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About GSDL



Geospatial Delhi Limited : A company of Govt. of NCT of Delhi, initially constituted as a SPV for management of DSSDI Project and since 2011 empowered as single point custodian any facilitator of Spatial Data Infrastructure provided by Delhi State SDI Project.



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		CAPACITY BUILDING	0	
		OPERATIONS AND DATA		DELHI GOVERNMENT
		SYSTEM & SOFTWARE		Team Delhi, Making things happen

Why SDI ??



Lots of data is available in each Government Department of GNCTD.

Why are we not able to use and value addition to these Data?









1. We do not know who has got what data?

..... Catalogues not accessible





2. Even if we know who has what data, but we do not know how we can access it.



....." Metadata is not available"





Even if we can access the data we can not use it in conjunction with one another

..... data follows multiplicity of standards in terms of scale , projection, accuracy, content and format





4. Even if the data gets standardised, there may be

- Restrictive policy regimes
- Reluctance to share
- Stored in different locations





- Meta-data is "data about data" or `data of other databases'
- They are descriptions of data available from different sources
- For example, a meta-data record will include data on the mapped area, its year of survey, the scale, the projection parameters, its ownership, and other information





A Spatial Data Infrastructure

"The SDI provides a basis for spatial data *discovery, evaluation, and application* for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general."

-The SDI Cookbook

http://www.gsdi.org







Factsheet of Delhi State SDI



The project DSSDI (Delhi State Spatial Data Infrastructure) was initiated by Government of NCT of Delhi with the motto to utilize the Geospatial Technologies in actual g-Governance, to ensure that spatial data once prepared through investment with such high end techniques is effectively integrated with the departmental MIS data at a large scale and its

- archival,
- dissemination,
- usage and
- simultaneous updation and upgradation

at a Central database repository located in Control Centers.





- Provides Common Operational Picture
- Build primary data once and use it many times for many applications
- Integrate distributed providers of data: Cooperative governance
- Support sustainable economic, social, and environmental development

Delhi SDI - Fact Sheet



Project Started : March 2008 Project Area (Sq.Km.) 1486 Districts : 9 Districts Sub-Divisions : 27 Sub-Divisions Villages : 357 **Urban Body** : MCD, NDMC, Cantonment Area **Department Participating** : 30 **Control Centres** : 2 **Monitoring Centres** : 10 **IP** Cameras : 63 Nos. Aerial Photographs used : 2649 Scale of Aerial Photographs : 1:8000 1:2K Grid Size (Approx.) : 1 km x 1 km Grids : 22533 **GCPs for Block Adjustment** : 1486 **Spatial Feature Classes** : 350+ Nos. Scale of base map : 1:2000 Application Development : Delhi Geo-Portal

System Architecture





Delhi Geoportal Workflow





General Security Principles





SDI Quality: Challenges and Opportunities

Spatial Data Quality Management – Challenges and Opportunities

Data Silos

Data Volume & Velocity

Complex Data Architecture

Real Time Enterprise Require

Lack of Accountability

Reactive Mode

Lack of Straight Processing

Structured & Unstructured data

Holistic Data Quality

Data optimization and Scalability

Simplify Data Architecture

Real Time data quality monitoring

Strong Data Governance

Proactive Data Quality Control

Automated Controls and monitoring

Leverage "Big Data" Solutions

High level of maturity in Data Quality Management is required to address operational challenges

Geospat



Dimensions are facets or specific measurements of data quality, pertaining to specific data elements

The authors propose many variations but the main ones that most agree on are:

- Accuracy
- Conformity
- Completeness
- Consistency/Duplication
- Timeliness (sometimes called Currency)
- Integrity

Data Quality Dimensions facilitate the consistent definition of data quality requirements and metrics across various organizations.

Dimensions of Data Quality - Explanation 🥔



Accuracy: How much does the data

conform to the real world?

Conformity: How much does the data conform to formats and domain values?

Currency:

How current is the data? When was it last entered or refreshed?

Completeness:

How much required data is missing?

Duplication: Does the same data exist in multiple systems? If so, is it represented the same?

Integrity: Does the data conform to integrity rules appropriately? Are relationships between elements retained?

There are a dozen or more Data Quality Dimensions that can be defined, but organizations should pick the ones that best meet their needs.

SDI Database enhancement and Management





- **Boundary** consisting administrative boundaries in various categories.
- **Building -** consisting Building footprints
- □ Transportation consisting layers on the aspects on Road, Railway, Airport, Metro Rail
- Utility (under & overground utilities) covers aspects on Power, Sewage, Water Supply, Gas & Oil Supply, Communication (Telephone & Mobile)
- Landuse / Landcover contains layers in various landuse / cover types
- □ Cadastre (Massavi) will show property related layers with linked attributes.
- □ Hydrography contains layers related to hydrology
- □ Hypsography contains layers related to elevation
- □ Image contains aerial image layers
- **DEM** contains DEM as a layer
- **Framework** contains layers for referencing purpose
- □ Input for Updation facilities for attribute data updation
- □ 3D GIS Layers layers used for 3d Texturing



Need proper snapping of the Road center line.







Road (including Circles) to be splitted at the intersection





Need proper classification of the Road center line





addition of new road in case of no connectivity or improper digitization







flipping of the polyline in proper direction and new extra field need to be updated when the road is directed



GSDL Version 1.1 ??



SI.	Spatial Data Quality	Ver 1.0	Ver 1.1
1	Lineage	Delivered	Enhanced
2	Positional accuracy	Delivered	Enhanced
3	Attribute accuracy	Delivered	Enhanced
4	Logical consistency	Delivered	Enhanced
5	Completeness	Delivered	Enhanced
6	Semantic accuracy	Delivered	Enhanced
7	Usage, purpose, constraints	Delivered	Enhanced
8	Temporal quality	Delivered	Enhanced
9	Variation in quality	Delivered	Enhanced
10	Meta-quality	Delivered	Enhanced
11	Resolution	Delivered	Delivered

Deployment of High-End Enterprise applications







Single Window Permission Seeking System for Excavation/Development Activity



Dynamics integrated with 3D GIS





Recommendations



Quality Processes should be in all stage of entire life cycle of project including data designing, development, management and dissemination

- Quality documents and workflows
- Monitoring and evaluation
- Remedial measure and rectification, if any
- Competent Authority for final approval

Delhi: Visualization to Virtualization







Thank You

