structure), thesauri (networked collections of controlled terms representing concepts in a networked structure) and other types of knowledge organisation systems.

In general, use of controlled collections of terms is recommended as far as possible. Where such collections do not exist, repository owners should consider creating and maintaining such collections to ensure consistent description.

6.1 INTEROPERABILITY LEVEL AND ASSET TYPE VOCABULARIES

The table below gives the relationships between the vocabularies for the ADMS concepts Interoperability Level and Asset Type.

<i>EIF¹⁸ Interoperability Level</i>	<i>Asset Type</i>
Political	Policy document
	Policy Implementation Guideline
Legal	Legislation
	Legal Implementation Guideline
	Licences for re-use
Organisational	Organisational Policy document
	Organisational Implementation Guideline
Semantic	Semantic Policy document
	Metadata Specification
	Metadata Schema
	Controlled Vocabulary
	Mapping Specification
	Syntax Specification
	Code List
	Semantic Implementation Guideline
Technical	Register of organisations
	Geographic Reference
	Technical Policy document
	Technical Implementation Guideline
	Interoperability Framework
	Technical Specification
	System/Service
API Specification	

¹⁸ http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf

6.2 DOCUMENTATION TYPE VOCABULARY

The proposed vocabulary for Documentation Type is as follows:

- Home page: a Web page that is fully dedicated to the asset
- Related Web page: a Web page that contains information related to the asset
- Main documentation: the main documentation or specification of the asset
- Related documentation: documentation that contains information related to the asset

6.3 DOMAIN VOCABULARY

The proposed vocabulary for Domain is the domain level¹⁹ of EuroVoc²⁰.

6.4 FILE FORMAT VOCABULARY

The proposed vocabulary for File Format is the list of IANA MIME Media Types²¹.

6.5 GEOGRAPHIC COVERAGE VOCABULARY

The proposed vocabulary for Geographic Coverage if related to regions in Europe is NUTS²², the Nomenclature of territorial units for statistics maintained by Eurostat. For countries and regions not included in NUTS, DBPedia²³ or FAO Geopolitical Ontology²⁴ references could be used.

6.6 LANGUAGE VOCABULARY

The proposed vocabulary for Language is the code list defined by IETF RFC 5646²⁵.

6.7 LICENCE VOCABULARY

A proposed vocabulary entity Licence is the one defined by Creative Commons²⁶. Other licence vocabularies may be considered depending on existing approaches and requirements.

6.8 LICENCE TYPE VOCABULARY

In addition to a reference to a specific licence (see previous section 6.7) a vocabulary is defined to classify the conditions and restrictions that are related to the specified licence.

¹⁹ http://eurovoc.europa.eu/drupal/?q=download/subject_oriented&cl=en

²⁰ <http://eurovoc.europa.eu/>

²¹ <http://www.iana.org/assignments/media-types/index.html>

²² http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

²³ <http://dbpedia.org/About>

²⁴ <http://www.fao.org/countryprofiles/geoinfo.asp?lang=en>

²⁵ <http://www.ietf.org/rfc/rfc5646.txt>

²⁶ <http://creativecommons.org/>

The following list of Licence Types is proposed:

- Public domain
- Attribution
- Viral effect (a.k.a. Share-alike)
- non-commercial use only
- no derivative work
- royalties required
- reserved names / endorsement / official status
- nominal cost
- grant back
- Jurisdiction within the EU
- other restrictive clauses
- known patent encumbrance
- unknown IPR

6.9 PUBLISHER TYPE VOCABULARY

The proposed vocabulary for Publisher Type is as follows:

- Standardisation body
- Supra-national authority
- National authority
- Regional authority
- Industry consortium
- Company

6.10 STATUS VOCABULARY

The proposed vocabulary for Status is:

- Published
- Under development
- Deprecated
- Withdrawn

6.11 SUBJECT VOCABULARIES

Many candidate vocabularies are available for Subject. Examples are the European Commission's ECLAS²⁷ Thesaurus and EuroVoc²⁸, EIONET's GEMET²⁹, FAO's AGROVOC³⁰,

²⁷ http://ec.europa.eu/libraries/doc/catalogues/index_en.htm

²⁸ <http://eurovoc.europa.eu/>

²⁹ <http://www.eionet.europa.eu/gemet>

³⁰ <http://aims.fao.org/website/AGROVOC-Thesaurus/sub>

ZBW's STW Thesaurus for Economics³¹, the Library of Congress' Subject Headings (LCSH)³² and Thesaurus for Graphic Materials (TGM)³³ and others, The use of these vocabularies is closely linked to the domain to which t an Asset is related. It is recommended that terms should be assigned from a vocabulary that is most widely used in the domain covered.

6.12 OTHER VOCABULARIES AND REFERENCE COLLECTIONS

For the concept Publisher, controlled collections of terms identifying government agencies may be available on a national or regional level which could be used to ensure consistent descriptions.

For the entity Included Item, the relationship could be directly to the items that are contained in the Asset if they can be referenced separately. Alternatively, a standardised concept vocabulary, such as the Universal Data Element Framework (UDEF)³⁴ could be used.

³¹ <http://zbw.eu/stw/versions/latest/about>

³² <http://www.loc.gov/aba/cataloging/subject/>

³³ <http://id.loc.gov/vocabulary/graphicMaterials.html>

³⁴ <https://www.opengroup.org/undef/>

7. RDF AND XML SCHEMAS FOR ADMS

The section will describe the RDF and XML schemas expressing ADMS. These will be added as soon as a decision has been taken on the namespaces to be used.

The RDF and XML expressions of ADMS will re-use existing vocabulary terms where possible.

The actual schemas will be included in an annex and will be made available at an appropriate URL for public access.

In parallel to the Public Comment period of the ADMS specification, expressions of ADMS in RDF and XML will be further developed. Initial versions are publicly available of the RDF schema³⁵ and XML schema³⁶.

³⁵ https://joinup.ec.europa.eu/system/files/project/ADMS_RDF_Schema-v0.8.zip

³⁶ https://joinup.ec.europa.eu/system/files/project/ADMS_XML_Schema-v0.8.zip

8. CUSTOMISATION

As ADMS is conceived as a core specification and requirements may evolve over time, there is a need to define a mechanism for extending, and more in general, customising ADMS. Through such customisation, the deployment of ADMS in different environments can be facilitated. Furthermore, this will also enable ADMS to develop over time while functional requirements and technical capabilities evolve.

8.1 ORGANISATIONAL CONSIDERATIONS

The organisational aspects of customising ADMS will be based on the overall process and methodology for Core Vocabularies³⁷. In particular, any changes in the model should be based on identified needs and the development process should lead to community consensus.

8.2 CONCEPTUAL CONSIDERATIONS

On the conceptual level, the customisation mechanism covers any changes to the model involving the addition of classes, properties and relationships, and options for variations in implementations.

An overview of customisation aspects is depicted in the diagram below:

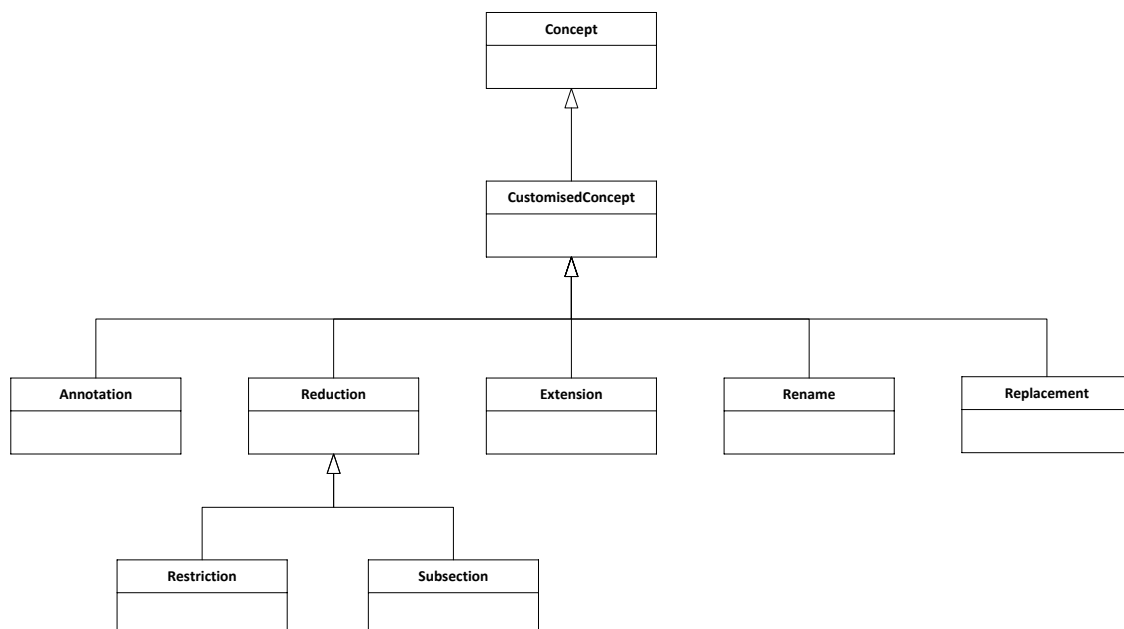


Figure 2: Concept customisation

³⁷ <https://joinup.ec.europa.eu/elibrary/document/isa-deliverable-process-and-methodology-developing-core-vocabularies>

Where the model that has been developed does not meet all business requirements, customisation is possible. Customising a model can be done in a variety of ways (based on the UBL 2 Guidelines for Customization³⁸):

- **Annotation.** It is possible to customise a model by adding new information in the form of annotations.
- **Extension.** Extending the model means adding new information to the model that was not previously there.
- **Reduction – Restriction.** A model can be customised by imposing additional restrictions on the information that is captured in the model.
- **Reduction – Subsection.** For some use cases, a model can contain too much information. Using just a subset of the information contained in the original model is another means of customisation.
- **Rename.** When certain naming requirements are in place preventing use of the original model, it can be customised by renaming it.
- **Replacement.** A model can be customised by developing a new model entirely replacing the first model.

Note that **Reduction** and **CustomisedConcept** are abstract concepts and are not extension mechanisms by themselves.

8.3 FURTHER WORK

It is the intention that expressions of ADMS will be developed in both RDF and XML. These two expression approaches have different customisation capabilities. Guidelines will need to be created for each of these technologies, considering the options for customisation and the consequences for interoperability in either case.

³⁸ <http://docs.oasis-open.org/ubl/guidelines/UBL2-Customization1.0cs01.pdf>

9. REFERENCES AND LINKS

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