Background document on specifications for reporting geographical data under NiD reporting obligations[1]

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[1] The document is available on WFD CIRCA at:
http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/nitrates_directive&vm=detailed&sb=Title

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Content

1. Introduction

The aim of this document is to explain needs and specifications for spatial data in relation to reporting under NItrates Directive (91/676/CEE)). There is a need to obtain spatial data systematically, to improve the positional accuracy, the topological correctness and furthermore to harmonise the format of the data across the EU. Spatial data is of crucial importance to produce high quality maps which are in turn essential for presentational purposes and to make accurate GIS analyses.

This document is based on the "Annex 4_GISspecific_UWWTD_070507.doc", drafted by the EC DG Environment contractor - **umwelt**bundesamt[Ⓞ],(FINAL version 08/05/2007), and adapted to the NiD reporting obligations.

2. Overview Topics

The aim is to harmonise geographical data in relation to reporting under NiD. Geographical data should also be in line with future reporting in WISE. The following aspects are considered:

1. Coordinate reference system
2. Data accuracy
3. Format / structure / geometry of datasets -> Data Dictionary
4. Data quality
5. Data documentation (Metadata)

2.1. Coordinate reference system

The use of a common coordinate reference system is particularly important for the harmonisation of geographic information across Europe. Spatial data provided by Member States are often insufficiently documented (e.g., the used projection is unknown or is only partially described). The use of different coordinate systems is a potential source of errors when national data are imported into a European wide system. **Therefore it is important that Member States shall provide data for reporting under a single coordinate system.**

The ETRS89 (European Terrestrial Reference System) is recommended by the WFD GIS Working Group for pan Europe spatial data collection, storage and analyses. Furthermore this is a reference system required to be used by the INSPIRE directive[2] for spatial data exchange and communication.
Therefore it is recommended to use ETRS 89 for the national point feature and area feature datasets regarding the Nitrates Directive.

The description and definition of ETRS89 is based on the convention of ISO19111, the 'Spatial referencing by coordinates' standard. For further documentation on ETRS89, see http://crs.bkg.bund.de/crs-eu/ and http://www.eionet.eu.int/gis.

2.2. Data accuracy

Scale and Positional Accuracy
The factor determining the required detail of spatial data is the size of the smallest feature to be shown on digital and paper maps.

This 'spatial detail' determines both the minimum mapping area and the number of coordinates used to describe an element. For example on a large scale map (1:250.000) a river is presented with more points than on a small scale map (1:1.000.000) where small meanders may not be represented.

For the WFD the level of spatial detail is set to 0.5 km² surface for lakes and to a 10 km² catchment area for rivers that leads to a scale of 1:250.000.

The GIS Working Group recommends for WFD needs a positional accuracy for the reporting of 1000 metres (corresponding to an input scale of approximately 1:1.000.000) in the short term. In the long term a positional accuracy of 125 m (1:250.000) is strongly recommended for higher positional data accuracy for web mapping purposes. The scale of 1:250.000 is preferable/advisable to use.

As for the scale and positional accuracy of GIS NiD data concerning point features (e.g. monitoring stations), sensitive area features (e.g. NVZ areas) the accuracy of 125 m (1:250.000) is strongly recommended as a minimum.

Data precision: coordinates – in decimal degrees, 5 digits.

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[2] INSPIRE directive available at: http://inspire.jrc.it/directive/l_10820070425en00010014.pdf

2.3. Format / Coding / Geometry of Datasets

2.3.1. Data exchange format

Point information

To report the point information (the locations of the groundwater- and surface water monitoring stations), it is strongly recommended to use the templates (.xls) which are available in the DD of Reportnet. See also the document "How to use Reportnet and deliver data under the nitrates directive.doc", which is available at http://cdr.eionet.europa.eu/help.

Polygon information

To report Geographic polygon (area) information (the designated NVZ areas and Potential NVZ areas), it is recommended to use the "**shapefile" (ESRI Standard)** data exchange format for vector data because it is compatible with systems operated by the Commission and furthermore to ensure integrated analysis of all EU water legislation reporting. This vector data format stores the location, shape and attributes of geographic features. A shapefile is stored in a set of related files (.shp, .shx, .dbf, .prj, .xml) and contains one feature class. All these types of files shall be provided to ensure the right processing of the data.

The .shp, .shx and .dbf files together will be needed to read the data with GIS software, the .prj file indicates the applied coordinate reference system and projection and is needed when national data are imported into a European wide system (see chapter 2.1 of this document), the .xml (metadata) tells us what the content and quality of the data is.

A shapefile consists of a set of related files with different extensions:
- shp – file (*.shp): File contains geometry of the geographic features. This is a direct access, variable record length file in which each record describes a shape with a list of its vertices. *[Note: xml schemas will be developed in the frame of WISE]*
- shx – file (*.shx): spatial index information file. This file is needed within a GIS environment (software)
- Attribute file (*.dbf): This contains features attributes with one record per feature. The one to one relationship between geometry and attribute is based on record number. It is a Dbase IV format file which can be read by most software packages.
- Projection file (*.prj): detailed description of the geographic reference system and should be included in each spatial dataset delivered to the Commission.
- Metadata .xml – file (*.shp.xml) this file contains the metadata of the dataset. (read chapter 2.5 of this document or chapter 9 of the "Guide to geographical data and maps".)

All these 5 files must be zipped (compressed) into 1 file before transfer to the Commission.

Warning: The shapefile format proved to be limitative for the transfer of NON ASCII characters (for example Cyrillic, Greek but also an umlaut or accent grave).

The .dbf component (shapefile Dbase IV format) depends for its character set representation on the code page of the PC where it is made. Therefore the topographic **names stored in the shapefile might be corrupted upon transfer to the Commission. In order to avoid the problem Commission asks ASCII representation of the names in addition to original language names. As for solving this problem the Commission recently proposed to do this with 3 columns regarding names:**
- ❑ **Name in original language**
- ❑ **Indication of the language**
- ❑ **Name in ASCII characters**

2.3.2. Coding

Concise coding will ease up electronic data transfer in the future and allow linkage to additional datasets that use the same coding mechanism. GIS feature coding is the assignment of unique identification codes to each table or spatial feature that will be referenced by GIS. This assignment needs to be managed to ensure uniqueness at national and international level. Standard code formats will ease electronic data transfer and enhance the possibility of central querying against distributed storage.

Unique European codes should be generated by placing the ISO 2 character national code for each Member State in front of up to 22 characters unique identifier codes generated within Member States.

A general code which will appear in all geographic and tabular data for NiD is the MS CountryCode:
For the Member States identifier, Unique European codes are provided by following format

MS #1#2….#22 where:
MS = 2 character Member State identifier, in accordance with ISO 3166-1-Alpha-2 country codes.

Coding of point information
The NiD Directive urges the MS to use the same coding system (NationalStationCode) for the NID monitoring stations as being used for other Water Framework Directive Articles 3, 5 and in particular 8 (information on monitoring) to be in line with further reporting within WISE. If in previous reporting a specific NiD-coding system has been used, it is requested to indicate also these codes in the tables (element NationalCodeND)

Coding of polygon information
For the polygon information on the designated Vulnerable Zones or Potential Vulnerable Zones (a database which is hosted by JRC) no agreements have been made so far for a coding system for this reporting exercise under NiD of 2008.

2.3.3. Geometry Types/Topological rules

The spatial datasets delivered to the Commission concerning the Nitrates Directive should be represented as following regarding the geometry types:

- ✓ **Point features: Monitoring stations for groundwater- and surface water in the ETRS 89 reference system. Coordinates should be based on ISO 6709:1983 (Standard representation of longitude, latitude for geographic point locations). These coordinates (Longitude (X) and latitude (Y) can be filled in as tabular information in the template which is available in the DD.**

- ✓ **Polygon features: Designated Nitrate Vulnerable Zones GIS boundaries, Potential Vulnerable Zones GIS boundaries (and Risk Areas for MS with Whole Territory Approach – Optional), in the ETRS 89 reference system delivered as Shapefile.**

> *Topological rules for polygon information on* NVZ or Potential NVZ areas:
> → Must not overlap

2.3.4. Data Dictionary

According to the WFD CIS Guidance Document[3] the aim of a Data Dictionary is to provide a common understanding of the file / table structure that should be used for the report of both tabular data and geographic datasets to the Commission.

NiD: For all geographical data which has to be reported for NiD, data definitions and templates are available in the Data Dictionary at Reportnet. The templates (Excel or XML schemas) and the specifications will guide in formatting and collating the data delivery. The format is compatible with the tables in the NiD guidance document on reporting agreed in February 2008.
http://dd.eionet.europa.eu/dataset.jsp?mode=view&ds_id=2592

!! It is strongly advised to use the Excel or XML templates, provided in the DD, for filling with data and uploading, else the automatic QA procedures will not be carried out after uploading the digital data on CDR and the data providers will not receive an immediate feedback on data delivery. To help you with filling in the

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[3] WFD CIS *Guidance document no 9* Implementing the Geographical Information: System Elements (GIS) of the Water Framework Directive is available from CIRCA site
http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos9sgisswgs31 p/_EN_1.0_&a=d

data and to see the exact formats which are required use the "technical specification for the NiD dataset" which also can be found in the DD[4].

Point information
The geographical information for the monitoring stations (point features) can be submitted by filling in the Longitude (X) and latitude (Y) international geographical co-ordinates (in ETRS89 reference system) in decimal degrees format in the tables **NID_GW_Stat** and **NID_SW_Stat**.

Fill in the data, row by row and according to the column headings.
Do not change the structure by merging rows or columns, or something similar and do not delete the text 'DO_NOT_DELETE_THIS_SHEET'-sheet.

Polygon features (area information)
For the GIS boundaries of the Designated Nitrate Vulnerable Zones, Potential Vulnerable Zones GIS boundaries (and Risk Areas for MS with Whole Territory Approach – Optional), **shapefiles** have to be delivered in the ETRS 89 reference system.

Attribute information for shapefiles
The recommended attributes for each NiD geographic shapefile can be found in the Dataset Definition and in the template in the Data Dictionary. The attributes are the same as described in the annex of the reporting guidelines (*Development guide for 'Member States' reports_Annex_final2008, chapter* 6.2, Tables 6.2.1 and 6.2.2.) For each attribute a column name, column definition, the methodology and the data specifications (datatype, length, data restrictions) are provided.

In the dataset definition and template of the NiD dataset in the Data Dictionary you will find next to the tables with the attribute information for the GIS files (NVZboundaries, NVZ_Pot_GIS and ND_WTARiskAreas(Optional)) some tables with metadata elements for the GIS information. These metadata elements concern only some technical aspects of the polygon features and are especially important in case you did not use the recommended data format and coordinate reference system.

The following elements have to be filled out
Data Format: format of GIS deliverable (e.g. .shp)
Scale: approximate scale at which map data were captured
Datum :   geodetic Datum (see chapter 3.6 of the WFD CIS Guidance Document[5])
Projection: name of projected coordinate system if coordinates are provided in a format other
                than unprojected.

For the complete metadata information, see chapter 2.5.

2.4. Data quality

It is essential that data delivered to the Commission are homogeneous and of general good quality.
After completing the submission of the data an automatic quality assessment (QA) will be carried out to check and control the quality of the uploaded tabular- and geographical data. (see chapter 7 of the technical document "How to use reportnet and deliver data under the Nitrates Directive.pdf"[6]). The part of the quality check which will not be covered by the automatic QA, will be carried out by experts.

Quality control includes the following questions:
- Do values and codes in tabular data are within the range defined in guideline documents?

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[4] http://dd.eionet.europa.eu/dataset.jsp?mode=view&ds_idf=NiD – create technical specification for the dataset.
[5] WFD CIS *Guidance document n.o 9* Implementing the Geographical Information: System Elements (GIS) of the Water Framework Directive is available from CIRCA site
http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos9sgisswgs31p/_EN_1.0_&a=d
[6]How to use reportnet and deliver data under the Nitrates Directive.pdf
http://cdr.eionet.europa.eu/help/howto_reportnet_nid.pdf

- Are 'IDs' in accordance with the given standards?
- Does the geometry of the polygons, have an acceptable structure and topology, e.g. are polygons not overlapping, are polygons closed (if not information will be lost), do they overlap, do they have gaps.
- Do the geometric accuracy, coordinate reference system, projection and file format follow specifications?
- Has metadata been filled in, including aspects of accuracy, coordinate system, methodology and source?

2.5. Data documentation - Metadata for geographical data

2.5.1. Requirements on GIS and map deliverables

Metadata is the information and documentation of spatial information, which makes data understandable and shareable for users over time. Metadata should accompany any geographically related deliverable to the EEA, including tabular data and GIS data.

As we are setting a common rules for reporting within WISE (and ensuring compatibility with the requirements of INSPIRE directive on geo-referenced data) it is strongly recommended to apply the rules laid down in **ISO 19115** for creating a metadata profile.
Some of the main aspects covered in the metadata are: name of the data, description of data, coordinate reference system, source and methodology – including version of specification on which the compilation is based, responsible party, ownership, user rights, process steps and dataset accuracy.

The WISE metadata profile applies to spatial datasets, dataset series and services, and may be applicable to other resource types. It defines the minimum requirements for the functional concepts of discovery and data usage. The proposal is in line with the draft implementing rules for metadata of the INSPIRE directive. The profile is mainly based on the guidelines for metadata included within the document "Guidance Document on Implementing the GIS Elements of the Water Framework Directive" (see reference in footnote at page 10).

ISO19115 metadata with the shapefiles
For NiD reporting it is strongly recommended to submit metadata in ISO 19115 with the shapefiles on the NVZ information.
This can be done in two ways:
a) (It is highly recommended to use this first option): Submit the metadata as part of the shapefile in .xml format. This can be done by using the EEA metadata editor for ArcCatalog (ArcCatalog is a data explorer and part of ESRI GIS software packages ArcView 8/9, ArcEditor 8/9 or ArcInfo 8/9) or with another available ISO 19115 compliant editor. (see section 2.5.2 for further explanations).
b) Use the form which can be found in the annex of this document to fill in the elements for each dataset. (see section 2.5.3 and Annex to this document for further explanations)

2.5.2. Using EEA Metadata Editor for ArcCatalog

Using the ArcCatalog (the data explorer in the ESRI ArcView 8/9, ArcEditor 8/9 or ArcInfo 8/9 software packages), you can use the EEA Metadata Editor, designed specifically for EEA metadata standard for geographic information (EEA-MSGI). The editor and the stylesheets also available provide an easy way to edit and visualise metadata.

Installing editor

You can find the EEA Metadata Editor Installation zip file and the style sheets at
http://www.eionet.europa.eu/gis/geographicinformationstandards.html, links "EEA metadata editor v4 for ESRI ArcCatalog 9.x (January 2007)" and "EEA MSGI stylesheets". Follow the instructions in the installation manuals.

Using editor

When using ArcCatalog with the EEA Metadata Editor installed, you can view, browse and edit metadata according to ISO19115 and EEA-MSGI. The editor is used the same way as the editors supplied by ESRI. Please consult the ArcCatalog user manual for more information about metadata editors.

The editor works on any file format accepted by ArcCatalog, including geodatabases.

Step1: Viewing metadata

Two new metadata stylesheets (metadata views) are provided: a stylesheet for identifying a dataset called **EEA-MSGI Simple**, and a stylesheet for viewing all EEA-MSGI metadata information called **EEA-MSGI Standard (see figures 1 and 2)**. Change the view of metadata in the metadata toolbar, which appears when the metadata tab is selected.

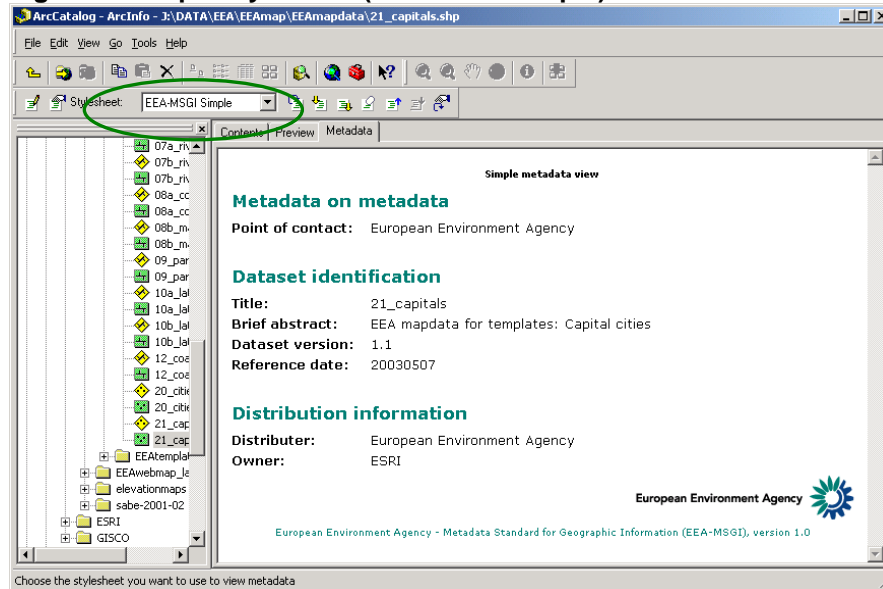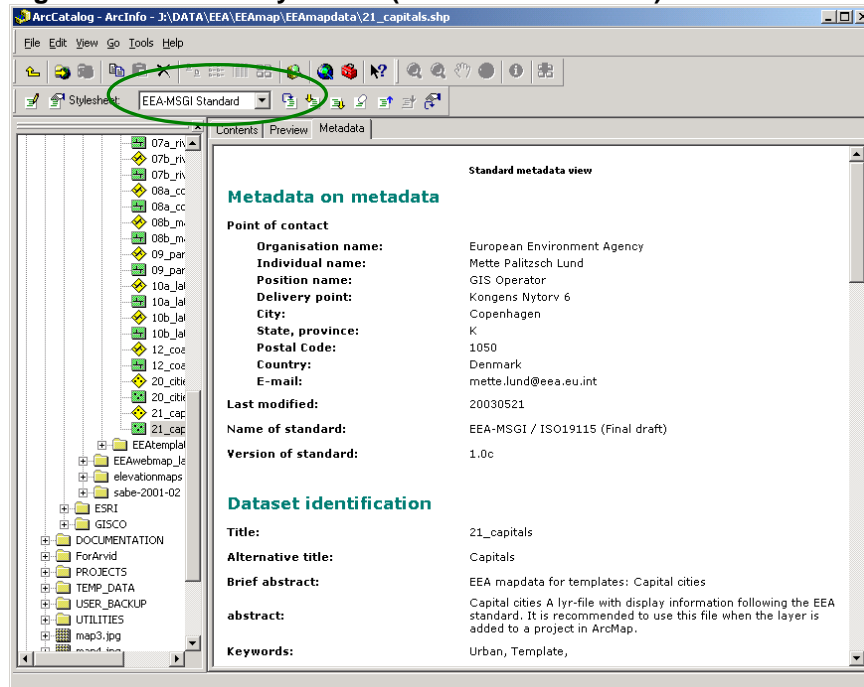**Figure 1: Simple stylesheet (EEA-MSGI Simple)**

Figure 2: Standard stylesheet (EEA-MSGI Standard)

Step 2: Editing metadata

To add or edit metadata to a dataset: select the dataset; click metadata tab; press the Metadata Edit button.

The editor splits metadata into four groups, *Metadata on Metadata*, *Data Identification*, *Distribution Information* and *Other Information*. Navigate between these groups using the tab page.

Metadata information marked with a green star (*) is mandatory.

The editor uses a database for storing often used addresses or contacts. You can edit this database if you have Access installed on your computer.

Other metadata elements such as file format and geographic reference system are automatically synchronised with the metadata.

See the EEA Metadata Editor user manual for further information (available in the downloaded material).

Figure 3: EEA metadata editor: screen of the Metadata on Metadata tab
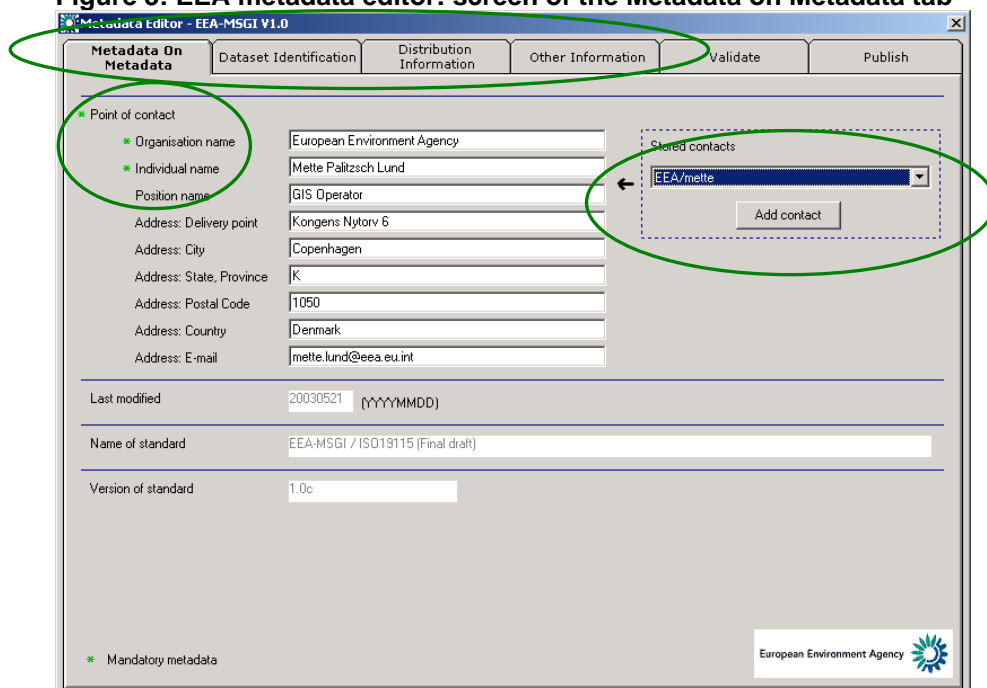
Step 3: Validating metadata

Before submitting metadata with a dataset, make sure you have provided all the metadata needed.
This is done in two steps:
  (1) Select the *Validate* tab. Press *Validate* and a validation log tells you which metadata are missing or wrongly formatted. If an error is listed in the log, fix the error and try again.
  (2) When the validation is happy ☺, you can close the editor and the metadata will automatically be stored correctly. Select the EEA-MSGI Standard stylesheet and check that you have remembered all the textual information needed to describe the dataset.

The validation tool validates other metadata elements not present in the editor, such as file format and geographic reference system metadata. These elements are synchronised automatically.

Figure 4: EEA metadata editor: Validation screen
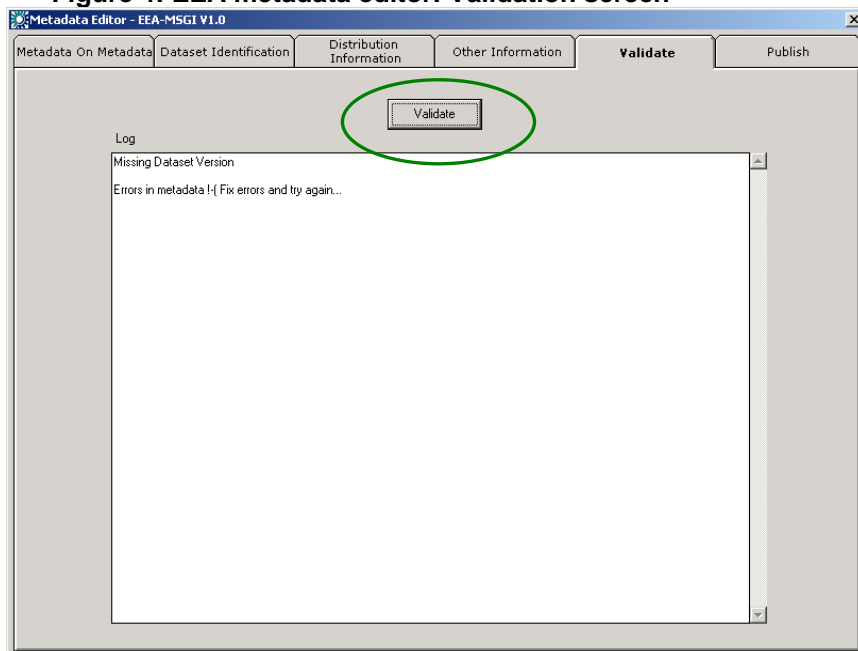
Step 4: Submitting metadata

To submit metadata with a dataset, you have to know where the metadata is stored.
When the metadata editor has been used to describe a dataset, e.g. shapefiles, the metadata are stored in an XML file (see figure 5). When submitting datasets remember to include the XML file as well as the projection file (*.prj) in the delivery zip file.

Figure 5: Metadata stored in the .shp.xml file
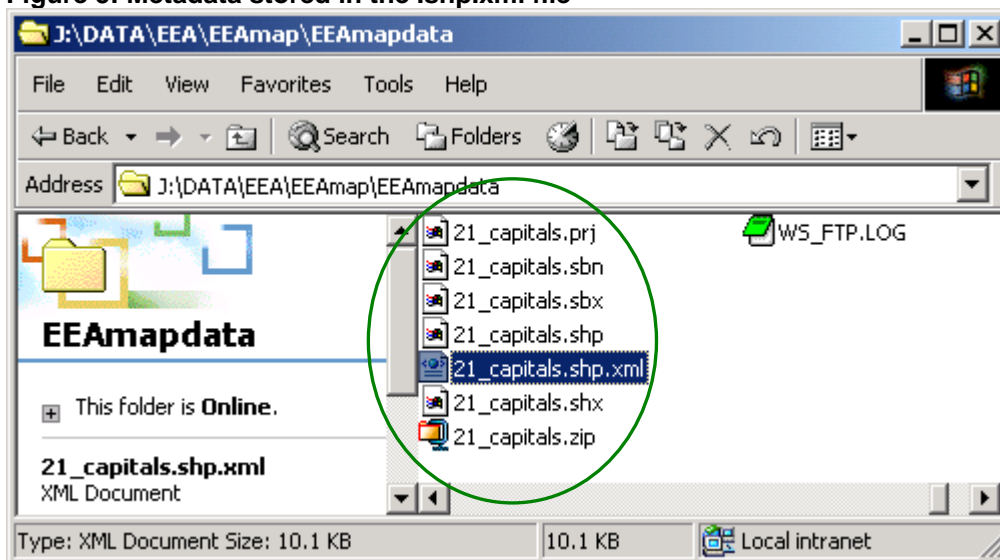
2.5.3. Using EEA spatial data metadata information form

When submitting geodata not using the EEA Metadata Editor, the EEA spatial data metadata information form should be used. It is a Word document and the latest version can be found at http://www.eionet.eu.int/gis (it is also available in the Annex to this document). You need to fill in the metadata from Word and validate entries manually.

Step 1: Download or copy the metadata form

Download the metadata form from http://www.eionet.eu.int/gis or copy the form in the annex to a new Word document.

Step 2: Fill in the metadata elements

Fill in all metadata elements which are described in the form..

Step 3: Submit the metadata form

Complete the form, add the document to your dataset delivery file package (shapefile), and compress the package as a zip file before submitting via Reportnet.

European Environment Agency

EEA metadata form for spatial datasets (GIS data)
&
EEA Metadata Standard for Geographic Information (EEA-MSGI v.1.1)

The use of the form

The EEA metadata standard for geodata

This form should be used by EEA, ETCs, national organisations being partners in EIONET and external contractors delivering GIS-data.

GIS-data or original geodata in this context can be all data sets containing geographical coordinates – firstly commonly know GIS data formats e.g. shapefile, Arc Coverage, Geodatabase, SDE database, geotiff file, imagine-file and vpf, secondly other files which can contain location information (points) such as xls, dBASE file, access database, text files.
The form should only be used for datasets and not for maps or graphs.

The table show a tree structure which can be used for viewing and registering metadata of spatial data sets, supplied according to the European Environment Agency – Metadata Standard for Geographic Information (EEA-MSGI). EEA-MSGI is a profile of ISO19115 (First edition) Metadata standard.
The tree has a max depth of 3 levels, which makes it easy for a user to navigate the tree.

- The field names have a description that is defined by the EEA and partly derived from the ISO descriptions.
- The fields, which contain a metadata item, are mapped with the corresponding ISO number.
- The "Max" column defines how many occurrences EEA allows in a view of one datasets metadata. N equals any number of occurrences. There may be more occurrences delivered by other metadata writers, but the EEA will only support these numbers of occurrences.

EEA reference:
Thor Jessen (thor.jessen@eea.eu.int)

2.6. Dataset metadata form mapped to ISO19115

Please fill in one metadata form for each dataset. Only lines with ISO numbers need to be filled. Predefined code lists are to be used for a few of the metadata elements.

EEA Field name			ISO Number	EEA Description	Please fill in	Max
Level 1	Level 2	Level 3				
Metadata on metadata				Defines the metadata on the dataset		1
	Point of contact			Responsible organisation and individual for the metadata		1
		Organisation name	8.376	Responsible organisation name		1
		Individual name	8.375	Responsible individual name		1
		Position name	8.377	The responsible individual role or position in the organisation		1
		Role	8.379	Function performed by the responsible organisation		1
		Address: Delivery point	8.378.381	Address line for the location		1
		Address: City	8.378.382	City of the location		1
		Address: State, Province	8.378.383	State, province of the location		1
		Address: Postal code	8.378.384	Postal code of the location		1
		Address: Country	8.378.385	Country of the location		1
		Address: E-mail	8.378.386	The electronic mail address of the responsible organisation or individual		1
	Last modified		9	Date of the last modification of the metadata		1
	Name of standard		10	Name of metadata standard		1
	Version of standard		11	Version of the metadata standard		1
Dataset identi-fication				Basic information required to identify the dataset		1
	Title		15.24.360	Title of the dataset		1
	Alternative title		15.24.361	Alternative titles of the dataset		N
	Brief Abstract		15.EEABrie fAbstract	Brief abstract explaining in short the content of the dataset		1
	Abstract		15.25	An abstract explaining the content of the dataset		1
	Keywords		15.33.53	Keywords helping to classify the dataset		N

	Topic category		15.41	A predefined ISO category, see **code list 2** underneath		1
	Dataset version		15.24.363	Version of the dataset		1
	Reference date		15.24.362.394	Date of last modification to the dataset		1
Reference system				Definition of the reference system used for the dataset		1
	Name		13.196.207	Name of reference system		1
	Datum			Identity of the datum		1
		Name	13.192.207	Name of datum		1
	Ellipsoid			Identity of the ellipsoid		1
		Name	13.191.207	Name of ellipsoid		1
		Semi-major axis	13.193.202	Radius of the equatorial axis of the ellipsoid		1
		Axis units	13.193.203	Units of the semi-major axis		1
		Flattening ratio	13.193.204	Ratio of the difference between the equatorial and polar radii of the ellipsoid to the equatorial radius when the numerator is set to 1		1
	Projection			Identity of the projection		1
		Name	13.190.207	Name of projection		1
		Zone	13.194.216	Unique identifier for grid zone		1
		Standard parallel	13.194.217	Line of constant latitude at which the surface of Earth and the plane or developable surface intersect		1
		Longitude Of Central Meridian	13.194.218	Line of longitude at the centre of a map projection generally used as the basis for constructing the projection		1
		Latitude of projection origin	13.194.219	Latitude chosen as the origin of rectangular coordinates for a map projection		1
		False easting	13.194.220	Value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in planar coordinate units		1
		False northing	13.194.221	Value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in planar coordinate units		1
		False easting northing units	13.194.222	Units of false northing and false easting		1

		Scale factor at equator	13.194.223	Ratio between physical distance and corresponding map distance, along the equator	1
		Longitude of projection centre	13.194.224	Longitude of the point of projection for azimuthal projections	1
		Latitude of projection centre	13.194.225	Latitude of the point of projection for azimuthal projections	1
Distri-bution information				Information about the distributors of the dataset	1
	Owner			Information about the owner organisation	N
		Organisation name	15.29.376	Name of the owner organisation	1
		Individual name	15.29.375	Name contact person in the owner organisation	1
		Position name	15.29.377	Position of the contact person in the owner organisation	1
		Role	15.29.379	Always "Owner" role	1
		Address: Delivery point	15.29.378.389.381	Address line for the location	1
		Address: City	15.29.378.389.382	City of the location	1
		Address: State, Province	15.29.378.389.383	State, province of the location	1
		Address: Postal code	15.29.378.389.384	Postal code of the location	1
		Address: Country	15.29.378.389.385	Country of the location	1
		Address: E-mail	15.29.378.389.386	The electronic mail address of the owner organisation or individual	1
	Originator			Information about intellectual creator (person and/or organisation with intellectual rights) of the dataset	N
		Organisation name	15.29.376	Name of the creating organisation	1
		Individual name	15.29.375	Name contact person in the creating organisation	1
		Position name	15.29.377	Position of the contact person in the creating organisation	1
		Role	15.29.379	Always "Originator" role	1
		Address: Delivery point	15.29.378.389.381	Address line for the location	1
		Address: City	15.29.378.389.382	City of the location	1
		Address: State, Province	15.29.378.389.383	State, province of the location	1

		Address: Postal code	15.29.378.3 89.384	Postal code of the location		1
		Address: Country	15.29.378.3 89.385	Country of the location		1
		Address: E-mail	15.29.378.3 89.386	The electronic mail address of the originator/creator organisation or individual		1
	Processor			The technical producer or processor of the data		N
		Organisation name	15.29.376	Name of the processor organisation		1
		Individual name	15.29.375	Name contact person in the processor organisation		1
		Position name	15.29.377	Position of the contact person in the processor organisation		1
		Role	15.29.379	Always "Processor" role		1
		Address: Delivery point	15.29.378.3 89.381	Address line for the location		1
		Address: City	15.29.378.3 89.382	City of the location		1
		Address: State, Province	15.29.378.3 89.383	State, province of the location		1
		Address: Postal code	15.29.378.3 89.384	Postal code of the location		1
		Address: Country	15.29.378.3 85	Country of the location		1
		Address: E-mail	15.29.378.3 89.386	The electronic mail address of the processor organisation or individual		1
	Distributor			The organisation distributing the data		N
		Organisation name	15.29.376	Name of the distributor organisation		1
		Individual name	15.29.375	Name contact person in the distribution organisation		1
		Position name	15.29.377	Position of the contact person in the distributor organisation		1
		Role	15.29.379	Always "Distributor" role		1
		Address: Delivery point	15.29.378.3 89.382	Address line for the location		1
		Address: City	15.29.378.3 89.383	City of the location		1
		Address: State, Province	15.29.378.3 89.384	State, province of the location		1

		Address: Postal code	15.29.378.3 85	Postal code of the location	1
		Address: Country	15.29.378.3 89.386	Country of the location	1
		Address: E-mail	15.29.378.3 89.382	The electronic mail address of the distributor organisation or individual	1
	Access rights			Defines access rights for the dataset	N
		Type of constraint	20.70	The type of access right applied to assure the protection of privacy or intellectual property, and any special restriction or limitations on obtaining the resource. See **code list 1**.	1
		Restriction	20.72	Description of the restriction of the access right.	1
Other dataset information				Other aspects explaining the dataset	1
	Language		15.39	Language used within the dataset	1
	Format name		15.32.285	Name of the used exchange format for the dataset	1
	Format version		15.32.286	Version of the used exchange format for the dataset	1
	Methodology description		18.81.83	General explanation of the data producer's knowledge about how the geometry was constructed/derived and how the attribute information being part of the dataset was generated.	1
	Changes		18.EEACha nges	Description of the changes since last version of the dataset	1
	Process steps			Information about the event in the creation process of the dataset	N
		Description	18.81.84.87	Description of the process step including related parameters or tolerance	1
		Source data reference title	18.81.84.91 .360	Name of the resource used in process step	N
		Source data reference date	18.81.84.91 .362	Date of the resource used in process step	N
	Scale		15.38.60.57	Gives a rough value of accuracy of the dataset; e.g. 2500000 means dataset has an accuracy suitable for use at scale 1:2.5 million at best	1

	Geographic accuracy		15.38.61	Geographic accuracy of location, ground distance as an value in meters	1
	Geographic box			Geographic position bounding box of the dataset	1
		West bound longitude	15.42.336.344	Western-most coordinate of the limit of the dataset extent, expressed in longitude in decimal degrees (positive east)	1
		East bound longitude	15.42.336.345	Eastern-most coordinate of the limit of the dataset extent, expressed in longitude in decimal degrees (positive east)	1
		South bound latitude	15.42.336.346	Southern-most coordinate of the limit of the dataset extent, expressed in latitude in decimal degrees (positive north)	1
		North bound latitude	15.42.336.347	Northern-most coordinate of the limit of the dataset extent, expressed in latitude in decimal degrees (positive north)	1

Code list 1: MD_RestrictionCode

Name	Domain code	Definition
MD_RestrictionCode	RestrictCd	limitation(s) placed upon the access or use of the data
copyright	001	exclusive right to the publication, production, or publication.
licence	005	formal regulation of user rights
intellectualPropertyRights	006	rights to financial benefits from and control of distribution of a non-tangible property that is the result of creativity
restricted	007	withheld from general circulation or disclosure
otherRestrictions	008	limitation not listed

Code list 2: MD_TopicCategoryCode

Name	Domain code	Definition
MD_TopicCategoryCode	TopicCatCd	high-level geographic data thematic classification to assist in the grouping and search of available geographic data sets. Listed examples are not exhaustive. NOTE It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.
farming	001	rearing of animals and/or cultivation of plants. Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock
biota	002	flora and/or fauna in natural environment. Examples: wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat
boundaries	003	legal land descriptions. Examples: political and administrative boundaries
climatologyMeteorologyAtmosphere	004	processes and phenomena of the atmosphere. Examples: cloud cover, weather, climate, atmospheric conditions, climate change, precipitation
economy	005	economic activities, conditions and employment. Examples: production, labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas
elevation	006	height above or below sea level. Examples: altitude, bathymetry, digital elevation models, slope, derived products, monitoring environmental risk, nature reserves, landscape
environment	007	environmental resources, protection and conservation. Examples: environmental pollution, waste storage and treatment, environmental impact assessment
geoscientificInformation	008	information pertaining to earth sciences. Examples: geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, erosion
health	009	health, health services, human ecology, and safety. Examples: disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services
imageryBaseMapsEarthCover	010	base maps. Examples: land cover, topographic maps, imagery, unclassified images, annotations
intelligenceMilitary	011	military bases, structures, activities. Examples: barracks, training grounds, military transportation, information collection
inlandWaters	012	inland water features, drainage systems and their characteristics. Examples: rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods, water quality, hydrographic charts
location	013	positional information and services. Examples: addresses, geodetic networks, control points, postal zones and services, place names
oceans	014	features and characteristics of salt water bodies (excluding inland waters). Examples: tides, tidal waves, coastal information, reefs
planningCadastre	015	information used for appropriate actions for future use of the land. Examples: land use maps, zoning maps, cadastral surveys, land ownership
society	016	characteristics of society and cultures. Examples: settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, recreational areas and activities, social impact assessments, crime and justice, census information
structure	017	man-made construction. Examples: buildings, museums, churches, factories, housing, monuments, shops, towers
transportation	018	means and aids for conveying persons and/or goods. Examples: roads, airports/airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways
utilitiesCommunication	019	energy, water and waste systems and communications infrastructure and services. Examples: hydroelectricity, geothermal, solar and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, communication networks