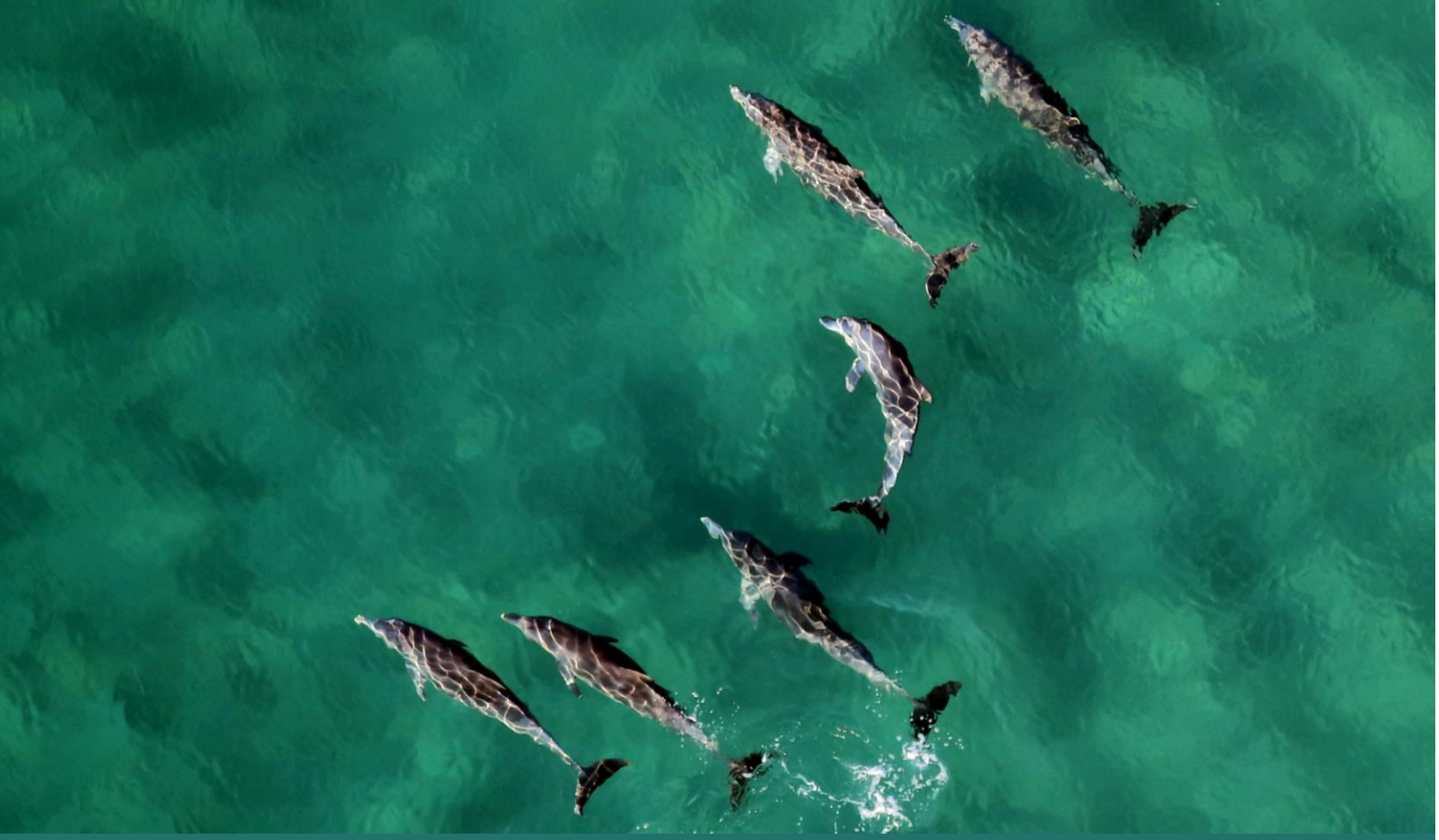

GUIDANCE FOR THE FORMATION OF A MARINE AND COASTAL METADATA STANDARD

UN environment programme

WCMC

NORWEGIAN ENVIRONMENT AGENCY

Suggested citation

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Photo credit

Ponta do Ouro, Mozambique (photo by Wynand Uys on Unsplash).

Contents

1 Summary

The following guidance document has been produced to facilitate the understanding and implementation of a metadata standard. This standard has been designed for use specifically in relation to the Norwegian Environment Agency's initiatives on marine and coastal biodiversity data under the Oil for Development (OfD) Programme, but can be applied in, or adapted to, the requirements of different locations.

This report aims to provide simple and easily understood guidance on data and data management, including:

- an outline of the key considerations when creating a metadata standard;
- the potential uses of a metadata standard within an organisation;
- advice on good practice when managing a dynamic metadata standard; and
- a summary of the benefits of metadata in providing a comprehensive data management service.

The standard complies (where appropriate) with guidance provided by ISO 19115[1] and INSPIRE[2] standards for data and associated services.

The standard has been designed to meet the marine and coastal data requirements of OfD partner countries, while also aligning with internationally recognised standards. In particular, the metadata standard proposed in this study could help increase the awareness and "findability" of marine and coastal biodiversity data by strengthening data-sharing mechanisms. The aim is to increase the potential for biodiversity-related issues to be considered in national decision-making, including policies, plans, programmes and environmental impact assessments (EIAs) associated with the offshore oil and gas sector.

While this document presents a potential standard, it may need to be adapted to meet the specific needs of ministries and supporting non-governmental organisations. Furthermore, this approach may not be uniformly applicable across all organisations working with relevant data but may be adapted to support interoperability of the data curated by these organisations. It is therefore hoped the standard will provide useful guidance from which to develop metadata standards for a range of purposes in different locations.

2 Introduction

Metadata are often defined as "*data describing the context, content and structure of other data and their management through time*"[3]. In simple terms, metadata represent *information about data*. Data are raw facts, presented without context. Without the addition of metadata, "raw"

[1] ISO 19115 is an internationally recognised schema for describing geographic information and services. ISO 19115-1:2014 contains the fundamentals of the standard and acts as guidance for this resource.

[2] INSPIRE was created by European Union member states to ensure that metadata are created for the spatial data sets and services corresponding to the themes listed in Annexes I, II and III in accordance with Article 5(1) of Directive 2007/2/EC. It also tries to align with ISO 19115 where possible.

[3] International Organisation for Standardization (ISO) (2016). ISO 15489-1:2016 Information and documentation -- Records management -- Part 1: Concepts and principles. ISO, Geneva, Switzerland. ISO 15489-1 s 3.12

data often lack the information required to understand their origins and the types of analyses they can support. Well-constructed and maintained metadata can therefore improve understanding and utility of datasets.

Metadata should be provided in a format that allows a dataset to be used, re-used, integrated with other datasets and analysed to inform decisions. Efforts to implement, organise and manage metadata can help to improve knowledge of an organisation's data holdings, support long-term operations and feed into decision-making.

Some common benefits of well-structured and informative metadata are presented in Figure 1 and outlined below.

- Streamlined data discovery[4] and data heritage[5]. Most data users and providers are increasingly managing systems in multiple locations and across various platforms. Through effective management of metadata, an organisation can create an inventory of its data. Metadata can help record changes made to different versions of a dataset throughout its lifecycle, while also providing information on the format and location of these data.
- Reduced loss of institutional knowledge. Often, institutional knowledge of data is held only by certain employees or actors. If these individuals leave an organisation, this knowledge can be lost. Metadata helps to preserve knowledge about the data, reducing the risk of losing important contextual information that can guide use.
- Increased continuity, lifecycle and usefulness of data. Missing or unavailable metadata may render a dataset more difficult (or impossible) to use beyond its initial purpose.
- Increased confidence in data and data-driven analyses for end users. Tracking data lineage gives context to users, which can help with identifying and correcting data errors, thereby increasing the accuracy and reliability of outputs.
- Increased value of data by facilitating reuse and sharing. Streamlining data discovery can increase awareness of what data exist and how they may be used for multiple purposes. Through comprehensive metadata, an organisation's data will be more accessible to multiple users. However, access to metadata does not always mean that the data described are accessible: the data manager still has control over data and their use (e.g. through licencing).

[4] A form of data use that brings together data from multiple different sources.
[5] The record of how a dataset is changed over time.

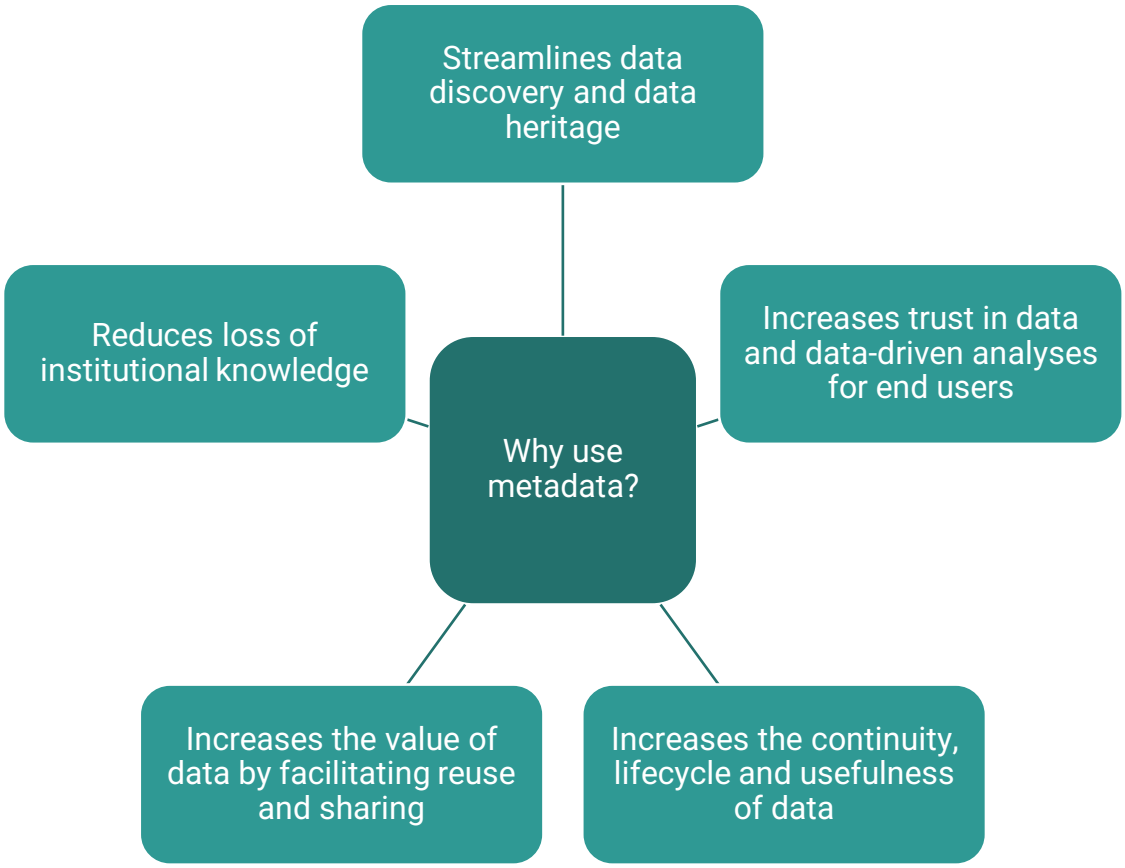

Figure 1: Why use metadata?

Organisations may be hesitant to share what they view as sensitive or important data, which are often costly to collect. Sharing of metadata can overcome some of the issues associated with sharing of raw data: for instance, metadata can clarify what data exist, their intended uses, the conditions of use, and how to access them. Metadata can also increase the value of data held by an organisation by helping users understand the utility of their data, improving access and supporting internal and external decision making.

Various resources provide information on marine and coastal metadata, such as the *Manual of marine and coastal datasets of biodiversity*[6] (see Figure 2). Such resources give examples of how metadata can be collected, used and presented.

[6] Weatherdon LV et al. (2015). Manual of marine and coastal datasets of biodiversity importance. December 2015 edition. Cambridge (UK): UNEP World Conservation Monitoring Centre. 30 pp. (+ 4 annexes totalling 221 pp. and one e-supplement). Available at: wcmc.io/MarineDataManual.

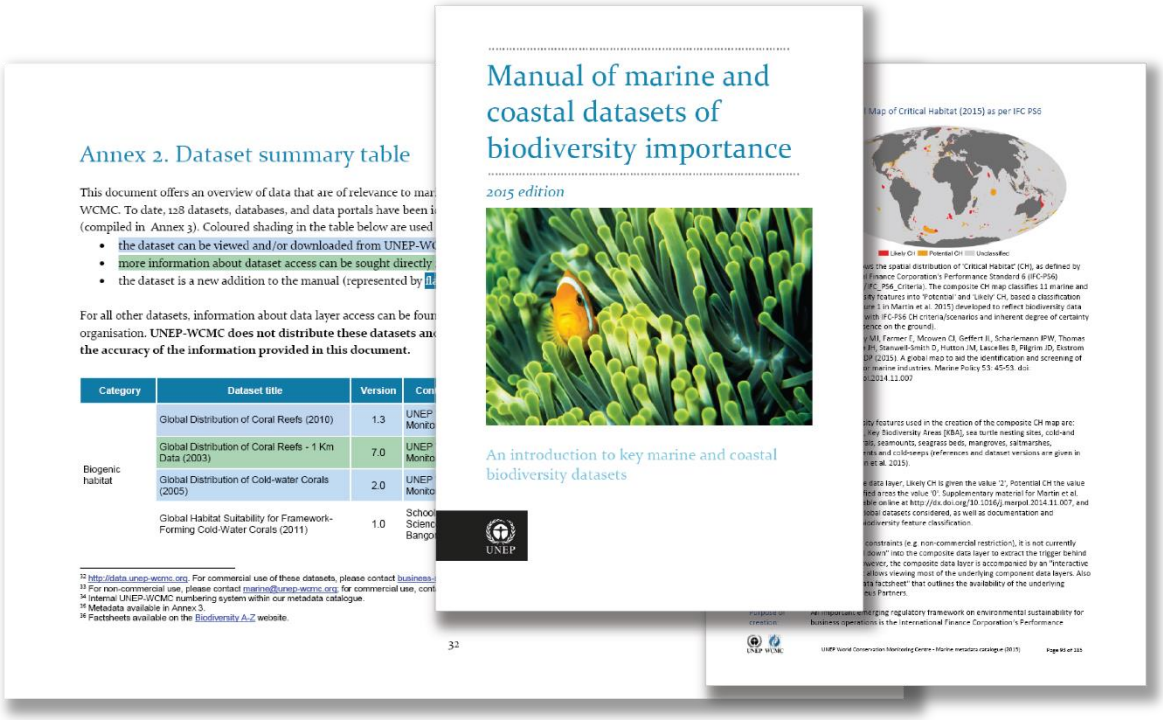

Figure 2: Manual of marine and coastal datasets of biodiversity (Weatherdon et al., 2015; available at http://wcmc.io/MarineDataManual). An online version of this manual is available at https://wcmc.io/oceandata.

3 Creating and managing metadata standards

3.1 Creating metadata standards

Metadata relating to the capture[7], collation and management of data can be strengthened by establishing a set of pre-agreed rules that guide metadata structure (e.g. accepted values), referred to as a 'metadata standard'. A metadata standard allows an organisation to implement and automate procedures for managing their data. Datasets can have long and complex lifecycles. Important information regarding each of these phases is often recorded in accompanying metadata.

Initially, metadata define a dataset once an organisation's 'metadata standard' is applied—usually at the point a dataset is obtained by an organisation. Key aspects documented within metadata include:

- method(s) and date(s) of collection;
- where the data are stored and their format(s); and
- key technical dependencies such as the software required for use (see fields described in Section 5).

[7] Capture refers to the process by which the dataset was created. It should detail method and timings of the dataset creation.

This information helps to ensure a dataset's long-term accessibility, preservation and management[8].

Metadata documenting the transfer of ownership of data to an organisation should also identify the parties/people responsible for the creation and curation of the data.

Metadata should be updated throughout a dataset's lifecycle to document changes in the structure and technical attributes of the data. Metadata should also describe new contexts in which the record may be used. All data management processes applied to a dataset should be documented in order to preserve its authenticity, reliability, usability and integrity. For example, updates to the spatial attribution of data due to shifting geographical boundaries should be noted. These changes can be easily and succinctly recorded in the lineage details of metadata.

Good metadata standards are dynamic and can incorporate additional information for managing records when necessary.

3.2 Responsibilities in the creation and maintenance of metadata

The roles and responsibilities regarding management of metadata should be clearly defined, assigned and recognised across an organisation[9], though an organisation may hold multiple roles at one time (see Figure 3).

Metadata responsibility usually relates to two (sometimes three) distinct roles. The first is the **data provider**, who is responsible for the creation of the dataset. The data provider should supply information relating to the data record at the point of creation. The contact details[10] of the data provider should be recorded in the metadata as a reference point for responsibility of the underlying dataset.

The next role is that of the **data manager** and the associated team, who are responsible for curating the data and accompanying metadata. They are responsible for integrating metadata supplied by the data provider. If changes are made to the data, it is the responsibility of the data manager to record these changes in the metadata.

The final potential role influencing metadata management is that of the **data analyst**. Often datasets will evolve as analyses are carried out. The data analyst's role includes documenting and supplying detailed information about the procedures applied to the data and the resulting structural changes to the new version of the dataset. For example, geospatial datasets may be assigned an ISO3 code[11] (which represents a particular country or territory) and the source for this association should be explicitly identified.

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[8] International Organisation for Standardization (ISO). (2017). ISO 23081-1:2017 Information and documentation -- Records management processes -- Metadata for records -- Part 1: Principles. ISO, Geneva, Switzerland. ISO 23081-1, 9.2.1

[9] International Organisation for Standardization (ISO). (2016). ISO 15489-1:2016 Information and documentation -- Records management -- Part 1: Concepts and principles. ISO, Geneva, Switzerland. ISO 15489-1:2001,6.3

[10] See Section 5.4 for more information for considerations on collecting and processing personal data.

[11] Officially assigned ISO 3166-1 alpha-3 codes used to represent countries, dependent territories, and special areas of geographical interest. For more information, visit: https://www.iso.org/iso-3166-country-codes.html.

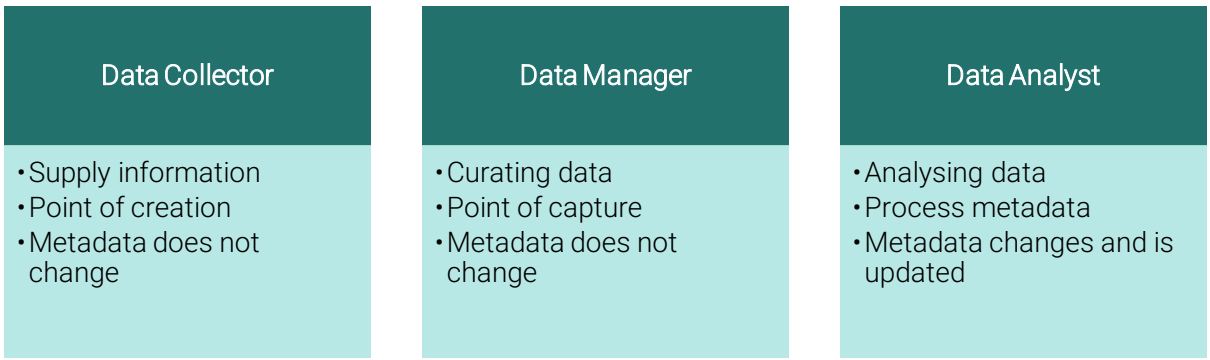

Figure 3: Roles and responsibilities for the creation and maintenance of metadata.

4 Accessibility

4.1 Users and data contributors

One of the primary functions of metadata is to increase awareness of a dataset for further use, whether within an organisation or externally. A set of guiding principles to make data 'Findable, Accessible, Interoperable[12] and Re-usable (FAIR)'[13] can be applied to achieve this. The FAIR principles (outlined in Table 1) emphasise the importance of increasing the ability of machines to automatically find and use the data, in addition to supporting the reuse of data by individuals. Metadata standards can be strengthened by taking these guiding principles into account.

Table 1: The 'Findable, Accessible, Interoperable and Re-usable' (FAIR) Guiding Principles[13]

The FAIR Guiding Principles[13]	
TO BE FINDABLE:	
F1.	Metadata are assigned a globally unique and eternally persistent identifier.
F2.	Data are described with rich metadata (defined by R1 below).
F3.	Metadata are registered or indexed in a searchable resource.
F4.	Metadata specify the data identifier.
TO BE ACCESSIBLE:	
A1.	Metadata are retrievable by their identifier using a standardized communications protocol.
A1.1.	The protocol is open, free, and universally implementable.
A1.2.	The protocol allows for an authentication and authorization procedure, where necessary.
A2.	Metadata are accessible, even when the data are no longer available.
TO BE INTEROPERABLE:	
I1.	Metadata use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2.	Metadata use vocabularies that follow FAIR principles.
I3.	Metadata include qualified references to other metadata.
TO BE RE-USABLE:	
R1.	Metadata have a plurality of accurate and relevant attributes.
R1.1.	Metadata are released with a clear and accessible data usage license.

[12] Interoperable refers to the readability of metadata by a variety of different computer systems and also by the human user.

[13] Wilkinson, M. D. *et al* (2016). The FAIR Guiding Principles for scientific data management and stewardship. Scientific Data, 3, 160018. https://doi.org/10.1038/sdata.2016.18

The FAIR Guiding Principles[13]
R1.2. Metadata are associated with their provenance. R1.3. Metadata meet domain-relevant community standards.

4.2 Metadata discovery services

'Metadata discovery services' are computer systems that publish and search collections of descriptive information (metadata) for data, services, and related information objects. These services make it possible to query a catalogue for datasets and associated services on the basis of the content of the corresponding metadata[14]. The implementation of a well-structured metadata standard (as discussed in Section 3) is important to facilitate the 'interoperability', or readability of the metadata by other discovery services and human users.

One such metadata discovery service is the Open Geospatial Consortium's (OGC's) Catalogue Service for the Web (CSW)[15], a well-known service cataloguing geospatial records on the Internet. The catalogue consists of records that describe geospatial data, geospatial services, and related resources.

CSW is part of the OGC Catalogue Service, which make quality, open standards for the global geospatial community. These standards are developed through a consensus process and are freely available for anyone to use to improve sharing of the world's geospatial data.

It should be noted that the Catalogue Service for the Web is a standard for cataloguing geospatial records using Extensible Markup Language (XML). XML, in this context, is a computer language that allows users to define:

- "tags", or headings for the information included about the dataset in the metadata;
- the order in which the tags appear; and
- how they should be processed or displayed.

When used for Web Services, XML is a piece of data that can travel between computer systems. Essentially, XML provides a customisable and flexible way of displaying metadata in a shareable, searchable format on the Internet.

The metadata standard proposed in this report is provided in Excel format, not in XML. This approach was taken because a wider range of potential users are likely to be more familiar with Excel than XML. However, in order to accommodate future integrations into metadata discovery services (such as CSW), the proposed metadata standard can be converted into XML format.

4.3 Licensing

When looking data accessibility, it is also important to consider data licensing standards. Ideally, data would be open for use in research and decision-making across all organizations and sectors. However, there are circumstances when this is not possible or appropriate. Adopting a licencing policy can help data users understand what they can do with the data, and

[14] Initial Operating Capability Task Force for Network Services (2011). Technical Guidance for the implementation of INSPIRE Discovery Services Creator Initial Operating Capability Task Force for Network Services [Online] Available from: http://inspire.ec.europa.eu/documents/Network_Services/TechnicalGuidance_DiscoveryServices_v3.0.pdf [Accessed April 2018]

[15] More information available at: http://www.opengeospatial.org/standards/cat

if there are any restrictions. For example, some data may not be used for commercial purposes, or cannot be changed. Other data can be used in a wide variety of ways, as long as the original source is credited.

Creative Commons[16] is one widely recognised example of a licensing standard. It offers a range of different licenses, from completely open to those that require attribution, restrict commercial use, and prohibit changes to or redistribution of the dataset (see Figure 1). One of the most 'open' licences under Creative Commons is Attribution 4.0 International (CC BY 4.0). CC BY 4.0 allows anyone to share the data in any format, and change it for any purpose (including commercial use). The only requirements are that credit must be given to the original creator, a link must be provided to the licence and any it must be indicated if any changes have been made (see the License Deed and Legal Code).

Figure 4: Summary of Creative Commons Licenses (Creative Commons licenses by Foter (CC-BY-SA).

5 Proposed Metadata Standard

This section outlines the elements that make up the proposed metadata standard. Where appropriate, this standard aligns with guidance provided by ISO 19115[17] and INSPIRE[18] standards for datasets and associated services (e.g. web services).

[16] More information available at: https://creativecommons.org/licenses/.

[17] International Organisation for Standardization (ISO). (2014). ISO 19115-1:2014 Geographic information -- Metadata -- Part 1: Fundamentals. ISO, Geneva, Switzerland.

[18] More information available at: http://inspire.ec.europa.eu

5.1 Guiding principles

The field descriptions below are made up of four parts, detailing specific aspects and requirements of each field. Each field is described in terms of its name, its level of importance, whether there are any specific accepted values and, finally, by a short description.

- Field name: The name of the data entry.
- Level of requirement: '**Essential'**, '**Useful'** or **'Conditional'**
- Accepted values: The data allowed in a field (as specified below).
    - **Free text:** 'open' (or undefined) text may be entered in this field (number of characters can be limited).
    - **Look-up values:** one or more options may be selected from a list of accepted / agreed values. Look up tables play a valuable role in reducing human error when inserting data. By limiting free text options, you can reduce the number of errors such as spelling mistakes.
    - **Ratio:** only a ratio in relation to 1 is permitted (e.g. 1:100,000).
    - **Date:** specify a date in the format YYYY-MM-DD (ISO 8601 date format)
    - Uniform **Resource Locator** (URL): specify a full web address for the dataset.
- Description: A description of information that the field supplies in relation to the dataset.

The following sections will describe each field in the format provided below.

Field: **Field name**

Level of requirement. Accepted values**.** Description**.** *(Example, where necessary)*

Example:

Field: **Metadata Identification (ID)**

Essential. Numeric ID. An ID assigned by the data manager that is used to link each feature record in the feature database's main attribute table to the relevant source information in the metadata table.

5.2 Tiered standard

The proposed metadata standard sets out a format to document information about a dataset, facilitate easy discovery and support use of appropriate data. A simple, tiered metadata standard has been created for implementation in locations with varying capacity and access to information. These 'tiers' include:

- **Essential** fields, which are required.
- **Useful** ("nice to have") fields, which may be included if possible to improve use and discoverability of the dataset.
- **Conditional** fields, which should be filled based on a specific set of criteria.

This standard uses established international standards for the structure of appropriate fields and the relevant acceptable values. This reduces duplication of effort and provides consistency

and compatibility with other metadata standards. These tiers relate to the importance and requirement of fields indicated in this standard.

5.2.1 Essential fields

Field: Metadata ID

- *Essential.* Numeric ID. An ID assigned by the data manager that is used to link each feature record in the database's main attribute table to the relevant source information in the metadata table.

Field: Title

- *Essential.* Free text. Limited to 254 characters to keep titles concise, allowing for further description in "Abstract" field. Depending on the intended users of the data, the title could either be written in the local language, the English translation, or both (see also 'Native Language Title'), as provided by the data supplier *(Example: "Revised ranges of seagrass species in the Quirimbas Archipelago, Mozambique")*.

Field: Coverage

- *Essential.* Look-up values. Indicates whether the data occur at the regional (i.e. regions within Uganda), national or global level *(Example: Global)*.

Sub-field (under Field, Contact): Organisation

- *Essential.* Free text. Name of the institution responsible for the creation of the data (*Example: UN Environment World Conservation Monitoring Centre).*

Field: Access and Use Constraints

- *Essential.* Look-up values detailing a series of licencing options based on currently known international licence types. Additional licenses may be added to the look-up table. Describes any restrictions imposed on the resource for security and other reasons. If there are no limitations on public access, this must be indicated (*Example: Creative Commons Attribution 4.0 International, or CC BY 4.0*[19]*).*

Field: Keywords

- *Essential.* Free text. Keywords[20] should be limited to five and separated by ";" *(Examples: habitat; seagrass; abundance).*

Field: Resource Locator

- *Essential.* Uniform Resource Locator URL. Specifies a full web address to locate the dataset (*Example: http://data.unep-wcmc.org/*).

5.2.2 Useful fields

Field: Native Language Title

- *Useful*. Free text. This is the title of the dataset in the language initially supplied. Limited to 254 characters to keep titles concise but allowing for further description in "Abstract" field.

Field: Abstract

- *Useful*. Free text. Short description of the dataset. This should be used to help search for the dataset.

Field: Category

- *Useful.* Look-up values. Contains high-level categories to assist in assigning the dataset to associated theme(s), which can be used for searching (*Example: Biota)*.

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[19] More information available at: https://creativecommons.org/licenses/by/4.0/.

[20] Examples of keywords associated with biodiversity can be found at www.biodiversitya-z.org

Field: Purpose

- *Useful.* Free text. Short description of why the dataset was created.

Sub-field (under Field, Contact): Person Responsible[10]

- *Useful.* Free text. Name of person responsible for the dataset.

Sub-field (under Field, Contact): Contact Email[10]

- *Useful.* Free text must contain "@" or error will be returned. Email for the creator/provider of the dataset.

Fields: North Bound Latitude; East Bound Longitude; South Bound Latitude; West Bound Longitude

- *Useful.* These bounding boxes contain westbound and eastbound longitudes and southbound and northbound latitudes in decimal degrees to at least two decimals, representing the extent covered by the data.

Field: Coordinate Reference System

- *Useful.* Look-up values. Geographic coordinate system of dataset used to enable the identification of specific locations of features in the dataset (*Example: WGS 1984)*.

Field: Scale

- *Useful.* Ratio. The denominator of the representative fraction on a source map. For example, on a scale 1:150,000 the denominator given should be 150,000. 'Not Reported' should be used when these data are not available. The ratio or relationship between a distance or area on a map and the corresponding distance or area on the ground, commonly expressed as a fraction or ratio. A map scale of 1:100,000 means that one unit of measure on the map equals 100,000 of the same unit on the earth.

Field: Resolution

- *Useful.* Resolution in metres (numeric field). The detail with which a map depicts the location and shape of geographic features. Refers to the grid size of raster data. *(Example: 25)*.

Field: Publication Date

- *Useful.* Supplied as text in the format YYYY-MM-DD (ISO date format). Text format is required because Excel does not recognise dates before 1900-01-01 in date format. Date that data were published (*Example: 2018-02-23*).

Fields: Start Date; End Date

- *Useful.* Supplied as text in the format YYYY-MM-DD (ISO date format). Text format is required because Excel does not recognise dates before 1900-01-01 in date format. Represent start and end dates of data collection (of survey).

Field: Update Date

- *Useful.* Must be supplied as text in the format YYYY-MM-DD (ISO date format). Text format is required because Excel does not recognise dates before 1900-01-01 in date format. Date of most recent update to dataset.

Field: Date Type

- *Useful.* Look-up values. A one- to two-character code that identifies accuracy of dates used in Publication Date to the nearest day, month, or year based on OSPAR's

Habitat Data Guidance for Users (version 1.2)[21]. This avoids any ambiguity, which might lead to different interpretations.

Field: Maintenance Frequency

- *Useful.* Look-up values. Indicates how often the dataset is updated, drawn from a set of agreed values *(Example: Biannually)*.

Field: Version

- *Useful.* Numeric ID. Indicates the latest version of the dataset *(Example: 2.0)*.

Field: Citation

- *Useful.* Free text (Length 254). Recommended text to be used referencing for the dataset. Citation in the following format: Authors. (Date). Dataset title. Publication city (country): Publisher. Paper DOI: _____. Data DOI: _____(if available). 'Not Reported' is used when this information is not available.

Field: Lineage

- *Useful.* Free text. Information about the creation, events, changes or transformations in the life of a dataset, including process used to create and maintain the dataset and associated dates. 'Not Reported' is used when this data was not available. Lineage should contain the creation method for the first version of the dataset.

Field: Disclaimer

- *Useful.* Free text. Warnings/exceptions to use of the data. 'Not Reported' is used when data entry is not available.

Field: Data Format

- *Useful.* Look-up table to which data formats can be added. Describes the format in which the dataset is stored *(Example: Shapefile, .shp)*.

Field: Language

- *Useful.* Look-up table (use only three-letter codes from ISO 639-2/B (bibliographic codes); full list available here: https://en.wikipedia.org/wiki/List_of_ISO_639-2_codes). Describes the language of the dataset *(Example: eng)*.

5.2.3 Conditional fields

Field: Character Set

- *Conditional.* The character encoding used in the dataset. Mandatory if an encoding is used that is not based on Unicode Transformation Format-8, or UTF-8 *(Example: US-ASCII)*.

5.2.4 Compliance with relevant ISOs

Table 2 links the metadata elements used in the above standard to their appropriate source relating to the ISO 19115[22] and the INSPIRE[23] metadata standard. In the case of 'Access and User Constraints,' 'Data Format', and 'Version', the approach taken is based on that used in UNEP-WCMC's metadata structure to make information more easily understood.

Table 2: Metadata elements and links to relevant ISOs

[21] Guidance accompanied the *'OSPAR threatened and/or declining habitats 2015'* shapefile (http://www.emodnet-seabedhabitats.eu/default.aspx?page=1953).

[22] More information at https://www.iso.org/standard/53798.html

[23] More information at http://inspire-geoportal.ec.europa.eu/EUOSME_GEOPORTAL/userguide/eurlex_en.htm

Element	ISO 19115 Conformity **	INSPIRE Conformity
Metadata ID	B.2.2.1 General	✓ *
Title	Free text	✓ *
Abstract	Free text	✓ *
Access and User Constraints		
Category	MD_TopicCategoryCode <<Enumeration>> (B.5.27)	
Purpose	Free text	✓ *
Contact	CI_ResponsibleParty (B.3.2) <<DataType>>	✓ *
Keywords	MD_Keywords (B.2.2.3) Free text	
Spatial Coverage	MD_SpatialRepresentation TypeCode <<CodeList>> (B.5.26) EX_Extent <<DataType>> (B.3.1) MD_Resolution <<Union>> (B.2.2.5)	✓ *
Temporal Coverage	MD_MaintenanceInformation (B.2.5)	✓ *
Version		
Citation	CI_Citation (B.3.2) <<DataType>>	✓ *
Resource Locator	URL (IETF RFC1738 IETF RFC 2056)	
Lineage	LI_Lineage (B.2.4.2)	
Disclaimer		✓ *
Data Format		
* Commission Regulation (EC) No 1205/2008 of 3 December 2008. ** indicates section of ISO 19115 report, available at: https://www.iso.org/standard/53798.html		

5.3 Data protection considerations

During the collation of metadata, information that is considered 'personal data' may be collected, such as names and email addresses. Various jurisdictions have strict laws relating to the collection and processing of personal data and can relate both to the geographical location the information is collected from and in (e.g. the European Union's General Data Protection Regulation). Such laws must be considered and adhered to, with protocols developed to ensure this. The appropriate measures will be addressed by the relevant legislation, but may include steps such as only collecting personal data that are directly relevant to the intended use, ensuring that the purpose for collecting the data is explicitly stated and that informed consent

for use of the data is secured from the data subject (i.e. the person you are collecting personal information from).

5.4 Metadata standard field summary

Table 3 below summarises the essential, useful and conditional fields presented in this standard.

Table 3: Metadata standard field summary.

Essential Field	Useful Field	Conditional Field
Metadata ID	Native Language Title	Character Set
Title	Abstract	
Coverage	Category	
Organisation	Purpose	
Access and Use Constraints	Person Responsible	
Keywords	Contact Email	
Resource Locator	North Bound Latitude; East Bound Longitude; South Bound Latitude; West Bound Longitude	
	Coordinate Reference System	
	Scale	
	Ratio	
	Resolution	
	Publication Date	
	Start Date; End Date	
	Update Date	
	Date Type	
	Maintenance Frequency	
	Version	
	Citation	
	Lineage	
	Disclaimer	
	Data Format	
	Language	