

Regional training workshop on geographical information system for energy planning

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Data and metadata collection guidelines

Introduction to metadata for geographic data

Dakar, 12 August 2014

Andrea de Bono
Université de Genève
UNEP/GRID-Geneva



Introduction to metadata for geographic data

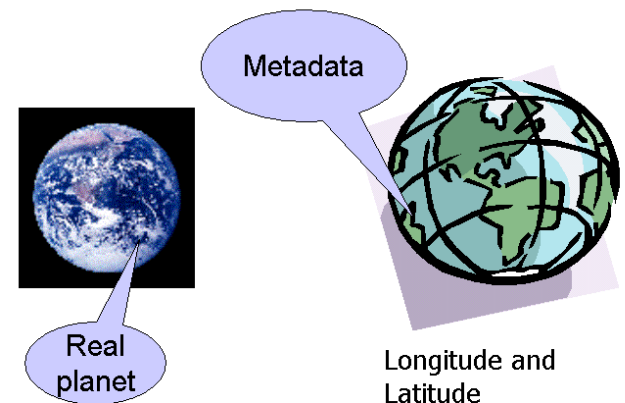




Metadata is a data....
...which describe another data.

It provides information about a certain item's content. For example, an image may include metadata that describes how large the picture is, the color depth, the image resolution, when the image was created, and other data.

Geospatial metadata (geographic metadata) is a type of metadata that is applicable to objects that have an explicit or implicit geographic extent



Metadata is a vital tool for management of spatial data and plays a key role in any spatial data infrastructure (SDI) initiative

The glue in a Spatial Data Infrastructure



Why metadata ?????

1) Access

2) Interoperability

3) Management

4) Rights

5) Preservation

1) Access

Thematic: what? (water quality)

Spatial: where? (Africa)

Temporal: when? (2001)

The screenshot shows the FAO GeoNetwork search interface. Three large grey arrows point to specific sections: 'WHAT?' (labeled 'Thematic'), 'WHERE?' (labeled 'Spatial'), and 'WHEN?' (labeled 'Temporal').

- WHAT? (Thematic):** Includes input fields for 'Either of the words', 'Title', 'Abstract', and 'Keywords'. It also has checkboxes for 'Map type' (Digital, Interactive, Hard copy, Downloadable) and 'Search accuracy' (Precise, Imprecise).
- WHERE? (Spatial):** Features a map of Africa with a red overlay. It includes coordinate input fields: 'lat (max) 90', 'long (min) -180', 'lat (min) -88.2', and 'long (max) 178.2'. There are also dropdown menus for 'Type' (set to 'encloses') and 'Region' (set to 'World').
- WHEN? (Temporal):** Includes radio buttons for 'Anytime' and 'From'/'To' date selection. It also has dropdowns for 'Restrict to' (Catalog: 'FAO GeoNetwork', Group: '- Any -', Category: 'Forestry') and 'Options' (Sort by: 'Relevance', Hits per page: '10', Output: 'Full').

At the bottom right, there is a 'Search' button and links for 'Reset' and 'Hide advanced options'.

Access.

With metadata, it is possible to do search on different criteria such as geographic location, date last updated, etc..

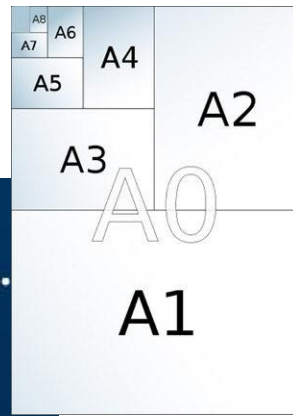
The screenshot shows a metadata page for 'AFRICOVER SURFACE WATER BODY FEATURES'. It includes the following information:

- Abstract:** SWB and related hydrological features subset of the AfriCover country separates. The AFRICVR shapefile data layer is comprised of 11296 derivative vector land cover - africover features deri ...
- Keywords:** land cover, africover, water bodies, environment, base map, surf. water bodies, African Water Resource Database, AWRD, Eastern Africa
- Buttons:** 'Metadata' and 'Download' buttons are visible at the bottom.
- Map:** A small map of Africa is shown on the right side of the page.

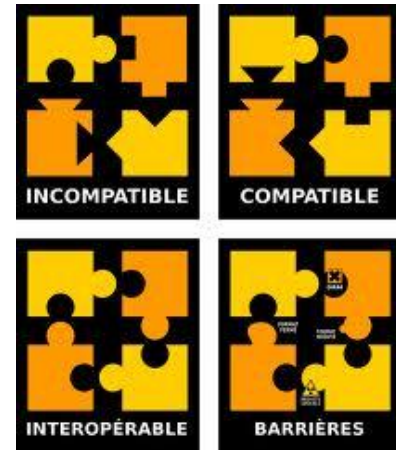
2) Interoperability (i)

Standards, Standards, Standards, Standards, ...

Standards are everywhere: from the size and weight of the paper we place in our printers to the way we send emails. ...



Interoperability: “the ability of two or more systems or components to exchange information and to use the information that has been exchanged”



2) Interoperability (ii)

Geographic metadata standards:

- Dublin Core
- FGDC
- ISO 19115/19139



SRTM elevation data 1km - hydrological model

Dublin Core

Identification Information

File Identifier: {0D1F08C5-3A49-4F7A-8BFF-7713C08F1199}

Title: SRTM elevation data 1km - hydrological model

Abstract: SRTM elevation data 1km, derived from.....

Service URL: www.myserver

Resource Type: OGC Web Map Service 1.3.0

Originator: Andrea de Bono

Publication Date: 2011-12-12

Metadata Language: English

Data Theme

Theme Topics: Elevation and Derived Products, Inland Water Resources


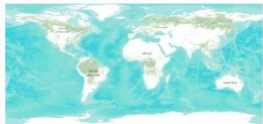
Spatial Domain

West Bounding Longitude: -180

East Bounding Longitude: 180

North Bounding Latitude: 90

South Bounding Latitude: -90



BOUNDARIES OF ERITREA - AFRICOVER

Abstract: The national and administrative boundaries have been provided by the NPPI. Coastlines have been adapted to match the landcover dataset.

Keywords: orientation, boundaries, administrative units, management, AFRICOVER

ISO 19115

Metadata Download

Identification info

Title: Boundaries of Eritrea - AFRICOVER

Date: 2003-04-04

Date Type: Publication: Date identifies when the resource was issued

Edition: First

Precondition Form: Digital map: Has represented in raster or vector form

Abstract: The national and administrative boundaries have been provided by the NPPI. Coastlines have been adapted to match the landcover dataset.

Purpose: The boundaries have been included in the Multipurpose Africover Database for the Environmental Resources (MADE) for orientation purposes only and should not be seen as comprehensive.

Status: Completed: Production of the data has been completed

Point of contact

Individual Name: Antonio Di Gregorio

Organization Name: FAO-UN

Position Name: Senior Remote Sensing and Land Cover Mapping Expert

Role: Originator: Party who created the resource

Individual Name: Yemane Teklehaimanot

Organization Name: National Food Information System - Ministry of Agriculture

Position Name: NPPI - Eritrea

Role: Owner: Party that owns the resource

Individual Name: John Latham

Organization Name: FAO-UN

Position Name: Senior Environment Officer

Role: Distributor: Party who distributes the resource

Declarative Keywords: As needed: Data is updated as deemed necessary

Orientation: orientation, boundaries, administrative units, management, AFRICOVER, Eritrea (area).

Declarative Keywords: copyright, artist, distributor

Other Constraints: The data remains full property of the owners. It can be accessed, reproduced and distributed given that the owner information is explicitly acknowledged and displayed in the copyright information (i.e. Produced by FAO - Africover). The Authors do not assume any responsibility for improper use of the data.

Vector: Vector data is used to represent geographic data

Equivalent scale

Denominator: 100000

Language: English

Character Set: UTF8: 8-bit variable size UCS Transfer Format, based on ISO/IEC 10646

Topic Category Code: Boundaries

Geographic bounding box

North bound latitude: 21.9949

West bound longitude: 36.4433

East bound longitude: 43.1214

South bound latitude: 12.3639

Supplemental information

The Boundaries dataset is part of the Multipurpose Africover Database for the Environmental Resources (MADE) which was produced by the Africover Project to establish a digital georeferenced database on land cover at a 1:200,000 scale (1:100,000 for small countries and specific areas), and a geographic reference for the whole of Africa including:

- geographical topographical reference
- toponymy
- roads
- hydrography

The Africover project was prepared in response to a number of national requests for assistance to the development of reliable and georeferenced information on natural resources at sub-national, national and regional levels. The Eastern Africa module is the first operational component of the Africover Project. It was formulated to meet several African countries' request for assistance in the set-up of reliable and georeferenced data-bases on natural resources. It is part of FAO assistance to the five East African countries: Africover Eastern Africa focuses the creation of a MADE for each of the 22 countries who joined the Project: Burundi, Democratic Republic of Congo, Eritrea, Kenya, Rwanda, Somalia, Sudan, Tanzania and Uganda. The Project has been operational in the period 1995-2002.

FAO AFRICOVER Project Code: OCV/RAF/207/ATA

Distribution info

Download Summary

Show File Download Chooser

Transfer options

Metadata



Metadata are based on standards, used to have the same level of information and prevent loss of knowledge about the data

3) Management

Action	Title	Owner	Status	Method	Date
	Soils	gptadmin	Approved	Registration	2012-01-27
	SRTM elevation data 1km - hydrological model	gptadmin	Approved	Editor	2011-11-10
	SRTM elevation data 90 m - hydrological model	gptadmin	Approved	Registration	2011-11-10
	SRTM elevation data 150 m - hydrological model	gptadmin	Approved	Registration	2011-11-10
	Modis land cover 2008 - 1km reclassified	gptadmin	Approved	Upload	2011-11-10
	Administrative boundaries at Regional level (circa NUTS 2)	gptadmin	Approved	Upload	2011-11-10
	Administrative boundaries at National level (1:100,000)	gptadmin	Approved	Upload	2011-11-10
	Administrative boundaries at National level (1:1.000,000)	gptadmin	Approved	Upload	2011-11-10
	SRTM elevation data 1km - mapping purpose	gptadmin	Approved	Upload	2011-11-10
	Catchment of the Black Sea	gptadmin	Approved	Upload	2011-11-10
	Sub-Catchments of the Black Sea	gptadmin	Approved	Upload	2011-11-10

variable_en	file_name	md_languag	md_charac	metadata_dati	meta_name	meta_versic	metadati
Population - Total - BIDON	pop_total_bidon			01.01.1900	ISO 19115:2003/19	1.0	
Terrestrial Area for WDPA - BIDON	terr_a_wdpa_bidon			01.01.1900	ISO 19115:2003/19	1.0	
Urban Population - Average Annual Growth Rate - BIDON	pop_urban_growth_bidon			01.01.1900	ISO 19115:2003/19	1.0	
DEM 5 minutes - All	etopo5_all.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	la_america_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	africa_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	w_asia_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	europa_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	asia_pac_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Continent	n_america_etopo5.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
DEM 5 minutes - Ocean	etopo5_oc.tif	24	4	10.02.2003	ISO 19115:2003/19	1.0	2 MNT 5 Minu
Dams	dams_pt	24	4	23.01.2003	ISO 19115:2003/19	1.0	2 Barrages
Forests - Current	cur_forests.tif	24	4	08.04.2002	ISO 19115:2003/19	1.0	1 Forêts Actu
Forests - Original	orig_forests.tif	24	4	09.04.2002	ISO 19115:2003/19	1.0	1 Forêts Prim
Mangroves	mangrove_po	24	4	09.04.2002	ISO 19115:2003/19	1.0	1 Mangroves
Watershed Boundaries Level 1 - HYDRO1k	n_america_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 1 - HYDRO1k	asia_pac_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 1 - HYDRO1k	w_asia_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 1 - HYDRO1k	africa_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 1 - HYDRO1k	la_america_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 1 - HYDRO1k	europa_basins1.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	w_asia_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	n_america_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	europa_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	asia_pac_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	la_america_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 2 - HYDRO1k	africa_basins2.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	asia_pac_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	w_asia_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	n_america_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	europa_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	africa_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Watershed Boundaries Level 3 - HYDRO1k	la_america_basins3.tif	24	4	16.10.2002	ISO 19115:2003/19	1.0	1 Bassins de
Administrative Boundaries - First Level (ESRI)	admin98_ll	24	4	09.04.2002	ISO 19115:2003/19	1.0	1 Frontières
Drylands - Percent of Total Area	dry_percent	24	4	09.07.2003	ISO 19115:2003/19	1.0	2 Terres aride
Drylands - Total Area	dry_area	24	4	09.07.2003	ISO 19115:2003/19	1.0	2 Terres aride
Global 1km Land Cover - IGBP Legend	igbp.tif	24	4	25.11.2002	ISO 19115:2003/19	1.0	2 Couverture
Global 1km Land Cover - IGBP Legend	la_america_igbp.tif	24	4	27.11.2002	ISO 19115:2003/19	1.0	2 Couverture
Global 1km Land Cover - IGBP Legend	asia_pac_igbp.tif	24	4	27.11.2002	ISO 19115:2003/19	1.0	2 Couverture
Global 1km Land Cover - IGBP Legend	africa_igbp.tif	24	4	27.11.2002	ISO 19115:2003/19	1.0	2 Couverture

Manages the organization of data storage.

4) Rights (i)

Manages and protects the rights

metadata catalog **don't gives directly** the access to the spatial data:...

They inform the user about the existence of a dataset.

They manage the access to the resource according to the rights of different users:

- Visualization and export of metadata
- Visualization of the data (through web-mapping services eg WMS)
- Access to the data (downloading)

Finally they inform the user about the right of use



4) Rights (ii)

License

A license is a contract under which the owner of copyright defines its counterparty the conditions under which these data can be:

- **used,**
- **disseminated,**
- **modified**

Examples: Customized license (FAO Africover)

Use Constraints	Copyright: Exclusive right to the publication, production, or sale of the rights to a literary, dramatic, musical, or artistic work, or to the use of a commercial print or label, granted by law for a specified period of time to an author, composer, artist, distributor
Other Constraints	The data remains full property of the owners. It can be accessed, reproduced and distributed given that the owner information is explicitly acknowledged and displayed in the copyright information (I.E. Produced by FAO - Africover). The Authors do not assume any responsibilities for improper use of the data.

Examples: Standardized license: Creative Common (CC)



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CC BY-NC-ND**

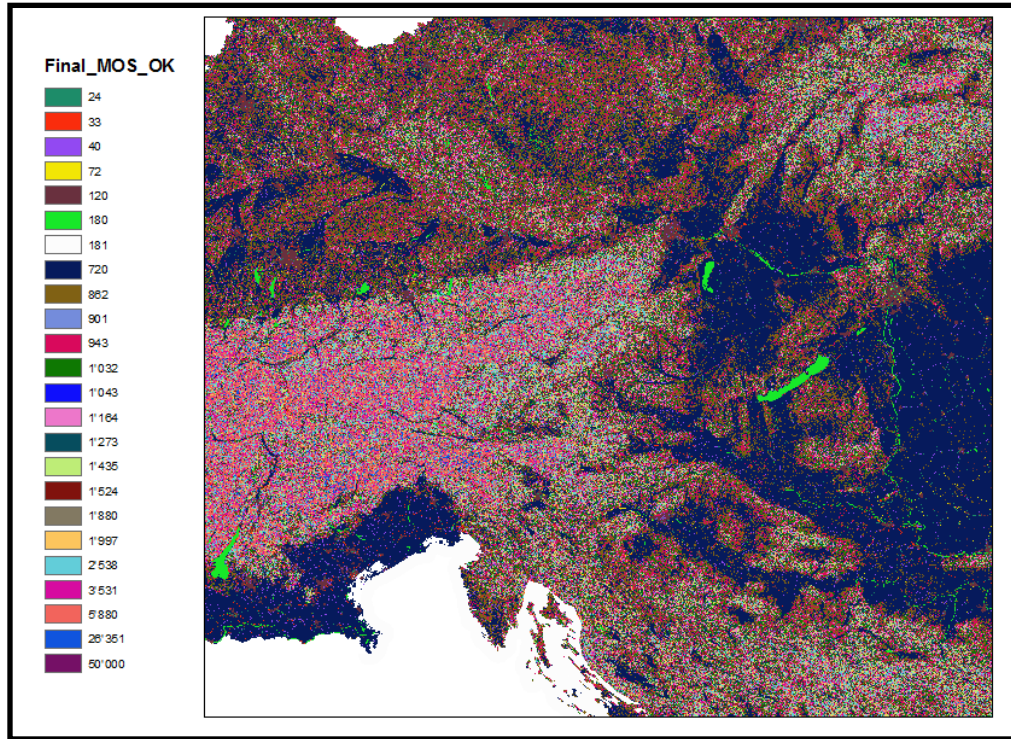
This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially.

**Most
open**

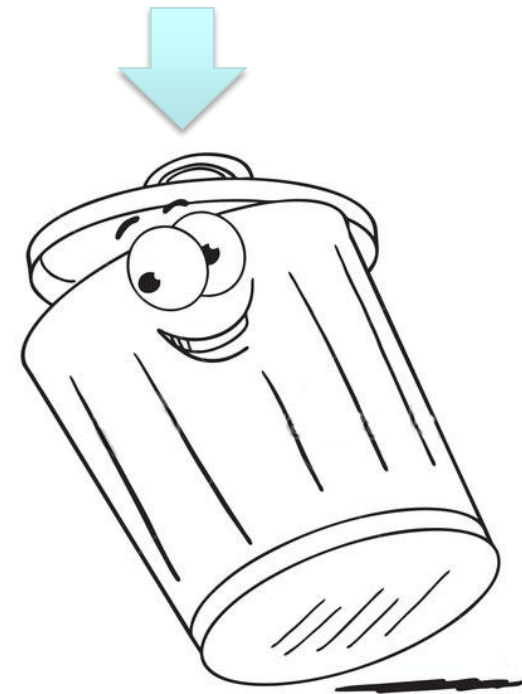
**Least
open**

5) Preservation

Any idea ????



Good for trash!!

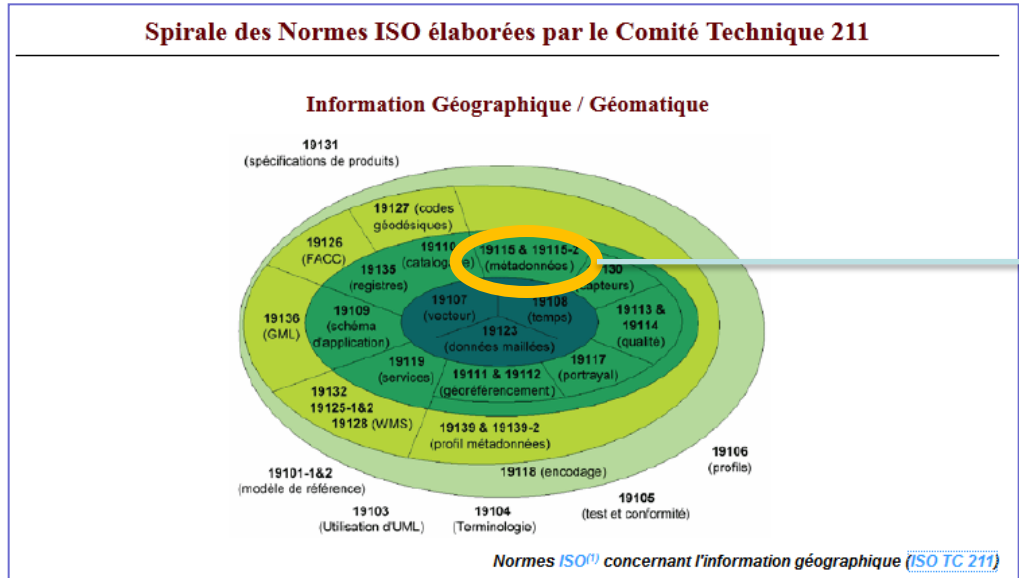


ISO has developed over 19 000 International Standards on a variety of subjects and more than 1000 new ISO standards are published every year

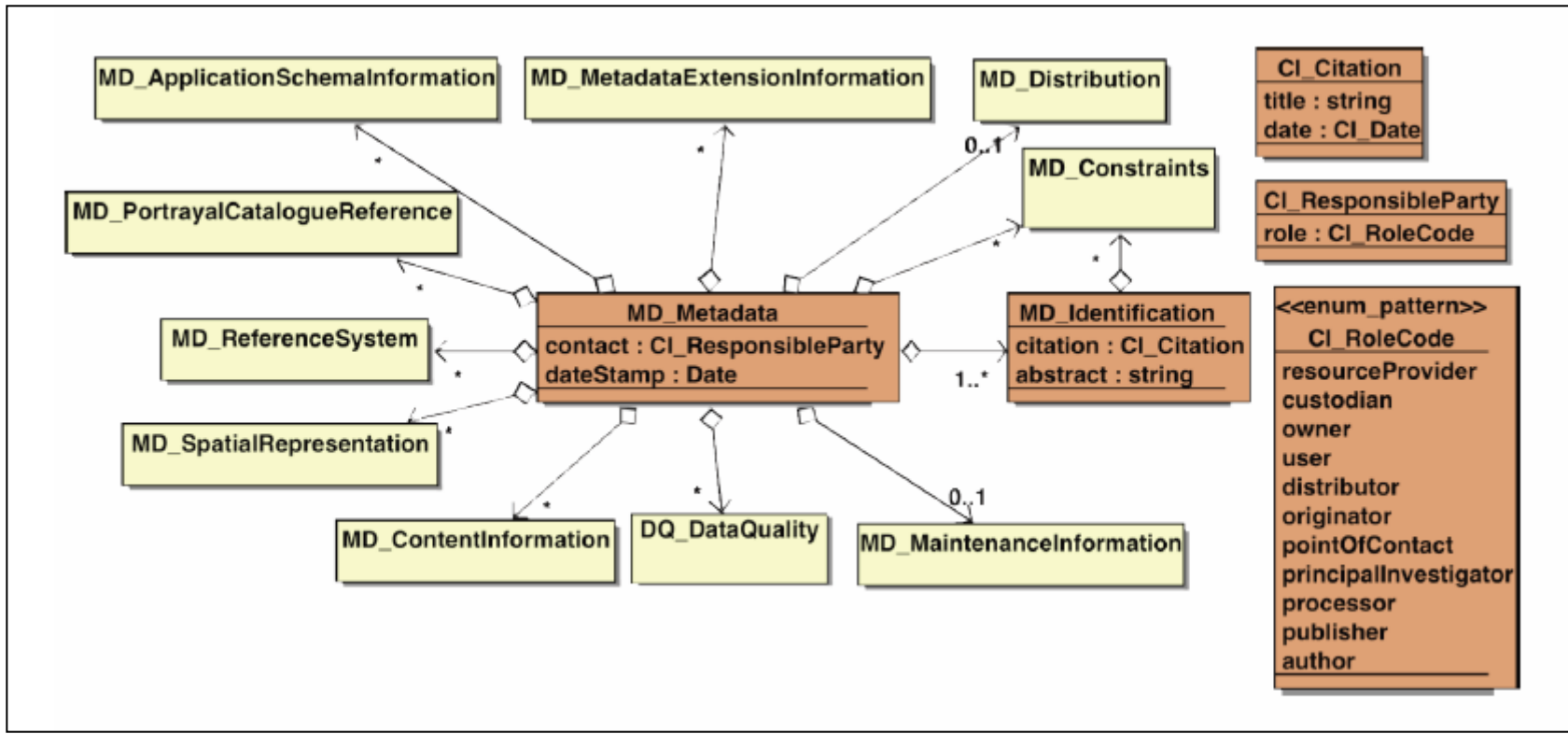
Scope

Standardization in the field of digital geographic information.

ISO/TC 211 aims to establish a structured set of standards for information concerning objects or phenomena that are directly or indirectly associated with a location relative to the Earth.



ISO 19115: Metadata for geographic information



From :C. Plumejeaud , et al (2011): Opérationnalisation d'un profil ISO 19115 pour des métadonnées socio-économiques

The ISO 19115 Standard **defines an extensive set of metadata elements**; (typically only a subset of the full number of elements is used).

The standard offers the possibility to adapt the level of detail and richness of information needs and **only information relating to the identification of the data set and the person responsible** for the metadata record are required.

ISO 19115: the 5 most frequently used sections

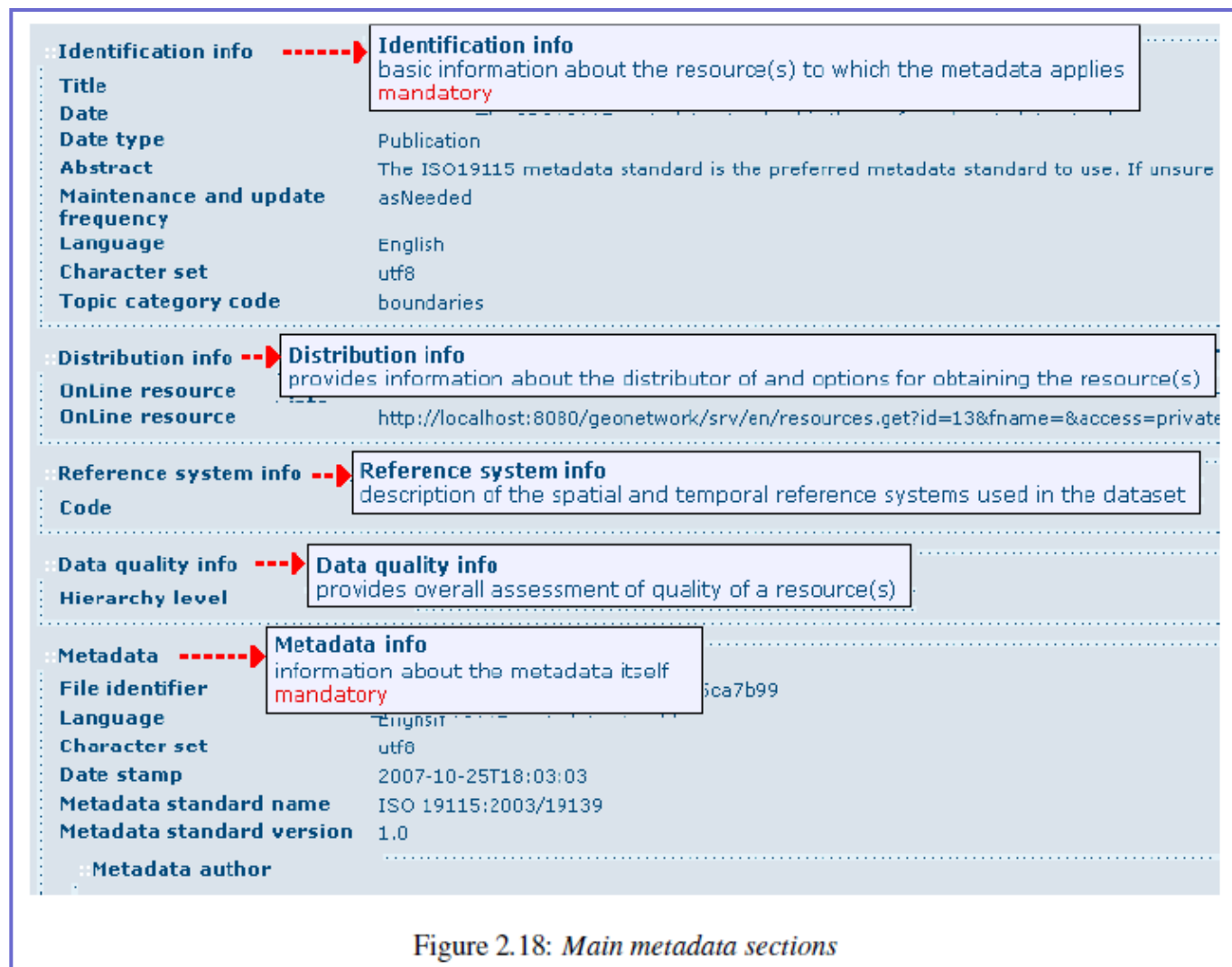


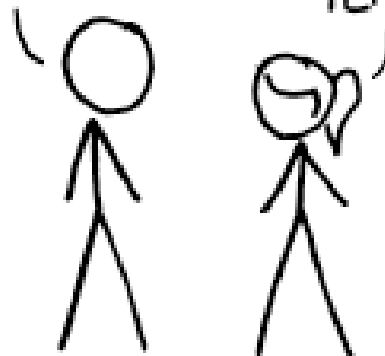
Figure 2.18: *Main metadata sections*

HOW STANDARDS PROLIFERATE:

(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC)

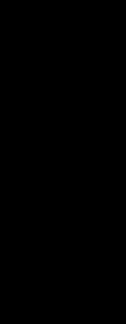
SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.



SOON:

SITUATION:
THERE ARE
15 COMPETING
STANDARDS.



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