
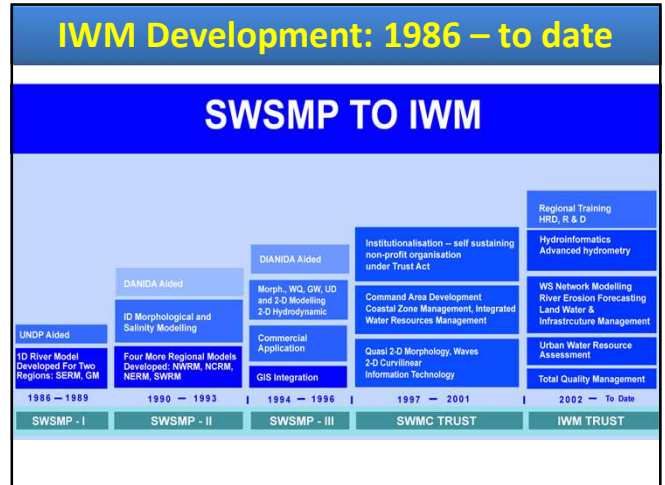
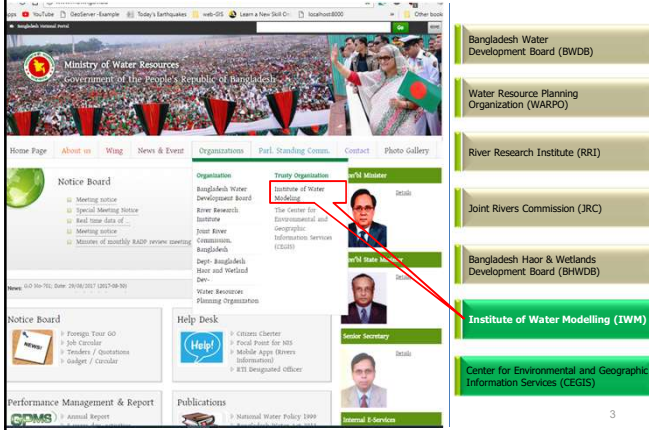


National Spatial Data Infrastructure (NSDI)

Dr. Mollah Md Awlad Hossain
 Director, ICT-GIS Division
 Institute of Water Modelling

Institute of Water Modelling

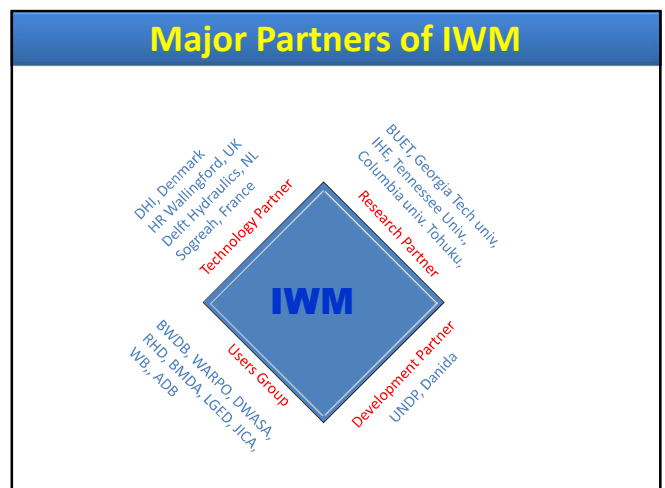


- Bangladesh Water Development Board (BWDB)
- Water Resource Planning Organization (WARPO)
- River Research Institute (RRI)
- Joint Rivers Commission (JRC)
- Bangladesh Haor & Wetlands Development Board (BHWDB)
- Institute of Water Modelling (IWM)**
- Center for Environmental and Geographic Information Services (CEGIS)

- ## IWM Board of Trustees (BOT)
1. Secretary, MOWR - Chairperson
 2. DG, BWDB
 3. DG, WARPO
 4. Chief Engineer, RHD
 5. Chief Engineer, LGED
 6. One Joint Secy/Joint Chief, Planning Commission
 7. One Joint Secy, MoF
 8. Chief Executive of an International Hydraulic Institute
 9. Head of WRE of BUET
 10. Chief Engineer DPHE
 11. Chief Executive of an NGO
 12. An individual with high repute
 13. President, Institution of Engineers Bangladesh
 14. Executive Director, IWM – Member Secretary

Divisions in IWM

Water Resources Planning	Executive Director
Irrigation Management	Deputy Executive Director (Opn)
Flood Management	Deputy Executive Director (P&D)
River Engineering	7 Working Divisions
Coast Port & Estuary Management	
Survey & Data	
ICT & GIS	



Areas of Service

- Integrated Water Resource Management
- Flood Management, Irrigation Management
- Integrated Coastal Zone Management
- Port and Coastal Structure Management
- Estuary and Marine System Management
- Water Quality Investigation
- Geo-Spatial Analyses and ICT solutions
- Hydrogeological investigation
- EIA, SIA
- Climate Change & Adaptation
- Training & Technology Transfer

IWM International Projects

- ❖ Tajikistan
- ❖ Nepal
- ❖ India
- ❖ Malaysia
- ❖ Philippines
- ❖ Cambodia
- ❖ Sri Lanka

Growth of Geo-Spatial Data/System

BADC	CCC	DOL	MES
BBS	CDA	DPHE	NMIDP
BCAS	CDA	DSHE	PDB
			Petro
BIDS	CDSP	DU	Bangla
BIWTA	CEGIS	DWASA	RAJUK
BMD	CERP	EGIS	REB
BPC	CPA	ERD	RHD
BRRI	CWASA	FAP 25	RRI
BRTA	DAE	FD	RU
BSCIC	DDC	GSB	SoB
BTMC	DLRS	ISPAN	SPARRSO
BTTB	DMB	IUCN	SRDI
BUJET	DoE	IWM	SWMC
BWDB	DoF	KDA	WARPD
CARE	DoH	LGED	WFC
**.....			

Growth of Number of Organizations

Year	Number of Organizations
1994	11
1996	20
1999	23
2003	39
2005	61
2008	72
2016	100+ (Assumed)

Some use of Geo-Informatics in Bangladesh

Where IWM contributed

IWM in Geo-Spatial activities

Digital Elevation Model, Contour Preparation

Analysis of Morphological Changes of River Plan form

Topographic Survey & Mapping

Environmental Impact Assessment & Salinity Mapping

Interactive Geo-referenced Database, Analyses, Presentation and Mapping

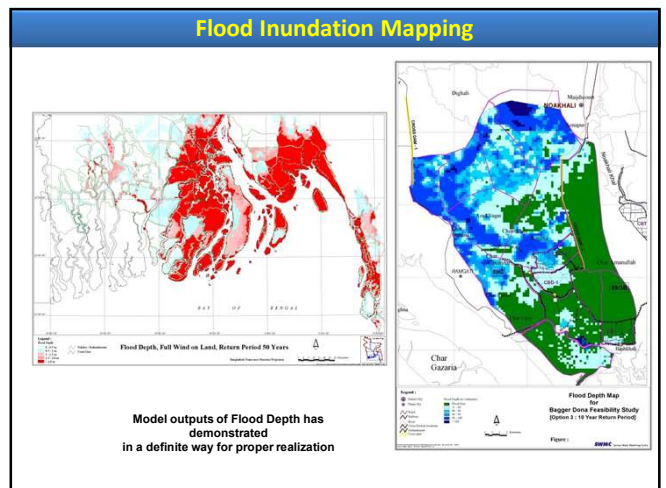
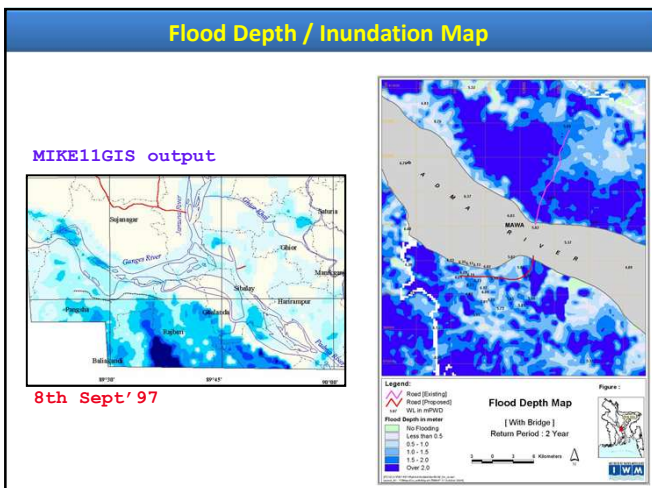
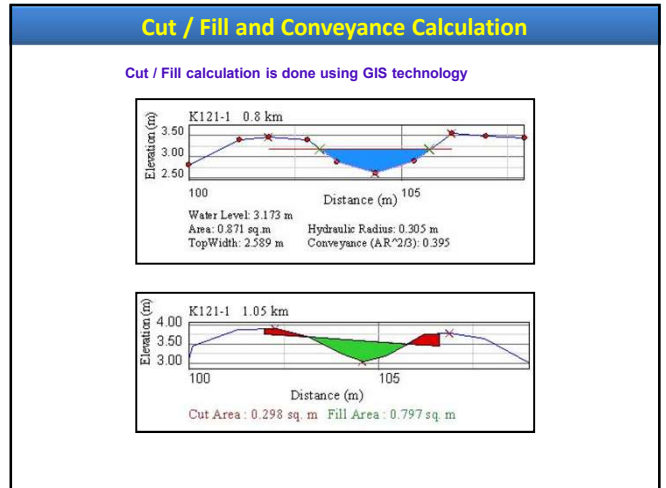
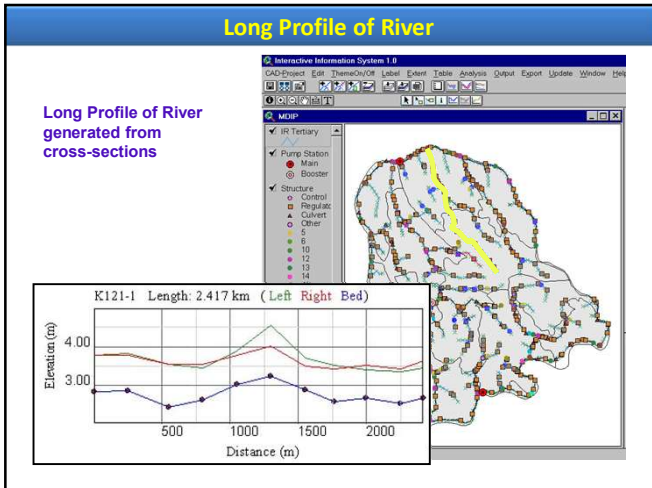
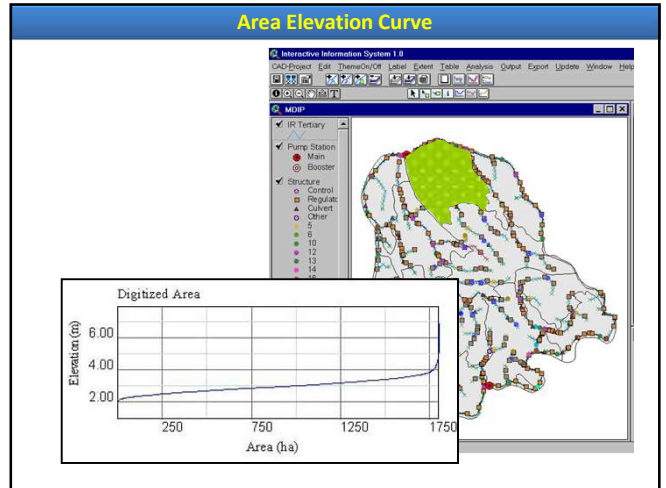
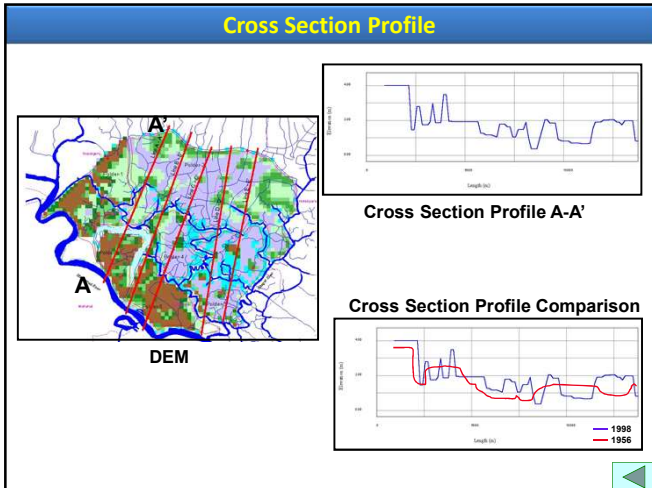
Field of Application

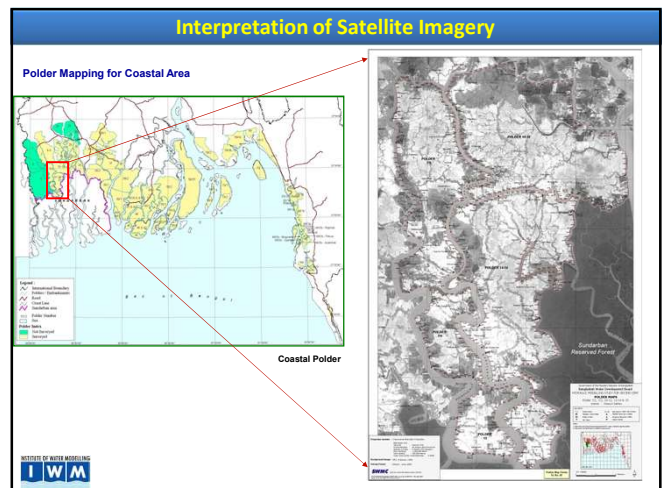
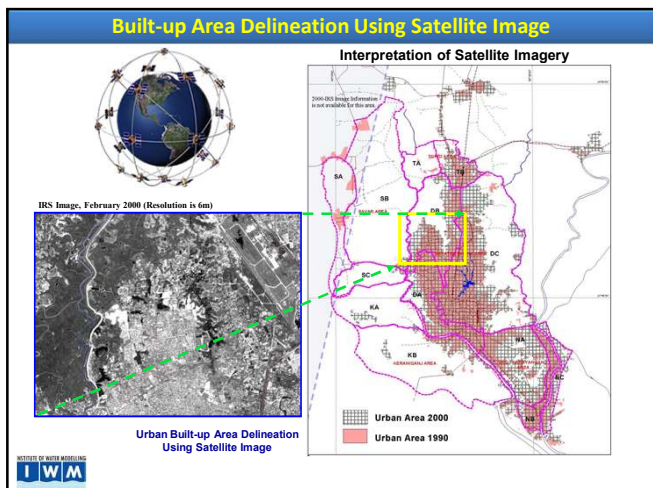
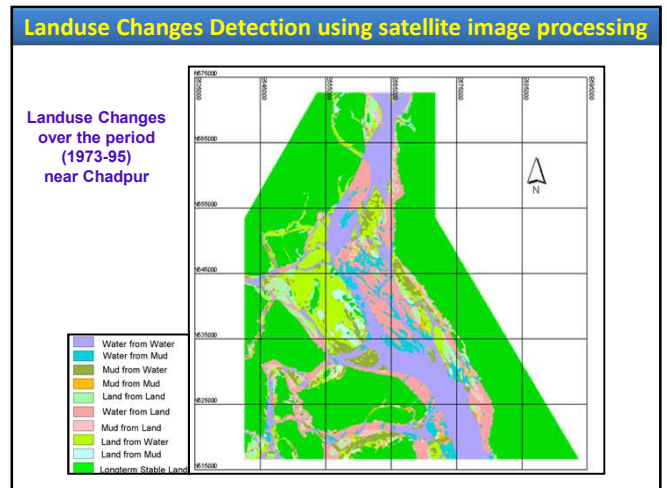
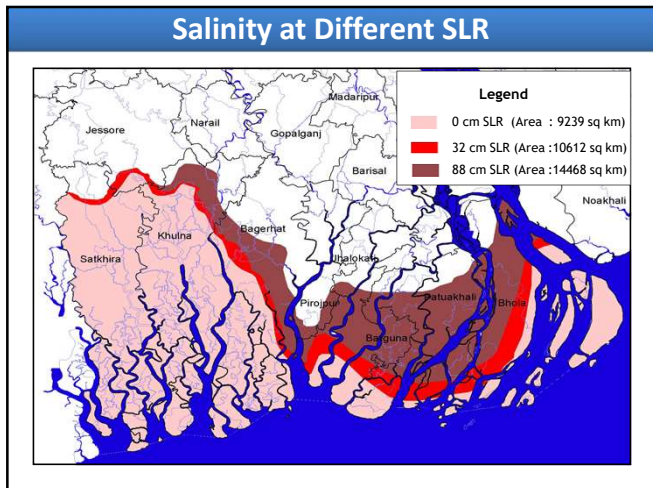
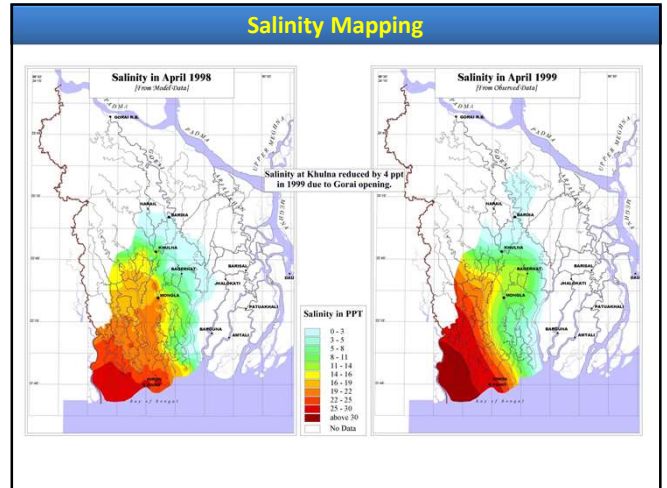
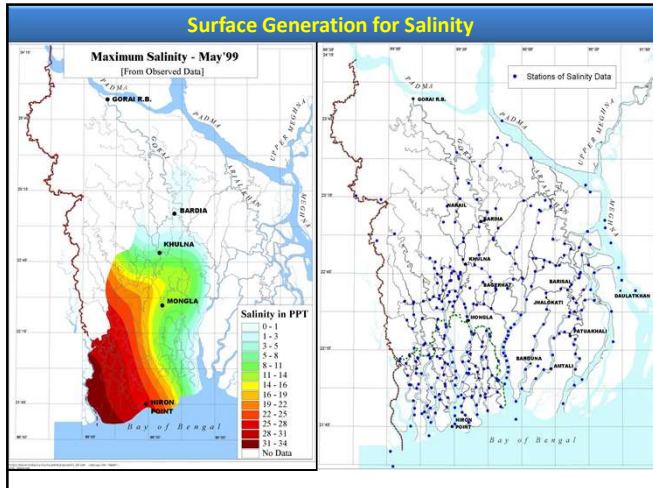
Application Development

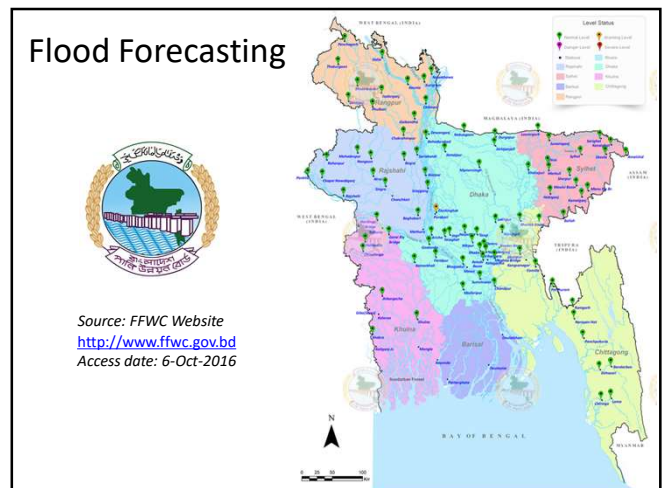
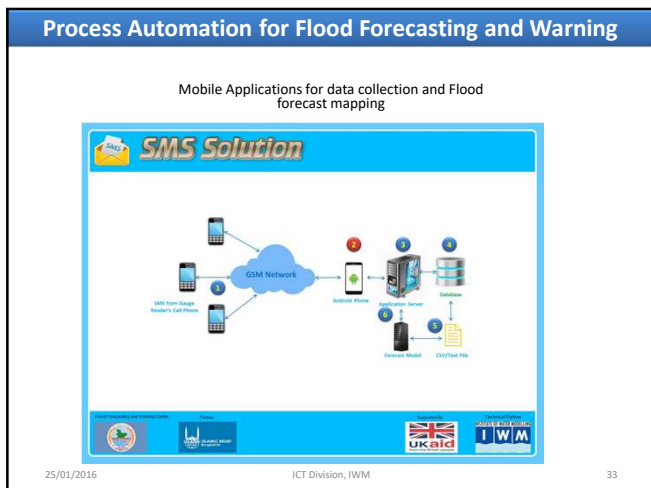
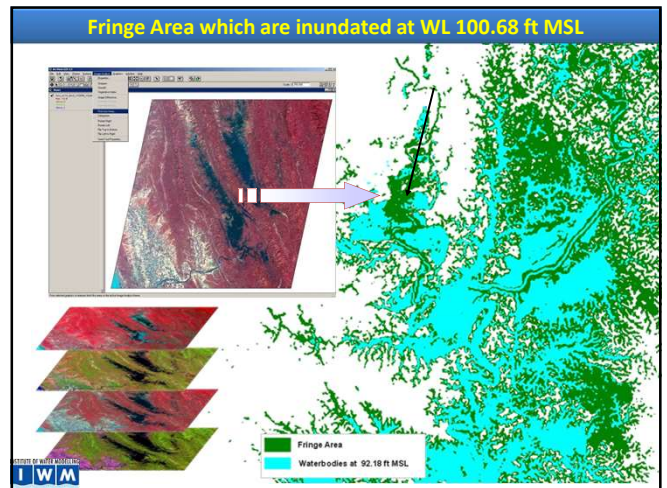
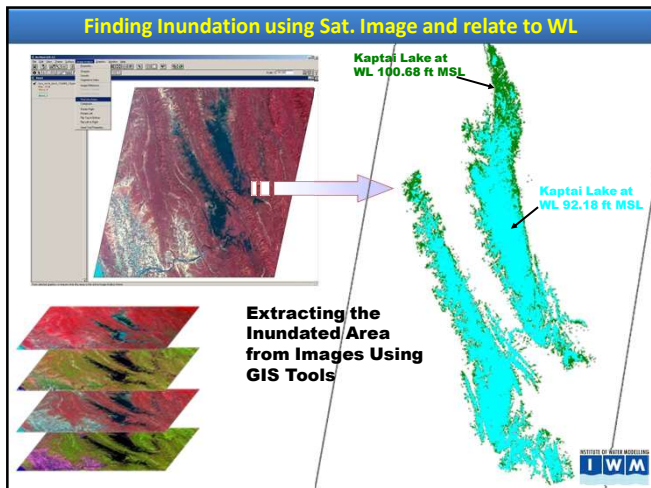
Crop Damage Assessment due to Inundation Based on Satellite Imageries

Flood Depth Inundation Mapping & Depth-Duration Analysis

Topographic Survey and Mapping







- ### Geo-Spatial Data Capturing
- Manual Survey
 - Digital Survey
 - Satellite Images
 - Aerial Photograph
 - UAV/Drone

- ### IWM provides following Supports in the field of Geomatics Surveying
- Establish Geodetic Control Points
 - Topographic Survey and Mapping for Urban are/Irrigation Projects etc.
 - Engineering Route survey for Railway, Road, Embankment
 - Use Remote sensing for Rural and Urban area
 - Satellite-based Global Positioning
 - Hydrographic/Bathymetric Survey in Marin and Inland Rivers

IWM use Equipment for Geomatics surveying

- ❖ Trimble SPS 855 GNSS Receiver
- ❖ Ashtech ProFlex 500 GNSS Receiver
- ❖ Ashtech Pro Mark 200 GNSS Receiver
- ❖ Trimble 4000 ssi GPS Receiver
- ❖ Trimble S5 Robotic Total Station
- ❖ Trimble M3 Mechanical Total Station
- ❖ SOKKIA Total Stations (Model- 550X, 550RX, 230R, SET 620 etc)
- ❖ SOKKIA Digital Level DL-30

Robotic and Mechanical Total Stations is used for land topography survey

Establish Geodetic Control Points (Use RTK GNSS Receiver for Static and Real-time correction method)

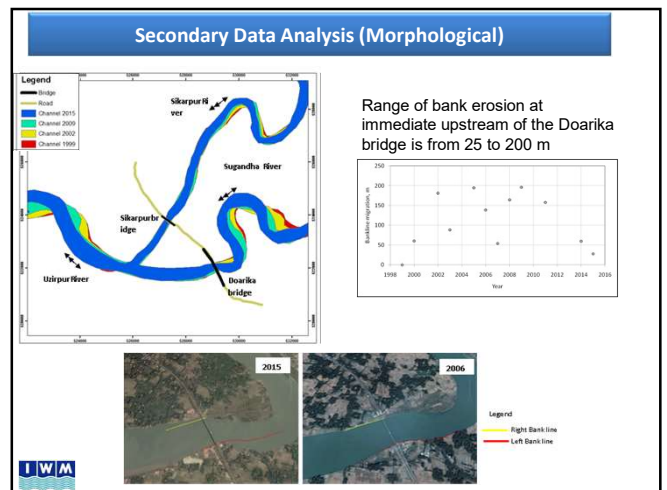
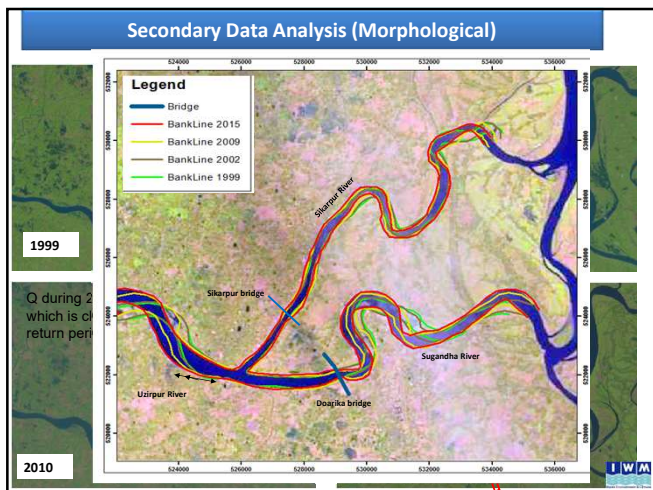
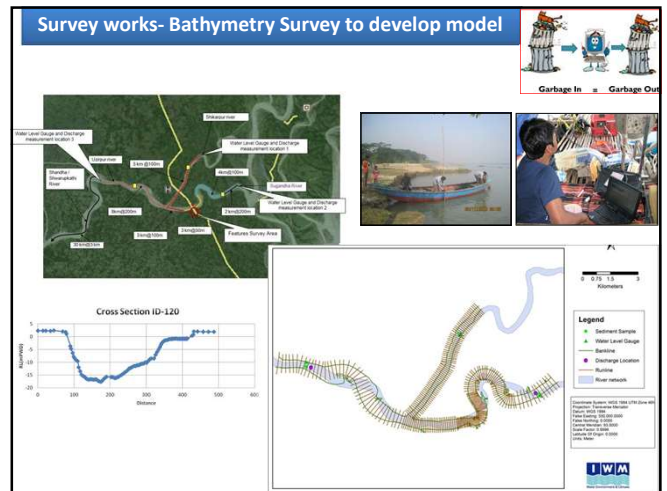
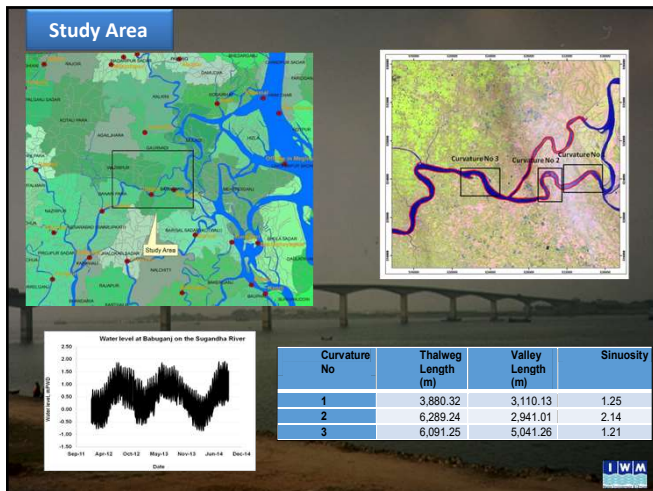
RTK GNSS GPS is used for Bathymetric Survey

RTK-GPS and Echo Sounder (bathymetric survey)

URTK-GPS and Echosounder in Spatial data collection works (bathymetric survey)

Hydro morphological study to save the Guide bund at Barisal

>The average ground elevation varies from about 1 mPWD to 3 mPWD within the study area
 >The study area is vulnerable to cyclones during the monsoon season when storm surges can cause dramatic increases in water level of up to 4m above tide and seasonal levels

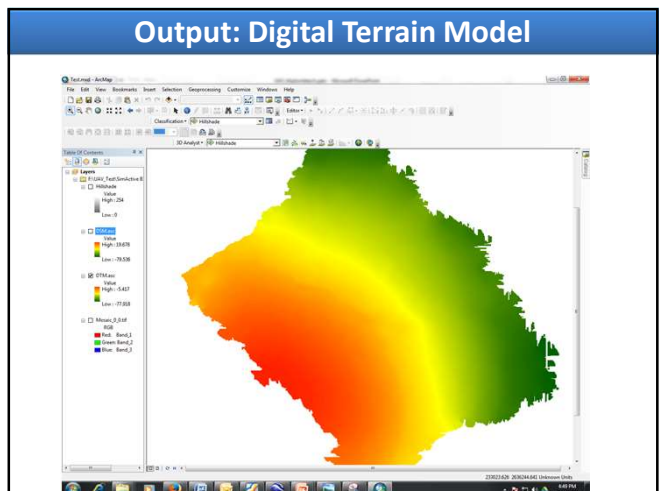
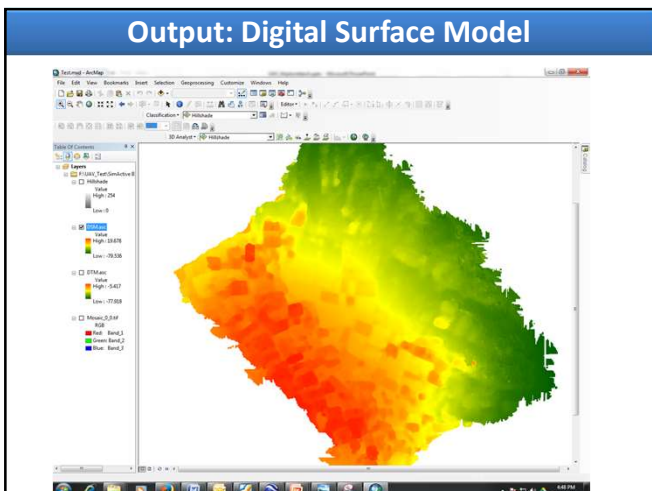
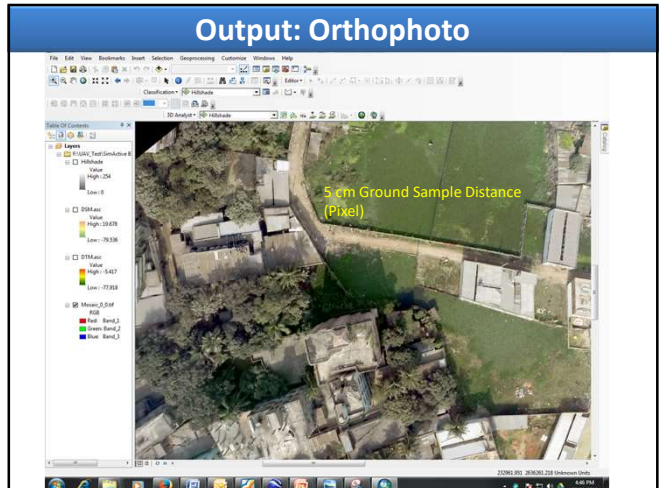
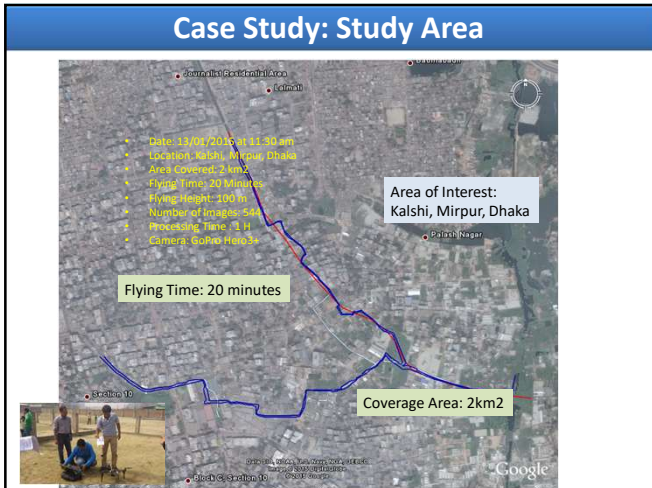
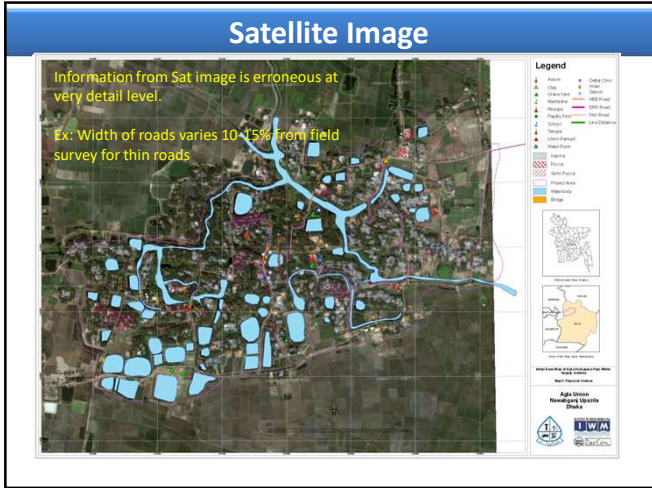


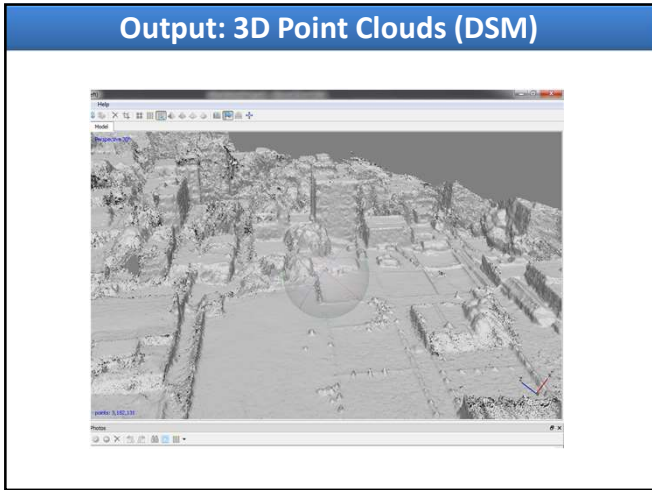
Mathematical Modelling : tool to understand and assess morpho-dynamics of the Sugandha River focusing the bridge area

- 1-Dimensional Modelling (Mike11)
 - Provides boundary conditions for 2-D modelling
- 2-Dimensional Modelling (Mike21C)
 - Provides the hydraulic design variables to the proposed measure

IWM-Study: Applying UAV technology for geo-spatial analysis

- Study Partners
 - IWM
 - Aplombtech
- Objectives:
 - Generate Orthophoto
 - Digital Surface Model
 - Digital Terrain Model
 - 3D Point Cloud
 - 3D Model





Output: 3D Model

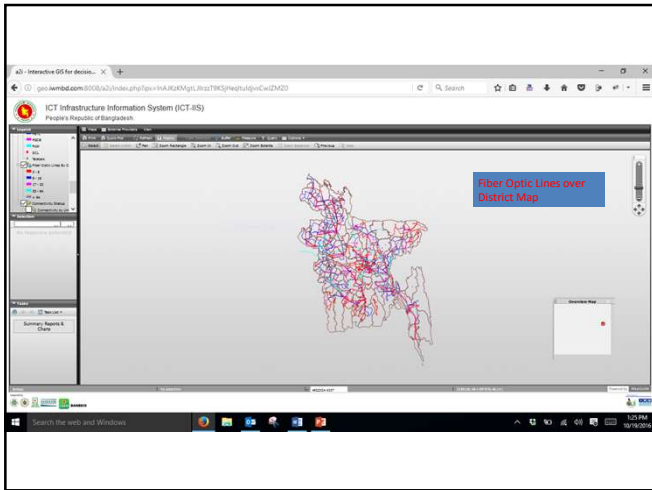
3D Model from UAV data

- Carrier: Indigenous Quad-Copter
 - Made by Aplombtech, Dhaka, Bangladesh
- Flight Planning: Mission Planner2
 - Customized by Aplombtech, Dhaka, Bangladesh
- Coding: MATLAB
- Image Processing Software:
 - Pix4DMapper, Switzerland
 - Agisoft PhotoScan Pro, Russia
 - Correlator3D, SimActive, Canada

Aerial Photo with Camera

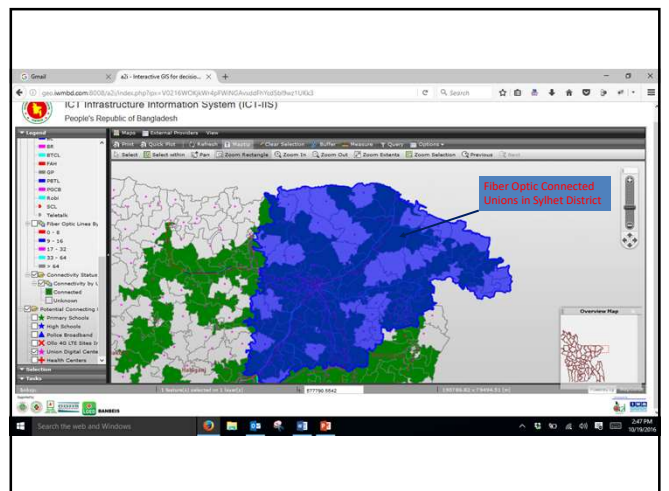
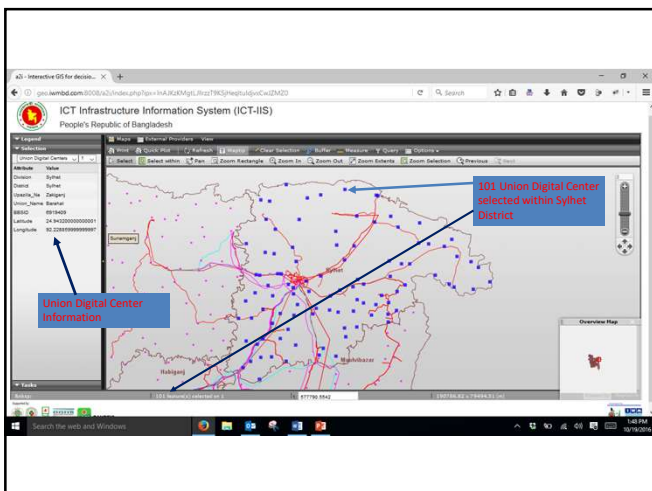
For 100 km2

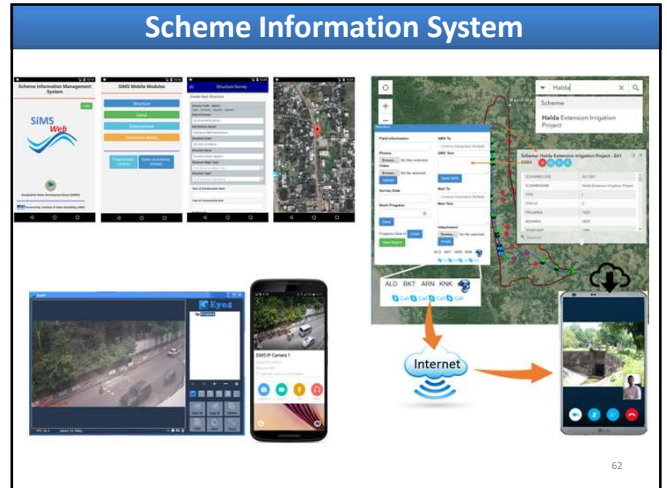
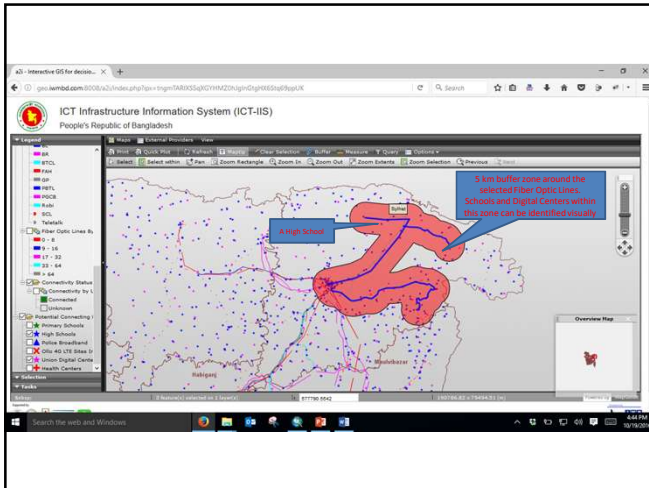
	Field Survey	UAV
Time	80 days	10 days
Person	800 man-days	20 man-days



Sylhet District is Selected

Select all union digital center within Sylhet





Recommendations

- There should be a common and standard data capturing, processing and development system of GIS data
- There should be a common projection systems among the GIS users organization

NDSI

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Recommendations

- Select Standard
 - Projection System
 - Data Capturing Procedures
 - Quality Check List
 - a set of guidelines for GIS data sharing considering data security and royalty among the GO-NGO organizations
- A Common National Metadata Standard, a National GIS to be developed and enforced

NDSI

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Issues to Consider

- **Data/Metadata Access – Policy at national/organizational level**
 - A National Data Center as ONE STOP
- **Development Platform**
 - Should be roust and reliable
 - Support should ensured
 - Sustainable development support
 - Expandable and upgradable

Freeware/low cost option should not be compromise with long term support and development scopes

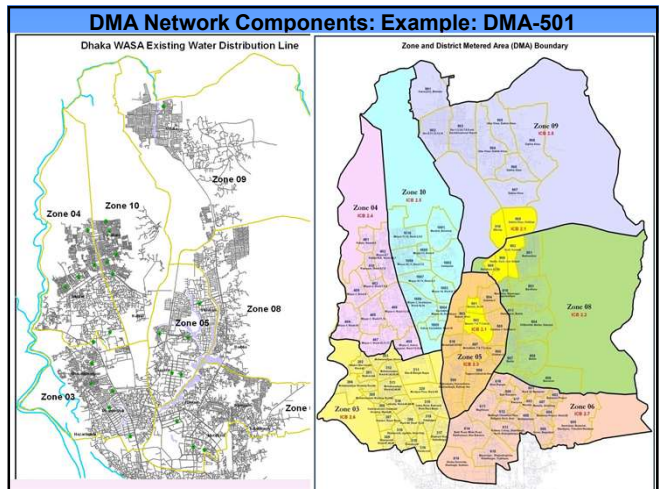
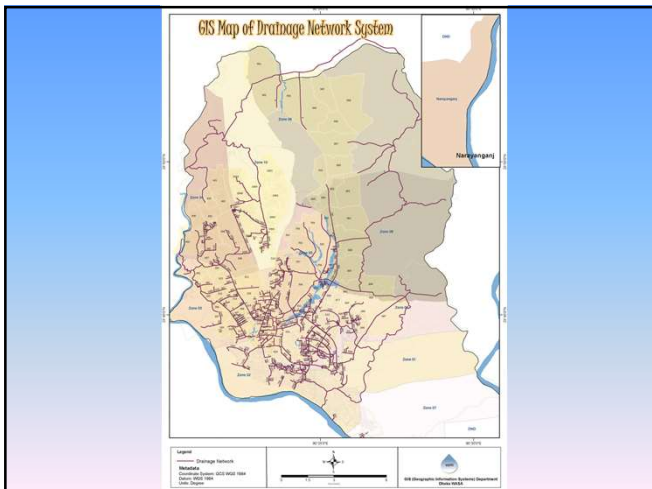
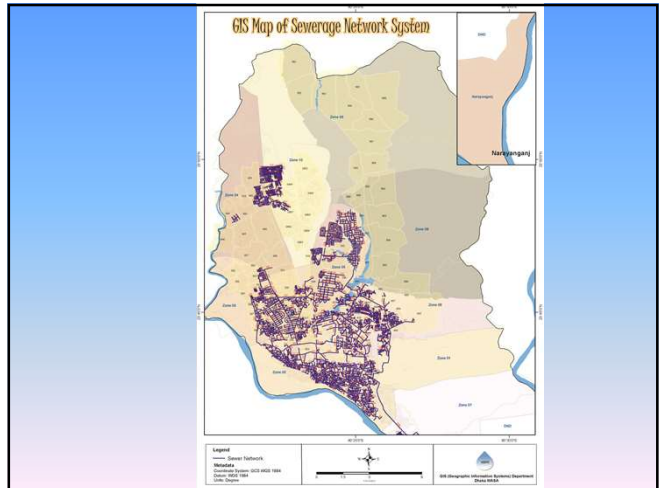
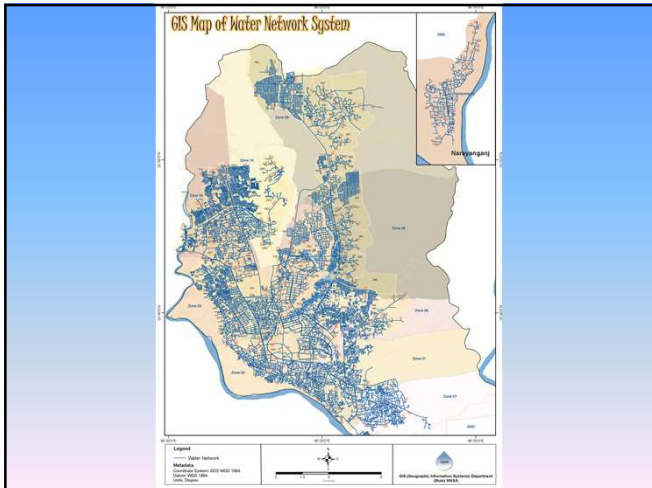
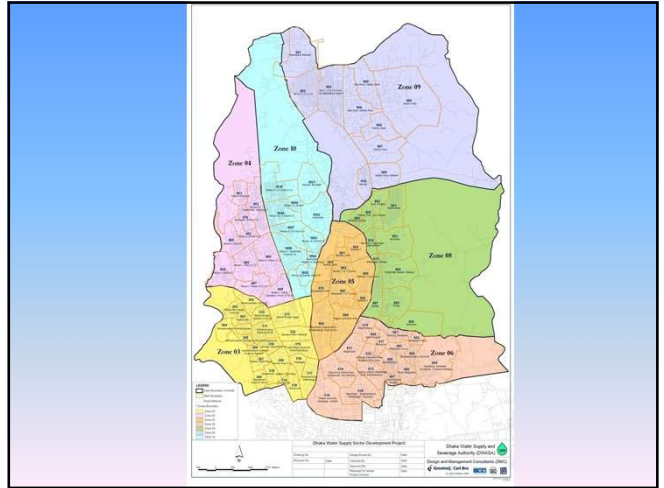
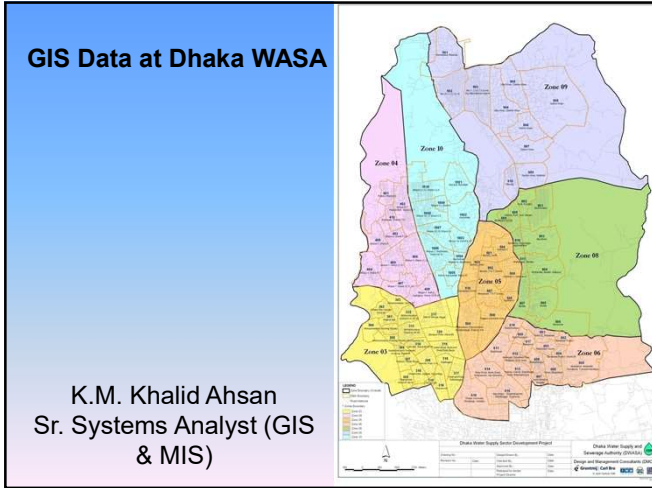
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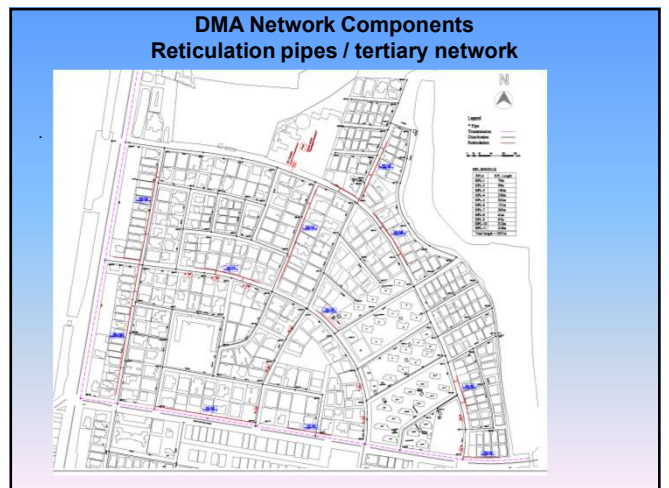
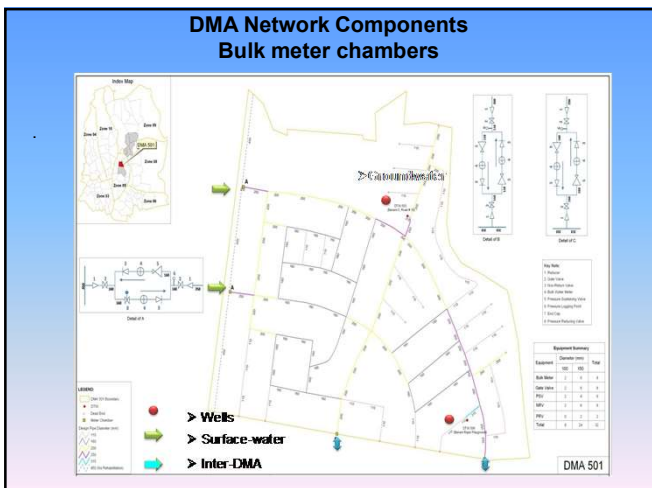
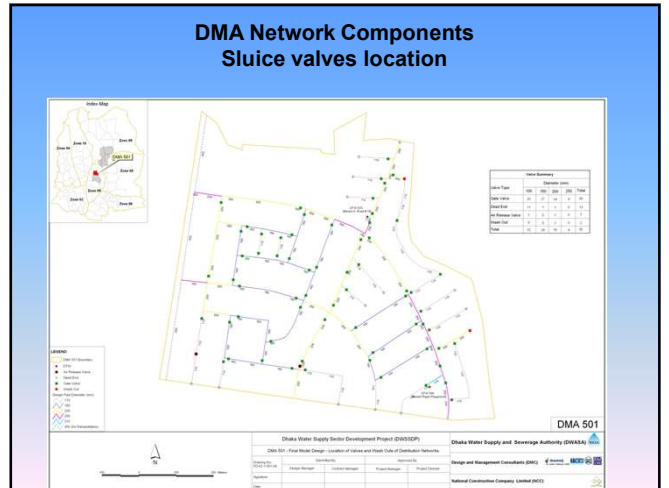
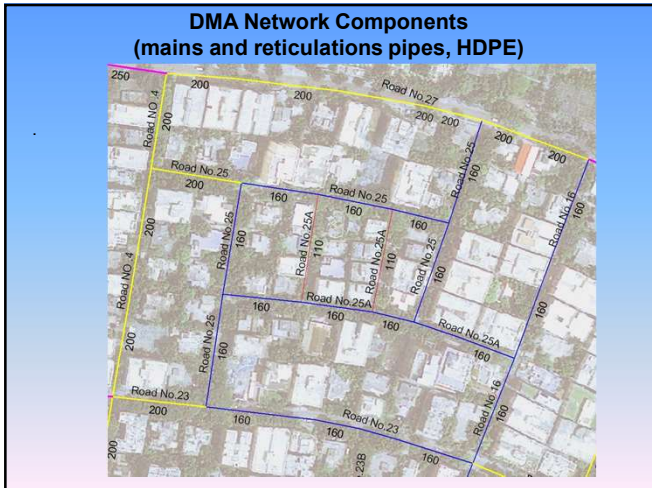
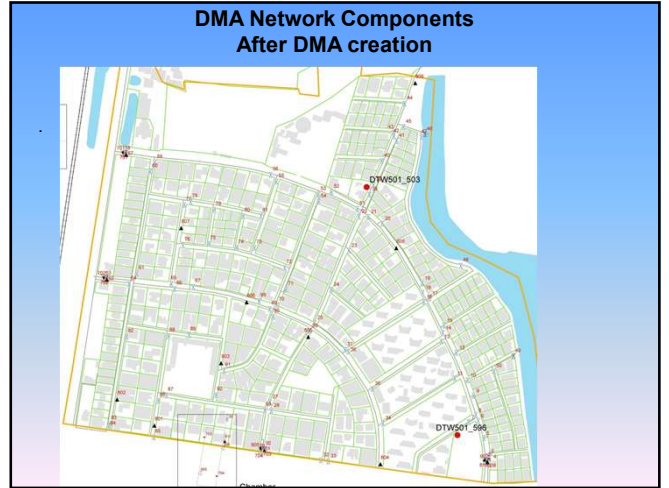
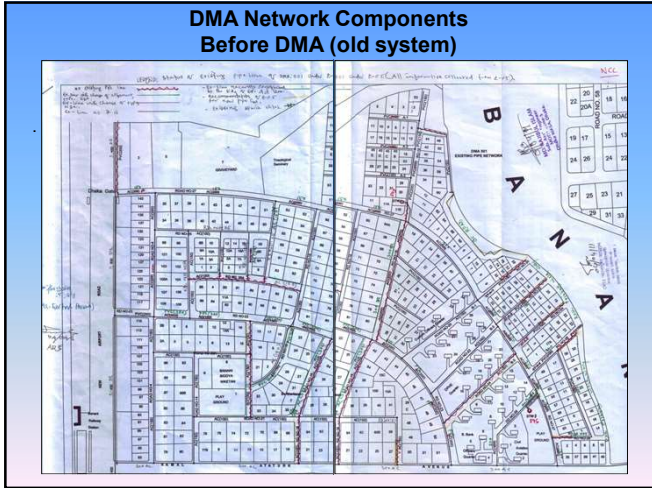
IWM participation

- IWM is a Govt. Trust under the Ministry of Water Resources
- IWM prepare and generate data for different projects
- IWM retains huge quantity of GoB data
- The data are maintained under the restriction of contract clauses
- IWM would be a good user of NSDI
- IWM could
 - Support NSDI with
 - Knowledge, Experiences, Technical support gained over decades
 - Data
- IWM also has the ability to participate in NSDI development, if required
- IWM is a sustainable, dependable and trusted organization by the GoB

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Thank You





DMA Network Components Service connections

DMA Network Components PTWs

GIS Shapefile Data Format

Fields	ID	WGS_X	WGS_Y	Ward	Thana	DMA_ID	Zone_ID	Datum	Elev_m
DTM	Explanation s	Number (15 digit)	Number (11 digit precision)	Text (50)	Text (50)	Number (5)	Number (5)	Text (10)	Number 5 (2 digit precision)
DTM	Explanation s	Package	Contractor	LastUpdate					
DTM	Explanation s	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor	Date on which database was last updated: (dd/mm/yy)					
DTM	Format	Text (10)	Text (100)	Date					

Road Double Line(Polyline)

Fields	ID	Name	Ward	Thana	DMA_ID	Zone_ID	Category	DataSource	Length_m
Road (Double Line) Geometry Polyline	Explanation s	Name of Road	Name of Ward	Name of Thana	DMA ID	Zone ID	DCC/ RWCD/ LGED/ Others	Name of Source Authority(DCC,Rajak,Survey)	Length in (m)
Road (Double Line)	Explanation s	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor (dd/mm/yy)	Date on which database was last updated					Number (2 digit precision)
Road (Double Line)	Format	Text (15 digit)	Text (100)	Text (50)	Number (5)	Number (5)	Text (10)	Text (10)	Number (2 digit precision)

WASA Road Double Line

Footh Path(Polyline)

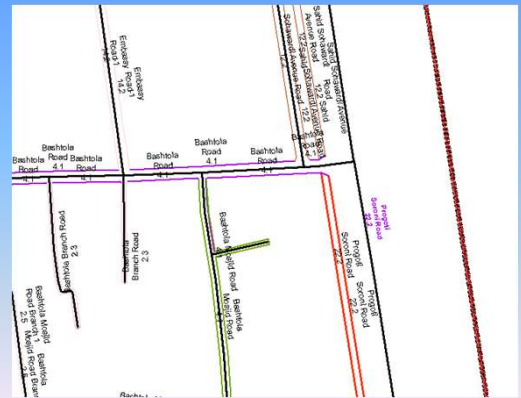
Fields	ID	Name	Location	DMA_ID	Surface	Data Source	Width_m	Package	Contractor	LastUp date
Footh Path(Polygone)	Explanation s	Name of Road	Name of Location	DMA ID	Concrete/Brick/Earth	Name of Source Authority(DCC,Rajak,Survey)	Width in (m)	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor	Date on which database was last updated: (dd/mm/yy)
Footh Path(Polygone)	Format	Number (15 digit)	Text (100)	Text (50)	Number (5)	Text (10)	Text (10)	Text (10)	Text (100)	Date

Road Centerline(Polyline)

Fields	ID	Name	Location	Ward	Thana	DMA_ID	Zone_ID	Category	Surface	DataSource	Width_m	Length_m
Explanations	Name of Road	Name of Location	Name of Ward	Name of Thana	DMA ID	Zone ID	DCC/ RRD/ LGED/ Others	Bituminous/ Concrete/ Earth/Fo of Pav/Dhases	Name of Source Authority		Width in (m)	Length in (m)
Format	Number (15 digit)	Text (100)	Text (50)	Text (50)	Text (50)	Number (5)	Number (5)	Text (10)	Text (20)	Text (10)	Number (2 digit precision)	Number (2 digit precision)

Fields	Package ID	Contractor	LastUpdate
Explanations	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor	Date on which database was last updated. (dd/mm/yy)
Format	Text (10)	Text (100)	Date

Road Centerline



Water body(Polygone)

Fields	ID	Category	Name	Area_sqkm	Package	Contractor	LastUpdate
Explanations	River/ Lake/ Pond/ Storage Reservoir/ Others	Name of Water-body	Area in (sqkm)	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor	Date on which database was last updated. (dd/mm/yy)	
Format	Number (15 digit)	Text (10)	Text (50)	Number (2 digit precision)	Text (100)	Date	

Railway Line(polyline)

Fields	ID	Gauge	Location	Ward	Thana	DMA_ID	Zone_ID	DataSource	Length_m	Package	Contractor
Explanations	Broad-gauge/ Meter-gauge/ Others					DMA ID	Zone ID	BBA/ RRD/ LGED/ Others	Length in (m)	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor
Format	Number (15 digit)	Text (20)	Text (50)	Text (50)	Text (50)	Number (5)	Number (5)	Text (10)	Number (2 digit precision)	Text (10)	Text (100)

Fields	Mausam Name	Pilot No.	Digitizer	LastUpdate
Explanations	This Field is optional.	This Field is optional.	Name of the person who digitized	Date on which database was last updated. (dd/mm/yy)
Format	Text (100)	Number	Text (100)	Date

Building(Polygone)

Fields	ID	Category	Storey	Population	Cus_Ty	MC_ID	Localion	Ward	Thana	DMA_ID	Zone_ID	Area_sqm	Package	Contractor	Digitizer	LastUpdate
Explanations	First 3 digits DMA ID, then 08 and last 4 digits building ID e.g. 010100001, 0101000010	Road/ Tin-shed/ Under/ Construction/ Covered/ Others	No of Storey in Building	Total Population in Building	Residential/ Commercial/ Others	Corresponding ID of the House Connections				DMA ID	Zone ID	Area in (sqm)	Package ID: e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated. (dd/mm/yy)
Format	Number (15 digit)	Text (20)	Number (5)	Number (5)	Text (10)	Number (15 digit)	Text (50)	Text (50)	Text (50)	Number (5)	Number (5)	Number (2 digit precision)	Text (10)	Text (100)	Text (100)	Date

Fields	Mauza Name	Pilot No	Pilot No	Account no	Holding No
Explanations	RS This Field is optional.	ICB This Field is Mandatory	Name of Owner	Customer Account No	Holding no
Format	Text (10)	Text (100)	Text (100)	Text (10)	Text (100)

Bridge(Polygone)

Fields	ID	Category	Name	Localion	Ward	Thana	DMA_ID	Zone_ID	Data Source	Length_m	Width_m	Package
Explanations	Bridge/ Culvert/ Flyover/ Others						DMA ID	Zone ID	BBA/ RRD/ LGED/ Others	Length in (m)	Width in (m)	Package ID: e.g. ICB 2.1, ICB 2.2
Format	Number (15 digit)	Text (10)	Text (100)	Text (50)	Text (50)	Text (50)	Number (5)	Number (5)	Text (10)	Number (2 digit precision)	Number (2 digit precision)	Text (10)

Fields	Contractor	LastUpdate
Explanations	Name of Contractor	Date on which database was last updated. (dd/mm/yy)
Format	Text (100)	Date

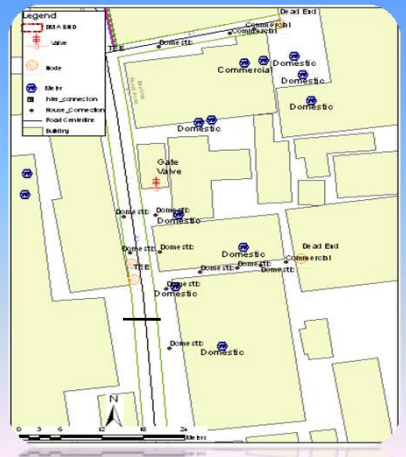
As-built Network: House Connection (Polyline)

Fields	HC ID	Meter ID	DMA ID	Zone ID	Name	Account No	Address	Cell Phone	Ref. PipeID	Dia. mm
Explanations	First 3 digits DMA ID, then 03 and last 4 digits Domestic Meter ID	Reference Domestic Meter ID	DMA ID	Zone ID	Name of the Owner	Customer Account No.	Holding No. and Address of the Owner	Mobile No.	Reference Distribution Pipe ID	Diameter of house connection pipe in mm
Format	Number (15 digit)	Number (15 digit)	Number (5 digit)	Number (5 digit)	Text (100)	Text (100)	Text (100)	Number (15 Digit)	Number (15 digit)	Number (5 digit)

Fields	Building ID	CS_Type	Length in m	PV Elev in m	PV_L_in	WGS_X	WGS_Y	Elev. in m	StreetName	Location
Explanations	ID of the Building in shape file	Residential/ Commercial/Industrial	Length of House Connector Pipe	Elevation of First Valve (PV) in m.	Length of pipe, connected from domestic meter up to PV, in m.	WGS X coordinate in WGS 84 (Degree Decimal)	WGS Y coordinate in WGS 84 (Degree Decimal)	Elevation of house connection pipe at corresponding junction in m	Name of the Street	Name of Location
Format	Number (5 digit)	Text (20)	Number (two digit precision)	Number (two digit precision)	Number (two digit precision)	Number (11 digit Precision)	Number (11 digit Precision)	Number (5 (2 digit Precision))	Text (100)	Text (50)

Fields	Thana	Package	Contractor	Digitizer	LastUpdate
Explanations	Name of Thana	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (dd/mm/yyyy)
Format	Text (50)	Text (10)	Text (100)	Text (100)	Date

As-built Network: House Connection (Polyline)



As-built Network: Pipe Network & Node

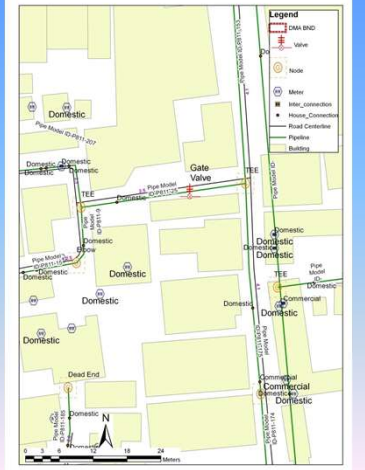
Fields	Pipe ID	Dia. mm	Material	Length in m	Category	DMA ID	Zone ID	From Node ID	To Node ID	Date
Explanations	First 3 digits DMA ID, then 01 and last 4 digits pipe ID, e.g. 50100001, 910010010	Nominal Diameter of Pipe in mm	HDPE / PVC / DI	Length of pipe in meter	Reticalation / Distribution in	DMA ID	Zone ID	Start Node ID	End Node ID	Date of Pipe Installation (dd/mm/yyyy)
Format	Number (15 digit)	Number (5 digit)	Text (20)	Number (2 digit Precision)	Text (20)	Number (5 digit)	Number (5 digit)	Number (15 digit)	Number (15 digit)	Date

Fields	StreetName	Location	Thana	HC No	Supplier	Package	Contractor	Digitizer	Model ID	LastUpdate
Explanations	Name of the Street	Name of Location	Name of Thana	No. of House Connections from that pipe	Name of Pipe Supplying company	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	First name of the person who digitized	Pipe ID in Design Model	Date on which database was last updated (dd/mm/yyyy)
Format	Text (100)	Text (50)	Text (50)	Number (5 digit)	Text (100)	Text (10)	Text (100)	Text (100)	String (15)	Date

Fields	Node ID	DMA ID	Zone ID	Node Type	WGS_X	WGS_Y	Elev. in m	Flow Type	StreetName	Location
Explanations	First 3 digits DMA ID, then 02 and last 4 digits Node ID, e.g. 501000010, 910010010	DMA ID	Zone ID	TEE / Cross / Blow / Dead End / Reducer	X coordinate in WGS 84 (Degree Decimal)	Y coordinate in WGS 84 (Degree Decimal)	Elevation of node in m	PWD / SOB / Others	Name of the Street	Name of Location
Format	Number (15 digit)	Number (5 digit)	Number (5 digit)	Text (20)	Number (11 digit Precision)	Number (11 digit Precision)	Number (5 (2 digit Precision))	Text (20)	Text (100)	Text (50)

Fields	Thana	Package	Contractor	Digitizer	LastUpdate
Explanations	Name of Thana	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (dd/mm/yyyy)
Format	Text (50)	Text (10)	Text (100)	Text (100)	Date

Pipe Network



As-built Network: Valve & Meter

Fields	Valve ID	Product ID	DMA ID	Zone ID	Type	Dia. mm	WGS_X	WGS_Y	Elev. in m	Ref. PipeID
Explanations	First 3 digits DMA ID, then 03 and last 4 digits Valve ID, e.g. 501000010, 910010010	Valve Specification ID from Suppliers	DMA ID	Zone ID	Gate Valve / Air Release Valve / Pressure Sustaining Valve / Non-return Valve etc.	Diameter of valve in mm	X coordinate in WGS 84 (Degree Decimal)	Y coordinate in WGS 84 (Degree Decimal)	Elevation of valve in m	Reference Pipe ID
Format	Number (15 digit)	String (50)	Number (5 digit)	Number (5 digit)	Text (50)	Number (5 digit)	Number (11 digit Precision)	Number (11 digit Precision)	Number (5 (2 digit Precision))	Number (15 digit)

Fields	Status	Supplier	StreetName	Location	Thana	Package	Contractor	Digitizer	LastUpdate
Explanations	Closed / Open	Name of Manufacturer / Suppliers	Name of the Street	Name of Location	Name of Thana	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (dd/mm/yyyy)
Format	Text (20)	Text (100)	Text (100)	Text (50)	Text (50)	Text (10)	Text (100)	Text (100)	Date

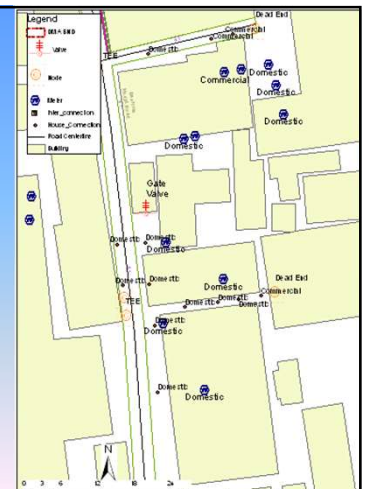
Fields	Meter ID	Product ID	DMA ID	Zone ID	Meter Type	CS_Type	Dia. mm	Elev. in m	WGS_X	WGS_Y
Explanations	First 3 digits DMA ID, then 04 and last 4 digits Meter ID, e.g. 501000010, 910010010	Meters Specification ID from Suppliers	DMA ID	Zone ID	Multi Meter / Domestic Meter	Residential/ Commercial/Industrial	Diameter of meter in mm	Elevation of meter in m	X coordinate in WGS 84 (Degree Decimal)	Y coordinate in WGS 84 (Degree Decimal)
Format	Number (15 digit)	String (50)	Number (5 digit)	Number (5 digit)	Text (20)	Text (20)	Number (5 digit)	Number (5 (2 digit Precision))	Number (11 digit Precision)	Number (11 digit Precision)

Fields	Ref. PipeID	Supplier	StreetName	Location	Thana	Package	Contractor	Digitizer	LastUpdate
Explanations	Pipe ID for Ref. Meter and House Connection ID for Domestic Meters	Name of Manufacturer / Suppliers	Name of the Street	Name of Location	Name of Thana	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (dd/mm/yyyy)
Format	Number (15 digit)	Text (100)	Text (100)	Text (50)	Text (50)	Text (10)	Text (100)	Text (100)	Date

Fields	Owner Name	Account No	Holding No
Explanations	Name of Owner	Customer Account No	Holding no
Format	Text	Text	Text

As-built Network:


Valve & Meter



As-built Network: Inter Connection & Utility Crossing

Fields	IC_ID	DMA_ID	Zone_ID	WGS_X	WGS_Y	Type	Int_#	Ref_#	CV_No	Meter_No
Inter-connection (Point)	First 3 digit DMA ID, then 06 and last 4 digits interconnection ID e.g. 05100001, 91000010	DMA ID	Zone ID	X coordinate in WGS 84 (Degree Decimal)	Y coordinate in WGS 84 (Degree Decimal)	Inter-DMA Connection or Transmission Main Connection	Common Diameter of inter-connection chamber equipments in mm	Reference Pipe ID	No. of Gate Valves at Interconnection chamber	No. of Meters at Interconnection chamber
Format	Number (15 digit)	Number (5 digit)	Number (5 digit)	Number (11 digit Precision)	Number (11 digit Precision)	Text (20)	Number (5 digit)	Number (15 digit)	Number (5 digit)	Number (5 digit)
Fields	PRV_No	PSV_No	NTV_No	StreetName	Location	Thema	Package	Contractor	Digitizer	LastUpdate
Inter-connection	No. of PRV at Interconnection chamber	No. of PSV at Interconnection chamber	No. of Non Return Valves at Interconnection chamber	Name of the Street	Name of Location	Name of Thema	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (ddmmYY)
Format	Number (5 digit)	Number (5 digit)	Number (5 digit)	Text (100)	Text (50)	Text (50)	Text (10)	Text (100)	Text (100)	Date
Fields	Utility_ID	DMA_ID	Zone_ID	WGS_X	WGS_Y	Type	Ref_#	Elev_m	StreetName	Location
Utility_Crossing (Point)	First 3 digit DMA ID, then 07 and last 4 digits Crossing ID e.g. 051070001, 910070010	DMA ID	Zone ID	X coordinate in WGS 84 (Degree Decimal)	Y coordinate in WGS 84 (Degree Decimal)	Street, Telephone, Electricity, Cable, Gas, Fire, etc.	Reference Pipe ID that it crosses by the utility	Elevation of crossing point in m	Name of the Street	Name of Location
Format	Number (15 digit)	Number (5 digit)	Number (5 digit)	Number (11 digit Precision)	Number (11 digit Precision)	Text (20)	Number (15 digit)	Number 5 (2 digit Precision)	Text (100)	Text (50)
Fields	Thema	Package	Contractor	Digitizer	LastUpdate					
Utility_Crossing	Name of Thema	Package ID, e.g. ICB 2.1, ICB 2.2	Name of Contractor	Name of the person who digitized	Date on which database was last updated (ddmmYY)					
Format	Text (50)	Text (10)	Text (100)	Text (100)	Date					


Projection System GEOGRAPHIC kept in all Shapefile & Satellite Image



Glimpses into LGED's GIS Activities and

Pilot Project and System Design Concept for NSDI Construction in Bangladesh

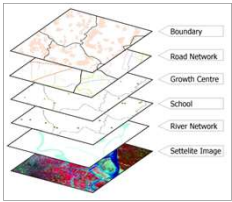
LGED GIS UNIT

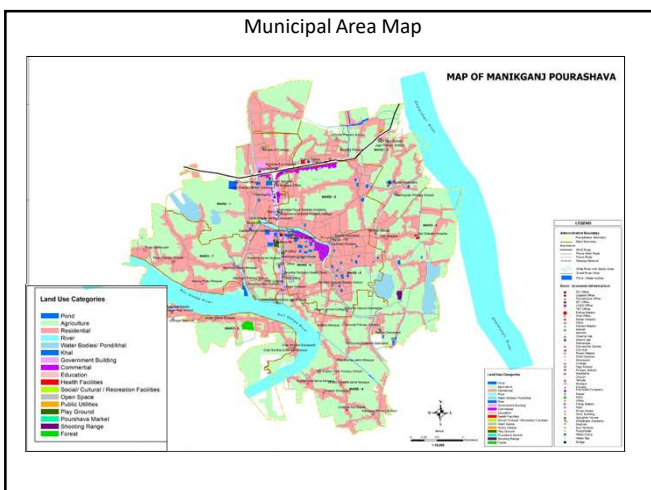
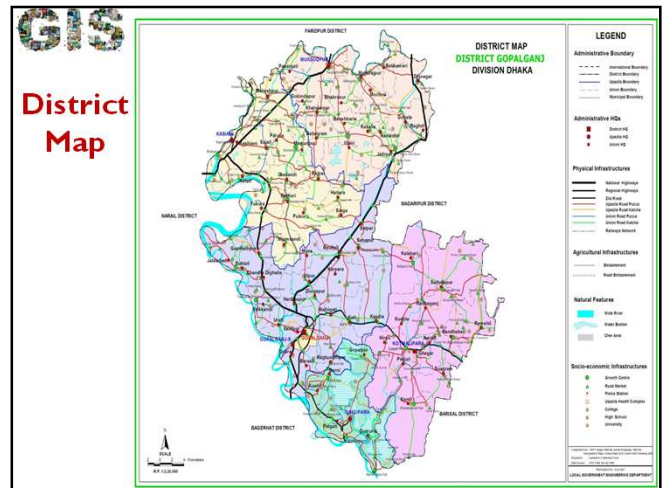
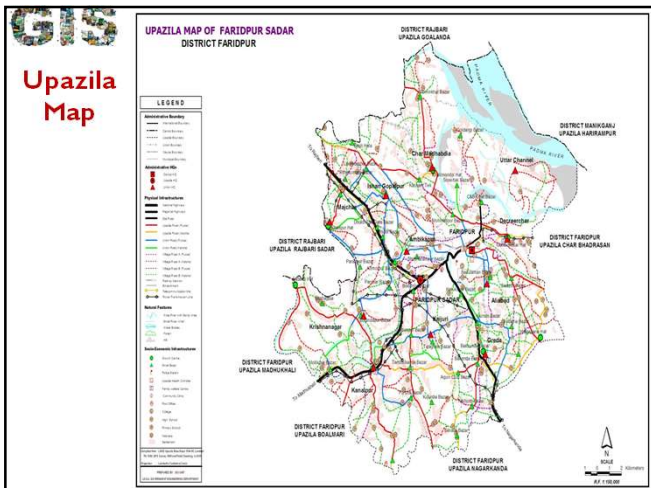


- GIS Unit
- Established in 1992
- One of the core units of LGED
- Dedicatedly involved in planning, monitoring and implementing of development activities of LGED

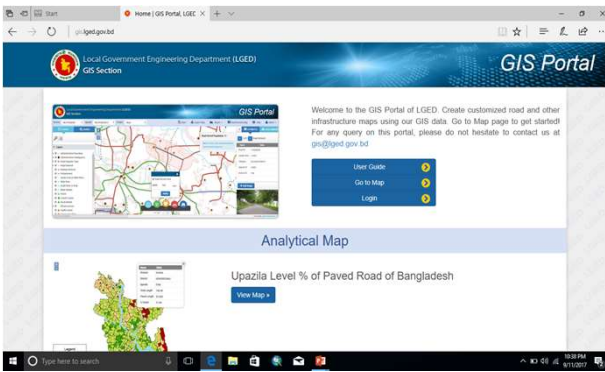
Geo Spatial database

- 17 layers of information
- Covers 491 Upazila (Sub-District)
- Different analytical maps in terms of accessibility
- Municipal area Map
- LGED GIS Portal (www.gis.lged.gov.bd)





LGED GIS Portal (www.gis.lged.gov.bd)



Local Government Engineering Department (LGED)
GIS Section

Welcome to the GIS Portal of LGED. Create customized road and other infrastructure maps using our GIS data. Go to Map page to get started! For any query on this portal, please do not hesitate to contact us at gis@lged.gov.bd

[User Guide](#)
[Go to Map](#)
[Login](#)

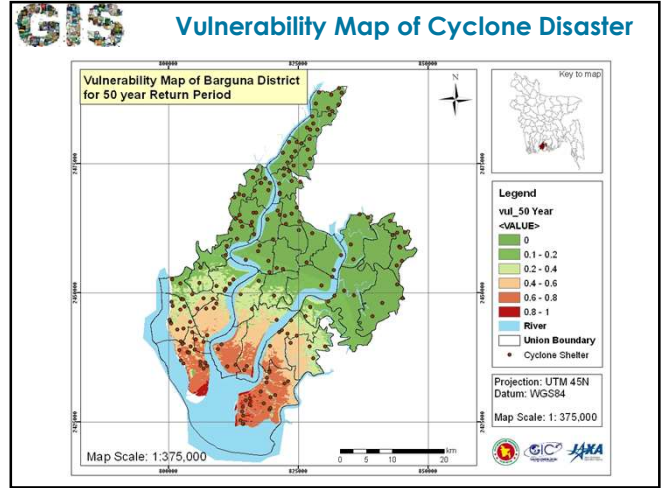
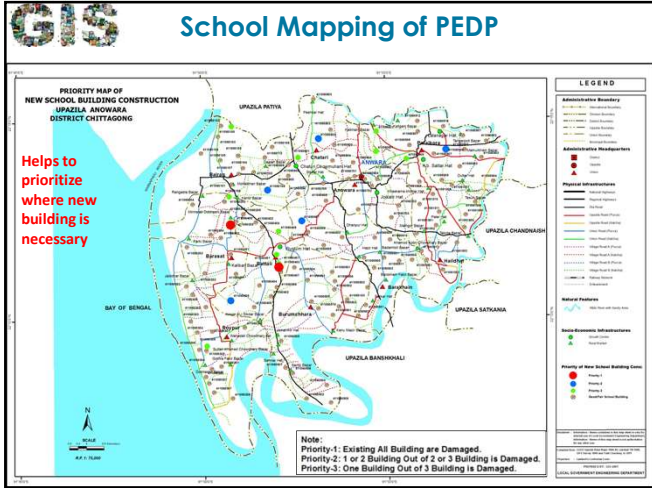
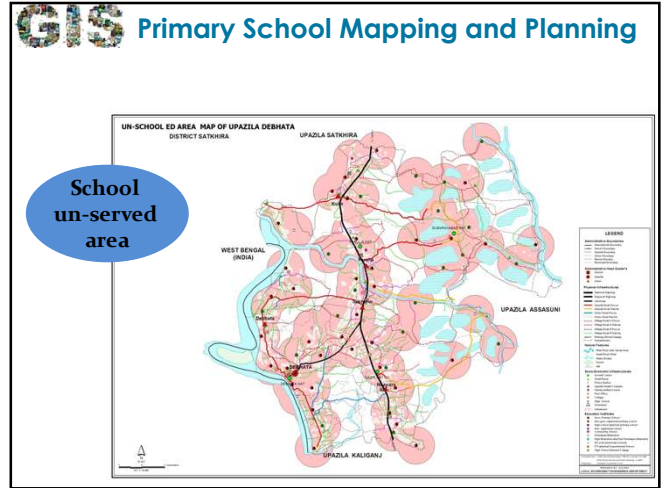
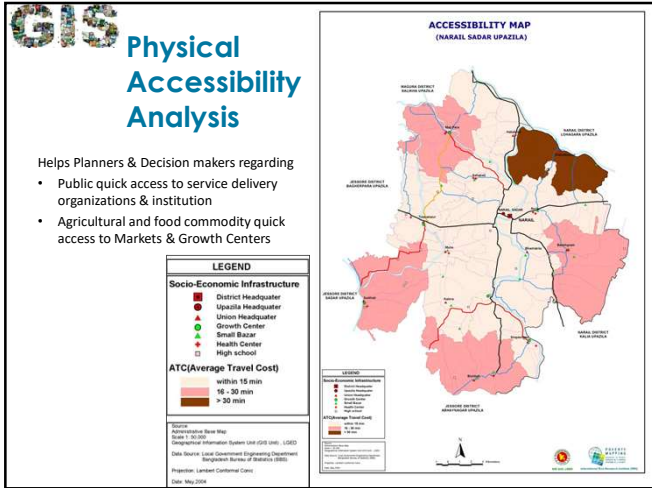
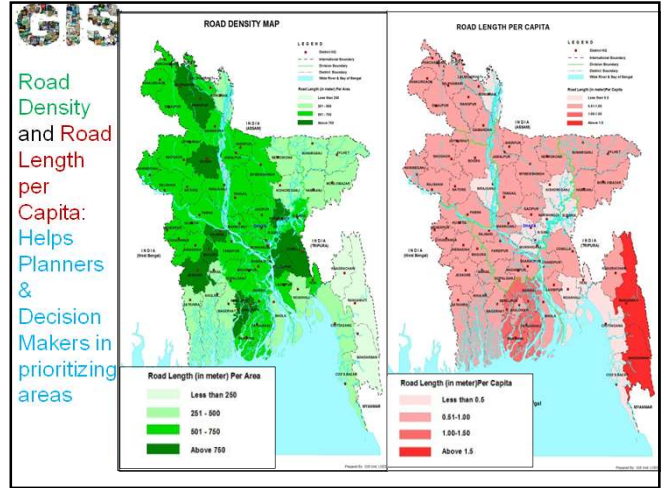
Analytical Map

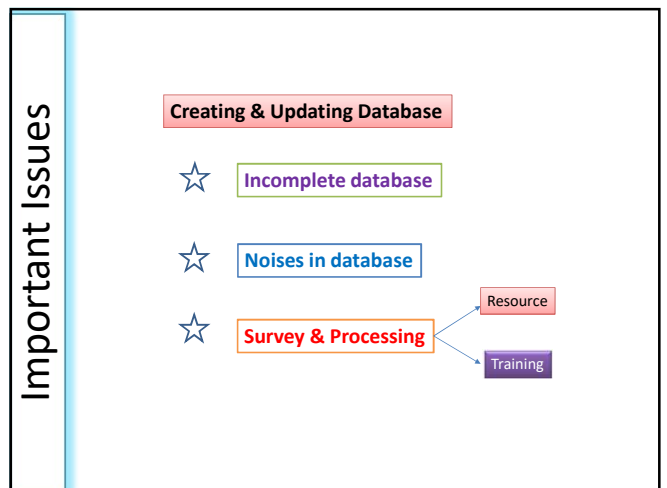
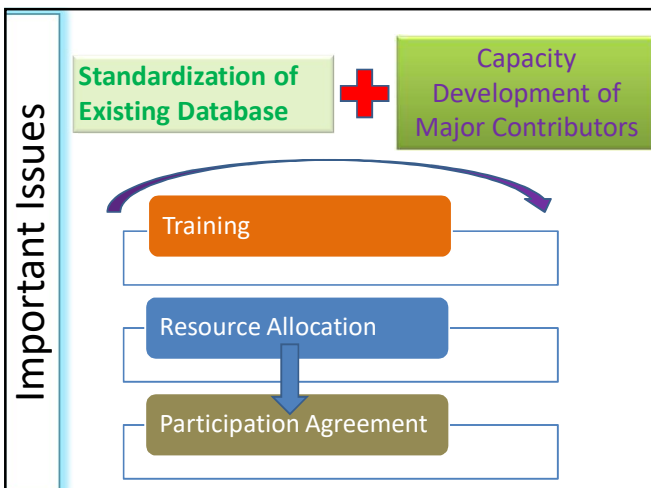
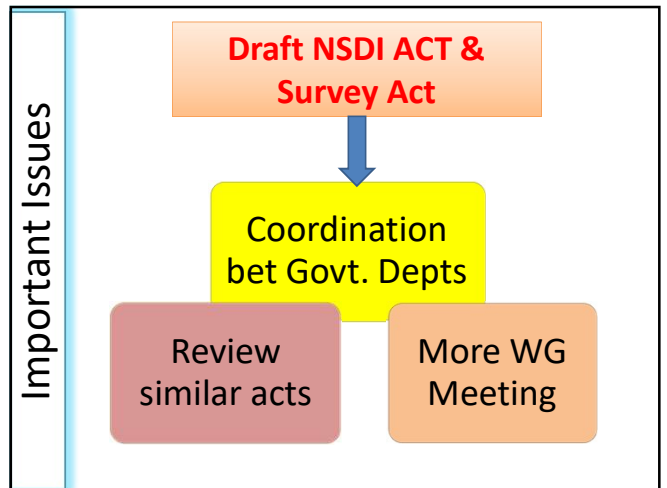
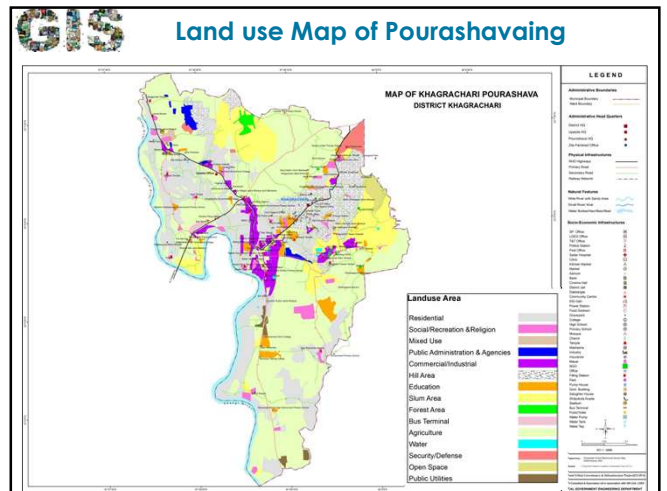
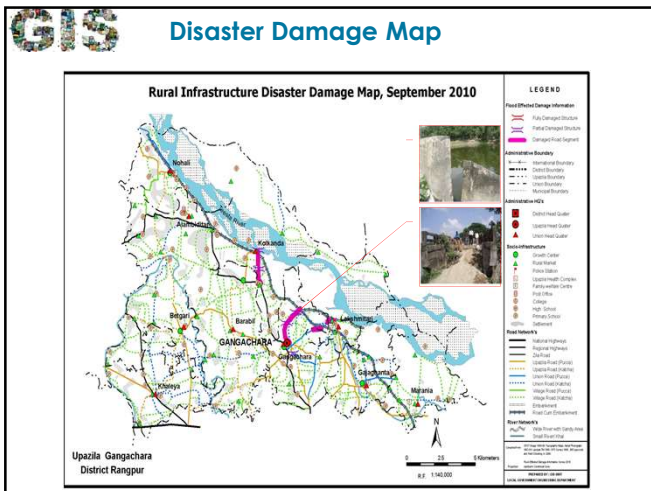
Upazila Level % of Paved Road of Bangladesh

[View Map](#)

<http://gis.lged.gov.bd>

Analytical Works





Roadmap to NSDI

Legal Framework- WG to be involved in every activity.
-Data policy & formulation of guideline may be started earlier

Geographic Information Standards: In study, research & creation of domestic standard LGED & WG may be involved

Topographical Map in Other Cities: LGED can play vital role in the preparation of this large scale map

IT SERVICES: In Construction & demonstration of administrative information provision system regarding disaster prevention & environment, LGED may be involved

HRD/Technology Dev./Promotion/New Industry Dev: In Examination & dissemination in Local Government Intitutions' Work, LGED can play significant role.

Data Sharing Policy:

- Data should be given to other Government organization free of cost.
- Fees may be taken from non-government organization

THANK YOU

GeoDASH

GEODASH.GOV.BD

A web-based application and platform for developing geospatial information systems (GIS) and for deploying spatial data infrastructure (SDI)

GeoDASH

What GeoDASH Offer

- ✓ Standard, facebook, google+ login.
- ✓ Shape formatted layers
- ✓ OSM formatted layers
- ✓ CSV formatted layers
- ✓ TIF formatted layers
- ✓ Documents
- ✓ Dock favourite layers, maps, documents and organizations
- ✓ Create map with layers
- ✓ Style layers
- ✓ Pan maps
- ✓ Get Featureinfo
- ✓ Measure length
- ✓ Measure Area
- ✓ Zoom in/ Out
- ✓ 3D map view
- ✓ Print map
- ✓ Download layer and metadata
- ✓ Connect to other GeoServer(s)
- ✓ Filter / select by attribute
- ✓ Data chart view
- ✓ Radius search
- ✓ Query on Map
- ✓ Cross joining of layers
- ✓ Wiki

2

GeoDASH

GeoDASH Home Page Overview

Sections: Development partners, Layer, map, Doc, org, news, search, dashboard, featured layer, Message, Notification, User profile, Language, wiki, Android app, Usage of GeoDASH

3

GeoDASH

GeoDASH Advantages

- It has a built-in map composer and viewer, tools for analysis, and reporting.
- Different agency and personnel can share their spatial data on GeoDASH and collaborate with each other for using different layer stack shared differently through the public or permissioned access of each layer.
- It allows the integrated creation of data, metadata, and map visualizations. Each dataset in the system can be shared publicly or restricted to allow access to only specific users.
- Social features like user profiles and commenting and rating systems allow for the development of communities around each platform to facilitate the use, management, and quality control of the data the GeoDASH instance contains.
- It allows connectivity between several GeoDASH like SDIs to augment the collaborative potential of govt. and non govt. GIS databases.

4

GeoDASH

Some Live Example

- Location of Educational Institutions in Bangladesh + Extreme Poverty Map of Bangladesh
- Dhaka Road System + Dhaka Schools (to see the accessibility of Schools in Dhaka)
- Dhaka Population Literacy Rate + Dhaka Schools
- Dhaka Hospitals + Dhaka Population 2011 (see the distribution of hospitals against population density)
- Flood Affected Upazilas in 2015 + Absolute Poverty map of Bangladesh

5

GeoDASH

Role Management For Organization Admin And User

Organization user

- ✓ Upload Layer
- ✓ Download Layer
- ✓ Create Map
- ✓ Print Map
- ✓ Upload document
- ✓ Download document
- ✓ Add to Favorites
- ✓ View Organization list
- ✓ View User list
- ✓ View Public Layer list
- ✓ View Public Map list
- ✓ View Public documents

Organization Admin

- ✓ Create user
- ✓ Add user(s) as organization admin
- ✓ Add member(s) to organization
- ✓ Invite user
- ✓ Approve/ Deny Layer publish request
- ✓ Approve/ Deny Maps publish request
- ✓ Approve/ Deny document publish request
- ✓ Set layer and featured

6

User Registration

Create a new account and get started

Username

Password

Confirm Password

Email

or

Already have an account?

7

Sign-in

Sign in to your account

Username

Password

Remember Me [Forgot your password?](#)

or

Don't have an account? [Register](#)

8

User Profile For Admin

Profile for Admin, user- Profile (User must update their profile), member wp, Admin wp, recent activity, create user, invite user, help

- Upload Layers
- Profile
- Member-Workspace
- Admin-Workspace
- Create User
- Recent Activity
- Invite User
- Help
- Log out

9

User Profile Detail

Profile details for A. K. M. Osman Humayun, Senior Project Manager at Structured Data Systems Limited. Includes contact information, location, and description.

10

Upload Layer

Upload layer (shape, Zip Shape, OSM, CSV, tif) & set permission, update Metadata

Permissions

- Who can view it?
 - Everyone
 - The following users
 - The following groups
 - The following pages
 - The following pages
 - The following pages
- Who can edit it?
 - Everyone
 - The following users
 - The following groups
 - The following pages
 - The following pages
 - The following pages

11

Metadata Update

Why Metadata is Important?

Edit Metadata

* Marked fields are mandatory

Editing details for geonode.layershp2

Owner: @osmanh

* Title: LayersHP2

Date: 2016-11-16 02:53 PM

Date type: Publication

12

Push For Approval By User (Layer, Map, Document)

Member Workspace

The screenshot shows a 'Delete Layer' dialog box with a table of layers. The first row is selected. Below the dialog is a map interface with a 'Push Layer' button and a 'Permissions' section.

Serial No.	Layer Title	Organization	Layer Creation Date
1	test	SDS, (Structural Data Systems Limited)	Nov 11, 2016, 7:18 p.m.

Admin Approval And Deny (Layer, Map, Document)

Admin Workspace

The screenshot shows an 'Admin Workspace' interface with a table of layers and a 'Delete Layer' dialog box. The dialog has 'Approve' and 'Reject' buttons.

User Approval Requested	Approval	User List	Deleted Layer		
Serial No.	Layer Title	Organization	Trust	Date of Request	Approved/Rej Layer
1	test	SDS, (Structural Data Systems Limited)	1	Nov 11, 2016, 7:30 p.m.	

Layer Explore

Layer explore:
Select layer,
Make feature,
Favourite,
sorting, list view,
Advance search,
layer info icons

The screenshot shows the 'Layer Explore' page with a list of layers. The first layer is 'Horizontal Learning Prog...'. A 'Selected Items' dialog is open over the list.

Layer Detail Page Operations

The screenshot shows the 'Layer Detail Page' for a layer titled 'flood_affected_districts_in_the_bangladesh_201...'. It features buttons for 'Download Layer', 'Edit Layer', 'Permissions', 'Change Layer Permissions', 'Legend', and 'Information'. A 'Selected Items' dialog is also visible.

Create Map

Set base map, Add layers, Add new server, find layers, Map save, Publish map, Print map, Identify, Query, Measure, Edit, 3D view, pan, zoom dragging box, zoom, last/next level zoom, max extent map, chart, search by radius

The screenshot shows the 'Create Map' interface with a map and a 'LAYERS' panel. The 'LAYERS' panel includes options for 'Base Maps' (Bing Aerial, OpenStreetMap, etc.) and 'Overlays' (Shapefile, etc.).

3D Map View

The screenshot shows the '3D Map View' interface, displaying a 3D city model with a 'Google Earth' logo in the bottom right corner.

Search By Radius

ID	Category	Storey	Population
504090026	Roof	2	10
504090044	Finished	1	4
504090046	Roof	8	6
504090047	Finished	1	100
504090068	Roof	4	6
504090069	Roof	1	6
504090072	Roof	11	328
504090076	Roof	12	100
504090085	Roof	6	8
504090100	Finished	1	7

Chart View

Cross Joining

cross joining, zoom to layer extent, remove layer, layer properties, Layer style, Layer info

Remember, Push for approval and Admin approval /Deny require

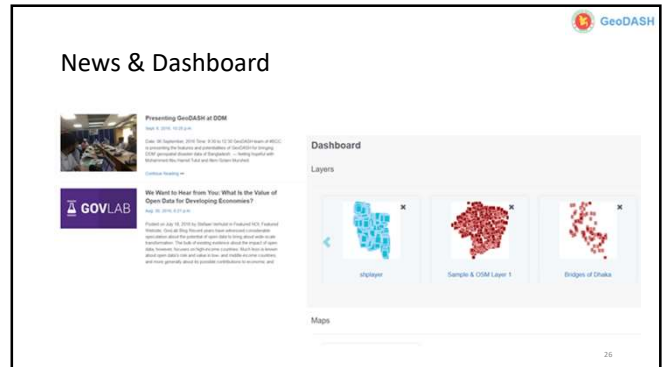
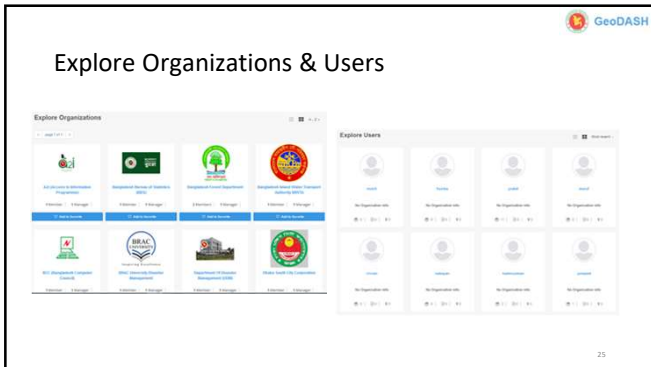
Cross Joining Result

Explore Map

Explore map, sorting, list view set permission, feverous, map info, map detail page, download, edit, change permission

Explore Map

Explore Doc: Select Doc – set permission, Favourite, sorting, list view, Advance search, layer info icons



National Spatial Data Infrastructure (NSDI) for Bangladesh

Products and Services from SOB




Syed Mohammad Masum
*Asst. Director (Survey)
 In-Charge, GIS Unit
 In-Charge, Digital Cartographic Unit
 Survey of Bangladesh*

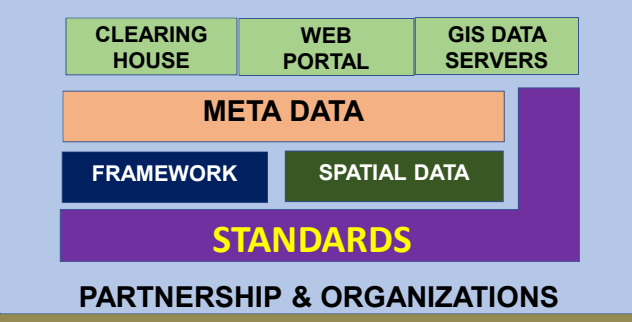
Scope

- Introduction
- Photogrammetric Resources & Probable Contribution
- GIS Resources & Probable Contribution
- Cartographic Resources & Probable Contribution

Introduction



NSDI Components



Photogrammetric Resources & Probable Contribution

Aerial Photographs




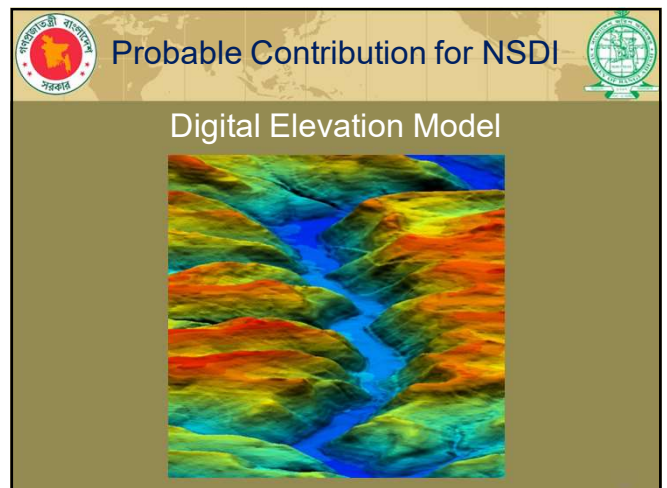
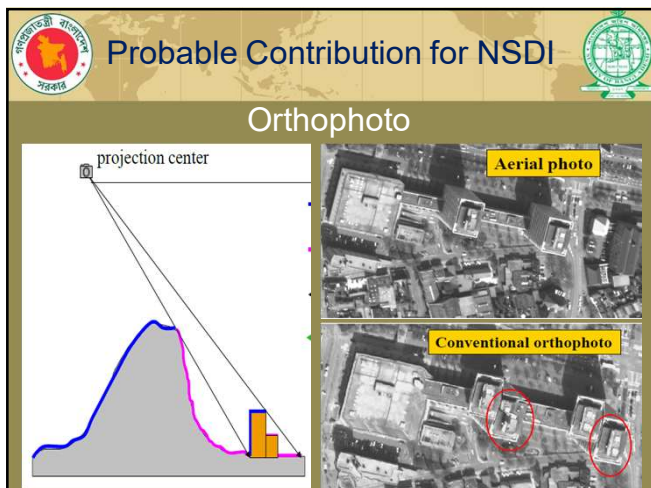
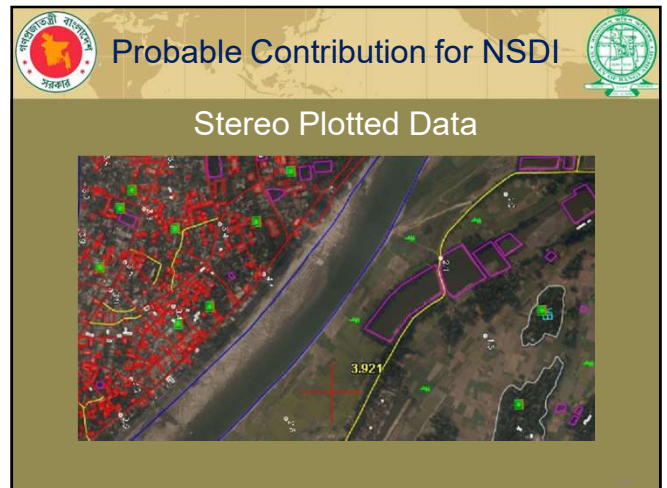
Chronological history of Aerial Photography in Bangladesh

Sl.	Year	Scale	Name of Company	Area
1	1974-75	1:30,000	Capital Air Survey Limited, Canada	All over the country
2	1977	1:5,000	Bangladesh Air Force	Dhaka City
3	1981-82	1:50,000 1:30,000 1:15,000	Capital Ari Survey Limited, Canada	Sundarban & Chittagong
4	1983-84	1:50,000 1:15,000	IGN France	All over the country
5	1990-91	1:50,000 1:30,000 1:20,000	Finnmap International, Finland	Coastal area, Jamuna & Surrounding
6	1995	1:30,000 1:20,000	Quasco Company, Australia	Chittagong, Cox's Bazar, Mymensingh
7	1998	1:50,000	Finnmap International, Finland	Coastal Area
8	1999-2001	1:25,000	Kevron Pvt Ltd. Australia	All over the country
9	2003	1:20,000	SOB/JICA/Asia Air Survey	Dhaka City
10	2010-11	50 cm GSD 25cm GSD	Passco Finnmap International	All over the Country Chittagong, Khulna, Rajshahi, Barisal & Sylhet City



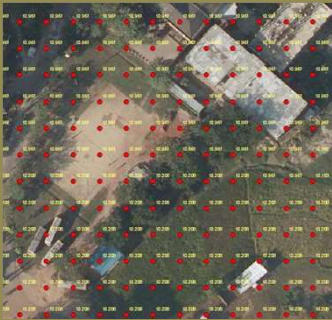
Photogrammetric Hardware and Software

Workstation	90
Aerial Triangulation	30
DTM & Orthophoto	20
2D Workstation	02
Software	
Summit Evolution with AutoCAD Map3d	63
Summit Evolution with ArcGIS	02
DT Master, Ortho Master, Ortho Vista	20
Plotter	02

Probable Contribution for NSDI

Dense and Accurate Spot Height



Probable Contribution for NSDI

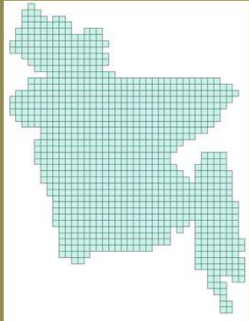
Accurate Contours with minimum interval



GIS Resources & Probable Contribution

GIS Database

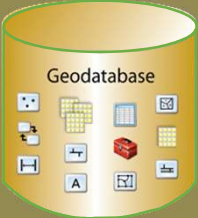
- 1 : 5,000 Scale
- 1 : 25,000 Scale
- 1 : 50,000 Scale
- 1 : 250,000 Scale
- 1 : 1,000,000 Scale



GIS Database


Properties of the Base GIS Database of 1:25K

Number of Sheets :	980
Number of Feature Datasets:	11
Number of Feature classes:	68
Number of Subtype:	303
Coordinate System:	BUTM2010
Coordinate Components:	(X,Y,Z)
Data Format:	ESRI Geodatabase



GIS Hardware and Software

Workstation	37
Software	
ArcGIS (ArcEditor)	30
ArcGIS (ArcInfo)	07
ArcGIS Server	01
ArcSDE	01
Data Reviewer	05
Workflow Manager	04
Production Manager	02
SQL Server	01
Plotter	01
Line Scanner	01



Probable Contribution for NSDI

Providing **Fundamental Geospatial Data (FGD)**

can be used as the basis for the referencing of any other spatial data in a country.

Probable Contribution for NSDI

Providing GIS data from different scale based **Ready Database** according to the category of necessity in different popular formats

Probable Contribution for NSDI

Providing **on demand** GIS data for specific purposes

Scale
Features
Necessity
Assessment
Attributes
Geometry

Data Extraction from RS Imagery

Data Extraction from GIS Databases

Data Collection from Field Survey and Other Sources

Sending Data to the Client

Probable Contribution for NSDI

Providing Analytical Products

Land Use/ Cover Map	Curvature Generation	Viewshed Generation	Inundation Model
From Road			

Metadata

- **Source** of the data
- **Purpose** of the data
- **Time and date** of creation
- **Creator or author** of the data
- **Method, Projection, Coordinate and Datum** System
- **Limitations** of the Data

SoB will provide comprehensive metadata for its own all spatial data with a standard format and may delineate the standard template for all other stakeholders to provide their metadata

Cartographic Resources & Probable Contribution

Cartography

The Science and Art to produce different types of **Maps** of different **scale** for different **Purposes** with the data from different **Sources**

DATA 1

DATA 2

DATA n

Topographic Map

- 1 : 5,000 Scale
- 1 : 25,000 Scale
- 1 : 50,000 Scale
- 1 : 250,000 Scale
- 1 : 1,000,000 Scale

Other Map

- District Map
- Division Map
- City Guide Map
- Ancient Monument Map
- Communication Map
- Etc.

Cartographic Hardware and Software

Workstation	45
Software	
ArcGIS (ArcEditor)	42
ArcGIS (ArcInfo)	03
ArcGIS Server	01
Production Mapping	45
Plotter	01
Line Scanner	01

Probable Contribution for NSDI

Providing Base Map as API for the NSDI Portal and Geoportal of Other Organizations

Base Map as API from SOB

<http://www.sob.gov.bd/xxx.....>

<http://www.xxxxxxxxxxxxxxxxx>

NSDI Portal

xxxxxxx
xxxxxxx
xxxxxxx
xxxxxxx


Presently Goole is being used

Probable Contribution for NSDI


Providing Different Maps in most of the popular formats (such as)

➔

- .tiff
- .jpeg,
- .pdf
- etc

 Probable Contribution for NSDI 

- Representation Rules including Symbology
- Layout Templates
- Grid Templates
- Color Chart
- Annotation Styles



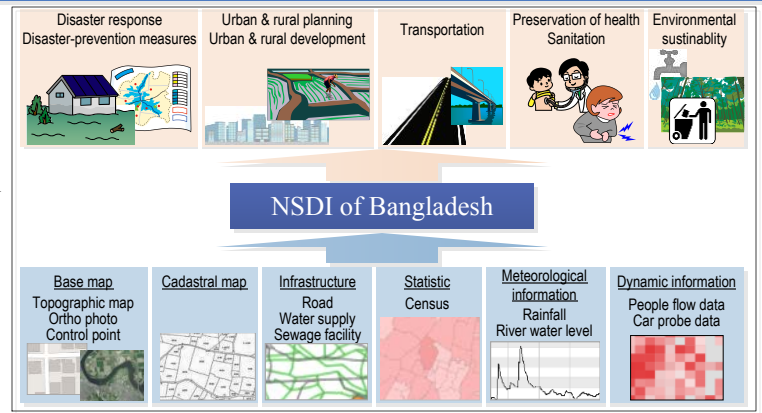


1. NSDI Seminar in Bangladesh

International seminar on National Spatial Data Infrastructure (NSDI) for Bangladesh was held on 1st and 2nd June, 2016, attended by Honorable Prime Minister Madam Sheikh Hasina.

Honorable Prime Minister mentioned as follows:

- ❖ NSDI would help development planning of the land, ensuring optimum utilization of the land.
- ❖ NSDI will preserve geo-spatial data in same platform helping all users to use the data according to their need, which we feel very much at the time of taking a project.
- ❖ A national committee led by the Ministry of Defense will be formed to formulate short and long term plan, fix up action strategy and provide necessary assistance to develop the NSDI.

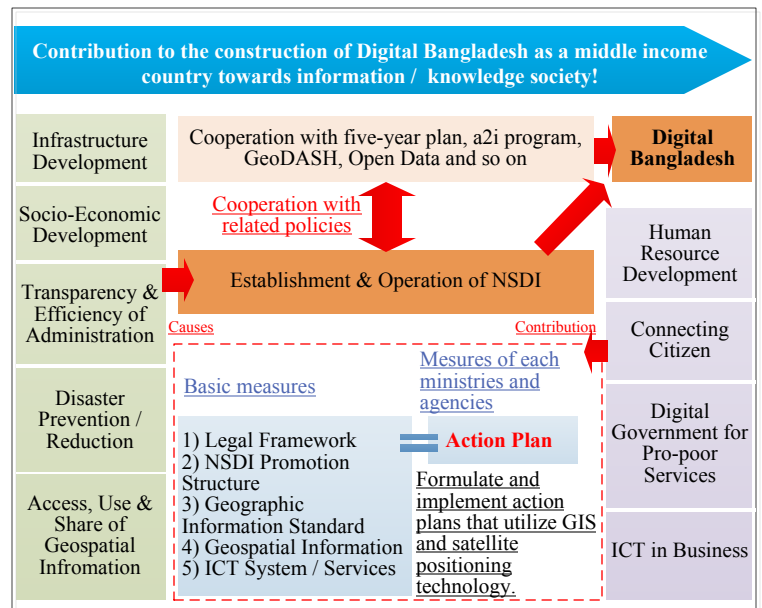


Concept of NSDI for Bangladesh

2. Basic Principles concerning Establishment & Operation of NSDI

Basic principles concerning basic measures and formulation and implementation of action plan of each ministry and agency are suggested as follows:

- ❖ As basic measures for establishment and operation of NSDI, development and provide of geospatial information, promote the use of GIS and satellite positioning technology, human resource development, research & development, and strengthen cooperation among related organizations.
- ❖ 1) Effective and efficient management of public facilities, 2) Promotion of disaster prevention / reduction measures, 3) Use, maintenance and preservation of the land, 4) Improvement of agricultural productivity, and 5) Protection of the people's lives and property, are applied GIS and satellite positioning technology.
- ❖ Improve the efficiency, sophisticated (advanced) and transparency of administrative management of the central and local governments.
- ❖ Provide diverse services that contribute to the improvement of convenience for citizens regardless of difference of rich and poor, literacy abilities, place of residence in urban and rural areas.
- ❖ Create and develop diverse businesses utilizing GIS & satellite positioning and harmonize with the environment.
- ❖ Pay attention to protection of personal information, promotion of secondary use of public data, and consideration of national security.



Concept for Establishment and Operation of NSDI

3. Main Activities and Setting Period for Roadmap to Establish NSDI (Draft)

	Preparation Period	Infrastructure Formation / Dissemination Period	Operation Period (Medium-term / Long-term Plan)
Period	Now – June 2018	July 2018 – June 2021	Medium-term: July 2021 – June 2026 Long-term: July 2026 – June 2031
Objective	Implement preparation work required to establish NSDI	Building and operation of NSDI, solving of various issues	Promote utilization of NSDI
Main activities	<ul style="list-style-type: none"> ❖ Building of Geo-portal website (Prototype version) ❖ Passage of Survey Act (Including required regulations) ❖ Passage of NSDI Act (Including required regulations) ❖ Determination of disclosure range/method of SOB geographic information ❖ Preparation for expansion of GNSS CORS ❖ Completion of digital topographic map (1:25,000 and 1:5,000) ❖ Preparation for establishment of NSDI Committee 	<ul style="list-style-type: none"> ❖ Building of NSDI platform ❖ Establishment of NSDI Committee and working group activities (Activities to solve various issues) ❖ Creation of primary data/demonstration of updating ❖ Expansion of continuous operating reference stations ❖ Updating and release of digital topographic map of Dhaka ❖ Review of base map updating technique ❖ Changing SOB organization and development of human resources/management system 	<ul style="list-style-type: none"> ❖ Periodic updating of base maps ❖ Development/updating of primary data with high importance ❖ Expansion/deployment of NSDI platform ❖ Operation, dissemination and use promotion of GNSS CORS ❖ Enhance map literacy of citizens

4. Determine Disclosure Range for SOB Geospatial Information

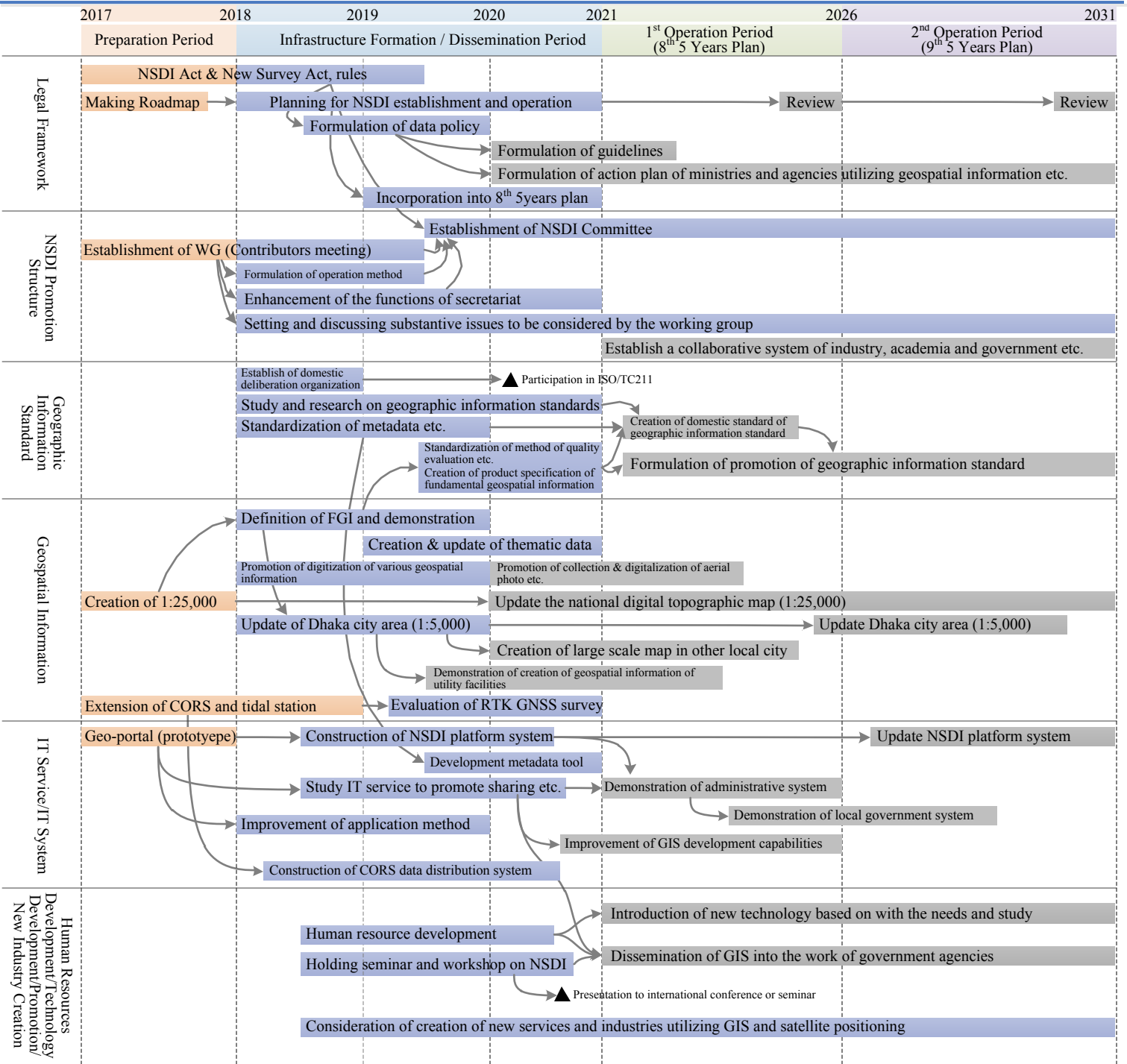
Based on the Survey Act (proposed), it is to determine the content of the geospatial information to be provided/released on the NSDI and release method. The content of operation performed of SOB in Survey Act are as follows:

- ❖ Creation of base map and other maps
- ❖ Preparation and distribution of DEM, DTM, DSM and ortho photos
- ❖ Distribution of map and GIS data
- ❖ Base map preparation, distribution and updating
- ❖ Preparation and distribution of thematic maps of different scales
- ❖ Other work

	Data	Opened on NSDI	Online site for purchase
Topographic maps	1:5,000 1:25,000 1:250,000 1:1,000,000	Map tiles/API	PDF/SHP
Ortho photo	1:5,000 1:25,000	Map tiles/API	TIFF
DEM		Map tiles/API	XYZ
GCP	BM/GPS points CORS	Position	XYZ/RINEX

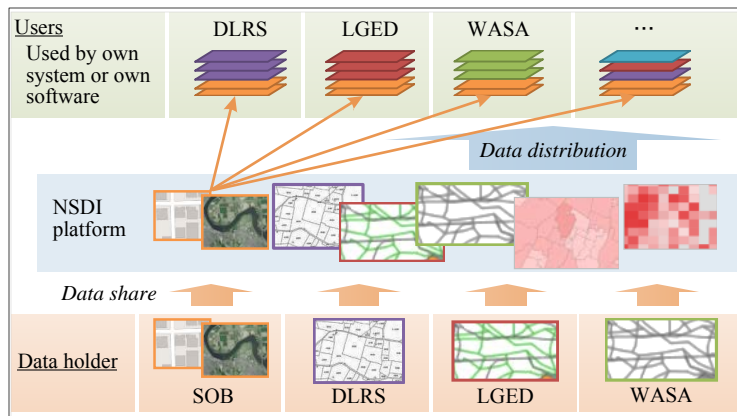


5. Roadmap to Establish NSDI (Draft)



6. Example of using NSDI Platform

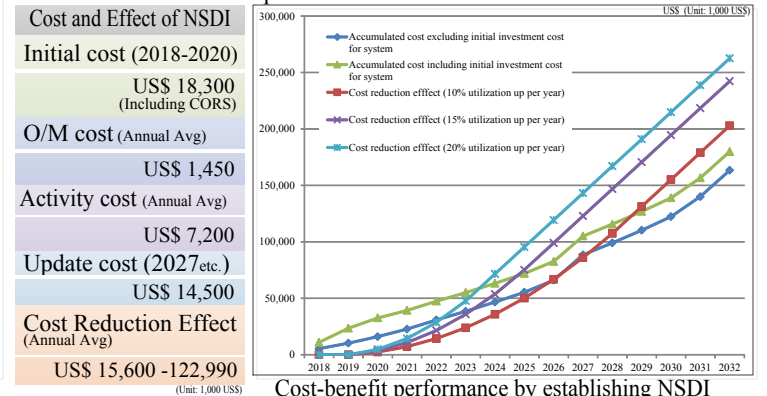
NSDI platform system is provided in order to search for and to obtain information related to geospatial information.



Utilization of fundamental geospatial information (FGI) provided by SOB

7. Cost-Benefit Performance by NSDI

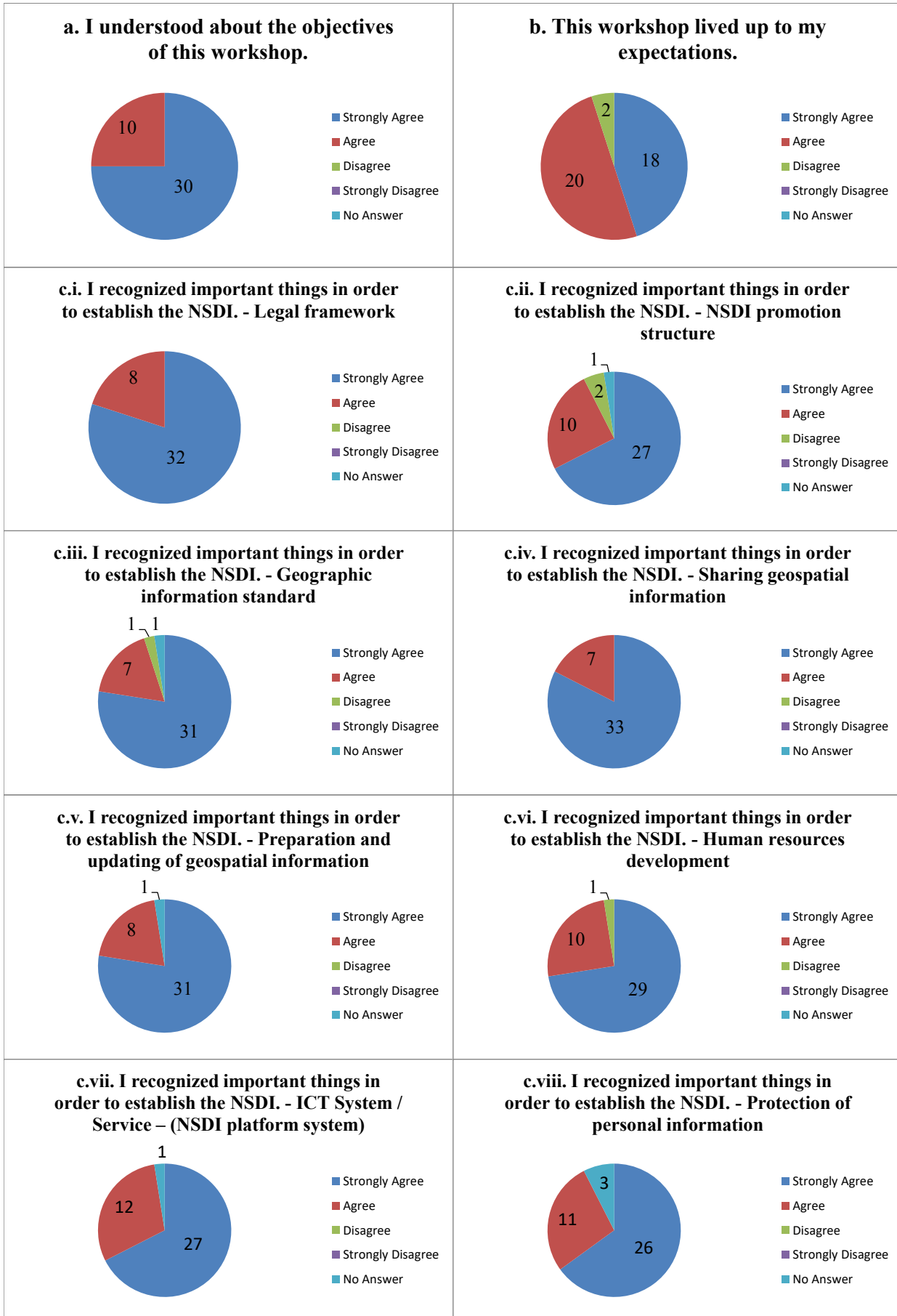
The cost-benefit by NSDI will be able to calculate from cost reduction by utilizing geospatial information by the organizations. In case that utilization of NSDI will increase 20% per year, it is estimated that the cost reduction effect will exceed the total cost of initial investment, maintenance and operation, activity, and update of system and data at the end of 4th years after the construction on NSDI platform.

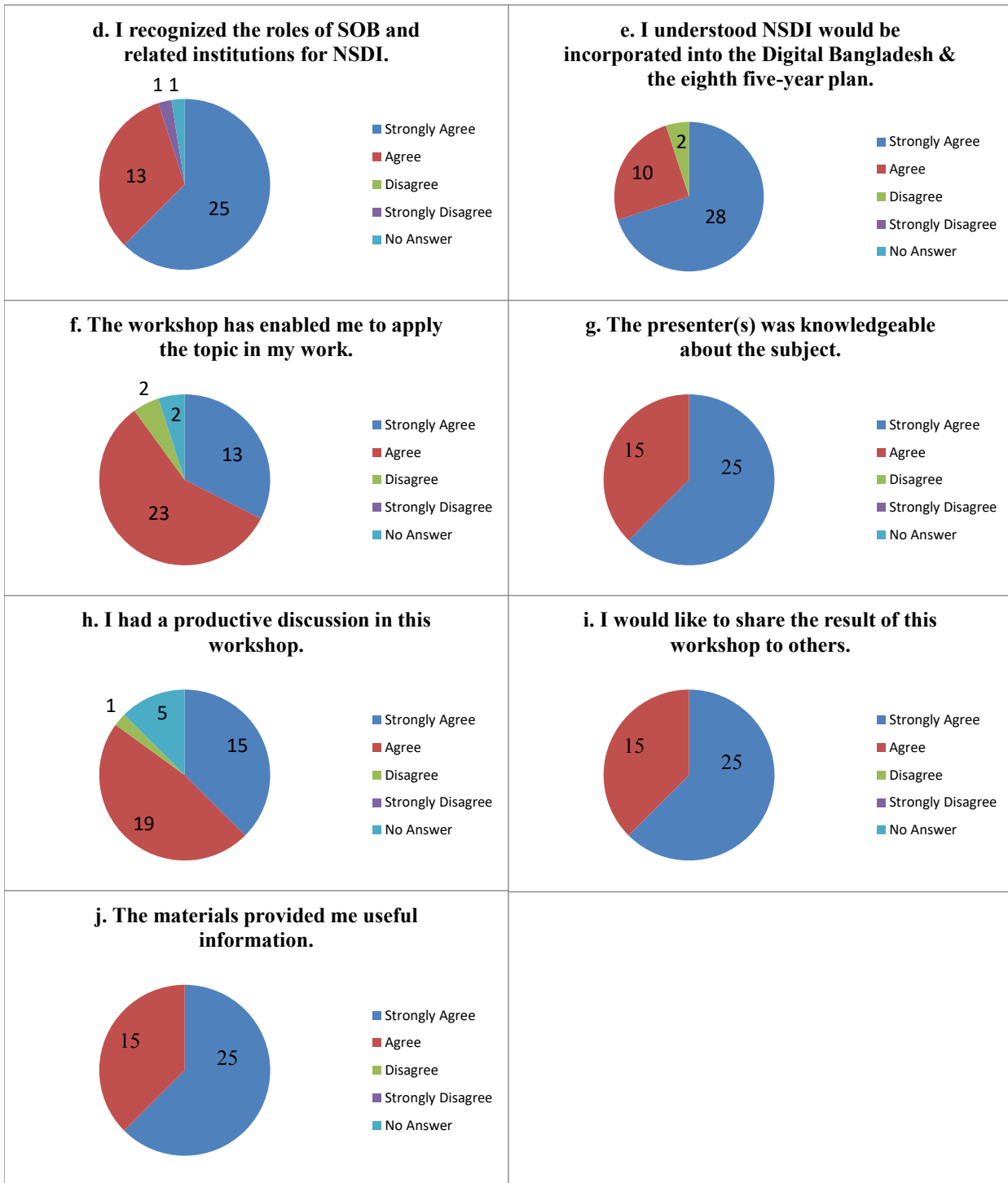


Cost-benefit performance by establishing NSDI

***Annex-16 Result of Questionnaire of NSDI
Workshop***

Question	Strongly Agree	Agree	Disagree	Strongly Disagree	No Answer
a. I understood about the objectives of this workshop.	30	10	0	0	0
b. This workshop lived up to my expectations.	18	20	2	0	0
c.i. I recognized important things in order to establish the NSDI. - Legal framework	32	8	0	0	0
c.ii. I recognized important things in order to establish the NSDI. - NSDI promotion structure	27	10	2	0	1
c.iii. I recognized important things in order to establish the NSDI. - Geographic information standard	31	7	1	0	1
c.iv. I recognized important things in order to establish the NSDI. - Sharing geospatial information	33	7	0	0	0
c.v. I recognized important things in order to establish the NSDI. - Preparation and updating of geospatial information	31	8	0	0	1
c.vi. I recognized important things in order to establish the NSDI. - Human resources development	29	10	1	0	0
c.vii. I recognized important things in order to establish the NSDI. - ICT System / Service – (NSDI platform system)	27	12	0	0	1
c.viii. I recognized important things in order to establish the NSDI. - Protection of personal information	26	11	0	0	3
d. I recognized the roles of SOB and related institutions for NSDI.	25	13	0	1	1
e. I understood NSDI would be incorporated into the Digital Bangladesh & the eighth five-year plan.	28	10	2	0	0
f. The workshop has enabled me to apply the topic in my work.	13	23	2	0	2
g. The presenter(s) was knowledgeable about the subject.	25	15	0	0	0
h. I had a productive discussion in this workshop.	15	19	1	0	5
i. I would like to share the result of this workshop to others.	25	15	0	0	0
j. The materials provided me useful information.	25	15	0	0	0





Questionnaire of NSDI Workshop

Num	Organization	2:What do you think about having an effect and benefit by NSDI on your organization?	3:Please share any other comments you have regarding this workshop.
1	Bangladesh Meteorological Department (BMD)	BMD collect and archiving all kinds of meteorological data. In this regards, BMD can be benefitted by NSDI as NSDI is going to be a platform of Spatial Data.	This workshop is very fruitful for NSDI. It is necessary to co-operate Government Organizations each other as much as possible.
2	Bangladesh Space Research and Remote Sensing Organization (SPARRSO)	No comment	More extant level discussion is required.
3	Rajdhani Unnayan Kartripakkha (RAJUK)	My organization will be benefitted by NSDI to establish the digital Bangladesh. NSDI is very effective way to improve the present system.	All organization should follow the one or some coordinate system for sharing various data within the organization and should be a common platform.
4	Rajdhani Unnayan Kartripakkha (RAJUK)	-	-
5	Rajdhani Unnayan Kartripakkha (RAJUK)	-	-
6	Bangladesh Water Development Board (BWDB)	BWDB can be highly benefitted from NSDI.	Coordination, cooperation and sharing of NSDI knowledge to other organization are highly recommended.
7	Dhaka Water and Sewage Authority (Dhaka WASA)	knowledge sharing	Organizational Coordination
8	Geological Survey of Bangladesh (GSB)	I believe GSB will be benefitted through NSDI for Geological mapping and mineral identification.	-
9	Department of Land Record and Survey (DLRS)	DLRS is mainly responsible for preparation of cadastral maps. Definitely DLRS will be benefitted by the NSDI.	-
10	Access to Information Program (a2i)	Land related initiatives and other citizen centric e-services that A2i is developing.	-
11	Dhaka South City Corporation (DSCC)	DSCC expect to get the benefit of NSDI. For this project DSCC is ready for any cooperation.	TITAS Gas and Fiber Optic Intitution can be the member of working group. Administrative boundaries of all the Institutions should be included in map. Data sharing process should be easy from SOB/NSDI to other institutions.
12	Bangladesh Computer Council (BCC)	For proper maintaining the Bangladesh govt. Network and Planning for to establish DRC the NSDI will play a vital role for us.	It is grand workshop to share knowledge on making the Roadmap to implement for BD Govt.
13	Department of Disaster Management (DDM)	I believe NSDI will be the central Spatial Data hub which can be used for DM and DRR.	-
14	Institute of Water Modelling (IWM)	IWM might get data and metadata from NSDI in consistent format.	Chief/ CEO and real working professionals should be invited.
15	Urban Development Department (UDD)	UDD is responsible for the preparation of plan of different Upazilas/ Union/ Zilas of Bangladesh. We need several Survey data (GIS data) from different organization for plan preparation. I think this will be helpful for my organization if we get data required from single platform.	The requirement of data are different for different organization again the format of some data may be different for different organization. This must be considered.

Questionnaire of NSDI Workshop

Num	Organization	2:What do you think about having an effect and benefit by NSDI on your organization?	3:Please share any other comments you have regarding this workshop.
16	Dhaka Electric Supply Company Limited (DESCO)	DESCO has a platform to develop GIS based network operator and asset management. So it would be helpful for DESCO.	-
17	Bangladesh Power Development Board (BPDB)	NSDI is extremely established in Bangladesh for digitization but a great challenge due to similar like BCC. So I hope NSDI will be work integrated with above office.	Realistic and effective people needs to establish this project. I hope the NSDI will be effect within the expected time.
18	Dhaka Power Distribution Company Limited (DPDC)	NSDI would be benefiting to DPDC in planning & designing physical infrastructure of power system.	It is clear how NSDI will share information with utilities as almost all utility are establishing their own GIS system that require common guideline interface. Without this facility, effect of NSDI may become less effective in true sense.
19	Bangladesh Rural Electrification Board (REB)	Yes, NSDI will benefit our organization. We will have NSDI policy in our country.	We understand the benefit of NSDI specify integrated Geo-Spatial Data in different organization.
20	Water Resources Planning Organization (WARPO)	Helpful for -availability of updating data, to reduce the laps and gaps of spatial data, provision for shareing remote sensing data and images among the Govt. agencies should be made possible, to reduce the cost significantly through NSDI.	Data availability management, evaluation improvement system should be included in NSDI. Provisions to assn nd assign the quality level of a particular data layer need to be included. Data management policy for NSDI should be formulated with the cooperation of all spatial data holdering agencies of the country.
21	Department of Environment	Yes.	-
22	Directorate of Primary Education	Monitoring and mentoring all primary schools of Bangladesh to ensure quality education, intensive and equitable education & lifelong education.	Role of different ministries/ divisions/ departments/ organizations may be clarified by arranging another workshop to establish NSDI for Bangladesh.
23	Military Institute of Science and Technology	It is helpful in the context of academic point of view. Academician will be able to conduct research in an integrated.	-
24	Bangladesh Army	For disaster management/ quick response where army needs to be employed in case of emergency i.e. aid to civil power.	1) A representative from Bangladesh Army should be included in the working group. 2) Separate gate way for the Armed Force & other national security agencies must be considered. 3) Sharing of spatial data of diffeent Govt.& other organizations must be planned accurately. 4) Administrative boundary must be preserved and prepared by single agency to be shared accordingly. Other organizon AOR(Area of Responsibilities) may be developed by individual organization. 5) List of data holders user's point of view must be made. 6) Seperate policies/ procedures/ guidelines must be made security, sharing, collection etc.7) GIS maps and cartographic maps are not same as per accuracy concerned.So topo maps (1:25K & 1:5K) genrated by system may not be appropriate for many govt. agencies e.g. WASA, DESCO etc who need large scale map even upto 1:1000. 8) For base data only SOB may be selected and assisted by SPARSSO for satellite images.
25	World Bank	-	-
26	JICA	-	Better to share the objective of each presentation first.

Questionnaire of NSDI Workshop

Num	Organization	2:What do you think about having an effect and benefit by NSDI on your organization?	3:Please share any other comments you have regarding this workshop.
27	JICA	JICA as the bilateral development partner engaged in various development projects, recently NSDI for proper planning and implementation.	1) Disaster Risk Mitigation becoming a growing concern for any country. So NSDI should involve the DRR organization. 2) Coordination mechanism with all the relevant organizations.
28	Survey of Bangladesh	My organization will be benefited enough.	An act is very essential for making NSDI.
29	Survey of Bangladesh	It will be very fruitful for us as well as other agencies of Govt. If it is established, it will be helpful for making digital Bangladesh.	Thanks for organizing the workshop. I wish its every success in future.
30	Survey of Bangladesh	In constructing NSDI my department will be immensely benefited and geoinformation department as well. After that the country will help to become digital Bangladesh using NSDI dataset.	1) Users and stakeholders of geoinformations should come for work & play their roles in making NSDI. 2) Government departments should play their pivotal efforts in making the project completed.
31	Survey of Bangladesh	It will be a great platform to share and get spatial data effectively, smoothly and quickly.	More stakeholders like Titas (Gas supply), planners, Disaster Management, NGO (UNDP, Red Crescent) should be invited.
32	Survey of Bangladesh	To establish the NSDI, Survey of Bangladesh will highly beneficial because SOB is National Mapping organization.	More stakeholders should be invited.
33	Survey of Bangladesh	No doubt from this platform it will be very easy to share and get spatial data, smoothly, effectively and quickly.	More stake holder like, World Bank, UNDP, Red Crescent, WHO, etc, should be invited.
34	Survey of Bangladesh	I think SOB is the main geospatial producer in Bangladesh. By establishing NSDI, the user of geospatial data can be benefited.	The workshop is nice. I think more and more workshop is needed making the roadmap to establish NSDI for Bangladesh.
35	Survey of Bangladesh	Establishment of NSDI in Bangladesh will be very effective for the development of Bangladesh. It will be benefited to all of us.	The workshop will inspire the participants to built NSDI for Bangladesh. So I think it is a fruitful workshop.
36	Survey of Bangladesh	From NSDI my organization will be highly beneficial by having mapping data from other organization like RHD, LGED, WASA, REB, BWDB, City corporation and Rajuk for preparing more information maps.	This workshop was highly demanding in this stage to construct the NSDI for Bangladesh. It helped a lot have communication between organizations. It is also gave clear view of NSDI to the organization attended the workshop.
37	Survey of Bangladesh	To establish the NSDI, SOB can play a vital role and making a fundamental Geospatial data using common parameters.	This types of workshop is needed for motivating different stakeholders.
38	JICA Study Team	-	There was a question regarding duplication of data and different platform of data problem. This problem is prevailing for decades past and shall continue in future decades unless the Govt. issues an executive order to stop it. SOB can take the initiative.
39	JICA SCAM Project	It will be very useful.	NSDI is totally new for Bangladeshi people. It needs another workshop for better understanding of NSDI.
40	Survey of Bangladesh	SOB will be benefited by NSDI by exchanging Geospatial data to the other organization.	-