BISAG-N
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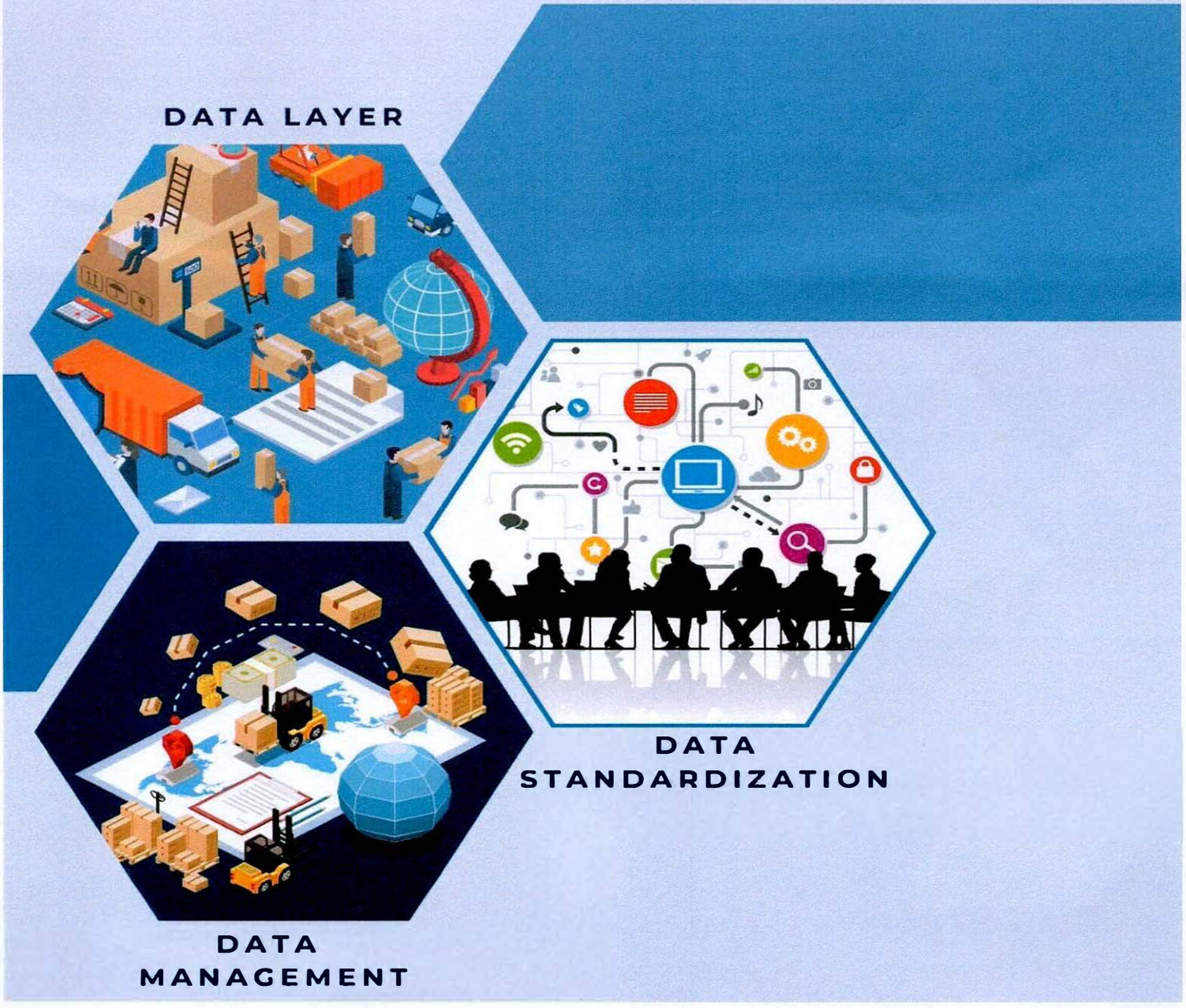
INDIA
LOGISTICS

DEPARTMENT FOR PROMOTION OF
INDUSTRY AND INTERNAL TRADE
MINISTRY OF COMMERCE & INDUSTRY,
GOVERNMENT OF INDIA

PM GatiShakti
National Master Plan for
Multi-Modal connectivity

MODEL STANDARD OPERATING PROCEDURE FOR STATE/UTs DATA MANAGEMENT ON PM GATISHAKTI NATIONAL MASTER PLAN PLATFORM

LOGISTICS DIVISION
DPIIT, MINISTRY OF COMMERCE AND INDUSTRY



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1. Overview

PM GatiShakti a transformative approach for integrated and holistic planning across Ministries/Departments was launched in October 2021. It aims to improve multi modal connectivity, and logistics efficiency and address critical gaps for the seamless movement of goods and services, focusing on minimizing disruptions and ensuring timely completion of works.

The PM GatiShakti NMP is a comprehensive portal providing a bird's eye view of infrastructure development with key layers of various Economic Zones, Infrastructure & Utilities across the country. The NMP depicts the economic zones and the infrastructure linkages required to support them to holistically integrate all the ministries/ states and departments.

The PM GatiShakti NMP provides entire data in one place with GIS-based spatial planning and analytical tools. It is designed to enhance efficiency and have an integrated approach by use of the latest satellite imagery for visual understanding, coordination among all the stakeholders; synchronization in the implementation of projects; planning tools for route planning, land acquisition, seeking permissions, congestion reduction and dashboard based periodic monitoring for progress. The transformative approach of PM GatiShakti supports Ministries indecision-making for project planning, land parcel evaluation, cost estimation, forest clearances, etc.

Over the last two years since the launch of the PM GatiShakti (PMGS) NMP, significant progress has been made in the mapping of the data layers and usage by the infrastructure Ministries. Several Line Ministries and States/UTs have been onboarded and are increasingly benefitting from the adoption of PM GatiShakti principles in project planning and implementation. After completing the onboarding of infrastructure Ministries, social sector Ministries/ Departments have been onboarded onto the PM GatiShakti, thereby enabling comprehensive socio-economic development across the country. The NMP has been further developed as a data-based decision support system with project planning tools, dynamic dashboards, MIS report generation, etc. to support the line Ministries/Depts and States/UTs in infrastructure planning and implementation. Line Ministries and States/UTs have individual portals to upload, update, standardize and validate data on a periodic basis. The data on these individual portals is integrated on the NMP, which is available for planning, review and monitoring by the NPG.

For accurate and integrated planning using the NMP, management of data for Quality Improvement Plan (QIP), on the NMP and individual portals, requires line Ministries/Depts. and States/UTs to define essential/desired data layers/attributes, upload

the relevant data/attributes in a standardized manner, along with metadata. This data needs to be validated by each line Ministry/Dept. and State/UT through an established mechanism. Therefore, the data layers on the PM GatiShakti SMP portal need to be authenticated and standardized in nature.

A standard operating procedure (SOP), a set of written guidelines or instructions for completing a routine task, is designed to increase performance, improve efficiency, and ensure quality through systemic homogenization. SOPs are utilized in various contexts by a vast array of entities, including those in planning, business, education, government, and industry.

In this context, a Standard Operating Procedure (SOP) for mapping various data layers has been developed by DPIIT for the State Master Plan (SMP) portal. The SOP contains data layers under various states/departments which are useful for planning by other ministries/departments as well. The SOP document mainly focuses on data management standards, types of data formats, data standardization, data validation, frequency of data updates, etc., which will guide states/departments for developing SMP as a valuable guideline to promote clarity, collaboration and efficient data management practices for planning. States have been mapping data on SMP as per 30 mandatory layers (as per table below). However, for clarity and ease of data mapping, 30 mandatory layers are grouped into 23 layers. Sub-classification has been done by grouping in 23 layers for systematic planning by merging some layers with main layers(**canal, drainage, river, reservoir/dam** with the **water resources main layer**;, **reserve forest, wildlife sanctuary** with the **forest main layer**; and **flood layers** in the **seismicity main layer**). The list of 30 mandatory layers (now grouped in 23 layers)are:

a. Mandatory Layers for State

S.NO	Data Layer	Type of Layers Geometry
1	Traffic Lights	Point
2	Electric Poles	Point
3	Bus terminals & Bus Shelters	Point
4	Govt. Buildings (State Govt/ Central Govt/ PSU)	Point and Polygon
5	Petrol/diesel outlet	Point
6	ASI Sites	Point
7	Tourism Sites	Point
8	Roads	Line
9	Water supply pipelines	Line
10	Sewer lines	Line
11	Canals*	Line
12	Drainage*	Line
13	Power transmission and distribution	Line

14	Village habitation	Point and Polygon
15	Mining areas	Polygon
16	Economic zones	Polygon
17	Industrial Parks	Polygon
18	Eco-sensitive zones	Polygon
19	Water resources	Polygon
20	Rivers*	Polygon
21	Reservoirs/ Dams*	Polygon
22	Land Records	Polygon
23	Forest	Polygon
24	Wild Life#	Polygon
25	Reserve Forest#	Polygon
26	Flood Maps@	Polygon
27	Soil Type	Polygon
28	Embankments	Polygon
29	Seismicity	Polygon
30	Coastal Regulation Zone (CRZ)	Polygon

**Merged with the main data layer of Water Resources Layers.*

 # Merged with the main data layer of Forest Layers.

@ Merged with the main data layer of Seismicity Layers.

2. Basic Definition

1. **Data layers:**
   A collection of similar geographic features, such as roadways (lines), water bodies (polygons) or landmarks (points). A data layer, also known as an operational layer, is a client-side layer that can access geographic data from a data source. You use a data layer to display geographic data on top of a base map layer in a map or scene. The data source for the layer can be a data service or a file such as a Shapefile, GeoJSON file or API.

2. **Spatial Data:**
   Spatial data is any type of data that directly or indirectly references a specific geographical area or location. Sometimes called geospatial data or geographic information, spatial data can also numerically represent a physical object in a geographic coordinate system.

3. **Attributes:**
   Attributes can be defined as: o non-spatial characteristics that describe spatial entities. A list of features and its associated data values. For example: Area (in sq.km), capacity (MMT), Major commodities, etc. are attributes for a port o commonly arranged in tables where a row is equivalent to one entity and a column is equivalent to one attribute, or descriptor of that entity.

4. **Web Map Service (WMS):**
   A Web Map Service (WMS) layer is a geo-referenced map image loaded from a Web Map Service. These are used as backgrounds and overlays for geographical maps. This Web Service is mainly used for visualization prospective.

5. **Web Feature Service (WFS):**
   A Web Feature Service (WFS) describes discovery, query, or data transformation operations. These Web Services can be used by Ministries/ Department/ States for running spatial queries to get attribute-specific information. E.g.: - If a Census Data Layer has information about Age and type of Work then we can search for all those populations having an age greater than any specific number.

6. **API (Application Programming Interface):**
   In the context of API, the word Application refers to any software with a distinct function. Interface can be thought of as a contract of service between two applications. This contract defines how the two communicate with each other using requests and responses.

7. **Metadata:**
   Metadata is an information/ instruction manual about spatial data. Similar to a catalog record, metadata records document the who, what, when, and where of a data resource. Metadata for each Data Layer details include the Source, Title, Type, Author, Last Modified Date, Thumbnail, tags, etc. Metadata is information about data resources. Geospatial metadata describes maps, Geographic Information Systems (GIS) files, imagery, and other location-based data resources.

8. **Shapefile:**
   A vector data storage format is used for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files and contains one feature class.

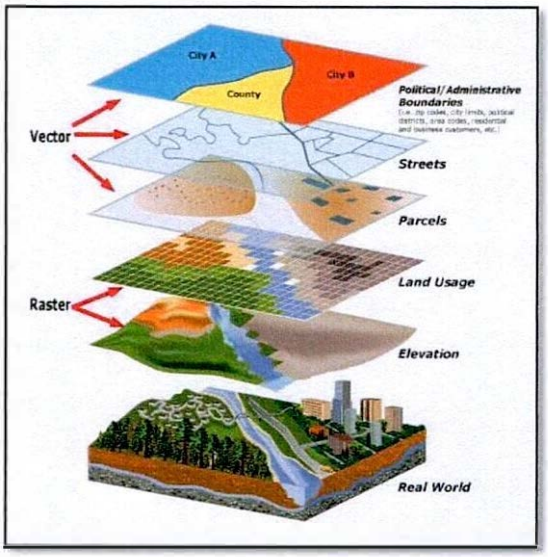
9. **KML (Keyhole Markup language):**
   KML is a file format used to display geographic data in an Earth browser such as Google Earth.

10. **Geo-referencing:**
    The process of aligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data. Geo-referencing may involve shifting, rotating, rescaling, skewing, and in some cases, warping, rubber sheeting, or ortho rectifying the data.

11. **Cadastral maps:**
    Cadastral maps are detailed representations of land parcels that provide comprehensive insights into property boundaries, land ownership details, and the physical characteristics of a specific area.

3. Data Formats

Geographic Information Systems (GIS) data formats serve as standardized methods for encoding geographical information into computer files, specifically tailored for deployment in GIS and other geospatial applications. These formats are broadly classified into two categories: vector and raster. These formats serve various purposes, from data storage and analysis to sharing and displaying geographic information. States/ Departments & UTs share data with DPIIT & BISAG-N in the following Data Formats.



- Vector Data Formats:

  1. Shapefile: The most common GIS format, consisting of a mandatory set of three files: SHP for feature geometry, SHX for the shape index, and DBF for attribute data.
  2. GeoJSON (GEOJSON, JSON): An open-standard format using JavaScript Object Notation (JSON) to encode geographic data structures like points, lines, and polygons.
  3. CSV Files with Location Information (Lat/ Long)
  4. XML files with Location information (Lat/Log)

- Raster Data Formats:

  - GeoTIFF (.TIFF): A format that includes geo-referencing information embedded within a TIFF file, which allows for the embedding of latitude, longitude, and map projection information directly within the image file.
  - ERDAS IMAGINE (.IMG): A raster data format used for satellite imagery and aerial photographs that supports multiple layers of spatial data.

Data shared to BISAG-N should preferably be in API format to ensure Near Real-Time Data updates to respective portals. In case States/Departments & UTs desire to do decision-making based on some specific layers, these layers should be shared with BISAG-N as a WMS/WFS Web Service. The preferable suggested for data exchange by DPIIT & BISAG -N.

S.No.	Task	ResponsibleAgency
1	Data Layer Sharing	Concerned Departments/States & UTs to define the GIS-based data formation which data would be shared.
2	Data Sharing for checking	Should be shared with DPIIT in .shp/Geodatabase/ or xls/.xlm
3	Data Upload to NMP/SMP/States/Departments & UTs Portals	BISAG-N to upload data after verification by DPIIT

4. Data Standardization

1. Identification of Data Layers

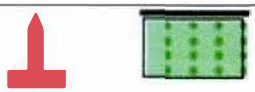
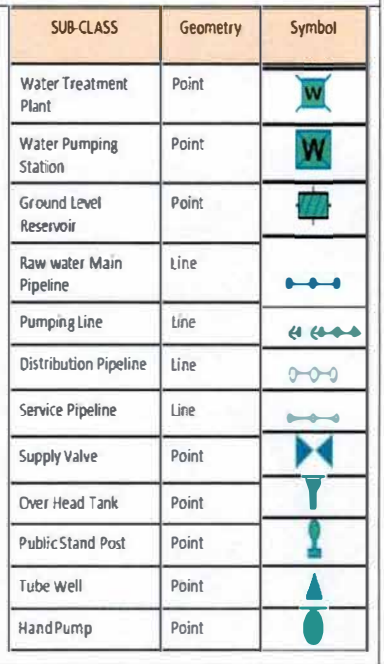
The States/Departments & UTs to identify the requisite data layers (mandatory and additional layers) that will aid planning process. Mandatory Layers are those compulsory data layers that shall be mapped on SMP and shared with other States/Departments & UTs and central Ministries for project planning and decision-making. Whereas, additional Layers are data layers which States/UTs feel deemed necessary for their planning purpose.

States/Departments & UTs should also ensure data resolution for each data layer Shared for accuracy of project planning.

S.No.	Task	Responsible Agency
1	Identification of Data Layers	Concerned States/Departments & UTs to Define Data Layers
2	Addition of data access parameter for Data Layers	
3	Validation script for Data Layer Verification	BISAG-N to ensure data validation script.

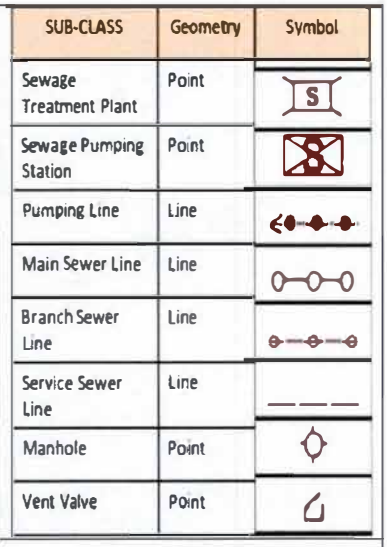
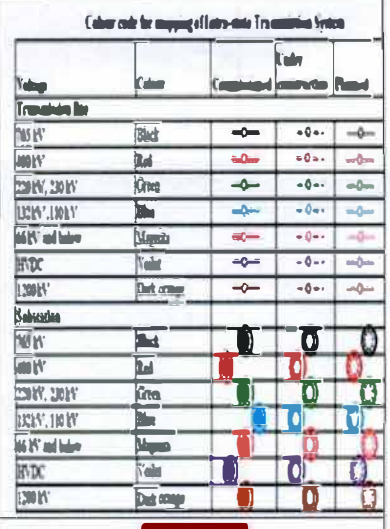
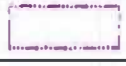
2. The Mandatory layers along with sub-layers are mentioned below in detail with type of data (line/point/ polygon) , scale and symbology.

S.N	Name of Data Layer	Type of Layer's Geometry	Accuracy Scale	Category of Layer	Standard Symbology
1	Traffic Lights	Point	1:500	Urban/Rural Land use	
2	Electric Poles	Point	1:500	Urban/Rural Land use	
3	Bus Terminals & Bus Shelters	Point/ Polygon	1:500	Urban/Rural Land use	
4	Petrol/ Diesel outlet	Point	1:500	Urban/Rural Land use	
5	Govt. Buildings (State Govt/ Central Govt/ PSU)	Polygon	1:500	Urban/Rural Land use	
6	ASI Sites	Point/ Polygon	1:500	Heritage	

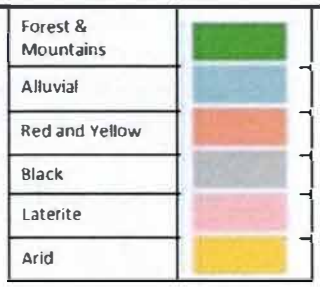
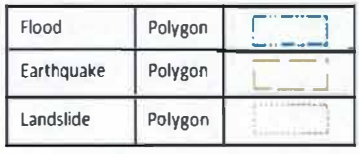
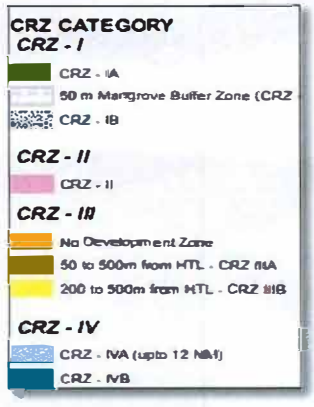
7	Tourism Sites	Point/ Polygon	1:500	Heritage	
8	Roads	Line & Polygon	1:1000	Roads	
9	Water Supply Network	Line	1:1000	Urban/ Land use	
					
10	Sewer lines	Line	1:1000	Urban/ Land use	

Categories of Road	Colour
National Highway Network	
State Expressways	
State Highways	
Major District Roads (MDRs)	
Other District Roads (ODRs)	
Municipal Roads	
Village Roads	

SUB-CLASS	Geometry	Symbol
Water Treatment Plant	Point	
Water Pumping Station	Point	
Ground Level Reservoir	Point	
Raw water Main Pipeline	Line	
Pumping Line	Line	
Distribution Pipeline	Line	
Service Pipeline	Line	
Supply Valve	Point	
Over Head Tank	Point	
Public Stand Post	Point	
Tube Well	Point	
Hand Pump	Point	

					
11	Power Transmission and Distribution	Line	1:1000	Power supply Network	
					
12	Village habitation	Polygon	1:1000	Boundaries	
13	Mining areas	Polygon	1:1000	Boundaries	
14	Economic zones	Polygon	1:1000	Boundaries	
15	Industrial Parks	Polygon	1:1000	Boundaries	

					Manufacturing – Polygon Service – Polygon Chemical – Polygon Pharmaceuticals – Polygon Textiles – Polygon IT Parks – Polygon Industrial Estate – Polygon Agro based & Food Processing – Polygon
16	Eco-sensitive zones	Polygon	1:1000	Boundaries	
17	Water Resources	Polygon	1:1000	Waterbodies/ Rivers/Reservoirs/Dams	
					River – Polygon Stream – Polygon/Line Canal – Polygon/Line Drain – Polygon/Line Ponds – Polygon Lake – Polygon Tank – Polygon Island (River/Lake) – Polygon Reservoir – Polygon Black Water – Polygon Sea – Polygon
18	Land Records	Polygon	1:1000	Boundaries	
19	Forest	Polygon	1:4000	Boundaries	
					Reserved Forest Protected/Notified Forest Wildlife Sanctuary
20	Soil Type	Polygon	1:4000	Boundaries	

					
21	Embankments	Polygon	1:10000	Boundaries	
22	Seismicity	Polygon	1:10000	Boundaries	
					
23	Coastal Regulation Zone (CRZ)	Polygon	1:10000	Boundaries	

3. Identification of Attributes for Each Layer

The States/Departments & UTs to identify the mandatory/additional data layers along with related attributes to aid monitoring, effective coordination, and integrated planning of projects on the NMP/SMP portals. Attributes of the mandatory layers are those compulsory attributes for data layers that shall be mapped and shared with other States/Departments & UTs for project planning and decision-making, where as essential attributes are those optional attributes for data layers that would be required by respective proponent States/Departments & UTs for their respective project planning on NMP only. Further, additional layers and related attributes may be identified by States/UTs in consultation with other departments/ planning division etc. restricted attributes are those attributes for data layers that will not be shared with any other

States/Departments & UTs

S.N	Task	Responsible Agency
1	Identification of Attributes for Data Layers	Concerned States/Departments & UTs to identify optionally and Mandatory attributes
2	Addition of Parameters in Attributes	
3	Validation script for Attribute Verification	BISAG-N to ensure data validation script.

4. Attributes of the Mandatory layers:

1. Traffic Lights

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Traffic Light ID	TL_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type	Authority	Text	50	Govt/Semi/ULB/other
Height	Height	Alphanumeric	25	Traffic Light Height
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal Minutes	Ex. 80° 56' 46.2012" E	Longitude

2. Electric Poles

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Electric Pole	EL_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type	Jurisdiction	Text	50	Govt/Semi/ULB/other/
Sub-Type	Authority	Text	50	Discom/Pvt/other
Height	Height	Alphanumeric	25	Electric Poles Height
Latitude	Lat	Degree Decimal	Ex. 26° 50'	Latitude

		Minutes	48.102" N	
Longitude	Long	Degree Decimal Minutes	Ex. 80° 56' 46.2012" E	Longitude

3. Bus Terminals & Bus Shelters

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Bus Terminals & Bus Shelters	BTBS_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type	Authority	Text	50	Govt/Semi/ULB/ Pvt/ other
Height	Height	Alphanumeric	25	Height
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal Minutes	Ex. 80° 56' 46.2012" E	Longitude

4. Petrol/ Diesel outlet

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Petrol/ Diesel outlet	PLDL_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Density	Density	Text	50	UoM
Capacity	Capacity	Alphanumeric	50	Capacity
year of commission	Year_Comm	Alphanumeric	50	Year of Commission
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal	Ex. 80° 56'	Longitude

		Minutes	46.2012" E	

5. Govt. Buildings (State Govt/ Central Govt/ PSU)

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Govt. Buildings	GB_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type of Building	Type_Building	Text	50	Cen./State/Semi
Name of Building	Name_Building	Text	50	Name of Building or Name of Office
year of establishment	Year_Comm	Alphanumeric	50	Year of Establishment
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal Minutes	Ex. 80° 56' 46.2012" E	Longitude

6. ASI Sites

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
ASI Sites	ASI_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type of Sites	Type_Site	Text	50	Cen./State/World Heritage/Built Heritage/Museums/project Mausam etc.
Name of ASI Site	Name_AS__BL	Text	50	Name of Site Building
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal	Ex. 80° 56' 46.2012" E	Longitude

		Minutes		

7. Tourism Sites

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Tourism Sites	Tour_ID	Alphanumeric	30	Unique Id
City Name	City_Name	Text	50	Name of City
District Name	Dist_Name	Text	50	Name of District
State/U.T.	State_Name	Text	50	Name of State
Type of Sites	Type_Building	Text	50	Cen./State/Religious/Local/ others
Name of Tourism Site	Name__Tour	Text	50	Name of Site
Latitude	Lat	Degree Decimal Minutes	Ex. 26° 50' 48.102" N	Latitude
Longitude	Long	Degree Decimal Minutes	Ex. 80° 56' 46.2012" E	Longitude

8. Roads

8.1 Road Layer - **Line Features**

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Road ID	Rd_ID	Alphanumeric	30	Unique Id
Road Type	Road_Type	Alphanumeric	50	AH/NH/SH/MDR/ODR/ MR / Village
Road Name	Road_Name	Text	50	Road Name
Length	Length	Double	10 Digit to 4 Decimals	Length (in km)

8.2 Road Layer –**Polygon Features**

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Road ID	Rd_ID	Alphanumeric	30	Unique Id

Road Type	Road_Type	Alphanumeric	50	AH/NH/SH/MDR/ODR/ MR / Village
Road Name	Road_Name	Text	50	Road Name
Arca	Arca	Alphanumeric	10 Digit to 4 Decimals	Arca (in Sq.km)

9. Water supply Network - **Line Features**

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description
Water SupplyID	WS_Line_ ID	Alphanu meric	30	Uniqueld
Type of Water Line	WT_Line	Text	50	*Raw Water Main Pipeline* *Pumping Line* *Distribution Pipeline* *Service Pipeline* *Strom Water Drain*
Town Name	Town_Name	Text	50	Town Name
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Construction Material	Cons_Mat	Text	50	PSC/DI/HDPE/MS/RCC/Others/GI/A C/CI/PVC
Pipe Dia in (mt.)	Pipe_Dia	Numeric	15	Pipe Diameter in meters
Length	Length	Numeric	15	Length in meters
Water Linc Naturc	WL_Nature	Text	30	Existing/Proposed/Doubling/feeder/mainline/minor line

9.1 Water Supply Network – **Point Features**

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description
Water SupplyID	WS_Line_ ID	Alphanum eric	30	Uniqueld

		ric		
Type of Water Structure	WS_Type	Text	50	*Water Treatment Plant* *Water Pumping Station* *Ground Level Reservoir* *Supply Valve* *Over Head Tank* *Public Stand Post* *Tube Well* *Hand Pump* *Storm Water Vent*
Town Name	Town_Name	Text	50	Town Name
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Capacity	Capacity	Text	30	Capacity of the Treatment plant, Pumping station, GLR, and overhead tank in the respectivcunits
Water Structure Nature	WS_Nature	Text	40	Existing/Proposed

10. Sewerage Network – **Line Feature**

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description
Sewerage ID	SW_Line_ ID	Alphanumeric	30	Unique Id
Type of Sewerage Line	SW_Line	Text	50	*Pumping Line* *Main Sewer Line* *Branch Sewer Line* *Service Sewer Line*
Town Name	Town_Name	Text	50	Town Name
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Construction on Material	Cons_Mat	Text	20	PSC/DI/HDPE/MS/RCC/Others/GI/AC/CI/PVC

Pipe Dia in mt.	Pipe_Dia	Numeric	15	Pipe Diameter in meters
Length	Length	Numeric	15	Length in meters
Water Line Nature	WL_Nature	Text	40	Existing/Proposed/Doubling/feeder/mainline/minor line

10.1 Sewerage Network – Point Feature

Attribute Name	Attribute Field Name	Attribute FieldType	Attribute Field Width	Description
SewerageID	SW_Line_ID	Alphanumeric	30	Unique Id
Type Sewerage Structure	SW_Type	Text	50	*Sewage Treatment Plant* *Sewage Pumping Station* *Manhole* *Vent Valve*
Town Name	Town_Name	Text	50	Town Name
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Capacity	Capacity	Text	50	Capacity of the Treatment plant, Pumping station, GLR, and overhead tank in the respective units
Water Structure Nature	WS_Nature	Text	40	Existing/Proposed

11. Power Supply attributes

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description
Power Supply	Pow_ID	Alphanumeric	30	Unique Id
Name of the Line	PL_Type	Text	50	KPS1 - Bhuj PS 765 kV D/C line
Tower location number	Tower_No	Numeric	25	e.g 301, 502
Tower Type	Tower_Type	Text	50	e.g. (DA/DB/DC or QA/QB/QD)
Special Foundation	Sp_Found	Text	50	e.g. Pile, well, raft etc.

Voltage levels	Vol_Level	Numeric	50	800/765/400/220/132/66 kV etc.
Name of Sub-station	Sub_Station_ Name	Text	50	e.g. Tuticorin/ ISTS/ Intra STS/Generator Pooling Station/Distribution etc.
Type of Sub-Station	Type_ Substation	Text	50	e.g AIS/GIS/Hybrid
Bus Switching Schemes (voltage level wise)	Bus_Swi_ Scheme	Text	100	e.g. 400 kV One and Half Breaker scheme, 220 kV Double main and Transfer Bus
Mode of Implementation	Mode_Imple	Text	50	eg.POWERGRID/Adani/GETCO/CESC/DVC/ NPC/TATA/NBPDCL/BEST/BESCOM/ReNe w/GMR/Avaada/JSW etc.
Status	Status	Text	50	Commissioned/ Under Construction / Planned
Transformation capacity	Trans_Capacity	Text	70	e.g. 2x1500 MVA, 765/400 kV
Town Name	Town_Name	Text	50	Town Name
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name

12. Village Habitation

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Village_ID	Vill_ID	Alphanumeric	30	Unique Id
Village Name	Vill_Name	Text	50	Name of Village
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Numeric	25	Area (in Sq.km)
Village Population	Village_Popu	Numeric	50	No. of Population

13. Mining Areas

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Mining_ID	Mining	Alphanumeric	30	Unique Id
Village/Location Name	Vill_Name	Text	50	Name of Location/Village
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Mineral Type	Min_Type	Text	50	Gold Mines/Iron

				/Limestone etc.
Quantity	Quantity	Numeric	50	In tons
Project Details	Pro_Details	Text	50	Complete/ongoing/ sanctioned/planning
Area	Area	Numeric	20	Area (in Sq.km)

14. Economic Zones

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Economic Zones _ID	Eco_Zones_ID	Alphanumeric	30	Unique Id
Village/Location Name	Vill_Name	Text	50	Name of Location/Village
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Economic Zone Type	Eco_Type	Text	50	SEZ/MMLP/ICD/GSC/GVC others
Project Details	Pro_Details	Text	50	Complete/ongoing/ sanctioned/planning
Area	Area	Numeric	20	Area (in Sq.km)

15. Industrial Parks

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Industrial _ID	Indus_ID	Alphanumeric	30	Unique Id
Location Name	Vill_Name	Text	50	Name of Location
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Industrial Zone Type	Indus_Type	Text	50	Manufacturing/ Service/ Chemical/ Pharma/Textile/ IT Parks etc.
Project Details	Pro_Details	Text	50	Complete/ongoing/ sanctioned/planning
Area	Area	Numeric	20	Area (in Sq.km)

16. Eco-Sensitive Zones

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Eco-sensitive _ID	Ecosen_ID	Alphanumeric	30	Unique Id
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Eco-sensitive	Eco_Zone_Type	Text	50	*Bird Sanctuary*

Zones Type				*Bio-diversity Park* *Botanical Garden* *Zoo* *National Park* *Mangrove* *Oxbow Lakes* *Paleochannels*
Area	Area	Numeric	20	Area (in Sq.km)

17. Water Resources

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Water Resource	WRD_ID	Alphanumeric	30	Unique Id
Village Name	Vill_Name	Text	50	Name of Village
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
WRD Type	WRD_TYPE	Text	50	*River* *Stream* *Canal* *Drain* *Ponds* *Lake* *Tank* *Island (River/Lake)* *Reservoir* *Back Water* *Seaport area*
Name of WRD	WRD_Name	Text	50	*e.g. Name of River, Pond etc.*
Area	Area	Numeric	20	Area (in Sq.km)

18. Cadastral

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Bhu Code	Bhu_Code	Alphanumeric	30	Unique_id
Survey Number	Survey_Num	Alphanumeric	30	Khasra Number/Survey Number
Ownership	Owner_Ship	Text	50	Central Govt./ State Govt/Private/Agriculture/

				wasteland/Forest /others
Village	Vill_Name	Text	50	Name of Location/Village
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4 decimals	Area of Village Cadastre or Parcel

19. Forest

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Forest	Forest_ID	Alpha- numeric	30	Unique_id
Forest Bit No.	Forest_Bit_No.	Alpha-numeric	30	Forest Parcel Identification No.
Type of Forest	Forest_Type	Text	50	Reserved Forest
				Protected/Notified Forest
				Wildlife Sanctuary
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4 decimals	AreaofForest Parcel

20. Soil

Attribute Name	Attribute FieldName	Attribute FieldType	Attribute Field Width	Description/Value
Soil	Soil_ID	Alphanumeric	30	Unique_id
Type of Forest	Soil_Type	Text	50	Forest & Mountains Soil/ Alluvial/Red and Yellow/ Black/ Laterite/ Arid
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4 decimals	AreaofSoil Parcel

21. Embankments

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Embankment	Embank_ID	Alpha-numeric	30	Unique_id
Name of	Name_Embank	Text	50	Local Name of Embankment

Embankment				
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4 decimals	AreaofParcel

22. Seismicity

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
Seismicity	Seimic_ID	Alpha-numeric	30	Unique_id
Type of Seismic Zones	Seismic Zones	Text	50	Earthquake Zone /Landslide/Flood Line/Landslide
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4 decimals	Areaofpolygon

23. CRZ(Coastal Regulation Zone)

Attribute Name	Attribute Field Name	Attribute Field Type	Attribute Field Width	Description/Value
CRZ	CRZ_ID	Alpha-numeric	30	Unique_id
Type of CRZ Zones	CRZ_Zones	Text	50	CRZ-I/CRZ-II/CRZ-III/CRZ-IV
District Name	Dist_Name	Text	50	District Name
State Name	State_Name	Text	50	State Name
Area	Area	Double	Upto4decimals	AreaofParcel

5. Data Verification

1. Data Authenticity Declaration for each Data Layer shall be provided by respective States/Departments & UTs. States/Departments & UTs need to ensure that the Data Layers shared should have all the Attributes. Each Layer should be spatially verified for accuracy such that features don't fall outside India/ State/ District/ Taluk Boundaries based on their actual location etc.
2. Maker-Checker-Approver mechanism needs to be adopted by each PM GatiShakti Cell of each State/Departments & UTs for Data Verification.

6. Frequency of Data Updates

The update periodicity of each data layer and their respective attributes will be 3 months from the State/Department and Union Territory. The declaration regarding the frequency of the data update mechanism to be adopted should be provided by the State/Department and Union Territory.

S.no.	Task	Responsible agency
1	Declaration for frequency of Data Layer update	Shared by States/Departments & UTs
2	Frequency of Data Layers upload	Concerned States/Departments & UTs to define frequency of data layer update
3	Integration of frequency of Data Layer updates at the Portal Level	• BISAG-N shall ensure data update Periodicity. • BISAG-N would ensure a notification/ alert mechanism to be provided to States/Departments & UTs as a reminder for Updation of their respective Data Layers. • Data layer integration at the level of Ministries/Departments/States and Union Territories will be integrated with the API after database verification by DPIIT.

7. Metadata for each Data Layer

Metadata for each Data Layer is to be updated and all layers are to be shared by States/Departments & UTs to BISAG-N as API or OGC Web Services. The metadata details are as follows:

S.No.	Task	Responsible agency
1	Metadata for Each Data Layer	Concerned States/Departments & UTs to update for respective Data Layers
2	Updating of Metadata	BISAG-N to facilitate by providing an Interface.
3	Automatic Metadata Updation	An automated tool to be developed by BISAG-N for updating metadata for each data layer being uploaded to PM GatiShakti Platform once data is shared by respective States/Departments & UTs and Departments in web services.

METADATA REFERENCE INFORMATION			
S.No.	**Metadata Parameter**	**Metadata Information**	**Sample Data**
1	Identification Information	Theme Layer Name	Road
		Type of Theme Layer	Polygon/Polyline/Point
		Originate Department	PWD/PHE/Water Resources
		Publication Date	04.07.2024
		Description of layer	Brief information about Theme Layer
		Access restriction	Yes/No/Limited
		Status	Completed/Ongoing/
		Website or portal name	Name of Any portal e.g. https://nhai.gov.in/
		Point of Contact Designation	Self-Explanatory
		Contact Organization	Self-Explanatory
		Organization Address	Self-Explanatory
		District Name	Self-Explanatory
		State Name	Self-Explanatory
2	Attribute Information	No. of Attributes	No. of column Information
		Attribute Name	Name of Information in the layer. e.g. Unique ID, Description, Area, Classification etc.
		Attribute Type	XLS, XLM OR OTHERS

3.	Spatial Reference Information	Coordinate System	Geographic or projected
		Geographic Coordinate Units	Degree Decimal or Degree Decimal Minutes
		Datum Name	WGS_1984

8. Data sharing Standards

The databases maintained by various States/Departments of India, which are based on GIS, need to be shared at the national level. The planning done at the national level has direct and indirect impacts at the state, district, and village levels. Continuous updating of the database and reflecting it on the national portal is an essential part of the planning process. Therefore, according to the National Data Sharing Policy, states will be required to do this through API/WMS/WFS.

9. References

- NNRMS Standards: National Natural Resources Management System
- The Digital India Land Records Modernization Programme (DILMP) Guidelines, Technical Manuals and MIS – 2018-2019, Ministry of Rural Department.
- National Urban Information System, (NUIS Standards) Govt of India, MOUD
- Urban And Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, January 2015, MoUD, New Delhi.
- website http://amrut.gov.in
- https://moef.gov.in/moef
- Survey of India
- GIS Standard Operating Procedures on Incidents – 2014 http://www.nwcg.gov.
- Geospatial content standards NRSC-RSAA-USGIG-Aug-2015-TR-729
- Finalized SOP of MoPNG, MPoW.
- Design and Standards, Ministry of Urban Development of India & NRSC – May 2016.
- ASPRS- Accuracy Standards for Digital Geospatial Data – (https://www.asprs.org/)

Abbreviation:

- API – Application Program Interface
- WMS- Web Map Service
- WFS – Web Feature Service
- KML - Keyhole Markup language
- .shp file – Shapefile
- CSV File - comma-separated values
- XML File - Extensible Markup Language
- GeoTiff - Geographic Tagged Image File Format
- CRZ - Coastal Regulation Zone
- BISAG-N - Bhaskaracharya National Institute for Space Applications and Geo-informatics
- DPIIT - Department for Promotion of Industry and Internal Trade
- NMP – National Master Portal
- OGC - Open Geospatial Consortium
- URDPFI - Urban and Regional Development Plans Formulation and Implementation
- NNRMS - National Natural Resources Management System
- DILMP - Digital India Land Records Modernization Programme
- NUIS- National Urban Information System
- AMRUT - *Atal Mission for Rejuvenation and Urban Transformation*
- Moef - Ministry of Environment and Forests
- NRSC- National Remote Sensing Centre

PM GatiShakti
National Master Plan for Multi-Modal Connectivity

Department of Commerce
Ministry of Commerce and Industry
Government of India

LOGISTICS DIVISION

DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE(DPIIT)
MINISTRY OF COMMERCE AND INDUSTRY