LITD 22 (25845)
Draft IS XXXX: 2024
December 2024

BUREAU OF INDIAN STANDARDS

WIDE CIRCULATION DRAFT FOR COMMENTS ONLY

मसौदा भारतीय मानक
भौगोलिक सूचना - कायाात्मक क्षेत्र (प्रशासलनक सीमाएँ)

Draft Indian Standard

Geospatial Information –

Functional Areas (Administrative Boundaries)

ICS 35.240.70

LITD 22 Geospatial Information Sectional Committee	**Last Date for Comments:07 Feb 2025**

Geospatial Information Sectional Committee LITD 22

FOREWORD

[formal clauses will be added later]

This draft Indian Standard will be adopted by the Bureau of Indian Standards, after the draft finalized by the Wearable Electronic Devices and Technologies Sectional Committee, will be approved by the Electronics and Information Technology Division Council.

In alignment with the directives outlined in the National Geospatial Policy (NGP) of 2022, which identifies 14 National Fundamental Geospatial Data themes, this standard is dedicated to the Functional Area (Administrative Boundary) theme. As stipulated in NGP clause 5.2.2.3, Survey of India (SOI) is tasked with maintaining Functional Areas (Administrative Boundaries) in collaboration with various stakeholders, including the private sector, while adhering to governmental priorities and policy goals.

1 CONTENTS

INTRODUCTION

The demarcation and accurate representation of administrative boundaries are essential for effective governance, planning, and decision-making, particularly in Land Resource Management. These boundaries exist at various levels, including International Boundary, State Boundary, District Boundary, Village Boundary, Municipal Boundary, Coastal Zone Regulation & Election constituency. However, the creation, update and maintenance of these boundary data sets involve multiple departments, states, and agencies, resulting in disparate datasets that lack uniformity and interoperability.

In response to the increasing digitalization trend, it becomes imperative to establish common standards for “Functional Areas (Administrative Boundaries)” data theme to ensure consistency and interoperability among stakeholders. Without such standards, existing datasets remain ambiguous and incompatible.

The thematic working group, under the National Geospatial Policy (NGP) of 2022 was established, recognizing the critical role of administrative boundaries in spatial data infrastructure. It was agreed to develop comprehensive standards for “Functional Areas (Administrative Boundaries)”related spatial data.

0.1 Objective

The objectives of this standard are:

a) Development of a nationally recognized standard for the "Functional Area" sectoral theme, achieved through comprehensive consultation with users and stakeholders.

b) Establishment of a standardized symbolization and depiction of 'Functional Area' at the national level, ensuring consistency and clarity in representing administrative boundaries on maps.

c) Mandating the inclusion of essential/minimum set of attributes for the “Functional Areas (Administrative Boundaries)”, thereby enhancing accuracy and completeness.

d) Requiring the inclusion of essential/minimum metadata for user information and analysis, facilitating understanding and thorough examination of the data.

e) Ensuring interoperability and accessibility across diverse applications and stakeholders, promoting seamless integration and utilization of geospatial data resources.

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Geospatial Information –

Functional Areas (Administrative Boundaries)

1 SCOPE

This Indian Standard establishes a common framework accessible to all stakeholders and users, facilitating the generation, archival, and dissemination of high quality and interoperable datasets within the sectoral theme.

This standard defines a reference "Functional Areas (Administrative Boundaries)" covering basic information-related components of Admin Boundaries. This standard includes the minimum elements required from the common perspective of all stakeholders.

This standard also includes a comprehensive range of tasks aimed at standardizing the data, quality, interoperability, and utility of administrative boundary data. The following key areas outline the specific objectives and deliverables of this standard:

a) Standardization of Domains for Functional Areas (Administrative Boundaries).
b) Creation or Adoption of Basic Definitions and Standards
c) Data Content and Structure for Functional Areas (Administrative Boundaries).
d) Harmonization for Naming and Semantics
e) Metadata and Data Dictionary Structure
f) Standardization of Symbols

By addressing these key areas of focus, this standard aims to lay the groundwork for a cohesive and interoperable Functional Areas (Administrative Boundaries) dataset, which will serve as a vital resource for governmental agencies, decision-makers, researchers, and the broader geospatial community.

2 NORMATIVE REFERENCES

The standards listed in Annexure F are necessary adjuncts to this standard. They, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3 TERMS, DEFINITIONS AND ABBREVIATIONS

3.1 Terms and Definitions

For this document's purposes, the following terms and definitions apply.

3.1.1 *International Boundary*

An international border is a defined boundary line separating the territories of two or more sovereign nations, recognized by international law and governing the movement of people, goods and services between them.

3.1.2 *State Boundary*

A state boundary in India is the legally recognized demarcation line separating the territories of individual states within the country.

3.1.3 *Division Boundary*

One Division is the integration of districts for administrative purposes.

3.1.4 *District Boundary*

A district is an administrative division within a state, serving as a unit for administrative purposes. It forms a crucial part of the state's administrative structure.

3.1.5 *Taluka/ Tehsil/ Mandal Boundary*

A Tehsil is an administrative division within a district, serving as a unit for administrative purposes. It is formed within the district's broader framework.

3.1.6 *Village*

A village means a village specified by the Governor through public notification to be a village for the purposes of this Part and includes a group of villages so specified.

3.1.7 *Village Boundary*

A village is the fundamental and smallest administrative unit within a Tehsil, serving as a divisional entity for administrative purposes.

3.1.8 *Panchayat*

A Panchayat means an institution (by whatever name called) of self-government constituted under article 243B of the Constitution of India for the rural areas.

3.1.9 *Panchayat Area/Boundary*

A Panchayat area means the territorial area of a Panchayat.

3.1.10 *Gram Sabha*

A Gram Sabha means a body consisting of persons registered in the electoral rolls relating to a village comprised within the area of Panchayat at the village level; Gram Sabha may exercise such powers and perform such functions at the village level as the Legislature of a State may provide, by law.

3.1.11 *Village level Panchayat*

It is called Panchayat at the village level. It is a local body working for the good governance of the village.

3.1.12 *Intermediate level Panchayat*

An Intermediate level means a level between the village and district levels specified by the Governor of a State by public notification to be the intermediate level for the purposes of this Part. Panchayat at the intermediate level, may not be constituted, in a State having a population not exceeding twenty lakhs.

3.1.13 *District level Panchayat*

In the district level of the Panchayati Raj system, there is Zila Parishad. It looks after the administration of the rural area of the district and its office is located at the district headquarters.

NOTE - For 3.1.6 to 3.1.13 see MoSPI_Ch42_S.No.42.7

3.1.14 *Committee*

Committee means a Committee constituted under article 243S of the Constitution.

3.1.15 *Metropolitan Area*

Metropolitan area means an area having a population of ten lakhs or more, comprised in one or more districts and consisting of two or more Municipalities or Panchayats or other contiguous areas, specified by the Governor by public notification to be a Metropolitan area.

3.1.16 *Municipal Area*

Municipal area means the territorial area of a Municipality, as is notified by the Governor.

3.1.17 *Municipality*

Municipality means an institution of self-government constituted under article 243Q of the Constitution.

NOTE

i) Constitution of Municipalities: As per Article 243Q of the constitution, every State should constitute three types of municipalities in urban areas. I.e. Nagar Panchayat, Municipal Council & Municipal Corporation

ii) For 3.1.14 to 3.1.16 see MoSPI_Ch42_S.No.42.25

3.1.18 *Nagar Panchayat*

Nagar Panchayat (by whatever name called) for a transitional area, that is to say, is an area in transition from a rural area to an urban area.

3.1.19 *Municipal Council*

A Municipal Council is constituted for a smaller urban area.

3.1.20 *Municipal Corporation*

A Municipal Corporation is constituted for a larger urban area.

Note – For 3.1.17 to 3.1.18 see MoSPI_Ch42_S.No.42.26

3.1.21 *Ward Boundary*

Municipal area shall be divided into territorial constituencies to be known as wards. See: MoSPI_Ch42_S.No.42.28

The Boundary of the ward will be Ward Boundary.

3.1.22 *Notified Area Council (Committee)*

It is established by a notification in the government gazette. Unlike the municipality, it is an entirely nominated body. The state government nominates all the members of a notified area committee, including the chairperson. Thus, it is neither an elected body nor a statutory body.

3.1.23 *Cantonment Boundary*

The area notified under "Cantonment Act, 2006" is called a Cantonment area. The Boundary of the area will be Cantonment Boundary.

Excerpt from the Act for reference: "The Central Government may, by notification in the Official Gazette, declare any place or places along with boundaries in which any part of the Forces is quartered or which, being in the vicinity of any such place or places, is or are required for the

service of such forces to be a cantonment for the purposes of this Act and of all other enactments for the time being in force, and may, by a like notification, declare that any cantonment shall cease to be a cantonment."

[*See Cantonment* Act, 2006 Chapter III, Definition of Cantonment]

3.1.24 *Forest Circle*

A circle is a geographical administrative unit within the Forest Survey of India. Circles are responsible for overseeing forest survey activities and management within a specific State or Region.

3.1.25 *Forest Division*

Divisions are further subdivisions within circles. They are responsible for more localized forest management and survey activities within their designated areas.

3.1.26 *Forest Range*

It represents a larger area than a forest but is smaller than a division or circle. The exact size and boundaries of a forest range can vary depending on factors such as the extent of forest cover, terrain, and administrative considerations.

3.1.27 *Forest Beat*

A beat is the smallest operational unit within a division. It typically represents a specific area of forestland surveyed and managed by forest officials.

3.1.28 *Coastal Regulation Zone (CRZ)*

For the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area shall be classified as CRZ-I, CRZ-II, CRZ-III, CRZ-IV.

[*See* Ministry of Environment, Forest and Climate Change Gazette notification: Extraordinary (Part II – Section 3(i) dated 08thJanuary, 2019)]

3.1.29 *Island Coastal Regulation Zone (ICRZ)*

For the purpose of conserving and protecting the coastal areas and marine waters, the ICRZ area shall be classified as ICRZ-I, ICRZ-II, ICRZ-III, ICRZ-IV.

[*See* Ministry of Environment, Forest and Climate Change Gazette notification: Extraordinary (Part II – Section 3(ii) dated 08thMarch, 2019)]

3.1.30 *Integrated Island Management Plan (IIMP)*

All the smaller Islands in Andaman and Nicobar and Lakshadweep, other than those listed under the ICRZ categories shall be managed through the respective Integrated Island Management Plans (IIMP).

3.1.31 *Parliament Constituency*

The Lok Sabha, the lower house of the Parliament of India, consists of Members of Parliament (MPs). Each MP represents a single geographic constituency known as Parliament Constituency.

3.1.32 *Legislative Assembly Constituency*

Assembly constituency means a constituency provided [by law] for the purpose of elections to the Legislative Assembly of a State.

3.1.33 *Planning Area Boundary*

A development area (local/ regional/ any other) as specified by competent authority/ Government delineated for future planned development under the law relating to Town and Country Planning from time to time.

The State notifies Planning Area by themselves or in consultation with Planning Boards and may elaborate the criteria for delineating the same in respective State Town and Country Planning Acts.

[*See* Section 2, Real Estate (Regulation and Development) Act, 2016 and Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, January, 2015, (Volume IIA and IIB Appendices to URDPFI Guidelines, 2014)]

3.1.34 *Highway Corridor Development Zone*

A regulatory zone provided along the important highways in a region outside the controlled/ development/ regulated zone, within which necessary planned development may be undertaken along a highway corridor.

3.1.35 *Peripheral Control Belt Boundary*

The area adjacent to the urban area earmarked by state planning departments in master plans for development regulations.

3.1.36 *Data Type*

Specification of a value domain with operations (4.15) allowed on values in this domain.

[*See*: ISO/TS 19103:2005, 4.1.5]

NOTE —"CharacterString" and "Text" are synonymously used in this standard.

Example: Integer, Decimal, Boolean, CharacterString.

3.1.37 *Dataset*

Identifiable collection of data

NOTE —A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature or feature attribute contained within a larger dataset. A hardcopy map or chart may also be considered a dataset.

3.1.38 *Feature*

Abstraction of real-world phenomena [*See* ISO 19101:2002, 4.11]

3.1.39 *Free Text*

Textual information that may be expressed in one or many languages

3.1.40 *Element*

Discrete unit of an entity

NOTE —Equivalent to an attribute and/or an association in UML terminology. Class attributes and relationships are referred to collectively as elements.

3.1.41 *Entity*

Set of elements describing the same aspect of data

NOTE —May contain one or more entities. Equivalent to a class in UML terminology.

3.1.42 *Model*

Abstraction of some aspects of reality. [*See*: ISO 19109:2005, 4.14]

3.1.43 *Resource*

Identifiable asset or means that fulfils a requirement

Example: Dataset, dataset series, service, document, initiative, software, person or organization.

3.1.44 *Citation*

Information object containing information that directs a reader or user’s attention from one resource to another. [*See* ISO 24619:2011, 3.1.16]

3.1.45 *Lineage*

Provenance, source(s) and production process(s) used in producing a resource

3.1.46 *Metadata*

Information about a resource

3.1.47 *Metadata Element*

Discrete unit of metadata

NOTE —Metadata elements are unique within a metadata class. Equivalent to an attribute and/or an association in UML terminology. Class attributes and relationships are referred to collectively as metadata elements.

3.1.48 *Metadata Entity*

Set of metadata elements describing the same aspect of data

3.2 Abbreviations

The following abbreviations shall apply:

SOI Survey of India

FSI Forest Survey of India

TWGThematic Working Group

NGP National Geospatial Policy, 2022

OGC Open Geospatial Consortium

UML Unified Modeling Language

XML Extensible Markup Language

3.3 Conformance Requirements

Any dataset that claims conformance with this standard shall pass the requirements described in the abstract test suite presented in **Annexure A**. Functional Areas (Administrative Boundaries) data model structures shall be as specified in **Clause 6 and Annexure B**. Metadata shall be as specified in **Clause 7 and Annexure C**. If a discrepancy exists between the UML models provided in **Clause 6 and Annexure B** for Functional Areas (Administrative Boundaries) data model **or Clause 7 and Annexure C** for Metadata, the UML models shall prevail.

3.4 Abstract Test Suite

For conformance, testing using the abstract test suite in **Annexure A**, classes and elements shall be mandatory, conditional or optional as specified in the applicable profile.

4 DATA CONTENT AND STRUCTURE

Functional Areas (Administrative Boundaries) shall be categorized based on their functions and roles in administration. Different Govt. agencies are responsible for administration and maintenance of various geographical units in India. Some of these categories contain hierarchical structures. In each hierarchy, the integration of smaller units shall form the next bigger unit. The objective of this standard is to provide a model for describing Functional Area (Administrative Boundaries) resources and intended for use by information system analysts, planning departments, as well as others for decision-making and governance.

This standard includes a complete conceptual metadata structure for describing information resources. The metadata structure defines basic principles and requirements for standardized description of information resources.

This standard defines features and metadata entities, their elements, properties, relationships between elements, and establishes a common set of terminology, definitions, and extension procedures.

Although the primary purpose of the metadata structure included in this standard is to describe Functional Area (Administrative Boundary) resources, it may be used to describe other geospatial and non-geographic information resources including textual documents.

It defines elements, entities and their properties, and the relationships among entities, and establishes a common set of terminology, definitions, and extension procedures.

When implemented by a resource provider, this standard shall:

Enable resource providers to generate and maintain functional area (administrative boundary) resources effectively.

a) Facilitate organization and management of metadata for information resources.
b) Enable information resource providers for effectively and completely characterizing their resources with the help of metadata.
c) Enable appropriate use of resources through accurate understanding of their characteristics.
d) Facilitate resource discovery, access, retrieval and reuse.
e) Enable users to determine whether an information resource will be of use to them.
f) Enable extension of the model to include other functional areas.
g) Enable fine-tuning of model bases on stakeholder’s requirements and inputs.

4.1 Functional Area (Administrative Boundary) class diagrams by packages

Functional Area (Administrative Boundary) data model standard is defined by packages. Each package provides mutually exclusive structures based on their administrative and/or functional use. There are seven main packages defined in this standard: Administrative Hierarchy, Local Governance, Forest and Environment, Electoral Constituency, Urban Planning, Coastal Regulation Zone, Metadata and one supporting package: Enumerations.

The structure is as shown in **Fig. 1.**

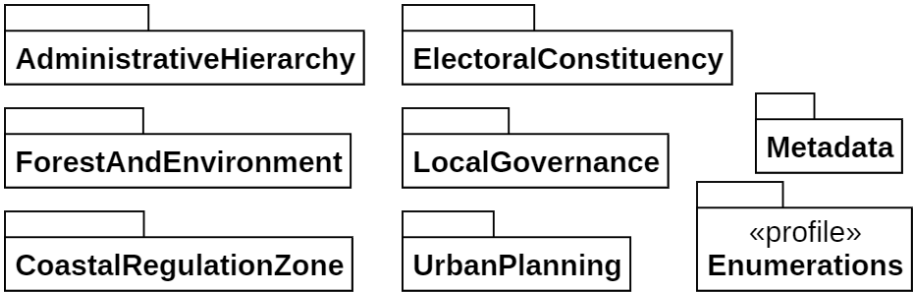


Fig. 1 Class Diagram by Package

Each package shall include one or more feature classes containing attributes and code list. In the UML diagram, the code lists shall be represented as enumerations. Class attributes and relationships are collectively referred to as feature classes. The diagrams in **clause 6** provide "views", which are portions of the total abstract model for Functional Area (Administrative Boundary). Each diagram shall define a UML package of related classes, elements, data types, and code lists. Related classes, which are defined in another diagram, are shown with attributes suppressed.

The Functional Area (Administrative Boundary) data model standard, shall be fully specified by the UML model diagrams and an associated data model structure for each package in **Annexure B**. Optional classes may have mandatory elements; those elements shall become mandatory only if the optional element is used. Datatype of Geometry property used in feature classes to store feature geometry is adopted from *OpenGIS Implementation Standard for Geographic information – Simple feature access – Part 1: Common architecture* and may be of type Point, MultiLineString and MultiPolygon. The Metadata package, which includes full metadata model, is described under **Clause 7 and Annexure C**.

4.2 Administrative Hierarchy package (AdministrativeHierarchy)

Normative Description:

Administrative Hierarchy package shall define the schema for describing major administrative units and sub-units in India and their relationship. LGD Code or name shall be used to link each administrative unit with its parent unit by defining primary key – foreign key relationship. Administrative boundaries are in general, shared by more than one administrative unit. A property "Code_Series" shall be defined in all linear boundary feature classes to store comma separated LGD_Codes or names of polygon units associated with the linear boundary features. In this approach, it will be possible to relate a polygon feature with its associated linear boundary and vice-e-versa. In a similar approach "Admin_Boundary_Pillar" point feature class contains a property "Code_Series" to store comma separated LGD_Codes or names of boundary lines associated with the boundary pillar features to relate boundary lines and in turn polygon units with associated boundary pillars and vice-e-versa.

This package contains 13 classes to define areas, boundaries and boundary pillars as specified in Fig. 2.

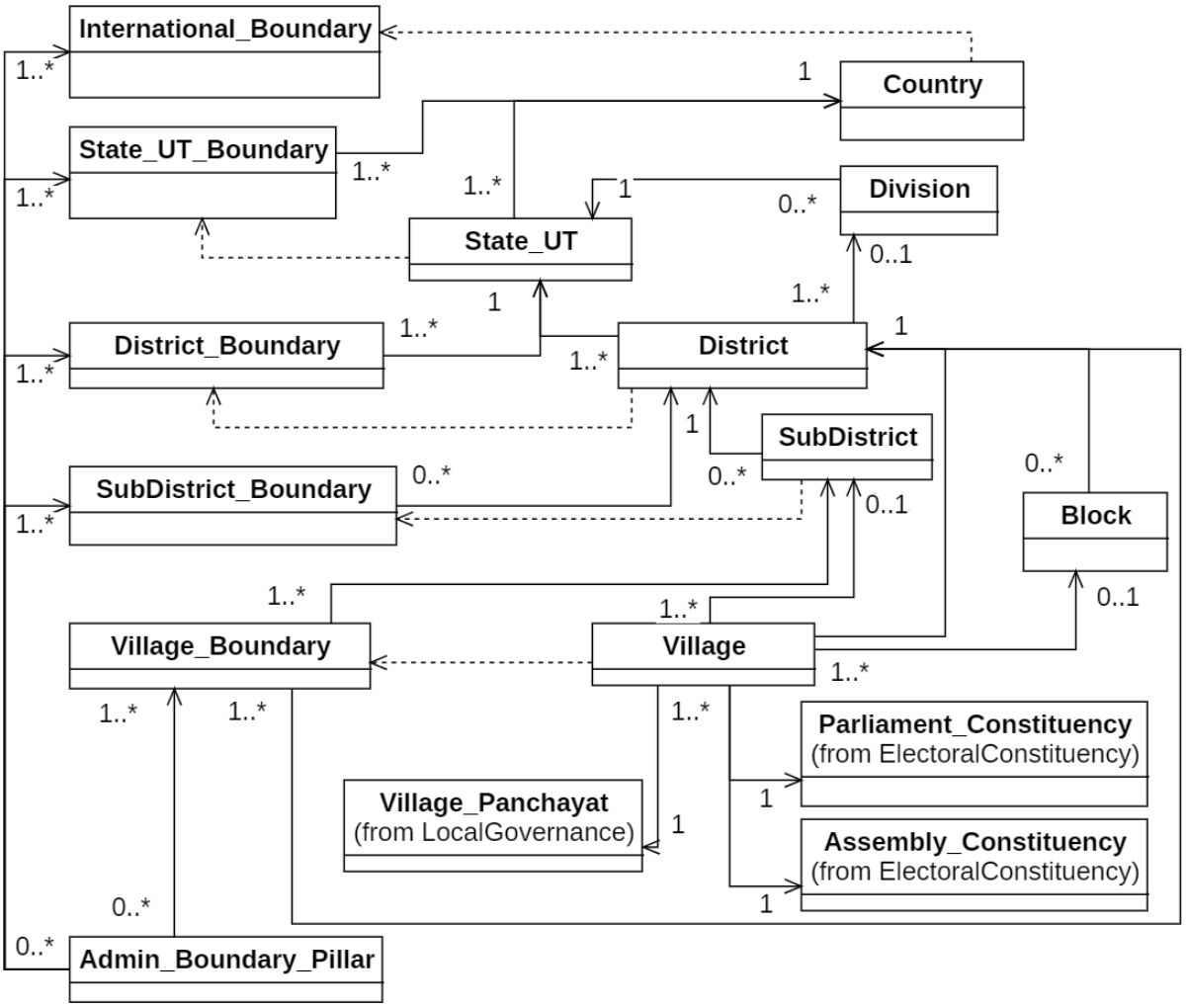


Fig. 2 Administrative Hierarchy UML

4.2.1 *Country Level and State level entities (International_Boundary, Country, State_UT_Boundary, State_UT, Admin_Boundary_Pillar)*

The structure is as specified in **Fig. 3** and the Full class definition is as listed in **Table B.1**

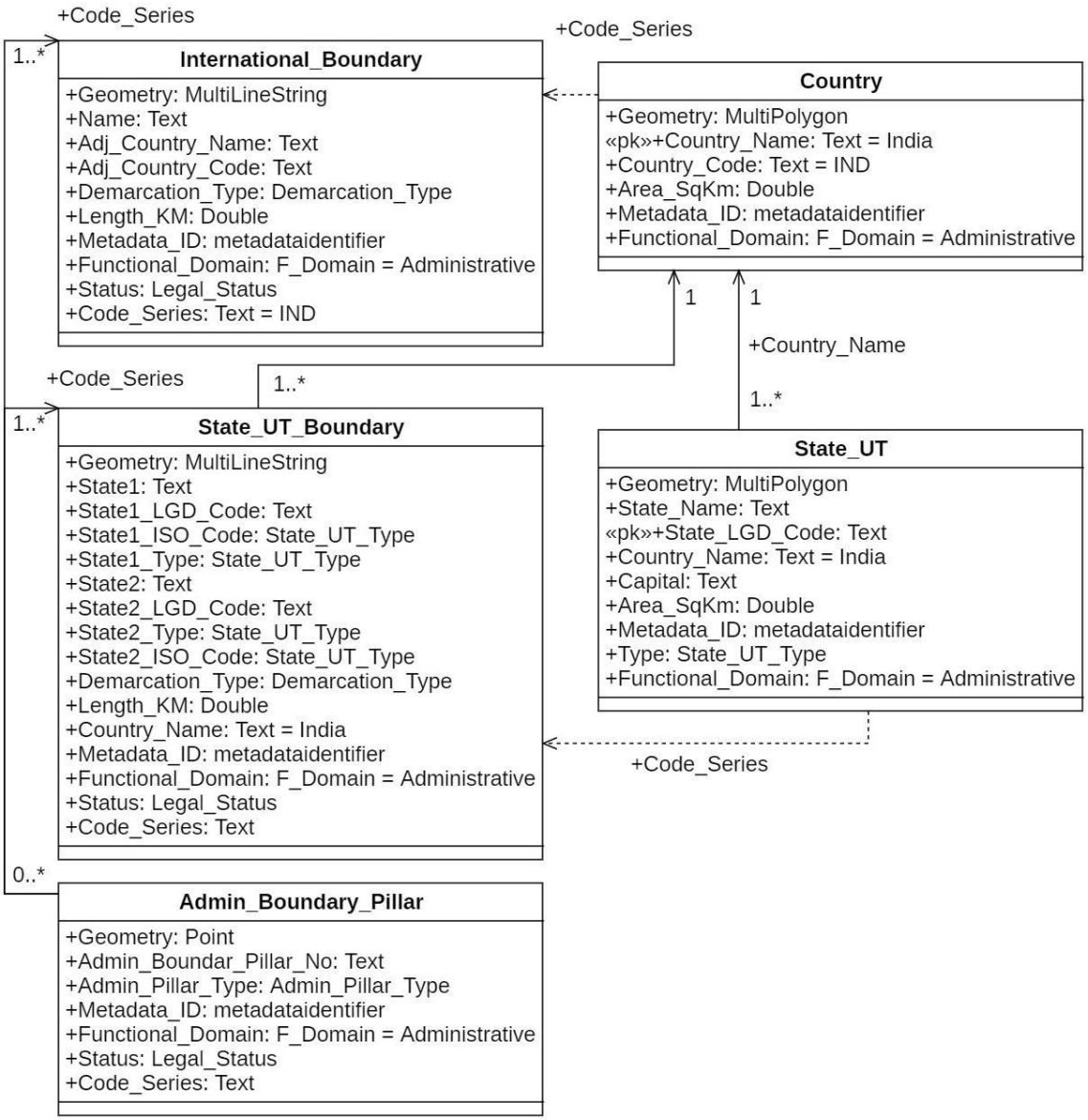


Fig. 3 Country and State level UML of administrative hierarchy

4.2.2 *Sub-State level entities (Division, District_Boundary, District, SubDistrict_Boundary, SubDistrict, Block)*

The structure is as specified in **Fig. 4** and the Full class definition is as listed in **Table B.2**.

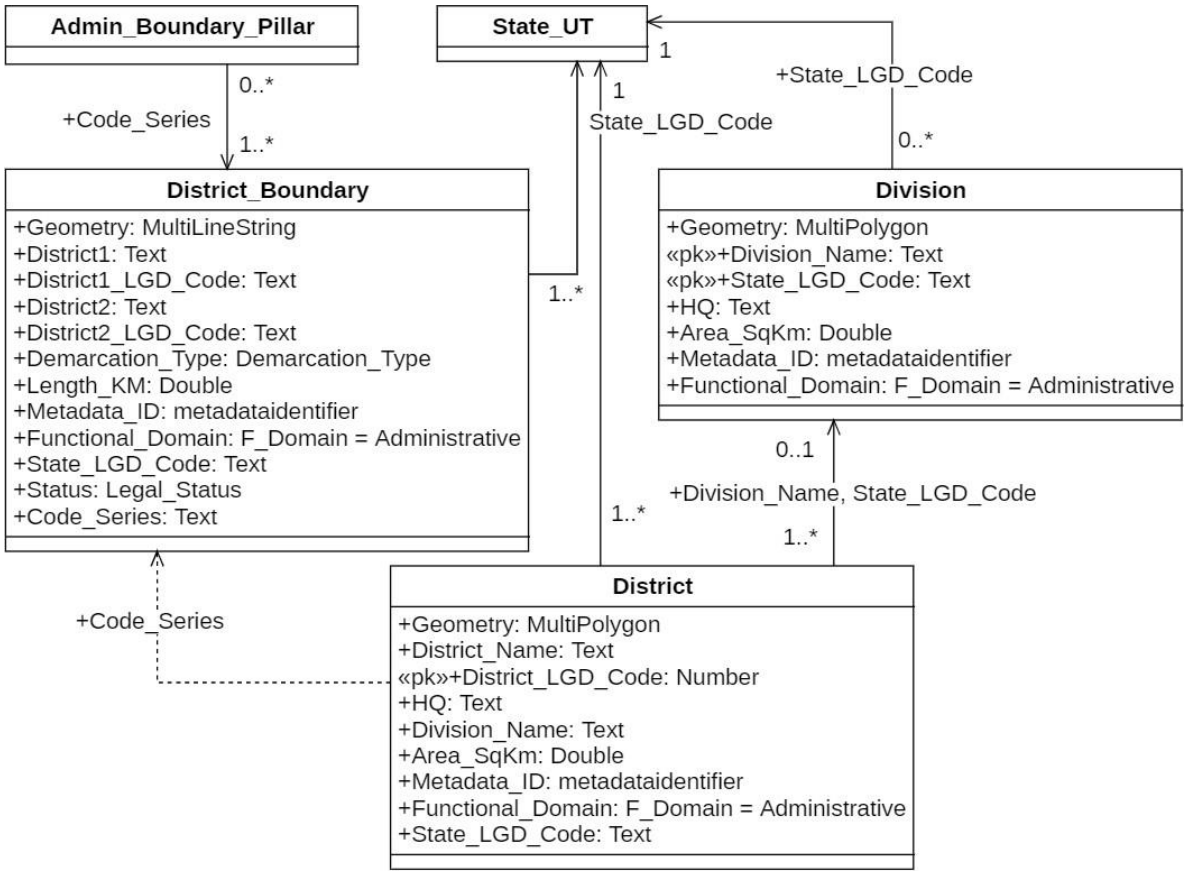


Fig. 4 Sub-state level UML of administrative hierarchy

4.2.3 *Sub-District level entities (SubDistrict_Boundary, SubDistrict, Block)*

The structure is as specified in **Fig. 5** and the Full class definition is as listed in **Table B.2**.

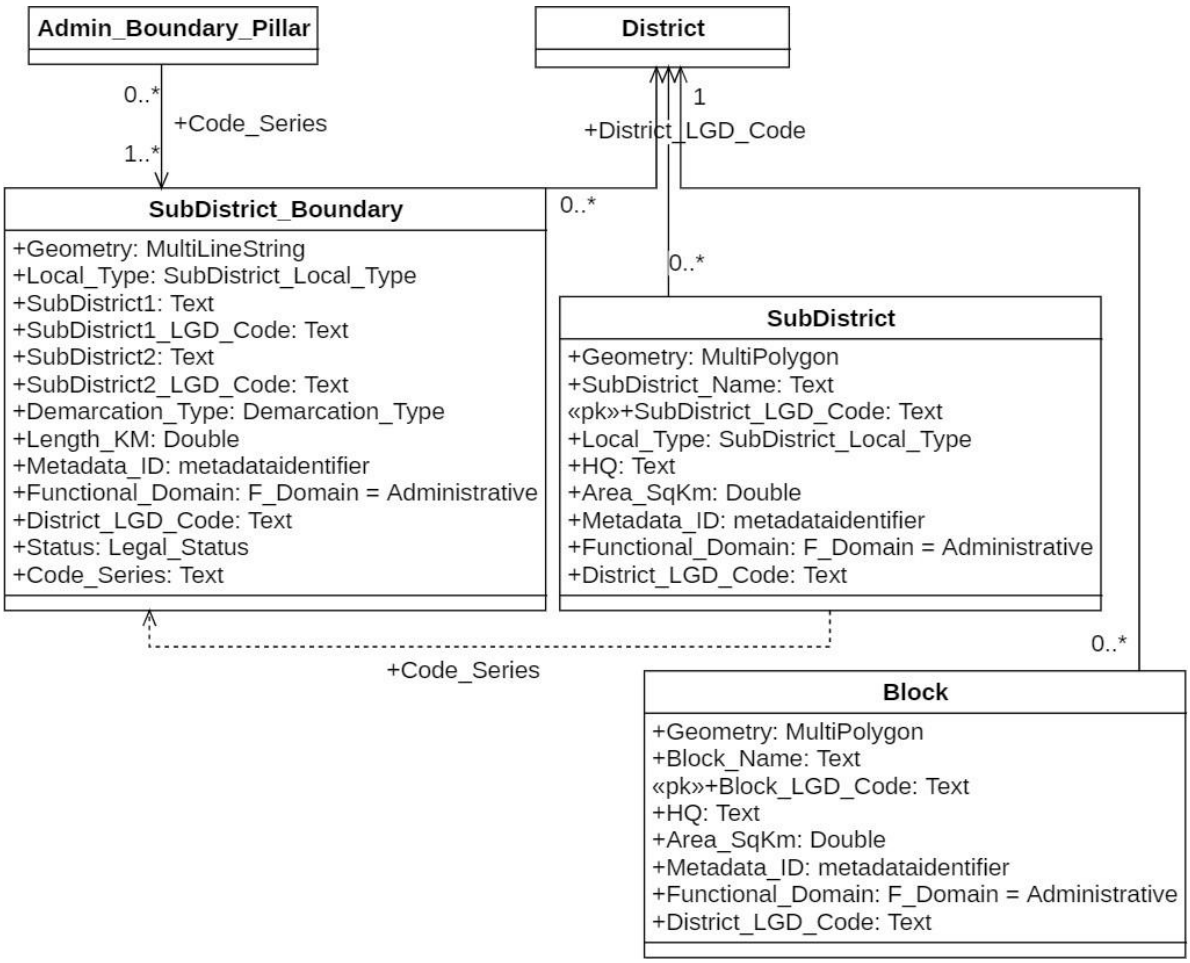


Fig. 5 Sub-district level UML of administrative hierarchy

4.2.4 *Village Level Entities (Village_Boundary, Village)*

The structure is as specified in **Fig. 6** and the Full class definition is as listed in **Table B.3.**

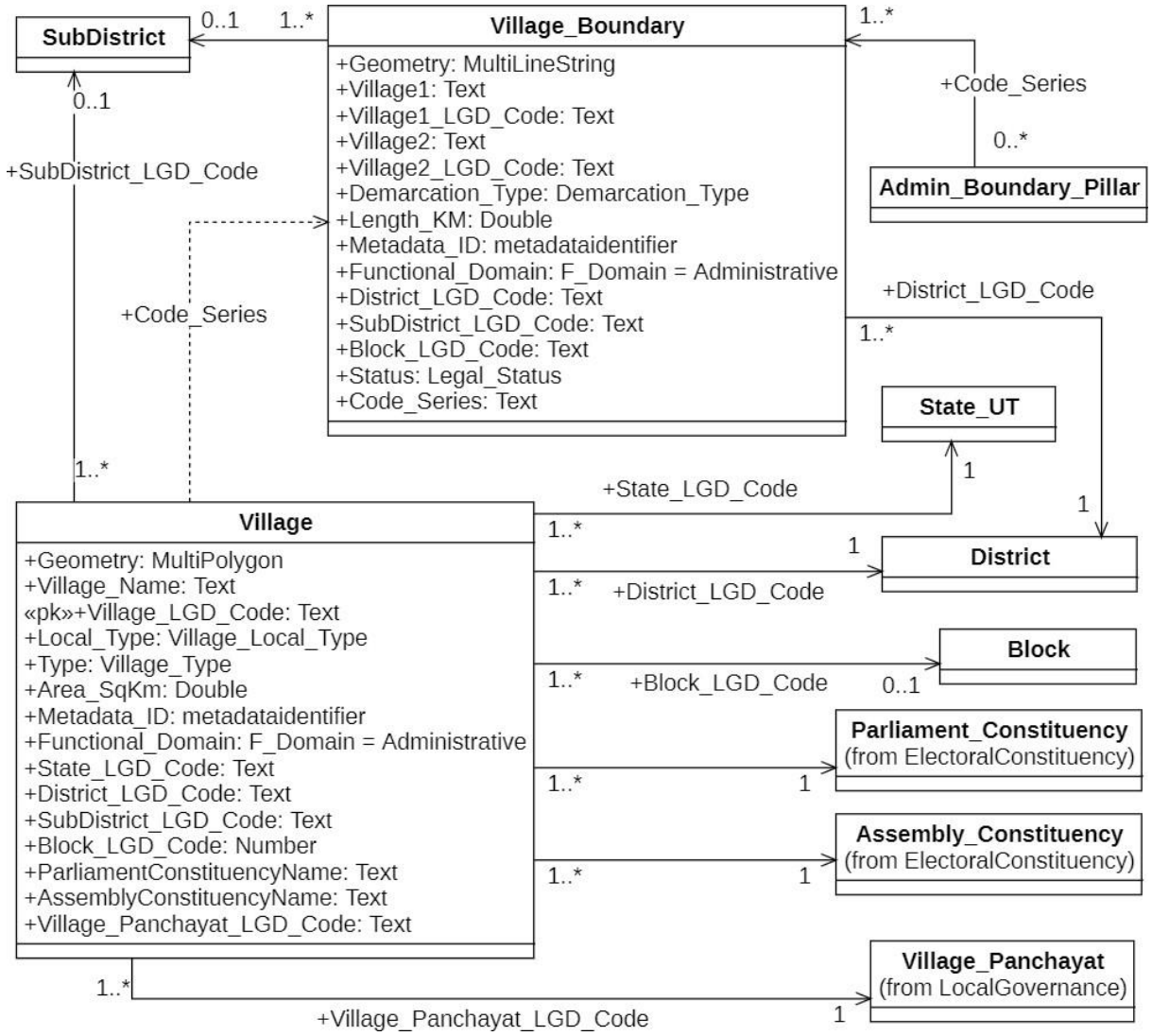


Fig. 6 Village level UML of administrative hierarchy

4.3 Environment protection and Forest Administration package (ForestandEnvironment)

Forest and Environment package defines the schema for describing major forest administration hierarchy of Forest Survey of India and Eco Sensitive Zones notified by Ministry of Environment, Forest and Climate Change (MoEFCC).

Eco-Sensitive Zones (ESZs) are also known as Ecologically Fragile Areas (EFAs). ESZ are areas notified by the MoEFCC around Protected Areas, National Parks and Wildlife Sanctuaries. The purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas by regulating and managing the activities around such areas. As per the National Board for Wildlife (NBWL), the delineations of eco-sensitive zones have to be site-specific, and the activities should be regulative in nature and not prohibitive unless required. The basic aim is to regulate certain activities around National Parks and Wildlife Sanctuaries to minimize the negative impacts of such activities on the fragile ecosystem encompassing the protected areas. They also act as a transition zone from areas of high protection to areas involving lesser protection.

Class definition of ESZ shall be as specified in **Fig.7** and the Full class definition shall be as listed in **Table B.4**.

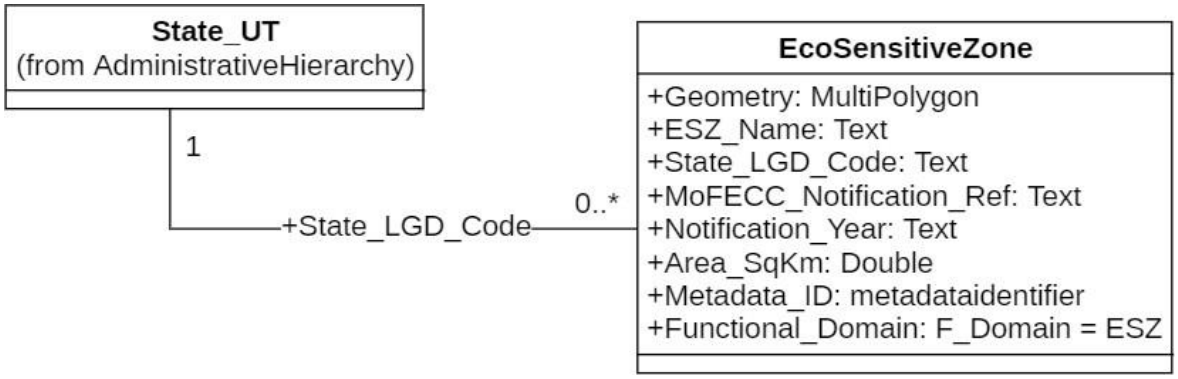


Fig. 7 Eco Sensitive Zone UML

The forest administration hierarchy contains seven classes to define forest areas, forest boundaries and forest boundary pillars as specified in **Fig.8** and the Full class definition is listed in **Table B.4**.

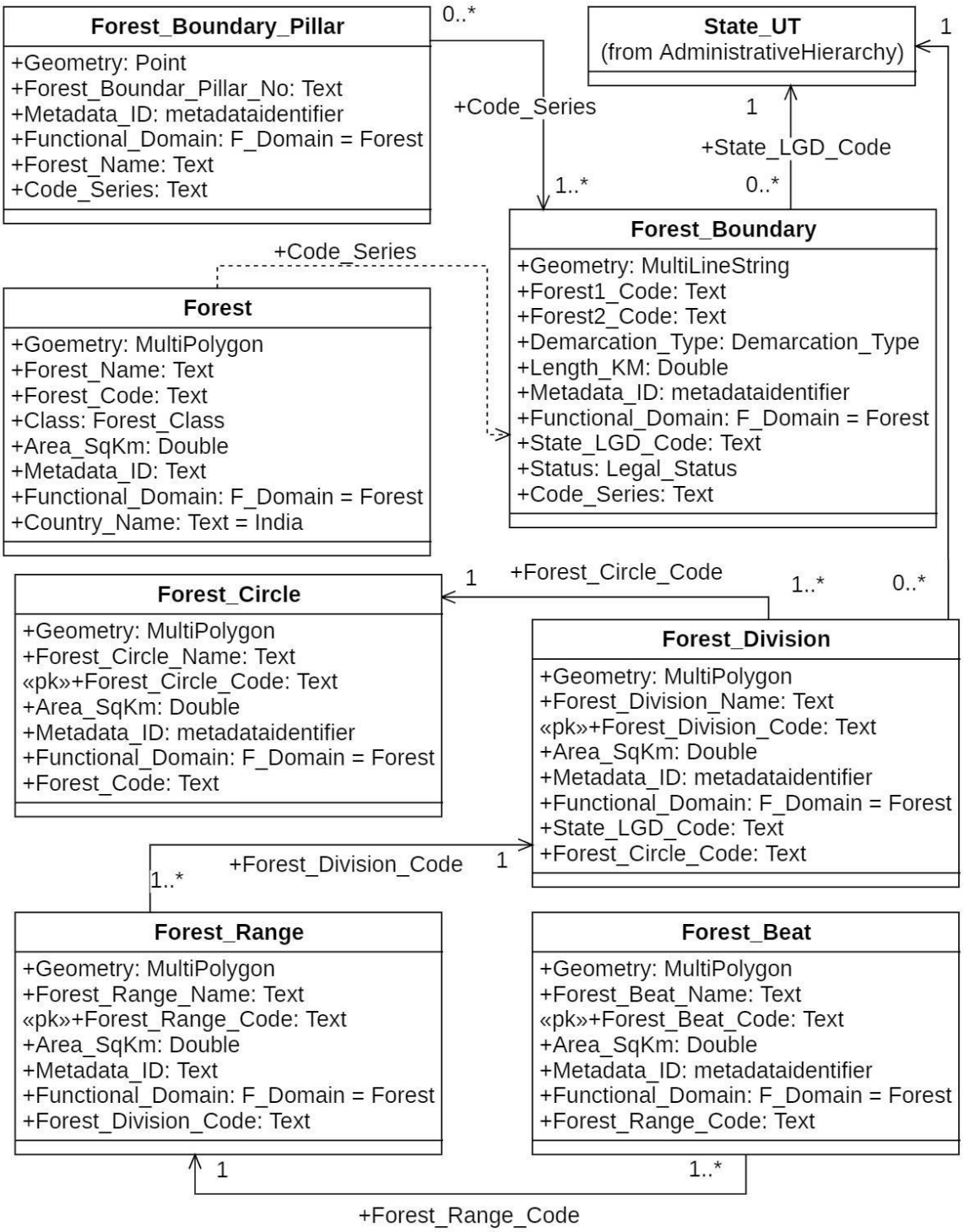


Fig. 8 Forest hierarchyUML

4.4 Local Governance Hierarchy Package (LocalGovernance)

LocalGovernance package defines the schema for describing local governance units and sub-units in India and their relationships. This hierarchy consists of three distinct hierarchies "RuralGovernance", "UrbanGovernance" and "CantonmentBoard".

4.4.1 RuralGovernance Hierarchy

"RuralGovernance" hierarchy describes Panchayati Raj system in India. It contains 4 classes as specified in **Fig.9** and the Full class definition is listed in **Table B.5**.

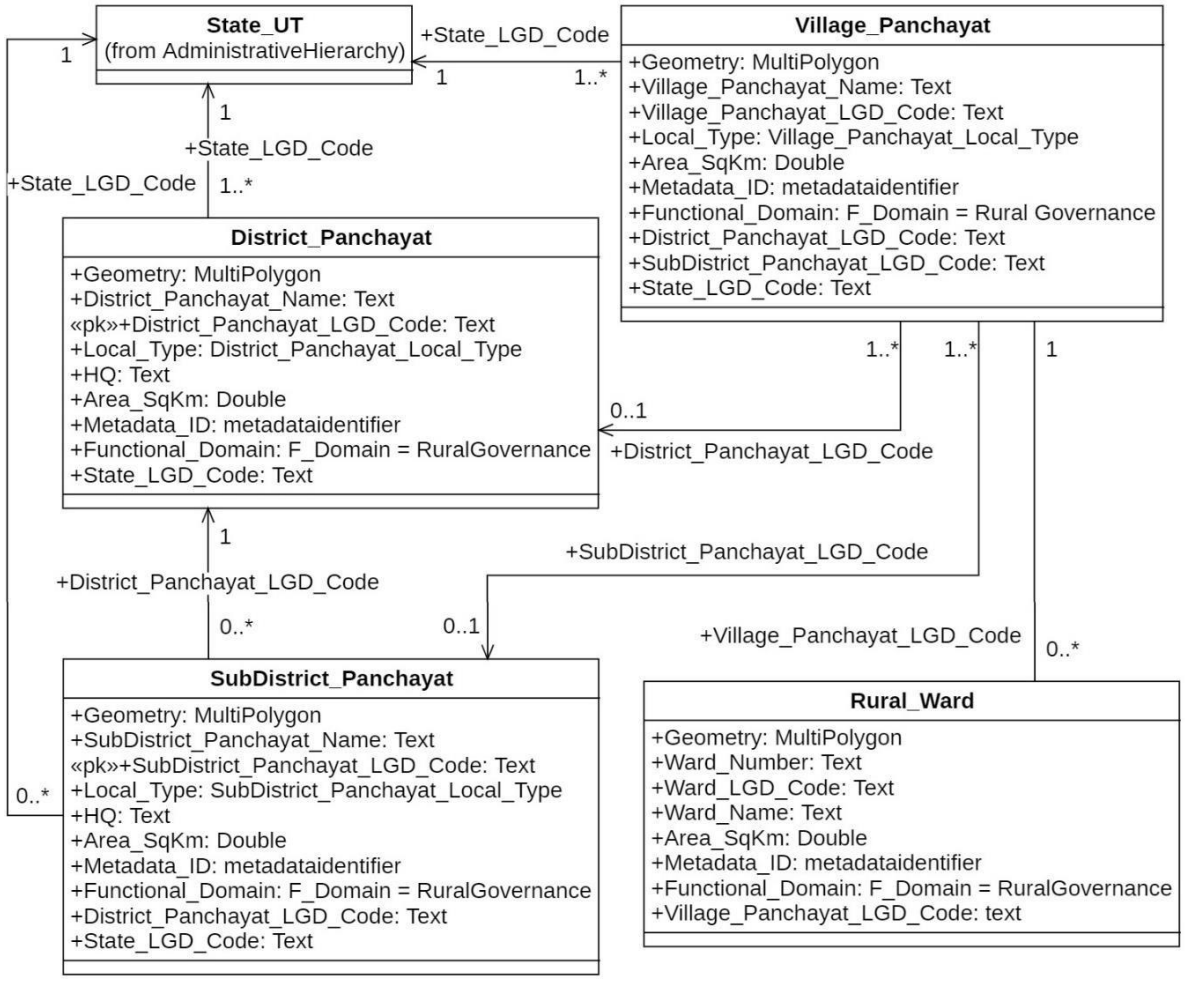


Fig. 9 Rural Local Governance Hierarchy

4.4.2 *UrbanGovernance hierarchy and CantonmentBoard Hierarchy*

Urban Governance hierarchy describes Municipal governance system in India. The structure shall be as specified in **Fig. 10** and the Full class definition as is listed in **Table B.6**.

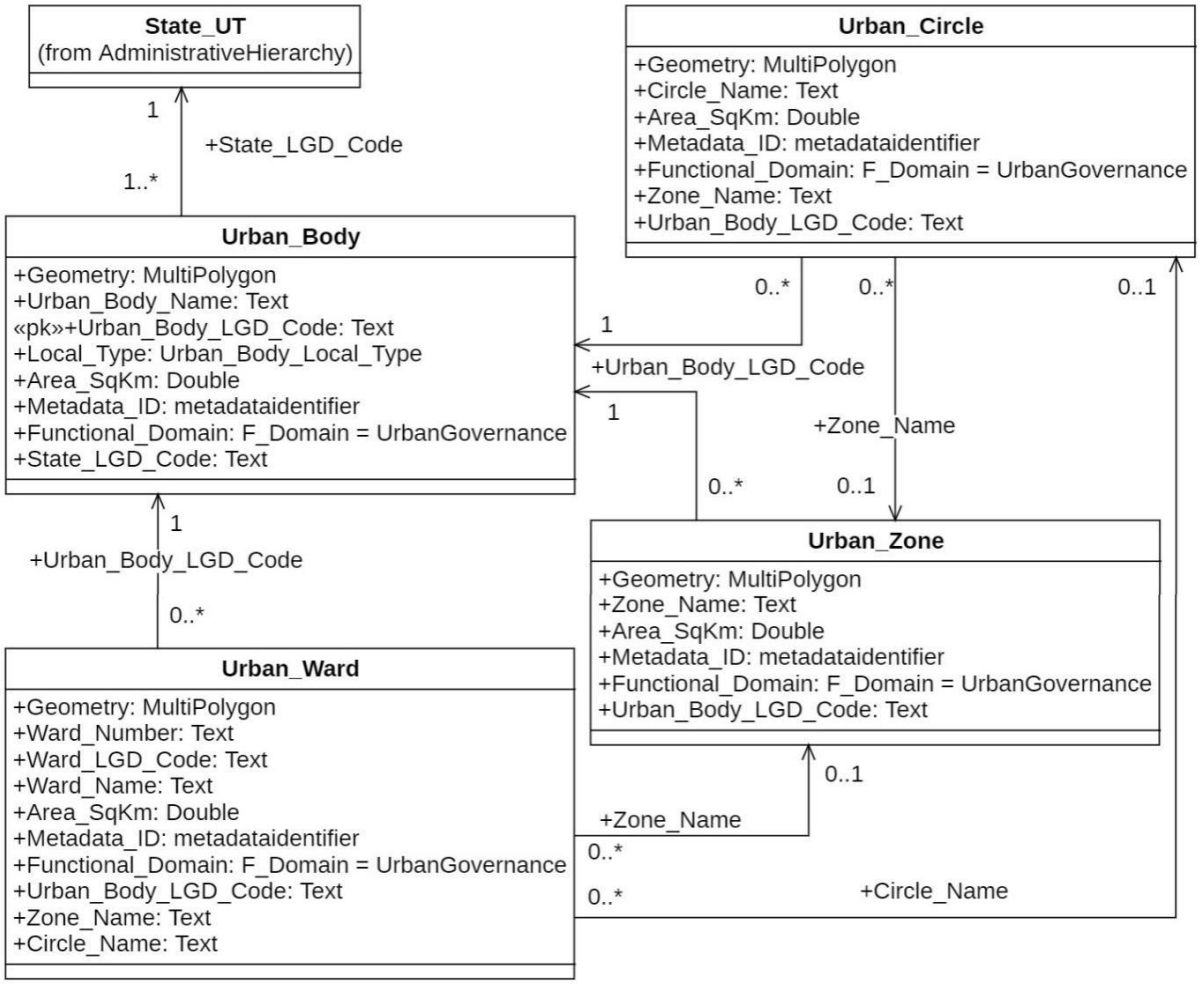


Fig. 10 Urban Local Governance Hierarchy

A Cantonment Board is a civic administration body that manages civilian areas near military stations. Cantonments are areas where military personnel reside, and they often have their own infrastructure, amenities, and governance systems separate from civilian administrations.

Hierarchies shall be as specified in Fig. 11 and the Full class definition shall be as listed in **Table B.7**.

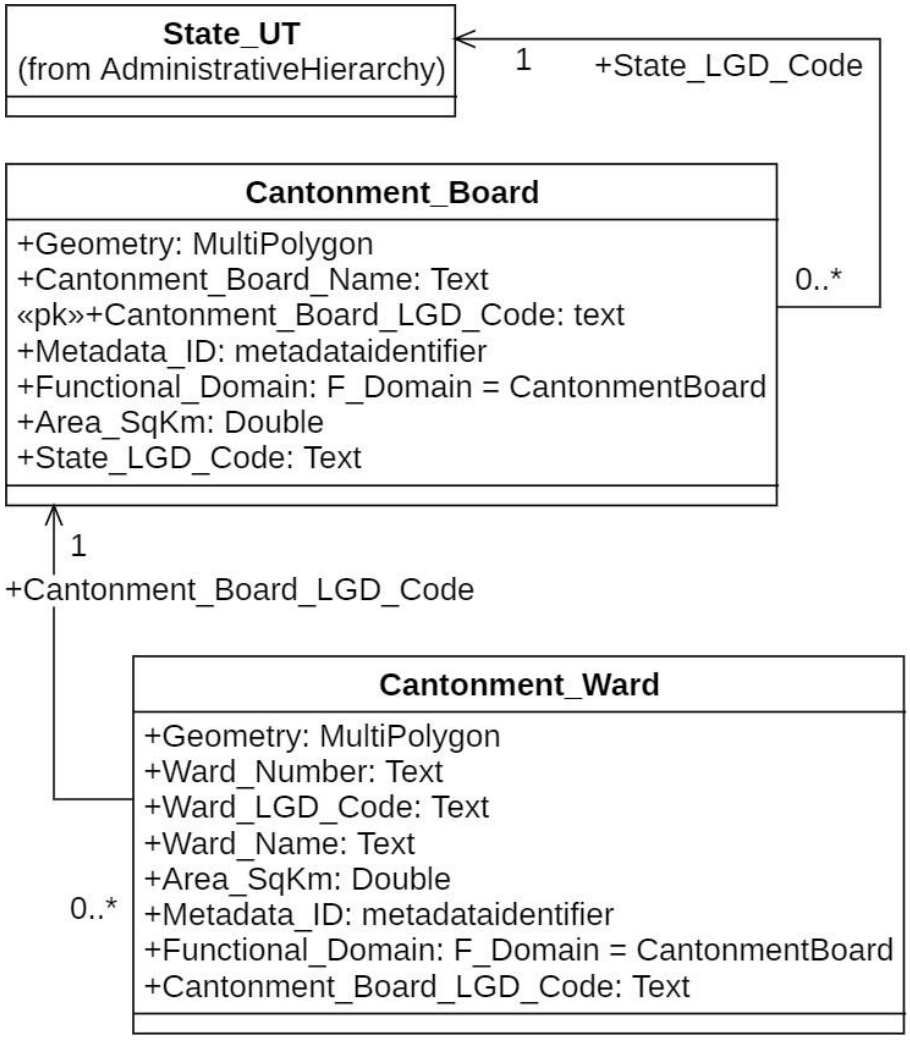


Fig. 11 Cantonment Body Governance Hierarchy UML

4.5 Electoral Constituency Package (ElectoralConstituency)

Electoral Constituency shall be as specified in **Fig.12** and the Full class definition as listed in **Table B.8**.

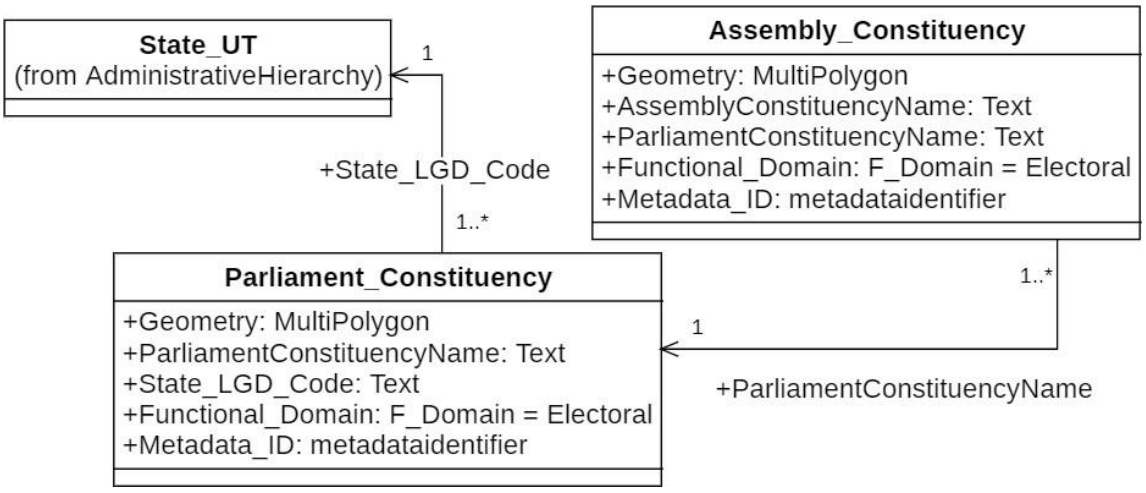


Fig. 12 Electoral Constituency Hierarchy

4.6 Costal Regulation Zone Package (CoastalRegulationZone)

Coastal Regulation Zone package defines the schema for describing Costal Regulation Zone (CRZ), Island Coastal Regulation Zone (ICRZ) and Integrated Island Management Plan (IIMP) in India.

The package has 3 classes as specified in **Fig.13** and the Full class definition as listed in **Table B.9**.

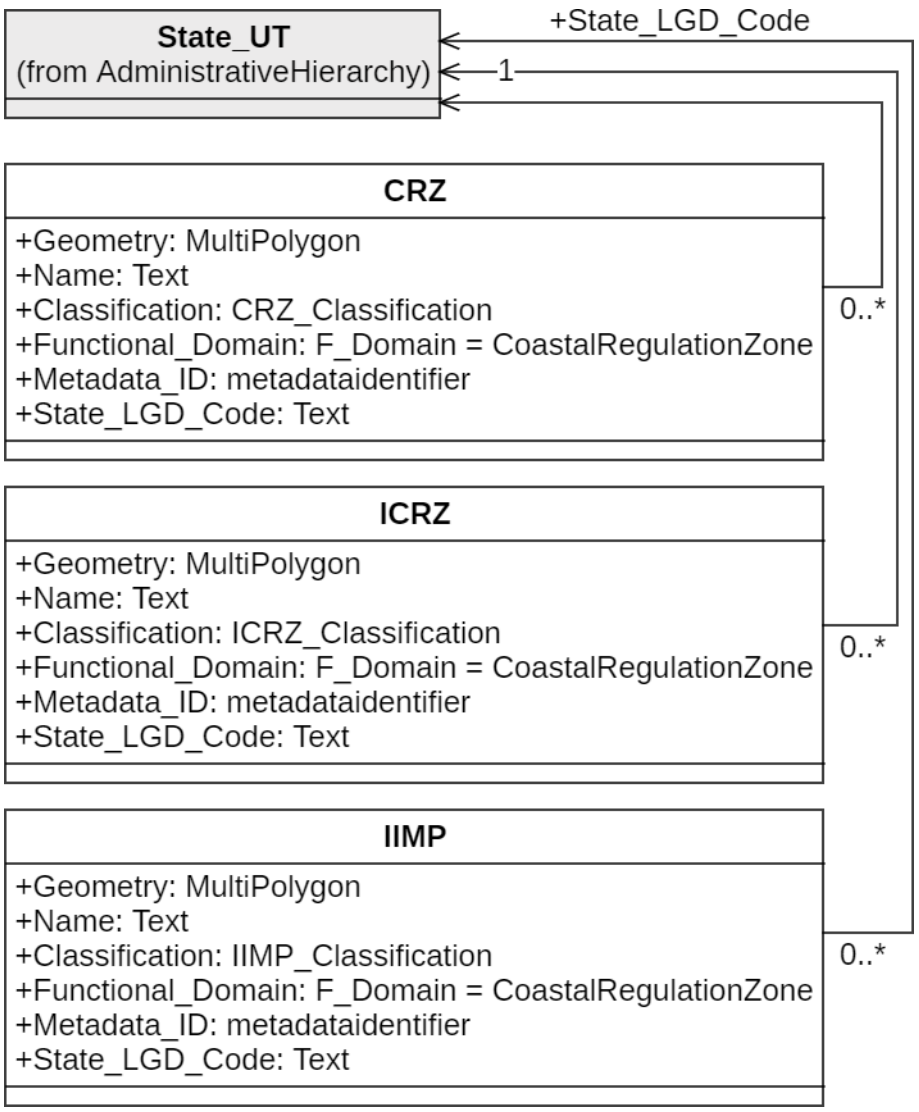


Fig. 13 Coastal Regulation Zone UML

4.7 Urban Planning Package (UrbanPlanning)

Urban Planning package defines the schema for describing various plan area boundaries notified by TCPO as specified in Fig.14 and the Full class definition as listed in **Table B.10**.

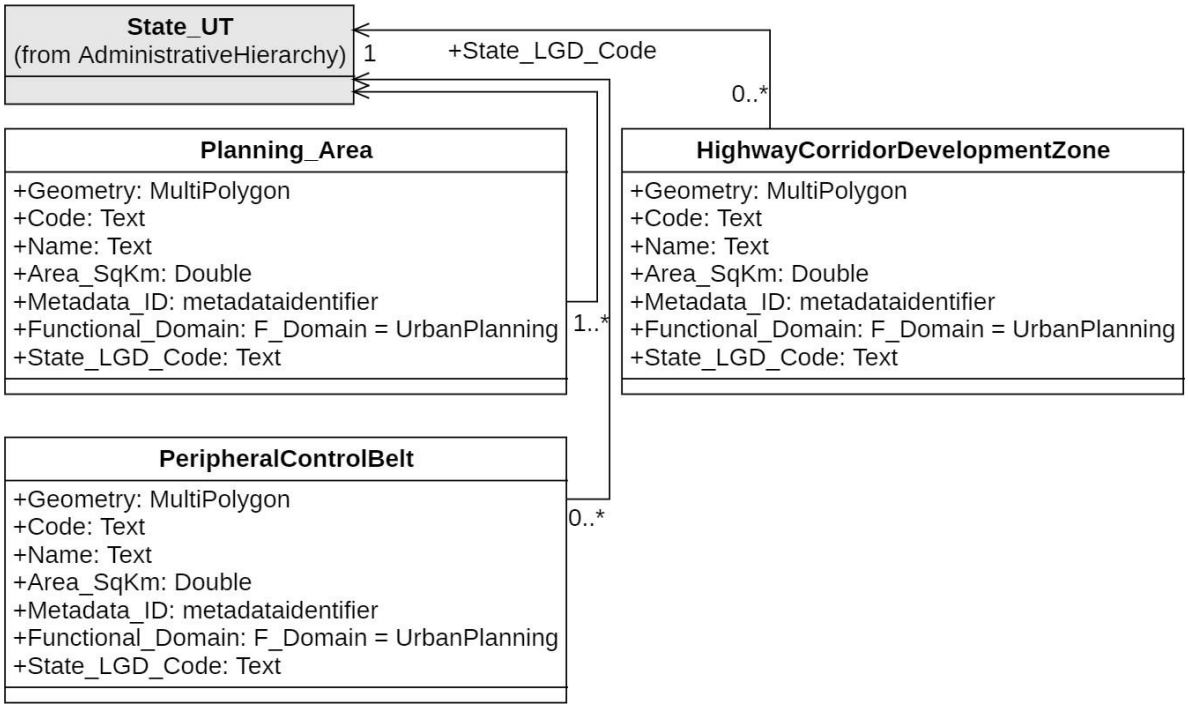


Fig. 14 Urban Planning UML

4.8 Enumerations Package:

Various classes shall use the Enumerations defined under this package. The package is as specified in **Fig.15& Fig. 16**and the Full class definition as listed in **Table B.11**.

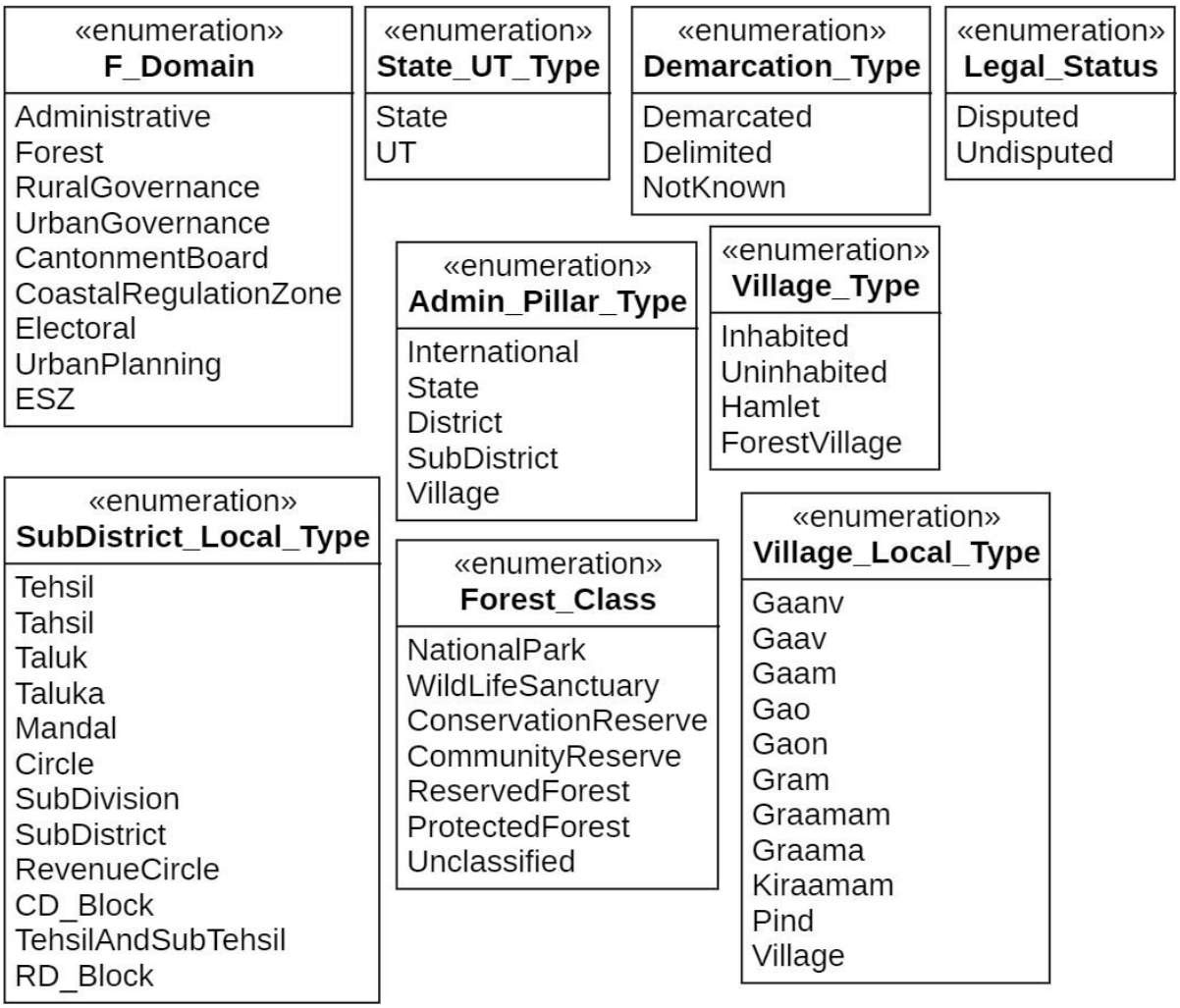


Fig. 15 Enumerations or Code Lists

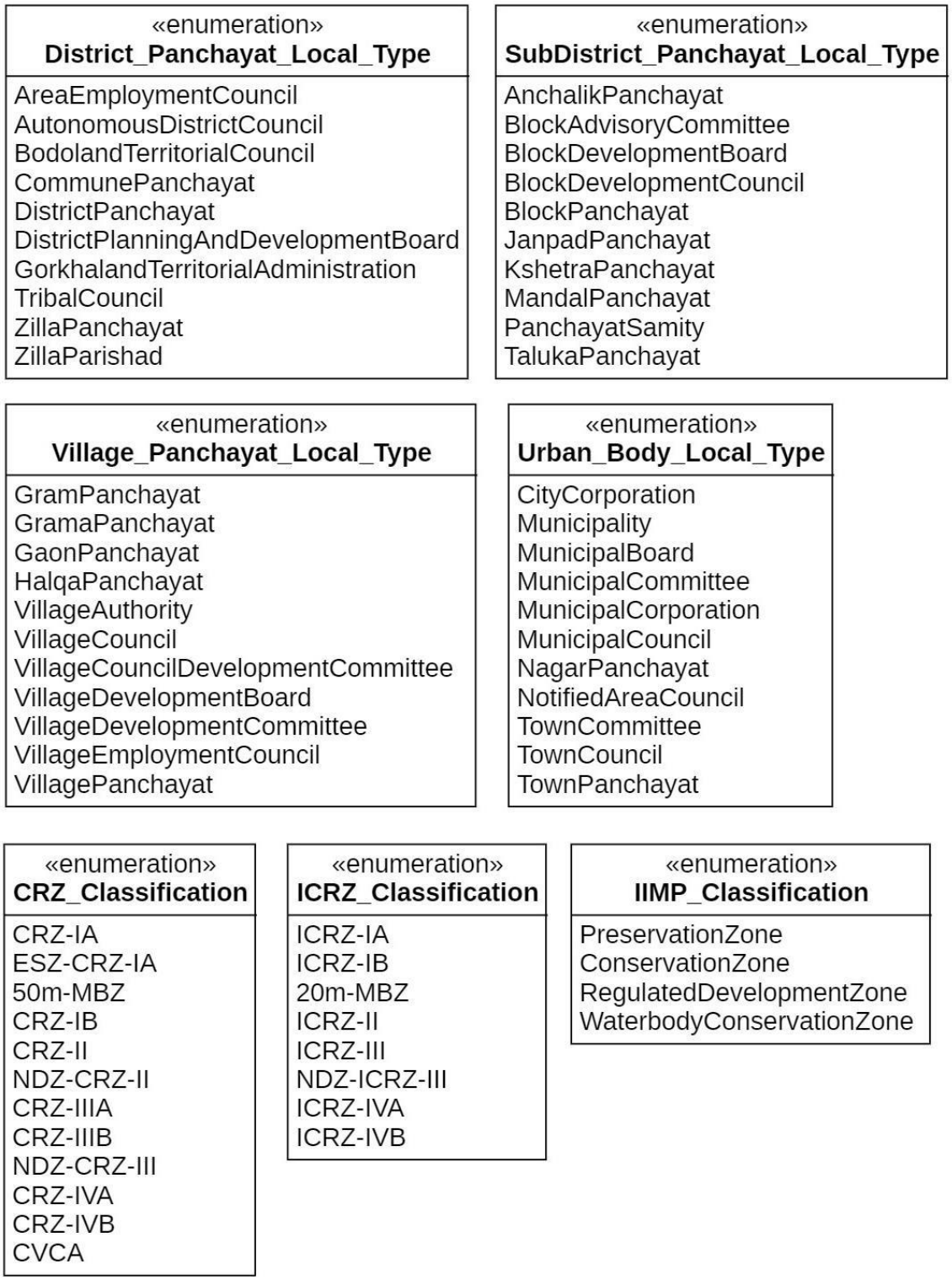


Fig. 16 Enumerations or Code Lists

5 METADATA AND DATA DICTIONARY

This standard provides metadata and data dictionary structure for which the details are given in **Annexure C**. This framework provides various aspects of functional boundary datasets, including origins of data, quality assessments, accuracy measures, update frequencies, and other pertinent metadata elements.

Standardized metadata schema and data dictionary format shall ensure uniformity and consistency in documentation, fostering interoperability and facilitating seamless integration across different functional boundary datasets and applications. This standardized approach not only streamlines processes but also enhances accessibility and understanding of functional boundary data for stakeholders.

Under the umbrella of Metadata and Data Dictionary standards, the aim is to empower stakeholders to efficiently discover, comprehend, and utilize functional boundary data. By offering well-organized and easily accessible metadata and data dictionary resources, this standard facilitates informed decision-making and foster collaboration within the community.

This standard defines general-purpose metadata, which is to be used in geospatial context. The metadata model described herein predominantly follows the structures and definitions as defined in *ISO 19115-2014* and *IS16439:2016* with some deviations from the reference model for the sake of simplicity of intended purpose of use.

This standard defines the schema required for describing geographic information and services by means of metadata. It provides information about the identification, the extent, the quality, the spatial and temporal aspects, the content, the spatial reference, the portrayal, distribution, and other properties of digital geographic data.

This standard is applicable to:

1. The cataloguing of all types of resources and the full description of geographic datasets, individual geographic features and feature properties.

This standard defines:

1. Mandatory and conditional metadata sections, metadata entities, and metadata elements;
2. The minimum set of metadata required to serve most metadata applications (data discovery, determining data fitness for use, data access, data transfer, and use of digital data and services);
3. Optional metadata elements to allow for a more extensive standard description of resources, if required;

Though this part of the standard is applicable to digital data and services, its principles may be extended to many other types of resources including non-geographic data.

5.1 Abbreviated Terms — Package

Two-letter abbreviated terms are used to denote the package that contains a class. Those abbreviated terms precede class names, connected by a "_". The International Standard in which those classes are located, is indicated in parentheses. A list of the abbreviated terms is as follows:

CI Citation [*See*:ISO 19115-1]

DQ Data Quality [*See*:ISO 19157]

EX Extent [*See*:ISO 19115-1]

GM Geometry [*See*:ISO 19107]

LI Lineage [*See*:ISO 19115-1]

MD Metadata [*See*:ISO 19115-1]

RS Reference System [*See*:ISO 19115-1]

SC Spatial Coordinates [*See*:ISO 19111]

TM Temporal [*See*:ISO 19108]

5.2 Metadata fundamentals packages and dependencies

This standard utilizes concepts defined in several other standards' packages. Metadata-Fundamentals are defined and provided by one or more packages. Each package provides a separate component of metadata information. There are five essential packages that define and provide the metadata that is defined in this part of the standard: Metadata, Citation, Extent, Lineage and Data Quality as shown in **Fig. 17.**

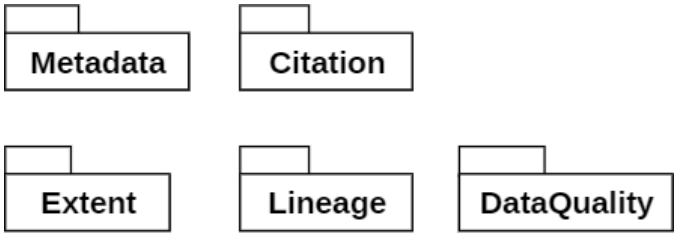


Fig. 17 Metadata Packages

Fig.18 illustrates conceptual dependencies among all classes of Metadata package on all packages to define complete metadata set.

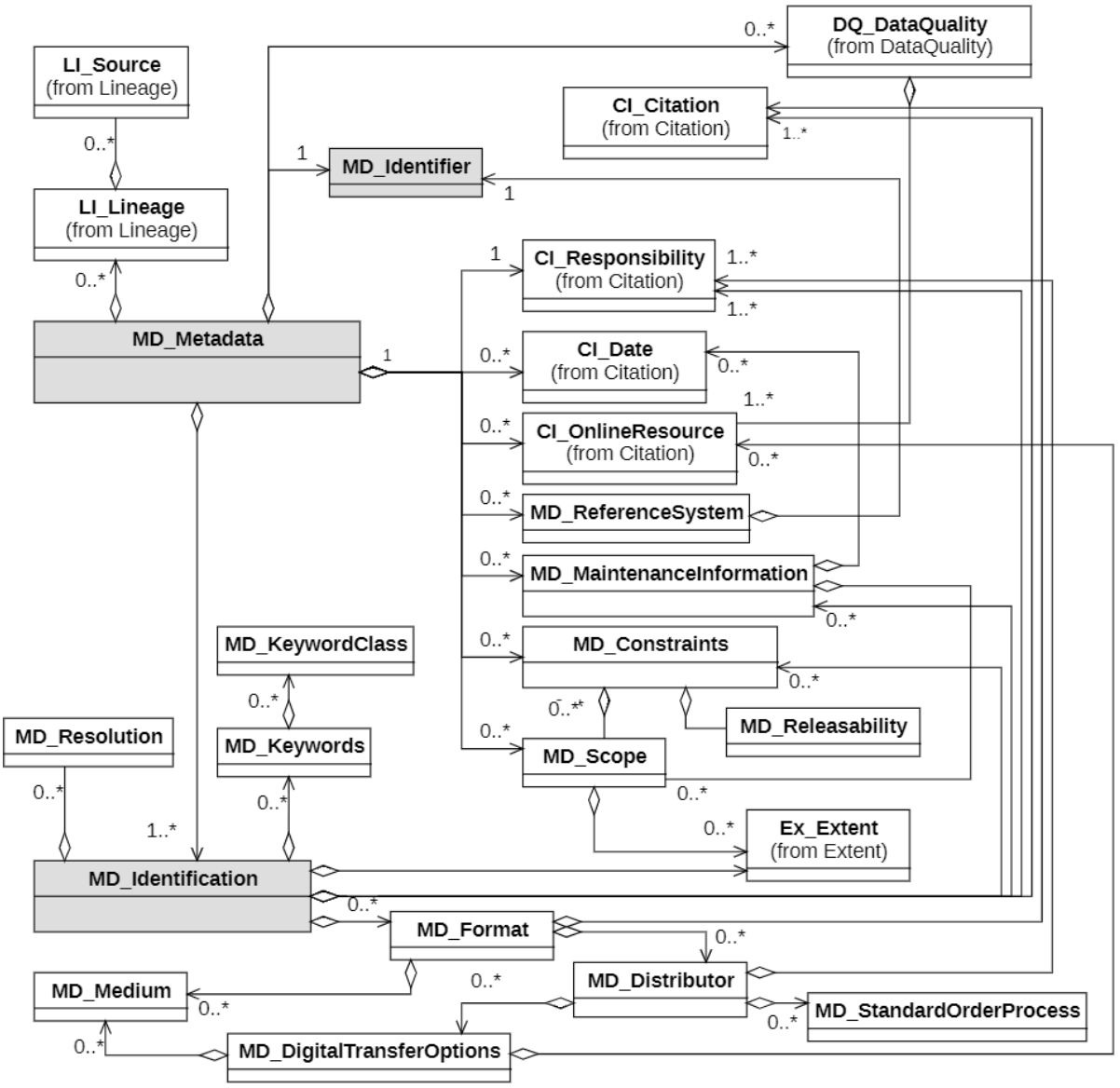


Fig. 18 Metadata Package Dependencies

Metadata is composed of one or more metadata packages containing one or more metadata classes containing attributes. The relationships between metadata packages and between metadata classes are specified by composition and aggregation relationship symbols. Class attributes and relationships are referred to collectively as metadata elements. The diagrams in **clause 7** provide "views", which are portions of the total abstract model for metadata. Each diagram defines a metadata UML package of related classes, elements, data types, and code lists. Related classes, which are defined in another diagram, are shown with attributes suppressed. UML model diagrams and an associated data dictionary for each package as given in **Annexure C** specify the metadata**..** In some cases, optional classes may have mandatory elements; those elements become mandatory only if the optional element is used.

5.3 Metadata Information Package (MD_Metadata)

The MD_Metadata package defines the schema for describing the complete metadata about a resource and metadata about the metadata itself as shown in **Fig. 19 & Fig. 20.**The data dictionary is located in **Table C.1**.

5.3.1 *Metadata Schema*

MD_Metadata class and an aggregate of 12 additional metadata classes as specified in **Fig.19& Fig. 20**provide the complete metadata. The Metadata Identifier (MD_Identifier) class contains attributes to uniquely identify a metadata record. Information about the spatial, temporal and parametric reference system(s) used by a resource in one class, MD_ReferenceSystem. Maintenance information package supports the provision of metadata related to the scope and frequency of maintenance for a resource or of metadata about a resource in a single class, MD_MaintenanceInformation. The DQ_DataQuality class is as defined in IS16439:2016.

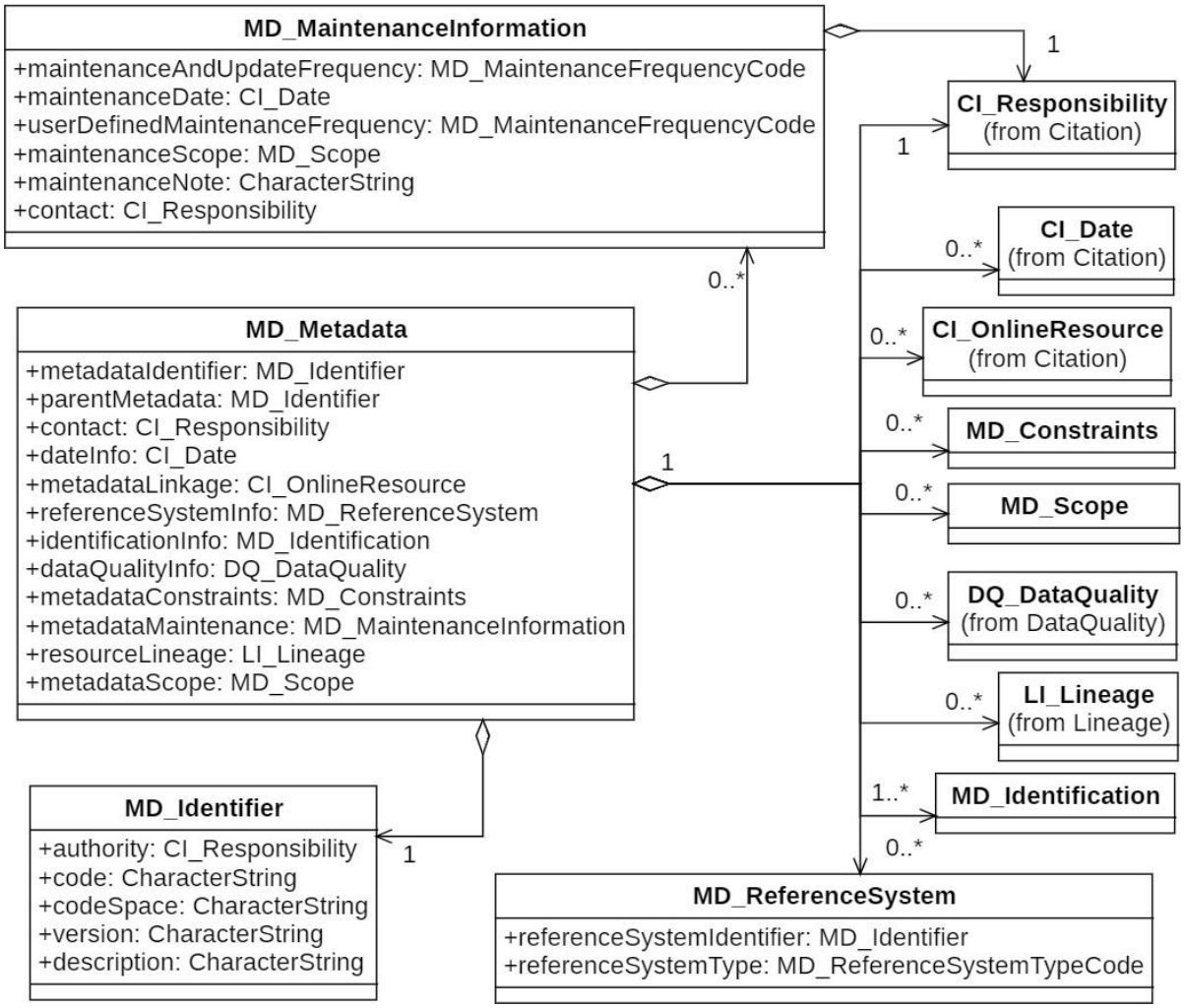


Fig. 19 MD_Metadata UML

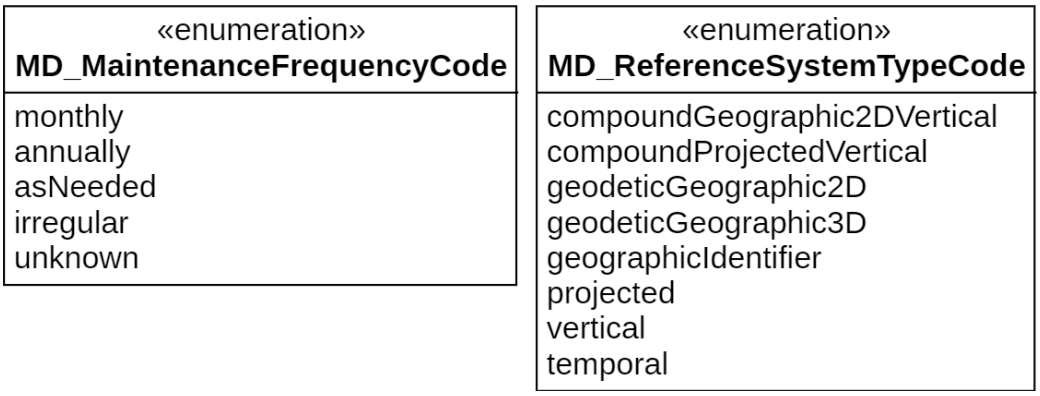


Fig. 20 MD_Metadata Associated Code Lists

5.3.2 *Metadata about Metadata*

The MD_Metadata class contains certain attributes providing information about the metadata as specified in Fig.21 whereas rest of the attributes provide information about the data. The data dictionary for MD_Metadata class is in **Table C.1**. A unique ID field of type CharacterString (Text) may be created in MD_Identifier class at implementation level to store unique metadata record ids. This field may be used to link MD_Metadata.metadataIdentifier and "Metadata_ID" field of all feature classes of Functional Area (Administrative Boundary) data model.

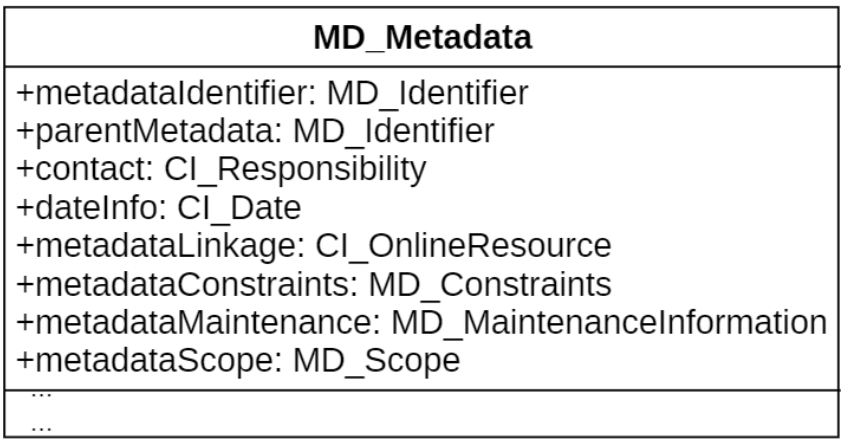


Fig. 21 Metadata About Metadata

5.3.3 *Constraint information (MD_Constraints), Releasability (MD_Releasability), Scope (MD_Scope)*

This package supports the provision of metadata concerning the legal and security constraints placed on resources and metadata about resources. MD_Constraints class defined in this standard is an aggregation of MD_Constraints, MD_LegalConstraints and MD_SecurityConstraints as defined in ISO 19115:2014. MD_Scope is a general-purpose class used by other classes. The full package is as specified in **Fig.22& Fig. 23.** The data definition for this diagram is located in **Table C.2**.

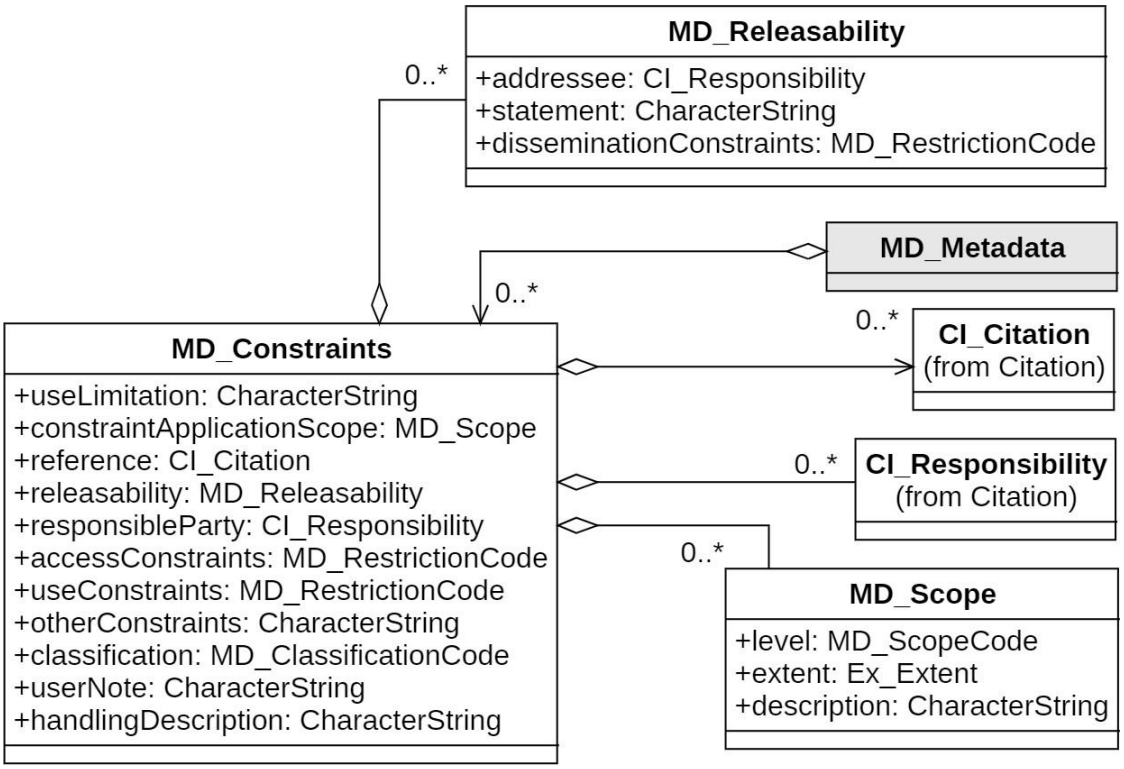


Fig. 22 Constraint Information UML

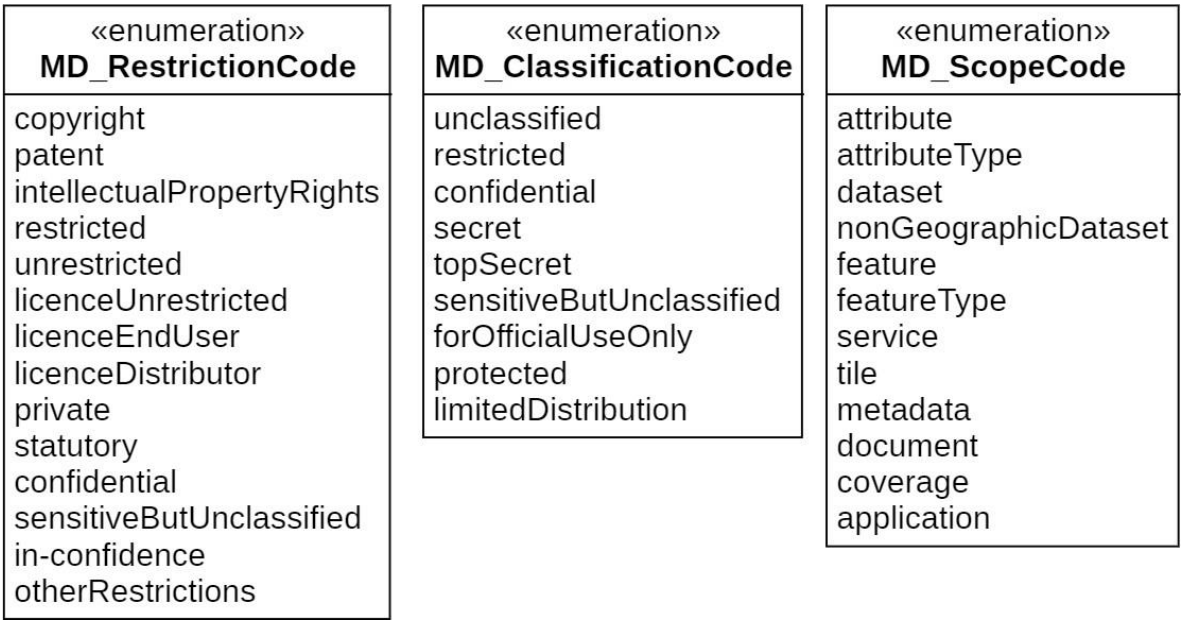


Fig. 23 Associated Code Lists of Constraint Information

5.3.4 *Identification Information (MD_Identification)*

Identification information supports the provision, for uniquely identifying a resource. The full package is as specified in **Fig.24.** Associated code lists are as shown in **Fig.26.** The data dictionary for this diagram is located in **Table C.3**.

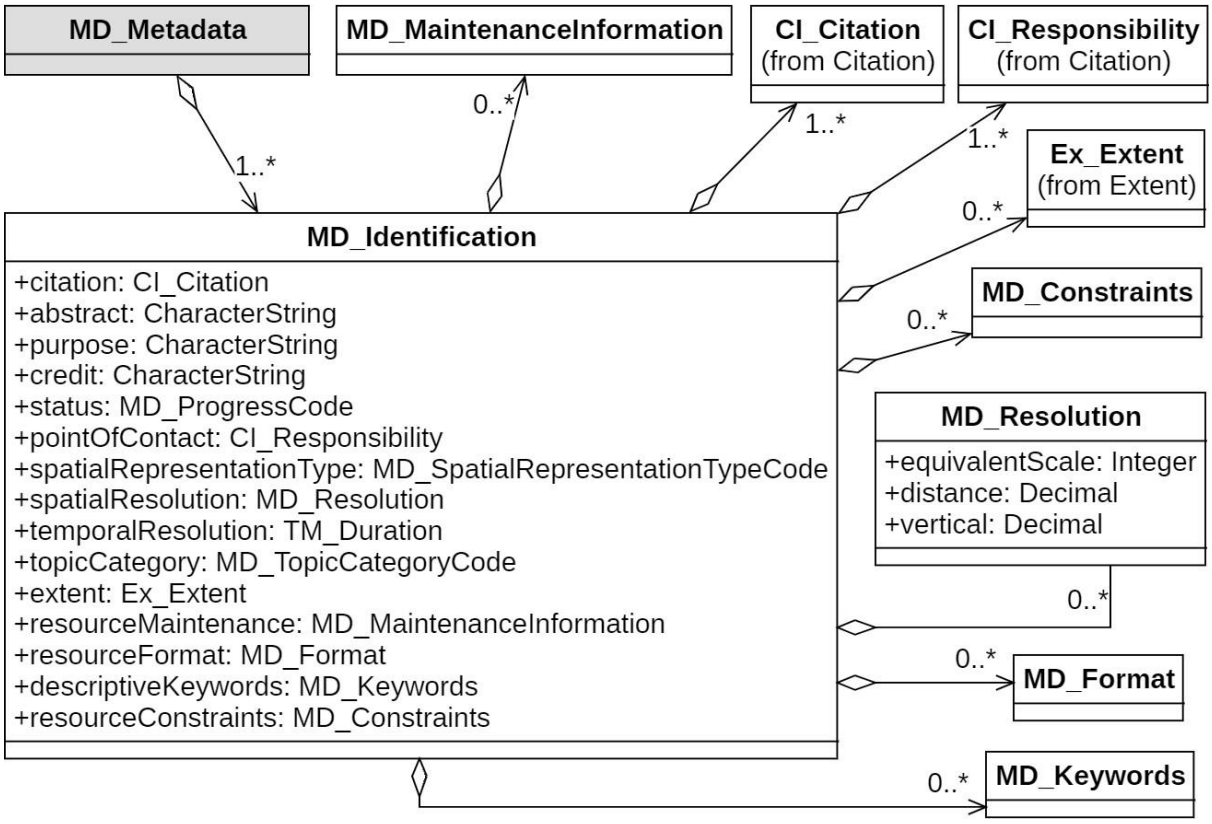


Fig. 24 Identification Information UML

5.3.5 *Format Information*

Format information is as defined in **Fig.25**. The data dictionary for this diagram is located in **Table C.4**.

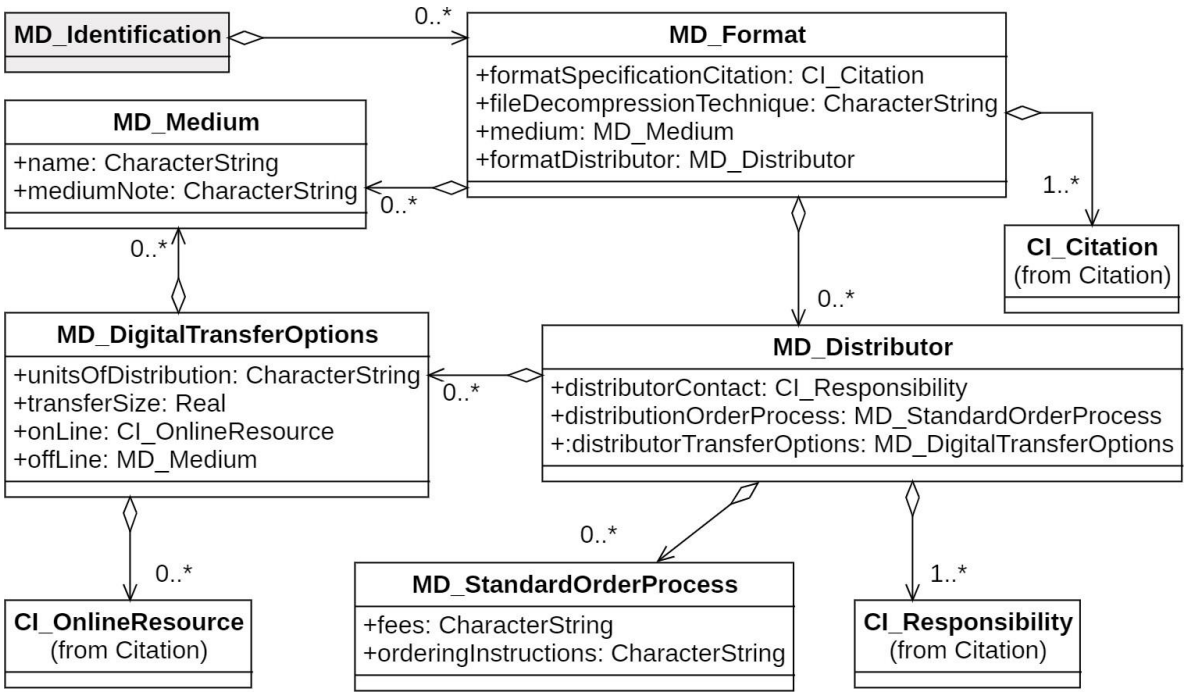


Fig. 25 Keyword Class UML

5.3.6 *Keywords Structure*

Keywords structure is as defined in **Fig.26.** The data dictionary for this diagram is located in **Table C.5**

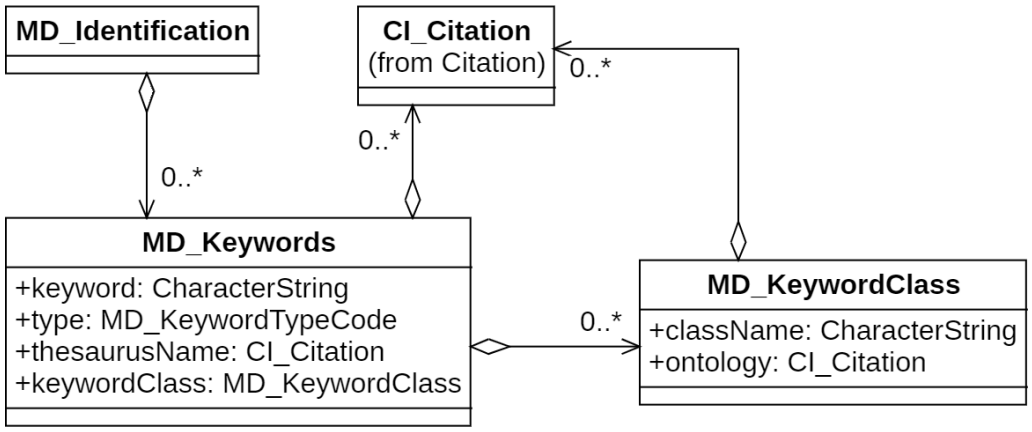


Fig. 26 Code lists associated with Identification information

Code lists used for Identification, Keywords and Format is as shown in **Fig.27.**

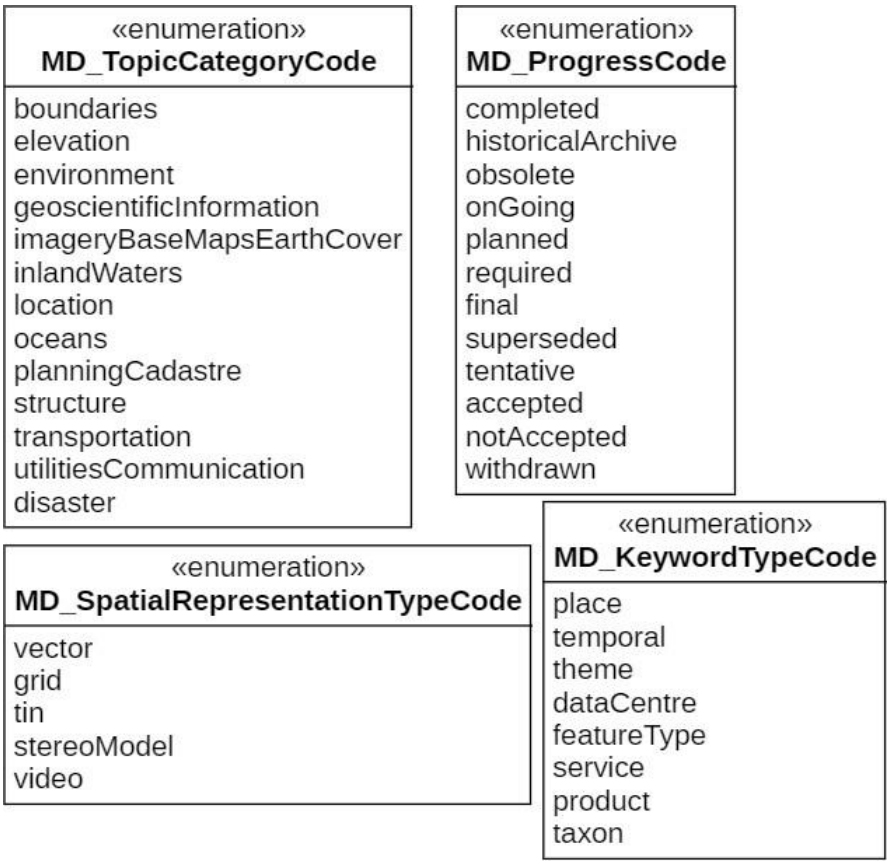


Fig. 27 Code lists associated with Identification information

5.4 Citation, responsibility and party information (CI_Citation, CI_Responsibility, and CI_Party):

This package provides a standardized method for citing a resource, as well as information about the party responsible for a resource. Citations use CI_Citation and cite the party responsible using CI_Responsibility. CI_Responsibility may be used without CI_Citation. CI_Responsibility is an aggregate of one or more parties (CI_Party). CI_Party, may be specified as CI_Individual and/or CI_Organisation. The full package is as specified in **Fig. 28 & Fig. 29**. The data dictionary for this diagram is located **Table C.6**.

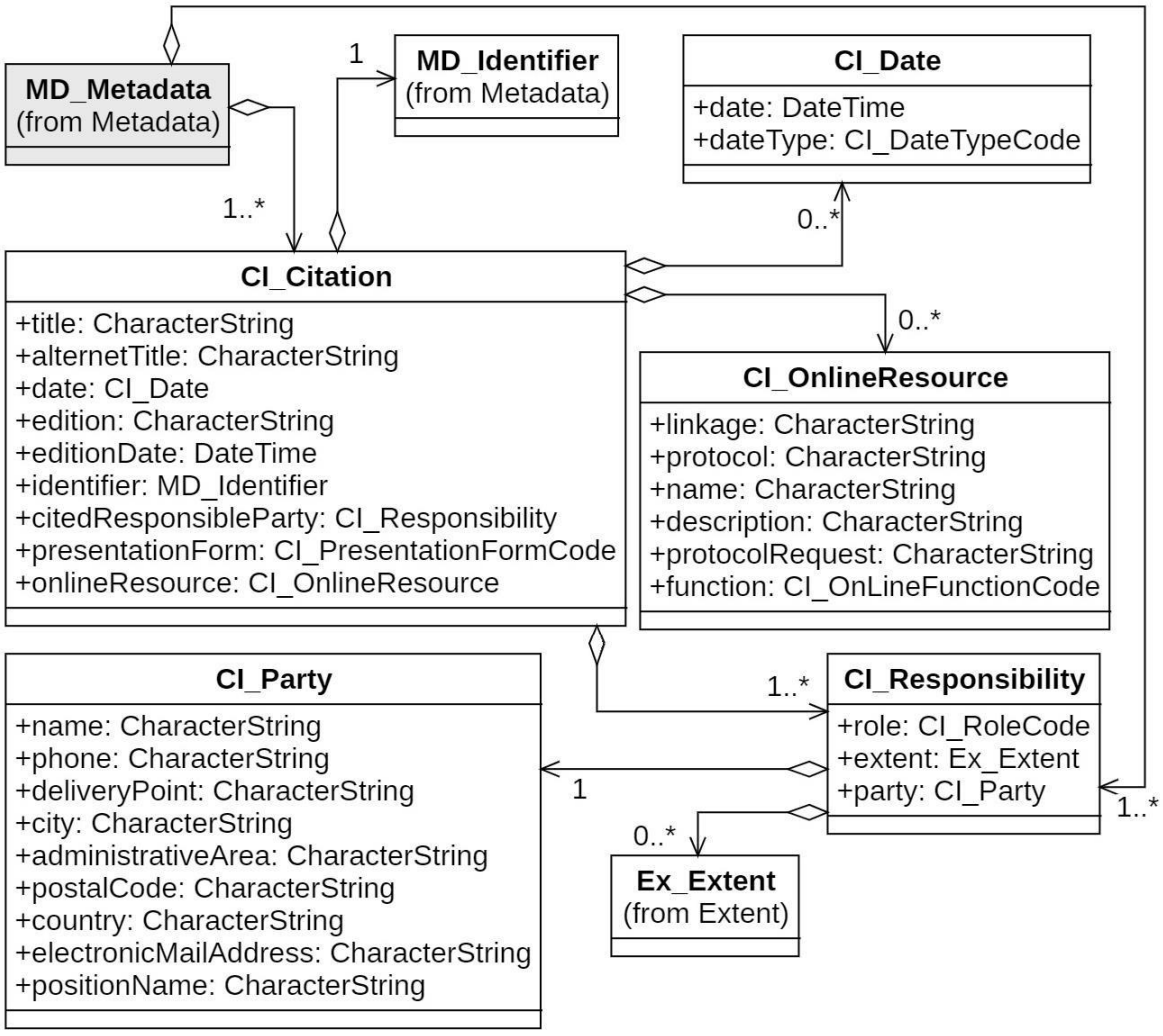


Fig. 28 Citation responsibility and party information

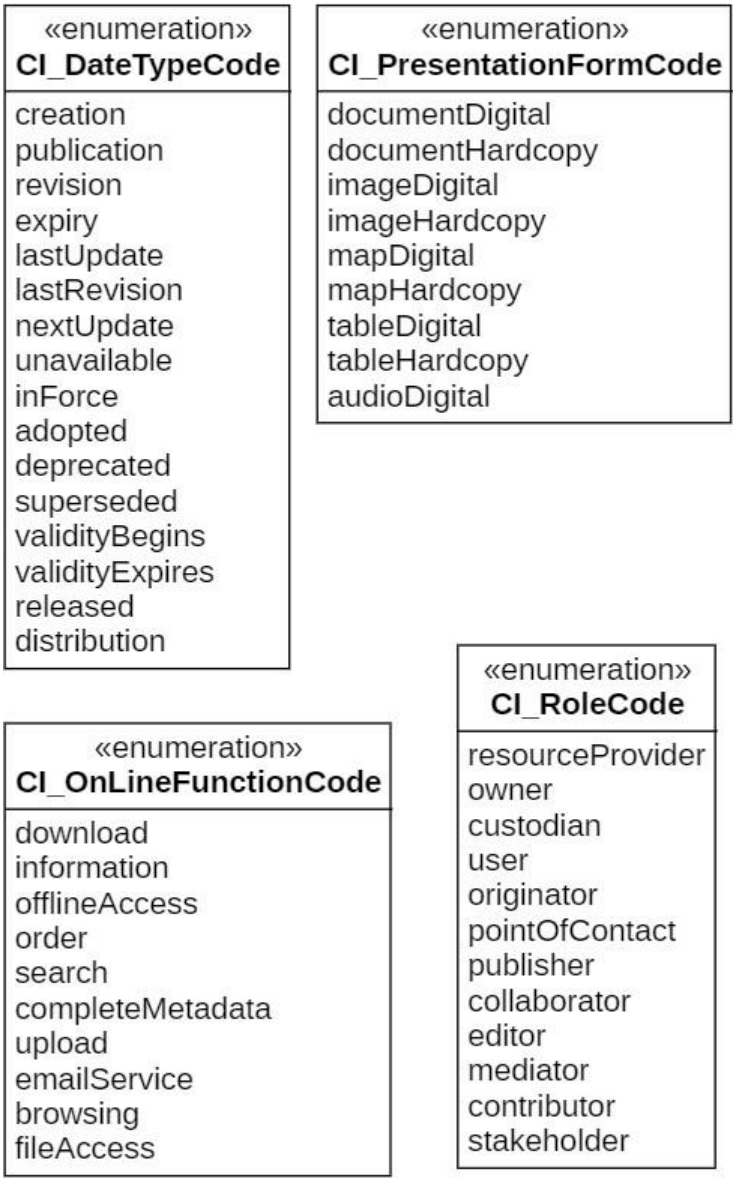


Fig. 29 Code lists associated with Citation information

5.5 Extent Information (EX_Extent)

The class in this package is an aggregate of the metadata elements that describe the spatial and temporal extent of resources, objects, events, or phenomena. The EX_Extent class contains information about the geographic (EX_GeographicExtent), temporal (EX_TemporalExtent) and the vertical (EX_VerticalExtent) extent of something. EX_GeographicExtent is defined as the further aggregation of optional classes EX_BoundingPolygon, EX_GeographicBoundingBox and EX_GeographicDescription. The full package is as specified in **Fig. 30.** TheEX_Extent class has three optional roles named “geographicElement”, “temporalElement”, and “vertical Element” and an element called “description”. At least one of the four elements shall be used. The data dictionary for this diagram (**Fig. 30)** is located in **Table C.7.**

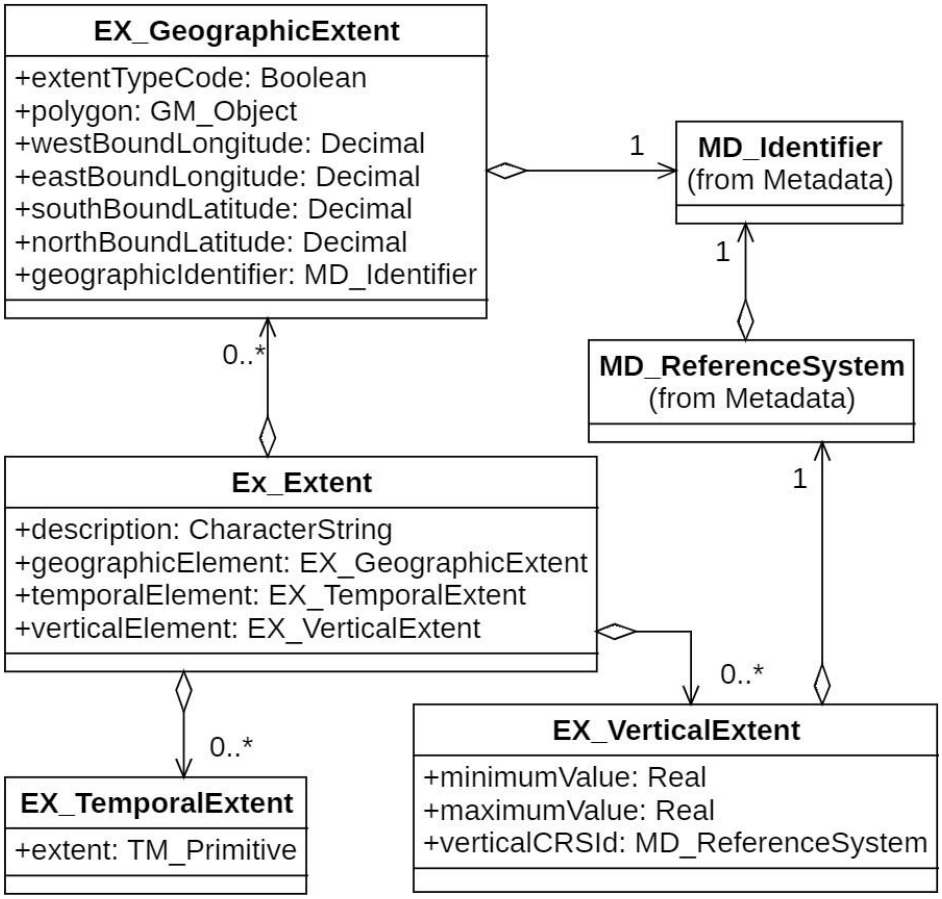


Fig. 30 Extent Information

5.6 Lineage Information (LI_Lineage)

This package supports the provision of metadata concerning the sources and production processes used in producing a resource. LI_Lineage is an aggregate of another class LI_Source, LI_ProcessStep. The full package is as specified in **Fig.31.** The data dictionary for this diagram is located in **Table C.8.**

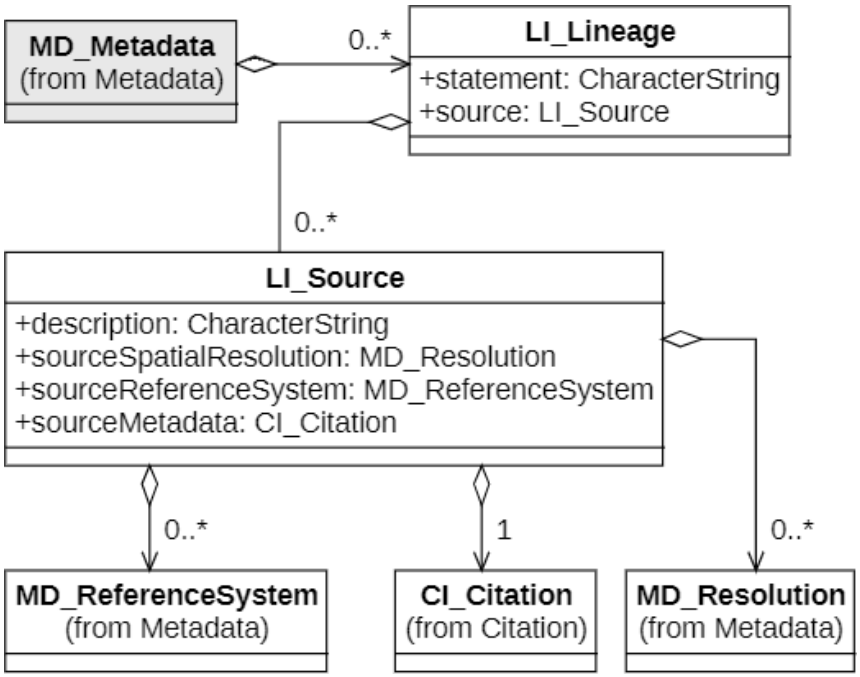


Fig. 31 Lineage Information

5.7 Data Quality Information (DQ_DataQuality)

The DQ_DataQuality class structure has been adopted from IS16439:2016 as shown in **Fig. 32**. The data dictionary for this diagram is located in **Table C.9**.

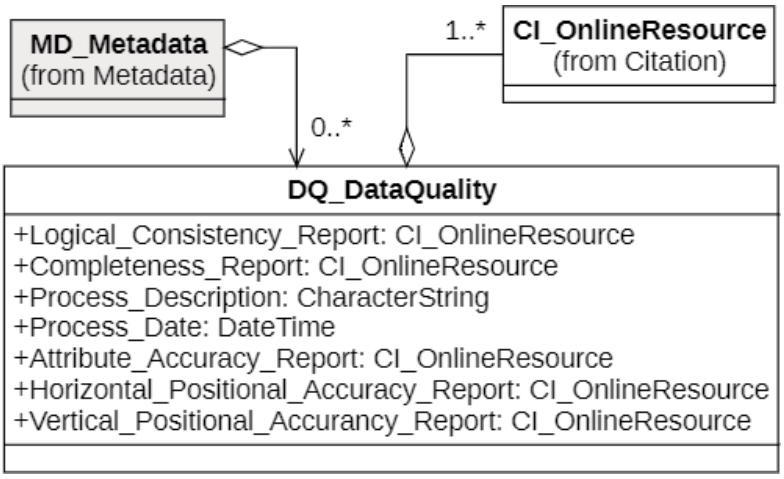


Fig. 32 Data Quality Information

6 TOPOLOGY:

The Administrative Boundary is a critical source of information about administrative divisions, featuring legal and technical statuses. The legal status pertains to political agreements between units, while the technical status addresses edge-matching concerns. Within this application schema, a flexible association between Administrative Unit and Administrative Boundary spatial object types is defined to facilitate the representation of topological and semantic relationships, aiding in queries to prevent geometric intersections.

Within this data specification, the following geometric and topological constraints are recommended:

a) Adjacent administrative or functional units of the same feature class shall not overlap. Their boundaries shall not intersect unless otherwise specified.
b) There shall be no gaps between adjacent administrative or functional units.
c) Unintended gaps arising from geometrical inconsistencies are generally prohibited. Boundaries of neighboring administrative units shall share the same set of coordinates within the specified resolution.
d) The borderline delineating administrative units shall correspond accurately to the geometries representing their boundaries.
e) Boundaries shall not include dangles. They shall consistently separate different administrative units.

7 HARMONIZATION OF NAMING AND SEMANTICS

For clarifying attributes names that are pronounced and spelt differently and yet associated with the same feature classes, it is essential to establish an enumeration list. These names may vary slightly or completely in pronunciation and spelling across different locations, yet they refer to the same attribute. For example, a village unit maybe referred to as Gaon, Gram, etc., but they belong to the same class, which is Village. Undertaking such an exercise fosters the harmonization of diverse toponymical names for the same feature, ensuring consistency and clarity in their interpretation and application across various contexts. To address such naming conflicts code lists or enumeration names suffixed with “Local_Type” as described under **Clause 6.7** and **Table B.8** are specified in this standard.

This standard does not provide a comprehensive harmonization. The list given in this standard is indicative and not exhaustive. This may be modified, by the user as per their requirement.

For the purpose of this document, the focal point lies in ensuring consistency and clarity in symbol usage. Establishing standardized symbols offers a singular visual appearance, ensuring uniformity across datasets regardless of location or user. Visual consistency shall be maintained by defining and standardizing symbols for diverse features within Functional boundaries—encompassing boundary lines, administrative units, and associated geographical features. This standardization not only facilitates effective communication but also enhances the interpretation of data across different contexts, promoting efficient usage and comprehension. Please refer to **Annexure D** for symbols and styles for Functional Areas (Administrative Boundaries) features.

ANNEXURE A

(*Clause* 3.4)

For conformance testing, the below test suite shall be used.

A.1 Abstract Test Suite

The data provided as specified in **Clause 6 & 7** and **Annexure B & C** shall meet the requirements specified in this abstract test suite, for conformance with Functional Areas (Administrative Boundaries) data model along with metadata structure. This abstract test suite applies to any profile derived from this part of the standard.

A.1.1 Test Case Identifier: Completeness Test

a) **Test Purpose:** To determine conformance by the inclusion of all packages, classes, and elements that are specified with an obligation of "M" or mandatory under the conditions specified.
b) **Test Method:** A comparison between this part of the standard and a subject dataset and metadata to be tested, shall be performed to determine if all classes and attributes defined as mandatory in **Clause 6 & 7** and **Annexure B & C** are present.

A.1.2 Test Case Identifier: Domain Test

a) **Test Purpose:** To determine if each provided element or attribute within a class falls within the specified domain.
b) **Test Method:** The values of each element shall be tested to ensure that they fall within the specified domain.

A.1.3 Test Case Identifier: Schema Test

a) **Test Purpose**: To determine if a subject dataset and metadata follows the schema specified in this standard.
b) **Test Method:** Test each data and metadata element and ensure it is contained within the specified class.

Annexure B

(C*lause* 4.1)

The Functional Area (Administrative Boundary) data model shall be fully specified by the UML model diagrams and an associated data model structure for each package as given below.

Data Model Structure for Functional Areas (Administrative Boundaries)

M=Mandatory; O=Optional; C=Conditional; PK=Primary Key (Unique)

Table: B.1 (Country & State Level)

(*Clause* 4.2.1)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**International_Boundary**	**International boundary lines**	**O**	**Class**	
a)	Geometry		M	MultiLine String	
b)	Name	Name of the boundary line. e.g.Mcmohan Line, Indo-Nepal etc.	O	Character String	FreeText
c)	Adj_Country_Name	ISO certified name of adjacent Country sharing common boundary	M	Character String	Adjacent countries of India sharing common international borders.
d)	Adj_Country_Code	Alpha-3 ISO Code of adjacent Country	O	Character String	Adjacent countries of India sharing common international borders.

e)	Demarcation_Type		M	CodeList	<<CodeList>> Demarcation_Type
f)	Length_KM	Length in kilometer as per official record	O	Double	
g)	Metadata_ID	Link with associated metadata record	M	Character String	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_ Domain (Default:Administrative)
j)	Status	Legal status of the feature	O	CodeList	<<CodeList>>Legal_Status
k)	Code_Series	Comma separated Codes of countries sharing common boundary. It will help to find associated elements from other point and polygon feature class.	M	Character String	
ii)	**Country**	**Geographical region of India**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Country_Name	ISO certified name	M (PK)	Character String	(Default:India)
c)	Country_Code	Alpha-3 ISO Code of Country	O	Character String	(Default:IND)
d)	Area_SqKm	Area in square kilometer as per official record	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	Character String	MD_Metadata. metadataidentifier

f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
iii)	**State_UT_Boundary**	**Boundary lines of state or union territory**	**O**	**Class**	
a)	Geometry		M	MultiLine String	
b)	State1	ISO certified name of state sharing common boundary	O	Character String	
c)	State1_LGD_Code	LGD Code	M	Character String	
d)	State1_ISO_Code	ISO 3166-2 code of the state	O	CodeList	<<CodeList>> State_UT_Type
e)	State1_Type	State or Union territory	M	CodeList	<<CodeList>> State_UT_Type
f)	State2	ISO certified name of state sharing common boundary	O	Character String	
g)	State2_LGD_Code	LGD Code	M	Character String	
h)	State2_Type	State or Union territory	M	CodeList	<<CodeList>> State_UT_Type
j)	State2_ISO_Code	ISO 3166-2 code of the state	O	CodeList	<<CodeList>> State_UT_Type
k)	Demarcation_Type		O	CodeList	<<CodeList>>Demarcation_Type
m)	Length_KM	Length in kilometer as per official record	O	Double	

n)	Country_Name		M	Character String	(Default:India)
p)	Metadata_ID	Link with associated metadata record	M	Character String	MD_Metadata. metadataidentifier
q)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_ Domain (Default:Administrative)
r)	Status	Legal status of the feature	O	CodeList	<<CodeList>> Legal_Status
s)	Code_Series	Comma separated LGD Codes of states sharing common boundary. It will help to find associated elements from other point and polygon feature class.	M	Character String	
iv)	**State_UT**	**Geographical region of state or union territory**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	State_Name	ISO certified name of the State.	O	Character String	
c)	State_LGD_Code	LGD Code	M (PK)	Character String	
d)	Country_Name		O	Character String	(Default:India)
e)	Capital	State Capital	M	Character String	
f)	Area_SqKm	Area in square kilometer as per official record	O	Double	

g)	Metadata_ID	Link with associated metadata record	M	Character String	MD_Metadata. metadataidentifier
h)	Type	State or Union Territory	M	CodeList	<<CodeList>> State_UT_Type
j)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_ Domain (Default:Administrative)
v)	**Admin_Boundary_Pillar**	**Boundary Pillars**	**O**	**Class**	
a)	Geometry			Point	
b)	Admin_Boundar_ Pillar_No			Character String	
c)	Admin_Pillar_Type	Associated region type		CodeList	<<CodeList>> Admin_Pillar_Type
d)	Metadata_ID	Link with associated metadata record	M	Character String	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_ Domain (Default:Administrative)
f)	Code_Series	Comma separated Codes of Region1, Region2. It will help to find associated elements from other point and polygon feature class.	M	Character String	

Table: B.2 (District &Sub-District)

(*Clauses* 4.2.2 *and* 4.2.3)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**Division**	**Integration of districts for administrative purposes**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Division_Name	Name of Division	M (PK)	CharacterString	FreeText
c)	State_LGD_Code	LGD Code	M (PK)	CharacterString	
d)	HQ	Divisional Head Quarter place name	O	CharacterString	
e)	Area_SqKm	Area in square kilometer	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
ii)	**District_Boundary**	**District boundary line**	**O**	**Class**	

a)	Geometry		M	MultiLineString	
b)	District1	Name of district sharing common boundary.	O	CharacterString	FreeText
c)	District1_LGD_Code	LGD code of district	M	CharacterString	
d)	District2	Name of district sharing common boundary.	O	CharacterString	FreeText
f)	District2_LGD_Code	LGD code of district	M	CharacterString	
g)	Demarcation_Type		O	CodeList	<<CodeList>> Demarcation_Type
h)	Length_KM	Length in kilometer	O	Double	
j)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
k)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
m)	State_LGD_Code	Parent state LGD Code	M	CharacterString	
n)	Status	Legal status of boundary	O	CodeList	<<CodeList>> Legal_Status

p)	Code_Series	Comma separated LGD Codes of districts sharing common boundary. It will help to find associated elements from other point and polygon feature class.	M	CharacterString	
iii)	**District**	**Geographic region of the district**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	District_Name	Name of the District	O	CharacterString	
c)	District_LGD_Code	LGD code of district	M (PK)	Number	
d)	HQ	District Head Quarter Name	O	CharacterString	
e)	Division_Name	Division name from Division table.	O	CharacterString	
f)	Area_SqKm	Area in square kilometer as per official record	O	Double	
g)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
j)	State_LGD_Code	Parent state LGD	M	CharacterString	

iv)	**SubDistrict_Boundary**	**Boundary line of administrative sub unit of district**	**O**	**Class**	
a)	Geometry			MultiLineString	
b)	SubDistrict1	Name of sub-district sharing common boundary	O	CharacterString	
c)	SubDistrict1_LGD_Code	LGD code of sub-district	M	CharacterString	
d)	SubDistrict2	Name of sub-district sharing common boundary	O	CharacterString	
e)	SubDistrict2_LGD_Code	LGD code of sub-district	M	CharacterString	
f)	Demarcation_Tpe		O	CodeList	<<CodeList>> Demarcation_Type
g)	Length_KM	Length of boundary feature in kilometer	O	Double	
h)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
j)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
k)	District_LGD_Code	Parent district LGD Code	M	CharacterString	

m)	Status	Legal status of boundary	O	CodeList	<<CodeList>>Legal_Status
n)	Code_Series	Comma separated LGD Codes of sub-district units sharing common boundary. It will help to find associated elements from other point and polygon feature class.	M	CharacterString	
v)	**SubDistrict**	**Administrative sub unit of district**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	SubDistrict_Name	Name of sub-district	O	CharacterString	
c)	SubDistrict_LGD_Code	Sub-district LGD Code	M (PK)	CharacterString	
d)	Local_Type	Local nomenclature of sub-district unit. E.g. Tehsil, Taluk, Mandal etc.	O	CodeList	<<CodeList>> SubDistrict_Local_Type
f)	HQ	Sub-district head quarter place name	O	CharacterString	
g)	Area_SqKm	Area in square kilometer as per official record	O	Double	
h)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier

j)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
k)	District_LGD_Code	Parent district LGD Code	M	CharacterString	
vi)	**Block**	**Rural administrative sub-unit of a district.**	**O**	**Class**	
a)	Geometry			MultiPolygon	
b)	Block_Name	Name of the block	M	CharacterString	
c)	Block_LGD_Code	Block LGD Code	M (PK)	CharacterString	
d)	HQ	Block head quarter place name	O	CharacterString	
e)	Area_SqKm	Area in square kilometer as per official record	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata.metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
h)	District_LGD_Code	Parent district LGD Code	M	CharacterString	

Table: B.3 (Village)

(*Clause* 4.2.4)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**Village_Boundary**	**Boundary line of village**	**O**	**Class**	
a)	Geometry		M	MultiLineString	
b)	Village1	Name of village sharing common boundary	M	CharacterString	
c)	Village1_LGD_Code	Village LGD Code	M	CharacterString	
d)	Village2	Name of village sharing common boundary	M	CharacterString	
e)	Village2_LGD_Code	Village LGD Code	M	CharacterString	
f)	Demarcation_Type		O	CodeList	<<CodeList>> Demarcation_Type
g)	Length_KM	Length of boundary element in kilometer	O	Double	
h)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
j)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)

k)	District_LGD_Code	Parent district LGD Code	M	CharacterString	
m)	SubDistrict_LGD_Code	Parent sub-district LGD Code	M	CharacterString	
n)	Block_LGD_Code	Parent block LGD Code	O	CharacterString	
p)	Status	Legal status of boundary	O	CodeList	<<CodeList>> Legal_Status
q)	Code_Series	Comma separated LGD Codes of villages sharing common boundary. Note - It will help to find associated elements from other point and polygon feature class.	M	CharacterString	
ii)	**Village**		**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Village_Name	Name of village	M	CharacterString	FreeText
c)	Village_LGD_Code	Village LGD Code	M (PK)	CharacterString	
d)	Local_Type	Local nomenclature of village. E.g. Gaon, Gram etc.	O	CodeList	<<CodeList>> Village_Local_Type
e)	Type	Habitation status of village	O	CodeList	<<CodeList>> Village_Type
f)	Area_SqKm	Area in square kilometer as per official record	O	Double	

g)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Administrative)
j)	District_LGD_Code	Parent district LGD Code	M	CharacterString	
k)	SubDistrict_LGD_Code	Parent sub-district LGD Code	M	CharacterString	
m)	Block_LGD_Code	Parent block LGD Code	O	CharacterString	
n)	ParliamentConstituencyName	Name of Parliament Constituency	M	CharacterString	
p)	AssemblyConstituencyName	Name of Assembly Constituency	M	CharacterString	
q)	Village_Panchayat_LGD_Code	LGD Code of village panchayat	M	CharacterString	

Table: B.4 (Forest and Environment)

(*Clause* 4.3)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**EcoSensitiveZone**	**Eco Sensitive Zones (ESZ) notified by MoEFCC**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	

b)	ESZ_Name	Name of the ESZ	M	CharacterString	
c)	State_LGD_Code	LGD code of associated state	M	CharacterString	
d)	MoFECC_Notification_Ref	MoEFCC Notification reference of the ESZ	O	CharacterString	
e)	Notification_Year	Year of notification	O	CharacterString	
f)	Area_SqKm	Area in square kilometer as per official record	O	Double	
g)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:ESZ)
j)	Country_Name		M	CharacterString	(Default:India)
ii)	**Forest**	**Boundary lines of forest unit**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Forest_Name	Name of the Forest	M	CharacterString	
c)	Forest_Code	Forest_Code of forest associated with forest boundary	M	CharacterString	

d)	Forest_Class	Legal, functional or administrative classification of forest.	M	CodeList	<<CodeList>>Forest_Class
e)	Area_SqKm	Area in square kilometer as per official record	O	Double	
f)	Metadata_ID	Link with associated metadata record.	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
h)	State_LGD_Code	LGD code of associated state	M	CharacterString	
iii)	**Forest_Boundary**	**Boundary lines of forest unit**	**O**	**Class**	
a)	Geometry		M	MultiLineString	
b)	Forest1_Code	Forest_Code of forest associated with forest boundary	M	CharacterString	
c)	Forest2_Code	Forest_Code of forest associated with forest boundary	O	CharacterString	
d)	Demarcation_Type		O	CodeList	<<CodeList>>Demarcation_Type
e)	Length_KM	Length on boundary in kilometer	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier

g)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
h)	State_LGD_Code	LGD code of associated state	M	CharacterString	
j)	Status	Legal status of boundary	O	CodeList	<<CodeList>>Legal_Status
k)	Code_Series	Comma separated Codes of Region1, Region2. Note - It will help to find associated elements from other point and polygon feature class.		CharacterString	
iv)	**Forest_Boundary_Pillar**	**Forest boundary pillar**	**O**	**Class**	
a)	Geometry		M	Point	
b)	Forest_Boundar_Pillar_No	Boundary pillar number	O	CharacterString	
c)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
d)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
e)	Forest_Code		M	CharacterString	

f)	Code_Series	Comma separated Forest_Codes of forest area sharing common boundary. It will help to find associated elements from other point and polygon feature class.	M	CharacterString	
v)	**Forest_Circle**	**Geographical administrative unit within the Forest Survey of India.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Forest_Circle_Name	Forest Circle Name	M	CharacterString	
c)	Forest_Circle_Code	Unique code of forest circle	M (PK)	CharacterString	
d)	Area_SqKm	Area in square kilometer as per official record	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
h)	Forest_Code	Name of Forest	M	CharacterString	
vi)	**Forest_Division**	**Forest sub-unit of a forest circle**	**O**	**Class**	

a)	Geometry			MultiPolygon	
b)	Forest_Division_Name	Name of forest division	O	CharacterString	
c)	Forest_Division_Code	Code of forest division. (Without space and special character)	M (PK)	CharacterString	
d)	Area_SqKm	Area in square kilometer	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
g)	State_LGD_Code	LGD code of associated state	M	CharacterString	
h)	Forest_Circle_Code	Code of parent forest circle	M	CharacterString	
vii)	**Forest_Range**	**Forest sub-unit of a forest division**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Forest_Range_Name	Name of forest division	O	CharacterString	
c)	Forest_Range_Code	Code of forest division. (Without space and special character)	M (PK)	CharacterString	
d)	Area_SqKm	Area in square kilometer	O	Double	

e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
g)	Forest_Division_Code	Code of parent forest division		CharacterString	
viii)	**Forest_Bit**	**Sub-unit of forest range**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Forest_Bit_Name	Forest bit name	O	CharacterString	
c)	Forest_Bit_Code	Code of forest bit (without space and special character)	M (PK)	CharacterString	
d)	Area_SqKm	Area in square kilometer	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Forest)
g)	Forest_Range_Code	Code of parent forest range unit	M	CharacterString	

Table: B.5 (Rural Governance)

(*Clause* 4.4.1)

Sl No. (1)	**Name of Entity or Element** (2)	**Definition** (3)	**Obligation/ Condition** (4)	**Data type** (5)	**Domain** (6)
i)	**District_Panchayat**	**District level of panchayati raj system**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	District_Panchayat_Name	Name of the District	O	CharacterString	
c)	District_Panchayat_LGD_Code	LGD Code	M (PK)	CharacterString	
d)	Local_Type	Local nomenclature of the administrative unit(e,g, Zilla Parishad etc)	O	CodeList	<<CodeList>> District_Panchayat_Local_Type
e)	HQ	Head quarter place name	O	CharacterString	
f)	Area_SqKm	Area in square kilometer	O	Double	
g)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, the feature is a part of.	M	CodeList	<<CodeList>>F_Domain (Default:RuralGovernance)
j)	State_LGD_Code	LGD Code of parent state	M	CharacterString	

ii)	**SubDistrict_Panchayat**	**Intermediate level sub district unit of Panchayati Raj system**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	SubDistrict_Panchayat_Name	Name of sub district panchayat	M	CharacterString	
c)	SubDistrict_Panchayat_LGD_Code	LGD Code of sub district panchayat	M (PK)	CharacterString	
d)	Local_Type	Local nomenclature of sub district panchayat (e.g. Mandal panchayat etc.)	O	CodeList	<<CodeList>> SubDistrict_Panchayat_Local_Type
e)	HQ	Head quarter place name	O	CharacterString	
f)	Area_SqKm	Area in square kilometer	O	Double	
g)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
h)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:RuralGovernance)
j)	District_Panchayat_LGD_Code	LGD code of parent district panchayat.	M	CharacterString	
iii)	**Village_Panchayat**	**Village level panchayat of Panchayati Raj system**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	

b)	Village_Panchayat_Name	Name of village panchayat	M	CharacterString	
c)	Village_Panchayat_LGD_Code	LGD Code of village panchayat	M (PK)	CharacterString	
d)	Local_Type	Local nomenclature of village panchayat	O	CodeList	<<CodeList>>Village_Panchayat_Local_Type
e)	Area_SqKm	Area in square kilometer	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:RuralGovernance)
h)	District_Panchayat_LGD_Code	LGD code of parent district level panchayat	M	CharacterString	
j)	SubDistrict_Panchayat_LGD_Code	LGD code of parent sub district level of panchayat	M	CharacterString	
k)	State_LGD_Code	LGD code of associated state	M	CharacterString	
iv)	**Rural_Ward**	**Sub unit of village panchayat**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Ward_Number		M	CharacterString	

c)	Ward_LGD_Code	Ward LGD Code or number (Combination of village panchayat LGD code and word number)	M (PK)	CharacterString	
d)	Ward_Name	Name of the ward	O	CharacterString	
e)	Area_SqKm	Area in square kilometer		Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:RuralGovernance)
g)	Village_Panchayat_LGD_Code	LGD Code of Village panchayat	M	CharacterString	

Table: B.6 (Urban Governance)

(*Clause* 4.4.2)

Sl No. (1)	**Name of Entity or Element (2)**	**Definition (3)**	**Obligation/ Condition (4)**	**Data type (5)**	**Domain (6)**
i)	**Urban_Body**	**Administrative area of Local urban government**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	

b)	Urban_Body_ Name	Name of the urban local body (e.g. Greater Hyderabad Municipal Corporation)	M	CharacterStrin g	
c)	Urban_Body_L GD_Code	LGD code of the urban local body	M (PK)	CharacterStrin g	
d)	Local_Type	Local nomenclature of the body (e.g. Municipal council, Town council etc.)	O	CodeList	<<CodeList>> Urban_Body_Local_T ype
e)	Area_SqKm	Area in square kilometer	O	Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterStrin g	MD_Metadata. metadataidentifier
g)	Functional_Do main	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Dom ain (Default:UrbanGovern ance)
h)	State_LGD_Co de	LGD code of associated state	M	CharacterStrin g	
ii)	**Urban_Zone**	**Administrative sub-unitunder Local urban government. Group of circles or wards.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Zone_Name	Name of the zone under urban local body.	M	CharacterStrin g	

c)	Area_SqKm	Area in square kilometer	O	Double	
d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:UrbanGovernance)
f)	Urban_Body_LGD_Code	LGD code of the urban local body	M	CharacterString	
iii)	**Urban_Circle**	**Administrative sub-unitunder Local urban government. Group of wards.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Circle_Name	Name of the circle under urban local body (e.g. Greater Hyderabad Municipal Corporation)	M	CharacterString	
c)	Area_SqKm	Area in square kilometer	O	Double	
d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:UrbanGovernance)

f)	Zone_Name	Name of the zone under urban local body.	O	CharacterString	
g)	Urban_Body_LGD_Code	LGD code of the urban local body	M	CharacterString	
iv)	**Urban_Ward**	**Administrative lowest level sub-unitunder Local urban government.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Ward_Number		M	CharacterString	
c)	Ward_LGD_Code	Ward LGD Code or number (Combination of LGD code of parent urban body and word number)	M (PK)	CharacterString	
d)	Ward_Name	Name of the ward	O	CharacterString	
e)	Area_SqKm	Area in square kilometer		Double	
f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:UrbanGovernance)

h)	Circle_Name	Name of the circle under urban local body (e.g. Greater Hyderabad Municipal Corporation)	M	CharacterString	
j)	Zone_Name	Name of the zone under urban local body.	O	CharacterString	
k)	Urban_Body_LGD_Code	LGD Code of Village panchayat	M	CharacterString	

Table: B.7 (Cantonment Body)

(*Clause* 4.4.2)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**Cantonment_Board**	**Notified area for administration under "Cantonment Act, 2006"**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Cantonment_Board_Name	Name of the cantonment board	M	CharacterString	
c)	Cantonment_Board_LGD_Code	LGD Code of the cantonment board	M (PK)	CharacterString	

d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:Cantonment Board)
f)	Area_SqKm	Area in square kilometer	O	Double	
g)	State_LGD_Code	LGD Code of associated state	M	CharacterString	
ii)	**Cantonment_ Ward**	**Administrative lowest level sub-unit under cantonment board.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Ward_Number		M	CharacterString	
c)	Ward_LGD_Code	Ward LGD Code or number (Combination of LGD code of parent cantonment board and word number)	M (PK)	CharacterString	
d)	Ward_Name	Name of the ward	O	CharacterString	
e)	Area_SqKm	Area in square kilometer		Double	

f)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
g)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Cantonment Board)
h)	Cantonment_Board_ LGD_Code	LGD Code of associated cantonment board	M	CharacterString	

Table: B.8 (Electoral Constituency)

(*Clause* 4.5)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**Parliament_Constituency**		**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	ParliamentConstituencyName		M	CharacterString	
c)	State_LGD_Code	LGD Code of associated state	M	CharacterString	
d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a	M	CodeList	<<CodeList>>F_Domain (Default:Electoral)

		part.			
ii)	**Assembly_Constituency**		**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	AssemblyConstituencyName		M	CharacterString	
c)	ParliamentConstituencyName		M	CharacterString	
d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:Electoral)

Table: B.9 (CoastalRegulationZone)

(*Clause* 4.6)

Sl No. **(1)**	**Name of Entity or Element** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**CRZ**	**Coastal regulation zone**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Name	Name of the zone	M	CharacterString	

c)	Classification	Classification of the zone	M	CodeList	<<CodeList>>CRZ_Classification
d)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
e)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:CoastalRegulationZone)
f)	State_LGD_Code	LGD Code of associated state	M	CharacterString	
ii)	**ICRZ**	**Island Coastal Regulation Zone**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Classification	Classification of zone	M	CodeList	<<CodeList>>ICRZ_Classification
c)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
d)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:CoastalRegulationZone)
e)	State_LGD_Code	LGD Code of associated state	M	CharacterString	
iii)	**IIMP**	**Integrated Island Management Plan**	**O**	**Class**	

a)	Geometry		M	MultiPolygon	
b)	Classification	Classification of zone	M	CodeList	<<CodeList>>IIMP_Classification
c)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
d)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:CoastalRegulationZone)
e)	State_LGD_Code	LGD Code of associated state	M	CharacterString	

Table: B.10 (Urban Planning)

(*Clause* 4.7)

Sl No. (1)	**Name of Entity or Element (2)**	**Definition (3)**	**Obligation/ Condition (4)**	**Data type (5)**	**Domain (6)**
i)	**Planning_Area**	**Area earmarked by state planning departments and notified by state government for planning and development**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Code	Name of the planning area	M	CharacterString	

c)	Name	Code of the planning area	O	CharacterString	
d)	Area_SqKm	Area in square kilometer	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part	M	CodeList	<<CodeList>>F_Domain (Default:UrbanPlanning)
g)	State_LGD_Code	LGD Code of associated state	M	CharacterString	
ii)	**HighwayCorridorDevelopmentZone**	**To control large scale urban development along the important highways in a region**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Code	Name of the planning area	M	CharacterString	
c)	Name	Code of the planning area	O	CharacterString	
d)	Area_SqKm	Area in square kilometer	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterString	MD_Metadata. metadataidentifier
f)	Functional_Domain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:UrbanPlanning)

g)	State_LGD_ Code	LGD Code of associated state	M	CharacterStrin g	
iii)	**PeripheralC ontrolBelt**	**The area adjacent to the urban area earmarked by state planning departments in master plans for development regulations.**	**O**	**Class**	
a)	Geometry		M	MultiPolygon	
b)	Code	Name of the planning area	M	CharacterStrin g	
c)	Name	Code of the planning area	O	CharacterStrin g	
d)	Area_SqKm	Area in square kilometer	O	Double	
e)	Metadata_ID	Link with associated metadata record	M	CharacterStrin g	MD_Metadata. metadataidentifier
f)	Functional_D omain	Name of functional area, of which the feature is a part.	M	CodeList	<<CodeList>>F_Domain (Default:UrbanPlanning)
g)	State_LGD_ Code	LGD Code of associated state	M	CharacterStrin g	

Table: B.11 (Enumerations)

(*Clause* 4.8)

Sl No. (1)	**Concept Name(English) (2)**	**Code (3)**	**Definition (4)**

i)	**Demarcation_Type**		**Boundary demarcation type**
a)	Demarcated	Demarcated	Boundary marked on ground
b)	Delimited	Delimited	Boundary marked on Map
c)	Not Known	NotKnown	
ii)	**State_UT_Type**		**State or Union Territories of India**
a)	State	State	States of India
b)	UT	UT	Union Territories of India
iii)	**F_Domain**		**Functional Areas**
a)	Administrative	Administrative	Major administrative hierarchy
b)	Forest	Forest	Forest administration hierarchy
c)	Rural Governance	RuralGovernance	Panchayati Raj hierarchy
d)	Urban Governance	UrbanGovernance	Local urban administration
e)	Cantonment Board	CantonmentBoard	Cantonment board administration
f)	CoastalRegulationZone	CoastalRegulationZone	Coastal Regulation Zones, Island Coastal Regulation Zones and Integrated Island Management Plannotified by the Government of India.
g)	Electoral	Electoral	Electoral constituencies
h)	UrbanPlanning	UrbanPlanning	Areas earmarked by state government for planning and development.
j)	ESZ	ESZ	Eco Sensitive Zone
iv)	**Legal_Status**		**Dispute status of boundaries**
a)	Disputed	Disputed	Boundary limit is under dispute
b)	UnDisputed	UnDisputed	Boundary is free from any dispute
v)	**Admin_Pillar_Type**		**Administrative Boundary Pillar**
a)	International	International	International boundary pillar
b)	State	State	State boundary pillar
c)	District	District	District boundary pillar
d)	SubDistrict	SubDistrict	Sub district boundary pillar
e)	Village	Village	Village boundary pillar
vi)	**SubDistrict_Local_Type**		**Local nomenclature of subdistrict**
a)	Tehsil	Tehsil	
b)	Tahsil	Tahsil	
c)	Taluk	Taluk	
d)	Taluka	Taluka	
e)	Mandal	Mandal	
f)	Circle	Circle	
g)	SubDivision	SubDivision	
h)	SubDistrict	SubDistrict	
j)	RevenueCircle	RevenueCircle	
k)	CD_Block	CD_Block	
m)	Tehsil And SubTehsil	TehsilAndSubTehsil	
n)	RD_Block	RD_Block	
vii)	**Village_Local_Type**		**Local nomenclature of village**
a)	Gaanv	Gaanv	
b)	Gaav	Gaav	
c)	Gaam	Gaam	
d)	Gao	Gao	
e)	Gaon	Gaon	

f)	Gram	Gram	
g)	Graamam	Graamam	
h)	Graama	Graama	
i)	Kiraamam	Kiraamam	
j)	Pind	Pind	
k)	Village	Village	
viii)	**Village_Type**		**Types of village**
a)	Inhabited	Inhabited	
b)	Uninhabited	Uninhabited	
c)	Hamlet	Hamlet	
d)	Forest Village	ForestVillage	
ix)	**Forest_Class**		**Types of Forest**
a)	NationalPark	NationalPark	
b)	WildLifeSanctuary	WildLifeSanctuary	
c)	ConservationReserve	ConservationReserve	
d)	CommunityReserve	CommunityReserve	
e)	Reserved Forest	ReservedForest	
f)	Protected Forest	ProtectedForest	
g)	Unclassified	Unclassified	
x)	**District_Panchayat_Local_Type**		**Local nomenclature of district level panchayat**
a)	Area Employment Council	AreaEmploymentCouncil	
b)	Autonomous District Council	AutonomousDistrictCouncil	
c)	Bodoland Territorial Council (BTC)	BodolandTerritorialCouncil	
d)	Commune Panchayat	CommunePanchayat	
e)	District Panchayat	DistrictPanchayat	
f)	District Planning & Development Board	DistrictPlanningAndDevelopmentBoard	
g)	Gorkhaland Territorial Administration	GorkhalandTerritorialAdministration	
h)	Tribal Council	TribalCouncil	
i)	Zilla Panchayat	ZillaPanchayat	
j)	Zilla Parishad	ZillaParishad	
xi)	**SubDistrict_Panchayat_Local_Type**		**Local nomenclature of intermediate level panchayat**
a)	Anchalik Panchayat	AnchalikPanchayat	
b)	Block Advisory Committee	BlockAdvisoryCommittee	
c)	Block Development Board	BlockDevelopmentBoard	
d)	Block Development Council	BlockDevelopmentCouncil	
e)	Block Panchayat	BlockPanchayat	
f)	Janpad Panchayat	JanpadPanchayat	
g)	Kshetra Panchayat	KshetraPanchayat	
h)	Mandal Panchayat	MandalPanchayat	
j)	Panchayat Samity	PanchayatSamity	

k)	Taluka Panchayat	TalukaPanchayat	
xii)	**Village_Panchayat_Local_Type**		**Local nomenclature of village level panchayat**
a)	Gram Panchayat	GramPanchayat	
b)	Grama Panchayat	GramaPanchayat	
c)	Gaon Panchayat	GaonPanchayat	
d)	Halqa Panchayat	HalqaPanchayat	
e)	Village Authority	VillageAuthority	
f)	Village Council	VillageCouncil	
g)	Village Council Development Committee (VCDC)	VillageCouncilDevelopmentCommittee	
h)	Village Development Board	VillageDevelopmentBoard	
j)	Village Development Committee	VillageDevelopmentCommittee	
k)	Village Employment Council	VillageEmploymentCouncil	
m)	Village Panchayat	VillagePanchayat	
xiii)	**Urban_Body_Local_Type**		**Local nomenclature of local urban government body**
a)	City Corporation	CityCorporation	
b)	Municipality	Municipality	
c)	Municipal Board	MunicipalBoard	
d)	Municipal Committee	MunicipalCommittee	
e)	Municipal Corporation	MunicipalCorporation	
f)	Municipal Council	MunicipalCouncil	
g)	Nagar Panchayat	NagarPanchayat	
h)	Notified Area Council	NotifiedAreaCouncil	
j)	Town Committee	TownCommittee	
k)	Town Council	TownCouncil	
m)	Town Panchayat	TownPanchayat	
xiv)	**CRZ_Classification**		**Coastal Regulation Zone classification vide MoEFCC Gazette notification: Extraordinary [Part II – Section 3(i) dated 08th January 2019.**
a)	CRZ-IA	CRZ-IA	
b)	ESZ-CRZ-IA	ESZ-CRZ-IA	Eco-Sensitive Zone under CRZ-1A
c)	50m-MBZ	50m-MBZ	50 m Mangrove Buffer Zone
d)	CRZ-IB	CRZ-IB	
e)	CRZ-II	CRZ-II	
f)	NDZ-CRZ-II	NDZ-CRZ-II	No Development Zone under CRZ-II
g)	CRZ-IIIA	CRZ-IIIA	
h)	CRZ-IIIB	CRZ-IIIB	
j)	NDZ-CRZ-III	NDZ-CRZ-III	No Development Zone under CRZ-III
k)	CRZ-IVA	CRZ-IVA	
m)	CRZ-IVB	CRZ-IVB	
n)	CVCA	CVCA	Critically Vulnerable Coastal Area

xv)	**ICRZ_Classification**		**Island Coastal Regulation Zone classification vide MoEFCC Gazette notification: Extraordinary [Part II – Section 3(ii) dated 08th March 2019.**
a)	ICRZ-IA	ICRZ-IA	
b)	ICRZ-IB	ICRZ-IB	
c)	20m-MBZ	20m-MBZ	20 m Mangrove Buffer Zone
d)	ICRZ-II	ICRZ-II	
e)	ICRZ-III	ICRZ-III	
f)	CRZ-IIIB	CRZ-IIIB	
g)	NDZ-ICRZ-III	NDZ-ICRZ-III	No Development Zone under ICRZ-III
h)	CRZ-IVA	CRZ-IVA	
j)	CRZ-IVB	CRZ-IVB	

Table: B.12 (Relations)

AdministrativeHierarchy				
Relation Type (1)	**End1.Reference (2)**	**End1.Multiplicity (3)**	**End2.Reference (4)**	**End2.Multiplicity (5)**
Association	State_UT_Boundary.Country_Name	1..*	Country.Country_Name	1
Association	State_UT.Country_Name	1..*	Country.Country_Name	1
Association	District_Boundary.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	District.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	Division.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Division.Division_Name, State_LGD_Code	0..1	District.Division_Name, State_LGD_Code	1..*
Association	SubDistrict_Boundary.District_LGD_Code	0..*	District.District_LGD_Code	1
Association	SubDistrict.District_LGD_Code	0..*	District.District_LGD_Code	1

Association	Block.District_LGD_Code	0..*	District.District_LGD_Code	1
Association	Village.SubDistrict_LGD_Code	1..*	SubDistrict.SubDistrict_LGD_Code	0..1
Association	Village.Block_LGD_Code	1..*	Block.Block_LGD_Code	0..1
Association	Village.District_LGD_Code	1..*	District.District_LGD_Code	1
Association	Village.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	Village.AssemblyConstituencyName	1..*	Assembly_Constituency.AssemblyConstituencyName	1
Association	Village.ParliamentConstituencyName	1..*	Parliament_Constituency.ParliamentConstituencyName	1
Association	Village.Village_Panchayat_LGD_Code	1..*	Village_Panchayat.Village_Panchayat_LGD_Code	1
Association	Village_Boundary.District_LGD_Code	1..*	District.District_LGD_Code	1
Association	Village_Boundary.SubDistrict_LGD_Code	1..*	SubDistrict.SubDistrict_LGD_Code	0..1
Association	Admin_Boundary_Pillar.Code_Series	0..*	Village_Boundary.Code_Series	1..*
Association	Admin_Boundary_Pillar.Code_Series	0..*	SubDistrict_Boundary.Code_Series	1..*
Association	Admin_Boundary_Pillar.Code_Series	0..*	District_Boundary.Code_Series	1..*
Association	Admin_Boundary_Pillar.Code_Series	0..*	State_UT_Boundary.Code_Series	1..*
Association	Admin_Boundary_Pillar.Code_Series	0..*	International_Boundary.Code_Series	1..*
Association	Country.Country_Name		International_Boundary.Code_Series	
Association	District.District_LGD_Code		District_Boundary.Code_Series	

Association	SubDistrict.SubDistrict_LGD_Code		SubDistrict_Boundary.Code_Series	
Association	Village.Village_LGD_Code		Village_Boundary.Code_Series	
ForestAndEnvironment				
Association	EcoSensitiveZone.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Forest.Country_Name	1..*	Country.Country_Name	1
Association	Forest_Boundary_Pillar.Forest_Name	1..*	Forest.Forest_Name	1..*
Association	Forest_Circle.Forest_Code	1..*	Forest.Forest_Code	1..*
Association	Forest_Boundary.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Forest_Division.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	Forest_Division.Forest_Circle_Code	1..*	Forest_Circle.Forest_Circle_Code	1
Association	Forest_Range.Forest_Division_Code	1..*	Forest_Division.Forest_Division_Code	1
Association	Forest_Bit.Forest_Range_Code	1..*	Forest_Range.Forest_Range_Code	1
Association	Forest.Code_Series		Forest_Boundary.Code_Series	
LocalGovernance				
Association	District_Panchayat.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	SubDistrict_Panchayat.District_Panchayat_LGD_Code	0..*	District_Panchayat.District_Panchayat_LGD_Code	1
Association	SubDistrict_Panchayat.District_Panchayat_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Village_Panchayat.SubDistrict_Panchayat_LGD_Code	1..*	SubDistrict_Panchayat.SubDistrict_Panchayat_LGD_Code	0..1

Association	Village_Panchayat.District_Panchayat_LGD_Code	1..*	District_Panchayat.District_Panchayat_LGD_Code	0..1
Association	Village_Panchayat.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	Rural_Ward.Village_Panchayat_LGD_Code	0..*	Village_Panchayat.Village_Panchayat_LGD_Code	1
Association	Urban_Body.State_LGD_Code	1..*	State_UT.State_LGD_Code	1
Association	Urban_Zone.Urban_Body_LGD_Code	0..*	Urban_Body.Urban_Body_LGD_Code	1
Association	Urban _Circle. Zone_Name	0..*	Urban_Zone,Zone_Name	1
Association	Urban _Circle.Urban_Body_LGD_Code	0..*	Urban_Body.Urban_Body_LGD_Code	1
Association	Urban_Ward.Circle_Name	0..*	Urban_Circle.Circle_Name	0..1
Association	Urban_Ward.Zone_Name	0..*	Urban_Zone,Zone_Name	0..1
Association	Urban_Ward.Urban_Body_LGD_Code	0..*	Urban_Body.Urban_Body_LGD_Code	1
Association	Cantonment_Board.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Cantonment_Ward.Cantonment_Board_LGD_Code	0..*	Cantonment_Board.Cantonment_Board_LGD_Code	1
ElectoralConstituency				
Association	Parliament_Constituency.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	Assembly_Constituency.ParliamentConstituencyName	0..*	Parliament_Constituency.ParliamentConstituencyName	1

CostalRegulationZone				
Association	CRZ.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	ICRZ.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	IIMP.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
UrbanPlanning				
Association	Planning_Area.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	HighwayCorridorDevelopmentZone.State_LGD_Code	0..*	State_UT.State_LGD_Code	1
Association	PeripheralControlBelt.State_LGD_Code	0..*	State_UT.State_LGD_Code	1

ANNEXURE C

(*Clause* 4.1)

The Metadata package, which includes full metadata model, shall be as below:

Data dictionary for geographic metadata

Table: C.1 - Metadata information Package (MD_Metadata)

(*Clause* 5.3.2)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation / Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**MD_Identifier**	**value uniquely identifying an object within a namespace**	**M**	**Class**	
a)	authority	the person or party responsible for maintenance of that namespace	O	Class	CI_Responsibility
b)	code	alphanumeric value identifying an instance in the namespace NOTE: Avoid characters that are not legal in URL	M	Character String	Free Text
c)	codeSpace	identifier or namespace in which the code is valid	M	Character String	
d)	version	version identifier for the namespace	M	Character String	Free Text
e)	description		O	Character String	Free Text

ii)	**MD_Metadata**	**Root entity which defines metadata about a resource or resources**	**M**	**Class**	
a)	metadataIdentifier		M	Class	MD_Identifier
b)	parentMetadata	identification of the parent metadata record	O	Class	MD_Identifier
c)	contact	party responsible for the metadata information	M	Class	CI_Responsibility
d)	dateInfo	date(s) associated with the metadata NOTE: Creation date shall be provided	O	Class	CI_Date
e)	metadataLinkage	online location where the metadata is available	O	Class	CI_OnlineResource
f)	referenceSystemInfo	digital representation of spatial information in the resource	O	Class	MD_ReferenceSystem
g)	identificationInfo	basic information about the resource(s) to which the metadata applies	M	Class	MD_Identification
h)	dataQualityInfo		O	Class	DQ_DataQuality
j)	metadataConstraints	restrictions on the access and use of metadata	O	Class	MD_Constraints
k)	metadataMaintenance		O	Class	MD_MaintenanceInformation
m)	resourceLineage	information about the provenance, source(s), and/or the production process(es) applied to the resource	O	Class	LI_Lineage

n)	metadataScope	the scope/type of resource for which metadata is provided	O	Class	MD_Scope
iii)	**MD_ReferenceSystem**	**Information about the reference system**	**O**	**Class**	
a)	referenceSystemIdentifier		M	Class	MD_Identifier
b)	referenceSystemType		O	CodeList	<<CodeList>> MD_ReferenceSystemTypeCode
iv)	**MD_MaintenanceInformation**		**O**	**Class**	
a)	maintenanceAndUpdateFrequency		M	CodeList	<<CodeList>> MD_MaintenanceFrequencyCode
b)	maintenanceDate		O	Class	CI_Date
c)	userDefinedMaintenanceFrequency	maintenance period other than those defined	O	CodeList	<<CodeList>> MD_MaintenanceFrequencyCode
d)	maintenanceScope		O	Class	MD_Scope
e)	maintenanceNote		O	Character String	
f)	contact		O	Class	CI_Responsibility

Table: C.2 - Constraint information (MD_Constraints), Releasability (MD_Releasability), Scope (MD_Scope)

(*Clause* 5.3.3)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**MD_Constraints**		**O**	**Class**	
a)	useLimitation	limitation affecting the fitness for use of the resource or metadata	O	CharacterString	
b)	constraintApplicationScope	spatial and/or temporal extent and or level of the application of the constraint restrictions	O	Class	MD_Scope
c)	releasability	information concerning the parties to whom the resource can or cannot be released	O	Class	MD_Releasability
d)	responsibleParty		O	Class	CI_Responsibility
e)	accessConstraints		M	CodeList	<<CodeList>> MD_RestrictionCode

f)	useConstraints		M	CodeList	<<CodeList>> MD_RestrictionCode
g)	otherConstraints		O	CharacterString	
h)	classification		M	CodeList	<<CodeList>> MD_ClassificationCode
j)	userNote	explanation of the application of the legal constraints or other restrictions and legal prerequisites for obtaining and using the resource	O	CharacterString	
k)	handlingDescription	additional information about the restrictions on handling the resource or metadata	O	CharacterString	
ii)	**MD_Releasability**		**O**		
a)	addressee	party to which the release statement applies	M	Class	CI_Responsibility
b)	statement	release statement	O	CharacterString	
c)	disseminationConstraints		O	Class	MD_RestrictionCode

iii)	**MD_Scope**	**Scope of the metadata or resource**		**Class**	
a)	level		M	CodeList	<<CodeList>> MD_ScopeCode
b)	extent		O	Class	Ex_Extent
c)	description		O	CharacterString	

Table: C.3 - Identification information (MD_Identification)

(*Clause* 5.3.4)

Sl No. (1)	**metadataMaintenance (2)**	**Definition (3)**	**Obligation / Condition (4)**	**Data type (5)**	**Domain (6)**
i)	**MD_Identification**	**basic information required to uniquely identify a resource**	**M**	**Class**	
a)	citation		M	Class	CI_Citation
b)	abstract	brief narrative summary of the resource	M	Character String	
c)	purpose	summary of the intentions with which the resource was generated	O	Character String	
d)	credit	recognition of those who contributed to the resource	O	Character String	

e)	status		O	CodeList	<<CodeList>> MD_ProgressCode
f)	pointOfContact		M	Class	CI_Responsibility
g)	spatialRepresentationType		O	CodeList	<<CodeList>> MD_SpatialRepresentationTypeCode
h)	spatialResolution		O	Class	MD_Resolution*[ISO/TS 19103]*
j)	temporalResolution		O	Class	TM_Duration*[ISO 8601]*
k)	topicCategory	main theme(s) of the resource	M	CodeList	<<CodeList>> MD_TopicCategoryCode
m)	extent		O	Class	Ex_Extent
n)	resourceMaintenance		O	Class	MD_MaintenanceInformation
p)	resourceFormat		O	Class	MD_Format
q)	descriptiveKeywords		O	Class	MD_Keywords
r)	resourceConstraints		O	Class	MD_Constraints

ii)	**MD_Resolution**		**O**		
a)	equivalentScale	Scale denominator	O	Integer	
b)	distance	Horizontal resolution	O	Decimal	
c)	uomDistance	Units of measure for horizontal distance	O	Character String	
d)	vertical	Vertical resolution	O	Decimal	
e)	uomVertical	Units of measure for vertical distance	O	Character String	

Table: C.4 - Format information (MD_Format)

(*Clause* 5.3.5)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**MD_Format**		**O**		
a)	formatSpecificationCitation		M	Class	CI_Citation
b)	fileDecompressionTechnique		O	CharacterString	
c)	medium		O	Class	MD_Medium
d)	formatDistributor		O	Class	MD_Distributor
ii)	**MD_Medium**	**Information about the media on which the resource can be stored (resourceFormat) or distributed**	**O**		

a)	name		M	CharacterString	
b)	mediumNote		O	CharacterString	
iii)	**MD_DigitalTransferOptions**		**O**		
a)	unitsOfDistribution		O	CharacterString	
b)	transferSize		O	Real	
c)	onLine		O	Class	CI_OnlineResource
d)	offLine		O	Class	MD_Medium
iv)	**MD_Distributor**	**Information about the distributor**	**O**		
a)	distributorContact		M	Class	CI_Responsibility
b)	distributionOrderProcess		O	Class	MD_StandardOrderProcess
c)	distributorTransferOptions		O	Class	MD_DigitalTransferOptions
v)	**MD_StandardOrderProcess**		**O**		
a)	fees		O	CharacterString	
b)	orderingInstructions		O	CharacterString	

Table: C.5 –Keyword structure (MD_Keywords)

(*Clause* 5.3.6)

Sl No (1)	metadataMaintenance (2)	Definition (3)	Obligation/ Condition (4)	Data type (5)	Domain (6)
	MD_Keywords	**keywords, their type and reference source**	**O**		
	keyword	commonly used word(s) or formalised word(s) or phrase(s) used to describe the subject	M	CharacterString	
	type	subject matter used to group similar keywords	O	CodeList	<<CodeList>> MD_KeywordTypeCode
	thesaurusName	name of the formally registered thesaurus or a similar authoritative source of keywords	O	Class	CI_Citation
	keywordClass	association of a MD_Keywords instance with a MD_KeywordClass to provide user-defined categorization of groups of keywords that extend or are orthogonal to the standardized KeywordTypeCodes and are associated with an ontology that allows additional semantic query processing	O	Class	MD_KeywordClass
	MD_KeywordClass	**Specification of a class to categorize keywords in a domain-specific vocabulary**	**O**		
	className		M	CharacterString	
	ontology	reference that binds the keyword class to a formal conceptualization of a knowledge domain for	M	Class	CI_Citation

		use in semantic processing			

Table: C.6 - Citation, responsibility and party information (CI_Citation, CI_Responsibility, and CI_Party)

(*Clause* 5.4)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation / Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**CI_Citation**	**Standardized resource reference**	**O**	**Class**	
a)	title	Name by which the cited resource is known	M	CharacterString	
b)	alternetTitle	Short name or other language name by which the cited resource is known	O	CharacterString	
c)	date	Reference date of the cited resource	O	Class	CI_Date
d)	edition	version of the cited resource	O	CharacterString	
e)	editionDate	Date of the edition	O	DateTime	
f)	identifier	value uniquely identifying an object within a namespace	M	Class	MD_Identifier
g)	citedResponsibleParty	roles, name, contact, and position information for an individual or organisation that is responsible for the resource	O	Class	CI_Responsibility

h)	presentationForm	mode in which the resource is represented	O	CodeList	<<CodeList>> CI_PresentationFormCode
j)	onlineResource	online reference to the cited resource	O	Class	CI_OnlineResource
ii)	**CI_Responsibility**		**O**	**Class**	
a)	role		M	CodeList	<<CodeList>> CI_RoleCode
b)	extent		O	Class	Ex_Extent
c)	party		M	Class	CI_Party
iii)	**CI_OnlineResource**		**O**	**Class**	
a)	linkage	url or online address	M	CharacterString	
b)	protocol	http, ftp etc.	M	CharacterString	
c)	name	Name of the resource	M	CharacterString	
d)	description		O	CharacterString	
e)	protocolRequest	request used to access the resource depending on the protocol (to be used mainly for POST requests)	O	CharacterString	

iv)	**CI_Party**	**Information about individual or organization**	**O**	**Class**	
a)	name		M	CharacterString	
b)	phone		O	CharacterString	
c)	deliveryPoint	Address line for the location	M	CharacterString	
d)	city		O	CharacterString	
e)	administrativeArea		O	CharacterString	
f)	postalCode		O	CharacterString	
g)	country		O	CharacterString	
h)	electronicMailAddress		O	CharacterString	
j)	positionName		O	CharacterString	
v)	**CI_Date**		**O**	**Class**	
a)	date		M	DateTime	[ISO 8601]
b)	dateType		O	CodeList	<<CodeList>> CI_DateTypeCode

Table: C.7 - Extent information (EX_Extent)

(*Clause* 5.5)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation / Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**Ex_Extent**	**Extent of the resource**	**O**		
a)	description		O	CharacterString	
b)	geographicElement	provides spatial component of the extent of the referring object	O	Class	EX_GeographicExtent
c)	temporalElement	provides temporal component of the extent of the referring object	O	Class	EX_TemporalExtent
d)	verticalElement	provides vertical component of the extent of the referring object	O	Class	EX_VerticalExtent
ii)	**EX_GeographicExtent**	**Spatial area of the resource**	**O**	**Class**	
a)	extentTypeCode		M	Boolean	0=excludion,1=inclusion
b)	polygon		C (if c-g not available)	GM_Object	
c)	westBoundLongitude		C (if b or g not available)	Decimal	
d)	eastBoundLongitude		C (if b or g not available)	Decimal	

e)	southBoundLatitude		C (if b or g not available)	Decimal	
f)	northBoundLatitude		C (if b or g not available)	Decimal	
g)	geographicIdentifier	Identifier used to represent a geographic area NOTE A geographic identifier as described in ISO 19112	C (if b-f not available)	Class	MD_Identifier
iii)	**EX_TemporalExtent**		**O**	**Class**	
a)	extent		M	TM_Primitive	[ISO 19108]
iv)	**EX_VerticalExtent**		**O**	**Class**	
a)	minimumValue		M	Decimal	
b)	maximumValue		M	Decimal	
c)	verticalCRSId		M	Class	MD_ReferenceSystem

Table: C.8 - Lineage information (LI_Lineage)

(*Clause* 5.6)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**

i)	**LI_Lineage**	**Information about the events or source data used in constructing the data specified by the scope or lack of knowledge about lineage**	**O**	**Class**	
a)	statement		O	CharacterString	
b)	source		M	Class	LI_Source
ii)	**LI_Source**		**O**	**Class**	
a)	description		M	CharacterString	
b)	sourceSpatialResolution		O	Class	MD_Resolution
c)	sourceReferenceSystem		O	Class	MD_ReferenceSystem
d)	sourceMetadata		O	Class	CI_Citation

Table: C.9 - Data Quality information (DQ_DataQuality)

(*Clause* 5.7)

Sl No. **(1)**	**metadataMaintenance** **(2)**	**Definition** **(3)**	**Obligation/ Condition** **(4)**	**Data type** **(5)**	**Domain** **(6)**
i)	**DQ_DataQuality**	**Quality report as defined in IS 16439**	**O**		

a)	Logical_Consistency _Report		O	Class	CI_OnlineResource
b)	Completeness_Report		O	Class	CI_OnlineResource
c)	Process_Description		O	CharacterString	
d)	Process_Date		O	DateTime	YYYY
e)	Attribute_Accuracy_ Report		O	Class	CI_OnlineResource
f)	Horizontal_Positional _Accuracy_Report		O	Class	CI_OnlineResource
g)	Vertical_Positional_ Accurancy_Report:		O	Class	CI_OnlineResource

Table: C.10 – Metadata Code Lists:

Sl No. (1)	**Concept Name(English) (2)**	**Code (3)**	**Definition (4)**
i)	**CI_PresentationFormCode**		**mode in which the data are represented**
a)	documentDigital	documentDigital	digital representation of a primarily textual item
b)	documentHardcopy	documentHardcopy	representation of a primarily textual item (may contain illustrations also) on paper, photographic material, or other media
c)	imageDigital	imageDigital	
d)	imageHardcopy	imageHardcopy	
e)	mapDigital	mapDigital	Map represented in raster or vector form
f)	mapHardcopy	mapHardcopy	map printed on paper

g)	tableDigital	tableDigital	Tabular data in digital form
h)	tableHardcopy	tableHardcopy	Tabular data printed on paper
j)	audioDigital	audioDigital	Digital audio recording
ii)	**CI_DateTypeCode**		**identification of when a given event occurred**
a)	creation	creation	date identifies when the resource was brought into existence
b)	publication	publication	date identifies when the resource was issued
c)	revision	revision	date identifies when the resource was examined or reexamined and improved or amended
d)	expiry	expiry	date identifies when resource expires
e)	lastUpdate	lastUpdate	
f)	lastRevision	lastRevision	
g)	nextUpdate	nextUpdate	
h)	unavailable	unavailable	date identifies when resource became not available or obtainable
j)	inForce	inForce	
k)	adopted	adopted	
m)	deprecated	deprecated	
n)	superseded	superseded	
p)	validityBegins	validityBegins	
q)	validityExpires	validityExpires	
r)	released	released	
s)	distribution	distribution	
iii)	**CI_OnLineFunctionCode**		**function performed by the resource**
a)	download	download	online instructions for transferring data from one storage device or system to another
b)	information	information	online information about the resource
c)	offlineAccess	offlineAccess	
d)	order	order	online order process for obtaining the resource
e)	search	search	online search interface for seeking out information about the

			resource
f)	completeMetadata	completeMetadata	complete metadata provided
g)	upload	upload	online resource upload capability provided
h)	emailService	emailService	online email service provided
j)	browsing	browsing	online browsing provided
k)	fileAccess	fileAccess	online file access provided
iv)	**CI_RoleCode**		**function performed by the responsible party**
a)	resourceProvider	resourceProvider	party that supplies the resource
b)	owner	owner	party that owns the resource
c)	custodian	custodian	party that accepts accountability and responsibility for the resource and ensures appropriate care and maintenance of the resource
d)	user	user	party who uses the resource
e)	originator	originator	party who created the resource
f)	pointOfContact	pointOfContact	party who can be contacted for acquiring knowledge about or acquisition of the resource
g)	publisher	publisher	party who publishes the resource
h)	collaborator	collaborator	party who assists with the generation of the resource other than the principal investigator
j)	editor	editor	party who reviewed or modified the resource to improve the content
k)	mediator	mediator	a class of entity that mediates access to the resource and for whom the resource is intended or useful
m)	contributor	contributor	party contributing to the resource
n)	stakeholder	stakeholder	party who has an

			interest in the resource or the use of the resource
v)	**MD_ClassificationCode**		**name of the handling restrictions on the resource**
a)	unclassified	unclassified	available for general disclosure
b)	restricted	restricted	not for general disclosure
c)	confidential	confidential	available for someone who can be entrusted with information
d)	secret	secret	kept or meant to be kept private, unknown, or hidden from all but a select group of people
e)	topSecret	topSecret	of the highest secrecy
f)	sensitiveButUnclassified	sensitiveButUnclassified	although unclassified, requires strict controls over its distribution
g)	forOfficialUseOnly	forOfficialUseOnly	unclassified information that is to be used only for official purposes determined by the designating body
h)	protected	protected	compromise of the information could cause damage
j)	limitedDistribution	limitedDistribution	dissemination limited by designating body
vi)	**MD_ScopeCode**		**class of information to which the referencing entity applies**
a)	attribute	attribute	information applies to the attribute value
b)	attributeType	attributeType	information applies to the characteristic of a feature
c)	dataset	dataset	information applies to the dataset
d)	nonGeographicDataset	nonGeographicDataset	information applies to non-geographic data
e)	feature	feature	information applies to a feature
f)	featureType	featureType	information applies to a feature type
g)	service	service	information applies to

			a capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour, such as a use case
h)	tile	tile	information applies to a tile, a spatial subset of geographic data
j)	metadata	metadata	information applies to metadata
k)	document	document	information applies to a document
m)	coverage	coverage	information applies to a coverage
n)	application	application	information resource hosted on a specific set of hardware and accessible over a network
vii)	**MD_ReferenceSystemTypeCode**		**defines type of reference system used**
a)	compoundGeographic2DVertical	compoundGeographic2DVertical	compound coordinate reference system in which one constituent coordinate reference system is a horizontal geodetic coordinate reference system and one is a vertical coordinate reference system EXAMPLE latitude, longitude, [gravity-related] height or depth
b)	compoundProjectedVertical	compoundProjectedVertical	Compound spatial reference system containing a horizontal projected coordinate reference system and a vertical coordinate reference system EXAMPLE easting, northing, [gravity-related] height or depth
c)	geodeticGeographic2D	geodeticGeographic2D	geodetic CRS having an ellipsoidal 2D coordinate system for example latitude,

			longitude
d)	geodeticGeographic3D	geodeticGeographic3D	geodetic CRS having an ellipsoidal 3D coordinate system for example latitude, longitude, ellipsoidal height
e)	geographicIdentifier	geographicIdentifier	spatial reference in the form of a label or code that identifies a location for example postal code
f)	projected	projected	coordinate reference system derived from a two-dimensional geodetic coordinate reference system by applying a map projection for example easting, northing
g)	vertical	vertical	one-dimensional coordinate reference system based on a vertical datum (datum describing the relation of gravity-related heights or depths to the Earth) for example [gravity-related] height or depth
h)	temporal	temporal	reference system against which time is measured for example time
viii)	**MD_MaintenanceFrequencyCode**		
a)	monthly	monthly	
b)	annually	annually	
c)	asNeeded	asNeeded	
d)	irregular	irregular	
e)	unknown	unknown	
ix)	**MD_RestrictionCode**		**limitation(s) placed upon the access or use of the data**
a)	copyright	copyright	
b)	patent	patent	
c)	intellectualPropertyRights	intellectualPropertyRights	
d)	restricted	restricted	
e)	unrestricted	unrestricted	
f)	licenceUnrestricted	licenceUnrestricted	
g)	licenceEndUser	licenceEndUser	

h)	licenceDistributor	licenceDistributor	
j)	private	private	
k)	statutory	statutory	
m)	confidential	confidential	
n)	sensitiveButUnclassified	sensitiveButUnclassified	
p)	in-confidence	in-confidence	
q)	otherRestrictions	otherRestrictions	
x)	**MD_ProgressCode**		**status of the resource**
a)	completed	completed	
b)	historicalArchive	historicalArchive	
c)	obsolete	obsolete	
d)	onGoing	onGoing	
e)	planned	planned	
f)	required	required	
g)	final	final	
h)	superseded	superseded	
j)	tentative	tentative	
k)	accepted	accepted	
m)	notAccepted	notAccepted	
n)	withdrawn	withdrawn	
xi)	**MD_TopicCategoryCode**		**High-level geographic data thematic classification to assist in the grouping and search of available geographic data sets NOTE 1 - May be used to group keywords as well. Listed examples are not exhaustive. NOTE 2 - It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.**
a)	boundaries	boundaries	
b)	elevation	elevation	
c)	environment	environment	
d)	geoscientificInformation	geoscientificInformation	
e)	imageryBaseMapsEarthCover	imageryBaseMapsEarthCover	
f)	inlandWaters	inlandWaters	
g)	location	location	
h)	oceans	oceans	
j)	planningCadastre	planningCadastre	
k)	structure	structure	
m)	transportation	transportation	

n)	utilitiesCommunication	utilitiesCommunication	
p)	disaster	disaster	
xii)	**MD_SpatialRepresentationTypeCode**		**Method used to represent geographic information in the resource**
a)	vector	vector	
b)	grid	grid	
c)	tin	tin	
d)	stereoModel	stereoModel	
e)	video	video	
xiii)	**MD_KeywordTypeCode**		**Methods used to group similar keywords**
a)	place	place	
b)	temporal	temporal	
c)	theme	theme	
d)	dataCentre	dataCentre	
e)	featureType	featureType	
f)	service	service	
g)	product	product	
h)	taxon	taxon	

ANNEXURE D

(*Clause* 7)

Symbols and styles for Functional Areas (Administrative Boundaries) features.

Table: D.1 –Style and Symbol Table for Administrative Boundaries

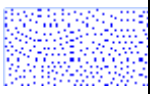
Category (1)	**Class (2)**	**Enumeration (3)**	**Symbol (4)**	**Color_code (5)**	**Remarks (6)**
Administrative	International_ Boundary	Demarcated		#000000	Bars=2.5 mm, gap between bars=1.7mm, Dot dia=0.4 mm,line width=0.25 mm
		Delimited		#000000	cross length=0.8mm , cross angle=45 deg,line width=0.2

					mm,line width=0.25 mm
		Not Known		#000000	cross length=0.8mm, cross angle=45 deg,line width=0.2 mm,line width=0.25 mm
	State_UT_Boundary	Demarcated		#000000	Bars=2 mm, gap between bars=1.4 mm, Dot dia=0.35 mm, dots placed centrally between bars, line width=0.2 mm
		Delimited		#000000	cross length=0.8mm, cross angle=45 deg,line width=0.2 mm,line width=0.25 mm
		Not Known		#000000	cross length=0.8mm, cross angle=45 deg,line width=0.2 mm,line width=0.25 mm
	District_Boundary			#000000	Bars=1.3 mm, gap between bars=0.85 mm line width=0.15 mm

	SubDistrict_Boundary			#000000	Dot dia=0.3 mm, Filled, gaps=1.4 mm center to center,line width=0.075 mm
Forest	Forest_Boundary			#00FF00	Inter dot gsp =2.0 mm,Inter pair gap= 0.85 mm, Dia of dot =0.35 mm, filled,,line width=0.15 mm

Table: D.2 –Style and Symbol Table for Coastal Regulation Zones (CRZ)

Category (1)	Class (2)	Enumeration (3)	Symbol (4)	Type	Colour	Red	Green	Blue	Width/ Size	Angle	Separation
Coastal Regulation Zones	CRZ	CVCA		Line Fill Symbol	Light Olivenite	205	205	102	1.20	45	10
		ESZ-CRZ IA		Marker Fill Symbol	Mars Red	255	0	0	1.0	-	-
		CRZ - IA		Simple Fill Symbol	Temperate Mixed Forest	112	140	72	-	-	-
		50mMBZ - CRZ IA		Line Fill Symbol	Arctic White	255	255	255	0.50	0	1.5
				Line Fill Symbol	Arctic White	255	255	255	0.50	90	1.5

				Line Fill Symbol	Gray 50%	130	130	130	-	-	-
		CRZ - IB		Picture Fill Symbol (Out Line Colour)	Sugilite	190	210	255	0.40	-	-
				Picture Fill Symbol (Fill Colour)	-	0	0	255	-	-	-
		CRZ - II		Simple Fill Symbol	-	255	181	211	-	-	-
		NDZ-CRZ-II NDZ-CRZ-III		Simple Fill Symbol	-	255	194	0	-	-	-
		CRZ IIIA		Simple Fill Symbol	Olivenite Green	168	168	0	-	-	-
		CRZ IIIB		Simple Fill Symbol	-	255	255	125	-	-	-
		CRZ - IVA		Simple Fill Symbol	Sodalite Blue	190	232	255	-	-	-
		CRZ - IVB		Simple Fill Symbol	-	0	153	166	-	-	-

ANNEXURE E

Extension of standard for Functional Areas (Administrative Boundaries)

E.1 Background

Clause 4 and Annexure B of the standard provide detailed definition and an associated structure to effectively model wide range of resources in the context of Functional Areas (Administrative Boundaries). **Clause 5 and Annexure C** of the standard provide an organized metadata definition and an associated robust metadata structure to effectively store and manage information about resources.

A wide range of features, are included in this standard under Functional Areas (Administrative Boundaries) theme. In order to satisfy the needs of various stakeholders and users the definitions and domain values are intended to be sufficiently broad. In order to make the data model more adoptable to broader user community each entity or feature class has been constructed with a minimum required set of elements or attributes and relations.

However, the domain of Functional Areas (Administrative Boundaries) theme is dynamic in nature. Which means, many other functional boundaries exist which may need to be taken into consideration for decision-making and governance. With the passage of time, Government may notify new functional areas for the sake of better governance. The metadata package may need extension as per user requirement. Due to the diversity and dynamic nature, this standard may not accommodate all application areas. In order, to better serve user needs, this section provides a generic guideline for extension of this standard.

E.2 Types of Extensions

The following types of extensions shall be allowed:

a. Adding a new package under Functional Areas (Administrative Boundaries) to include new functional area or administrative hierarchy that is legitimate to define under this theme.
b. Adding new metadata package, metadata class and metadata element.
c. Adding a new feature class or entity.
d. Adding a new attribute or element.

e. Creating a new codelist for an existing element or attribute without a domain.
f. Adding new element to an existing codelist (expanding a codelist).
g. Imposing a more stringent obligation on an existing element.
h. Imposing a more restrictive domain on an existing element.
i. Changing in style and symbol table.

E.3 Creating an Extension

a) Prior to the extension a careful review of the existing structure within this standard shall be performed to confirm that suitable entities and elements do not already exist.
b) For each extended package, class, and/or element, the name, definition, obligation, condition, data type, and domain values shall be defined.
c) For extension of codelist or enumeration mutual exclusiveness of new elements with other existing elements shall be ascertained.
d) Relationships as provided in Clause 6&7 shall be defined, so that a structure and schema may be determined.
e) Suitable cartographic styles and symbols shall be prepared keeping harmony with existing style and symbol table (**Annexure D**) for extended spatial features.

E.4 Rules for Creating an Extension

a) Extended elements shall not be used to change the name, definition or data type of an existing element.
b) Extended structure may use existing elements as components.
c) An extension is permitted to impose more stringent obligations on existing elements than the standard requires. (Elements that are optional in the standard may be mandatory in an extension.)
d) An extension is permitted to contain elements with domains that are more restrictive than the standard. (Elements without an associated domain in the standard may have a closed list of appropriate values)
e) An extension is permitted to restrict the use of domain values allowed by the standard. (If the standard contains five values in the domain of an existing element, the extension may specify that its domain consists of three domain values. The extension shall require that the user select a value from the three domain values.)
f) An extension is permitted to expand the number of values in a codelist. The extended codelist should be published or otherwise made available.
g) Deletion or modification of cartographic styles and symbols for existing spatial features defined in this standard is not permitted unless and until approved by competent committee. However, for inclusion of styles and symbols for existing or extended spatial features, the extended styles and symbols table, as provided in **Annexure D**, shall be published or otherwise made available to all stake holders and users.
h) An extension shall not permit anything not allowed by the standard.

ANNEXURE F

(*Clause* 2)

F.1 International Standards

a) ISO 19115: 2014 – Geographic Information – Meta data
b) ISO 19156: 2011 - Geographic Information – Observations and measurements
c) ISO 19111: 2019 - Geographic Information –Spatial Referencing by Co ordinates
d) ISO 19125 1: 2020 - Geographic Information –Simple Feature Access Part 1 Common Architecture
e) Open GIS Implementation Standard for Geographic information – Simple feature access – Part I

F.2 Indian Standards

a) IS 17007: 2018 Geographic Information –Conceptual Schema Language

b) IS 16439: 2016 – Metadata Standard for Geospatial Information

c) IS/ ISO 8601-1: 2019 Date and Time Representations For Information Interchange Part 1: Basic Rules