

# GIS Technology and Laws in India

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# GIS Technology and Technologies it uses.

- Geospatial Data:

Survey and Mapping.

GPS.

Remote Sensing.

Airphotography.

UAV Photography.

Data Security

Data Communication

- Attribute Data:

- Social Issues.

- Privacy Issues.

- Tax Issues.

- Governance Issues.

# Policies Related to Geo Spatial Data

- Map Restriction Policy.
- National Map Policy (2005).
- The Civil Aviation Requirement (CAR), 2012.
- Civil Aviation .. Site Elevation Certificate.
- Remote sensing Data Policy(2011).
- National Data Sharing and Accessibility Policy (NDSAP) 2012.
- National Geo-spatial Policy(NGP)
- Policy on UAV or Drones.

# Map Restriction Policy.

- All the maps above scale of 1:50000 are Restricted if it contain any part of International Boundary.
- Entire Coast Line of India is an International Boundary.
- All the toposheets of coast are restricted.
- International land boundary sheets were completely not available to civilian use. Ex.. No civilian could access a toposheet having India-Pakistan or India-Burma boundary.
- Highly criticized by all sections of society as anti development policy.

# Existing Policies Dealing Geospatial and Non-spatial Data

Open availability of satellite data and digital forms of maps, especially when seen in the global context, has necessitated policymaking in India, over the last two decades, such as:

- ***National Map Policy (NMP), 2005***: It basically defines the scope, distribution and liberalised access of digital survey of India topographic maps to user groups without jeopardising national security. As per this policy, SOI has prepared open series topographical maps for the use of the civil purposes which were made available as per the policy.

# NATIONAL MAP POLICY 2005

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# ***The Civil Aviation Requirement (CAR), 2012***

- This policy basically details procedures for issuance of flight clearances for agencies undertaking aerial photography,
  - geophysical surveys and cloud seeding.

# ***The Remote Sensing Data Policy (RSDP), 2011***

- It defines the distribution process of satellite images to different category of users and their availability for attending various applications.
- NRSC is the nodal agency for distribution of satellite data. Nector



# ***The National Data Sharing and Accessibility Policy (NDSAP), 2012***

- This policy basically deals with providing an enabling provision and platform for proactive and open access to data generated through public funds available with various departments and organisations of Government of India. The Policy at present has made considerable progress to enrol about 106 Government departments to proactively sharing the data on the national portal, i.e. [data.gov.in](http://data.gov.in). Further efforts are on to enrol State Government agencies to adopt this policy and share their data for public use.

# NGIS

- National Geospatial Information System... 2012 Approved by Planning Commission... Joint effort of Sol and NRSC... Sol to supply foundation geospatial data with existing 1:50000 topographic maps.
- State level data collection was to be decided. (Every facility on file).
- Failed due to organisational competition and professional competition among promoting officers.

# *National Geospatial Policy (NGP)*

- This policy is being coordinated by Department of Science and Technology and is at the drafting stage. Once, this policy is ready, it will empower people to access geospatial data for addressing their need using geospatial technologies without compromising national security. Also, it will play a vital interface between government and other agencies for doing ease of business.

# Standards, Spatial Framework and Technologies

- NGIS concept
- Advancement of Technologies for data acquisition... HRSI Many applications coming up across the world. LiDAR and UAVs ..
- To have easy interoperability and portability with new technologies, software, equipment across the world, it was resolved to have appropriate standards for the data.
- OGC: Open Geospatial Consortium standards were adopted.

# OGC standards

Parameters where OGC standards are to be implemented are

- Content Standards.
- Metadata Standards.
- Schema/Data Models.
- Spatial Framework
- Quality.
- Image. GIS Servers.
- Portal Standards.

# NNRMS Standards

- NNRMS standards 2005 were published in 2005 for Digital Mapping.
- Sol adopted these for NUIS project. 153 Towns.
- As these Technologies, processes and standards were to be passed on to states, who were partners in NGIS and all other Gol initiatives, NSDI was chosen as agency to coordinate these activities.



# DELHI STATE SPATIAL DATA INFRASTRUCTURE

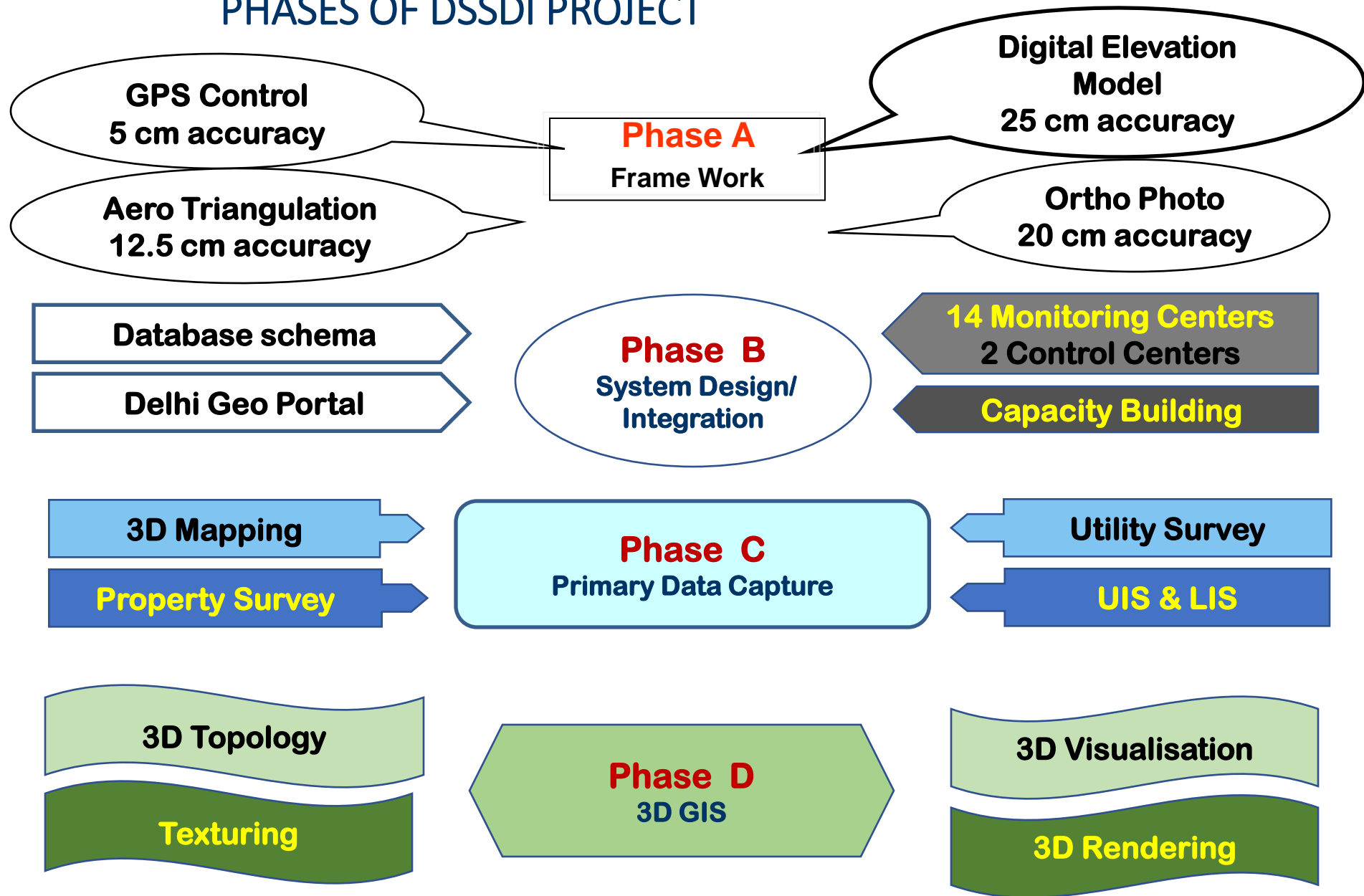
*A trend setter in urban management*

Govt. of National Capital Territory of DELHI

दिल्ली सरकार



# PHASES OF DSSDI PROJECT

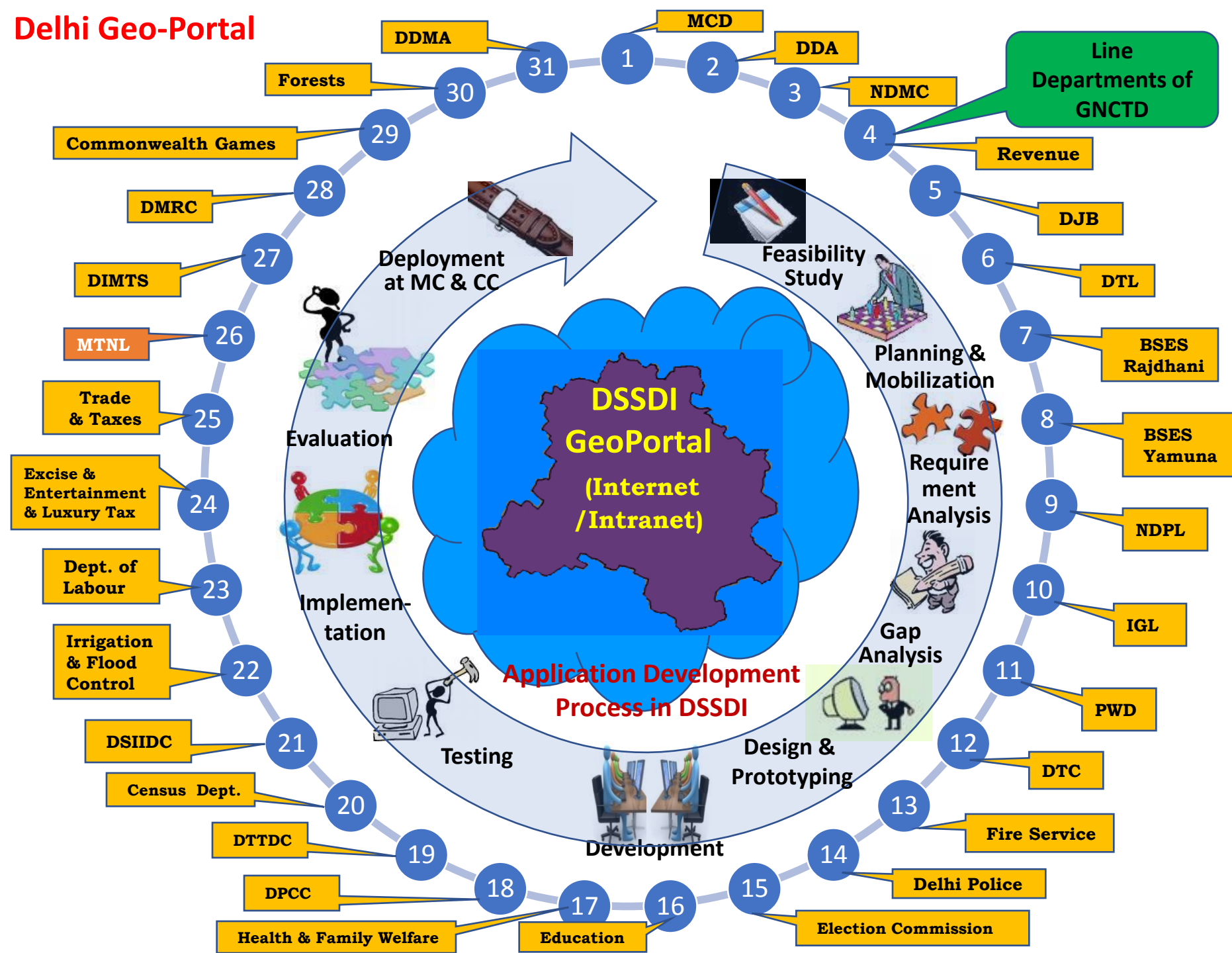




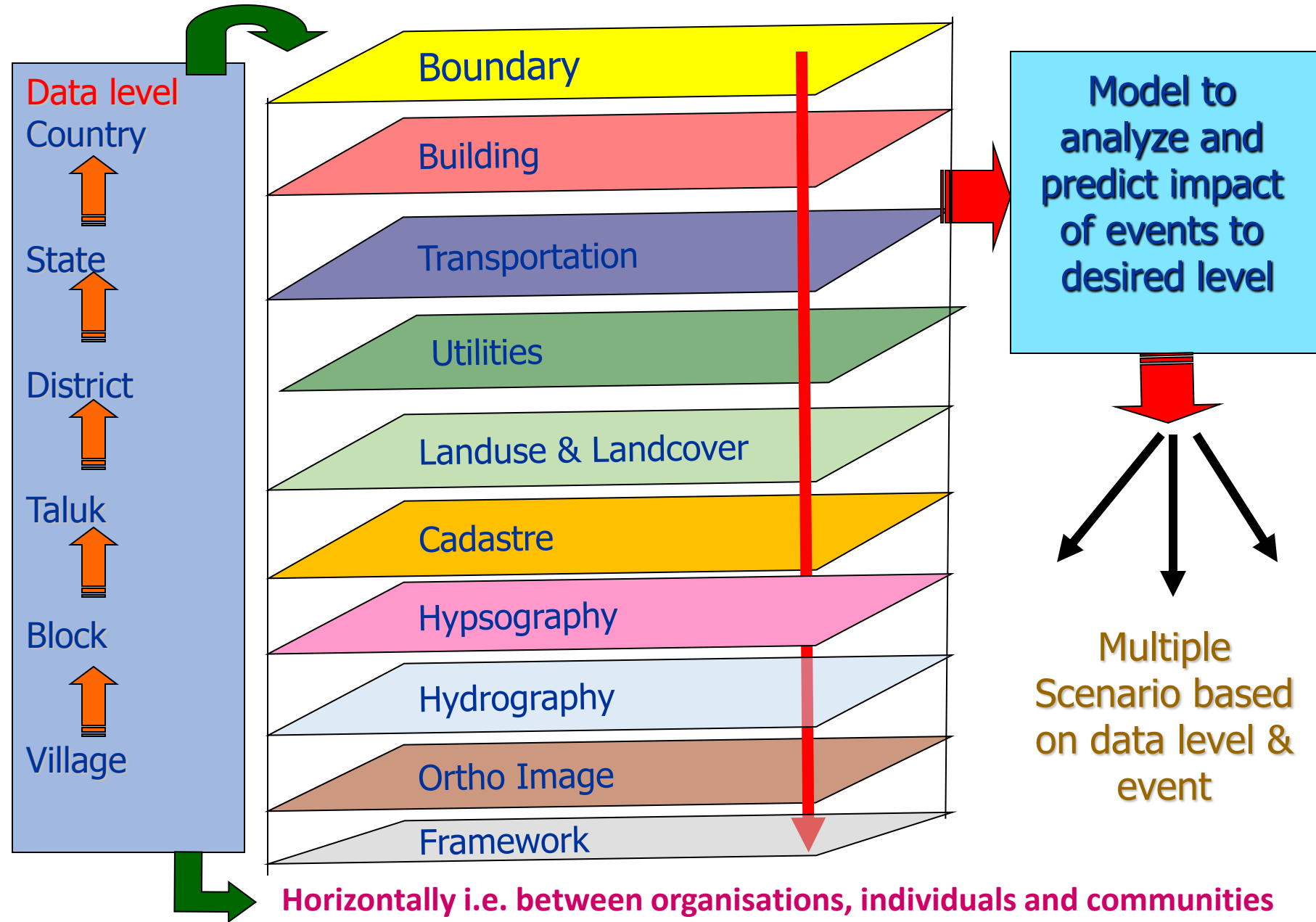
## PROJECT AT A GLANCE

- DSSDI Project, will **set new benchmarks in urban management** in India
- The project will **facilitate high-resolution, three-dimensional virtual walkthroughs of the NCT of Delhi**
- **Urban Information System** -of the entire range of overland and underground public utilities of the city
- **Land Information System (LIS)** that maintains land records, spatial and attribute details up to the level of an individual building unit
- Wireless monitoring of the city by installing wireless IP cameras.
- Development of **Geo-Portal** to function as a single window through to access information and decision support systems using Enterprise GIS
- The project will **support the highest standards of g-governance** will enable:
  - Integrated management & Timely maintenance of the city's public utilities
  - Optimal utilisation of physical, financial and human resources ie Significant cost savings
  - Efficient revenue realisation and Land use monitoring
  - Tight policing and security arrangements
  - **Disaster management**
  - Seamless coordination between the line departments & **Integrated planning**
  - A calibrated, comprehensive mapping of the overland and underground utilities.

# Delhi Geo-Portal



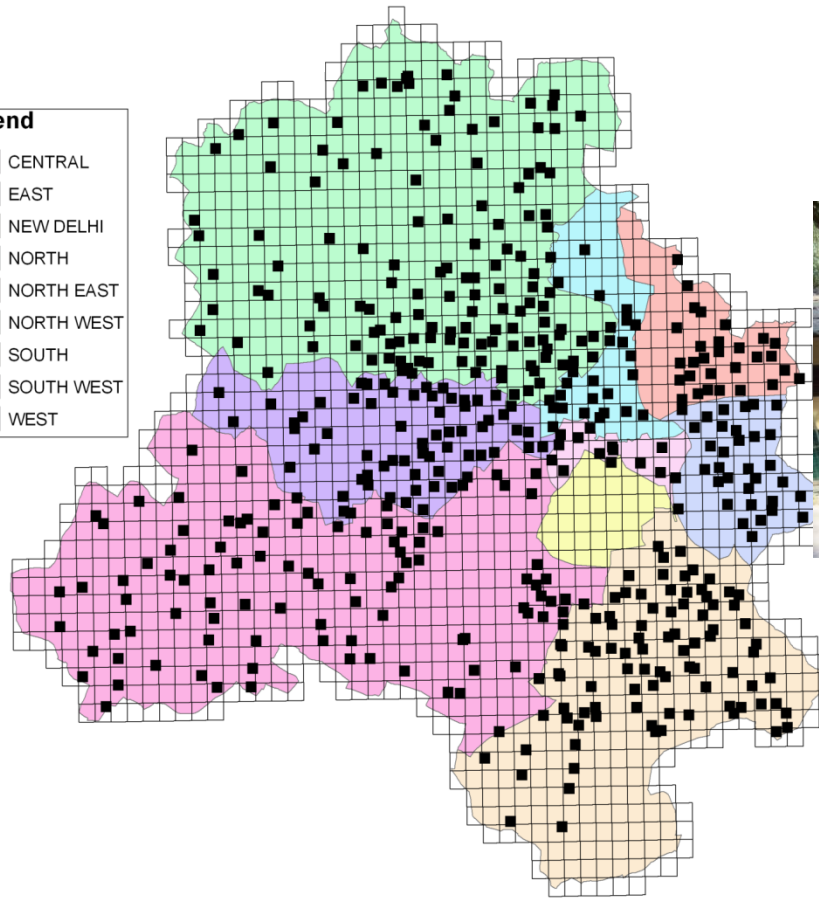
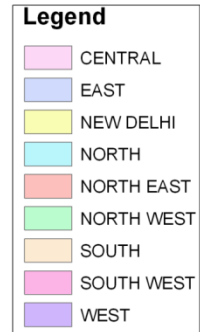
# Multi-layered Geo-spatial Database



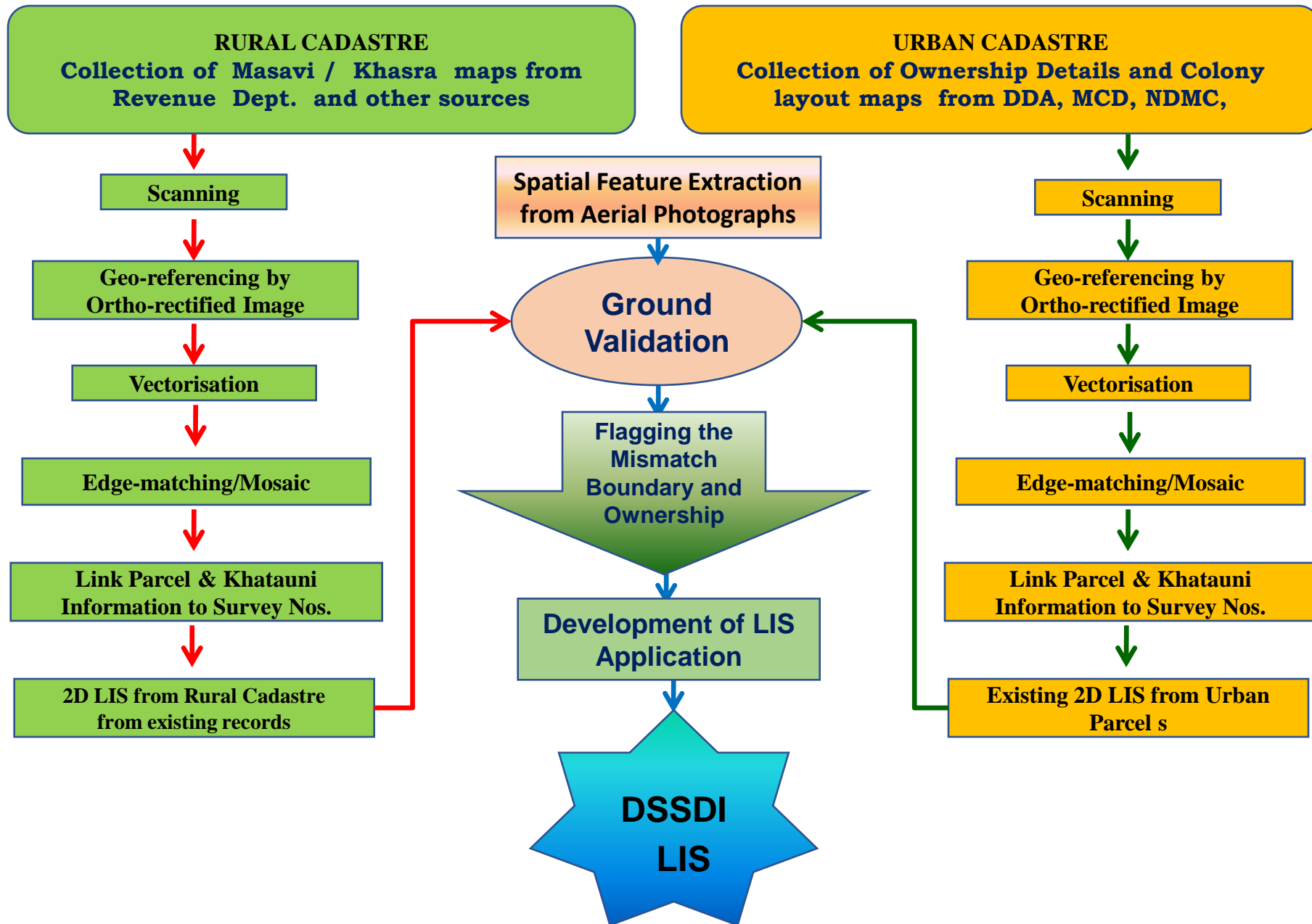
# Monumentation



SIDE VIEW  
30cm\*30cm\*50cm



# Land Information System



# Attributes for Property Survey

## ***1. Index and Linkage to Spatial Data:***

## ***2. Address and Attributes of Property –***

- ❖ District, Urban Locality, Type of Settlement -

## ***3. Plot / Parcel***

- ❖ Plot No., Usage of non-built-up plot : In use / Vacant, Revenue Parcel No.

## ***4. Building and Property Identification Details :***

- ❖ Building Name, Building Type, Year of Construction, Floor / level Details –

## ***5. Building Unit details :***

- ❖ Building Sl. No, Building Unit Sl. No. -

- ❖ Building Unit classification,

- ✓ Residential / Business / Educational / Health / Institution / Utility Center / Religious
- ✓ Government Office / Historical Monument, Heritage Building, Court, Others.

- ❖ Property Owner Details:

- ✓ Covered Area (as per document), Plot area (as per document)

- ❖ Property Occupant and Occupancy details (in case the occupant is not the owner):

- ❖ Electricity and Water Connection - Electricity connection no (K No.), Water connection no.



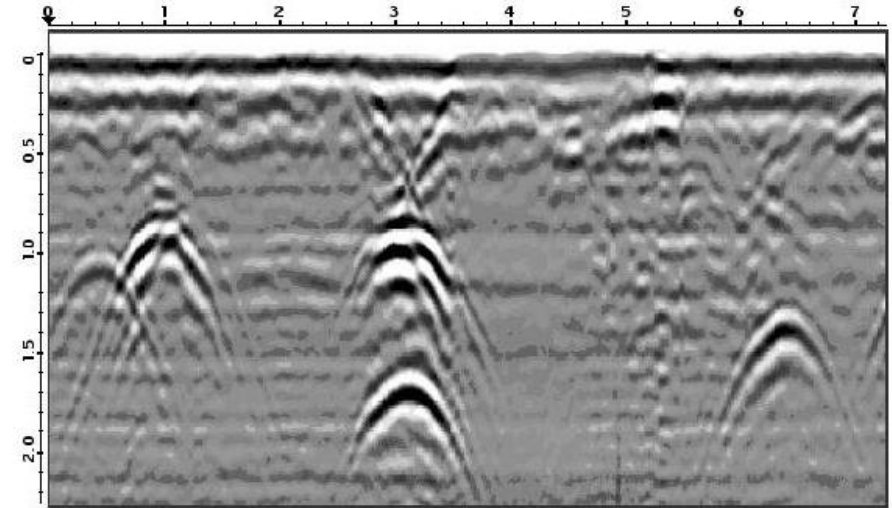
# Underground Utilities -Water, sewer, gas and all type of cabling

## Single channel Ground Probing Radar

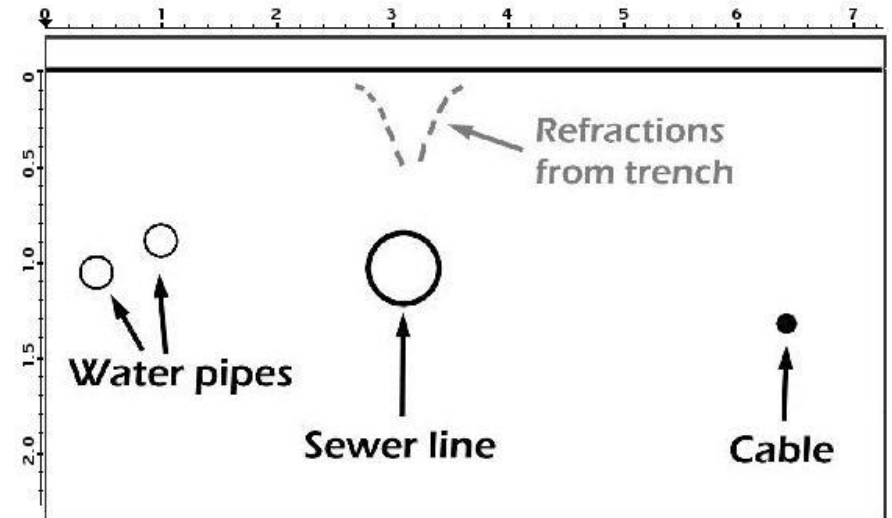


6 Feet wide coverage  
Scan grid geometry  
5 inch x 1inch

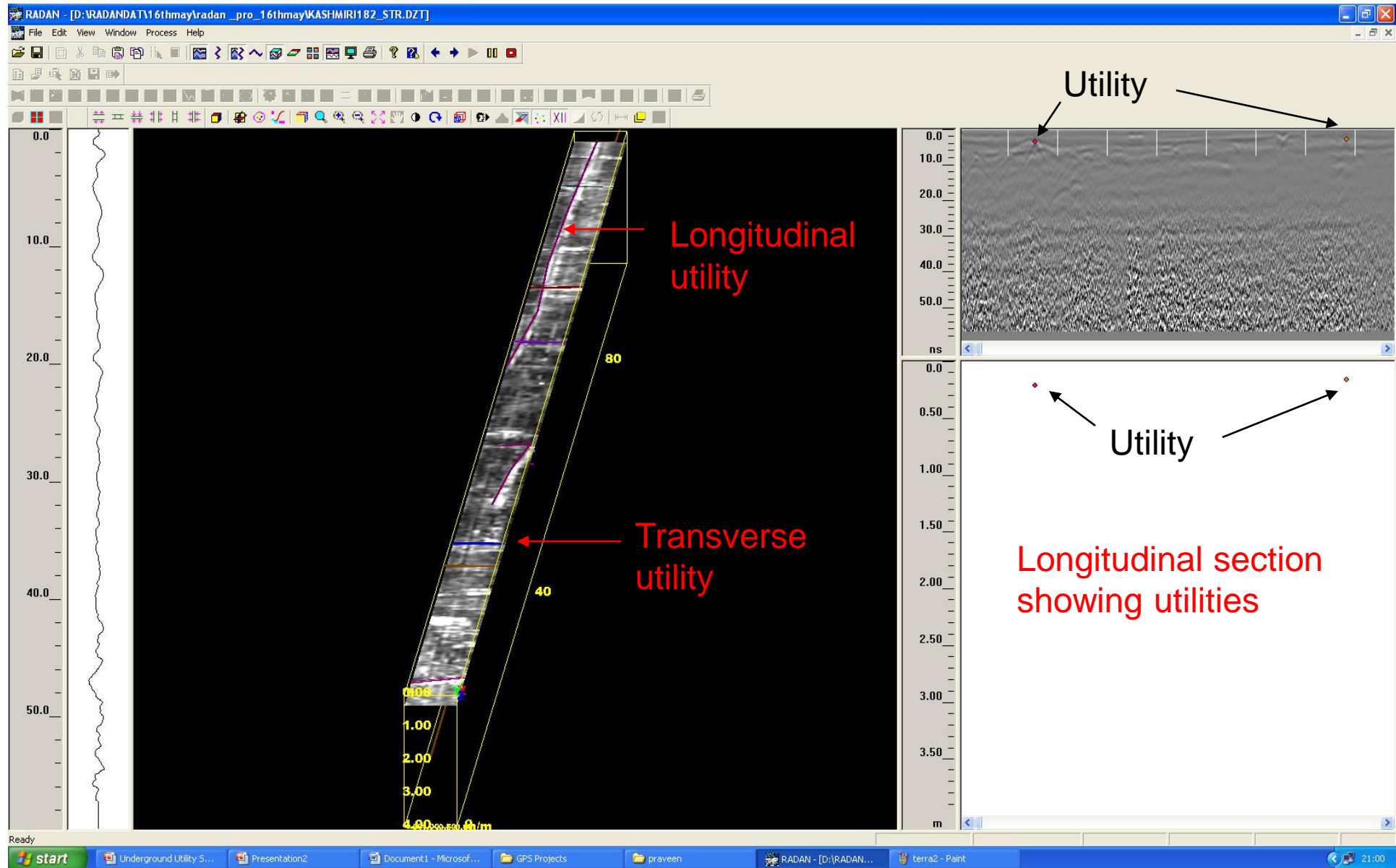
## Parabolas indicating underground utilities



## Multichannel cart radar system-Terra-Vision

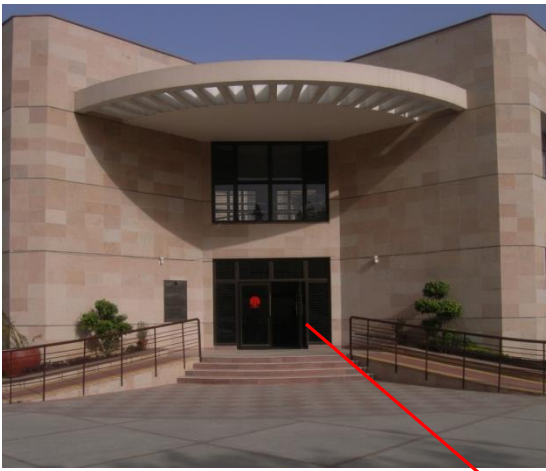


### 3-Dimensional block model showing utilities

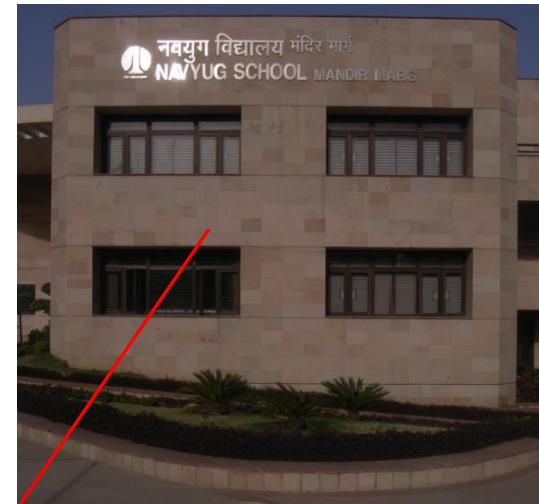




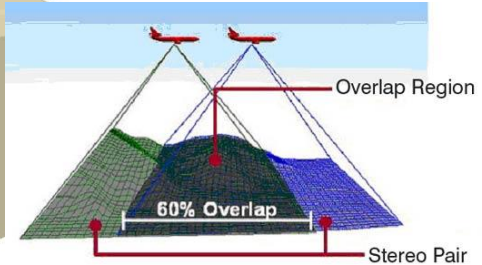
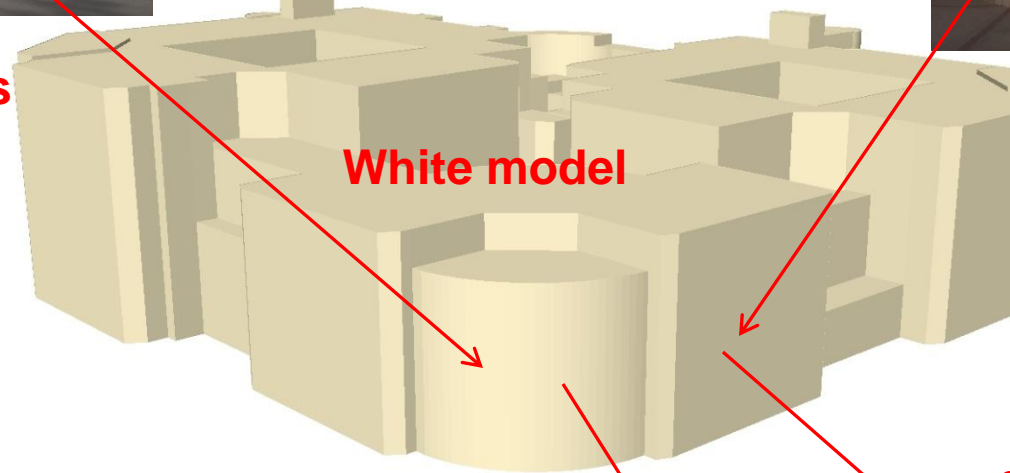
## 3D Texturing & Visualisation



camera integrated with GPS records time and co-ordinates



## Field Photographs

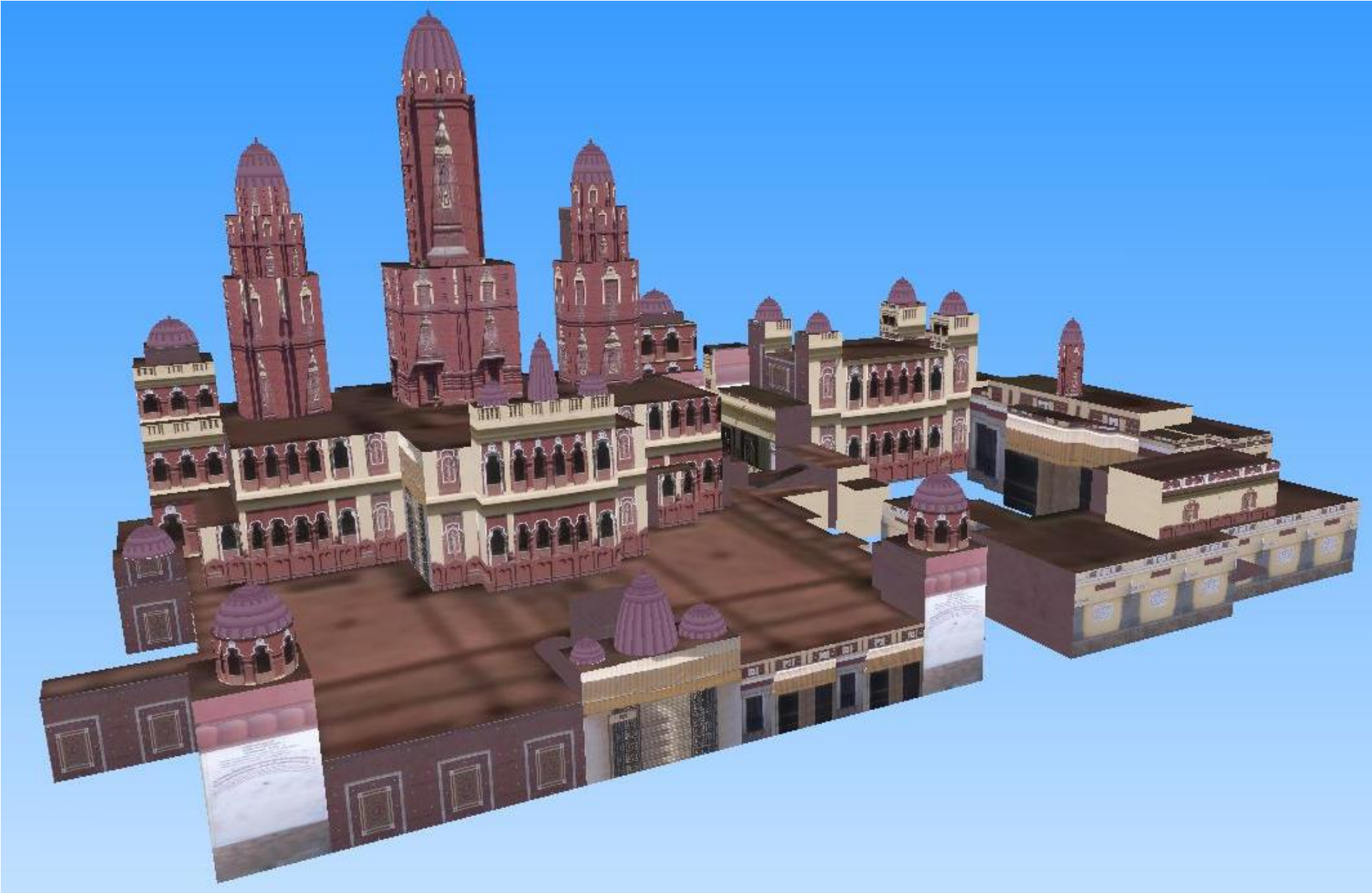


## 3D Texturing

- Creation of highly precise geometric building models from DEM, and stereo captured vector data
- Texture data for building by :
  - Digital picture capture
  - Top-texture from satellite images



# Birla Mandir





# Gurudwara





# MODELING DISASTER GAS PIPE LINE LEAKAGE

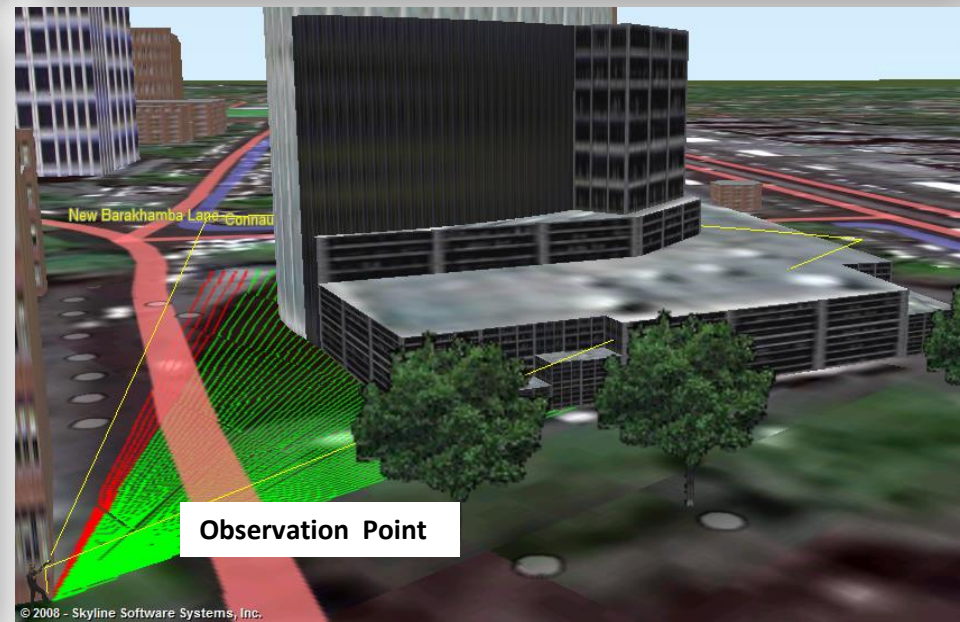
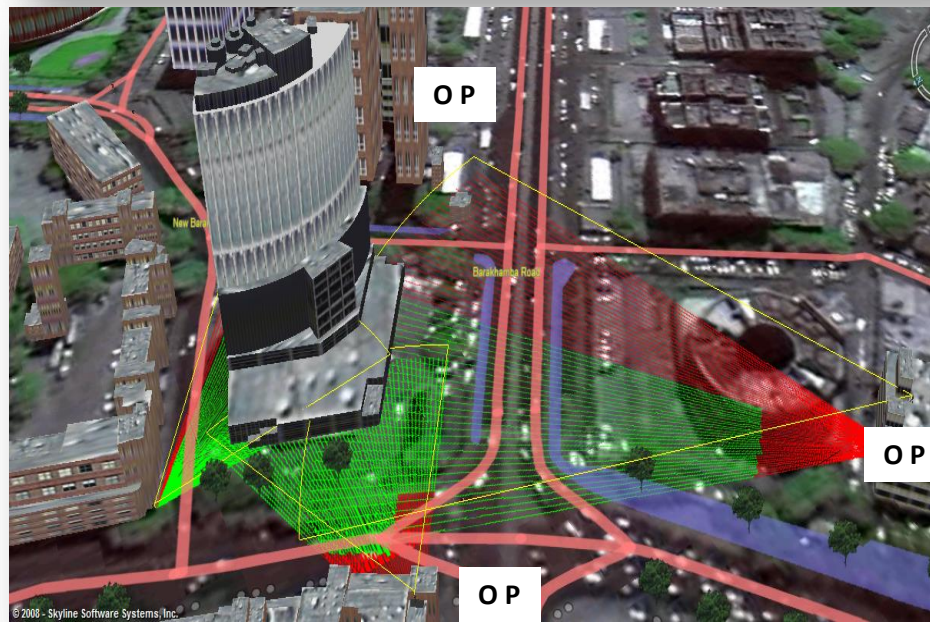
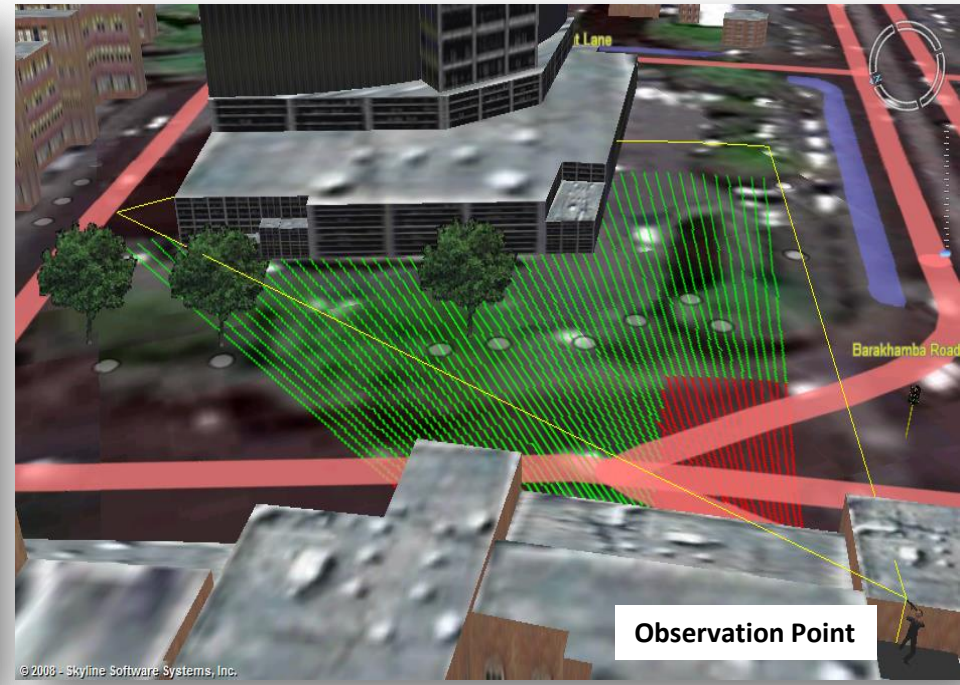
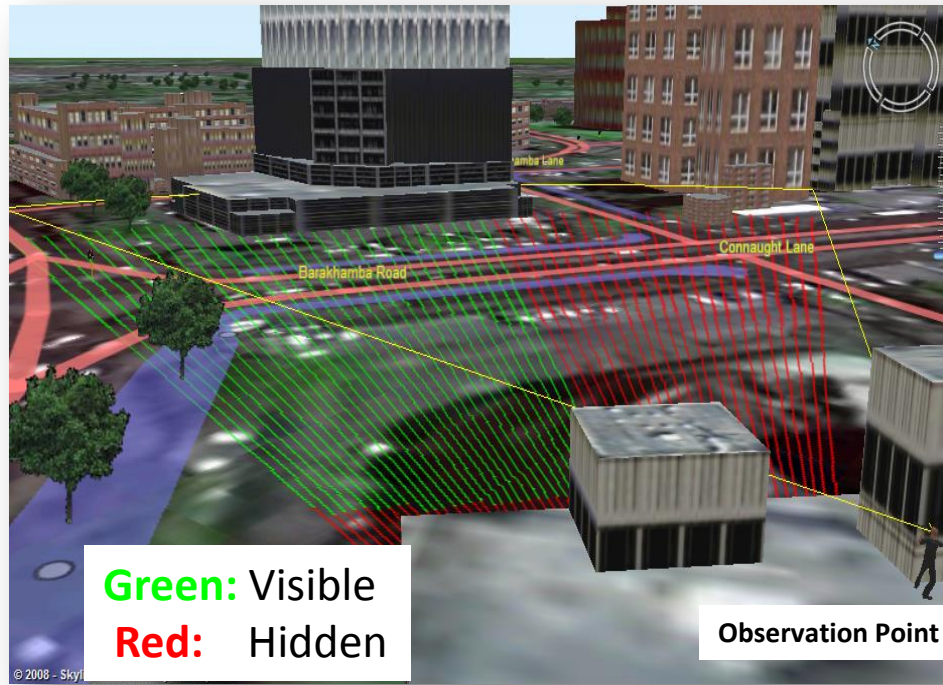


## BUFFER ZONE

- High Risk Area
- Medium Risk Area
- Low Risk Area

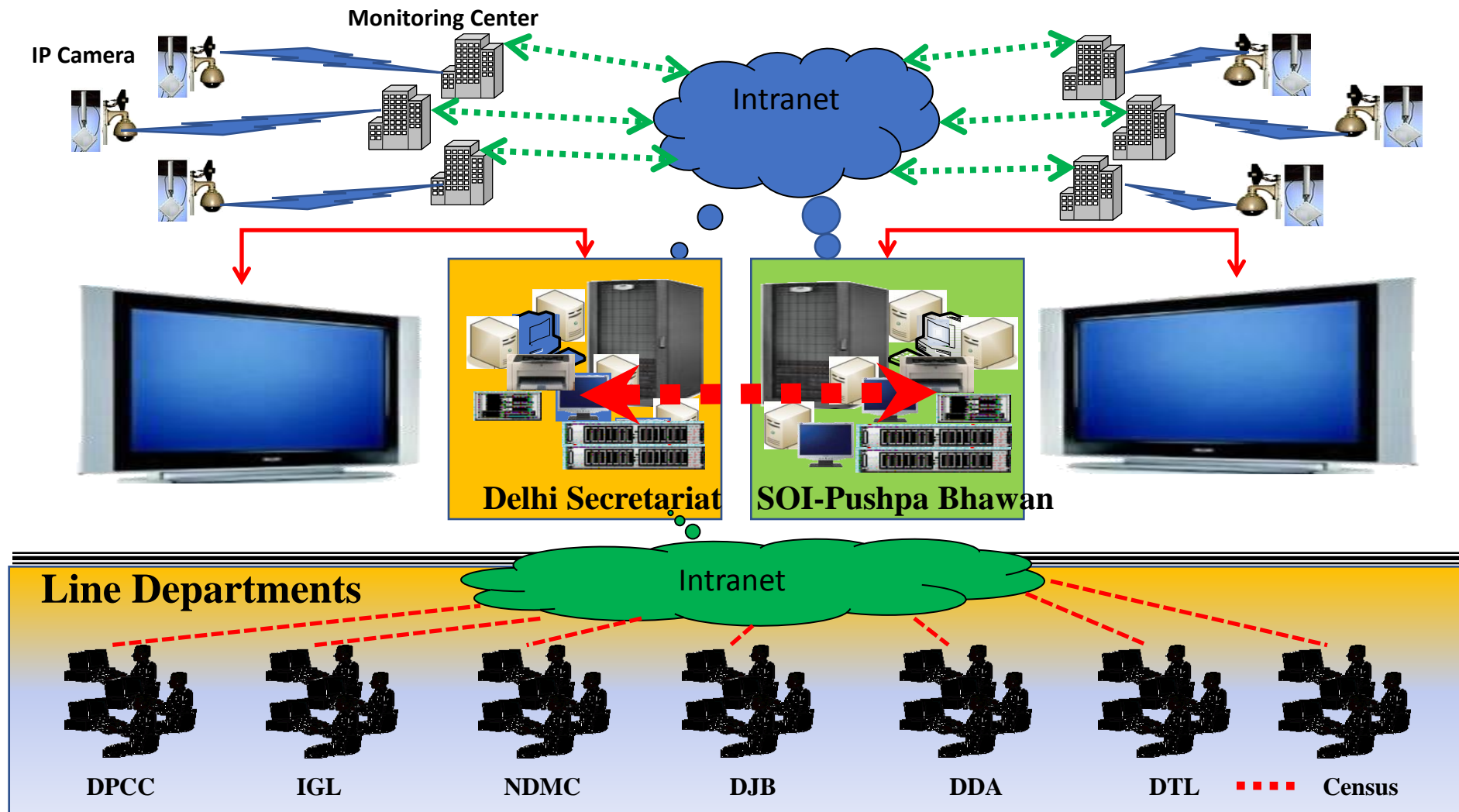


# VIEWSHED ANALYSIS



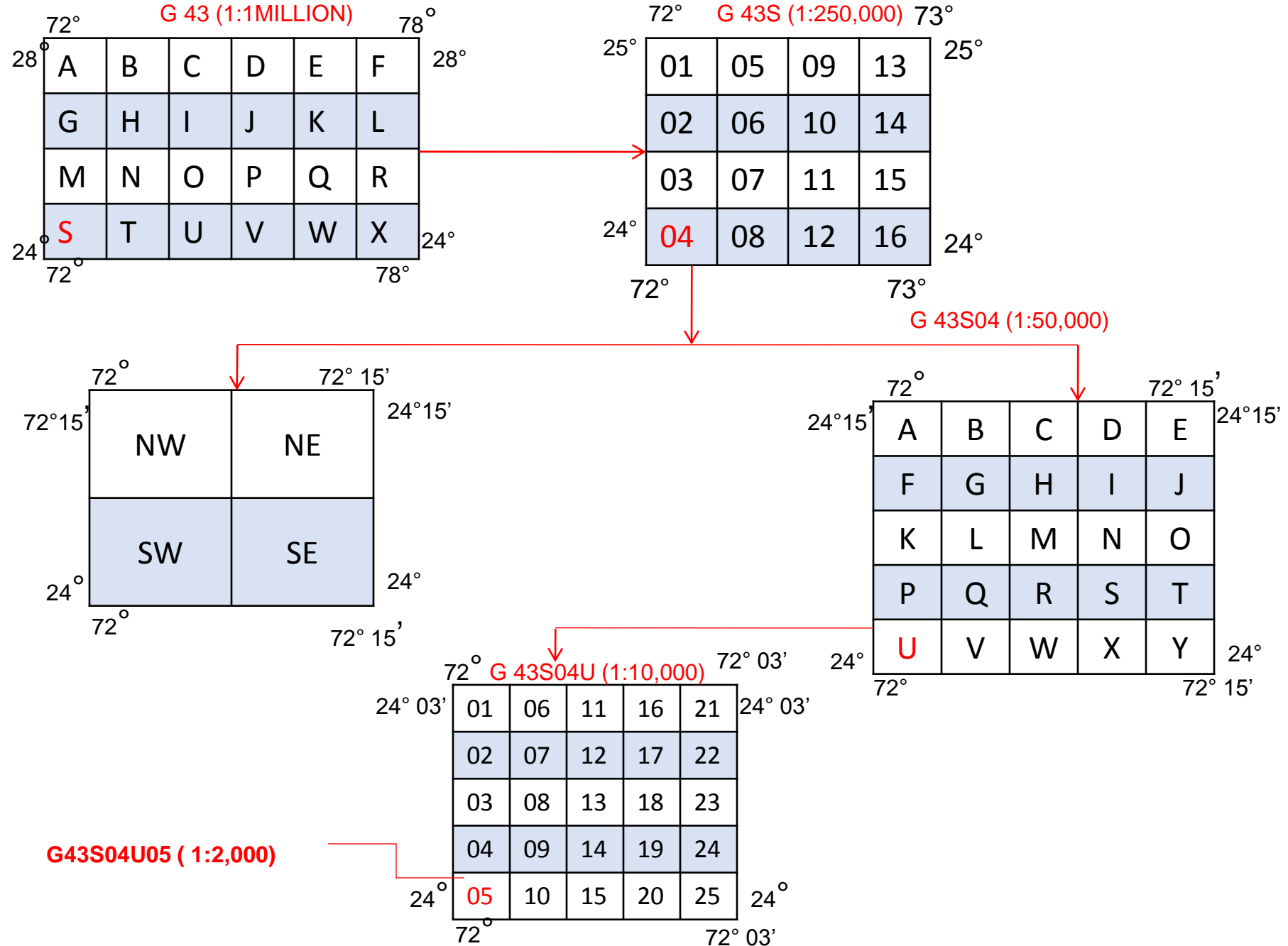


# Delhi Geo-Portal - Architecture

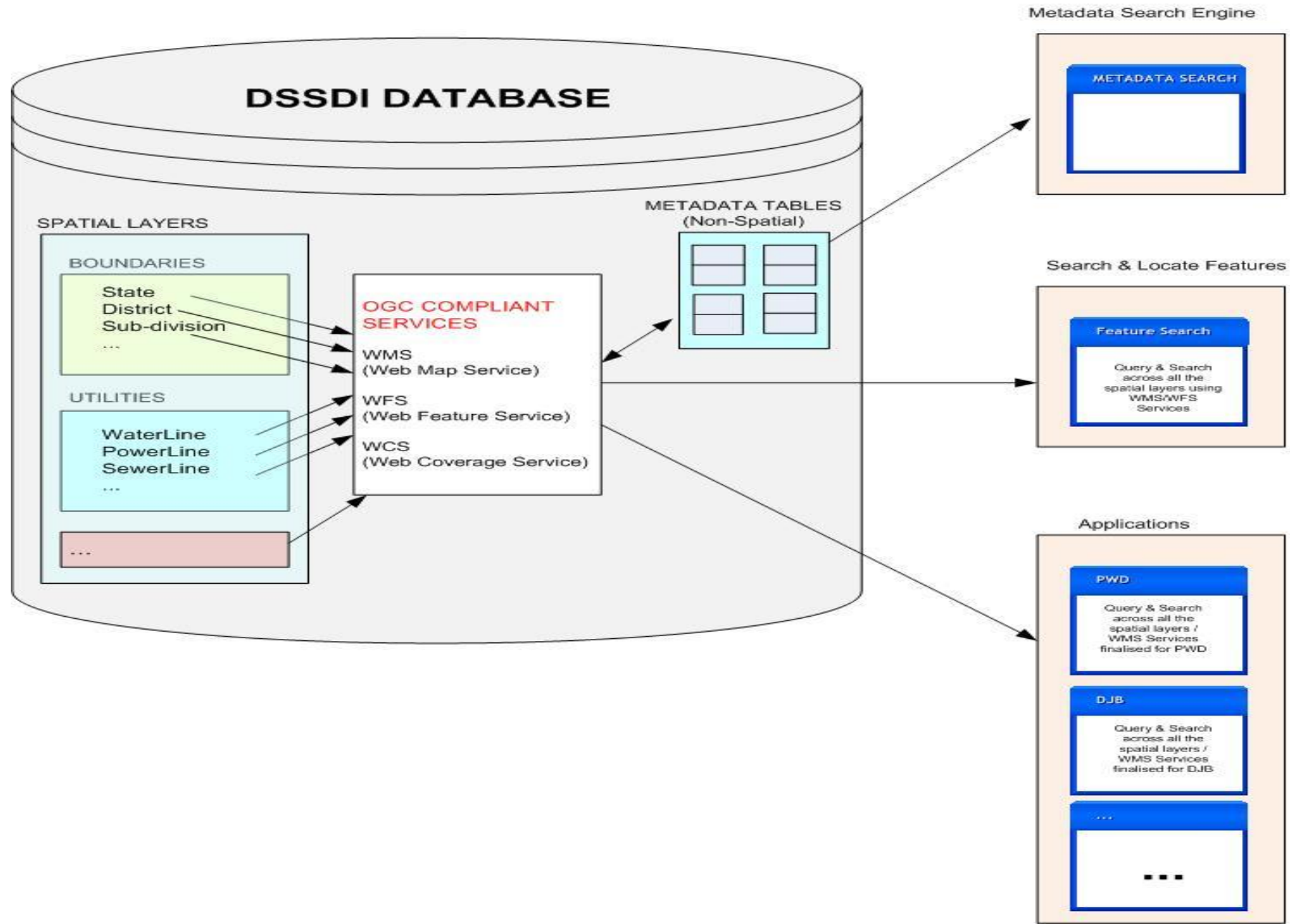


- **System Integration, Implementation, Maintenance of the DSSDI solution for 5 years.**
- A one-stop geospatial “access” for metadata, data and applications for Line Depts. i.e. Preview, Access: download images, video, maps & Textual Data.
- **Capacity Building for Line Depts. (Training – Senior Management Staff & Technical Staff)**

# Sheet Layout

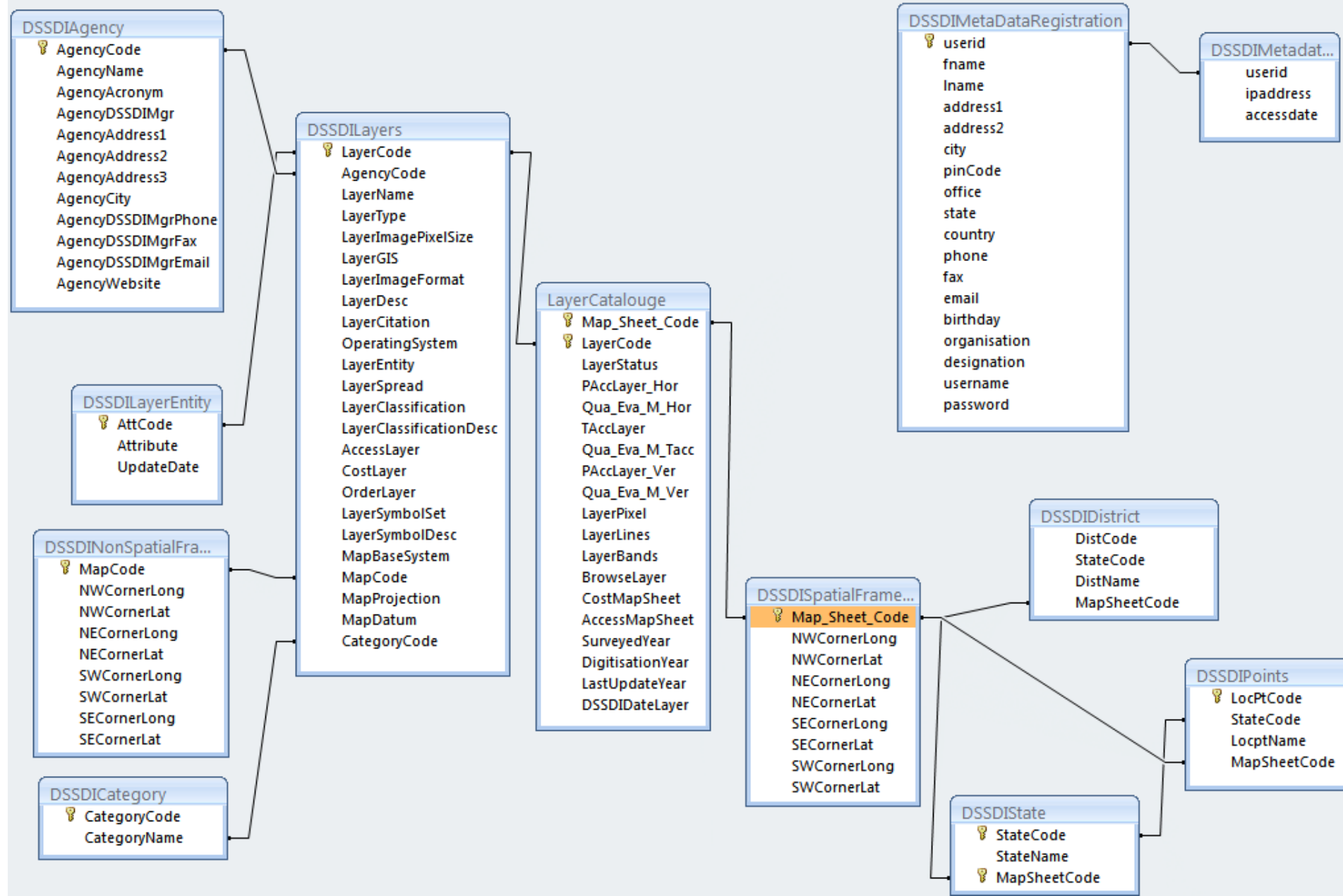


# DSSDI – Database View





# Metadata Tables – NSDI Standards



# DSSDI - Metadata Search Engine

DSSDI - Metadata Search Engine

Where

District

Select District

Ward

Select Ward

Place

Enter Place

☐ Use envelope

What

Select Theme(s)

☐ Boundaries

☐ Buildings

☐ Transportation

☐ Utilities

☐ Land Use & Land Cover

When

Surveyed Year

Enter Surveyed Year

Published Year

Enter Published Year

Other Criteria

Sheet No.

Enter Sheet No.


Any Keyword

Enter Keywords

Submit Query

Search Results

Map Viewer



Layer / Legend Information

Status bar

# DSSDI - Metadata Search Engine

Where

District 

South West


Ward 

Select Ward

Place 

Enter Place

☐ Use envelope



What

Select Theme(s)

☒ Boundaries

☐ Buildings

☐ Transportation

☒ Utilities

☐ Land Use & Land Cover

When

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Any Keyword 


Enter Keywords

Submit Query

Search Results

Map Viewer

3 Records found in matching criteria

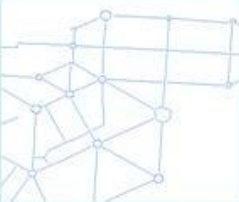


Layer Name :  
Layer Description :

Detail Metadata

View on Map

Download




Layer Name :  
Layer Description :

Detail Metadata

View on Map

Download



Layer Name :  
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Detail Metadata

View on Map

Download

Status bar

# INDIA GEOPORTAL



## India GeoPortal

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- » RTI
- » Photo Gallery

### » Welcome to NSDI

India is fast moving into being an information and knowledge society - especially with the emphasis on Information Technology and 'transparent' e-governance...[Know More](#)

### » NSDI VISION

1. National Infrastructure for the availability and access to organised spatial data.
2. Use of the infrastructure at Community, Local, State, Regional and National Levels for sustained economic growth.

### » NSDI Agencies

 DST	 Sol	 ISRO	 CGWB	 nrsc	 MoES
 GSI	 FSI	 MoEF	 Col	 IMD	 NBSSLUP
 DOD	 NATMO	 NIC	 NRDMS	 CWC	 Planning Commission

### » NSDI Portal Login

» Username:

» Password:

[New User?](#) [Forgot Password?](#)

### » News & Events

#### Training Activities

1. Training to trainers on GML was conducted from 8th April 2008 to 11th April 2008.
2. NSDI Nodal-officers meeting was conducted on 23rd May 2008.
3. Training to Nodal-officers on NSDI Geo-Portal was conducted from 10th November 2008 to 5th December 2008

[OGC Delhi Pilot Links.](#)



# Login as 'DSSDI' user



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## Delhi GeoPortal

Survey of India (SOI) on behalf of Delhi Government is intended to create and maintain an integrated geospatial information system including 3D database of Delhi (DSSDI).

The work includes generation of base map and creating land / property information, generation of 3D pictorial data base, creation of DSSDI portal and applications for various stakeholders of Government of Delhi with maintenance for a period of 5 years.

The data will be used for City planning, Urban development, Utility Management, Traffic Management, Property tax collection, Pollution and Environment Monitoring, Security Management, Hazards and Disaster Management, Change Detection Analysis of building construction, Planning for future commonwealth games at Delhi.

This project is being full-fledged operational from the Office of The Project Director, DSSDI, Survey of India, Delhi with full assistance from Navayuga Spatial Technologies, Navayuga Infotech, and Navayuga Engineering Company Limited.

## Login Here

### Map viewer

User Name

Password

Don't have a GeoPortal ID ?

[Signing up is easy. Signup...](#)

## News & Events

- 1

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Site powered by Navayuga

This site is best viewed in 1024 X 768

Use IE 6.0/7.0 , Mozilla Firefox 2.0/3.0



## Delhi GeoPortal



Welcome To Delhi GeoPortal

|| One Stop Entry For  
Line Departments  
in Delhi ||

### Login

Select Department  \*

Password :  \*

Login



Survey of India

Powered by: NAVAYUGA





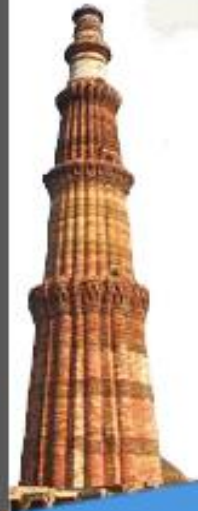


## Delhi GeoPortal



Welcome To Delhi GeoPortal

|| One Stop Entry For  
Line Departments  
in Delhi ||



### Login

Revenue Department

BSES Rajdhani Power Ltd

BSES Yamuna Power Limited

Census India

Commonwealth Games Delhi 2010

Delhi Development Authority

Delhi Fire Services

Delhi Integrated MMTS Ltd

Delhi Jal Board

Delhi Metro Rail Corporation Ltd

Delhi Police

Delhi Pollution Control Committee

Delhi State Ind. & Infra. Dev. Corp.

Delhi Tourism & Transport Development

Delhi Transco Ltd

Delhi Transport Corporation

Department of Forests

Department of Trade and Taxes

Dept of Irrigation & Flood Control

Directorate of Education

Directorate of Health Services

Excise Entertainment & Luxury Tax De

Indraprastha Gas Limited

Mahanagar Telephone Nigam Ltd

Municipal Corporation of Delhi

New Delhi Municipal Council

North Delhi Power Limited

Office of the Labour Commissioner

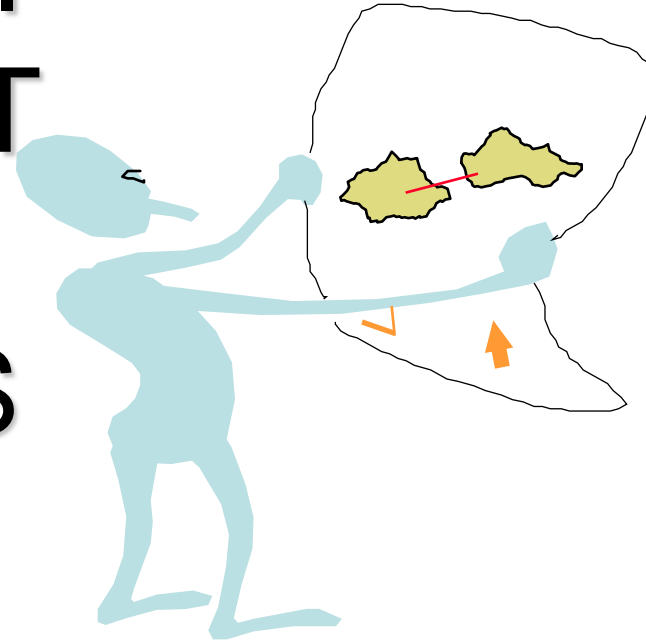
Office of the Chief Electoral officer, De

Public Works Department

Revenue Department



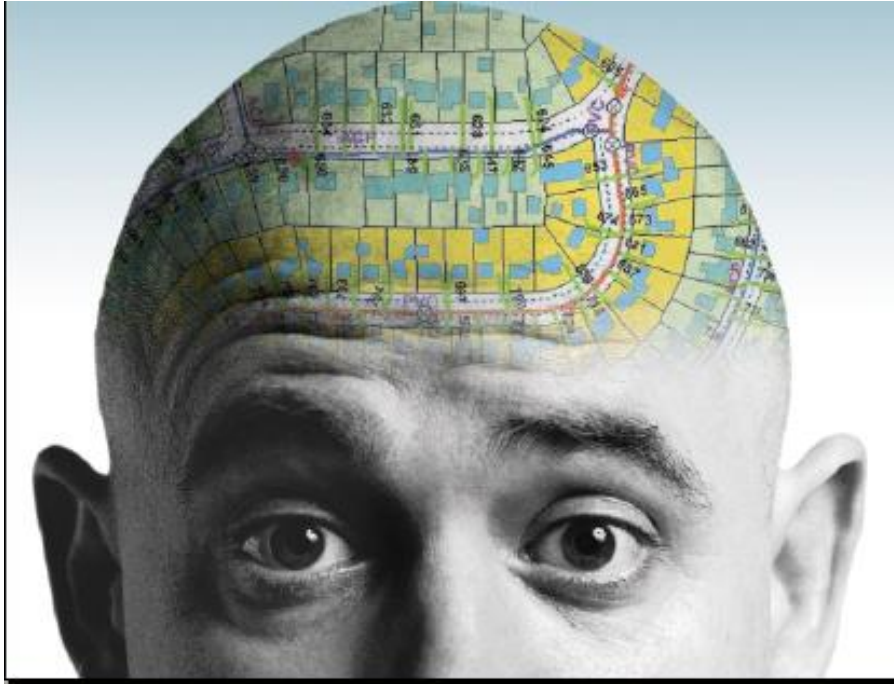
AT DSSDI  
PROJECT  
WE  
ALWAYS  
THINK  
OF  
THE



User

But

2 Dimensional



Think ? 3 Dimensional





**THANK YOU VERY MUCH**

A Geospatial  
Decision Support System  
for effective management  
of the  
Commonwealth Games  
&  
g - governance