



**Institutional Mechanism for Formulation of Domain specific
Metadata and Data Standards in e-Governance**

eGSI-IM:02
Version 1.0
April 2012

Government of India
Ministry of Communications and Information Technology
Department of Electronics and Information technology
New Delhi- 11003

Metadata of IM for Domain specific MDDS

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| 12. | Brief Description | <p>This document describes the schematic relationship among the data, entity, domain and sector. It empathizes on the need for standardization of metadata of data elements to ensure semantic Interoperability required for data exchange among e-governance systems.</p> <p>For the purpose of formulation of domain specific metadata and data standards, it describes the process to be followed along with roles and responsibilities of stakeholders involved</p> |
| 13. | Target Audience | <ul style="list-style-type: none"> - All agencies involved in the formulation of Domain specific Metadata and Data Standards. - All other agencies associated with e-Governance Standards enforcement & compliance - All stakeholders in Central and State |

| S. No. | Data elements | Values |
|--------|----------------------------|---|
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1.0 Introduction

For a successful e-Governance system for integrated services delivery, there is a need for seamless sharing and exchange of data among departmental applications. Semantic interoperability among e-Governance applications requires that precise meaning of exchanged information is understood across applications. For this purpose, there is a need for commonly accepted data definitions for the various data elements. Hence, usage of standardized data elements should be one of the prerequisites for systematic development of interoperable e-Governance applications.

Data Standards promote the consistent recording of information and are fundamental to efficient exchange of information. They provide the rules for structuring information, so that the data entered into a system can be reliably read, sorted, indexed, retrieved, communicated between systems, and shared. They help protect the long-term value of data.

Once the data standards are in place, there is a need to manage data, information, and knowledge. Metadata of standardized data elements can be used for this purpose.

Metadata is structured information that describes, explains, locates or otherwise makes it easier to retrieve, use or manage an information resource. Metadata is often called data about data or information about information. A metadata is a matter of context or perspective - what is metadata to one person or application can be data to another person or application.

In other words, Metadata facilitates the user by providing access to the raw data through which the user can have an understanding of the actual data. Hence, Metadata is an abstraction layer that masks the underlying technologies, making the data access friendlier to the user.

1.1 Scope of Metadata and Data Standards in e-Governance

Presently, most of the e-Governance applications are developed in silos, causing redundancy/ ambiguity of data, while exchanging data/information. In a Federated Government, usually, there is a need for exchange of data between sectors or domains within a sector or applications within a domain etc.

To meet the objective of e-Governance, specially single window sectoral services to the customers, there is a need for systematic approach to address the requirement of semantic interoperability, by standardizing metadata of generic data elements, common, within a domain/ across domains or across the sectors.

However, in the current version, the mechanism for the formulation of Metadata and Data standards (MDDS) is restricted to domain level only, and Interoperability requirements at sectoral level are not covered. Further, Enforcement Mechanism of standards is also not covered in this document, as the primary responsibility of enforcement lies with the concerned Ministry / Department. The ministry / dept will have to ensure compliance of standards, based on the directive for compliance policies / guidelines to be issued by Gol, separately.

1.2 Purpose of this Document

Hybrid approach can be adopted for standardization of metadata and data of generic data elements within various domains by entrusting the task to different domain specific Expert committees for domain data elements while DEITY takes the responsibility for the common generic data elements. These domain MDDS committees will have members from domains concerned, representatives from the central and state governments etc. These committees should work under the Central advisory body by following the Gol Institutional mechanism for standards formulation.

This document describes the Institutional mechanism for the formulation of domain specific MDDS which should be followed by different domain expert committees while formulating their MDDS so as to enable semantic interoperability among ICT applications within and across the domains.

1.3 Description

The Institutional mechanism for formulation of domain specific MDDS, includes the following:

- I. Roles and Responsibilities of various Stakeholders involved in the formulation and execution of domain specific MDDS (Section 3.1.3)
- II. Process of constitution of Domain MDDS Committees (Sections 3.2 & 3.3)
- III. Stages in the process for formulation of Domain specific MDDS (Section 3.4)
 - a. Preparatory Stage
 - b. Draft Stage
 - c. Review stage
 - d. Approval stage
 - e. Notification / Publication Stage (including updation of registry/repository)
- IV. Guidelines / Best practices to be followed during the process of formulation of domain specific MDDS (given in Annexure- VI)

2.0 Target Audience

- All agencies involved in the formulation of Domain specific Metadata and Data Standards.
- All other agencies associated with e-Governance Standards enforcement & compliance
- All stakeholders in Central and State Governments, as well as Public and Private Organizations, involved in execution, design, development and implementation of e-governance applications.

3.0 Type of Standard document & Enforcement category

Type of Standard : Procedure document / Best Practice

Enforcement Category: Mandatory

4.0 Definition and Acronyms

Annexure VII

5.0 Process of Domain Specific MDDS formulation

5.1 Roles and Responsibilities of Stakeholders

5.1.1 Major Stakeholders involved

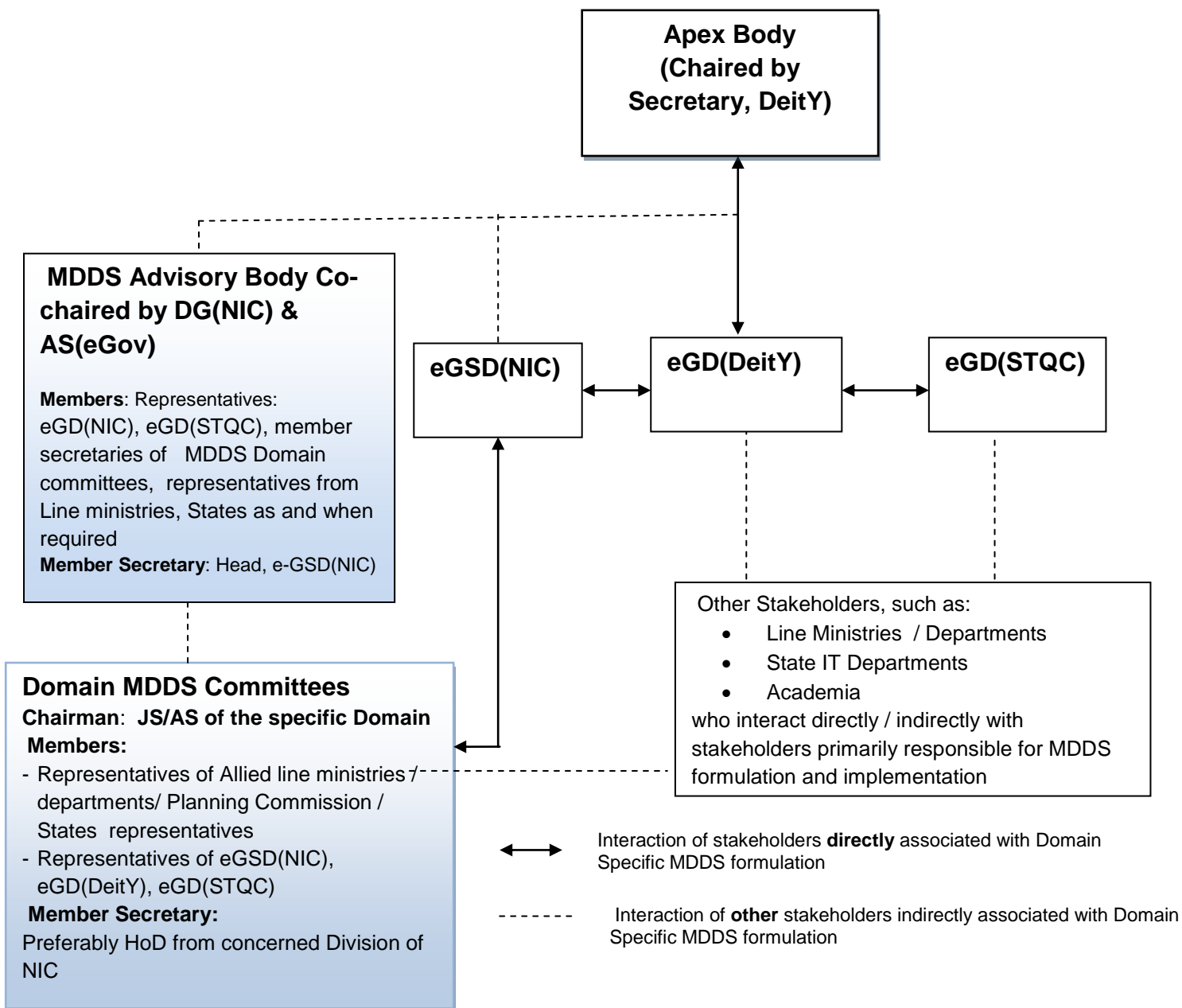


Figure 1: Stakeholders in Domain Specific MDDS formulation

5.1.2 Major tasks and key stakeholders responsible for outcome

| S.No. | Task | Key responsibility |
|-------|--|--|
| 1. | Domains Identification | eGD(DeitY) |
| 2. | Constitution of Domain MDDS Committee | Line Ministry / Department |
| 3. | Domain Specific Standards formulation | Domain MDDS Committee |
| 4. | Final review of draft for submission to Apex Body for approval | MDDS Advisory Body |
| 5. | Conflicts resolution regarding ownerships, metadata values etc. | MDDS Advisory Body If required, conflicts may be taken up with Committee of Secretaries (CoS) on the recommendation of the MDDS Advisory body |
| 6. | Approval of standards | Apex Body |
| 7. | Creation and maintenance of: <ul style="list-style-type: none"> a. Central Registry (index of standardized generic data elements & Repository of Metadata of common generic data elements across all domains b. Domain specific Repository of metadata of generic data elements c. Code directories for use by e-Governance applications | <ul style="list-style-type: none"> a. eGSD(NIC) b. Domain MDDS Committee c. Identified owners of code directories |
| 8. | Adherence, promotion and awareness of Domain MDDS in e-Governance Applications | Line Ministry / Department |
| 9. | Enforcement mechanism for e-Governance Standards in general would be applicable. Compliance certification | eGD(STQC) |

5.1.3 Roles and Responsibilities of all stakeholders

| Stakeholders | Responsibilities with respect to formulation of Domain specific MDDS |
|--|--|
| Apex Body on Standards chaired by Secretary, DeitY | <ul style="list-style-type: none"> a. Approve the recommended Domain specific MDDS, after ensuring that due processes have been followed. b. Other responsibilities as defined in Institutional Mechanism for Standards formulation |
| MDDS Advisory Body Under the chairmanship of DG(NIC) AS(eGov) | <ul style="list-style-type: none"> a. Advice Ministries / Line departments on importance of Domain specific MDDS b. Advice on issues which can result in conflicts related to ownership and definition of data and metadata of identified generic data elements c. Review domain specific MDDS (finalized after closed group / Public review) for submission to Apex Body for approval. |
| Ministry/ Department | <ul style="list-style-type: none"> a. Constitute Domain MDDS Committees b. Advice / Facilitate Domain MDDS Committee for execution of the assignment c. Provide necessary support for adherence of MDDS in e-Governance applications in the domain |
| Domain MDDS Committee Chairman: JS/AS of the specific Domain | <ul style="list-style-type: none"> a. Formulate Metadata and Data Standards for a domain as per the laid down procedure in section 3.4 of this document. b. Liaison with eGSD (NIC) for inclusion of approved metadata and data elements, in centralized registry & repository of metadata of standardized generic data elements. c. Maintain repository of metadata of standardized generic data elements in the domain, along with history of the changes. d. Facilitate and promote adherence to MDDS within the domain. |
| eGD (DeitY) | <ul style="list-style-type: none"> a. Set Priorities and identify domains for MDDS formulation b. Steer the activity of constitution of Domain MDDS Committees c. Participate in the process as per Institutional mechanism for standards formulation d. Steer the activity related to conflicts resolution e. Mandate the implementation of Standards in Ministries/ Departments at Central & State Governments by issuing advisory/policy/guidelines for compliance with the domain MDDS wherever required |
| eGSD (NIC) | <ul style="list-style-type: none"> a. Steer the activity-of formulation of domain specific MDDS, as per Institutional mechanism of Standards formulation b. Coordinate with identified technical agency to create and maintain a Central Registry of generic data elements of all the domains c. Bring awareness at national/states level for adoption of MDDS in e-Governance applications |
| eGD(STQC) | <ul style="list-style-type: none"> a. Certification of applications with regard to compliance to MDDS. |

5.2 Domain Identification Process by DeitY

Depending upon the priorities with respect to nationwide implementation of e-Governance projects, DeitY will identify the priority domains for formulation of MDDS.

5.3 Constitution of Domain MDDS Committees by the Ministry / Department

Initially DeitY/ NIC would forward the mechanism for formation of Domain Specific MDDS to all the Ministries / Departments / State IT secretaries to inform them about the GoI initiatives regarding formulation of e-Governance Standards, with specific focus on role of MDDS for semantic interoperability of data among e-Governance applications. Departments would be requested to take initiatives in formulation of MDDS in their domains and submit their proposals to DeitY. The proposals should include the list of all domains in the ministry, their data standardization status, if any, and the intended domains in which they would like to initiate standardization work.

Based on the proposals received from departments / identified priority areas with respect to ongoing national e-Governance projects, DeitY would ask the concerned Ministries / Departments to form Domain MDDS Committees

The Ministries /Departments concerned would constitute Domain MDDS Committees, by issuing a notification / Office Memorandum (OM) indicating the terms and conditions of the committee.

The notification / OM would include:

- Broad objective / scope of the work
- Names of Chairperson and committee members
- Terms of Reference (TOR)
- List of domain, with which there may be possibility of data exchange (if possible)
- Expected timelines to finish the work of formulation of Domain MDDS.

Refer Annexure – VI for guidelines for preparing Office Memorandum

5.4 Process of formulation of Domain Specific MDDS

5.4.1 Schematic of interaction among inter/intra domain entities for Integrated Services Delivery

For the purpose of identification of candidate data elements for standardization, a domain is considered as consisting of many entities, each one having a purpose for existence. Further each entity is defined with the help of attributes usually referred as data elements.

There is a need to categorize the identified data elements as follows:

- a) Data elements **specific to particular entity only**
- b) Data elements, which are common across the entities **within the domain**
- c) Data elements, which are common **across other domains also**

The data elements categorized in b) and c) above become candidate generic data elements within the domain / across the domains, whose metadata needs to be standardized by using standardized template for its Metadata.

Further, the values of certain generic data elements need to be controlled and defined in advance, for using them uniformly across the domain applications. The values of such generic data elements are specified in their respective **Code directories**. The metadata of the code directories like owners, attributes

(data elements to describe them), and table of values of the attributes of codes in these code directories also need to be described as a part of MDDS formulation activity.

Custom data elements can be derived from standardized metadata of generic data elements, specific to the requirements of an application within a domain. The nomenclature of custom / specific data elements also can be standardized for ease of semantic interoperability among e-Governance applications

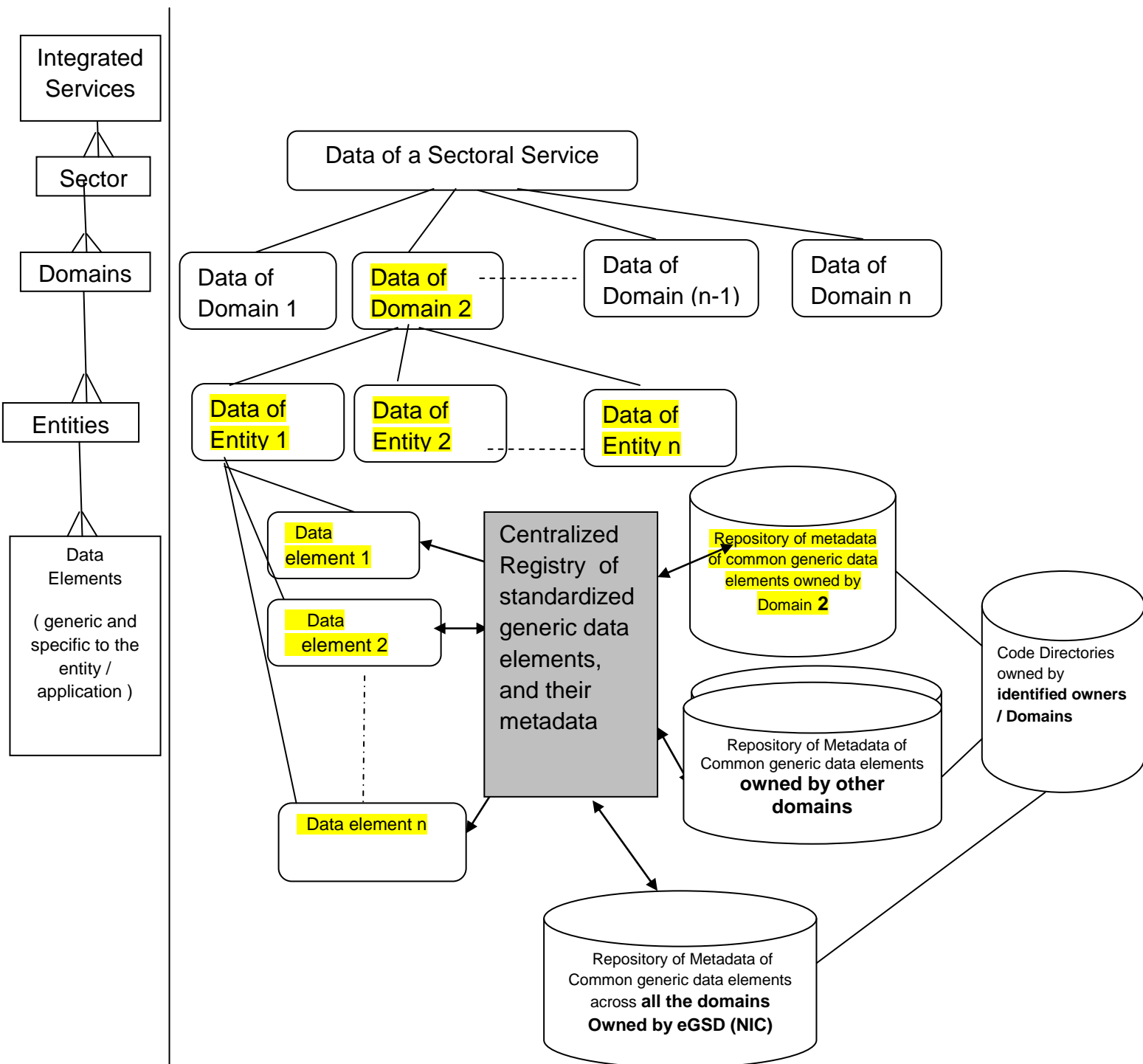


Figure 2 Schematic diagram for Interaction among inter/intra domain entities

Note: Refer Annexure – I for illustration of schematic diagram for MDDS for Demographic Domain

5.4.2 Institutional Mechanism of MDDS formulation by Domain MDDS Committee

Following would be the stages. Activities need to be done in parallel as far as feasible to meet the timelines of domain MDDS formulation within 6 months.

| Stage | Stage Name | Activity | Stipulated time line |
|---------|---------------------------------|--|----------------------|
| Stage 5 | Preparatory Stage | Preparation and review of Base Paper | One and half month |
| Stage 4 | Draft Stage | Preparation of Draft MDDS | Two months |
| Stage 3 | Review Stage | Closed group and Public Review of Draft MDDS | One Month |
| Stage 2 | Recommendation Stage | Finalization of draft MDDS for submission to Apex Body | One Month |
| Stage 1 | Approval Stage | Approval by Apex body | 1 day |
| Stage 0 | Notification /Publication Stage | Notification and updation of Registries | 2 days |

Detailing of each of the above Stages is as follows:

5.4.2.1 Preparatory Stage (Stage 5)

– Stipulated time line: 1.5 months

| S. No. | Activity | Stakeholders involved |
|--------|--|-------------------------|
| a. | <p>Prepare draft base paper for the domain MDDS as per the following process.</p> <ol style="list-style-type: none"> I. Identify entities within the domain II. Briefly describe their purpose, and desired list of attributes (data elements) to describe each entity. Briefly define / describe each data element, and list out possible values / validation checks/ format etc. III. Allocate internal reference number / short name of data elements, which would be useful to map them with unique reference numbers of generic data elements already standardized. | - Domain MDDS Committee |

| | | |
|----|---|--|
| b. | <p>Review and finalization of the draft Base paper in consultation with domain experts at Central and State level, and any other external departments, with whom the data of entities may be interoperable. (If required, the letters for review by external departments can be issued by Domain Departments through DeitY in advance. The State DeitYs to coordinate with other state departments to give their feedback on the base paper. If required, the State Informatics Officers of NIC at State level to assist the committee in facilitating the feedback from other state departments.)</p> | <ul style="list-style-type: none"> - Domain MDDS Committee - Subject / Domain Experts at Central and State Level - DeitY / NeGP - State IT Secretaries - Concerned HoDs / SIOs of NIC |
|----|---|--|

5.4.2.2 Draft Stage (Stage 4)

– Stipulated time line: 2 months

On the basis of **finalized base paper**, the Domain MDDS Committee will start working to bring out the draft document for domain specific MDDS. The activities involved at this stage are:

| S.No. | Activity | Stakeholders involved |
|-------|---|--|
| a. | <p>From the list of entity wise data elements given in the base paper, divide the data elements in three categories as follows:</p> <ol style="list-style-type: none"> I. Data elements common across entities within the domain, which would become candidates for generic data elements within the domain, and whose metadata needs to be standardized II. Data elements, which may be used by other domains also, which would become candidates for generic data elements across the domains, and whose metadata needs to be standardized III. Data elements, specific to entities only, which do not affect the interoperability among applications within the domain, and across the domains. These need not be candidates for standardization. <p><i>(Note: It is advised that, wherever possible, formats of NON candidate data elements should be derived from already standardized generic data elements, available in centralized registry)</i></p> | Domain MDDS Committee |
| b. | <ol style="list-style-type: none"> I. Obtain new Domain number from eGSD (NIC), in case the domain is to be included first time in the Central repository, else use the existing domain number, in case new generic data elements are being added to it. II. Allocate unique reference numbers to the new generic data elements by appropriately grouping them in parts / | Domain MDDS Committee eGSD(NIC) |

| | | |
|----|---|---|
| | instances, wherever applicable. (Refer Annexure VI) | |
| c. | Study International data standards for their suitability in Indian context, and decide about the values for standardization of their metadata. (Refer Annexure II for template of metadata of data element) | Domain MDDS Committee In collaboration with other international agencies /domains, if required |
| d. | I. Decide about the ownership of identified new generic data elements and code directories, in consultation with the proposed owners. (In the enforcement stage, the owners will be authorized to update, control versions and maintain values in the code directories and registry and to create history of changes for backward traceability. II. Address issues, which can result in conflicts related to ownership and metadata of identified generic data elements for standardization with member secretaries of Domain Committees concerned If the issues still remain unresolved, then it would be put up to the Committee of Secretaries(CoS) | Domain MDDS committee and proposed owners of the code directories MDDS Advisory Body eGSD(NIC) eGD(DeitY) CoS |
| e. | Document the metadata of new generic data elements. (Refer Annexure II for Template on Metadata for Data element and Annexure VI for various guidelines) Identify and create new Code Directories, if not existing in the Central repository, wherever required. Identify their attributes for storing the respective values.(Refer Annexure VI for guidelines) | Domain MDDS and proposed owners of code directories |
| f. | Prepare the draft domain MDDS Document (Refer Annexure III for template) and submit to eGSD(NIC) for wide circulation for closed group review and Public review | Domain MDDS & eGSD(NIC) |

5.4.2.3 Review and Recommendation Stage (Stage 3 and 2)

– Stipulated time line: 2 months

| S. No. | Activity | Stakeholders involved |
|--------|---|---|
| a. | As per the Institutional Mechanism for formulation of e-Governance standards, the draft document will go through the review process by having the Closed group review and Public Review | eGSD (NIC),eGD (DeitY) GD(STQC) |
| b. | Conflicts, if any, after Public review, specially related to ownership and metadata of identified generic data elements may be resolved with member secretaries of Domain Committees and then to CoS / Apex Body through eGD(DeitY), if still unresolved. | Domain MDDS Committees, Advisory Body eGSD(NIC), eGD (DeitY) Committee of Secretaries (CoS) |

| | | |
|----|---|---|
| c. | Consolidate all the review comments and document them, while stating the proposed action points, along with justification for the same. Revise the draft accordingly and prepare recommended draft for submission to Apex Body through Advisory Body | Domain MDDS Committee eGSD (NIC) Advisory Body |
| d. | Submit recommended MDDS to Apex Body through eGSD (NIC) and eGD (DeitY) for approval. . | Domain MDDS Committee eGSD (NIC), eGD (DeitY) Apex Body |
| e. | Simultaneously, the domain MDDS committee to start preparing registry and repository of metadata of new generic data elements within the domain in the prescribed template in Annexure V, and keep it ready with status as “awaiting approval”. | Domain MDDS committee eGSD (NIC) |

5.4.2.4 Approval Stage (Stage 1)

– Stipulated time line: 1 day

| S.No. | Activity | Stakeholders involved |
|-------|---|---|
| a. | Apex Body on Standards, to review and approve the recommended domain MDDS, as per the Institutional Mechanism for e-Governance standards formulation. In case of any clarification/ enhancements, the Apex Body may invite the Chairperson of the Domain MDDS Committee, for the meeting. | Apex Body eGD (DeitY) |
| b. | If approved by the Apex Body, the standard will be notified for publishing else the Domain MDDS Committee would revise the draft again, and would go through the stages 3 and 2 again, in case of major changes. | eGD (DeitY) Domain MDDS Committee |

5.4.2.5 Notification / Publication Stage (Stage 0)

– Stipulated time line: 2 days

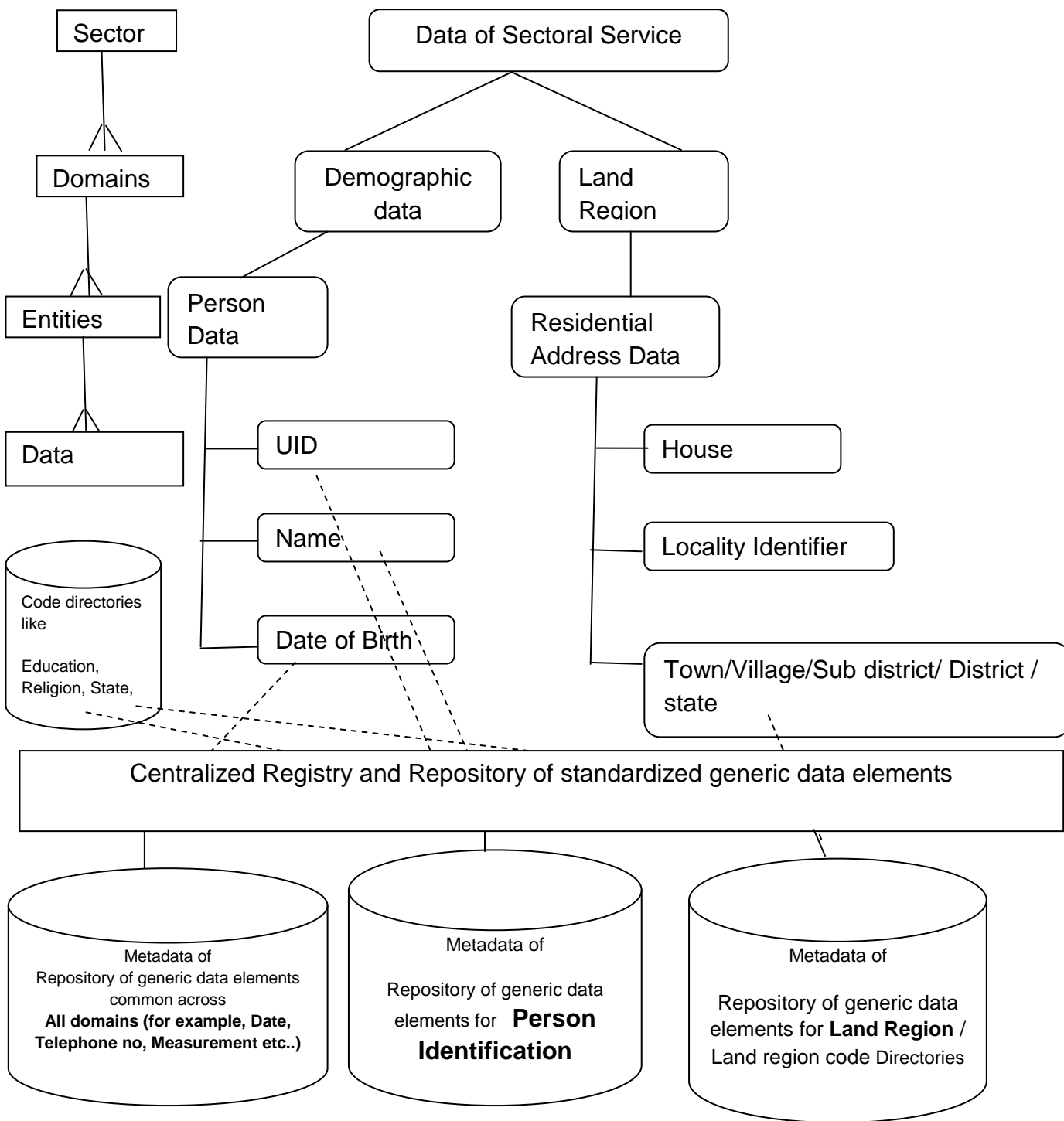
| S. No. | Activity | Stakeholders involved |
|--------|---|--|
| a. | Notification of approved standard | eGD(DeitY) |
| b. | Finalize the registry / repository of metadata of new generic data elements by incorporating corrections, if any. It would change status of metadata of each new generic data element/ code directory as “approved” | Domain MDDS Committee eGSD (NIC) |
| c. | Include metadata of generic data elements across domains, | eGSD(NIC) |

| | | |
|----|---|--|
| | being maintained by it in the prescribed format | |
| d. | Finalize the registry of metadata of new generic data elements across various domains and standardized in consultation with the Domain MDDS Committee. | eGSD(NIC) |
| e. | Update Central Registry of standardized common generic data elements for web publishing | eGSD(NIC) / Identified agency |
| f. | Publish notification, as well as the standard in prescribed format on the eGov Standards Portal, http://egovstandards.gov.in for use by all e-Governance applications | eGSD(NIC) |
| g. | Printing / circulation of published domain specific MDDS. | Primarily - Concerned Ministry / Department Supported by eGSD(NIC), GD(DeitY) |

Note: The stakeholders involved in the preparation of Domain specific MDDS document may refer Annexure VI for guidelines/ best practices to be followed in the process of Domain specific MDDS formulation.

6.0 Annexure

Annexure I: An Illustration of Schematic diagram for Demographic Domain



Annexure II: Template to describe Metadata of a Data Element

(Based on UK e-GIF Template which is an extension of Dublin Core)

| S.No. | Item | Description |
|-------|-----------------------|--|
| 1 | Name | Name / Number of the Generic or Custom Data Element |
| 2 | Description | A simple and unambiguous definition of Generic or Custom Data Element. |
| 3 | Type | Generic or Custom Generic: commonly used data element across different e-Governance applications. Custom: Used in a particular application only |
| 4 | Is Part of | |
| 5 | Parts if any | |
| 6 | Data Format | Varchar/Character/Decimal(for real/ floating number) / Integer(Whole number)/Date etc Recommended style of printing / display, if required so |
| 7 | Max Size | Maximum Size of the data element |
| 8 | Validations | Generic Validations for Generic Data and Specific Validations for Custom Data to be applied for acceptance of data. |
| 9 | Values | List of Acceptable Values |
| 10 | Default Value | For any list of values, the default value to be used unless otherwise stated. |
| 11 | Owner | Name(s) of the departments who owns the Data element/ Code Directory and has the rights for updating. |
| 12 | Based on | Reference to document / standard on the basis of which the data element is standardized by the Expert committee for MDDS |
| 13 | Version | The version number of Data element |
| 14 | Status | Current status of Standard (Draft or Accepted) |
| 15 | Date Agreed | The date on which this version was accepted as Data Standard for Government. |
| 16 | Verification | Steps taken to establish the correctness of Generic or Custom Data Elements. Such steps taken for different level of verifications by departments will be detailed here. |
| 17 | Comments | Additional Notes, if any |
| 18 | Date of Publishing | The date on which Standard is Published or PDF version will be created |
| 19 | Example/ Illustration | Suitable example of the data element to be given for clarity and ready reference |

Annexure III: Template to document MDDS

(Based on Template in Institutional Mechanism for Standards formulation v 1.0)

Title (on Main Page, with suitable Document No., Version No. and Month/ year of publication on top right corner)

Metadata of the document (Refer Annexure – IV for the template for metadata)

Amendments Log (at the time of further revisions to published version 1.0)

Contents

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- 1.1.3 Description
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2.0 Target Audience

3.0 Type of Standard Document (Specifications) & Enforcement Category (Mandatory / Recommended)

4.0 Definition & Acronyms (To be annexed)

5.0 Specification of Generic data elements and their Metadata

5.1 Quick Reference table of Identified Generic Data Elements

(Unique Reference number, Name , Short Description, Data format , Maximum size)

5.2 Quick Reference table of Code directories

(Unique reference number of the code directory, Name, Owner, - Reference to the physical location of the code directory values)

5.3 Metadata of code Directories

(Unique Reference number of corresponding generic data element for its metadata, list of attributes to store values including version number, date of last update of record etc.)

5.4 Metadata of Generic Data Elements along with examples

(Refer Annexure – II for the template)

6.0 Steps / Guidelines for using generic data elements, if any

7.0 Annexures, if any

8.0 References, if any

9.0 List of Contributors

Annexure IV: Template for Metadata of Standard document

(Based on Dublin Core Standard)

| S. No. | Data elements | Values |
|--------|---|--------|
| 1. | Title | |
| 2. | Title Alternative | |
| 3. | Document Identifier <i>(To be allocated at the time of release of final document)</i> | |
| 4. | Document Version, month, year of release <i>(To be allocated at the time of release of final document)</i> | |
| 5. | Present Status | |
| 6. | Publisher | |
| 7. | Date of Publishing | |
| 8. | Type of Standard Document <i>(Policy / Technical Specification/ Best Practice /Guideline/ Process)</i> | |
| 9. | Enforcement Category <i>(Mandatory/ Recommended)</i> | |
| 10. | Creator <i>(An entity primarily responsible for making the resource)</i> | |
| 11. | Contributor <i>(An entity responsible for making contributions to the resource)</i> | |
| 12. | Brief Description | |
| 13. | Target Audience <i>(Who would be referring / using the document)</i> | |
| 14. | Owner of approved standard | |
| 15. | Subject <i>(Major Area of Standardization)</i> | |
| 16. | Subject. Category <i>(Sub Area within major area)</i> | |

| | | |
|-----|--|--|
| 17. | Coverage. Spatial | |
| 18. | Format <i>(PDF /A at the time of release of final document)</i> | |
| 19. | Language <i>(To be translated in other Indian languages later)</i> | |
| 20. | Copyrights | |
| 21. | Source <i>(Reference to the resource from which present resource is derived)</i> | |
| 22. | Relation <i>(Relation with other e-Governance standards notified by DeitY)</i> | |

Annexure V: Template for Centralized Registry and of generic data elements

| Unique Reference Number | Name of generic data element | Description | Data format | Link to its metadata |
|-------------------------|------------------------------|-------------|-------------|----------------------|
| | | | | |
| | | | | |
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| | | | | |

Annexure VI: Guidelines/Best practices to be followed in the Process of Domain MDDS Formulation

This Annexure contains the following guidelines/ best practices:

- VI A Suggested structure of the Domain MDDS Committee
- VI B Suggested Terms of Reference for Domain MDDS Committee
- VI C Short name allocation to custom / specific data elements
- VI D Allocation of reference number to new common generic data elements
- VI E Guidelines for creating new code directories
- VI F Guidelines for deciding the format of a data element

VI A Suggested structure of the Domain MDDS Committee

- **Chairman**- Policy making person at the level of JS/AS, attached with the Ministry
- **Member Secretary** – NIC, HOD or representative, attached with the ministry, or any other person identified by chairman
- **Members:**
 - A representative each from concerned department/ ministry
 - A representative from Planning Commission dealing with the sector, if required
 - A representative from eGD(DeitY)
 - A representative from eGSD(NIC)
 - Representatives from at least 3 State governments, corresponding 3 State Informatics Officers, and IT Secretaries (The selection of the states would be on the basis of their active involvement in the domain for which committee is formed)
 - A representative each, from allied department/ ministries, if any
 - A representative from Academia
 - Representatives from any other government organization / Civil Society/Industry, as required

VI B Suggested Terms of Reference for Domain MDDS Committee

1. To identify the data elements and suggest standard data formats, and metadata for these identified data elements.
2. To identify global metadata standards for the identified data elements and ensure that these standards are adopted as far as possible while considering the existing Indian Standards with priority.
3. To interact with other Expert Committees on e-Governance to ensure synergy between the standards related to Metadata and data elements from the perspective of interoperability requirements of e-Governance and National policy on Open Standards.
4. To advise for identification of suitable test suites for conformance testing of the implementations.
5. Create and maintain the Domain Registry and Repository of approved generic data elements within the domain
6. If required, the Committee will develop suitable extension on top of the global standards to ensure interoperability from the Indian e-Governance context. If desirable, the Committee can interact with

organizations involved in similar initiative elsewhere and submit recommendations to the Standard Bodies.

Note: The committee, if deemed necessary may extend the scope of the TOR, to ensure that the overall objectives of the committee are fulfilled

VI C. Short name allocation to custom / specific data elements

In a domain, various identified entities are described through their data elements. The metadata of the data elements is derived from the corresponding generic data elements linked through unique reference number allocated to them.

However to have uniformity in the usage of nomenclature of commonly used data elements across the entities of the domain, it is suggested to allocate short names to the data elements as follows:

Suppose a domain has been assigned a number as “XX”

Short name of the entity within domain is - EEE

Short Name of the identified data element of EEE is – NNN

Then the short name of the data element of the entity would be XX- EEE- NNN

For example, consider the domain “ Public Distribution System with code PDS.

There is an entity “Warehouse” in PDS, whose short name can be –WHS

One of its data elements is “Location”, whose short name can be - LOC

Hence the sort name of the data element ‘Location” would be PDS-WHS-LOC.

Now the same data element Location may have different short name like “PDS-GDW-LOC”, in some other entity say “Godown” in the domain PDS

Thus with the help of these short names, data elements common across the entities / common across the domains can be identified, to make them candidates for generic data elements for standardization.

VI D. Allocation of unique reference number to new common generic data elements

With the objective of linking the identified Generic data elements, with their metadata, each one of them has been allocated a unique reference number. Further the reference numbers are codified to ensure logical grouping of relevant generic data elements, some of which may be identified in future.

These reference numbers would be used to customize the generic data elements to describe data elements of identified entities within the domain.

The coding scheme of Universal Postal Union (UPU) Standards S42a-5 and S42b-5 has been adopted for structuring of these reference numbers.

The common generic data elements can be categorized as:

- Common across domains (with “00” as domain reference number)

- Common within a domain (each domain to be given a unique domain reference number by eGSD(NIC)

Within a domain various generic data elements would be identified, and some of them would be logically grouped. Each identified generic data element would be allocated a reference number as follows:

(i) Rationale of grouping of Generic data elements for their codification & allocation of unique reference number

The Generic data elements identified for standardization can be described as:

- Data elements having distinct identity with only one level of description
- Data elements having two levels of description, where 2nd level describes the subtypes.

These subtypes can be “Instances” or “Parts”, which also have distinct identity.

Here **Instance** (a type representing the same data element in a different way) means representation of the same root data element at 1st level in different formats, which may or may not be mandatory to describe the root data element. For example, the generic data element “Date” can have different instances to represent date in different formats say dd-mmm-yy or dd/mm/yyyy.

Part means physical sub division of the root data element at 1st level or its instance. The parts are mandatory to describe the root data element. For example, to describe the data element, “Date”, the parts- “day”, “month” and “year” - are mandatory.

For the purpose of standardization and interoperability, data elements of domain applications would be derived from the generic data elements, if applicable.

(ii) Codification Scheme for Unique Reference Numbers of Generic Data Elements

A codification scheme has been adopted for grouping and referencing of data elements at two levels. The coding scheme represents an e-Governance domain, data element within the domain, instance of data element, and part of the data element, structured as domain no (xx): data element no within domain (yy)-Instance number (nn) - part number (mm).

An Illustration:

| S.No | Generic Data Element | Instance (a type representing the same data element in different way) | Parts | Codification scheme for its reference number |
|------|---|---|-------|--|
| 1 | Data element having no parts and no instances | NA | NA | xx.yy |

| | | | | |
|---|--|------------|------------|--|
| 2 | Data element having only instances, and no parts | Applicable | NA | xx.yy-nn For example: xx.yy-01 xx.yy-02 |
| 3 | Data element having only parts and no instances | NA | Applicable | xx.yy-00-mm For example : xx.yy-00-01 xx.yy-00-02 |
| 4 | Data element having parts as well as instances | Applicable | Applicable | xx.yy-nn-mm For example: xx.yy-01 -01 xx.yy-02-01 xx.yy-01-02 xx.yy-02-02 |

Here, xx: Defines the Domain number, which will be allocated by eGSD(NIC)

yy: Defines the Data Element number within the domain xx

xx.yy-01: Defines an Instance of Data element xx.yy

xx.yy-00-01: Defines a Part of Data element xx.yy

xx.yy-01-01: Defines the Instance of the Data element part xx.yy-00-01

Further "G" will be prefixed to indicate that the referenced data element is Generic, and "C" will be prefixed to indicate that the referenced data element is Customized for a specific purpose in the domain application, like "Date of Birth" is customized data element derived from the generic data element "Date".

(iii) Illustrations of Codification Scheme for unique reference number

In the following examples, generic data elements common across the domains are taken, for which domain number has been given as "00"

a. Data element "Date" has three parts like: Day, Month, and Year

The date has three parts, hence reference numbers for Generic data element "date", and its parts would be as follows:

| | |
|---|---------------|
| Domain name (xx): Common for all domain applications | G00 |
| Data Element: Date (in dd/mm/yyyy format) | G00.01 |
| 1 st Part of Date : Day | G00.01-00-01 |
| 2 nd Part of Date : Month | G00.01-00-02 |
| 3 rd Part of Date : Year | G01.01-00-03 |

(b) Unique Reference number of **data element "Measurement"** and its instances (different ways of a measurement) like:

- Measurement of **Distance in Meters/ Kilometers/ Centimeters/ Millimeters**
- Measurement of **Area in Square Meters/ Kilometers/ Centimeters/ Millimeters/Hectares**
- Measurement of **Volume in Cubic Meter/ Cubic Centimeter / Cubic Milliliters**
- **Measurement of Weight in Gram / Kilogram**

Hence the data element "measurement" will have difference instances, which would have reference numbers as follows:

| | |
|---|---------------|
| Domain name (xx): Common for all domain applications | G00 |
| Generic Data element: Measurement | G00.02 |
| Measurement- Distance in Meters | G00.02-11 |
| Measurement- Distance in Kilometers | G00.02-12 |
| Measurement- Distance in Centimeters | G00.02-13 |
| Measurement- Distance in Millimeters | G00.02-14 |
| Measurement- Area in Square Meters | G00.02-21 |
| Measurement- Area in Square Kilometers | G00.02-22 |
| Measurement- Area in Square Centimeters | G00.02-23 |
| Measurement- Area in Square Millimeters | G00.02-24 |
| Measurement- Area in Hectares | G00.02-25 |
| Measurement- Volume in Cubic Meters | G00.02-31 |
| Measurement- Volume in Cubic Kilometers | G00.02-32 |
| Measurement- Volume in Cubic Centimeters | G00.02-33 |
| Measurement- Volume in Cubic Millimeters | G00.02-34 |
| Measurement- Weight in Grams | G00.02-41 |
| Measurement- Weight in Kilograms | G00.02.42 |

VI E. Guidelines for allocation of unique reference number for Code Directories

a. Allocation of unique reference number to code directories

The format would be CDxx.nn, Here

CD is abbreviation for the code directory

xx is the domain no. allocated to the domain by eGSD(NIC)

nn is running serial number of the code directory, within the domain xx

b. Metadata of Code Directories

For each code directory, data elements will have to be identified, which would be used to store standardized values in the form of a database table.

VI F. Guidelines for deciding the format of a data element

The format of identified generic data element can be number / decimal/ variable length alphanumeric / fixed length etc. There may be a need to describe maximum length of the variable for storage / display in the input / output forms. At times there is need to define specific number of digits after decimal point, as well as maximum / minimum values.

Further there is a possibility that the above parameters related to the format of a generic data element may vary from domain to domain, and may have to be standardized at domain level.

Note: Detailing to be worked out by forming a group by eGD (DeitY)

Annexure VII Definitions and Acronyms

A. Definitions

| S.No | Term | Definition |
|------|-----------------------------|---|
| 1. | Code Directory | In case of certain generic data elements, their values need to be controlled and defined in advance for using them uniformly across the domain applications. Such predefined values would be stored in prescribed structure, referred as Code Directory. |
| 2. | Custom Data Element | <p>Custom data elements are specific to describe an entity within a domain. They may be derived from standardized metadata of generic data elements</p> <p>For example: Date of launching a scheme is custom data element to describe an attribute of the entity “scheme”.</p> <p>(The format of date of launching a scheme is derived from the standardized metadata of the generic data element “Date”.)</p> |
| 3. | Domain | <p>The business processes of a sector (refer the definition of sector can be divided into various domains, each one consisting of inter-related functions of governance to meet the requirements of the purpose, for which it is created.</p> <p>For example: Education sector consists of domains such as Higher Education, Secondary Education, Primary Education, Adult Education etc. Each such domain is a specialized creature catering to the governance of specific group of related functions to be performed by governments at different levels (federal /state /local).</p> |
| 4. | e-Governance | <p>E-Governance means “a procedural approach in which the Government and its citizens, businesses, and other arms of government are able to transact all their activities or at least majority of activities using Information and Communication Technology tools.</p> <p>Source : Gol Policy on Open Standards</p> |
| 5. | Entity | <p>an entity is a single person, place, or thing about which data can be stored</p> <p>(http://whatis.techtarget.com/definition/0,,sid9_gci212066,00.html)</p> |
| 6. | Generic Data Element | For the purpose of this standard, the generic data elements are usually defined as commonly used data elements across different e-Governance applications. |
| 7. | MDDS | Metadata and Data Standards provide a way for information resources in electronic form to communicate their existence and their nature to other electronic applications (e.g. via HTML or XML) or search tools and to permit exchange of information between applications |

| | | |
|----|-----------------|---|
| 8. | Metadata | Data about data. A collection of information that describes the content, quality, condition, format, lineage, and any other relevant characteristic of a data set |
| 9. | Sector | <p>Government functions encompass services to citizens, which can be divided into sectors of economy.</p> <p>A sector deals with production, and/or delivery allocation of goods and services to the citizens and/ or business at the federal, state and local level of governance.</p> <p>Each sector is governed with the administrative and legislative mechanisms under different departments of the Government. Thus a sector can have more than one department.</p> <p>The examples of sectors in the Government of India include Agriculture, Health, and Education.</p> |

B. Acronyms

| | |
|-------------------|--|
| CoS | Committee of Secretaries |
| DietY | Department of Electronics and Information Technology |
| eGD(DietY) | e-Governance Division (Department of Electronics and Information Technology) |
| eGD(STQC) | e-Governance Division (Standardization Testing and Quality Certification) |
| eGSD(NIC) | e-Governance Standard Division (National Informatics Center) |
| Goi | Government of India |
| HOD | Head of Department |
| ICT | Information and Communication Technology |
| MDDS | Metadata and Data Standards |
| NeGD | National e-Governance Division |
| NeGP | National e-Governance Plan |
| NIC | National Informatics Centre |
| OTC(NIC) | Open Technology Centre (National Informatics Centre) |
| SIO | State Informatics Officer |
| STQC | Standardization Testing and Quality Certification |
| ToR | Terms of Reference |

7.0 References

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