

ROLE OF METADATA & DATA STANDARDS in e-GOVERNANCE

Seamless sharing and integration of data among various applications within and across the domains in e-Governance system augments its efficacy. In our country, a large number of the e-Governance applications developed within various domains are still being used in silos as they failed to be interoperable. A key technological challenge for effective interoperability among systems is to ensure that the precise meaning and pattern of the exchanged data are preserved, accessed and perceived in an organized manner. Standardization of data and systematic development of various interoperable applications are thus vital to the successful eco-systems of e-Governance.



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METADATA & DATA STANDARDS

Data Standards are those documented agreements and norms on representation, format, definition, structuring, tagging, transmission, manipulation, and use of data. Data Standards enable consistent recording of information and are fundamental to efficient sharing and 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 and shared between systems.

Metadata is key to ensure that a data will survive and continue to be accessible in the future.

Metadata takes its importance once the Data Standards are in place. **Metadata** is the data that defines and describes another data or information. It is used to manage data, information and knowledge. Metadata is the structured information that describes, explains, locates or otherwise makes it easier to retrieve, use or manage an information resource.

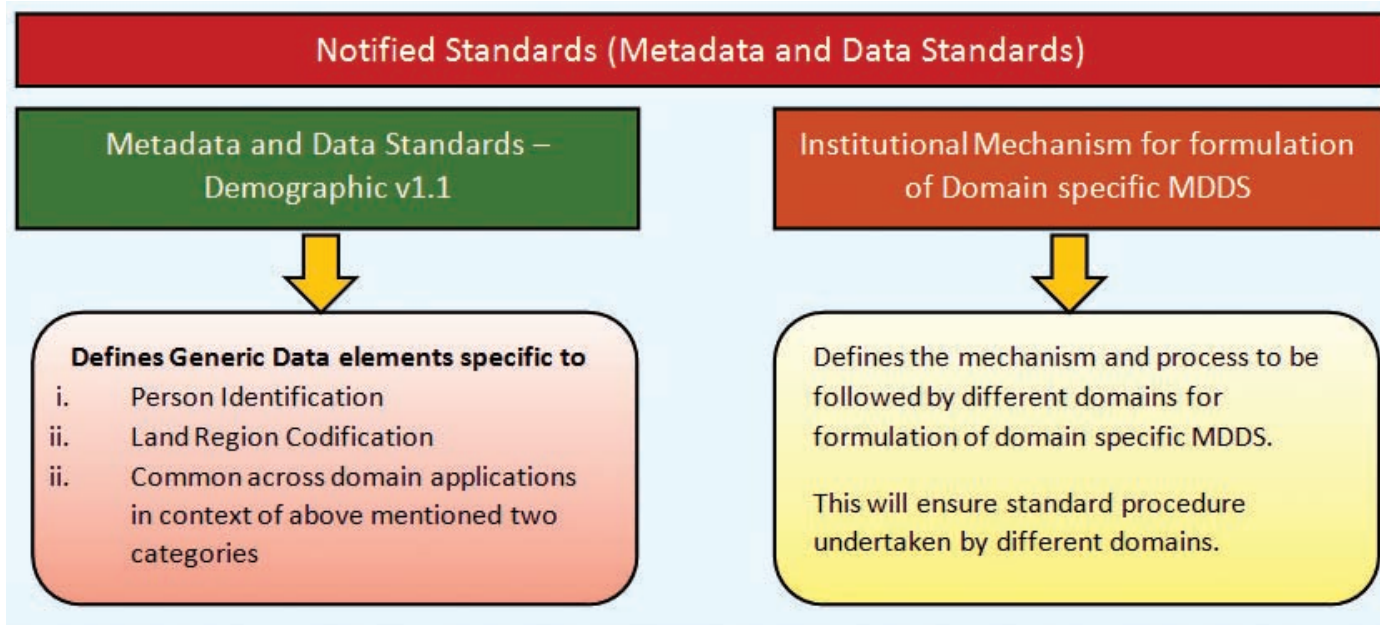
A Book Catalogue in a Library is a simple example of Metadata. The different data elements of information pertaining to a book such as Title of the Book, Author's name, Publication Date, Publication Language, Name of Publisher, Subject, Category, Keywords, etc. are describing and defining the

attributes of a book. Hence, these constitute the metadata of the book.

An integrated service in a typical e-Governance system would involve multiple domains, and deal with its various entities. Each of these entities is defined with the attributes called **data elements**. Similar kind of data elements are defined by different domains based on their own preset descriptions, data formats and data sizes. For example, the attribute "**Date**" related to a particular event may be represented in different formats such as dd/mm/yyyy, mm/dd/yyyy, or dd-mm-yyyy in other applications. Applications that are sharing data in such formats may interpret values differently, resulting in misinformation and unreliable data. This poses a major challenge in sharing data and information among the various applications.

It is also critically important to define each of the data elements as an independent unit and provide it with a contextual definition. For instance, the data element 'Plant' may be referred as a 'Green plant/herb/grass' by Agriculture domain, whereas it may be perceived as 'Manufacturing Unit/Industrial Plant' by the Industry domain.

Hence, achieving interoperability among domain applications, especially in context to e-Governance, **standardization of commonly accepted context-based data definitions and metadata** of various data elements forms a vital parameter.



METADATA REGISTRY (MDR)

As a part of the activity for standardization, DeitY has identified domains of 12 MMPs to work towards the formulation of Domain specific Metadata and Data standards (MDDS) through Domain Committee in each domain. Each domain requires standardization of its terms and entities to ensure semantic interoperability among e-Governance systems. Domains like Panchayati Raj, Health, Drinking Water & Sanitation and Agriculture are actively working in this direction.

Each of the domains will create and maintain **domain repository** of its standardized data elements along with their metadata. A Central Metadata Registry (MDR) will be created to maintain standardized generic data

elements common across domain applications and their metadata. This MDR will provide the **indexing/linking to different domain repositories** and promote standard descriptions, common understanding of data definitions, synchronization, management and re-use of data in different contexts.

INITIATIVES BY GOVERNMENT OF INDIA

a. Metadata and Data Standards – Demographic v1.1 (Notified in Nov 2011)

Data Elements have been defined and standardized for two domains; Person (identification) and Land Region (Codification) as a part of domain specific MDDS. The common generic data elements specific to two domains are also identified. Moving ahead, these common generic data elements will be stored in Centralized MDR. Controlled values of some of these data elements are defined in the form of **Code Directories**. List of notified generic data elements along with their metadata and XML Schema is available on <https://egovstandards.gov.in>,

which is being used by various applications.

b. Institutional Mechanism for formulation of Domain specific Metadata and Data Standards (MDDS)

This document describes the mechanism to be followed by different domains while formulating their MDDS along with roles and responsibilities of **Domain Committee** and other stakeholders involved. This will enable uniformity and consistency in the process undertaken by different domains.

CONCLUSION

Achieving semantic interoperability is functionally an important aspect in e-Governance in order to enable and provide single-window solution to citizens across the country. For this, it is essential that the various applications for information and service delivery need to adopt standardization in data definitions and metadata of its data elements.

FOR FURTHER INFORMATION:

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AWARENESS WORKSHOPS ON MDDS

- Awareness Workshop on Domain specific Metadata and Data Standards was organized at DeitY on 18th of October 2013 in which the officials from NIC & DeitY and representatives from different ministries/departments have participated.
- During the Workshop, training was imparted to the participants on formulation of Domain specific MDDS.