



INSPIRE Infrastructure for Spatial Information in Europe

Draft Implementing Rules for Metadata (Version 3)

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1 Introduction

This document contains the Commission's draft proposal for Implementing Rules (IRs) on metadata as required by the INSPIRE Directive (2007/2/EC). This document is published on the INSPIRE web site¹ on 2007-10-26 and is open for comments by the public for a period of eight weeks, until 2007-12-21 (16.00 hrs CET). Only comments received by the deadline using the template for comments and the instructions provided on the web site will be considered. At the end of this phase of public consultation, the Commission will elaborate a revised proposal and submit it to the Regulatory Committee as required by the Directive.

This document is publicly available as a 'non-paper', as it does not represent an official position of the Commission, and as such can not be invoked in the context of legal procedures.

The document is organised as follows: Section 1 is introductory to help readers understand the background and requirements without need to reference other documents. It is expected that in the final Implementing Rules this section will be removed or be strongly summarized. Section 2 is the core of the proposal. Section 2.1 defines the scope, Section 2.2 describes the metadata elements required, and Section 2.3 details in two separate tables the proposed metadata elements for spatial datasets (Table 1), and spatial data services (Table 2). Section 2.4 defines the process through which guidelines and instructions for implementation will be developed. Annex A defines key terms used in the text. Annex B details the value domains which are referred to in the text.

A separate document² issued for guidance i.e. not part of the Implementing Rules, and published on the INSPIRE web site together with this draft proposal, suggests how the standards EN ISO 19115 and EN ISO 19119 can be used to disseminate the INSPIRE metadata elements defined in Chapter 2 of this document, and will be revised according to the process described in section 2.4.

An explanation of the changes introduced by the Commission between the draft Implementing Rules version, 2 published in February 2007, and this draft (version 3) is contained in a separate document also available on the INSPIRE web site.³

1.1 Background

INSPIRE is a Directive (2007/2/EC) of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community⁴. The purpose of such an infrastructure is to assist policy-making in relation to policies and activities that may have a direct or indirect impact on the environment. The Directive came into force on the 15th May 2007.

INSPIRE should be based on the infrastructures for spatial information that are created by the Member States. Such infrastructures should be designed to ensure that spatial data are stored, made available and maintained at the most appropriate level; that it is possible to combine spatial data from different sources across the Community in a consistent way and share them between several users and applications; that it is possible for spatial data collected at one level of public authority to be shared between other public authorities; that spatial data are made available under conditions which do not unduly restrict their extensive

¹ INSPIRE Website: <http://www.ec-gis.org/inspire/>

² See "MD_IR_and_ISO.pdf" in the following section of the web site

http://www.ec-gis.org/inspire/public_consultations/metadata/metadataReference.cfm

³ "INSPIRE_Metadata_ImplementingRule_Changes_v2 tov3" in the same section as the footnote above

⁴ The text of the Directive in multiple languages is available at

<http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2007:108:SOM:EN:HTML>

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use; that it is easy to discover available spatial data, to evaluate their suitability for the purpose and to know the conditions applicable to their use.

To achieve these aims, the Directive focuses in particular on five key areas: metadata, the interoperability and harmonisation of spatial data and services for selected themes (as described in Annexes I, II, III of the Directive); network services and technologies; measures on sharing spatial data and services; and coordination and monitoring measures.

Member States are required to bring into force national legislation, regulations, and administrative procedures necessary to comply with the Directive by the 15th May 2009.

To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and trans-boundary context, the Directive requires that common Implementing Rules (IRs) are adopted in a number of specific areas. These IRs will be adopted as Commission Regulations or Decisions, and will be binding in their entirety. The Commission is assisted in the process of adopting such rules by a Regulatory Committee composed by representatives of the Member States and chaired by a representative of the Commission (this is known as the Comitology procedure⁵). The Committee was established in June 2007. According to the INSPIRE Directive, the IRs on metadata must be adopted within one year of the entry in force of the Directive, i.e. by 15th May 2008.

The requirements of the Directive in relation to metadata are detailed below.

1.2 The Directive's Requirements for Metadata

The general principle informing the need for metadata is expressed in Paragraph (6) of the Directive's preamble, i.e. that the "infrastructures for spatial information in the Member States should be designed to ensure that [...] it is easy to discover available spatial data, to evaluate their suitability for the purpose and to know the conditions applicable to their use".

Metadata is defined in Art. 3, point (6) as: "information describing spatial data sets and spatial data services and making it possible to discover, inventory and use them."

The Directive covers the spatial data sets that fulfil the conditions defined in Article 4, and in particular (Art. 4-1):

- (a) *they relate to an area where a Member State has and/or exercises jurisdictional rights;*
- (b) *they are in electronic format;*
- (c) *they are held by or on behalf of any of the following:*
 - (i) *a public authority, having been produced or received by a public authority, or being managed or updated by that authority and falling within the scope of its public tasks;*
 - (ii) *a third party to whom the network has been made available in accordance with Article 12;*
- (d) *they relate to one or more of the themes listed in Annex I, II or III.*

Art. 5 is dedicated to Metadata and requires the following:

1. *Member States shall ensure that metadata are created for the spatial data sets and services corresponding to the themes listed in Annexes I, II and III, and that those metadata are kept up to date.*
2. *Metadata shall include information on the following:*

⁵ An explanation of the process for the development and adoption of the Implementing Rules is contained in Section 3 of the Work Programme 2007-09 see http://inspire.jrc.it/reports/transposition/INSPIRE_IR_WP2007_2009_en.pdf

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- (a) *the conformity of spatial data sets with the Implementing Rules provided for in Article 7(1);*
 - (b) *conditions applying to access to, and use of, spatial data sets and services and, where applicable, corresponding fees;*
 - (c) *the quality and validity of spatial data sets;*
 - (d) *the public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services;*
 - (e) *limitations on public access and the reasons for such limitations, in accordance with Article 13⁶.*
3. *Member States shall take the necessary measures to ensure that metadata are complete and of a quality sufficient to fulfil the purpose set out in point (6) of Article 3.*
 4. *Rules for the implementation of this Article shall be adopted by one year following the date of entry into force of this Directive in accordance with the regulatory procedure referred to in Article 22(2). These rules shall take account of relevant, existing international standards and user requirements, in particular with relation to validation metadata.*

The timetable for the creation of metadata is set out in Art. 6, and indicates that metadata for the data themes in Annexes I and II of the Directive should be created no later than 2 years following the adoption of the IRs (i.e. by May 2010) and for Annex III no later than 5 years following the adoption of the IR (i.e. May 2013).

Additional requirements for Metadata come in Art. 11-1 (a) and 11-2 in which Member States are required to establish and operate discovery services making it possible to search for spatial data sets and services on the basis of the corresponding metadata, and to display the content of such metadata, based at a minimum on the following criteria:

- (a) *keywords;*
- (b) *classification of spatial data and services;*
- (c) *the quality and validity of spatial data sets;*
- (d) *degree of conformity with the Implementing Rules provided for in Article 7(1);*
- (e) *geographical location;*
- (f) *conditions applying to the access to and use of spatial data sets and services;*
- (g) *the public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services.*

The Directive does not mandate the use of any particular natural language for the metadata content. The Directive recognizes the importance of multi-lingual aspects and mandates the use of multi-lingual thesauri in the context of interoperability of spatial datasets and services (Art. 8-2 (c)).

Separate Implementing Rules for discovery services are being prepared and are not the subject of this document.

⁶ See section 2.2.9 for details of applicable limitations.

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2 The INSPIRE Metadata Implementing Rules

2.1 Scope

As indicated in Art. 5, “Member States shall ensure that metadata are created for the spatial data sets and services corresponding to the themes listed in Annexes I, II and III, and that those metadata are kept up to date”. The creation and maintenance of metadata related to a series of spatial datasets, to spatial datasets, or to services related to such spatial datasets meet these requirements. These Implementing Rules do not require the documentation of individual spatial objects or attributes.

As indicated in the Directive (Article 4-2) in case where multiple copies of the same spatial dataset are held by or on behalf of various public authorities, the Directive, and therefore these Implementing Rules, apply only to the reference version of the spatial dataset (i.e. that copy of a multiple-copied dataset which must be published under the conditions of the INSPIRE Directive)

These Implementing Rules include the minimum set of metadata elements required to comply to Directive 2007/2/EC, and in particular to Articles 5 and 11 thereof.

2.2 INSPIRE Metadata Elements

This section describes the metadata elements required by these Implementing Rules. Additional information regarding the implementation of these elements as part of a set of metadata describing a resource is given in section 2.3.

2.2.1 Identification

A proper identification of the spatial dataset, spatial dataset series and spatial data services is necessary to the implementation of the Directive. To this end, the following metadata elements shall be provided:

2.2.1.1 **Resource title**

This is a characteristic and often-unique name by which the resource is known. Because the name may contain basic information about a resource such as a geographic and/or thematic description, it is an important element for the identification of the resource (by human users).

The value domain of this metadata element is free text.

2.2.1.2 **Abstract**

This is a brief narrative summary of the content of the resource.

The value domain of this metadata element is free text.

2.2.1.3 **Resource type**

This is the type of resource being described by the metadata.

The value domain of this metadata element is defined in Annex B.1.

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2.2.1.4 **Resource locator**

If the resource is a spatial dataset, the resource locator defines the link(s), commonly expressed as Uniform Resource Locator(s) (URL) to obtain more information on the resource, and/or to one or more spatial data service, if available, to view, download, or process in other ways the resource.

If the resource is a spatial data service, the locator defines the link, commonly expressed as a Uniform Resource Locator(s) (URL) to the service.

2.2.1.5 **Unique resource identifier**

If the resource is a spatial dataset, the Unique Resource Identifier is derived from the Unique Spatial Object Identifiers required by Article 8-2 (a) of the Directive.

The value domain of this metadata element is free text.

2.2.1.6 **Coupled resource**

If the resource is a spatial data service, this metadata element identifies, where relevant, the target spatial dataset(s) of the service through their Unique Resource Identifiers.

The value domain of this metadata element is free text.

2.2.1.7 **Resource language**

The language(s) used within the resource.

The value domain of this metadata element is limited to the languages defined in ISO 639-2.

2.2.2 **Classification of spatial data and services**

2.2.2.1 **Topic category**

The topic category is a high-level classification scheme to assist in the grouping and topic-based search of available spatial data resources.

The value domain of this metadata element is defined in Annex B.2.

2.2.2.2 **Classification of spatial data services**

This is a classification to assist in the search of available spatial data services. A specific service shall be categorized in only one category, unless it is an aggregate service that may perform services from more than one category.

The value domain of this metadata element is defined in Annex B.3.

2.2.3 **Keyword**

If a resource is a spatial dataset or spatial dataset series, at least one keyword shall be provided describing the relevant INSPIRE spatial data theme (as defined in Annex I, II or III of the Directive) from the general environmental multi-lingual thesaurus (GEMET) (<http://www.eionet.europa.eu/gemet>).

For each keyword, the following metadata elements shall be provided:

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2.2.3.1 **Keyword value**

The keyword value is a commonly used word, formalized word or phrase used to describe the subject. While the topic category is too coarse for detailed queries, keywords help narrowing a full text search and they allow for structured keyword search.

2.2.3.2 **Originating controlled vocabulary**

If the keyword value originates from a Controlled Vocabulary (Thesaurus, Ontology, ...), for example GEMET, the citation of the originating Controlled Vocabulary shall be provided.

2.2.4 **Geographic location**

The requirement of the Directive for geographic location (Article 11-2 (e)) shall be expressed with the metadata element geographic bounding box.

2.2.4.1 **Geographic bounding box**

This is the extent of the resource in the geographic space, given as a bounding box. The bounding box shall be expressed with westbound and eastbound longitudes, and southbound and northbound latitudes in decimal degrees, with a precision of at least 2 decimals.

2.2.5 **Temporal reference**

This metadata element addresses the Directive's requirement to have information on the temporal dimension of the data (Article 8-2 (d)). At least one of the following metadata elements shall be provided.

The value domain of these metadata elements is a set of dates. Each date shall refer to a temporal reference system and shall be expressed in a form compatible with this temporal reference system. The default reference system is the Gregorian calendar. In this temporal reference system dates have to be expressed according to ISO 8601.

2.2.5.1 **Temporal extent**

The temporal extent defines the time period covered by the content of the resource. This time period can be expressed as:

- an individual date,
- an interval of dates expressed through the starting date and end date of the interval;
or
- a mix of individual dates and intervals of dates.

2.2.5.2 **Date of publication**

This is the date of publication of the resource when available, or the date of entry into force.

2.2.5.3 **Date of last revision**

This is the date of last revision of the resource, if the resource has been revised.

2.2.5.4 **Date of creation**

This is the date of creation of the resource, if it has not been revised.

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2.2.5.5 **Alternate references**

As different thematic communities have different ways of expressing the temporal reference of their resources, a study has been launched to define appropriate ways to express this metadata element. The study outcomes expected in December 2007 will inform the final draft of these Implementing Rules, with addition of alternate time-related metadata elements.

2.2.6 **Quality and validity**

The Directive requires that the quality and validity of spatial datasets is documented in metadata and that it is possible to search resources based on this. This requirement shall be addressed by the following metadata elements:

2.2.6.1 **Lineage**

This is a statement on process history and/or overall quality of the spatial dataset. Where appropriate it may include a statement whether the dataset has been validated or quality assured, whether it is the official version (if multiple versions exist), and whether it has legal validity.

The value domain of this metadata element is free text.

2.2.6.2 **Spatial resolution**

Spatial resolution refers to the level of detail of the dataset. It shall be expressed as one of the following:

- an equivalent scale (typically, for maps or map-derived products), generally expressed as an integer value expressing the scale denominator;
- a resolution distance for gridded data and imagery-derived products, generally expressed as a numerical value associated with a unit of length.
- an interval of equivalent scales expressed through the start and end scales of the interval;
- an interval of resolution distances expressed through the start and end resolution distance of the interval.

2.2.7 **Conformity**

Conformity refers to the requirement of the Directive in Articles 5-2 (a) and 11-2 (d) that metadata shall include information on the degree of conformity with the Implementing Rules provided in Art. 7-1, which refer to the interoperability and where practicable harmonization of spatial data sets and services. There may be more than one specification per spatial data theme or spatial data service. Each conformity statement shall be expressed through the following metadata elements:

2.2.7.1 **Specification**

This is a citation of the specification to which the resource is expected to conform. This citation shall include at least the title and a reference date (date of publication, date of last revision or of creation) of the specification.

2.2.7.2 **Degree**

This is the degree of conformity of the resource to the related specification. The value domain of this metadata element is defined in Annex B.4.

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2.2.8 Conditions applying to access and use

This metadata element defines the conditions for access and use of spatial datasets and services, and where applicable, corresponding fees as required by Articles 5-2 (b) and 11-2 (f).

The value domain of this metadata element is free text.

The element must have values. If no conditions apply to the access and use of the resource, "no conditions apply" shall be used. If conditions are unknown, "conditions unknown" shall be used. This element shall also provide information on any fees necessary to access and use the resource, if applicable, or refer to a Uniform Resource Locator (URL) where this information is available.

2.2.9 Limitations on public access

Member States may limit public access to spatial datasets and spatial data services where such access would adversely affect any of the following (Article 13):

- *the confidentiality of the proceedings of public authorities, where such confidentiality is provided for by law,*
- *International relations, public security or national defence,*
- *the course of justice, the ability of any person to receive a fair trial or the ability of a public authority to conduct an enquiry of a criminal or disciplinary nature,*
- *the confidentiality of commercial or industrial information, where such confidentiality is provided for by national or Community law to protect a legitimate economic interest, including the public interest in maintaining statistical confidentiality and tax secrecy,*
- *intellectual property rights,*
- *the confidentiality of personal data and/or files relating to a natural person where that person has not consented to the disclosure of the information to the public, where such confidentiality is provided for by national or Community law,*
- *the interests or protection of any person who supplied the information requested on a voluntary basis without being under, or capable of being put under, a legal obligation to do so, unless that person has consented to the release of the information concerned,*
- *the protection of the environment to which such information relates, such as the location of rare species.*

This metadata element shall provide information on the limitations (if they exist) and the reasons for such limitations (Article 5-2(e)).

This metadata element must have values. If there are no limitations on public access this must be indicated.

2.2.10 Organisations responsible for the establishment, management, maintenance and distribution of spatial data sets and services

The Directive requires information on the public authorities responsible for the establishment, management, maintenance and distribution of spatial datasets and services (Articles 5-2 (d) and 11-2 (g)). To satisfy these requirements, the following two metadata elements shall be provided:

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2.2.10.1 **Responsible party**

This is the description of the organisation responsible for the establishment, management, maintenance and distribution of the resource. This description shall include the name of the organisation and a contact e-mail address.

2.2.10.2 **Responsible party role**

This is the role of the responsible organisation.

The value domain of this metadata element is defined in Annex B.5.

2.2.11 **Metadata on metadata**

The Directive requires in Article 5 that metadata is not only created but also kept up to date. The following information on the metadata management process shall therefore be provided:

2.2.11.1 **Metadata point of contact**

This is the description of the organisation responsible for the creation and maintenance of the metadata. This description shall include the name of the organisation and a contact e-mail address.

2.2.11.2 **Metadata date**

Date, which specifies when the metadata record was created or updated.

This date shall be expressed in conformance with ISO 8601.

2.2.11.3 **Metadata language**

This is the language in which the metadata elements are expressed.

The value domain of this metadata element is limited to the languages defined in ISO 639-2.

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2.3 Conditions and Relationships to the Directive

The previous section described the metadata elements required by these Implementing Rules. In this section, information regarding implementation of these elements as part of a set of metadata describing a resource is given. For clarity, the requirements for spatial datasets and services are addressed in different tables with the following information:

- The reference to the paragraph in section 2.2 defining the metadata element or group of metadata elements,
- the name of the metadata element or group of metadata elements,
- the multiplicity of a metadata element. The expression of the multiplicity follows the Unified Modeling Language (UML) notation for multiplicity,
 - 1 means that there shall be only one instance of this metadata element in a result set,
 - 1..* means that there shall be at least one instance of this element in a result set,
 - 0..1 indicates that the presence of the metadata element in a result set is conditional but can occur only once,
 - 0..* indicates that the presence of the metadata element in a result set is conditional but the metadata element may occur once or more,
 - When the multiplicity is 0..1 or 0..*, the condition defines when the metadata elements is mandated,
- a conditional statement if the multiplicity of the element does not apply to all types of resources. All elements are mandatory in other circumstances,
- the relationship between the metadata element and the requirements of the Directive.

In order to be conformant to these Implementing the Rules, the metadata describing a spatial dataset or a spatial dataset series shall comprise the metadata elements or groups of metadata elements listed in Table 1 according to their expected multiplicity and their related condition. When no condition is expressed, the metadata element is mandatory.

Table 1: INSPIRE metadata for spatial datasets and spatial dataset series

Ref.	Metadata elements	Multiplicity	Condition	Reason for inclusion
2.2.1.1	Resource title	1		Required by relevant European standards
2.2.1.2	Abstract	1		Required by relevant European standards
2.2.1.3	Resource type	1		As the Directive applies to both spatial datasets and spatial data services, this metadata element is necessary to identify the type of resource.
2.2.1.4	Resource Locator	0..*	Mandatory if a URL is available to obtain more information on the resource, and/or access related services.	Necessary link to additional information making it possible to inventory, and use the resources (Art 3-6)
2.2.1.5	Unique resource identifier	1		Unique Spatial Object Identifier (Art 8-2 (a))
2.2.1.7	Resource language	0..*	Mandatory if the resource includes textual information	Directive recognises the importance of multi-linguality (Art 8-2 (c))
2.2.2.1	Topic category	1..*		Classification of spatial data (Art. 11-2 (b))
2.2.3	Keyword	1..*		Keywords describing a resource (Art. 11-2 (a))
2.2.4.1	Geographic bounding box	1..*		Geographical location; (Art. 11-2 (e))
2.2.5	Temporal reference	1..*		Temporal domain; (Art 8-2 (d))
2.2.6.1	Lineage	1		Quality and validity of spatial data; (Art. 5-2 (c) and 11-2 (c))
2.2.6.2	Spatial resolution	0..*	Mandatory for datasets and dataset series if a unique equivalent scale or resolution distance can be specified	Contributes to assessment of Quality and Validity (Art. 5-2 (c) and 11-2 (c))
2.2.7	Conformity	1..*		The conformity of spatial data sets with the Implementing Rules referred to in Article 7(1); (Art. 5-2 (a) and Art. 11-2 (d))
2.2.8	Conditions for access and use	1..*		Conditions applying to access to, and use of, spatial data sets and services and where applicable, corresponding fees (Art. 5-2 (b) and 11-2 (f)).
2.2.9	Limitations on public access	1..*		Limitations on public access and the reasons for such limitations (Art. 5-2 (e))
2.2.10	Responsible organisation	1..*		Public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services; (Art. 5-2 (d) and 11-2 (g))
2.2.11.1	Metadata point of contact	1..*		Required by relevant European standards
2.2.11.2	Metadata date	1		Art 5-1 requires that metadata are kept up to date
2.2.11.3	Metadata language	1		Directive recognises the importance of multi-linguality (Art 8-2 (c))

In order to be conformant to these Implementing Rules, the metadata describing a spatial data service shall comprise the metadata elements or groups of metadata elements listed in Table 2 according to their expected multiplicity and their related condition. When no condition is expressed, the metadata element is mandatory.

Table 2: INSPIRE metadata for spatial data services

Ref.	Metadata element	Multiplicity	Condition	Reason for inclusion
2.2.1.1	Resource title	1		Required by relevant European standards
2.2.1.2	Abstract	1		Required by relevant European standards
2.2.1.3	Resource type	1		As the Directive applies to both spatial datasets and spatial data services, this metadata element is necessary to identify the type of resource
2.2.1.4	Resource locator	0..1	Mandatory if linkage to the service is available	Art. 11-1: Those services shall [...] be easy to use, available to the public and accessible via the Internet [...].
2.2.1.6	Coupled resource	0..*	Mandatory if linkage to datasets on which the service operates are available	Unique Spatial Object Identifier is required by Art. 8-2 (a)
2.2.2.2	Classification of spatial data services	1..*		Classification of spatial data services (Art. 11-2 (b))
2.2.3	Keyword	1..*		Keywords describing a resource (Art. 11-2 (a))
2.2.4.1	Geographic bounding box	0...*	Mandatory for services with an explicit geographic extent	Geographical location; (Art. 11-2 (e))
2.2.7	Conformity	1..*		The conformity of spatial data services with the Implementing Rules referred to in Article 7-1 (Art. 11-2 (d))
2.2.8	Conditions for access and use	1..*		Conditions applying to access to, and use of, spatial data sets and services, and where applicable, corresponding fees (Art. 5-2 (b) and 11-2 (f)).
2.2.9	Limitations on public access	1..*		Limitations on public access and the reasons for such limitations (Art 5-2 (e))
2.2.10	Responsible organisation	1..*		Public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services; (Art. 5-2 (d) and 11-2 (g))
2.2.11.1	Metadata point of contact	1..*		Required by relevant European standards
2.2.11.2	Metadata date	1		Art 5-1 requires that metadata are kept up to date
2.2.11.3	Metadata language	1		Directive recognises the importance of multi-linguality (Art 8-2 (c))

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2.4 Guidelines and instructions for implementation

The European Commission shall establish, in collaboration with stakeholders and relevant standardisation organisations, detailed guidelines and instructions for implementation to ensure interoperability of metadata.

These will include instructions on how the European standards EN ISO 19115 and EN ISO 19119 shall be used to disseminate INSPIRE metadata, should one chose to use these standards.

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Annex A: Terms and definitions

lineage

History of a dataset, and the life cycle from collection and acquisition through compilation and derivation to its current form [from ISO19101].

metadata

Information describing spatial datasets and spatial data services and making it possible to discover, evaluate and use them⁷.

metadata element

Discrete unit of metadata (ISO 19115). Metadata elements are unique within a metadata entity.

quality

Totality of characteristics of a product that bear on its ability to satisfy stated and implied needs [ISO 19101].

reference version

That copy of a multiple-copied dataset which must be published under the conditions of the INSPIRE Directive. (Article 4.2 INSPIRE Directive)

Note 1. This is not strictly a “version” of the data or dataset under, for example, version control. The data or datasets may be identical in different copies. The Directive need apply only to one, termed the “reference version”.

Note 2. Data or datasets may exist in different versions within the data life cycle. It is only the version which users access to which the Directive applies. However if there are distinct uses for different versions, it may be necessary to publish them separately as distinct reference versions, under different metadata documents.

Note 3. The “reference” version does not apply to a dataset protected from heavy use, from which another working, dataset is derived and which users normally access. It is the normally accessed spatial dataset to which the INSPIRE Directive applies.

Note 4. When duplicate copies of spatial datasets are published under the INSPIRE Directive, there is a potential problem in how catalogues and catalogue services handle duplicate or nearly duplicate metadata. This is a metadata management issue, rather than directly a metadata definition problem.

resource

An information resource that has a direct or indirect reference to a specific location or geographic area.

Example: spatial dataset, spatial dataset series, spatial data service.

spatial data

Any data with a direct or indirect reference to a specific location or geographic area (INSPIRE Directive Art. 3.2)

Note 5: The terms geographic(al) data or geospatial data are also often used to refer specifically to data that has a spatial reference to the Earth’s surface or near-surface.

⁷ This definition of metadata originates from the directive. It is compatible with the general definition of metadata provided in ISO 19115 and the OGC abstract specification for metadata: “data about data”. It clarifies the expected role of metadata within the INSPIRE Infrastructure

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spatial dataset

Identifiable collection of spatial data.

spatial dataset series

Collection of spatial datasets sharing the same product specification.

spatial data services

The operations which may be performed, by invoking a computer application, on the spatial data contained in spatial datasets or on the related metadata (INSPIRE Directive Art. 3.4)

spatial object

An abstract representation of a real world phenomenon related to a specific location or geographical area.

validity

Validity may be related to the range of space and time that is pertinent to the data; to whether the data has been checked to a measurement or performance standard or to what extent the data is fit for purpose. Where appropriate it may also refer to the legal validity of the spatial dataset.

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Annex B. Value domains

Value domains are an important means to interoperability of metadata in a multi-lingual context. This annex describes the value domains that are mandated by these Implementing Rules. The value domains below represent the core elements, and will be developed and maintained through a participatory process involving relevant stakeholders.

B.1 Resource type

1. Spatial dataset series.
2. Spatial dataset
3. Spatial data services

B.2 Topic categories

1. Farming
Rearing of animals and/or cultivation of plants.
This category applies to the following INSPIRE Themes: Agricultural and aquaculture facilities (III.9)
2. Biota
Flora and/or fauna in natural environment
This category applies to the following INSPIRE Themes: Bio-geographical regions (III.17), Habitats and biotopes (III.18) and Species distribution (III.19)
3. Boundaries
Legal land descriptions
This category applies to the following INSPIRE Themes: Administrative units (I.4) and Statistical units (III.1)
4. Climatology / Meteorology / Atmosphere
Processes and phenomena of the atmosphere
This category applies to the following INSPIRE Themes: Atmospheric conditions (III.13) and Meteorological geographical features (III.14)
5. Economy
Economic activities, conditions and employment
This category applies to the following INSPIRE Themes: Energy resources (III.20) and Mineral resources (III.21)
6. Elevation
Height above or below sea level
This category applies to the following INSPIRE Themes: Elevation (II.1)

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7. Environment

Environmental resources, protection and conservation

This category applies to the following INSPIRE Themes: Protected sites (I.9)

8. Geoscientific Information

Information pertaining to earth sciences

This category applies to the following INSPIRE Themes: Soil (III.3), Geology (II.4) and Natural risk zones (III.12)

9. Health

Health, health services, human ecology, and safety

This category applies to the following INSPIRE Themes: Human health and safety (III.5)

10. Imagery Base Maps / Earth Cover

Base maps

This category applies to the following INSPIRE Themes: Orthoimagery (II.3) and Land cover (II.2)

11. Intelligence / Military

Military bases, structures, activities

This category does not apply specifically to any INSPIRE Theme

12. Inland Waters

Inland water features, drainage systems and their characteristics

This category applies to the following INSPIRE Themes: Hydrography (I.8)

13. Location

Positional information and services

This category applies to the following INSPIRE Themes: Geographical names (I.3) and Addresses (I.5)

14. Oceans

Features and characteristics of salt water bodies (excluding inland waters)

This category applies to the following INSPIRE Themes: Sea regions (III.16) and Oceanographic geographical features (III.15)

15. Planning / Cadastre

Information used for appropriate actions for future use of the land

This category applies to the following INSPIRE Themes: Cadastral parcels (I.6), Land use (III.4) and Area management/restriction/regulation zones & reporting units (III.11)

16. Society

Characteristics of society and cultures

This category applies to the following INSPIRE Themes: Population distribution – demography (III.10)

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17. Structure

Man-made construction

This category applies to the following INSPIRE Themes: Buildings (III.2), Production and industrial facilities (III.8) and Environmental monitoring facilities (III.7)

18. Transportation

Means and aids for conveying persons and/or goods

This category applies to the following INSPIRE Themes: Transport networks (I.7)

19. Utilities / Communication

Energy, water and waste systems and communications infrastructure and services

This category applies to the following INSPIRE Themes: Utility and governmental services (III.6)

B.3 Classification of spatial data services

The values are based on the geographic services taxonomy of EN ISO 19119 and will be developed further with input of stakeholder communities. This taxonomy is organized in categories, the subcategories defining the value domain of the classification of spatial data services.

B.3.1 Geographic human interaction services

This category comprises the following subcategories:

101. Catalogue viewer

Client service that allows a user to interact with a catalogue to locate, browse, and manage metadata about geographic data or geographic services

102. Geographic viewer

Client service that allows a user to view one or more feature collections or coverages.

103. Geographic spreadsheet viewer.

Client service that allows a user to interact with multiple data objects and to request calculations similar to an arithmetic spreadsheet but extended to geographic data.

104. Service editor

Client service that allows a user to control geographic processing services.

105. Chain definition editor

Provides user interaction with a chain definition service.

106. Workflow enactment manager.

Provides user interaction with a workflow enactment service.

107. Geographic feature editor

Geographic viewer that allows a user to interact with feature data.

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108. Geographic symbol editor

Client service that allows a human to select and manage symbol libraries

109. Feature generalization editor.

Client service that allows a user to modify the cartographic characteristics of a feature or feature collection by simplifying its visualization, while maintaining its salient elements – the spatial equivalent of simplification.

110. Geographic data-structure viewer

Client service that allows a user to access part of dataset to see its internal structure.

B.3.2 Geographic model/information management services

This category comprises the following subcategories:

201. Feature access service.

Service that provides a client access to and management of a feature store

202. Map access service.

Service that provides a client access to a geographic graphics, i.e., pictures of geographic data.

203. Coverage access service.

Service that provides a client access to and management of a coverage store.

204. Sensor description service.

Service that provides the description of a coverage sensor, including sensor location and orientation, as well as the sensor's geometric, dynamic, and radiometric characteristics for geoprocessing purposes.

205. Product access service.

Service that provides access to and management of a geographic product store.

206. Feature type service.

Service that provides a client to access to and management of a store of feature type definitions.

207. Catalogue service.

Service that provides discovery and management services on a store of metadata about instances.

208. Registry Service.

Service that provides access to store of metadata about types.

209. Gazetteer service

Service that provides access to a directory of instances of a class or classes of real-world phenomena containing some information regarding position.

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210. Order handling service.

Service that provides a client with the ability to order products from a provider.

211. Standing order service

Order handling service that allows a user to request that a product over a geographic area be disseminated when it becomes available.

B.3.3 Geographic workflow/task management services

This category comprises the following subcategories:

301. Chain definition service.

Service to define a chain and to enable it to be executed by the workflow enactment service

302. Workflow enactment service

The workflow enactment service interprets a chain and controls the instantiation of services and sequencing of activities.

303. Subscription service.

Service to allow clients to register for notification about events.

B.3.4 Geographic processing services – spatial

This category comprises the following subcategories:

401. Coordinate conversion service

Service to change coordinates from one coordinate system to another coordinate system that is related to the same datum.

402. Coordinate transformation service.

Service to change coordinates from a coordinate reference system based on one datum to a coordinate reference system based on a second datum.

403. Coverage/vector conversion service

Service to change coordinates from a coordinate reference system based on one datum to a coordinate reference system based on a second datum.

404. Image coordinate conversion service

A coordinate transformation or coordinate conversion service to change the coordinate reference system for an image.

405. Rectification service.

Service for transforming an image into a perpendicular parallel projection and therefore a constant scale.

406. Orthorectification service.

A rectification service that removes image tilt and displacement due to terrain elevation.

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407. Sensor geometry model adjustment service.

Service that adjusts sensor geometry models to improve the match of the image with other images and/or known ground positions.

408. Image geometry model conversion service.

Service that converts sensor geometry models into a different but equivalent sensor geometry model.

409. Subsetting service

Service that extracts data from an input in a continuous spatial region either by geographic location or by grid coordinates.

410. Sampling service.

Service that extracts data from an input using a consistent sampling scheme either by geographic location or by grid coordinates.

411. Tiling change service.

Service that changes the tiling of geographic data.

412. Dimension measurement service.

Service to compute dimensions of objects visible in an image or other geodata.

413. Feature manipulation services.

Register one feature to another, an image, or another dataset or coordinate set; correcting for relative translation shifts, rotational differences, scale differences, and perspective differences. Verify that all features in the Feature Collection are topologically consistent according to the topology rules of the Feature Collection, and identifies and/or corrects any inconsistencies that are discovered

414. Feature matching service.

Service that determines which features and portions of features represent the same real world entity from multiple data sources, e.g., edge matching and limited conflation.

415. Feature generalization service

Service that reduces spatial variation in a feature collection to increase the effectiveness of communication by counteracting the undesirable effects of data reduction.

416. Route determination service.

Service to determine the optimal path between two specified points based on the input parameters and properties contained in the Feature Collection.

417. Positioning service.

Service provided by a position-providing device to use, obtain and unambiguously interpret position information, and determine whether the results meet the requirements of the use.

418. Proximity analysis service.

Given a position or geographic feature, finds all objects with a given set of attributes that are located within an user-specified distance of the position or feature.

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B.3.5 Geographic processing services – thematic

This category comprises the following subcategories:

501. Geoparameter calculation service.

Service to derive application-oriented quantitative results that are not available from the raw data itself.

502. Thematic classification service.

Service to classify regions of geographic data based on thematic attributes

503. Feature generalization service.

Service that generalizes feature types in a feature collection to increase the effectiveness of communication by counteracting the undesirable effects of data reduction.

504. Subsetting service

Service that extracts data from an input based on parameter values.

505. Spatial counting service

Service that counts geographic features

506. Change detection service

Service to find differences between two data sets that represent the same geographical area at different times.

507. Geographic information extraction services.

Services supporting the extraction of feature and terrain information from remotely sensed and scanned images

508. Image processing service.

Service to change the values of thematic attributes of an image using a mathematical function.

509. Reduced resolution generation service.

Service that reduces the resolution of an image.

510. Image Manipulation Services.

Services for manipulating data values in images: changing colour and contrast values, applying various filters, manipulating image resolution, noise removal, "striping", systematic-radiometric corrections, atmospheric attenuation, changes in scene illumination, etc.

511. Image understanding services.

Services that provide automated image change detection, registered image differencing, significance-of-difference analysis and display, and area-based and model-based differencing.

512. Image synthesis services.

Services for creating or transforming images using computer-based spatial models, perspective transformations, and manipulations of image characteristics to improve visibility, sharpen resolution, and/or reduce the effects of cloud cover or haze.

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513. Multi-band image manipulation.

Services that modify an image using the multiple bands of the image.

514. Object detection service.

Service to detect real-world objects in an image.

515. Geoparsing service.

Service to scan text documents for location-based references, such as a place names, addresses, postal codes, etc., in preparation for passage to a geocoding service.

516. Geocoding service.

Service to augment location-based text references with geographic coordinates (or some other spatial reference).

B.3.6 Geographic processing services – temporal

This category comprises the following subcategories:

601. Temporal reference system transformation service.

Service to change the values of temporal instances from one temporal reference system to another temporal reference system.

602. Subsetting service.

Service that extracts data from an input in a continuous interval based on temporal position values.

603. Sampling service

Service that extracts data from an input using a consistent sampling scheme based on temporal position values.

604. Temporal proximity analysis service

Given a temporal interval or event, find all objects with a given set of attributes that are located within an user-specified interval from the interval or event.

B.3.7 Geographic processing services – metadata

This category comprises the following subcategories:

701. Statistical calculation service.

Service to calculate the statistics of a dataset

702. Geographic annotation services.

Services to add ancillary information to an image or a feature in a Feature Collection

B.3.8 Geographic communication services

This category comprises the following subcategories:

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801. Encoding service

Service that provides implementation of an encoding rule and provides an interface to encoding and decoding functionality.

802. Transfer service

Service that provides implementation of one or more transfer protocols, which allows data transfer between distributed information systems over off-line or on-line communication media.

803. Geographic compression service.

Service that converts spatial portions of a feature collection to and from compressed form

804. Geographic format conversion service.

Service that converts from one geographic data format to another.

805. Messaging service

Service that allows multiple users to simultaneously view, comment about, and request edits of feature collections.

806. Remote file and executable management.

Service that provides access to secondary storage of geographic features as if it were local to the client.

B.4 Degree of conformity

1. Conformant

The resource is fully conformant with the cited specification

2. Not Conformant

The resource does not conform with the cited specification

3. Not evaluated

Conformance has not been evaluated

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B.5 Responsible party role

1. Resource Provider
Party that supplies the resource
2. Custodian
Party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource
3. Owner
Party that owns the resource
4. User
Party who uses the resource
5. Distributor
Party who distributes the resource
6. Originator
Party who created the resource
7. Point of Contact
Party who can be contacted for acquiring knowledge about or acquisition of the resource
8. Principal Investigator
Key party responsible for gathering information and conducting research
9. Processor
Party who has processed the data in a manner such that the resource has been modified
10. Publisher
Party who published the resource
11. Author
Party who authored the resource