Technical Interoperability Standard for the Reuse of Informacion Resources

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DECISION OF 19 FEBRUARY 2013 OF THE SECRETARY OF STATE FOR PUBLIC ADMINISTRATION APPROVING THE TECHNICAL INTEROPERABILITY STANDARD FOR THE REUSE OF INFORMATION RESOURCES

Law 37/2007, of 16 November, on the Reuse of Information in the Public Sector, sets forth the regulations applicable to the information produced or stored by public institutions, based on the potential created by the development of the information society, the interests of companies operating in their sphere and contributing to economic development and job creation, and as a tool for the control of transparency and citizen participation.

Royal Decree 1495/2011, of 25 October, regulating Law 37/2007, of 16 November, on the Reuse of Information in the Public Sector, introduces in its final provision two amendments to Royal Decree 4/2010, of 8 January, regulating the National Interoperability Framework for E-Government, for information in the state public sector. First of all, it adds a paragraph (l) to Additional provision I to include the Technical Interoperability Standard for the Reuse of Information Resources. Secondly, it adds Additional provision 5 on said standard, establishing the deadline for approval.

The Technical Interoperability Standards describe specific aspects of a wide range of topics such as e-documents, digitisation, e-files, authentic copy and conversion, signature policy, standards, data brokerage, data models, e-document management, connection to the communication network of the Spanish Public Administration, and data models for the exchange of registry entries and declaration of conformity, all of which are necessary to guarantee the more practical and operational aspects of interoperability between Public Administration agencies and citizens. These Technical Operability Standards shall be further developed and improved over time, parallel to the progress of e-government services, their supporting infrastructure, and the evolution of technology, in order to meet the provisions in Article 42.3 of Law 11/2007, of 22 June, on Citizens' E-Access to Public Services.

The Technical Interoperability Standard for the Reuse of Information Resources sets forth the regular terms for the selection, identification, description, format, use and availability of documents or information resources produced or stored in the public sector, pertaining to many different areas of interest – society, economics, law and justice, tourism, business, education and so on – in full compliance with the provisions in Law 37/2007, of 16 November.

Said terms are meant to facilitate and guarantee public information reuse procedures in the Public Administration, ensuring the persistence of information and the use of adequate formats and terms of use.

Drafted in collaboration with all the Public Administration agencies to which it applies, the present Technical Standard has received a favourable report from the Standing Committee of the High Council for E-Government, at the proposal of the E-Government Sector Committee.

In accordance with the provisions in Section 2 of Additional Provision 1 of Royal Decree 4/2010, of 8 January, the Secretary of State decides:

One

To approve the Technical Interoperability Standard for the Reuse of Information Resources.

Two

That the Technical Interoperability Standard for the Reuse of Information Resources that is being approved by virtue of this document shall come into force on the day following its publication in the Official State Gazette, irrespective of the clauses in Transitory Provision 1 of Royal Decree 4/2010, of 8 January, regulating the National Interoperability Framework for E-Government.

Madrid, 19 February, 2013. Secretary of State for Public Administration Antonio Germán Beteta Barreda.

TECHNICAL INTEROPERABILITY STANDARD FOR THE REUSE OF INFORMATION RESOURCES

Contents

DECISION OF 19 FEBRUARY 2013 OF THE SECRETARY OF STATE FOR PUBLIC ADMINISTRATION APPROVING THE TECHNICAL INTEROPERABILITY STANDARD FOR THE REUSE OF INFORMATION RESOURCES 1

TECHNICAL INTEROPERABILITY STANDARD FOR THE REUSE OF INFORMATION RESOURCES 3

I – Purpose 4

II – Scope of application 5

III – Selection of reusable information 6

IV – Identification of reusable information 7

V – Description of reusable information 8

VI – Format of reusable documents and information resources 9

VII – Applicable terms and conditions of use 10

VIII – Availability of documents and information resources 11

IX – Catalogue of reusable public information 12

ANNEX I Glossary 13

ANNEX II URI scheme 15

Basic characteristics 16

URI basic structure 17

URIs for catalogue and data set identification 19

URIs for vocabulary identification 20

URIs for concept scheme identification 21

URI for abstract or physical resource identification 22

Standardisation of URI components 23

URI management of semantic resources 24

ANNEX III Catalogue's document and information resource metadata 25

ANNEX IV Primary sector taxonomy 30

ANNEX V Identification of geographical coverage 33

ANNEX VI Catalogue and record definition template in RDF format 36

I – *Purpose*

The Technical Interoperability Standard for the Reuse of Information Resources is aimed at setting forth the basis guidelines for the reuse of documents and information resources produced or stored in the public sector as referred to in Article 3 of Law 37/2007, of 16 November, on the Reuse of Information in the Public Sector by Interested Parties.

II – *Scope of application*

This Standard shall apply to the availability for reuse of public information resources by any Public Administration agency or related or reporting public bodies within the scope of Article 3 of Royal Decree 4/2010, of 8 January, regulating the National Interoperability Framework for E-Government.

For the purpose of this Standard, the words, phrases, terms and definitions included in the document shall be understood as defined in Annex I.

III – *Selection of reusable information*

1. When selecting documents and information resources for reuse, those with the greatest relevance and social or economic potential shall be considered as priority.
2. Reusable documents and information resources shall be primary sources, without changes or alterations in order to avoid mistakes due to the handling of information.
3. Granularity shall be as fine as possible, avoiding additional aggregations, to ensure reuse meeting all kinds of needs.
4. Reusable documents and information resources shall be associated to structured information for automated handling.
5. Periodical documents or information resources available for reuse shall be updated to their latest versions, indicating date of update and update period.

IV – *Identification of reusable information*

1. Reusable documents and information resources shall be identified with single, univocal references based on uniform resource identifiers (URIs), which are the necessary basis for an information reuse self-consistent mechanism on the Internet. Identifiers are univocal, stable, extensible and persistent references to documents and resources, and they offer origin guarantees, a key requisite for reuse.

2. URIs are built taking the following into account:

   a) HTTP or HTTPS protocols shall be used to guarantee identifiers' address and resolution on the Web.

   b) Since a single information resource can be associated to several representations, a server required to provide an URI should manage this requirement in accordance with the HTTP header, producing a representation, meeting customer needs in return.

   c) URIs shall use consistent, extensible and persistent schemes, preferably according to the model described in Annex II. URI building rules shall follow a series of guidelines ensuring consistency and uniformity, which can be extended or adapted if necessary. When an URI is created and published, it shall not vary over time.

   d) URIs shall have a comprehensible, significant structure. They must offer information that can be easily understood and written by people, thus offering information on resources and their origin by just interpreting the identifier.

   e) If possible URIs identifying documents or resources shall not contain information on the technical implementation of the document or resource they represent.

V – *Description of reusable information*

1. For descriptive purposes, publicly available documents and information resources shall be associated to the minimal metadata in Annex III. For some metadata, the values will be those established in Annexes IV and V.
2. For distribution purposes, documents and information resources shall be associated to the metadata in Annex III.
3. To facilitate vocabulary reuse, the Public Administration Semantic Interoperability Centre shall be used. As envisaged in Article 3, clause 3 of Royal Decree 4/2010, vocabularies shall be published in the formats described in clause 6.

VI – *Format of reusable documents and information resources*

1. In an effort to guarantee the free choice of technology options by citizens and Public Administration agencies, as well as adaptability to technology development, both publicly available reusable documents and information resources and the metadata and services associated to them shall use open standards and/or complementary standards that are widespread among citizens, in compliance with the provisions in Article 11 or Royal Decree 4/2010, of 8 January. Likewise, they shall comply with the clauses in the Technical Interoperability Standard for Standard Catalogues, approved by decision of the Secretary of State for Public Administration on 3 October 2012.
2. Other standards shall be used on an exceptional basis, when necessary because of the characteristics of the document or resource in question, when conversion to more adequate standards is not possible or when there are no other standards available, in compliance with the provisions on standards in Article 11 of Royal Decree 4/2010, of 8 January.
3. Any reusable document or information resource can be made publicly available in one or more distributions and in several formats with the aim of facilitating reuse by different types of actors.
4. Formats providing semantic representation of information shall be preferred, in order to facilitate comprehension and automated handling. If possible in the formats selected, internationally recognised schemes and vocabularies shall be used to represent information.
5. Complementary information about the schemes and vocabularies used to represent information shall be added if possible.

VII – *Applicable terms and conditions of use*

1. The specific terms and conditions of reuse by public bodies in the Public Administration shall be in compliance with the provisions in Law 37/2007, of 16 November, and the associated enforcement regulations. The clauses in Article 8 of Royal Decree 1495/2011, of 24 October, can be used as reference by other Public Administration agencies.
2. The general terms of reuse applying to a body or agency, which shall be available and able to be handled electronically, can be complemented by special terms applicable to specific document or information resource categories through public licences, available under the same terms as the general terms.

VIII – *Availability of documents and information resources*

1. Publicly available documents and information resources shall abide by the Principle of E-Accessibility to Information and Services, under the terms set forth in the regulations in force, in accordance with Article 4.c of Law 11/2007, of 22 June.
2. Every public body or agency within the scope of Article 1.2 of Royal Decree 1495/2011, of 11 October, shall provide structured information on the documents and information resources available for reuse. If possible, said information shall appear in a section of the e-office, with the associated URL, as in http://www.sede.gob.es/datosabiertos. Other agencies or bodies in the Public Administration shall follow their own regulations in this regard.
3. Public documents or information resources available for reuse shall be associated to the information required for their interpretation.
4. Availability through dynamic access points, which shall be complementary to mass download, shall be accompanied by a technical document explaining point configuration and use, including at least information on allowed search criteria, type of information retrieved and accepted formats.
5. Web addresses referencing documents, information resources or public information catalogues available for reuse shall contain information about this.

IX – *Catalogue of reusable public information*

1. In order to enable cooperation between different agencies or bodies, reusable public information catalogues shall use:
    a) A publication interface to share metadata of reusable documents or information resources.
    b) A search interface for access from third party applications.
2. Document or information resource category descriptions shall be available in files containing at least the associated mandatory metadata described in Annex III. Catalogues and records can be defined according to the template in Annex VI.
3. Catalogue contents shall be accessed in two different ways:
    a) Through readable HTML documents.
    b) Through automatically processed information allowing for the reuse of the catalogue's metadata and for interoperability with other catalogues. Catalogues themselves shall be offered as sets of reusable data, using the internationally recognised vocabulary DCAT.

ANNEX I
Glossary

Reusing actor: Individual or legal entity that reuses public information for business or other purposes, excluding public administrative activities.

Data: Formal representation of facts, concepts or instructions that is apt for communication, comprehension or processing by human beings or automated means.

Distribution: Information conveyed in specific formats and thus accessible from specific URLs. A single information resource can have one or several distributions.

Document: Natural or artificial language expression or graphic, sound or image communication in any kind of media, including electronic ones.

E-document (electronic document): Information of any kind expressed in electronic media, stored in electronic media in a given format and subject to specific identifying and handling procedures.

Reusable document/information resource: Document owned by a public body or agency in the public sector, by individuals or legal entities, for business or other purposes, excluding public administrative activities, in accordance with the scope of application and the exceptions in Article 3 of Law 37/2007, of 16 November.

Primary document/information resource: Data taken directly from a source, without changes or alterations.

Multipurpose Internet mail extension: Set of conventions or instructions for the transparent exchange of files (text, audio, video and others) over the Internet.

Format: Set of technical and layout characteristic of a document or information resource.

Uniform resource identifier: Alphanumeric sequence univocally identifying an abstract or physical resource. Unlike uniform resource locators, uniform resource identifiers are invariable in their reference to resources.

Resource description framework: Set of specifications for the semantic description of resources on the Web, giving meaning to Web representations for data to be automatically processed. It is not a format, but it is associated with several representations instead (XML, N3, Turtle, etc.).

Application programming interface: Set of protocols and tools for software communication, offering calls to programming libraries to access services from processes and thus achieving programming abstraction between higher and lower software levels.

Linked Open Data: Approximation by some Open Data initiatives based on the Semantic Web, relating semantically defined data that are identified and represented on the Web.

Uniform resource locator: A uniform resource identifier referring to variable resources.

Metadata: Data defining and/or describing other data. There are different types of metadata, depending on their application.

Granularity: The size in which data fields are sub-divided.

Ontology: Formal representation of knowledge as a set of concepts within a domain and the relationships between pairs of concepts.

Open Data: Initiative to make data available for reuse by third parties.

Dynamic access point: Search service to get structured information through requests based on configuration parameters.

RDFa: Representation of structured data in Web documents using semantic markup (RDF) in the code that are invisible to users and can be interpreted and effectively used by applications.

SPARQL (SPARQL Protocol and RDF Query Language): A query language for databases, able to retrieve and manipulate data stored in Resource Description Framework format.

RDF triple: A Resource Description Framework chunk consisting of three components, namely, a subject, a predicate (property) and an object.

W3C (World Wide Web Consortium): A prestigious international community where Member organisations, full-time staff and the public work together to develop Web standards.

Semantic Web: A collaborative movement led by W3C to automatically define, integrate, share and reuse information on the Web across application, enterprise and community boundaries thanks to the inclusion of semantic contents in Web pages.

Acronyms and abbreviations

API: Application Programming Interface

DCAT: Data Catalogue Vocabulary

HTTP: Hypertext Transfer Protocol

HTTPS: Hypertext Transfer Protocol Secure

MIME: Multipurpose Internet Mail Extensions

OWL: Web Ontology Language

RDF: Resource Description Framework

RDFS: Resource Description Framework Schema

RSS: RDF Site Summary, often dubbed Really Simple Syndication

SKOS: Simple Knowledge Organisation System

URI: Uniform Resource Identifier

URL: Uniform Resource Locator

WWW: World Wide Web

ANNEX II
URI scheme

Uniform resource identifier (URI) scheme establish common identification mechanisms for the data made publicly available so that they can be referred to in a single, reliable and persistent way, a key requirement for their reuse.

Basic characteristics

The general requirements to design an URI scheme are:

a) Use the HTTP protocol in order to ensure URI dereferencing on the Web.

b) Use consistent, extensible and persistent URI building structures. URI building rules shall follow uniform and self-consistent patterns that can be extended or adapted if necessary.

c) Use comprehensible, relevant URI building structures, which means they shall offer self-contained semantic information, thus offering reusing actors information about the resource itself, as well as its origin.

d) Do not make information available on the technical implementation of the resources represented in the URIs. If possible, avoid specific information on underlying technologies, e.g. technologies used to create Web resources (.php, .jsp, etc.).

e) URIs shall comply with the persistence principle, which means that created URIs should never change and the contents they refer to should always be accessible. In case a resource associated to an identifier needs to be changed or deleted, a mechanism shall be established to inform of said resource's status using HTTP status codes. If a link redirecting to the resource's new location is available, HTTP 3XX status codes shall be used. For resources that are no longer available, the HTTP 410 (Gone) status codes shall be used.

URI basic structure

All URIs shall have a uniform structure, lending consistency to the resource representation system, covering the basic principles of URI building and containing intuitive information on the origin and type of information they identify.

The base shall consist of basic information on data origin, a space used by the publishing body to host its platform for reuse. For Open Data status (web page, catalogue, or other types of information), http://www.sede.gob.es/datosabiertos or http://organismo.gob.es/datosabiertos shall be used when resources are not to be found in an e-office. Other semantic resources can follow domain-dependent patterns (http://organismo.gob.es).

For URIs corresponding to bodies' web page documents, first the language shall be determined in compliance with standard ISO 639-1, followed by the channel according to the http://organismo.gob.es/idioma/datosabiertos model, e.g. http://organismo.gob.es/es-ES/datosabiertos. This depends on the technologies and policies in each body. This step shall not be necessary in the management of semantic resources, for their description allows for several languages in a single URI.

The elements in an URI route are: sector, type of information, type of representation, domain or subject and specific concepts, in this order:

*http://{base}/**{type of info}[/{sector}][/{domain}][/{concept}][.{ext}]***

Or, alternatively, fragment identifiers can be used with # at the end:

*http://{base}/**{type of info}[/{sector}][/{domain}][.{ext}][#{concept}]***

This general structure can vary according to specific needs or preferences, although the 'base' and 'type of info' elements must remain unchanged. The final part could identify general or specific subjects, concrete concepts and/or representation formats in an extension. The latter two are optional elements, depending on the type of information being represented.

TYPE OF INFORMATION	
VALUE	**INFORMATION REPRESENTED**
catalogo	Document or information resource included in the catalogue, with a list of resources or bodies in the same domain. Usually, these documents or information resources contain common data, e.g. terms of use, origin, vocabularies used, etc. It also identifies the catalogue itself.
def	Vocabulary or ontology used as semantic model, usually RDFS schemes or OWL ontologies.
kos	Knowledge organisation system in a specific domain, usually, taxonomies, dictionaries or thesauri represented with SKOS.

TYPE OF INFORMATION	
VALUE	**INFORMATION REPRESENTED**
recurso	Single, univocal abstract representation of a physical or abstract resource. Atomic representations of documents and information resources that tend to be specific characteristics of the concepts defined in vocabularies. URIs specifying extension (or format) indicate they are resource representations. There are two types of basic representations: documents readable by human beings (usually HTML) and documents readable by machines (RDF formats). Specific types of documents are expressed in document extensions.

SECTOR
The selection of the adequate sector, along with the specific origin's domain shall give users confidence in the type of information they are handling, as well as in the source. An identifier of the (primary) sector shall be selected (see Annex IV). Each document or information resource, vocabulary or concept scheme shall belong to a single sector. For those belong to more than one sector, the most representative or a common sector shall be selected.

INFORMATION DOMAIN OR SUBJECT
In order to identify specific elements in a sector (information resources, vocabularies, concept schemes, etc.), an adequate reference shall be created representing the domain or subject of the information being handled.

CONCRETE CONCEPTS
The final elements of some URIs, after type of information, sector and information domain, refer to concrete concepts or specific characteristics. Concepts are abstract representations that do not match the classes or properties in the vocabularies or ontologies used in the semantic representation of resources. In addition to concepts, reference can be made to specific characteristics or to abstract concepts under the knowledge organisation system (taxonomy, thesaurus, etc.).

FORMAT
Since resource representing documents can be of various types, they are identified with file extensions, e.g. 'doc.html', 'doc.rdf' or 'doc.n3'. For the abstract identification of resources, they extension shall be omitted.

Types of specific URIs for semantic resources in Linked Data-based initiatives:

URIs for catalogue and data set identification

If the reuse initiative has only one catalogue, they could be represented in the URI: *http://{base}/**catalogo***

If the body has more than one catalogue, there shall be a descriptive reference for each catalogue identifying its domain or subject, as in: *http://{base}/**catalogo/{sector}***

Each data set in a catalogue shall be identified with a single identifier: *http://{base}/catalogo/**{dataset}***

Also, the fragment identifier nomenclature can be used (#): *http://{base}/catalogo#**{dataset}***

URIs for vocabulary identification

The basic scheme for vocabularies and ontologies shall be: *http://{base}/**def/{sector}/{domain}***

Where *sector* indicates the subject and *domain* corresponds to the reference and is a brief but descriptive textual representation.

Vocabulary classes and properties shall use the URI identifying the vocabulary where they are defined, compounded with class/property identifiers as in: *http://{base}/def/{sector}/{domain}/**{Property|Class}***

Also, the fragment identifier nomenclature can be used (#): *http://{base}/def/{sector}/{domain}#**{Property|Class}***

URIs for concept scheme identification

Every knowledge organisation system (taxonomies, dictionaries, thesauri, etc.) in a specific domain shall be identified with a structure-based URI: *http://{base}/**kos/{sector}/{domain}***

Where *sector* indicates the subject of the concept scheme and *domain* corresponds to the reference given to said scheme and is a brief but descriptive textual representation.

The concepts in the schema shall use the URI identifying the scheme where they are defined, as in: *http://{base}/kos/{sector}/{domain}/**{Concept}***

Also, the fragment identifier nomenclature can be used (#): *http://{base}/kos/{sector}/{domain}#**{Concept}***

URI for abstract or physical resource identification

These resources are the atomic representations of documents and information resources, besides exemplifying the classes defined in vocabularies. They shall be identified as in: *http://{base}/**recurso/{sector}**[/{domain}]/**{class}/{ID}***

Also, the fragment identifier nomenclature can be used (#): *http://{base}/**recurso/{sector}**[/{domain}]/**{class}#{ID}***

Where *sector* indicates the subject associated with the resource and *class* corresponds to the type of concept used to describe the resource (usually, the identifier of one of the classes characterising it). *ID* is an identifier to distinguish the resource from other occurrences of the same type within the system. *Domain* could be the same as in the vocabulary defining the classes exemplified in the resource (optional).

Standardisation of URI components

In order to ensure consistency and facilitate maintenance of URI schemes, the following rules shall be applied for URI component standardisation:

a) Choose single short alphanumeric identifiers that are representative, intuitive and significant.

b) Always use lower case except for the names of classes or concepts. The names or classes usually appear with a capital letter.

c) Eliminate accents, diereses and punctuation marks. A hyphen (-) can exceptionally be used.

d) Do not use articles or conjunctions for concepts with more than one word.

e) Hyphens (-) can be used to separate words.

f) If possible, avoid abbreviation (except when they are intuitive).

The terms used in URIs must be readable and comprehensible for as many people as possible, which is why Spanish or another official language shall be used.

URI management of semantic resources

The following RDF semantic resource management practices shall be applied:

a) Whenever possible, when there are HTML (or similar readable formats) and RDF versions of a resource, the URI managing server shall negotiate its contents according to the header of the actor sending the request. If the customer accepts the RDF format in any notation (e.g., because the header states they accept MIME application/rdf+xml type), they shall get the RDF document through alternative redirecting using HTTP 3XX status codes. If possible, they shall also get the document in the preferred format.

b) When the contents are not negotiated by the server, in order to facilitate the discovery of RDF contents in the HTML documents related to resource descriptions, links shall be included to the alternative representations in RDF in the HTML documents themselves: *<link rel="alternate" type="application/rdf+xml" href="document.rdf">* or similar. The sentence includes the document's MIME format type (application/rdf+xml, text/n3, etc.).

c) When several information resources are connected, links will be generated for mutual redirecting to facilitate two-way navigation.

ANNEX III

Catalogue's document and information resource metadata

The metadata associated with catalogues, and with the documents and information resources they contain are described below, alongside the terms recommended for them in standard vocabularies and the corresponding abbreviations. Besides names, descriptions, and types of data required for representation, it is specified whether they are obligatory (*R*, required) and whether they take multiple (*M*) metadata, as in descriptions in several languages.

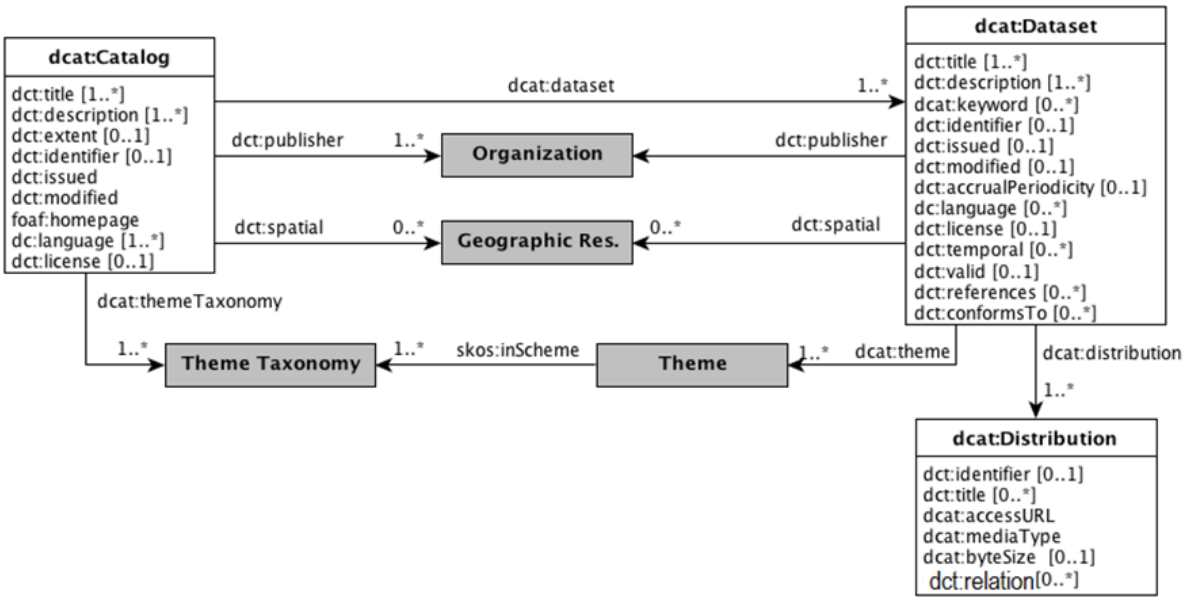
In the description of the metadata in this Annex, the suggested vocabularies and value schemes shall be used, alongside Semantic Web technologies (at least for the description of RDF resources in any representation format), with the aim of enhancing semantic interoperability for the systems sharing such standard representations.

Vocabularies:

VOCABULARY		URI
XML Schema	xsd:	http://www.w3.org/2001/XMLSchema#
Simple Knowledge Organisation System (SKOS)	skos:	http://www.w3.org/2004/02/skos/core#
Dataset Catalogue (dcat)	dcat:	http://www.w3.org/ns/dcat#
Dublin Core Terms	dct:	http://purl.org/dc/terms/
Dublin Core Elements	dc:	http://purl.org/dc/elements/1.1/
W3C Time Ontology	time:	http://www.w3.org/2006/ time#
Friend Of A Friend (FOAF)	foaf:	http://xmlns.com/foaf/0.1/

Semantic representation is based on DCAT, the vocabulary developed by the World Wide Web Consortium (W3C) for a standardised definition of documents and information resources. Document or information resource catalogues are represented using *dcat:Catalog* and they include a collection of *dcat:Dataset*. Their properties refer to other resources and semantic concepts identified in the Annexes of this document, and illustrated in the diagram below and explained in the tables that follow. The basic entities or properties described in this Annex can be enriched with additional metadata as considered relevant to improve the quality of information.

The resources representing the catalogue and the datasets it contains shall be identified with a specific URI following the scheme described in Annex II.



CATALOGUE (domain dcat:Catalog)					
METADATA	**DESCRIPTION**	**PROPERTY**	**R**	**M**	**TYPE AND VALUE SCHEME**
Name	Brief title or name given to the data catalogue	dct:title	✓	✓	**Literal**. Alphanumeric sequence (several languages recommended).
Description	Descriptive summary of the data catalogue	dct:description	✓	✓	**Literal**. Alphanumeric sequence (several languages recommended).
Publishing body	Body or agency publishing the catalogue	dct:publisher	✓	–	**foaf:Agent**. The URI identifying a public body shall be specified, with a single alphanumeric code for each organ/unit/office taken from the Common Directory managed by MINHAP, according to the following scheme: **http://datos.gob.es/recurso/sector-publico/org/Organismo/{ID-**MINHAP**}**
Catalogue size	Total number of documents and/or information resources in the catalogue	dct:extent	–	–	**dct:SizeOrDuration**. The value of an integer and the equivalent textual representation should be included.
Identifier	Reference for catalogue identification	dct:identifier	–	–	**xsd:anyURI**. URI identifying the catalogue's current description.
Date of creation	Date when the catalogue was original published	dct:issued	✓	–	**Literal**. Date/Time with ISO-8601 format: **YYYY-MM-DDThh:mm:ssTZD.**
Date of update	Date when the catalogue was last updated (document or information resource added, changed or deleted)	dct:modified	✓	–	**Literal**. Date/Time with ISO-8601 format: **YYYY-MM-DDThh:mm:ssTZD.**
Language(s)	Language(s) the information in the catalogue is available in	dc:language	✓	✓	**Literal**. Standard tag values to identified languages defined in RFC 5646 **{'es', 'ga', 'ca', 'eu', 'en', 'fr'}**. One tag for each property.

CATALOGUE (domain dcat:Catalog)					
METADATA	**DESCRIPTION**	**PROPERTY**	**R**	**M**	**TYPE AND VALUE SCHEME**
Geographical coverage	Geographical area covered in the catalogue	dct:spatial	–	✓	**Resource**. See Annex V. One resource for each property.
Subjects	All the subjects included in the catalogue	dcat:themeTaxonomy	✓	✓	**skos:ConceptScheme**. See taxonomy in Annex IV. Value: **http://datos.gob.es/kos/sector-publico/sector/**
Web page	Web address to access the data catalogue (public access)	foaf:homepage	✓	–	**Resource**. URI identifying the catalogue cover.
Terms of use	Reference to the catalogue's general terms of use	dct:license	✓	–	**Resource**. URI identifying the resource describing the terms of use.
Document(s) and information resource(s)	List of all the documents and/or information resources in the catalogue	dcat:dataset	✓	✓	**dcat:Dataset**. One property for each catalogue entry (see document and/or information resource metadata).

DOCUMENT AND/OR INFORMATION RESOURCE (domain: dcat:Dataset)					
METADATA	**DESCRIPTION**	**PROPERTY**	**R**	**M**	**TYPE AND VALUE SCHEME**
Name	Name or title of the document and/or information resource	dct:title	✓	✓	**Literal**. Alphanumeric sequence (several languages recommended).
Description	Detailed description of the document and/or information resource	dct:description	✓	✓	**Literal**. Alphanumeric sequence (several languages recommended).
Subject(s)	Main subject or topic of the document and/or information resource	dcat:theme	✓	✓	**skos:Concept**. Reference to associated subjects in the public sector recommended (see taxonomy in Annex IV).
Tag(s)	Text tag(s) for a free the classification of document and/or information resource	dcat:keyword	–	✓	**Literal**. Compact alphanumeric sequence. Several properties can be included (one property for each tag).
Identifier	URI identifying the document and/or information resource	dct:identifier	–	–	**xsd:anyURI**. URI identifying the file describing the document and/or information resource.
Date of creation	Date when the document and/or information resource was created	dct:issued	–	–	**Literal**. Date/Time with ISO-8601 format: **YYYY-MM-DDThh:mm:ssTZD.**
Date of latest update	Date when the document and/or information resource was last updated	dct:modified	–	–	**Literal**. Date/Time with ISO-8601 format: **YYYY-MM-DDThh:mm:ssTZD.**
Update frequency	Estimated period of time between updates for the document and/or information resource (if available)	dct:accrualPeriodicity	–	–	**dct:Frequency**. Standard periods with ISO-8601 (**P<date>T<time>**) or similar format recommended.

DOCUMENT AND/OR INFORMATION RESOURCE (domain: dcat:Dataset)					
METADATA	**DESCRIPTION**	**PROPERTY**	**R**	**M**	**TYPE AND VALUE SCHEME**
Language(s)	Language(s) the information of the document and/or information resource is available in	dc:language	–	✓	**Literal**. Standard tag values to identified languages defined in RFC 5646 **{'es', 'ga', 'ca', 'eu', 'en', 'fr'}**. One tag for each property.
Publishing body	Body or agency publishing the document and/or information resource	dct:publisher	✓	–	**foaf:Agent**. The URI identifying a public body shall be specified, with a single alphanumeric code for each organ/unit/office taken from the Common Directory managed by MINHAP, according to the following scheme: **http://datos.gob.es/recurso/sector-publico/org/Organismo/{ID-**MINHAP**}**
Terms of use	Resource describing the terms of use or licensing terms applicable to the document and/or information resource	dct:license	–	–	**dct:LicenseDocument** or similar. URI identifying the resource describing the terms of use. If it is not a public licence, and if necessary, the description could include fees using the values of the currency code under standard ISO-4217 (EUR, USD, GBP, etc.).
Geographical coverage	Geographical area covered by the document and/or information resource	dct:spatial	–	✓	**Resource**. It can have one of the values of Spanish provinces (see Annex V).
Temporal coverage	Start date, end date and duration of the period covered by the document and/or information resource	dct:temporal	–	✓	**dct:PeriodOfTime**. The period of tie can be defined according to the W3C time ontology (*time:*).
Validity	Validity of the document and/or information resource before content update	dct:valid	–	–	**Literal**. Fecha/Hora con formato ISO-8601: **YYYY-MM-DDThh:mm:ssTZD.**
Related resource(s)	Links to resource(s) related to the document and/or information resource (information on data, audio visual materials, etc.)	dct:references	–	✓	**Resource**. URI identifying related resource(s). As many properties as known references.
Regulations	Regulations governing the document and/or information resource (link to legal document(s))	dct:conformsTo	–	✓	**Resource**. URI identifying related legal document(s). As many properties as known regulatory documents.
Distribution(s)	Reference to the resources identifying the publication of the document and/or information resource in all possible formats	dcat:distribution	✓	✓	**dcat:Distribution**. URI identifying the resource describing the document or information resource's distribution(s). As many properties as known distributions.

DOCUMENT AND OR INFORMATION RESOURCE DISTRIBUTION (dominio: dcat:Distribution)					
METADATA	**DESCRIPTION**	**PROPERTY**	**R**	**M**	**TYPE AND VALUE SCHEME**
Identifier	URI identifying the distribution	dct:identifier	–	–	**xsd:anyURI**. URI identifying the distribution's descriptive file.
Name	Brief title or name given to the distribution	dct:title	–	✓	**Literal**. Alphanumeric sequence (several languages recommended).
Access URL	URL giving access to the publication or reading of the document and/or information resource	dcat:accessURL	✓	–	**Literal**. URL with the document address or data retrieval service.
Format	Format of the document and/or information resource	dcat:mediaType	✓	–	**dct:MediaTypeOrExtent**. Resource indicating the MIME type of data format. One format per distribution.
Size	Estimated size of the document and/or information resource	dcat:byteSize	–	–	**Literal**. Size in bytes.
Additional information about format	Link(s) to format related document(s) indicating format, representation schemes and other technical information about document and/or information resource access	dct:relation	–	✓	**Resource**. URI referring to format related resources. As many properties as known references to additional documents.

ANNEX IV
Primary sector taxonomy

This classification of primary sectors includes the subjects related to each sector. It is based on the document *'Propuesta de Taxonomía Común para los procedimientos y servicios electrónicos, el marco de la Ley 11/2007'* (A Proposal for a Common Taxonomy of E-Services and Procedures Under Law 11/2007) and a comparison with the lists of subjects in such reference websites as 060, EUGO, INE, EUROSTAT, WORLD BANK, OECD.

This taxonomy should be the basis for the URI scheme in Annex II and the classification of public information resource catalogues and records according to the metadata in Annex III.

SECTOR	IDENTIFIER
Science and technology *It includes innovation, research, R&D+I, telecommunications, Internet and information society.*	**ciencia-tecnologia**
Commerce *It includes consumption.*	**comercio**
Culture and leisure *It includes leisure and free time.*	**cultura-ocio**
Population *It includes migration, family, women, children, senior citizens, register.*	**demografia**
Sports *It includes sports facilities, associations, competitions.*	**deporte**
Economics *It includes public debt, currency, banking and finance.*	**economia**
Education *It includes training.*	**educacion**
Employment *It includes labour, labour market.*	**empleo**
Energy *It includes renewable sources.*	**energia**
Finance *It includes taxes.*	**hacienda**
Industry *It includes mining.*	**industria**
Law and justice *It includes recording.*	**legislacion-justicia**
Environment *It includes meteorology, geography, wildlife conservation.*	**medio-ambiente**
Rural areas *It includes agriculture, cattle breeding, fishing and forestry.*	**medio-rural-pesca**
Health *It includes healthcare services.*	**salud**

SECTOR	IDENTIFIER
Public sector *It includes budgeting, organisational structure, internal regulations, public service.*	**sector-publico**
Safety *It includes citizen protection, defence.*	**seguridad**
Society and welfare *It includes citizen participation, marginalisation, active ageing, autonomy and dependency, disability, retirement, insurance and pensions, assistance and financial aid.*	**sociedad-bienestar**
Transport *It includes communications, traffic.*	**transporte**
Tourism *It includes accommodation, catering, hospitality.*	**turismo**
Urban planning and infrastructure *It includes sanitation, construction (public facilities and infrastructure).*	**urbanismo-infraestructuras**
Housing *It includes property market, construction (houses).*	**vivienda**

The table below identifies the primary sectors listed above and associates them to a single URI reference. The URIs are the values of the metadata used to classify the information resources by subject as defined in Annex III. The taxonomy is defined as a concept scheme identified with the following URI:

http://datos.gob.es/kos/sector-publico/sector

Each of the concepts is referred to by an URI made of the word identifying them and the identifier of the concept scheme.

SECTOR	URI
Science and technology	http://datos.gob.es/kos/sector-publico/sector/**ciencia-tecnologia**
Commerce	http://datos.gob.es/kos/sector-publico/sector/**comercio**
Culture and leisure	http://datos.gob.es/kos/sector-publico/sector/**cultura-ocio**
Population	http://datos.gob.es/kos/sector-publico/sector/**demografia**
Sports	http://datos.gob.es/kos/sector-publico/sector/**deporte**
Economics	http://datos.gob.es/kos/sector-publico/sector/**economia**
Education	http://datos.gob.es/kos/sector-publico/sector/**educacion**
Employment	http://datos.gob.es/kos/sector-publico/sector/**empleo**
Energy	http://datos.gob.es/kos/sector-publico/sector/**energia**
Finance	http://datos.gob.es/kos/sector-publico/sector/**hacienda**
Industry	http://datos.gob.es/kos/sector-publico/sector/**industria**
Law and justice	http://datos.gob.es/kos/sector-publico/sector/**legislacion-justicia**
Environment	http://datos.gob.es/kos/sector-publico/sector/**medio-ambiente**
Rural areas	http://datos.gob.es/kos/sector-publico/sector/**medio-rural-pesca**

SECTOR	URI
Health	http://datos.gob.es/kos/sector-publico/sector/**salud**
Public sector	http://datos.gob.es/kos/sector-publico/sector/**sector-publico**
Security	http://datos.gob.es/kos/sector-publico/sector/**seguridad**
Society and welfare	http://datos.gob.es/kos/sector-publico/sector/**sociedad-bienestar**
Transport	http://datos.gob.es/kos/sector-publico/sector/**transporte**
Tourism	http://datos.gob.es/kos/sector-publico/sector/**turismo**
Urban planning and infrastructure	http://datos.gob.es/kos/sector-publico/sector/**urbanismo-infraestructuras**
Housing	http://datos.gob.es/kos/sector-publico/sector/**vivienda**

ANNEX V
Identification of geographical coverage

These identifiers corresponding to the geographical resources of the Spanish territory (country, autonomous regions and provinces) shall be used as single references to these elements in geographical coverage metadata descriptions in information resource catalogues (see Annex III). The identifiers in the second column are the values of the metadata.

COUNTRY	URI
Spain	http://datos.gob.es/recurso/sector-publico/territorio/Pais/**España**

AUTONOMOUS REGION/CITY	URI
Andalusia	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Andalucia**
Aragon	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Aragon**
Asturias	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Principado-Asturias**
Balearic Islands	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Illes-Balears**
Canary Islands	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Canarias**
Cantabria	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Cantabria**
Castile-Leon	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Castilla-Leon**
Castile-La Mancha	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Castilla-La-Mancha**
Catalonia	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Cataluna**
Valencia	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Comunitat-Valenciana**
Extremadura	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Extremadura**
Galicia	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Galicia**
Madrid	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Comunidad-Madrid**
Murcia	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Region-Murcia**
Navarra	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Comunidad-Foral-Navarra**
Basque Country	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Pais-Vasco**
La Rioja	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**La-Rioja**
Ceuta	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Ceuta**
Melilla	http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/**Melilla**

AUTONOMOUS REGION/CITY	PROVINCE	URI
Andalusia	Almeria	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Almeria**
	Cadiz	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Cadiz**
	Cordoba	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Cordoba**
	Granada	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Granada**
	Huelva	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Huelva**
	Jaen	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Jaen**
	Malaga	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Malaga**
	Seville	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Sevilla**
Aragon	Huesca	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Huesca**
	Teruel	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Teruel**
	Zaragoza	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Zaragoza**
Asturias	Asturias	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Asturias**
Balearic Islands	Balearic Islands	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Illes-Balears**
Canary Islands	Las Palmas	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Las-Palmas**
	Santa Cruz de Tenerife	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Santa-Cruz-Tenerife**
Cantabria	Cantabria	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Cantabria**
Castile-Leon	Avila	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Avila**
	Burgos	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Burgos**
	Leon	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Leon**
	Palencia	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Palencia**
	Salamanca	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Salamanca**
	Segovia	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Segovia**
	Soria	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Soria**
	Valladolid	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Valladolid**
	Zamora	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Zamora**

AUTONOMOUS REGION/CITY	PROVINCE	URI
Castile-La Mancha	**Albacete**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Albacete**
	Ciudad Real	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Ciudad-Real**
	Cuenca	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Cuenca**
	Guadalajara	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Guadalajara**
	Toledo	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Toledo**
Catalonia	**Barcelona**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Barcelona**
	Girona	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Girona**
	Lerida	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Lleida**
	Tarragona	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Tarragona**
Valencia	**Alicante**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Alicante**
	Castellon	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Castellon**
	Valencia	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Valencia**
Extremadura	**Badajoz**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Badajoz**
	Caceres	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Caceres**
Galicia	**Coruña**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**A-Coruna**
	Lugo	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Lugo**
	Ourense	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Ourense**
	Pontevedra	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Pontevedra**
Madrid	**Madrid**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Madrid**
Murcia	**Murcia**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Murcia**
Navarra	**Navarra**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Navarra**
Basque Country	**Alava**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Alava**
	Guipuzcoa	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Guipuzcoa**
	Vizcaya	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Vizcaya**
La Rioja	**La Rioja**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**La-Rioja**
Ceuta	**Ceuta**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Ceuta**
Melilla	**Melilla**	http://datos.gob.es/recurso/sector-publico/territorio/Provincia/**Melilla**

ANNEX VI

Catalogue and record definition template in RDF format

Template for RDF descriptions of data catalogues, records, data sets and associated distributions, in both Notation3 (N3) and RDF/XML. Both templates include variable parts and comments on possible values. For properties that are not applicable or whose value is unknown, undefined properties are to be preferred to valueless elements.

RDF/XML

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns:time="http://www.w3.org/2006/time#"
  xmlns:dct="http://purl.org/dc/terms/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:dcat="http://www.w3.org/ns/dcat#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:tema="http://datos.gob.es/kos/sector-publico/sector/"
  xmlns:auto="http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-scheme#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">

  <dcat:Catalog rdf:about="@@URI-catalog@@">
    <!--
      Identifier corresponding to the URI identifying the catalogue itself, e.g.
      http://datos.gob.es/catalogo/catalogoNacional
    -->
    <dct:identifier>@@URI-catalog@@</dct:identifier>
    <!--
      The title and description can be iterated for representations in several languages
    -->
    <dct:title xml:lang="es">@@title-es@@</dct:title>
    <dct:description xml:lang="es">@@description@@</dct:description>
    <!--
      Agency publishing the catalogue, using an URI describing it, e.g.,
      http://datos.gob.es/recurso/sector-publico/org/Organismo/E00003901
    -->
    <dct:publisher rdf:resource="@@URI-agency@@" />
    <!--
      Catalogue size (number of datasets), expressed with an integer and text(s)(several
language       versions are possible).
    -->
    <dct:extent>
      <dct:SizeOrDuration>
        <rdf:value

rdf:datatype="http://www.w3.org/2001/XMLSchema#nonNegativeInteger">@@integer@@</rdf:value>
        <rdfs:label xml:lang="es">@@number-text@@</rdfs:label>
      </dct:SizeOrDuration>
    </dct:extent>
    <!—Dates must have the format YYYY-MM-DDTHH:MM:SS+TZ -->
    <dct:issued              rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">@@date-
creation@@</dct:issued>
    <dct:modified
rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">@@update@@</dct:modified>
    <!—Catalogue language (iterate property as many times as languages there are)
es|ga|en|ca|...-->
    <dc:language>@@code-language@@</dc:language>
    <!--
```

```
        Catalogue spatial coverage.
        Iterate property if necessary referring to resources like:
          - http://datos.gob.es/recurso/sector-publico/territorio/pais/Espana
          - http://datos.gob.es/recurso/sector-publico/territorio/autonomia/Extremadura
          - http://datos.gob.es/recurso/sector-publico/territorio/provincia/Caceres
      -->
      <dct:spatial rdf:resource="@@URI-location@@" />
      <!--
        Subject concept taxonomy:
          - http://datos.gob.es/kos/sector-publico/sector/
      -->
      <dcat:themeTaxonomy rdf:resource="http://datos.gob.es/kos/sector-publico/sector/" />
      <!-- Catalogue's main page, where the following are visually displayed -->
      <foaf:homepage rdf:resource="@@URI-homepage-catalog@@" />
      <!—Link to resource under general terms of use (advisable for self-contained metadata) -
->
      <dct:license rdf:resource="@@URI-terms-use@@" />
      <!--
        Specifications for each of the records in the catalogue.
        Iterate property for each document or information resource.
      -->
      <dcat:dataset>
        <dcat:Dataset rdf:about="@@URI-dataset@@">
          <!—Identifier corresponding to URI identifying the dataset -->
          <dct:identifier>@@URI-dataset@@</dct:identifier>
          <!—Dataset title and description -->
          <dct:title xml:lang="es">@@title-es@@</dct:title>
          <dct:description xml:lang="es">@@description@@</dct:description>
          <!--
            Catalogue’s main subject(s). Iterate property if there is more than one subject.
            Use standard concept schemes:
              - http://datos.gob.es/kos/sector-publico/sector/ciencia-tecnologia
                http://datos.gob.es/kos/sector-publico/sector/cultura-ocio
                http://datos.gob.es/kos/sector-publico/sector/demografia
                http://datos.gob.es/kos/sector-publico/sector/deporte
                http://datos.gob.es/kos/sector-publico/sector/economia
                http://datos.gob.es/kos/sector-publico/sector/educacion
                http://datos.gob.es/kos/sector-publico/sector/empleo
                http://datos.gob.es/kos/sector-publico/sector/energia
                http://datos.gob.es/kos/sector-publico/sector/hacienda
                http://datos.gob.es/kos/sector-publico/sector/industria
                http://datos.gob.es/kos/sector-publico/sector/legislacion-justicia
                http://datos.gob.es/kos/sector-publico/sector/medio-ambiente
                http://datos.gob.es/kos/sector-publico/sector/medio-rural
                http://datos.gob.es/kos/sector-publico/sector/salud
                http://datos.gob.es/kos/sector-publico/sector/sector-publico
                http://datos.gob.es/kos/sector-publico/sector/seguridad
                http://datos.gob.es/kos/sector-publico/sector/sociedad-bienestar
                http://datos.gob.es/kos/sector-publico/sector/transporte
                http://datos.gob.es/kos/sector-publico/sector/turismo
                http://datos.gob.es/kos/sector-publico/sector/urbanismo-infraestructuras
                http://datos.gob.es/kos/sector-publico/sector/vivienda
          -->
          <dcat:theme rdf:resource="@@URI-sector-subject@@" />
          <!—Keyword(s), indicating alternatives to main subject -->
          <dcat:keyword>@@key-word@@</dcat:keyword>
          <!-- Dates can be of the types:
              - http://www.w3.org/2001/XMLSchema#date (YYYY-MM-DD)
              - http://www.w3.org/2001/XMLSchema#dateTime (YYYY-MM-DDTHH:MM:SS+TZ)
          -->
          <dct:issued
rdf:datatype="http://www.w3.org/2001/XMLSchema#date">@@creation@@</dct:issued>
          <dct:modified
rdf:datatype="http://www.w3.org/2001/XMLSchema#date">@@update.@@</dct:modified>
          <!--
            Estimated update period for the data in the dataset.
```

```
          -->
          <dct:accrualPperiodicity>
            <dct:Frequency>
              <rdfs:label>Every @@time-interval@@</rdfs:label>
              <rdf:value>
                <time:DurationDescription>
                 <rdfs:label>@@time-interval@@</rdfs:label>
                 <!—could be time:days or other units (weeks, months, etc.) -->
                 <time:days
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">@@n@@</time:days>
                </time:DurationDescription>
              </rdf:value>
            </dct:Frequency>
          </dct:accrualPeriodicity>
          <!—Language(s) the data are specified in (@@es|en|ca|ga...) -->
          <dc:language>@@language@@</dc:language>
          <!-- Body making the data available. There shall be an URI identifying it. -->
          <dct:publisher rdf:resource="@@URI-body@@" />
          <!-- URI describing the terms of use applicable to the data -->
          <dct:licence rdf:resource="@@URI-licence@@" />
          <!--
            Data spatial coverage
            Iterate property if necessary, referring to a resource of the type:
              - http://datos.gob.es/recurso/sector-publico/territorio/Pais/Espana
              - http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/Extremadura
              - http://datos.gob.es/recurso/sector-publico/territorio/Provincia/Caceres
          -->
          <dct:spatial rdf:resource="@@URI-location@@" />
          <!--
            Data time coverage (if necessary)
            Define start and end dates using xsd:dateTime (YYYY-MM-DDTHH:MM:SS+TZ)
          -->
          <dct:temporal>
            <time:Interval>
              <rdf:type rdf:resource="http://purl.org/dc/terms/PeriodOfTime" />
              <time:hasBeginning>
                <time:Instant>
                  <time:inXSDDateTime
rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">
                    @@start-date-time@@
                  </time:inXSDDateTime>
                </time:Instant>
              </time:hasBeginning>
             <time:hasEnd>
               <time:Instant>
                  <time:inXSDDateTime
rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">
                    @@end-date-time@@
                  </time:inXSDDateTime>
                </time:Instant>
              </time:hasEnd>
            </time:Interval>
          </dct:temporal>
          <!—Links to related resources -->
          <dct:references rdf:resource="@@URI-recurso-relacionado@@" />
          <!--
            Different distributions (1..n)
          -->
          <dcat:distribution>

   <dcat:distribution>
   <dcat:Distribution>
   <!—Identifier corresponding to the URI identifying the distribution itself -->
   <dct:identifier>@@URI-distribution@@</dct:identifier>
   <dct:title xml:lang="es">@@name-distribution-es@@</dct:title>
   <!—Data Access URL --> <dcat:accessURL
```

```
   rdf:datatype="http://www.w3.org/2001/XMLSchema#anyURI">@@URL-acceso@@</dcat:accessURL>
   <!-- MIME format of distribution data. -->
              <dct:format>
                <dct:IMT>
                  <rdf:value>${MIME_Type_value (e.g., text/csv)}</rdf:value>
                  <rdfs:label>${readable_text_ (e.g., CSV)}</rdfs:label>
                </dct:IMT>
              </dct:format>
              <!--
                Document or information resource distribution size.
                Represented in bytes (decimal number) and in a readable text label (e.g.,
30KB)
              -->
              <dcat:byteSize rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">
                    @@byte-num@@
              </dcat:byteSize>
              <!--
                For documents with additional information on the data and their access,
reference to it can          be made using text and the URL redirecting to the document
              -->
              <dct:references>
                <rdf:Description>
                  <rdfs:label xml:lang="es">@@link-text@@</rdfs:label>
                  <foaf:page rdf:resource="@@document-URL@@" />
                </rdf:Description>
              </dct:references>
            </dcat:Distribution>
          </dcat:distribution>
        </dcat:Dataset>
      </dcat:dataset>
    </dcat:Catalog>
  </rdf:RDF>
```

Notation3 (N3)

```
@prefix dct: <http://purl.org/dc/terms/>.
@prefix dc: <http://purl.org/dc/elements/1.1/>.
@prefix dcat: <http://www.w3.org/ns/dcat#>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema#>.
@prefix tema: <http://datos.gob.es/kos/sector-publico/sector/>.
@prefix time: <http://www.w3.org/2006/time#>.
@prefix xml: <http://www.w3.org/XML/1998/namespace>.
@prefix rdfs: <http://www.w3.org/2000/01/rdf-scheme#>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix auto: <http://datos.gob.es/recurso/sector-publico/territorio/Autonomia/>.


# Catalogue
$$URI-catalog$$ a dcat:Catalog;
   dct:title "$$title-en$$"@es;
   dct:description "$$description$$"@en;
   dct:identifier "$$URI-catalog";
   # Number of datasets
   dct:extent
   [
      a dct:SizeOrDuration;
      rdf:value "$$integer$$"^^xsd:nonNegativeInteger;
      rdfs:label "$$text-number$$"@en.
   ];
   # Creation and update dates
   dct:issued "$$creation-date$$"^^xsd:dateTime;
   dct:modified "$$update$$"^^xsd:dateTime;
   dc:language "$$language-code$$";
   dct:publisher <$$URI-body$$>;
   dct:license <$$URI-terms-of-use$$>;
```

```
    dct:spatial <$$URI-location$$>;
    dcat:themeTaxonomy <http://datos.gob.es/kos/sector-publico/sector/>;
    foaf:homepage <$$URI-homepage-catalog$$>;

    # Datasets in the catalogue (multiple)
    dcat:dataset <$$URI-dataset$$>.

 # Datasets associated to the catalogue
 <$$URI-dataset$$> a dcat:Dataset;
    dct:title "$$title-en$$"@en;
    dct:description "$$description$$"@en;
    dcat:theme <$$URI-sector-subject$$>;
    dcat:keyword "$$key-world$$","$$key-word2$$","$$key-wordN$$";
    # Estimated update period
    dct:accrualPeriodicity
    [
       a dct:Frequency;
       rdf:value
       [
          a time:DurationDescription;
          rdfs:label "$$time-interval$$";
          time:days $$n$$.
       ];
       rdfs:label "Every $$time-interval$$".
    ];
    dct:publisher <$$URI-body$$>;
    dct:identifier "$$URI-dataset$$";
    dct:issued "$$creation$$"^^xsd:date;
    dct:modified "$$update$$"^^xsd:date;
    dc:language "$$language$$";
    dct:licence <$$URI-licence$$>;
    dct:spatial <$$URI-location$$>;
    dct:references <$$URI-dataset$$>;
    dct:temporal
    [
       a dct:PeriodOfTime, time:Interval;
       time:hasBeginning
       [
          a time:Instant;
          time:inXSDDateTime "$$start-date-time$$"^^xsd:dateTime.
       ];
       time:hasEnd
       [
          a time:Instant;
          time:inXSDDateTime "$$end-date-time$$"^^xsd:dateTime.
       ].
    ];
    # Document or information resource distributions
    dcat:distribution
    [
       a dcat:Distribution;
       dct:identifier "$$URI-distribution$$";
       dct:title "$$name-distribution-en$$"@en;
       dct:format
       [
          a dct:IMT;
          rdf:value "${MIME_type_value (e.g., text/csv)}";
          rdfs:label "${readable_text_ (e.g., CSV)}".
       ];
       dct:references
       [
          rdfs:label "$$link-text$$"@en;
          foaf:page <$$URL-document$$>.
       ];
       dcat:accessURL "$$access-URL$$"^^xsd:anyURI;
       dcat:byteSize "$$byte-num-text$$".   ].
```