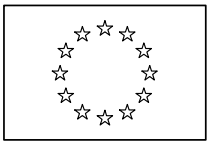

COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 3.12.2008
C(2008) 7558 final

REGULATION ../…/EC

of 3.12.2008

implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

REGULATION ../…/EC

of 3.12.2008

implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata
(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)[1], and in particular Article 5(4) thereof,

Whereas:

(1) Directive 2007/2/EC lays down general rules for the establishment of the Infrastructure for Spatial Information in the European Community. Since, for the proper functioning of that infrastructure, it is necessary for a user to be able to find spatial data sets and services and to establish whether they may be used and for what purpose, Member States should provide descriptions in the form of metadata for those spatial data sets and services. Since such metadata should be compatible and usable in a Community and trans-boundary context, it is necessary to lay down rules concerning the metadata used to describe the spatial data sets and services corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC.

(2) The definition of a set of metadata elements is necessary in order to allow identification of the information resource for which metadata is created, its classification and identification of its geographic location and temporal reference, quality and validity, conformity with implementing rules on the interoperability of spatial data sets and services, constraints related to access and use, and organization responsible for the resource. Metadata elements related to the metadata record itself are also necessary to monitor that the metadata created are kept up to date, and for identifying the organization responsible for the creation and maintenance of the metadata. This is the minimum set of metadata elements necessary to comply with Directive 2007/2/EC and does not preclude the possibility for organizations to document the information resources more extensively with additional elements derived from international standards or working practices in their community of interest. Nor does it preclude the possibility to adopt guidelines established and kept up to date by the Commission, in particular when it is necessary to ensure the interoperability of metadata.

(3) Instructions are necessary for the validation of metadata in accordance with Directive 2007/2/EC with regard to the conditions and expected multiplicity of each metadata element, that is to say, whether values for each element are always to be expected in the metadata record, can occur only once, or can occur more than once.

[1] OJ L 108, 25.4.2007, p. 1.

(4) The value domain of each metadata element is necessary to ensure interoperability of metadata in a multi-lingual context and that value domain should be able to take the form of free text, dates, codes derived from international standards, such as language codes, keywords derived from controlled lists or thesauri, or character strings.

(5) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 22 of Directive 2007/2/EC,

HAS ADOPTED THIS REGULATION:

Article 1

Subject Matter

This Regulation sets out the requirements for the creation and maintenance of metadata for spatial data sets, spatial data set series and spatial data services corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC.

Article 2

Definitions

For the purposes of this Regulation, in addition to the definitions laid down in Article 3 of Directive 2007/2/EC, the definitions set out in Part A of the Annex shall apply.

Article 3

Creation and maintenance of metadata

The metadata describing a spatial data set, a spatial data set series or a spatial data service shall comprise the metadata elements or groups of metadata elements set out in Part B of the Annex and shall be created and maintained in accordance with the rules set out in Parts C and D thereof.

Article 4

Entry into force

This Regulation shall enter into force on the 20th day following its publication in the *Official Journal of the European Union.*

Article 5

Addressees

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 3.12.2008.

For the Commission
Stavros DIMAS
Member of the Commission

ANNEX

Metadata Implementing Rules

Part A

Interpretation

1. The following definitions shall apply:

   – "character string" means the value domain of metadata elements expressed as a set of characters treated as a unit;

   – "free text" means the value domain of metadata elements expressed in one or more natural languages;

   – "lineage" means the history of a data set, and the life cycle from collection and acquisition through compilation and derivation to its current form, in accordance with EN ISO 19101;

   – "metadata element" means a discrete unit of metadata, in accordance with EN ISO 19115.

   – "namespace" means a collection of names, identified by a Uniform Resource Identifier (URI) reference, which are used in Extensible Markup Language (XML) documents as element names and attribute names;

   – "quality" means the totality of characteristics of a product that bear on its ability to satisfy stated and implied needs, in accordance with EN ISO 19101;

   – "resource" means an information resource that has a direct or indirect reference to a specific location or geographic area;

   – "spatial data set series" means a collection of spatial data sets sharing the same product specification.

2. References to the validity of spatial data sets shall be understood as relating to any of the following:

   – the range of space and time that is pertinent to the data;

   – whether the data have been checked to a measurement or performance standard;

   – the extent to which the data are fit for purpose;

   – where appropriate, the legal validity of the spatial data set.

Part B

Metadata Elements

1. IDENTIFICATION

The following metadata elements shall be provided:

1.1. Resource title

This a characteristic, and often-unique, name by which the resource is known.

The value domain of this metadata element is free text.

1.2. Resource abstract

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

The value domain of this metadata element is free text.

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 Part D.1.

1.4. Resource locator

The resource locator defines the link(s) to the resource and/or the link to additional information about the resource.

The value domain of this metadata element is a character string, commonly expressed as Uniform Resource Locator (URL).

1.5. Unique resource identifier

A value uniquely identifying the resource.

The value domain of this metadata element is a mandatory character string code, generally assigned by the data owner, and a character string namespace uniquely identifying the context of the identifier code (for example, the data owner).

1.6. Coupled resource

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

The value domain of this metadata element is a mandatory character string code, generally assigned by the data owner, and a character string namespace uniquely identifying the context of the identifier code (for example, the data owner).

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. CLASSIFICATION OF SPATIAL DATA AND SERVICES

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 Part D.2.

2.2. Spatial data service type

This is a classification to assist in the search of available spatial data services. A specific service shall be categorised in only one category.

The value domain of this metadata element is defined in Part D.3.

3. KEYWORD

If the resource is a spatial data service, at least one keyword from Part D.4 shall be provided.

If a resource is a spatial data set or spatial data set series, at least one keyword shall be provided from the General Environmental Multi-lingual Thesaurus (GEMET) describing the relevant spatial data theme as defined in Annex I, II or III to Directive 2007/2/EC.

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

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.

The value domain of this metadata element is free text.

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.

This citation shall include at least the title and a reference date (date of publication, date of last revision or of creation) of the originating controlled vocabulary.

4. GEOGRAPHIC LOCATION

The requirement for geographic location referred to in Article 11(2)(e) of Directive 2007/2/EC shall be expressed with the metadata element geographic bounding box.

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.

5. TEMPORAL REFERENCE

This metadata element addresses the requirement to have information on the temporal dimension of the data as referred to in Article 8(2)(d) of Directive 2007/2/EC . At least one of the metadata elements referred to in points 5.1 to 5.4 shall be provided.

The value domain of the metadata elements referred to in points 5.1 to 5.4 is a set of dates. Each date shall refer to a temporal reference system and shall be expressed in a form compatible with that system. The default reference system shall be the Gregorian calendar, with dates expressed in accordance with ISO 8601.

5.1. Temporal extent

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

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

5.2. Date of publication

This is the date of publication of the resource when available, or the date of entry into force. There may be more than one date of publication.

5.3. Date of last revision

This is the date of last revision of the resource, if the resource has been revised. There shall not be more than one date of last revision.

5.4. Date of creation

This is the date of creation of the resource. There shall not be more than one date of creation.

6. QUALITY AND VALIDITY

The requirements referred to in Article 5(2) and Article 11(2) of Directive 2007/2/EC relating to the quality and validity of spatial data shall be addressed by the following metadata elements:

6.1. Lineage

This is a statement on process history and/or overall quality of the spatial data set. Where appropriate it may include a statement whether the data set 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.

6.2. Spatial resolution

Spatial resolution refers to the level of detail of the data set. It shall be expressed as a set of zero to many resolution distances (typically for gridded data and imagery-derived products) or equivalent scales (typically for maps or map-derived products).

An equivalent scale is generally expressed as an integer value expressing the scale denominator.

A resolution distance shall be expressed as a numerical value associated with a unit of length.

7. CONFORMITY

The requirements referred to in Article 5(2)(a) and Article 11(2)(d) of Directive 2007/2/EC relating to the conformity, and the degree of conformity, with implementing rules adopted under Article 7(1) of Directive 2007/2/EC shall be addressed by the following metadata elements:

7.1. Specification

This is a citation of the implementing rules adopted under Article 7(1) of Directive 2007/2/EC or other specification to which a particular resource conforms.

A resource may conform to more than one implementing rules adopted under Article 7(1) of Directive 2007/2/EC or other specification.

This citation shall include at least the title and a reference date (date of publication, date of last revision or of creation) of the implementing rules adopted under Article 7(1) of Directive 2007/2/EC or of the specification.

7.2. Degree

This is the degree of conformity of the resource to the implementing rules adopted under Article 7(1) of Directive 2007/2/EC or other specification.

The value domain of this metadata element is defined in Part D.5 .

8. CONSTRAINT RELATED TO ACCESS AND USE

A constraint related to access and use shall be either or both of the following:

- a set of conditions applying to access and use (8.1)
- a set of limitations on public access (8.2).

8.1. Conditions applying to access and use

This metadata element defines the conditions for access and use of spatial data sets and services, and where applicable, corresponding fees as required by Article 5(2)(b) and Article 11(2)(f) of Directive 2007/2/EC.

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 information on fees is available.

8.2. Limitations on public access

When Member States limit public access to spatial data sets and spatial data services under Article 13 of Directive 2007/2/EC, this metadata element shall provide information on the limitations and the reasons for them.

If there are no limitations on public access, this metadata element shall indicate that fact.

The value domain of this metadata element is free text.

9. ORGANISATIONS RESPONSIBLE FOR THE ESTABLISHMENT, MANAGEMENT, MAINTENANCE AND DISTRIBUTION OF SPATIAL DATA SETS AND SERVICES

For the purposes of Article 5(2)(d) and Article 11(2)(g) of Directive 2007/2/EC, the following two metadata elements shall be provided:

9.1. 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 as free text;
- a contact e-mail address as a character string.

9.2. Responsible party role

This is the role of the responsible organisation.

The value domain of this metadata element is defined in Part D.6.

10. METADATA ON METADATA

For the purposes of Article 5(1) of Directive 2007/2/EC the following metadata elements shall be provided:

10.1. 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 as free text;
- a contact e-mail address as a character string.

10.2. Metadata date

The date which specifies when the metadata record was created or updated.

This date shall be expressed in conformity with ISO 8601.

10.3. Metadata language

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

The value domain of this metadata element is limited to the official languages of the Community expressed in conformity with ISO 639-2.

Part C

Instructions on Multiplicity and Conditions of the Metadata Elements

The metadata describing a resource shall comprise, as regards a spatial data set or a spatial data set series, the metadata elements or groups of metadata elements listed in Table 1 and, as regards a spatial data set service, the metadata elements or groups of metadata elements listed in Table 2.

Those metadata elements or groups of metadata elements shall be in accordance with the expected multiplicity and the related conditions set out in Table 1 and Table 2.

When no condition is expressed in relation to a particular metadata element, that element shall be mandatory.

The tables present the following information:

– the first column contains the reference to the paragraph in Part B of the Annex defining the metadata element or group of metadata elements;

– the second column contains the name of the metadata element or group of metadata elements;

– the third column specifies the multiplicity of a metadata element. The expression of the multiplicity follows the Unified Modelling Language (UML) notation for multiplicity, in which:

  – 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,

– the fourth column contains a conditional statement if the multiplicity of the element does not apply to all types of resources. All elements are mandatory in other circumstances.

Table 1: Metadata for spatial data sets and spatial data set series

Reference	Metadata elements	Multiplicity	Condition
1.1	Resource title	1	
1.2	Resource abstract	1	
1.3	Resource type	1	
1.4	Resource locator	0..*	Mandatory if a URL is available to obtain more information on the resource, and/or access related services.
1.5	Unique resource identifier	1..*	
1.7	Resource language	0..*	Mandatory if the resource includes textual information.
2.1	Topic category	1..*	
3	Keyword	1..*	
4.1	Geographic bounding box	1..*	
5	Temporal reference	1..*	
6.1	Lineage	1	
6.2	Spatial resolution	0..*	Mandatory for data sets and data set series if an equivalent scale or a resolution distance can be specified.
7	Conformity	1..*	
8.1	Conditions for access and use	1..*	
8.2	Limitations on public access	1..*	
9	Responsible organisation	1..*	
10.1	Metadata point of contact	1..*	
10.2	Metadata date	1	
10.3	Metadata language	1	

Table 2: Metadata for spatial data services

Reference	Metadata element	Multiplicity	Condition
1.1	Resource title	1	
1.2	Resource abstract	1	
1.3	Resource type	1	
1.4	Resource locator	0..*	Mandatory if linkage to the service is available.
1.6	Coupled resource	0..*	Mandatory if linkage to data sets on which the service operates are available.
2.2	Spatial data service type	1	
3	Keyword	1..*	

4.1	Geographic bounding box	0…*	Mandatory for services with an explicit geographic extent.
5	Temporal reference	1..*	
6.2	Spatial resolution	0..*	Mandatory when there is a restriction on the spatial resolution for this service.
7	Conformity	1..*	
8.1	Conditions for access and use	1..*	
8.2	Limitations on public access	1..*	
9	Responsible organisation	1..*	
10.1	Metadata point of contact	1..*	
10.2	Metadata date	1	
10.3	Metadata language	1	

Part D

Value Domains

Where specified in the description of the metadata elements in Part B, the value domains described in Part D.1 to D.6 shall be used with the multiplicity expressed in Table 1 and Table 2 of Part C.

In relation to a particular domain, each value is defined by:

- a numerical identifier;
- a textual name for humans which may be translated in the different Community languages;
- a language neutral name for computers (the value expressed between parenthesis);
- an optional description or definition.

1. RESOURCE TYPE

1. **Spatial data set series (series).**
2. **Spatial data set (dataset)**
3. **Spatial data services (services)**

2. TOPIC CATEGORIES IN ACCORDANCE WITH EN ISO 19115

1. Farming (farming)

   Rearing of animals and/or cultivation of plants.

   This category applies to Directive 2007/2/EC spatial data theme Annex III(9) Agricultural and aquaculture facilities.

2. Biota (biota)

   Flora and/or fauna in natural environment.

   This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(17) Bio-geographical regions, Annex III(18) Habitats and biotopes, Annex III(19) Species distribution.

3. Boundaries (boundaries)

   Legal land descriptions.

   This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(4) Administrative units, Annex III(1) Statistical units.

4. Climatology / Meteorology / Atmosphere (climatologyMeteorologyAtmosphere)

   Processes and phenomena of the atmosphere.

   This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(13) Atmospheric conditions, Annex III(14) Meteorological geographical features.

5. Economy (economy)

   Economic activities, conditions and employment.

   This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(20) Energy resources, Annex III(21) Mineral resources.

6. Elevation (elevation)

   Height above or below sea level.

   This category applies to the following Directive 2007/2/EC spatial data theme: Annex II(1) Elevation.

7. Environment (environment)

   Environmental resources, protection and conservation.

   This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(9) Protected sites.

8. Geoscientific Information (geoscientificInformation)

   Information pertaining to earth sciences.

   This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(3) Soil , Annex II(4) Geology, Annex III(12) Natural risk zones.

9. Health (health)

   Health, health services, human ecology, and safety.

   This category applies to the following Directive 2007/2/EC spatial data theme: Annex III(5) Human health and safety.

10. Imagery / Base Maps / Earth Cover (imageryBaseMapsEarthCover)

    Base maps.

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex II(3) Orthoimagery, Annex II(2) Land cover.

11. Intelligence / Military (intelligenceMilitary)

    Military bases, structures, activities.

    This category does not apply specifically to any Directive 2007/2/EC spatial data themes.

12. Inland Waters (inlandWaters)

    Inland water features, drainage systems and their characteristics.

    This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(8) Hydrography.

13. Location (location)

    Positional information and services.

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(3) Geographical names, Annex I(5) Addresses.

14. Oceans (oceans)

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

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(16) Sea regions, Annex III(15) Oceanographic geographical features.

15. Planning / Cadastre (planningCadastre)

    Information used for appropriate actions for future use of the land.

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(6) Cadastral parcels, Annex III(4) Land use, Annex III(11) Area management/restriction/regulation zones & reporting units.

16. Society (society)

    Characteristics of society and cultures.

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(10) Population distribution – demography.

17. Structure (structure)

    Man-made construction.

    This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(2) Buildings, Annex III(8) Production and industrial facilities, Annex III(7) Environmental monitoring facilities.

18. Transportation (transportation)

    Means and aids for conveying persons and/or goods.

    This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(7) Transport networks.

19. Utilities / Communication (utilitiesCommunication)

    Energy, water and waste systems and communications infrastructure and services.

    This category applies to the following Directive 2007/2/EC spatial data theme: Annex III(6) Utility and governmental services.

3. SPATIAL DATA SERVICE TYPE

1. Discovery Service (discovery)

Services making it possible to search for spatial data sets and services on the basis of the content of the corresponding metadata and to display the content of the metadata.

2. **View Service (view)**

   Service that makes it possible, as a minimum, to display, navigate, zoom in and out, pan or overlay viewable spatial data sets and to display legend information and any relevant content of metadata.

3. **Download Service (download)**

   Service that enables copies of spatial data sets, or parts of such sets, to be downloaded and, where practicable, accessed directly.

4. **Transformation Service (transformation)**

   Service that enables spatial data sets to be transformed with a view to achieving interoperability.

5. **Invoke Spatial Data Service (invoke)**

   Service that allows defining both the data inputs and data outputs expected by the spatial service and a workflow or service chain combining multiple services. It also allows defining the external web service interface of the workflow or service chain.

6. **Other Service (other)**

4. CLASSIFICATION OF SPATIAL DATA SERVICES

The keywords are based on the geographic services taxonomy of EN ISO 19119. This taxonomy is organized in categories, the subcategories defining the value domain of the classification of spatial data services.

100 Geographic human interaction services (humanInteractionService)

This category comprises the following subcategories:

101. Catalogue viewer (humanCatalogueViewer)

     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 (humanGeographicViewer)

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

103. Geographic spreadsheet viewer (humanGeographicSpreadsheetViewer)

     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 (humanServiceEditor)

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

105. Chain definition editor (humanChainDefinitionEditor)

     Provides user interaction with a chain definition service.

106. Workflow enactment manager.(humanWorkflowEnactmentManager)

Provides user interaction with a workflow enactment service.

107. Geographic feature editor (humanGeographicFeatureEditor)

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

108. Geographic symbol editor (humanGeographicSymbolEditor)

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

109. Feature generalization editor (humanFeatureGeneralizationEditor)

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 (humanGeographicDataStructureViewer)

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

200 Geographic model/information management service (infoManagementService)

This category comprises the following subcategories:

201. Feature access service (infoFeatureAccessService)

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

202. Map access service (infoMapAccessService)

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

203. Coverage access service (infoCoverageAccessService)

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

204. Sensor description service (infoSensorDescriptionService)

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 geo-processing purposes.

205. Product access service (infoProductAccessService)

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

206. Feature type service (infoFeatureTypeService)

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

207. Catalogue service (infoCatalogueService)

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

208. Registry Service (infoRegistryService)

Service that provides access to store of metadata about types.

209. Gazetteer service (infoGazetteerService)

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

210. Order handling service (infoOrderHandlingService)

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

211. Standing order service (infoStandingOrderService)

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

300 Geographic workflow/task management services (taskManagementService)

This category comprises the following subcategories:

301. Chain definition service (chainDefinitionService)

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

302. Workflow enactment service (workflowEnactmentService)

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

303. Subscription service (subscriptionService)

Service to allow clients to register for notification about events.

400 Geographic processing services – spatial (spatialProcessingService)

This category comprises the following subcategories:

401. Coordinate conversion service (spatialCoordinateConversionService)

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

402. Coordinate transformation service (spatialCoordinateTransformationService)

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 (spatialCoverageVectorConversionService)

Service to change the spatial representation from a coverage schema to a vector schema, or vice versa.

404. Image coordinate conversion service (spatialImageCoordinateConversionService)

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

405. Rectification service (spatialRectificationService)

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

406. Orthorectification service (spatialOrthorectificationService)

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

407. Sensor geometry model adjustment service (spatialSensorGeometryModelAdjustmentService)

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 (spatialImageGeometryModelConversionService)

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

409. Subsetting service (spatialSubsettingService)

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

410. Sampling service (spatialSamplingService)

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

411. Tiling change service (spatialTilingChangeService)

Service that changes the tiling of geographic data.

412. Dimension measurement service (spatialDimensionMeasurementService)

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

413. Feature manipulation services (spatialFeatureManipulationService)

Register one feature to another, an image, or another data set 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 (spatialFeatureMatchingService)

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 (spatialFeatureGeneralizationService)

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 (spatialRouteDeterminationService)

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 (spatialPositioningService)

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

418. Proximity analysis service (spatialProximityAnalysisService)

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

500 Geographic processing services – thematic (thematicProcessingService)

This category comprises the following subcategories:

501. Geoparameter calculation service (thematicGoparameterCalculationService)

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

502. Thematic classification service (thematicClassificationService)

Service to classify regions of geographic data based on thematic attributes.

503. Feature generalization service (thematicFeatureGeneralizationService)

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 (thematicSubsettingService)

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

505. Spatial counting service (thematicSpatialCountingService)

Service that counts geographic features.

506. Change detection service (thematicChangeDetectionService)

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

507. Geographic information extraction services (thematicGeographicInformationExtractionService)

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

508. Image processing service (thematicImageProcessingService)

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

509. Reduced resolution generation service (thematicReducedResolutionGenerationService)

Service that reduces the resolution of an image.

510. Image Manipulation Services (thematicImageManipulationService)

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 (thematicImageUnderstandingService)

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 (thematicImageSynthesisService)

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.

513. Multi-band image manipulation (thematicMultibandImageManipulationService)

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

514. Object detection service (thematicObjectDetectionService)

Service to detect real-world objects in an image.

515. Geoparsing service (thematicGeoparsingService)

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 (thematicGeocodingService)

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

600 Geographic processing services – temporal (temporalProcessingService)

This category comprises the following subcategories:

601. Temporal reference system transformation service (temporalReferenceSystemTransformationService)

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

602. Subsetting service (temporalSubsettingService)

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

603. Sampling service (temporalSamplingService)

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

604. Temporal proximity analysis service (temporalProximityAnalysisService)

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

700 Geographic processing services – metadata (metadataProcessingService)

This category comprises the following subcategories:

701. Statistical calculation service (metadataStatisticalCalculationService)

Service to calculate the statistics of a data set.

702. Geographic annotation services (metadataGeographicAnnotationService)

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

800 Geographic communication services (comService)

This category comprises the following subcategories:

801. Encoding service (comEncodingService)

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

802. Transfer service (comTransferService)

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 (comGeographicCompressionService)

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

804. Geographic format conversion service (comGeographicFormatConversionService)

Service that converts from one geographic data format to another.

805. Messaging service (comMessagingService)

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

806. Remote file and executable management (comRemoteFileAndExecutableManagement)

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

5. DEGREE OF CONFORMITY

1. Conformant (conformant)

The resource is fully conformant with the cited specification.

2. Not Conformant (notConformant)

The resource does not conform to the cited specification.

3. Not evaluated (notEvaluated)

Conformance has not been evaluated.

6. RESPONSIBLE PARTY ROLE

1. Resource Provider (resourceProvider)

Party that supplies the resource.

2. Custodian (custodian)

Party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource.

3. Owner (owner)

Party that owns the resource.

4. User (user)

Party who uses the resource.

5. Distributor (distributor)

Party who distributes the resource.

6. Originator (originator)

Party who created the resource

7. Point of Contact (pointOfContact)

Party who can be contacted for acquiring knowledge about or acquisition of the resource.

8. Principal Investigator (principalInvestigator)

   Key party responsible for gathering information and conducting research.

9. Processor (processor)

   Party who has processed the data in a manner such that the resource has been modified.

10. Publisher (publisher)

    Party who published the resource.

11. Author (author)

    Party who authored the resource.