

添付資料 - 17 NSDI ワークショップの資料

- ・ **SOB** から各機関への案内状
- ・ プレゼンテーション配布資料



SURVEY OF BANGLADESH
SURVEYOR GENERAL OFFICE
TEJGAON, DHAKA - 1208
Phone: 9114191 Fax: 9117463
info@sob.gov.bd, www.sob.gov.bd

SOB/14-C/NSDI Meeting/P- 2251

Date: 31 August 2017

From

Surveyor General of Bangladesh
 Survey of Bangladesh
 Shaheed Tajuddin Swarani, Tejgaon, Dhaka-1208

To

As per the Distribution.

Subject: Invitation to attend Workshop on “Pilot project and System Design Concept for NSDI construction in Bangladesh” to be held on 12 September 2017 at 09:30 am

Ref:

1. JICA Letter dated 29 August 2017.
2. Survey of Bangladesh letter no: SOB/14-C/NSDI Meeting/P-2251 dated 27 July 2017.
3. Survey of Bangladesh letter no: SOB/14-C/NSDI Meeting/P-1362 dated 02 May 2017.
4. MOD letter number 23.00.0000.220.25.001.16.639 dated 24 November 2016.
5. Record of Discussion between JICA and Authorities concerned of the People's Republic of Bangladesh (MOD, MOF and SOB) dated 27 August 2013.

Dear Sir/Madam,

An international Seminar on “National Spatial Data Infrastructure (NSDI) for Bangladesh” organized by Survey of Bangladesh (SOB) of Ministry of Defence (MOD) and assisted by Japan International Cooperation Agency (JICA) was held on 1st and 2nd June of 2016 at Dhaka. Sheikh Hasina, the Honorable Prime Minister (PM) of Bangladesh, inaugurated the seminar and gave away her guidelines to create awareness and importance of NSDI among all Contributors. Accordingly two contributors meeting was held on 15 May and 9 August of this year, where so far progresses of NSDI, draft road map plan and NSDI pilot project construction since the seminar were discussed. Large infrastructure like NSDI demands more numbers of meetings, workshops and seminars.


With this backdrop, JICA with the assistance from SOB is going to organize a workshop principally focusing on the ‘Pilot project and system design concept for NSDI construction’ and discussion on ‘Utilization of geo-spatial data and road map plan of NSDI construction’ as well. **The workshop would take place in the SURMA Hall of Pan Pacific**

Sonargaon Hotel from morning to afternoon (9.30 am to 3:00 pm) and Respected Secretary, MOD is likely to be the chief guest of the session. It is my pleasure and honor to invite one of your senior representatives (where applicable) to participate in the workshop. We deeply appreciate your long stretched contribution on the geo-spatial activities in Bangladesh. Presence of your resource person will surely promote the activities in establishing SDI for our Nation. In this regard, please send us the name of the participant from your organization by 06 September 2017 following the table given below. Apart from the paper copy, you may also send the electronic copy of your nomination letter to our official email (info@sob.gov.bd).

Name of the Participant	Position in the office	Name of the Organization	Mobile Number	E-mail ID

The proposed Agenda for the meeting is given as an annexure to this letter for your concern. We eagerly look forward to your contribution on this workshop.

Sincerely Yours,



Brigadier General Zakir Ahmed, psc
Surveyor General of Bangladesh

E-mail: sg@sob.gov.bd

Annexure:

Agenda for workshop on 'Pilot project and system design concept for NSDI construction' in Bangladesh

Distribution (Not following seniority):

1. Secretary, Ministry of Defence (MOD)
2. Director General, Bangladesh Bureau of Statistics, (BBS)
3. Director, Bangladesh Metrological Department (BMD)
4. Chairman, Space Research and Remote Sensing Organization (SPARRSO)
5. Prof Md. Mafizur Rahman, Department of Civil Engineering, BUET
6. Chief Engineer, Local Government Engineering Department (LGED)
7. Chief Engineer, Roads and Highways Department (RHD)
8. Chairman, Rajdhani Unnayan Kartripakkha (RAJUK)
9. Director General, Bangladesh Water Development Board (BWDB)
10. Chairman, Water and Sewerage Authority (WASA)
11. Director General, Geological Survey of Bangladesh (GSB)
12. Chairman, Bangladesh Agricultural Development Corporation (BADCO)
13. Director General, Department of Land Record and Survey (DLRS)
14. Project Director, Access to Information (A2I) Programme, PMO's Office
15. Chief Representative, JICA Bangladesh
16. Mr. Toru Watanabe, Team Leader, JICA NSDI Study Team

17. Chief Executive Officer, Dhaka North City Corporation (DNCC)
18. Chief Executive Officer, Dhaka South City Corporation (DSCC)
19. Executive Director, Bangladesh Computer Council (BCC)
20. Director General, Department Of Disaster Management (DDM)
21. Executive Director, Center for Environmental and GIS (CEGIS)
22. Executive Director, Institute of Water Modelling (IWM)
23. Director, Urban Development Department (UDD)
24. Chairman, Bangladesh Road Transport Authority (BRTA)
25. Managing Director, Dhaka Electric Supply Company Limited (DESCO)
26. Chairman, Bangladesh Power Development Board (BPDB)
27. Managing Director, Dhaka Power Distribution Company Limited (DPDC)
28. Chairman, Bangladesh Rural Electrification Board (REB)
29. Director General, Water Resources Planning Organization (WARPO)
30. Director General, Department of Environment
31. Chief Conservator of Forest, Forest Department
32. Director General, Directorate of Primary Education
33. Director General, Directorate of Secondary and Higher Education
34. Vice-Chancellor, Dhaka University
35. Vice-Chancellor, Jahangirnagar University
36. Vice-Chancellor, BRAC University
37. Vice-Chancellor, Sher-e-Bangla Agriculture University
38. Chairman, Bangladesh Inland Water Transport Authority (BIWTA)
39. Chairman, Bangladesh Energy Regulatory Commission (BERC)
40. Chairman, Bangladesh Telecommunication Regulatory Commission (BTRC)

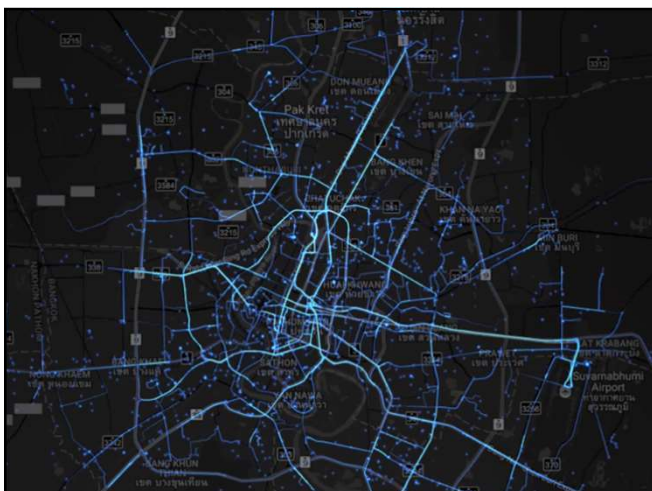
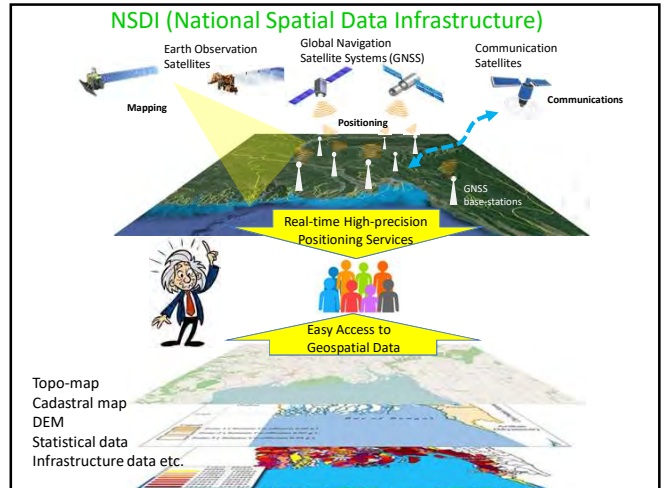
Annexure

**AGENDA FOR WORKSHOP ON 'PILOT PROJECT AND SYSTEM
DESIGN CONCEPT FOR NSDI CONSTRUCTION' IN BANGLADESH**

Ser No	Topic	Speaker/ Responsibility	Time		Remarks
			From	To	
1.	Opening Speech and Overview	Surveyor General	0930	0940	
2.	Introduction of the Participants	Moderator/Anchor	0940	0950	
3.	Key Note Presentation: Introduction of Advanced examples for constructing NSDI in Bangladesh (Tentative)	Prof. Ryosuke Shibasaki, University of Tokyo	0950	1020	
4.	Key Note Presentation:	Prof. Mafizur Rahman, BUET	1020	1050	
5.	Overview on the "Survey carried out" and Presentation on "Pilot project and System Design Concept"	JICA Study Team	1050	1110	
6.	Discussion on Agenda 5.	Ali	1110	1140	
7.	TEA	All	1140	1200	Served outside the Hall
8.	Presentation on Road Map Plan for the Construction of NSDI for Bangladesh	Survey of Bangladesh and JICA Study team	1200	1220	
9.	Panel Discussion on the "Utilization of Geo-spatial Data, Road map plan and NSDI Pilot Project"	Moderator – Prof. Shibasaki Working Group Members and other Participants	1220	1310	WG Members may present their speech for 5 to 10 minutes
10.	Summary of the Discussion	Moderator/Anchor	1310	1320	
11.	Closing Address	Secretary, MOD	1320	1335	
12.	LUNCH	All	1335	1500	Served outside the Hall

Introduction for Developing an Advanced NSDI of Bangladesh

Ryosuke SHIBASAKI
Professor, Center for Spatial Information Science,
The University of Tokyo



DTC Our Products Our Customers

GPS tracking and Thai public transportation

Zero accident in public transportation can come to reality as in the beginning of 2016. Department of Land Transport has enforced all new-register public transportation, trailers and trailers with 10 wheels or more to install GPS. This data is linked to Department of Land Transport's Transport Management Center to accommodate tracking and observe driving behavior. To follow GPS Across Thailand project, the department intends to, by the end of 2017, have all public transportation vehicles installed GPS. D.T.C. Enterprise fully supports this project as all its GPS tracking devices are certified by Department of Land Transport.

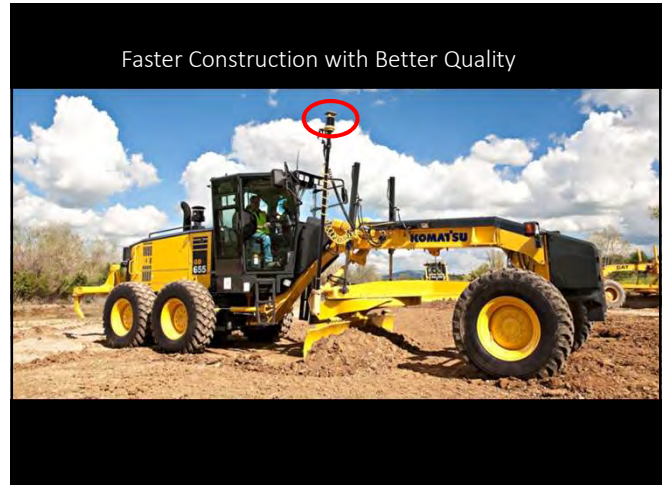
Friday, 18 March 2016

Singapore will have world's first GNSS urban congestion pricing scheme by 2020

Next-Generation ERP System Architecture

The diagram illustrates a system where a car is equipped with GNSS and a Cellular Network. The GNSS provides Positioning data, which is sent to a Central Computer System. This system is connected to Financial Institutions for Payment and to Communications networks. The system also utilizes Location & T ariff Tables.

© 2015 Smart Transport Authority. All rights reserved.

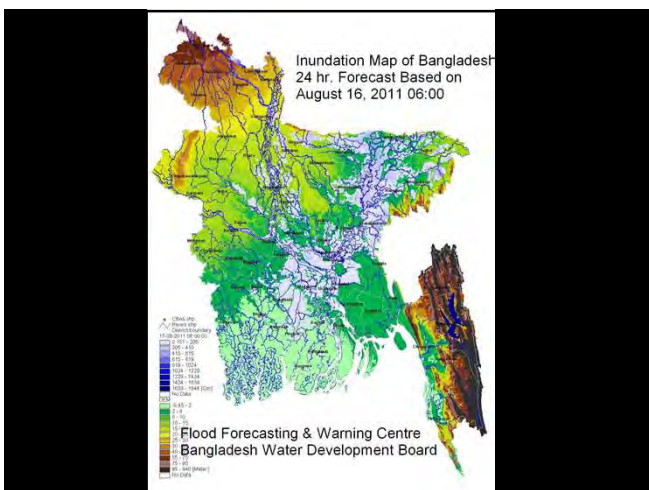


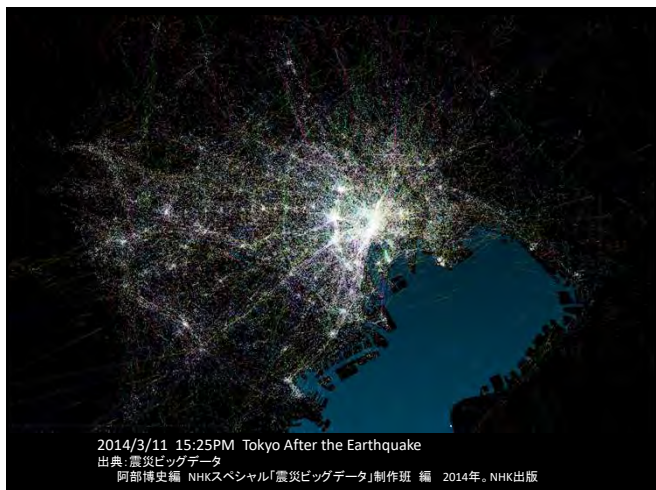
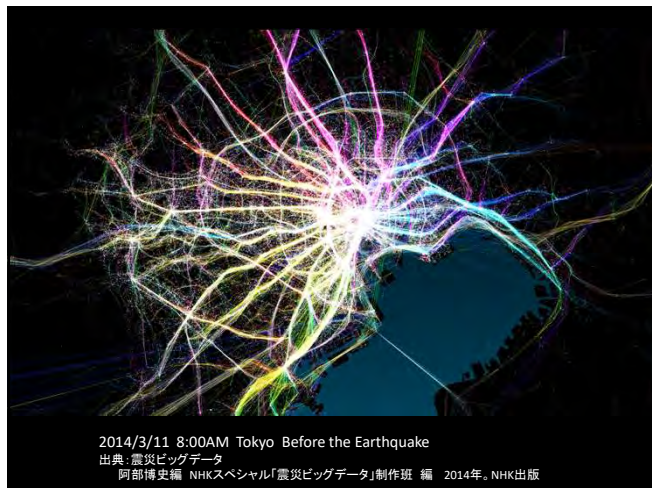

Very-Cheap RTK GNSS Receiver

- GNSS Receiver: u-blox M8T US \$80
- GNSS Antenna US \$30
- RaspberryPi Computer US \$50
- Battery Pack US \$50
- Data Modem As per use base

US \$210

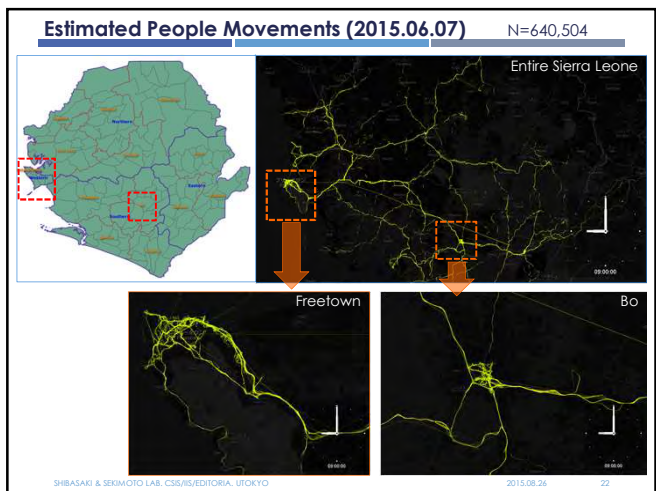
A person is shown holding a small, white RTK GNSS receiver mounted on a tripod. The receiver is connected to a smartphone, which is being used to display data or control the device.

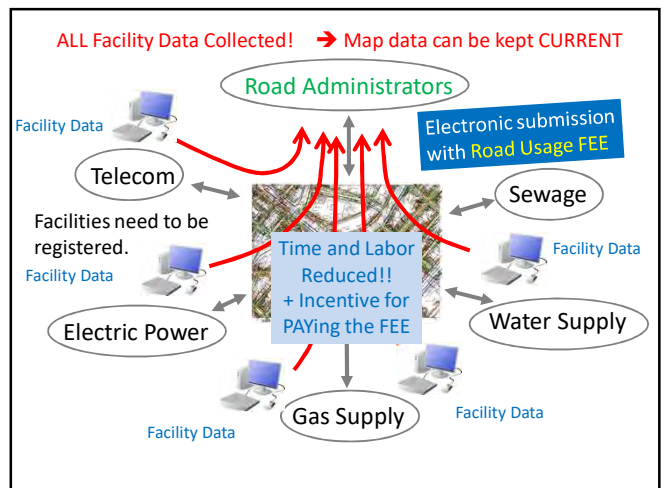
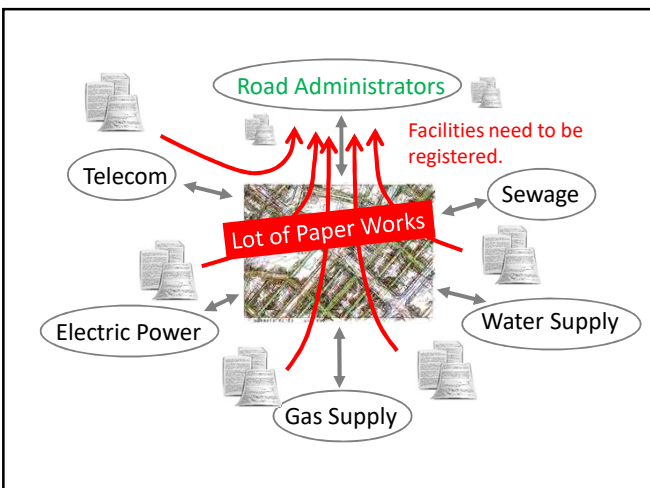
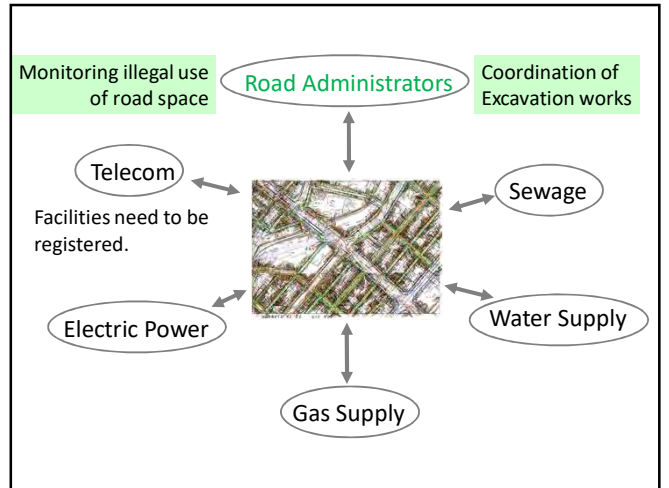


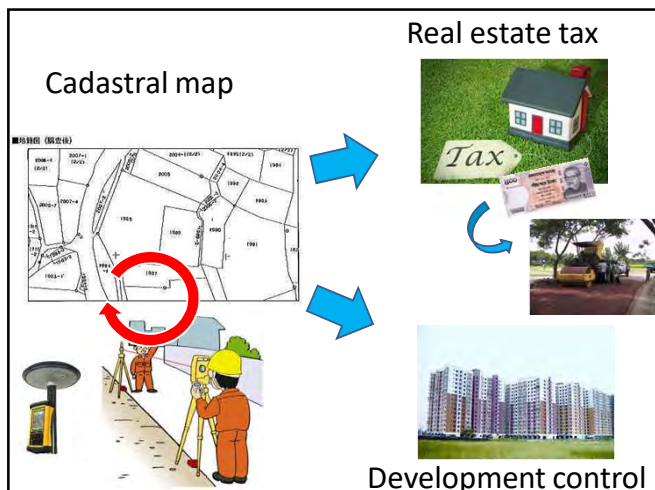



**People Flow Analysis
 for Epidemic Control
 with Mobile Phone Data**

ITU Technical Team for CDAEC
 Prof. R. Shibasaki,
 Dr. H.Kanasugi,
 Dr.A.Watayangkurn and
 Dr.W. Ohira

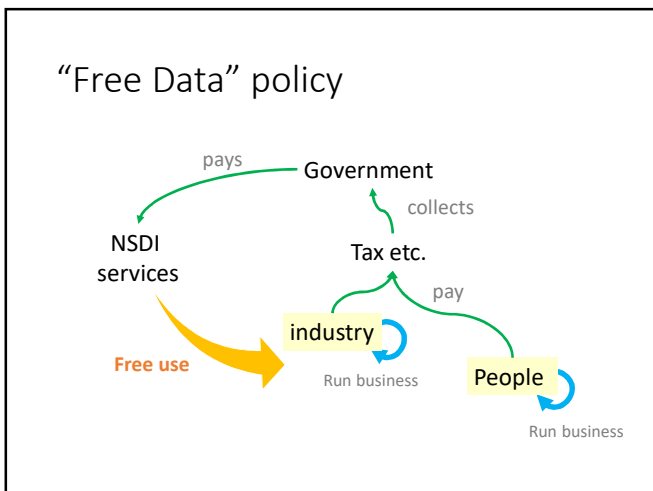
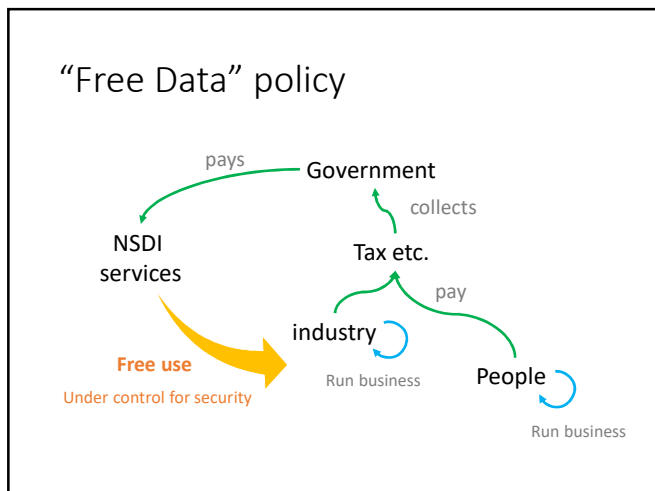
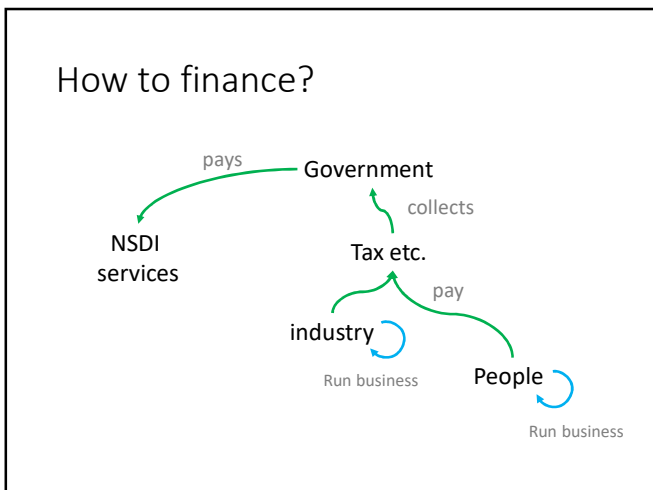


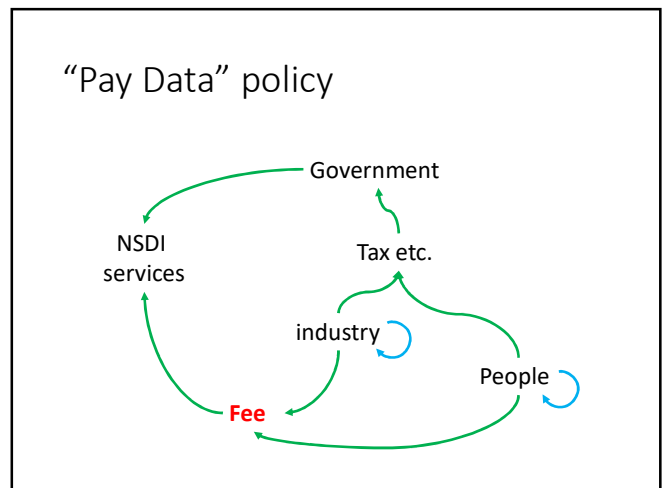
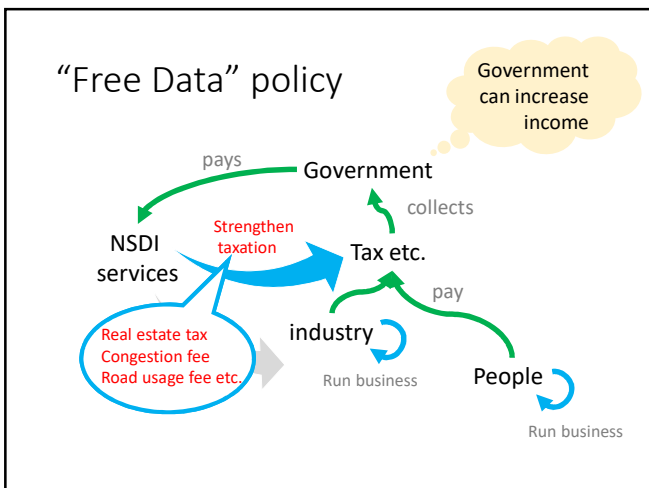
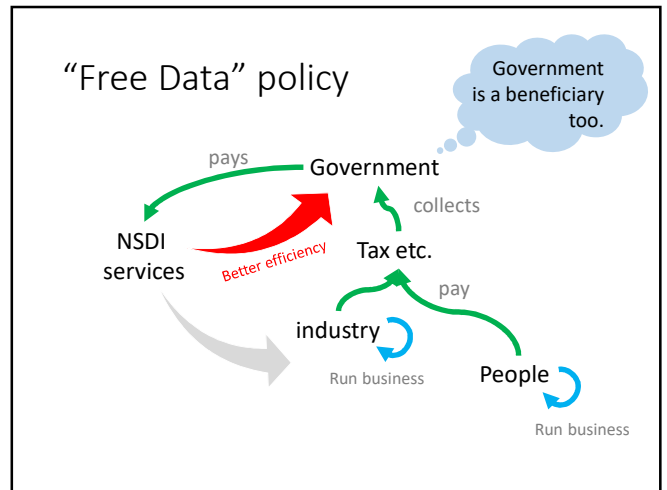
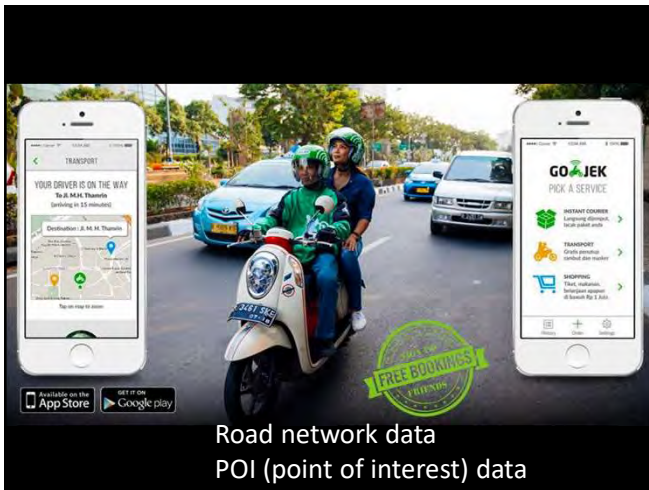
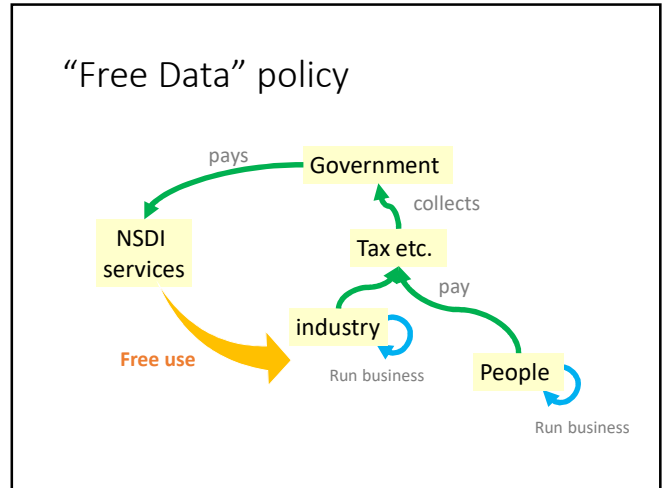
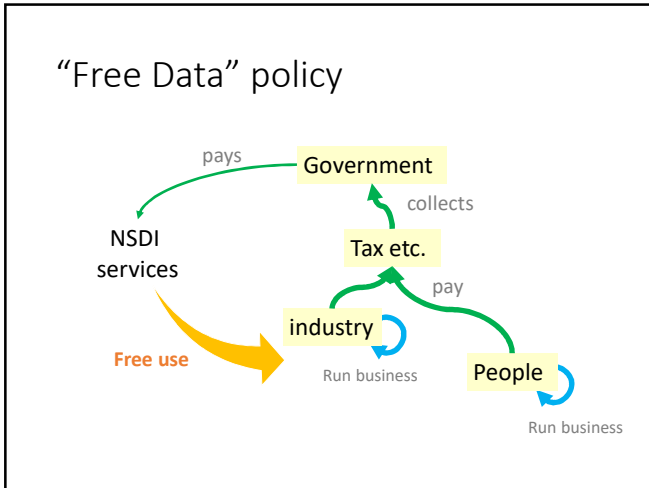


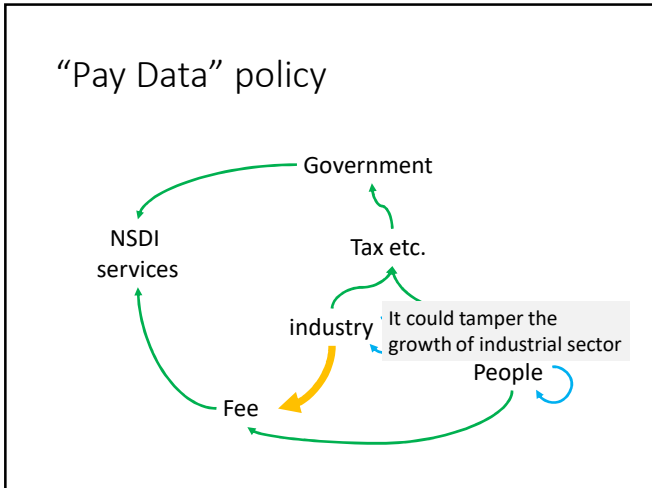


Sustainable NSDI

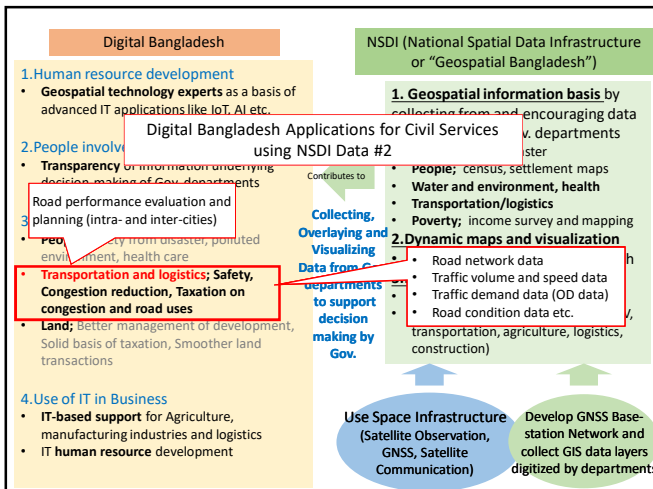
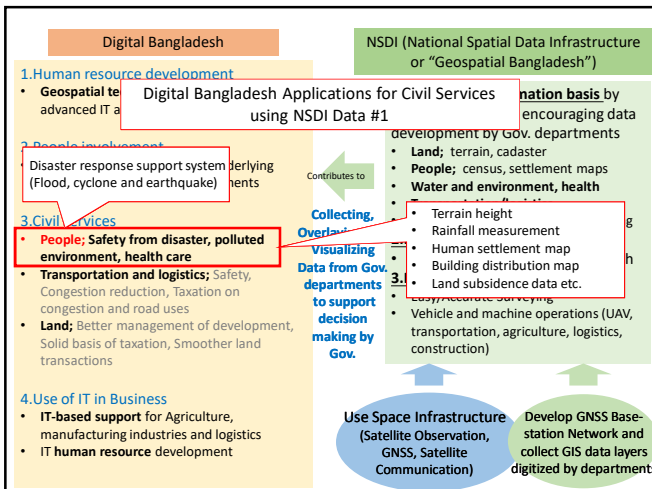
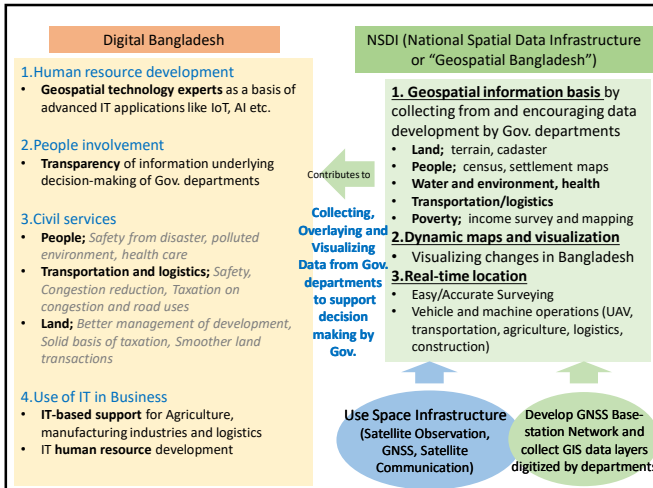
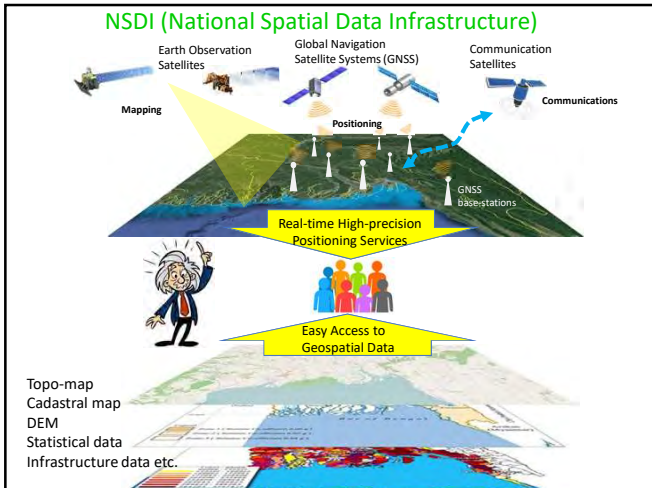
Data Policy?
Finance?

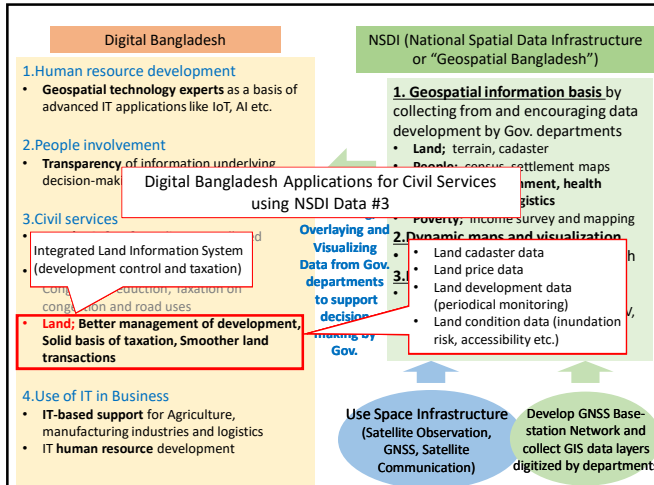






NSDI contribute to Digital Bangladesh!





Concluding remarks

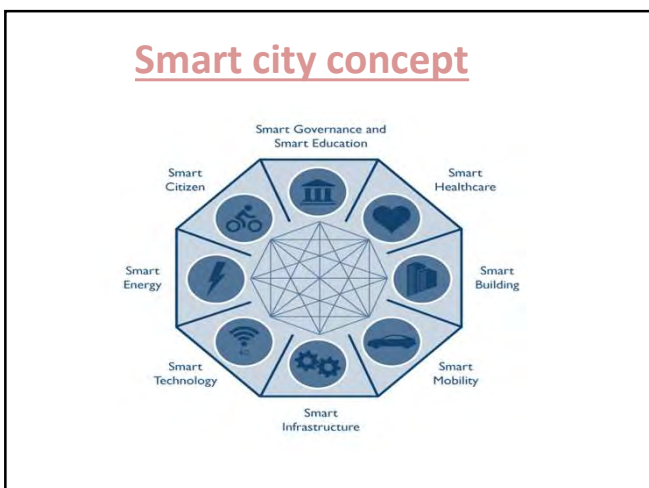
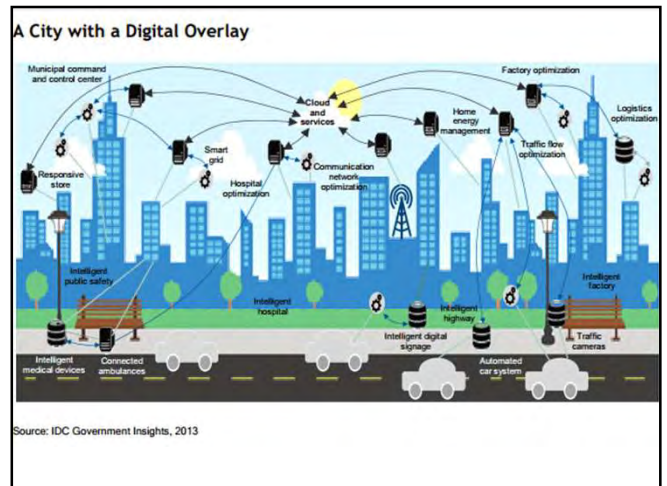
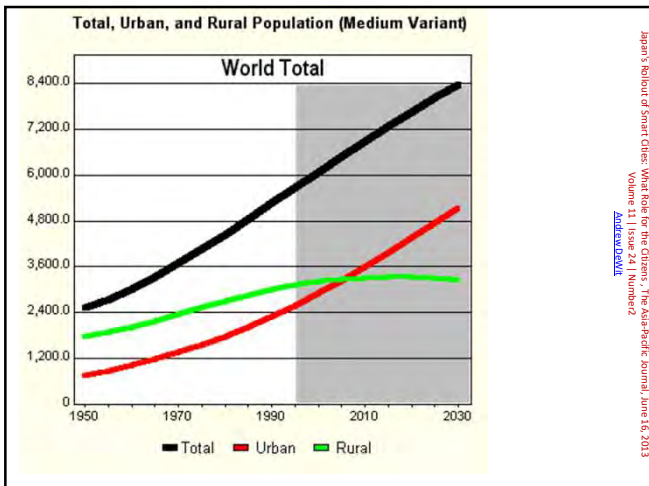
- NSDI should be a mechanism of accelerating **Value Creation from Data**, beyond a platform of data dissemination.
 - For social benefits, industrial development and the better welfare of People
 - Data policy and financing scheme should be designed based on the above principle.
- It is people or experts that create values from data using NSDI. University or BUET should lead **Capacity Building** for diverse and innovative users of NSDI.

Needs, Demands and Value Additions of NSDI: Bangladesh Context

Dr. Md. Mafizur Rahman
 Professor of Civil Engineering
 BUET
 mafizur@gmail.com

Pilot Project and System Design Concept for NSDI Construction in Bangladesh
 Hotel Pan Pacific Sonargaon, Dhaka
 September 12, 2017

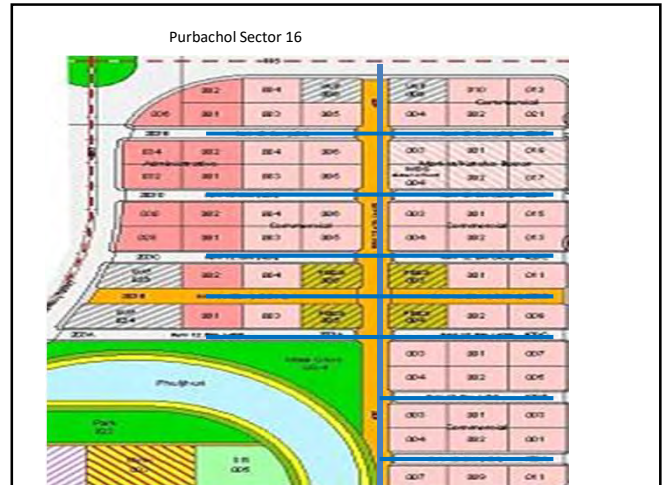
Needs, Demands and Value Additions of NSDI: URBAN AREAS



- ## features
- ❖ Smart parking
 - ❖ Intelligent transport system
 - ❖ Tele-care
 - ❖ Traffic management
 - ❖ Smart grids
 - ❖ Smart urban lighting
 - ❖ Waste management
 - ❖ Smart city maintenance
 - ❖ Smart taxi
 - ❖ Digital-signage.

Various Service Lines

- Water Supply
- Sewerage
- Storm Water
- Gas
- Electricity
- Internet (Fiber Optics)
- Telephone (Land phones)
- Television



SERVICE LINES ARE NOT SIMPLE: Have Associated Components



INSTALLATION OF NEW PIPE/ Maintenance of Existing Systems

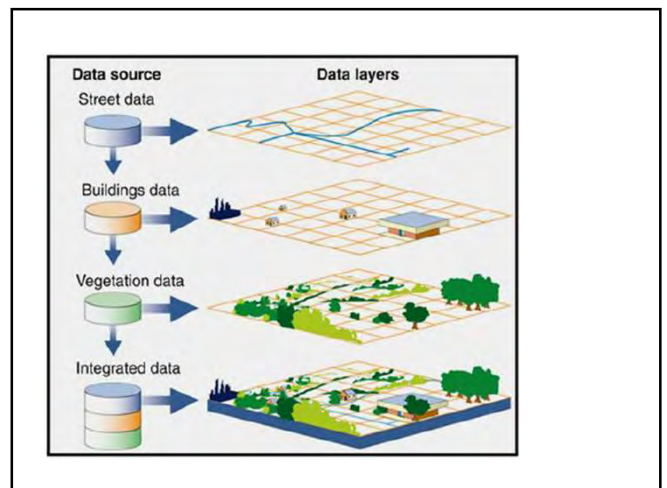
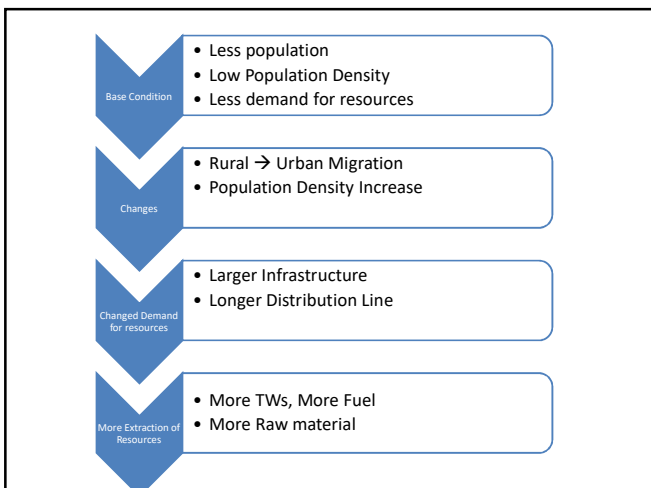
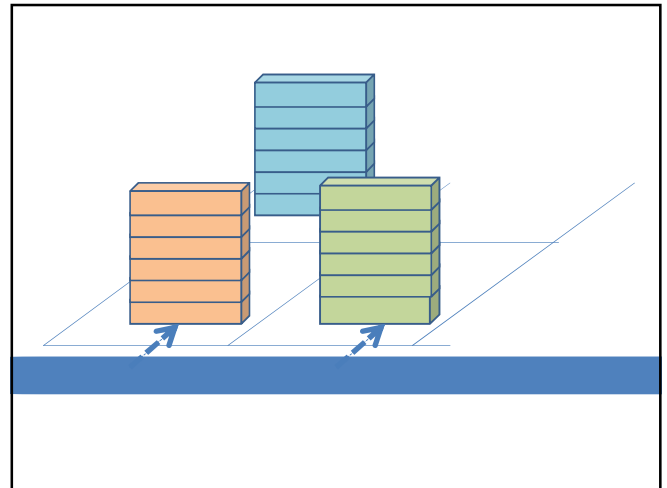
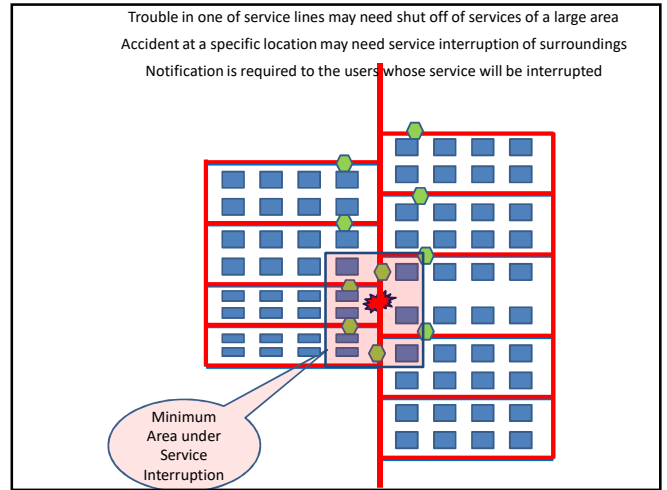
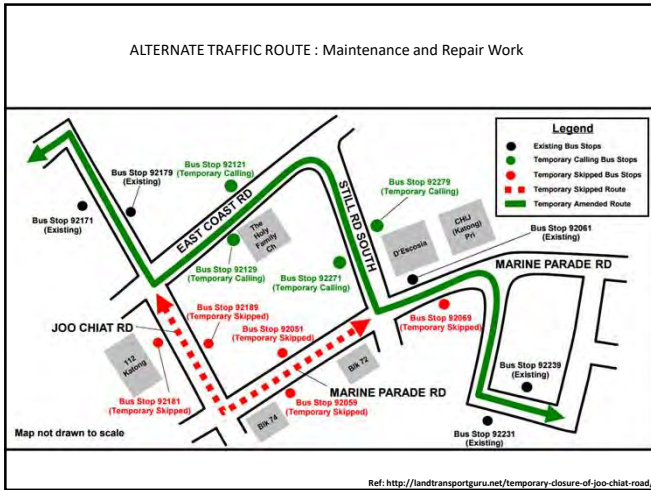


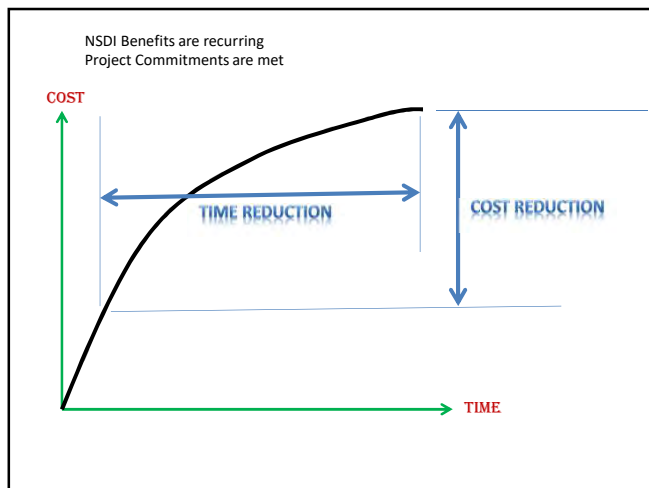
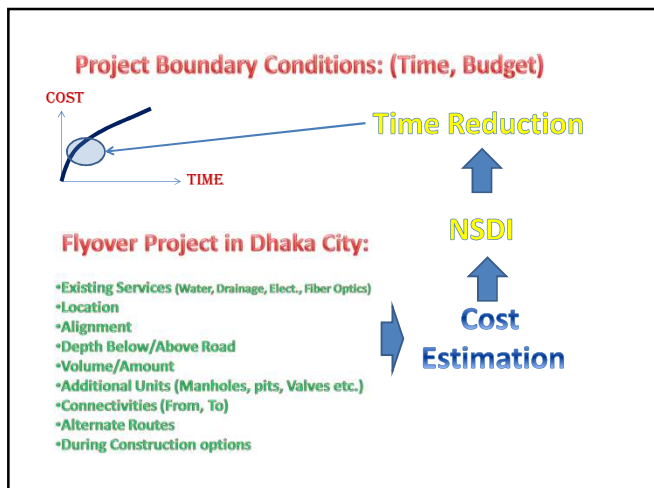
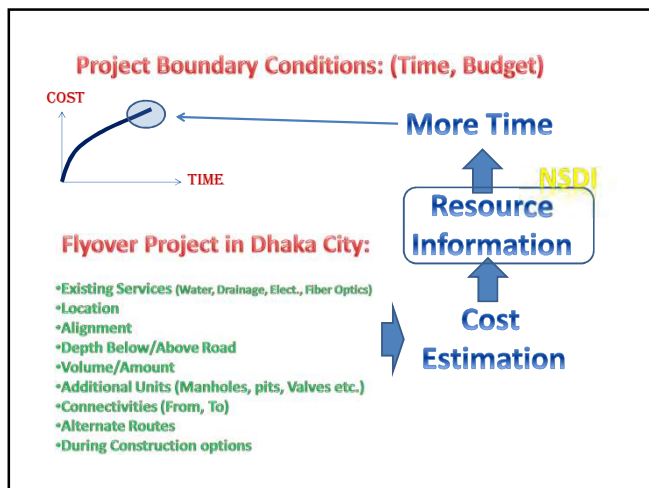
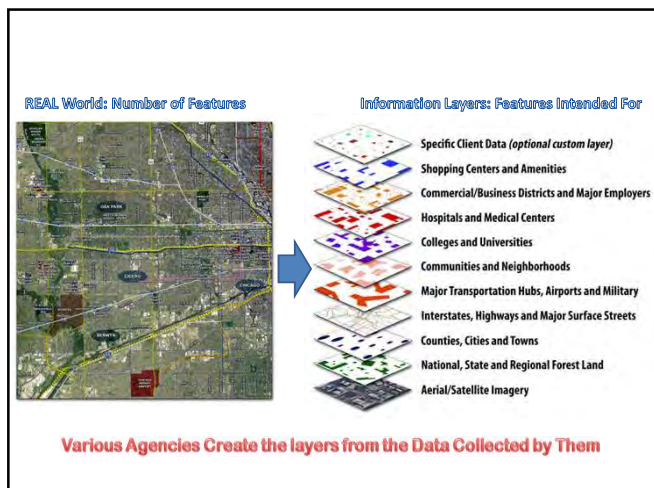
Excavation is difficult in a Densely populated City : Dhaka



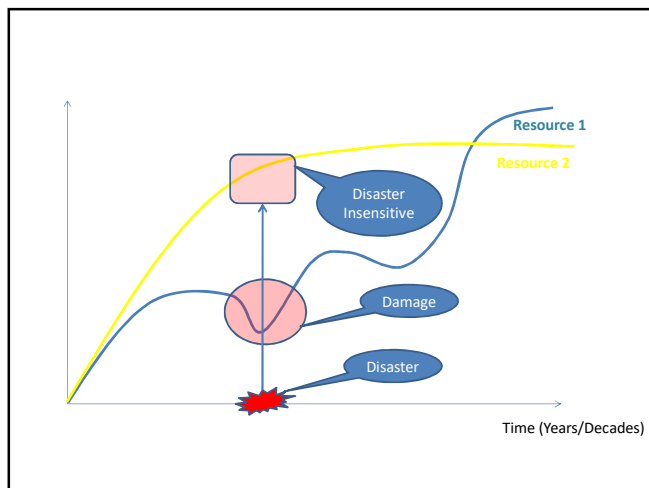
Excavation is difficult in a Densely populated City : Dhaka



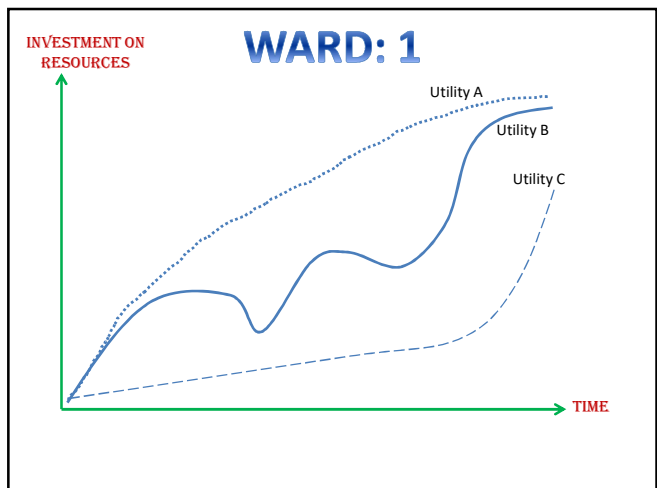
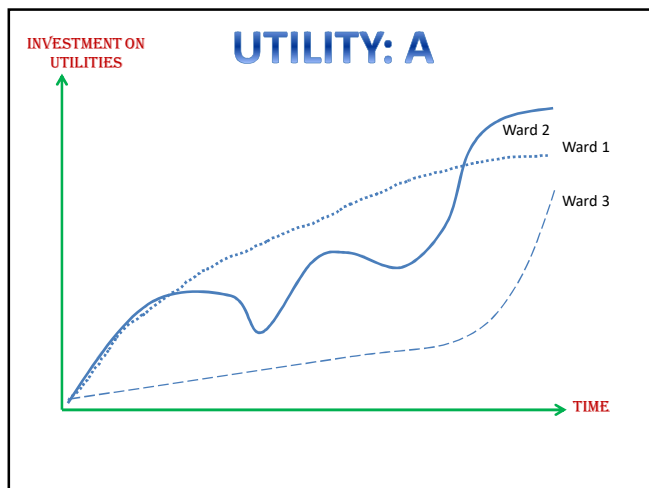




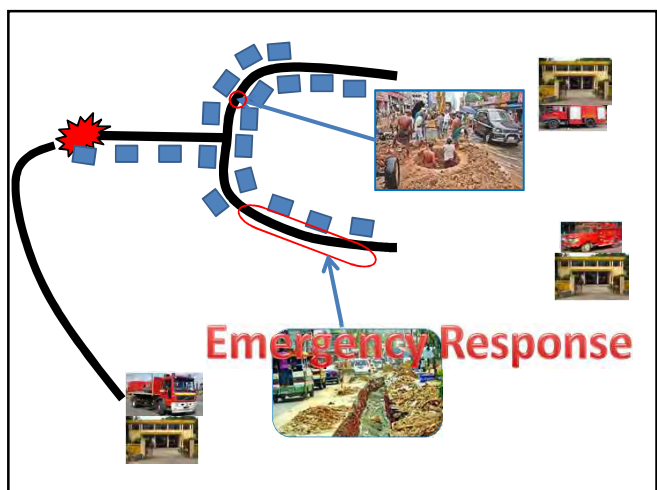
Information of Resources
Can Save Time and Cost:
Projects can meet
Time and Cost
Limits



	Resource A	Resource B	Resource C	Resource D	Resource E
LOCATION 3					
LOCATION 2					
LOCATION 1					
Disaster 1	S+	S++	S++	IS	S+
Disaster 2	S++	S++	IS	S+	S+
Disaster 3	IS	S++	S++	S+	S+
S: The Resource is sensitive to the Disaster, ++: The Degree of Sensitivity, IS: Disaster Insensitive Resource					
Disaster 5	S+++	S++	S+++	IS	IS
Disaster 6	S++	S++	S++	S+	S+
Disaster 7	S++	S++	S++		



- # Additional Demand for resources at the user's end
- # Additional Distribution need (Infrastructure Upgradation)
- # Additional Demand for resource Extraction at Source (Generating more resource)
- # Time and Location (Resource Allocation)



Obstacles During Disaster

- Maintenance work
- Narrow Lanes (Width)
- Schools/Hospitals

Fire Station

- Nearest/Farthest
- Fastest Station

FIREFIGHTER

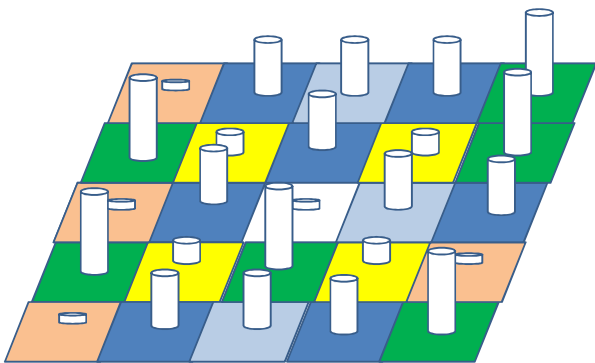
Resources/Strength

- Ability to mitigate
- Sufficient Resources

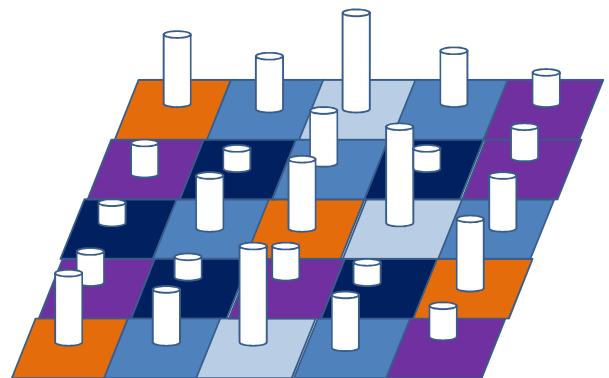
Needs, Demands and Value Additions of NSDI: RURAL AREAS



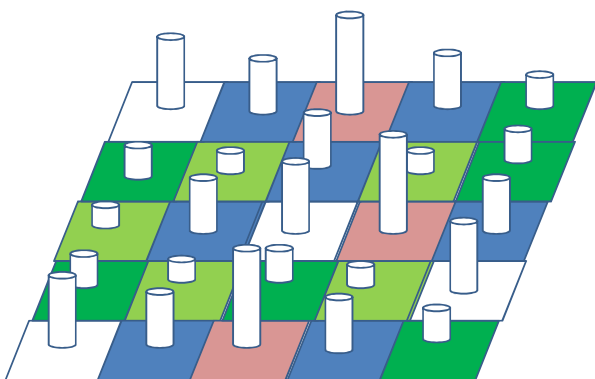
Zone 1: Winter



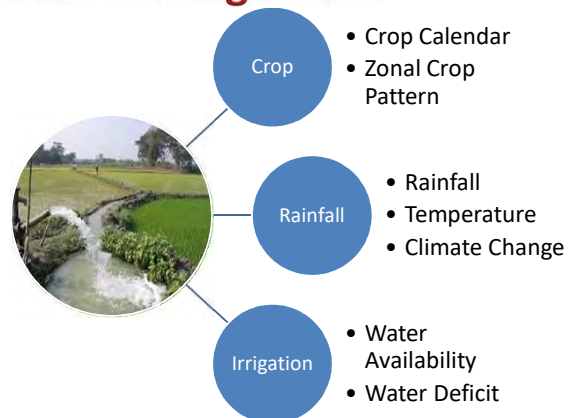
Zone 1: Summer

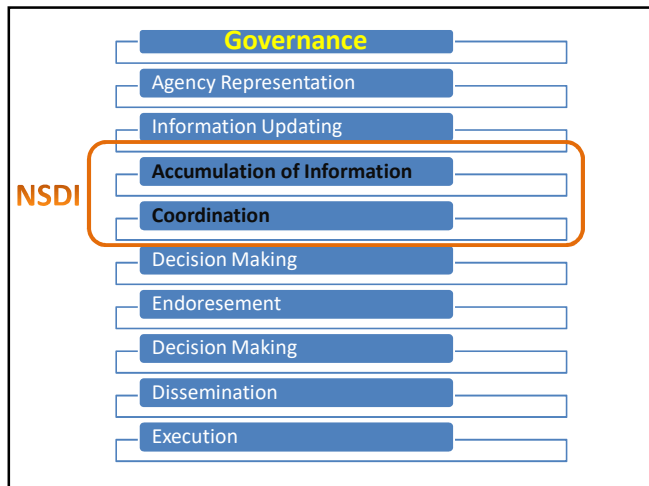
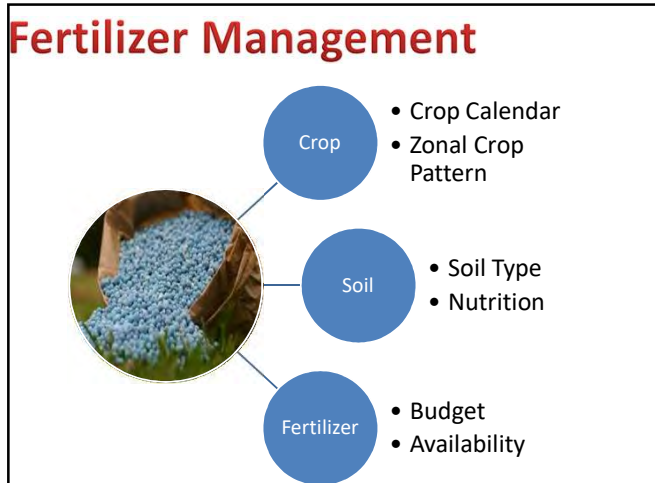


Zone 1: Monsoon

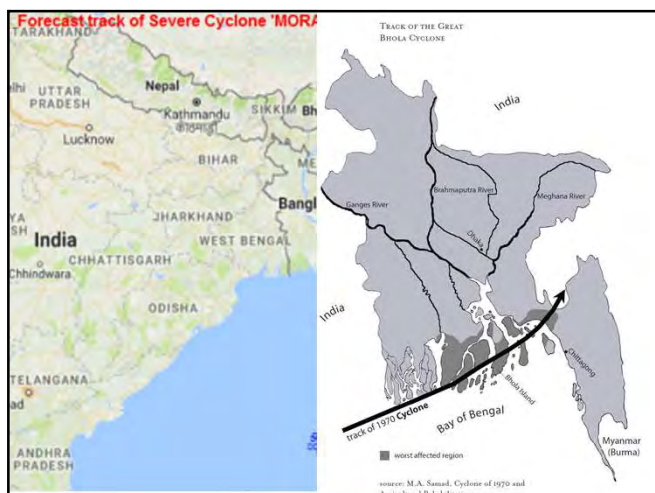
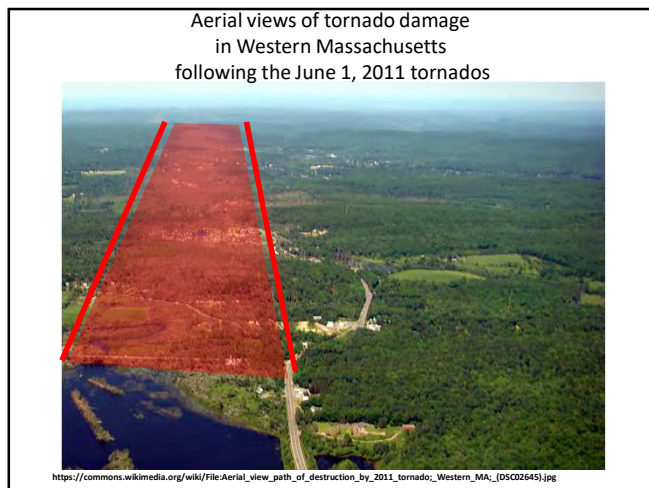


Water Management



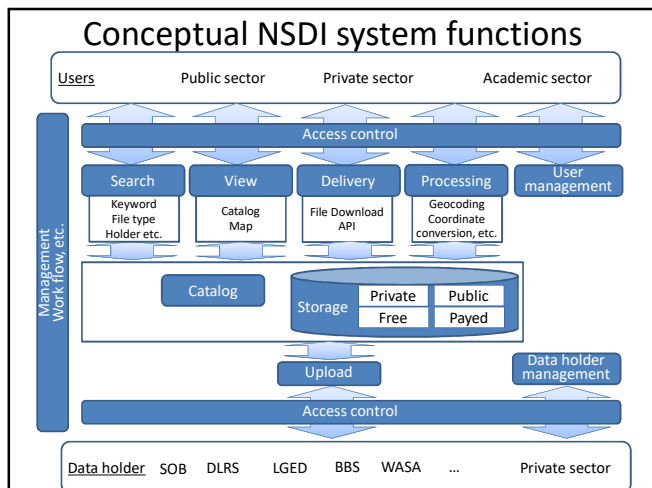
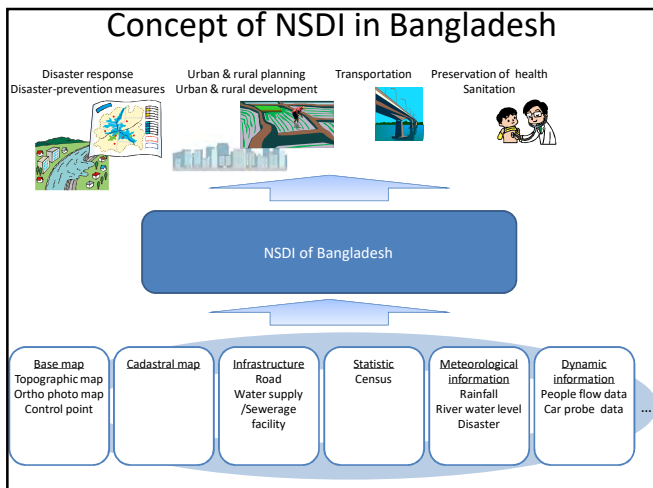
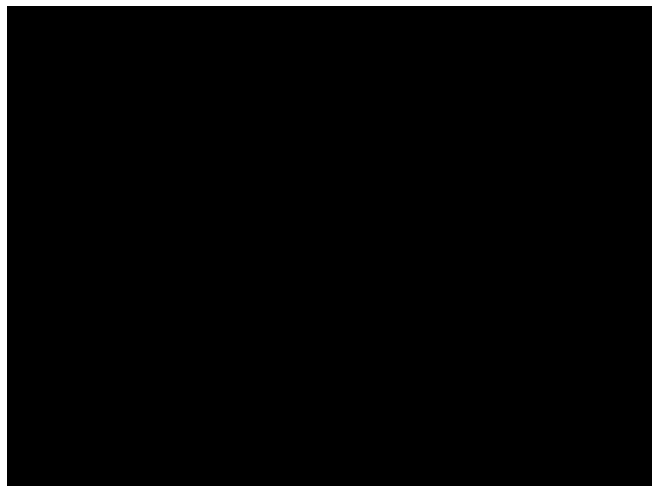
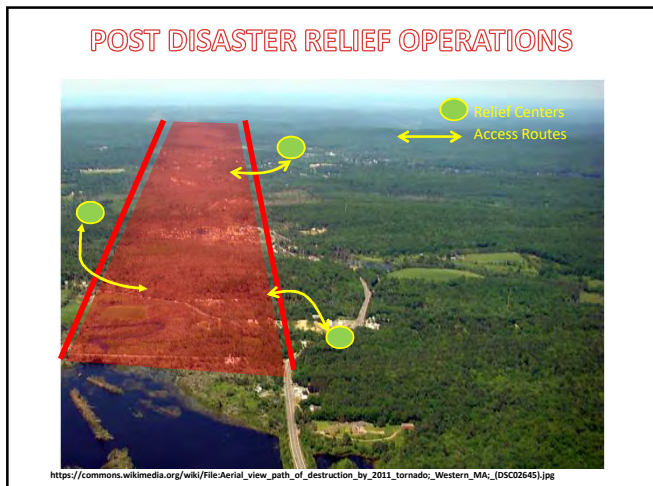


Disasters: Damage, Loss, Relief Operations for Disaster Recovery and Reconstruction



Overall Summary of Damage and Losses

	Disaster Effects, million Ariary			Disaster Effects, USD million		
	Damage	Losses	Total	Damage	Losses	Total
Social Sectors	212,193.20	24,425.60	236,618.80	128.60	14.80	143.41
Education	5,276.60	1,059.90	6,336.50	3.20	0.64	3.84
Health	11,230.00	5,690.50	16,920.50	6.81	3.45	10.25
Nutrition	1,314.30	1,575.70	2,890.00	0.80	0.95	1.75
Housing and Public Administration buildings	194,372.30	16,099.50	210,471.80	117.80	9.76	127.56
Productive Sectors	13,974.8	212,216.10	226,190.80	8.47	128.62	137.09
Agriculture, livestock and fisheries	10,461.10	159,564.30	170,025.40	6.34	96.71	103.05
Industry and Commerce	2,849.5	27,423.8	30,273.2	1.73	16.62	18.35
Tourism	664.20	25,228.00	25,892.20	0.40	15.29	15.69
Infrastructure	60,792.10	24,954.90	85,747.00	36.84	15.12	51.97
Electricity	3,502.40	2,957.60	6,460.00	2.12	1.79	3.92
Water and Sanitation	616.80	1,729.00	2,345.80	0.37	1.05	1.42
Transport	55,383.60	20,083.60	75,467.20	33.57	12.17	45.74
Telecommunications	1,289.30	184.70	1,474.00	0.78	0.11	0.89
Cross-Sectoral	356.60	475.80	832.40	0.22	0.29	0.50
Environment	356.60	475.80	832.40	0.22	0.29	0.50
TOTAL	287,316.70	262,072.40	549,389.00	174.13	158.83	333.00



NSDI Challenges

Accessibility of the data: When any government agency or department collects data, they feel this data is their own and no one has the authority to own them. By this, they forget the benefit of giving this data as they may need some data that are collected by others instead of collecting them again.

-Availability of digital data: One of the bases in NSDI implementation is sharing the data and this can be difficult with non-digital data. Also, sharing has become easier with the advancement in the technology which can be done by using the internet.

- Need of Coordination (Institutional arrangements): Avoiding the duplication is one of the most important advantages of NSDI. And this advantage cannot be achieved with the lack of coordination and without good arrangements among agencies, particularly among agencies that receive the money from the same resource (i.e. government). The data may be collected by one of the agencies and as a result of absence of the coordination the same data collected again which duplicates the efforts and the money.

Incompatibility of data (lack of standards): Sharing the data is affected greatly by the lack of data sets standards. Collected data can be classified and organized in different ways, especially when using GIS databases, based on each agency needs and requirements. Hence, these data cannot be integrated in order to be shared with other agencies.

-Lack of experts (knowledge and skills): NSDI system design and management needs experience and knowledge in order to put the concept of the institutions structure and policy in a network and database. On other words, there is a lack of experts in GIS and IT fields.

-Absence of technology infrastructure: In many countries, the problem of deficiency of the technology such the high speed internet, fully constituted WAN and LAN is still present. Sharing the data is affected by this issue as agencies cannot give and take the data easily.

- Lack of Awareness: Many non-government agencies, public, and private sectors still have no information on GIS and SDI. These people are not cooperating due to their unawareness of the benefits of disseminating information to the public and the importance of sharing the data.

-Funding limitation: Many organizations suffer from the lack of funding in many spatial projects because these projects have big size data which need high processing equipment in addition to big size storage which are too expensive. Also, government agencies have some constraints in funding as they may need to show results to get the required fund. In addition, as mentioned above, the lack of organization may duplicate the money that is spent on different projects for the same area.

-- **Availability of Metadata:** The presence of metadata facilitates the ability of the users to reach its need rapidly and easily. Therefore, collection of a big size of data without metadata describe them would be like a mess. Also, the access to the required data would be time consuming if there is a probability to find these data.

-- **Need of Legal aspects:** NSDI is not only consisting of technical aspect. It is supported by policies and laws, and some of the agencies consider policies as the most important component of NSDI. Policies of many organizations are not suitable for digital data. This usually happens through the process of moving from the use of paper maps to digital data which can be transferred by the networks (internet, intranet). When policies are to manage paper maps and traditional approaches, and they are no longer can be used for digital forms. Also, another issue is the lack of the policies of the multi-field and multi-agency cooperation.

-Difference in languages: The provision of a platform with multilingual support is important and is not a trivial issue. Many nations consist of more than one language. Thus, data may be entered in a language which is different from some of the users. Therefore, there would be difficulties in searching, querying, and analysing the data.

-- **Weak Cooperation:** The main pillar of NSDI is Cooperation. The more cooperation in an NSDI initiative the more successful will be. Some of NSDI projects may implemented in a multi-stakeholder environment where the partnership has to be enough strong to push the project to the success. A number of NSDI projects experience uncooperative organizations which can affect all the aspects of an NSDI significantly.

-- **Long Term Benefits:** Some of the stakeholders resist an NSDI project in case of there is no evidence on short or medium term benefits because NSDI projects need some time in order to show result or benefits.

NSDI advantages

Throughout the world, many NSDI initiatives have been established and many researchers have studied it from many aspects (Components, Challenges, Advantages, implementation approaches...etc.). In any of these NSDI, there are many challenges must be overcome to move on looking for the success. Therefore, the benefit of NSDI should be strong enough to motivate any government in different levels to start such project. Some of NSDI advantages have been summarized as follow (CGDI, 2003; Ceti & Tomi, 2009; Manisa & Nkwae, 2007; Martirano, Bonazountas, & Gagliardi, 2009; Shariff et al., 2011; The Land Information Council Of Jamaica, 2007):

- Guarantees the availability of the data to the users from different agencies.
- Prevents the duplication in the spatial data by ensuring the data is collected one time.
- Removes the redundancy of the spatial data.
- Supports the economic development at different level: national, provincial, and local by providing platform has all needed maps by investors and private sectors, and promoting geospatial technology for tourism.
- Links multi-government country by using inter-jurisdictional and intra-jurisdictional linkages.
- Increases transparency of government and decision-making. - Improves the cooperation among agencies and different departments.
- Creates and promotes the partnership between public and private sectors.
- Enhances managing natural and land resource in addition to the actions that affect community.
- Helps in providing the foundation in a consistent and cost-effective manner for monitoring programs (Environmental, Economic, and social changes).
- Harmonizes numerous sizes of spatial data.

Thanks

mafizur@gmail.com

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- Making the Roadmap to Establishing NSDI -

Workshop

Roadmap for Establishment & Operation of NSDI (Draft)

September 2017

Survey of Bangladesh (SOB)
Ministry of Defence
The Government of the People's Republic of Bangladesh

JICA Map Administration Expert
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1. Time Frame

An Expected Process of NSDI Establishment and Operation Plan at the dawn in Japan

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Phase	Infrastructure formation phase [Establishment of a framework and rules]				Expansion phase [Development of the foundation]			Action plan to realize rich & varied life of the people using GIS [Practical dissemination]			
Measures	<ul style="list-style-type: none"> Development of NSDI Standardization of geospatial information Long-term planning for dissemination and promotion 				<ul style="list-style-type: none"> Development, dissemination (nationwide) Update of NSDI (nationalwide) Implementation of various technical assistance 			<ul style="list-style-type: none"> GIS Action Program 2002-2005 Promotion of efficiency of administration using GIS Support for full-scale dissemination of GIS 			

Choice, Concentration & Reduce time

In case of Bangladesh

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Period	Infrastructure Formation / Dissemination period				Operation period (1)					Operation period (2)				
Start	July 2018 – June 2021 (3 Years)				July 2021 - June 2026 (5th 5-year plan period)					July 2027 - June 2031 (9th 5-year plan period)				
Measures	<ul style="list-style-type: none"> Basic Measures Formulation of Action Plan 				<ul style="list-style-type: none"> Implementation of Action Plan 					<ul style="list-style-type: none"> Implementation of Action Plan 				

2.1. Concept for Roadmap of Establishment & Operation of NSDI in Bangladesh (Tentative)

Contribution to the construction of digital Bangladesh as a middle income country towards information / knowledge society!

Causes

- Infrastructure Development
- Socio-Economic Development
- Transparency & Efficiency of Administration
- Disaster Prevention / Reduction
- Access, Use & Share of GI

Establishment & Operation of NSDI

This is important!

Basic measures

- 1) Legal Framework
- 2) NSDI Promotion Structure
- 3) Geographic Information Standards
- 4) Geospatial Information
- 5) ICT System / Services
- 6) Other

Action Plan

Formulate and implement action plans that utilize GIS and satellite positioning technology.

Cooperation with five-year plan, a2i program, GeoDASH, Open Data and so on

Cooperation with related policies

Digital Bangladesh

- Human Resource Development
- Connecting Citizen
- Digital Government for Pro-Poor Services
- ICT in Business

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2.2. Basic Principles concerning Establishment & Operation of NSDI (Tentative)

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

- I. As basic measures for establishment and operation of NSDI, development and provide of geospatial information, promote the use of GIS and satellite positioning technology (CORS), human resource development, research & development, and strengthen cooperation among related organizations.
- II. 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.
- III. Improve the efficiency, sophisticated (advanced) and transparency of administrative management of the central and local governments.
- IV. 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.
- V. Create and develop diverse businesses utilizing GIS & satellite positioning and harmonize with the environment.
- VI. Pay attention to protection of personal information, promotion of secondary use of public data, and consideration of national security.

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3. Roadmap for Establishment & Operation of NSDI

Legal Framework

NSDI Promotion Structure

Geographic Information Standards (ISO/TC211)

Geospatial Information

IT Service / IT System

Other

Human Resources Development / Technology Development / Promotion / New Industry Creation

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3.0.1 Example of Components of NSDI

France (INSPIRE)

USA (FGDC, 2005)

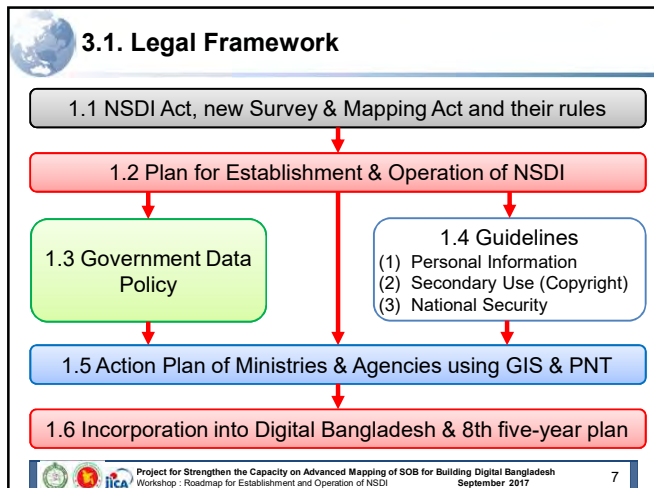
Thailand ← FGDC?

India (DST, 2001)

UNEP (AD-SDI Framework)

Brazil (IBGE, 2008)

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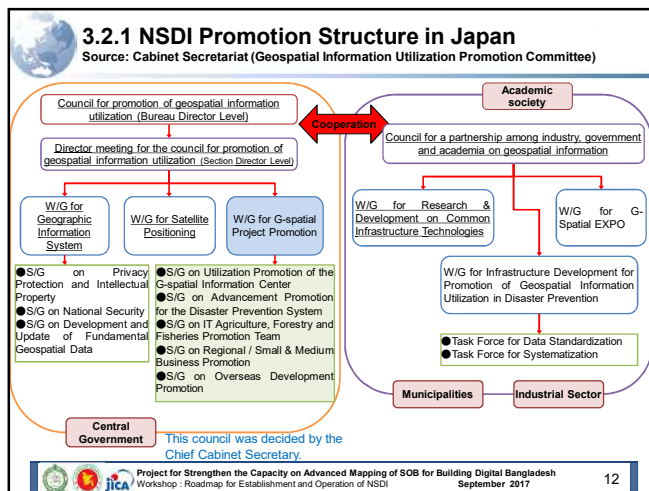
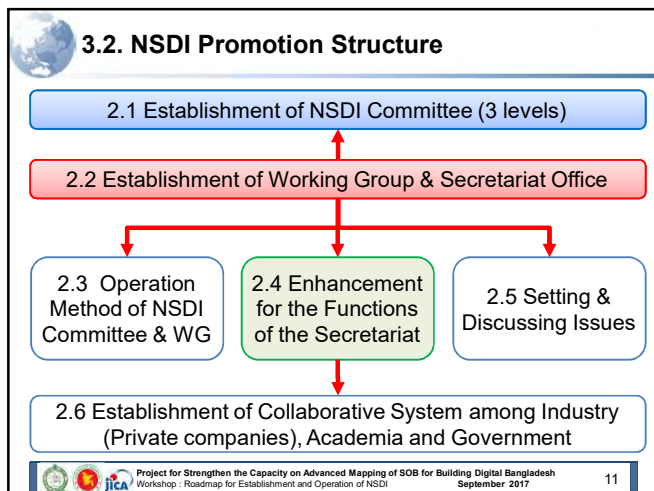
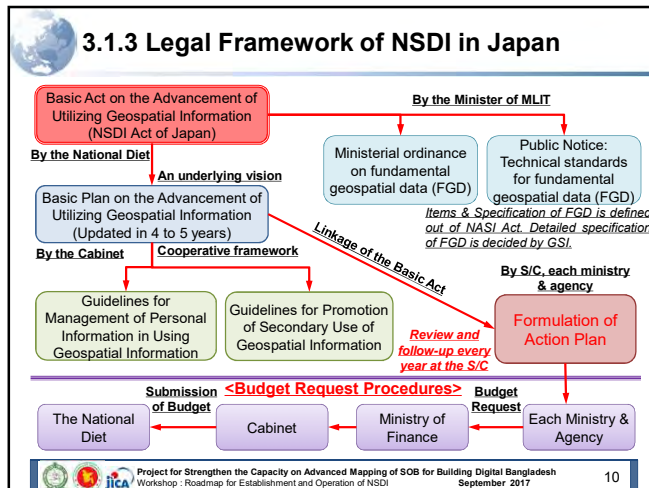
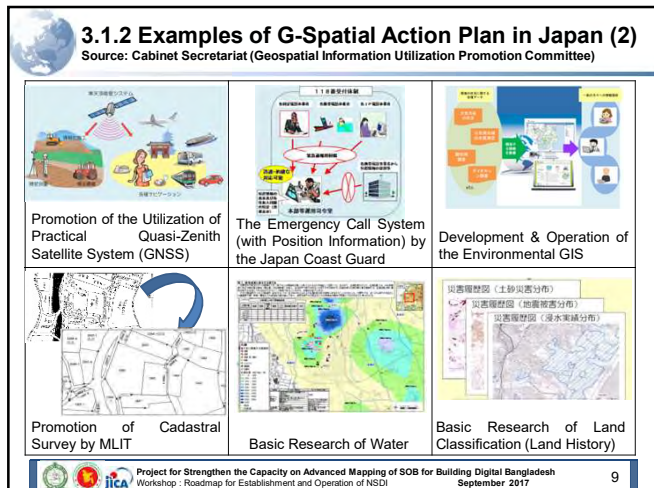
3.1.1 Examples of G-Spatial Action Plan in Japan (1)

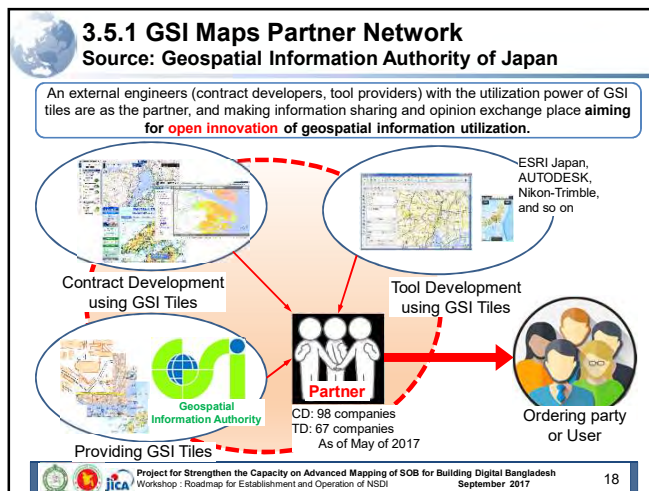
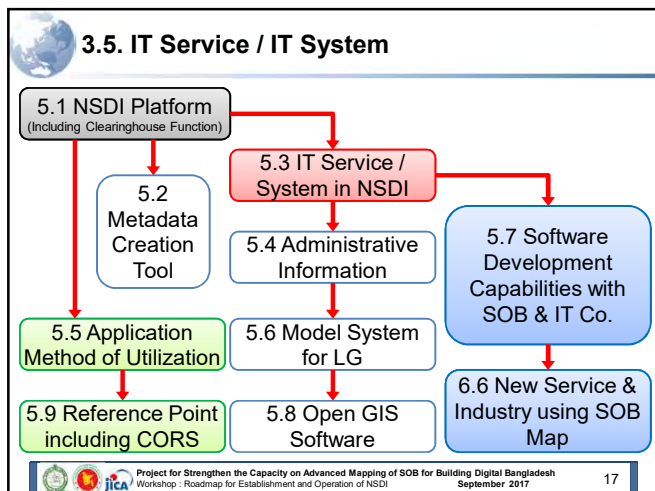
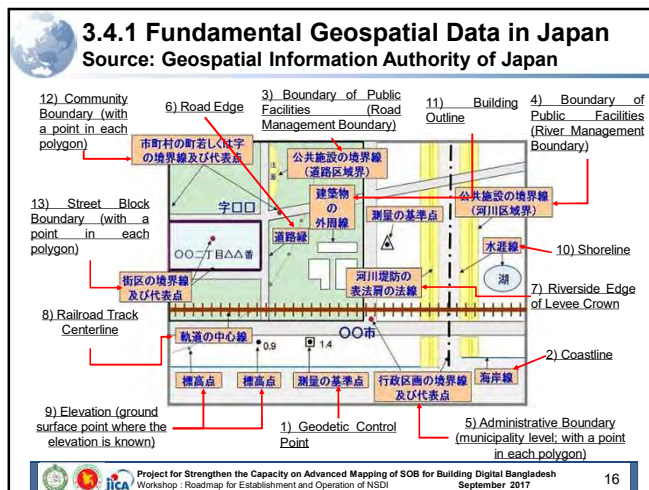
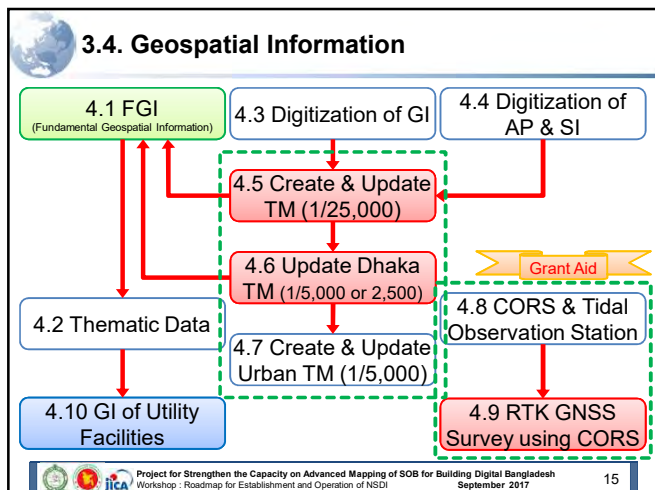
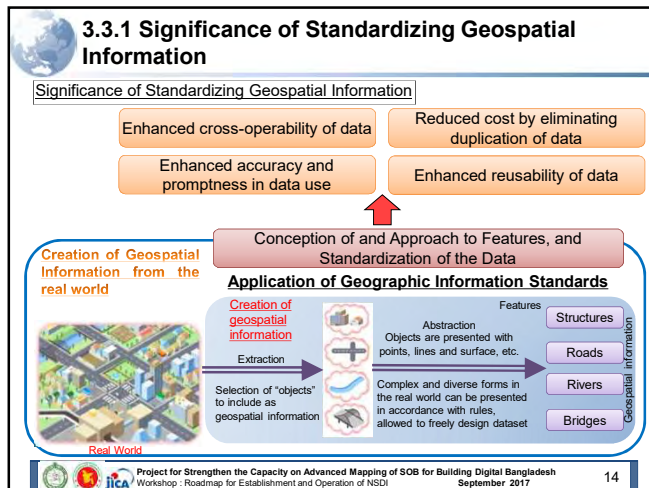
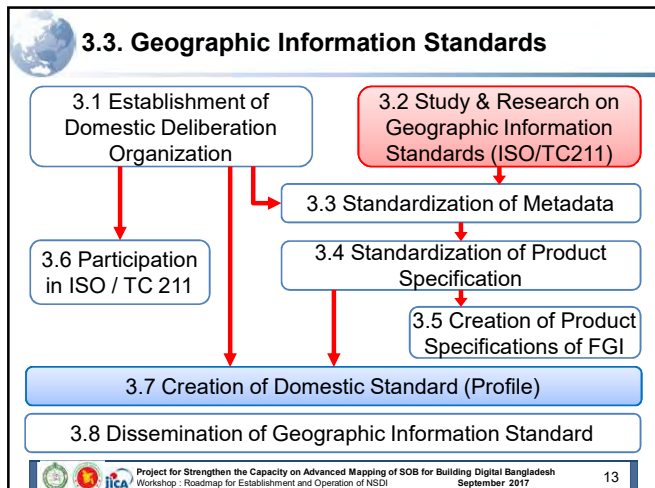
Source: Cabinet Secretariat (Geospatial Information Utilization Promotion Committee)

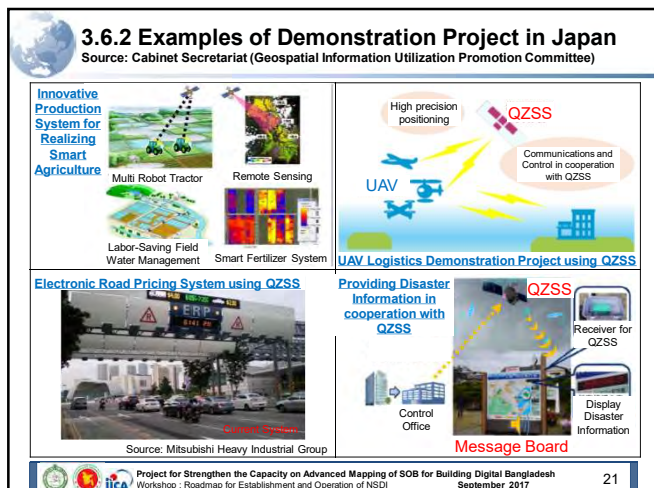
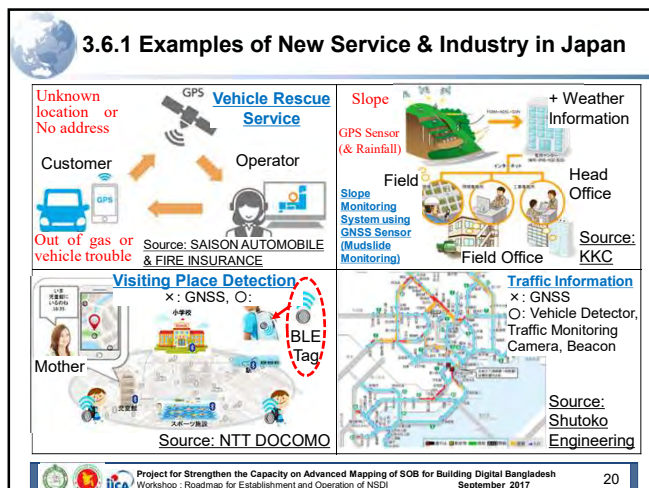
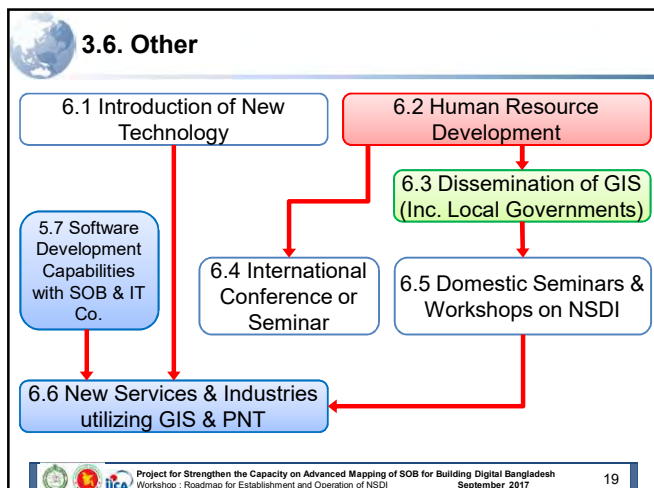
G-Spatial Action Plan of Each Ministry for NSDI in 2015

No.	Name of Ministry & Agency	# of Plan	Remarks
1	Council for promotion of geospatial information utilization	8	
2	Cabinet Office	2	Including NPA
3	Ministry of Internal Affairs and Communications	10	
4	Ministry of Justice	3	
5	Ministry of Finance	1	
6	Ministry of Foreign Affairs	2	With Cabinet Office
7	Ministry of Education, Culture, Sports, Science and Technology	15	
8	Ministry of Agriculture, Forestry and Fisheries	25	
9	Ministry of Economy, Trade and Industry	12	
10	Ministry of Land, Infrastructure, Transport and Tourism	76	GSI: 33
11	Ministry of the Environment	10	
12	Ministry of Defense	1	
13	National Police Agency (NPA)	11	
14	Other	4	
Total		187	

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Thank you very much
for your attention!!

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- Making the Roadmap to Establishing NSDI -

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Presentation on "Cost and Effect of NSDI in Bangladesh"

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Ministry of Defence
The Government of the People's Republic of Bangladesh




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1.1 Difference of cost and effect of ordinary infrastructure development project and NSDI

- Ordinary Infrastructure Development Project (Highway, Water, Gas, Electricity, Harbor, MRT, etc.).
 - Users will pay usage fee.
 - Project earns an income.
 - An income will be used for the maintenance and operation
 - cost, updating cost and extinguishment of initial investment cost.
- NSDI
 - Basically, users will not pay usage fee.
 - Therefore, project earns no income or very small income.




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1.2 Cost and income of infrastructure development project

- Ordinary Infrastructure Development Project
 - Cost:
 - Initial investment cost
 - Operation and maintenance cost
 - Updating cost
 - Income:
 - Usage fee paid by users
- NSDI
 - Cost:
 - Initial investment cost for NSDI platform
 - Operation and maintenance cost
 - Updating cost of NSDI platform
 - Data preparation and updating cost
 - Income:
 - Cost reduction by the utilization of geospatial information by NSDI users.

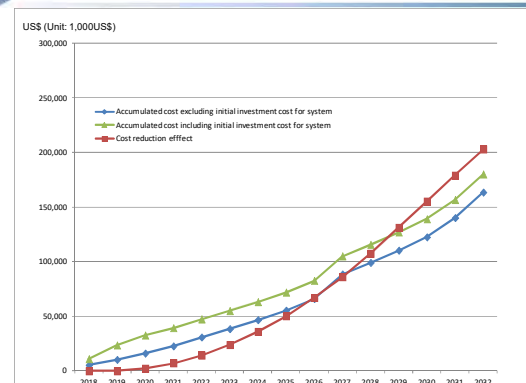



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2.1 In case of 10% up of NSDI utilization per year



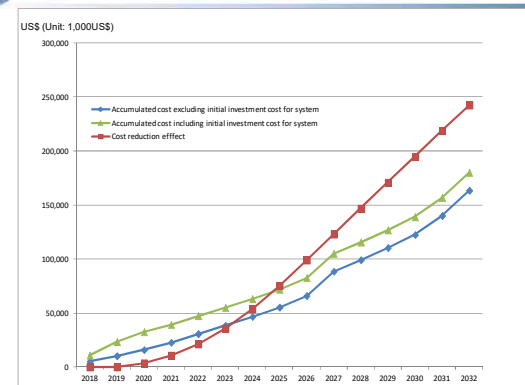



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2.2 In case of 15% up of NSDI utilization per year



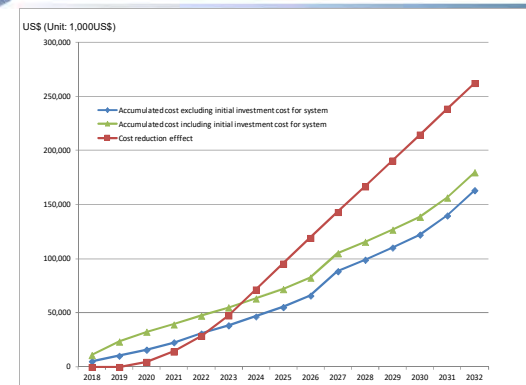



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2.3 In case of 20% up of NSDI utilization per year






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3. Conclusion


- From the viewpoint of cost and effect of NSDI, it is necessary to promote the utilization of NSDI, especially mutual data utilization among the organizations.
- Assuming that utilization of NSDI will increase 20% per year, it is estimated that at the end of 4th year after the construction of NSDI platform, the cost reduction effect will exceed the total cost of initial investment cost, maintenance and operation cost, platform updating cost and data preparation and updating cost.



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***Thank you for your cooperation
for the establishment of NSDI in Bangladesh.***



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Overview of NSDI Pilot Project

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1.1 Objective of the NSDI pilot project

- General objective of the NSDI pilot project is followings:
 - Create a limited scale of database system (Prototype System)
 - Examine the function and performance of NSDI
 - Research on the benefits and issues prior to the introduction of full scale NSDI for Bangladesh
- Purpose and target of the NSDI pilot project
 - Suggest the best specification of NSDI for Bangladesh
 - Propose the rules of operations and roles of participated organizations



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1.2 Project members and roles

- Organization of NSDI pilot project

MOD

Supervisor

SOB

Coordinator


Working Group (WG)

Implementer of the project (including SOB)

}


JICA

Provider of fund to construct Prototype System, advisor on experimenting process




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3



1.3 Schedule


Tasks	2017 Aug	Sep	Oct	Nov	Dec	2018 Jan	Feb	Mar	Apr	May	Jun
Preparation											
Requirement definition		★	WG kick-off								
Tender and contract											
Construction of Prototype system											
Setting Prototype system											
Operational test and Validation											
Evaluation											
Summarize											★
									Evaluation meetings		



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2. OVERVIEW OF THE NSDI PILOT PROJECT




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2.1 Structure of the NSDI prototype system (1/2)

- Basic design – NSDI powered by GeoDash
- The reasons for utilizing GeoDash are:
 - To well-designed geo-portal system established with support from WB,
 - To have operational experience to handle and publish various maps and made by public organizations,
 - To be effective in constructing NSDI prototype system.



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2.1 Structure of the NSDI prototype system (2/2)

■ NSDI prototype system configuration

National Datacenter
(using hosting service provided by BCC)

- Open layers (free access from users)
- Partially open layers (free access to limited attributions)
- Closed layers (authorized access only)
- Base map data (limited area) (Topographic map, Orthophoto map, GCP index, DEM provided by SOB)
- Meta data
- Application customized for NSDI
- GeoDash portal

NSDI Working members

Access
Validation
Evaluation

Functions:
- Uploading
- Downloading
- Searching
- Overlaying
- Filtering

Administration:
Data management
User management
System management

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2.2 Experimental operation (1/2)

■ Administration process

- Authorization of information**: Check the quality and liability of requested maps and information and permit to register.
- Registration**: Register maps and information layers according to the authorized request.
- Access control**: Set the rules of access to the registered information.
- Unregister and update**: Unregister or replace the maps and information with regulated procedures.
- Monitoring**: Monitor and summarize the accesses from clients.

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2.2 Experimental operation (2/2)

■ Utilizing process

- Checking functions**: Check and examine all functions of Geo-portal.
- Checking security control**: Check security of closed and partially closed layers.
- Using system**: Check search and download operation of Clearing House.

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2.3 Evaluation

■ Evaluation items are as follows:

- **Data Quality**
 - Change of accuracy or completeness from source data
 - Workload and cost of conversion and registration
 - Consistency and integrity of different maps and information
- **System performance**
 - Easiness and secureness of registration
 - Sufficiency of function of geo-portal
 - System resource: capacity, speed
- **Operation bodies**
 - Organization of NSDI operation
 - Process of operation
 - Summarization method of user activities

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2.4 Final reports

■ Final report include the following topics:

- Benefits and issues in utilizing NSDI on activities of public organizations
- Issues and necessity in preparation of base maps and geospatial information
- Examples of activities and organizations in which NSDI is essential or efficient
- Required specifications for full scale NSDI for Bangladesh

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NSDI for Bangladesh

Geodetic Products & Services for NSDI

Nayon Chandra Sarker
 Assistant Director (Survey)
 Incharge, Geodetic Detachment
 Survey of Bangladesh


Survey of Bangladesh establishes and maintains the Geodetic Control Network of Bangladesh

National Datum Yard, Gulshan, Dhaka



Established: 1994

National Horizontal Datum, Gulshan, Dhaka




Horizontal Datum Fixation

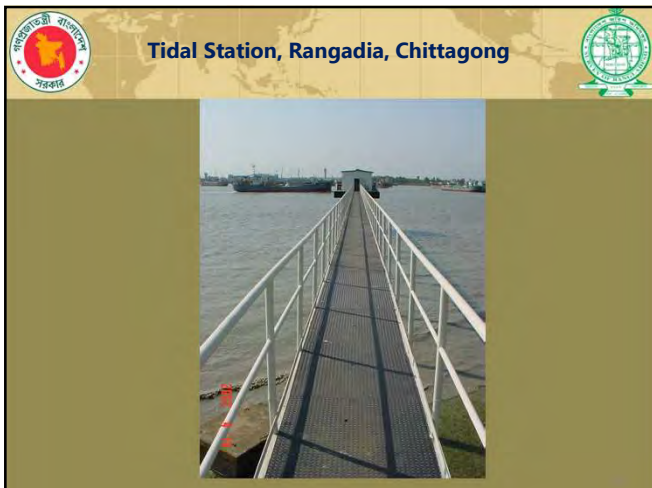
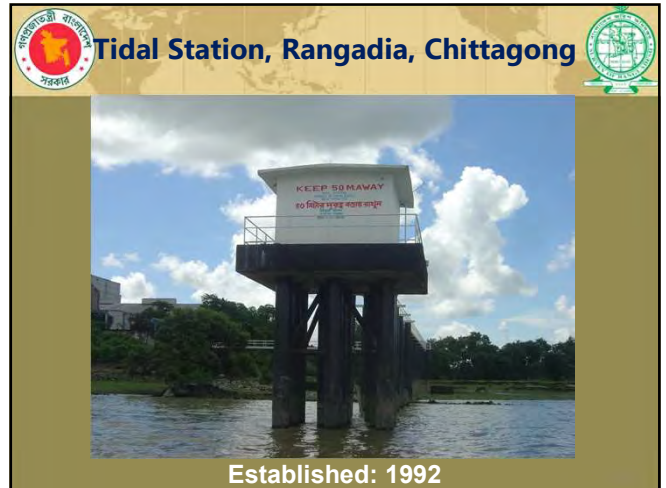
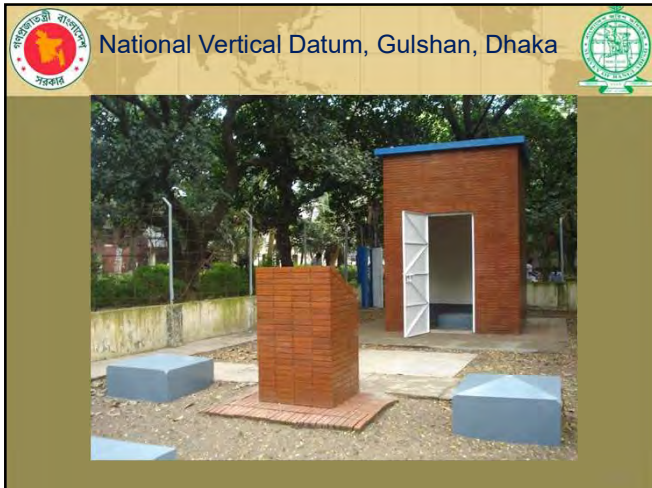


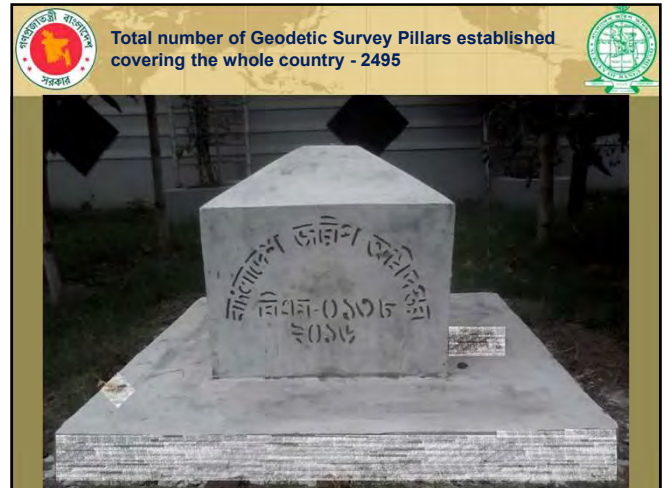
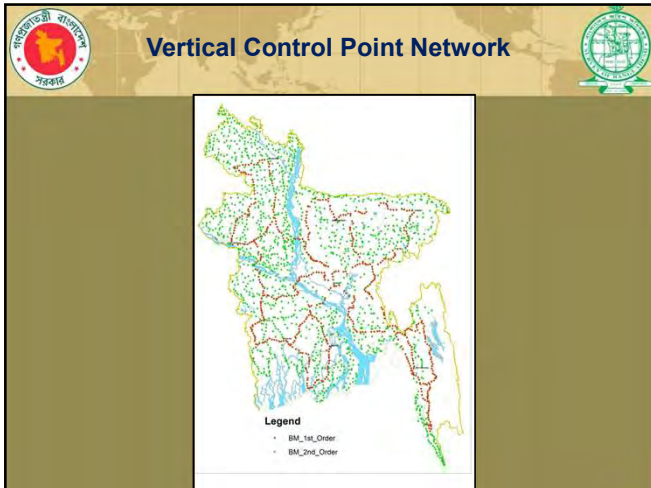
Station Name	Country	Distance from Dhaka (m)
Wettzell	Germany	6,787,514.1944m
Tsukuba	Japan	4,805,509.9497m
Yarangadee	Australia	6,156,922.11986m
Hartebeesthoek	South Africa	8,043,381.7942m

Horizontal Control Point Network



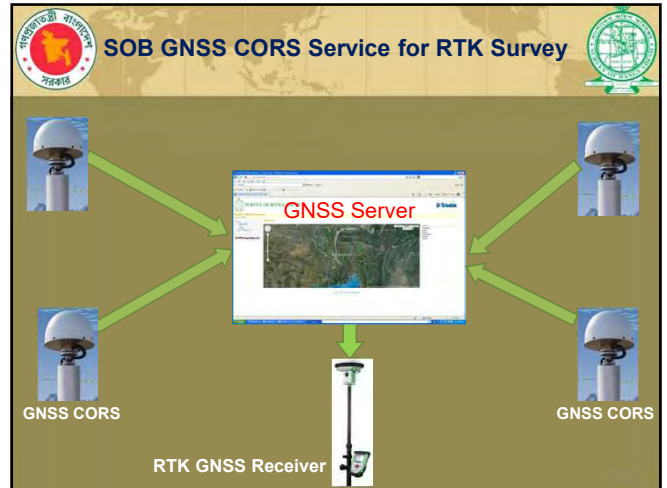
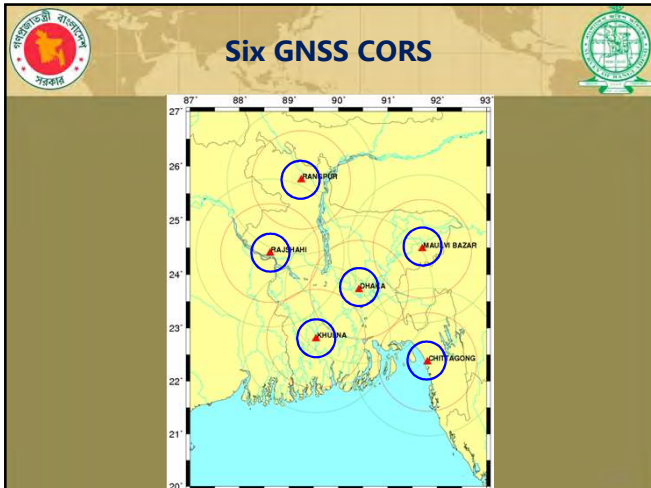
Legend:
 ● GNSS CORS
 ▲ GNSS Point (Old Chain)
 ○ GNSS Point (New Chain)





- 1D Geodetic Survey pillars (height above MSL value only) – 1418
- 2D Geodetic Survey pillars (horizontal coordinates only) – 289
- 3D Geodetic Survey pillars (height above MSL value & horizontal coordinates) – 788



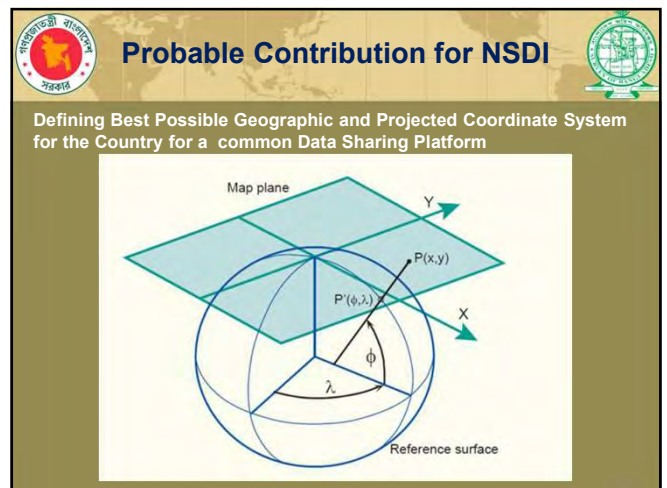
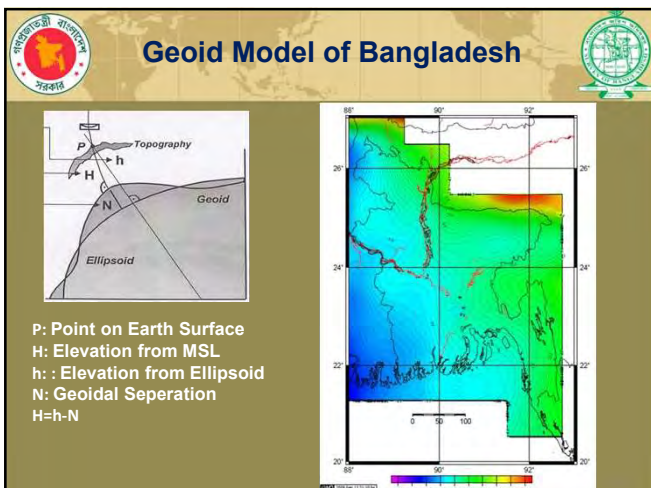


- ❖ Link for SOB Geodetic Survey Pillars → SOB → Website: www.sob.gov.bd → Important Links → SOB Geodetic Control Points
- ❖ Link for SOB GNSS CORS → SOB Website: www.sob.gov.bd → Important Links → SOB Continuously Operating Reference Station

Next plan of SOB in the field of Geodetic Survey

To densify the GNSS CORS Network to cover the whole country establishing additional 60 CORS with the cooperation of JICA

To prepare an accurate Geoid Model for Bangladesh



Probable Contribution for NSDI

Determining the Parameters for Coordinate Transformation

Datum A → Datum B

$Dx = xx.xx, dy = yy.yy, dz = zz.zz$

Probable Contribution for NSDI

Determining accurate 3D Coordinate at any place

Probable Contribution for NSDI

Providing GNSS CORS Service for RTK Survey to get quick & accurate position in Real Time

GNSS CORS → GNSS Server → RTK GNSS Receiver

Probable Contribution for NSDI

Providing Tidal Data for Disaster Management, Drainage System Designing, Mangrove Forest Management, Maritime and other research etc

File Name	File Size	Date	Time
...

Probable Contribution for NSDI

Assisting Monitoring of Tectonic Plate Movement by providing GNSS CORS Data

Tectonic Plates

Pacific Plate


Probable Contribution for NSDI

Providing Coordinates & Heights of Geodetic Control Points for determining Coordinates & Heights of unknown places

Lat: 23° 52' 12.364"
 Long: 90° 25' 27.421"
 Height: 8.142 m

Probable Contribution for NSDI


Assessing Spatial Standard for other Organization Data



● Error Ellipse

THANKS

Instruments used for Geodetic Survey



GNSS CORS Receiver 15 8 2011

Instruments used for Geodetic Survey

GNSS Receiver




Instruments used for Geodetic Survey

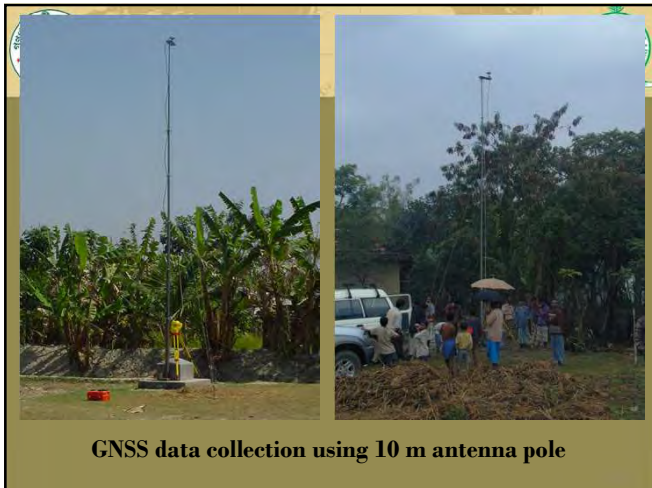
Total Station



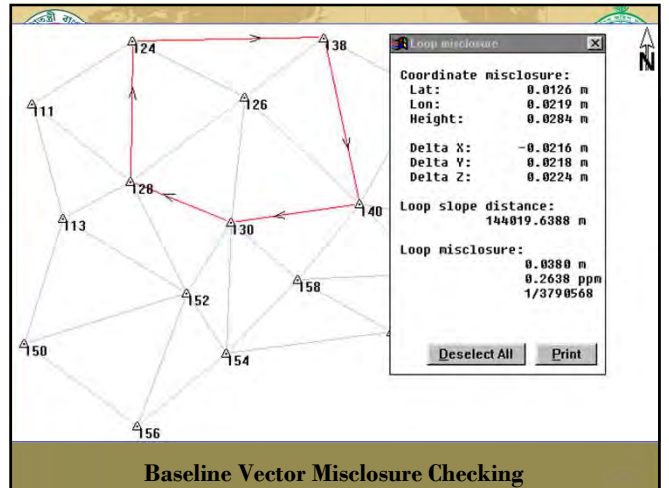
Instruments used for Geodetic Survey

Digital Level

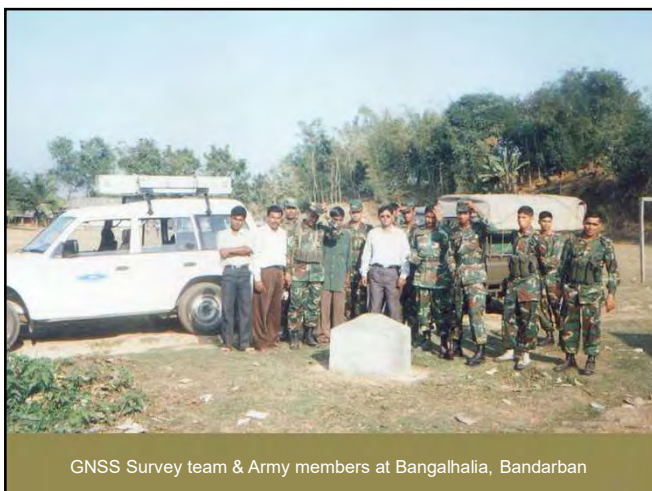




GNSS data collection using 10 m antenna pole



Baseline Vector Misclosure Checking



GNSS Survey team & Army members at Bangalhalia, Bandarban



