

Spatial Data Infrastructure (SDI) Implementation in Madhya Pradesh

Road Map

7/21/2014

MAP_IT

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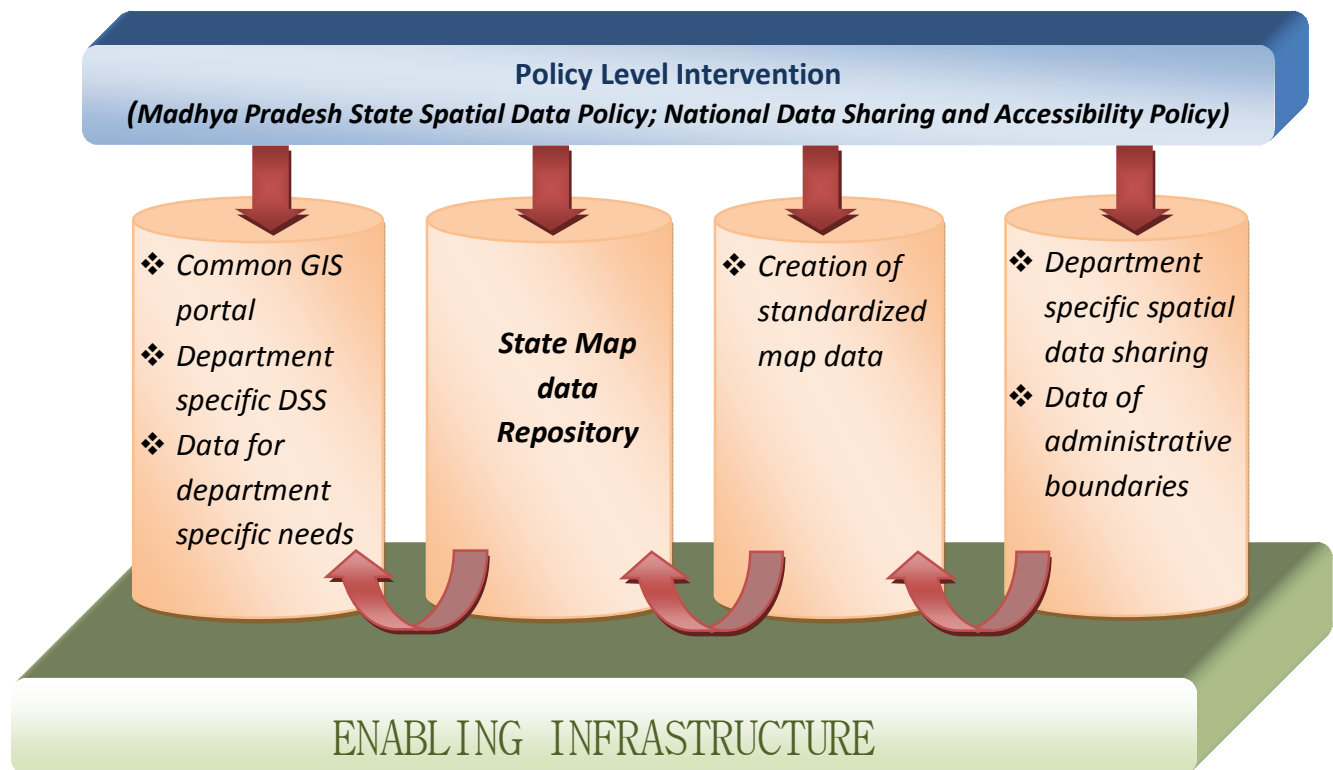
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1 Definitions

1. **'State Agencies'** – state departments, local body, public authority and public agency
2. **'Nodal agency'** – means the nodal agency as designated by the state government for carrying out activities envisaged in the policy
3. **'Spatial data'** - means geographically referenced map data along with its requisite attribute information
4. **'SSDI'** – means State Spatial Data Infrastructure which is defined as *“the collection of technologies, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data”*

2 Spatial Data Infrastructure (SDI) Implementation Process in MP



3 Activities

Department of Information Technology, Government of Madhya Pradesh (DoIT) is the nodal agency for implementation of Spatial Data Infrastructure (SDI) in the state. Following activities shall be carried out for SDI implementation:

3.1 Policy level intervention

1. The National Data Sharing and Accessibility Policy (NDSAP-2012) which is being implemented in the State, has clauses applicable to map data. The governing principles for data sharing shall be adopted from the NDSAP with an objective of enabling better sharing and exchange of spatial data within state departments
2. The Government of Madhya Pradesh through its Madhya Pradesh State Spatial Data Policy has provisions which shall be utilized for the implementation of Spatial Data Infrastructure in the state.

3.2 Satellite imagery for state users

The nodal agency designated by the Government of Madhya Pradesh shall procure high resolution or other required satellite imagery at defined intervals which shall be made available to all state users. Based on the data needs of larger user community, the nodal agency shall decide on the resolution and type of satellite imagery required to be procured for entire state.

3.3 Collation of existing spatial Data

Several state departments and their agencies are currently utilizing geographically referenced data for their department specific usage. The benefits of created spatial data can be further enhanced by creating an integrated data repository, comprising of spatial data from several departments. In order to do this, the data along with the Meta data information already available with different state agencies shall have to be first collated. Following approach shall be adopted for collation of existing spatial data -

- a. All GIS data except satellite imagery shall be physically collated from state agencies and brought into a single repository.
- b. The satellite images used by departments shall be shared with nodal agency through database server access

3.4 Standardization of spatial data

Co-referenced GIS data with standardized Meta data information is the backbone of SSDI enablement. The standardization of spatial data shall be carried out as under –

3.4.1 Single reference for spatial data

Single control network shall be used for referencing all spatial data. Control network across the state is being created under the National Land Records Modernization Program (NLRMP). The created control network shall be used for referencing all spatial data of the state.

Till the time control network is not available, the best resolution geo-referenced satellite imagery available in the state shall be used. Spatial data from all state agencies shall be referenced to a single satellite imagery of the state.

3.4.2 Co-referencing of satellite images

The new satellite imagery procured by designated nodal agency shall require referencing to the established network before being used. The data of established control network (mentioned in previous section) shall be used as base reference. Nodal agency shall identify a suitable agency to carry out the work in a time bound fashion.

In case of non-availability of control network, the best resolution, geo-referenced satellite imagery available in the state shall be used for referencing spatial data.

The legacy satellite imagery provides value addition in terms of identifying changes over defined period of time. Hence is an important piece of information and needs to be co-referenced in order to have a record of situation in the past.

3.4.3 Creation of seamless, standardized administrative boundaries

The extents of administrative units shall be standardized and single seamless database shall be prepared which can be used by all state agencies. Administrative units shall include the following: -

- a. Village boundary
- b. Panchayat boundary
- c. Block boundary
- d. District boundary
- e. Ward boundary
- f. Forest boundary

DoIT has entered into a MoU with Madhya Pradesh Council for Science & Technology (MPCoST) to carry out the village data preparation in a time bound fashion.

3.4.4 Standardization of existing department specific GIS data

GIS data collated from state agencies shall be standardized to create an integrated multipurpose GIS data for the state. Polygon data on boundaries pertaining to departmental jurisdictions like police extent, colonies and domain specific command areas shall be standardized with respect to their geographic location and Meta data information. Data on linear extents like roads shall be rectified for geographic locations and Meta data information. Point locations collected through GPS shall be standardized with respect to their Meta data information only.

Considering land use and land cover as part of bio-geo databases, the spatial data shall be standardized for location. The attribution shall be maintained as per the standards recommended by NRDMS from time to time.

Depending on the quantum of work, Nodal agency may engage a private or Government agency to carry out the work in a time bound fashion.

3.5 Creation of multipurpose GIS data of departmental assets

The distributed departmental assets need to be mapped in order to have better informed planning and management of citizen services. The nodal agency shall engage / empanel suitable agencies to meet

mapping requirements of state agencies through which it will be possible to create required department specific map data. The state agencies shall seek financial proposal from the nodal agency for meeting their mapping needs.

3.6 Development of MPSSDI portal

This activity entails development of portal for data discovery and electronic sharing of spatial data. The portal shall function as data exchange hub; providing access to map data, while having capabilities of communicating with other portals at national level as well. State Applications used for decision making shall be fed through the common GIS data repository.

3.7 Updation of spatial data and user access

The nodal agency shall develop mechanism for online updation of changes made by state agencies in their respective spatial datasets. The departments shall own the updation of standardized data.

3.8 Creation of 3-D GIS data

3-D GIS data for the entire state is required for applications like telecom, flood management development planning, watershed management and the like. The base satellite imagery required for generation of 3-D GIS is being procured by department of Revenue for the entire state. The same dataset can be further utilized for creation of 3-D GIS data of the state. Utilization of same base satellite imagery shall reduce the 3D GIS creation by approximately INR 100 crore. The nodal agency shall take up the said work upon receipt of requisite satellite imagery from the owner department.

3.9 Data and applications for department specific GIS needs

In order to fully utilize the benefits of GIS technology, department specific spatial data and application needs shall be recorded through need assessment studies. The nodal agency shall support and facilitate such data and application creation projects, however, the ownership of such projects shall stay with the parent departments.

4 Dependency

The implementation of Spatial Data Infrastructure (SDI) in the state requires departmental coordination in terms of data sharing and finalization of jurisdiction boundaries. The current plan has dependency in terms of interdepartmental data sharing and jurisdiction finalization within the below timelines:-

4.1 Departmental Responsibility Matrix for Data Sharing

Sl. No	Department / Agency	Data sharing	Timelines Months (M) from project start
1	Revenue and Land Records	Control Network data Digital cadastral Maps Stereo imagery for 3D creation	M5 – Completion M1 M8 – Onwards
2	UADD	Digital ward boundaries Other spatial data	M1 M2
3	Forest	Digital forest Village maps	M1

		Forest extents	M1
4	MPCoST	Rectified satellite imagery (Cartosat)	M1
6	Other user departments	Existing data	M3

4.2 Finalization of jurisdiction boundaries

The available administrative jurisdiction extents of villages, ward limits and forest boundaries are to be used to create seamless administrative boundary data of the state. Co-operation for creation of seamless data is required from data owner department. The nodal agency shall collate and coordinate amongst the owner departments for completion of task within below timelines:

Sl. No	Department / Agency	Activity	Timelines Months (M) from project start
1	Revenue and Land Records; UADD; Forest	Finalization of administrative boundaries of villages, wards and forest	M4

The other jurisdiction extents which are based on village / ward extents shall be re-created using the seamless, standardized administrative boundary GIS data.

ESTIMATED TIMELINES

ACTIVITY	MONTHS (From Project Start Date)								
	M1	M2	M3	M4	M5	M6	M7	M8	M9
Policy level intervention									
Satellite imagery for state users								ONGOING	
Collation of existing spatial Data									
Single reference for spatial data									
Co-referencing of satellite images								ONGOING	
Creation of seamless, standardized administrative boundaries									
Creation of multipurpose GIS data of departmental assets			ONGOING						
Standardization of existing department specific GIS data									
Creation of multipurpose GIS data of departmental assets The distributed departmental assets need to be mapped in order to have better informed planning and management of citizen services. The nodal agency shall engage / empanel suitable agencies to meet mapping requirements of state agencies through which it will be possible to create required department specific map data. The state agencies shall seek financial proposal from the nodal agency for meeting their mapping needs. Development of MPSSDI portal									
Updation of spatial data and user access				ONGOING					

Creation of 3-D GIS data								TO BEGIN
Data and applications for department specific GIS needs	ONGOING							