Project for Establishment of National Spatial Data Infrastructure (NSDI) for Bangladesh

Guidelines for

Metadata

(DRAFT)

10 August 2020

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This document should be reviewed on a regular basis
and updated by the NSDI-WG when necessary.

Revision history

Version	Date	Comments
1.0	xx August 2020	The first version

Foreword

National Spatial Data Infrastructure (NSDI) is a framework of efficient exchange and utilization of geographic information including legislation, rules, management and ICT systems.

Through the utilization of NSDI, we can expect the following three merits.

1. Removing duplication of data, investment, labour, etc.,

2. Raising efficiency of data interoperability contributing to the productivity of current work,

3. Incubating new businesses and projects.

For identification and evaluation of the geographic information, we shall develop the metadata in the same manner and share them among all stakeholders.

In order to develop the guidelines, we used the "Specifications of Japan Metadata Profile (JMP) 2.0" (by Geospatial Information Authority of Japan (GSI), <http://psgsv.gsi.go.jp/koukyou/public/JMP/jmp20spe.pdf>, in Japanese), "Instruction Manual of JMP 2.0" (GSI, <https://psgsv.gsi.go.jp/koukyou/public/JMP/jmp20exp.pdf>, in Japanese), "Metadata Instruction for 1:25,000 Scale Map" (by SoB), "INSPIRE Data Specifications Template" <https://inspire.ec.europa.eu/documents/data-specifications-template>, NWRD (by WARPO) and ISO 19115-1 (Metadata – Part 1: Fundamentals).

This document, the Guidelines for Metadata, relates with the Guidelines for Data Product Specifications and the Guidelines for Data Quality. These three guidelines have been developed for the Project for Establishment of National Spatial Data Infrastructure (NSDI) for Bangladesh.

Table of Contents

Acronyms and Abbreviations

No.	Abbreviation	Official name
	DPS	Data Product Specifications
	GIS	Geographic Information System
	ICT	Information and Communication Technology
	ISO	International Organization for Standardization
	ISO/TC 211	International Organization for Standardization/Technical Committee 211 (Geographic information/Geomatics)
	JISC	Japanese Industrial Standards Committee
	JMP 2.0	Japan Metadata Profile 2.0
	JPGIS	Japan Profile for Geographic Information Standards
	MoD	Ministry of Defence
	NDC	National Datacenter
	NSDI	National Spatial Data Infrastructure
	NSDI-PF	National Spatial Data Infrastructure Platform
	NSDI-PP	National Spatial Data Infrastructure Pilot Project
	NSDI-PPWG	National Spatial Data Infrastructure Pilot Project Working Group
	NSDI-PS	National Spatial Data Infrastructure Prototype System
	NSDI-WG	National Spatial Data Infrastructure Working Group
	SoB	Survey of Bangladesh
	SoB BM	Survey of Bangladesh's Base Map
	TC	Technical Committee

CHAPTER 1.   Basic Information of Metadata

1.1. What is the Metadata?

Metadata is, generally, information about dataset, dataset series, service, document, initiative, software, person or organization and other relates issues.

This document, the guidelines for metadata, contains what is the metadata and how to describe the contents of metadata for geographic information. The metadata provides information about the identification, the extent, the quality, the spatial and temporal aspects, the content, the spatial and temporal references, the portrayal, distribution, and other properties of digital geographic data.

The guidelines are applicable to:

- geographic datasets, dataset series, and individual geographic features and feature properties.

The guidelines define:

- mandatory, conditional and optional metadata contents;

- the minimum set of metadata required to serve the NSDI-PF.

1.2. Why we use Metadata?

Users may choice the suitable data based on the information registered as metadata. The suitable data means the data that match the user's requirements.

1.3. Operation of Metadata

The users can search and identify the geographic data based on the metadata information through the clearinghouse functions of the NSDI-PF.

The guidelines aim to contribute to identify the geographic information for the NSDI users.

CHAPTER 2.   General Rules for the Metadata Description

2.1. Overview

There are several rules for the metadata description for efficient information sharing.

Metadata is the information about a resource. The metadata elements (including the mandatory metadata elements for NSDI-PF) shall be developed and formatted in accordance with the Guidelines of Metadata.

For example, users can search/select the data based on the metadata through the clearing house.

− contents / theme / range

− price

− date of creation, acquisition

− name of the data provider, etc.

2.2. Obligation/Condition

Each metadata has property of the obligation/ condition. This is a descriptor indicating whether a metadata item shall always be documented in the metadata or sometimes be documented (i.e. contains value(s)). This descriptor may have the following values: M (mandatory), C (conditional), or O (optional).

2.2.1. Mandatory (M)

The metadata item shall be documented.

2.2.2. Conditional (C)

Specifies a condition that can be processed by a machine under which at least one metadata   is mandatory. 'Conditional' is used for one of the three following possibilities:

− Expressing a choice between two or more options. At least one option is mandatory and must be documented.

− Documenting a metadata if another metadata has been documented.

− Documenting a metadata content if a specific value for another metadata content has been documented. To facilitate reading by humans, the specific value is used in plain text. If the answer to the condition is true, then the metadata content shall be mandatory.

2.2.3. Optional (O)

The metadata may or may not be documented. Optional metadata have been defined to provide a guide to those looking to document their data fully. (Use of this common set of defined contents will help promote interoperability among geographic information users and producers world-wide.) If an optional metadata is not used, the metadata contents within that metadata (including mandatory contents) will also not be used.

NOTE: Optional metadata can have mandatory contents; those contents only become mandatory if the optional metadata is used.

2.3. Maximum occurrence

Specifies the maximum number of the metadata item may have.

Single occurrences are shown by "1"; repeating, unbounding, occurrences are represented by "N". Fixed number occurrences other than one are allowed, and will be represented by the corresponding number (i.e. "2", "3"… etc.).

2.4. Data type

Specifies a set of distinct values for representing the metadata elements; for example, integer, real, string (sequence of characters), free text, date (time may be included), and Boolean (true/false).

CHAPTER 3. Metadata Information

3.1. Minimum Set of Metadata

The minimum required fields of metadata are shown in the table below.

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
1	data name	identifiable name of the data	M	1	string	
2	abstract	brief summary of the data	M	1	free text	
3	date of creation	the date of completion of the data creation	M	1	date	
4	spatial extent	Minimum and maximum values of latitude (north, south) and longitude (east, west) in decimal degree	C	4	real	At least one of "spatial extent" or "administrative area" shall be registered.
5	coordinate system	ex. WGS84, ITRF2014	C	1	string	This shall be mandatory if "spatial extent" is registered.

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
6	administrative area	Name(s) of upazila, town, city, district, division, or whole country. A largest unit is enough.	C	N	string	At least one of "spatial extent" or "administrative area" shall be registered.
7	responsible organization	Name of the organization that is responsible for the data.	M	1	string	
8	contact information	Contact information of the responsible section (section name, telephone numbers, e-mail address, postal address)	M	N	string	

Annex

Metadata for NSDI-PF

1. Metadata for the NSDI-PF

On the NSDI-PF, the metadata items in the tables below are required to input.

Table 1 Metadata on the uploading layers page

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
1	Title of data Layer	name of the data	M	1	string	
2	Target organizations for Sharing Data	Access limitation of organizations	M	1	List	
3	Category of the data	Select a category of theme	M	N	date	None, Administrative,
4	Date type		M	N	List	publication / creation / registration, etc.

Table 2 Metadata on the metadata pages

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
1	Owner	name of the responsible organization of the data	M	1	string	
2	Title	name of the data	M	1	string	
3	Date	date of the occurrence of the data related activity	M	N	date	YYYY/MM/DD

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
4	Date type	type of the data related activity on the date (#3)	M	N	code	publication / creation / registration, etc.
5	Edition	version of the data	O	1	string	
6	Abstract	brief narrative summary of the data	M	1	free text	
7	Purpose	summary of the intentions with which the data was developed	O	1	free text	
8	Maintenance frequency	frequency with which changes and additions are made to the data after the initial data is completed	O	1	list	every six months, annually, every other year, every five years, occasionally, etc.
9	Regions	administrative division	O	N	list	See Table
10	Restrictions	restrictions on the access and use of the data	O	N	string	
11	Restrictions other	additional information on the restrictions	O	1	free text	
12	License	?	O	1	string	

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
13	Language	the language and character set used in the data	C	N	string	mandatory if a language is used in the data
14	Spatial representation type	?	O	1	string	
15	Resource type	layer/?	O	1	string	
16	Temporal extent / start	time period covered by the content of the data / start	Use obligation / condition from the reference	1	date	
17	Temporal extent / end	time period covered by the content of the data / end	Use obligation / condition from the reference	1	date	
18	Supplemental information	any other descriptive information about the data	O	1	free text	
19	Data quality	Description of the data quality evaluation; data quality item, evaluation method, evaluation criteria, evaluation results	M	N	string	Refer the "Guidelines for Data Quality"

#	Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Remarks
20	Metadata uploaded preserve / Featured / Is Published	?				
21	Thumbnail URL	Is mosaic / has time / has elevation	O	1		
22	Time regex	regular expression of time				
23	Keywords	Words or phrases describing the data to be indexed and searched	O	N	string	
24	Point of Contact	identification of, and means of communication with, person(s) and organization(s) associated with the data	M	1	string	
25	Metadata Author	Creator of the metadata	O	1	string	
26	Category	Category of the data	M	N	string	