

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

Guidelines for Data Product Specifications (DRAFT)

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Working Group on NSDI for Bangladesh
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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 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 and productivity of current work,
3. Incubating new business and projects.

For creation and utilization of the geographic information, we shall share the data contents in the same manner among all stakeholders. From this viewpoint, ISO/TC 211 (Technical Committee of Geographic Information/Geomatics) has standardized the rules of Data Product Specifications (DPS) as ISO 19131.

In order to develop the guidelines, we used the “Manual for Creation of Geospatial Data Product Specifications” (by Geospatial Information Authority of Japan (GSI), <<https://www.gsi.go.jp/common/000219864.pdf>>, in Japanese), “INSPIRE Data Specifications Template” <<https://inspire.ec.europa.eu/documents/data-specifications-template>>, National Water Resources Database (by WARPO).

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

Table of Contents

CHAPTER 1. Basic Information of DPS.....	1-1
1.1. What is the DPS?	1-1
1.2. Why we use DPS?.....	1-1
1.3. Operation of DPS	1-1
1.4. DPS and ISO/TC 211	1-1
CHAPTER 2. Basic Structure of DPS	2-1
2.1. Overview	2-1
2.2. Specification scopes	2-1
2.3. Data product identification.....	2-3
2.4. Data content and structure.....	2-3
2.5. Reference systems.....	2-3
2.6. Data Quality	2-4
2.7. Data Product Delivery.....	2-4
2.8. Metadata.....	2-5
2.9. Additional information.....	2-5

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 DPS

1.1. What is the DPS?

Data product specifications (DPS) are detailed description of a dataset or dataset series together with additional information that will enable it to be created, supplied to and used by another party.

NOTE: A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a dataset. It may be used for production, sales, end-use or other purposes.

1.2. Why we use DPS?

For creation and utilization of the geographic information, we shall share the explanation about data contents in the same manner among all stakeholders. From this viewpoint, ISO/TC 211 (Technical Committee of Geographic Information/Geomatics) has standardized the rules of Data Product Specifications (DPS) as ISO 19131, which include concrete description of the geographic information.

1.3. Operation of DPS

The guidelines aim to contribute to both creation and utilization of geographic information for the NSDI for Bangladesh.

1.4. DPS and ISO/TC 211

The general structure and definitions of DPS are described in an international standard named ISO 19131 developed by ISO/TC 211 (Geographic information/Geomatics).

The general structure of DPS defined in ISO 19131 is as follows;

Overview

Specification scopes

Data product identification

Data content and structure

Reference systems

Data Quality

Data Product Delivery

Metadata

Additional information

The explanation of each component are described in Chapter 2.

CHAPTER 2. Basic Structure of DPS

2.1. Overview

The overview shall include the following parts:

- information about the creation of the data product specifications;

NOTE: This may include the title, a reference date, the responsible organization, the language and the topic category.

- terms and definitions;

NOTE: This may take the form of a reference to a terminology repository.

- abbreviations;
- the name and any acronyms of the data product;
- an informal description of the data product.

The informal description of the data product shall contain general information about the data product which may include the following aspects:

- the content of the dataset;
- the extent (both spatial and temporal) of the data;
- the specific purpose for which the data shall be or has been collected;
- the data sources and data production processes;
- the maintenance of the data.

NOTE: An informal description is intended to give a short introduction to the data product specifications and allow a human reader a better understanding of the specifications.

2.2. Specification scopes

The data product specifications shall include a description of its scope, which may be restricted in terms of spatial or temporal extent, feature types and properties included, spatial

representation, or position within a product hierarchy. The data product specifications may specify a partitioning of the data content of the product on the basis of one or more criteria. Such partitioning may be different for different parts of the data product specifications. Each such part of the data content shall be described by a specification scope that may inherit or override the general specification scope.

Criteria that might be used as the basis for partitioning include, but are not limited to

- spatial or temporal extent,
- feature type,
- property type,
- property value,
- spatial representation,
- product hierarchy.

EXAMPLE:

Data products to support navigation often contain two sets of feature types: those that provide navigation information that changes rapidly and is essential for safety of navigation, and those that provide background reference information. Maintenance and delivery information would be partitioned on the basis of these groupings; reference system information would not.

The information describing the specification scope shall include scope identification and items from the following as required to describe the scope:

- level — a code identifying the hierarchical level of the data;
- level name — the name of the hierarchical level of the data;
- level description — a detailed description of the level of the data;
- extent — the spatial, vertical and temporal extent of the data;
- coverage — the coverages to which the information applies.

2.3. Data product identification

The information identifying the data product shall include the following items:

- title — the title of the data product;
- abstract — a brief narrative summary of the content of the data product;
- topic category — the main theme(s) of the data product;
- geographic description — the extent of the geographic area covered by the data product.

The following optional items may be included where appropriate:

- alternate title — short name or other name by which the data product is known;
- purpose — summary of the intentions with which the data product is developed;
- spatial representation type — the form of the spatial representation (e.g. vector data);
- spatial resolution — a factor which provides a general understanding of the density of spatial data in the data product;
- supplemental information — any other descriptive information about the data product.

2.4. Data content and structure

The attributes and their definitions of each feature in the data should be clarify. The content information of a feature-based data product is described in terms of a feature catalogue. The data producer may create the feature catalogue as an additional document.

NOTE: Unified Markup Language (UML) description of application schema, which is adapted in ISO 19131, is not adapted in this part.

2.5. Reference systems

The data product specifications shall include information that defines the reference systems used in the data product. This shall include the following:

- the spatial reference system;

- the temporal reference system.

The spatial reference system used may be either a coordinate reference system, as defined in ISO 19111, or a spatial reference system using geographic identifiers, as defined in ISO 19112. The temporal reference system shall be as defined in ISO 19108. In either case, the reference system shall be identified by a reference system identifier.

2.6. Data Quality

The DPS shall identify the data quality requirements for the data product in accordance with the Guidelines for Data Quality.

This shall include a statement on acceptable conformance quality levels and corresponding data quality measures as defined in ISO/TS 19138. This statement shall cover all the data quality elements and data quality sub-elements defined in ISO 19113, even if only to state that a specific data quality element or data quality sub-element is not applicable. It shall also include any additional data quality elements and sub-elements.

When establishing the conformance quality levels in a data product specification, it should be taken into consideration that

- different quality evaluation methods may be applied to different parts of the dataset (different data quality scopes),
- for the same data quality element, different results with different confidence intervals can be achieved with different quality evaluation measures,
- conformance quality levels can be different for different features in the dataset, e.g. the required positional accuracy for features with fuzzy boundaries is usually much lower than for linear and well defined features.

2.7. Data Product Delivery

The data product specifications shall identify any requirements for the data product delivery. These shall include delivery format information and delivery medium information, where applicable.

Delivery format information may include the following items:

- name of the data format;
- version of the format (date, number, etc);
- the name of the subset, profile or product specification of the format;
- structure of the delivery file;
- language(s) used within the dataset;
- the full name of the character-coding standard used.

Delivery medium information may include the following items:

- description of the units of delivery (e.g. tiles, layer, geographic areas);
- estimated size of a unit in the specified format, expressed in Mbytes;
- name of the data medium;
- other delivery information.

2.8. Metadata

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.

2.9. Additional information

This section of the data product specifications may include any other aspects of the data

product not provided elsewhere in this document. Additional information might include constraint information (for access and use). If this information only applies to part of the product, then the scope for this must be clearly identified.

Annex

Example of the DPS