



National Network & Affordable Broadband Initiatives

Presented By

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Overview

From our research nearly 190 thousands sites majority of which includes schools, colleges, government offices, health, agri & growth centers require high speed broadband internet. Analyzed estimated demand is staggering 2.25 Tbps. The presentation will focus on the various initiatives so far been taken place as well the ongoing & upcoming projects to address the identified areas to connect, considering the unconnected ones and sustainable modus operandi.

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Topics

- Introduction of A2I
- Historical Ride & Our Data Services Systems & Projects
- Project initiatives and National Network Design
- Sustainability Approach



a2i is the world's first Innovation Lab+ and the key driver from the Prime Minister's Office of the government's public service innovation agenda. We work with a whole-of-government approach leveraging the rapid expansion of technologies to foster truly unprecedented transformations that are taking public services to citizens' doorsteps

Authorities from the government and private sector make better use of technology to benefit under-served communities

E-Service

Capacity

Policy

Innovation

Public
Service



A2I Innovation Lab

Prototype Funding

R&D

IP Protection

Mentoring

Knowledge Sharing

Collaboration

Leapfrogging Digital Bangladesh Development



Key Initiatives

Digital Center

Digital
Financial
Inclusion

Service
Innovation
Fund

Innovation Fair

Challenge
Fund

National Portal

Online
Dashboard

Digital Land
Services

Human
Development
Media

Multimedia
Classrooms

Teachers'
Portal

Digital
Judiciary

Education for
Employment

CRVS

Service
Process
Simplification

Information
Repositories

Open
Government
Data

E-file

Judicial Portal

Mujtopaath

Achievements

131.9 Million Mobile Subscriber

63.9 M Internet Users

147 M Birth Registration

237 M services provided from UDC > \$28.15M earnings by entrepreneurs

75M birth registration served from UDC

0.5M migrant workers electronic registration

45.8 M utility bill payment electronically

3.9M electronic land records delivered

25.5M electronic money order sent through post office

20.2M admission application

8M students engaged in over 30 thousands multimedia classrooms

12M teacher trained on digital content development

Over 10thousands topics at infokosh

Achievements (Contd.)

National portal with 43 thousands website, over 2.1M content and more than 71 thousands trained officials

Specialized telemedicine consultation services reduced 82% cost

13M govt. officials training

For service innovation over 3000 proposal received

Agri call centers services made 0 visit to agri extension office, 100% cost decreased

101.2M public exam result publication



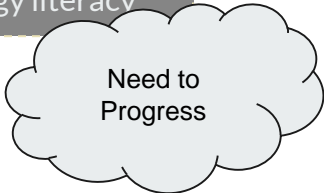
Area	2008	2016
Poverty	40%	23%
Literacy	49%	65%
Electricity	27%	75%
Wireless	2G	Wiman, 3G
Internet	0.4%	30% +
Mobile	20 M	125 M
Social Media	Insignificant	14 M +
e-Services	Handful	200 + in major Dev
Service Access Point	<10	5000 +
Policy	Dysfunctional ICT Policy	Policies: ICT, Broadband, Edu, Health, PPP etc.

Leapfrogging in 8 Years



Index	Present	Previous	Key Factors
ICT Development Index (176 Countries)	145 (2016)	143 (2015)	Below marked Infrastructure Development, internet price, internet use in individual level
Networked Readiness Index (139 Countries)	112 (2016)	109 (2015)	Low mark in individual usage, infrastructural development, digital content
Telecommunication Infrastructure Index (Component of E-Government Ranking)	124 (2016)	148 (2014)	Back dated data, less internet penetration in root level
Inclusive Internet Index (75 Countries)	46 (2017)	46 (2016)	141.5 Million people offline. Availability, Affordability, Relevance, Readiness
Global Connectivity Index (50 Countries)	49 (2017)	49 (2016)	Fundamental infrastructure development, need faster broad band connection, Digital technology literacy

Where do we stand





Synergy





Success & Potentials

Demographic Dividend
65% of youth (18-35Yrs)

77% Narrow & Semi-
Broadband penetration
through MNOs

Over 5200 UDC- Public
Access Service Centers

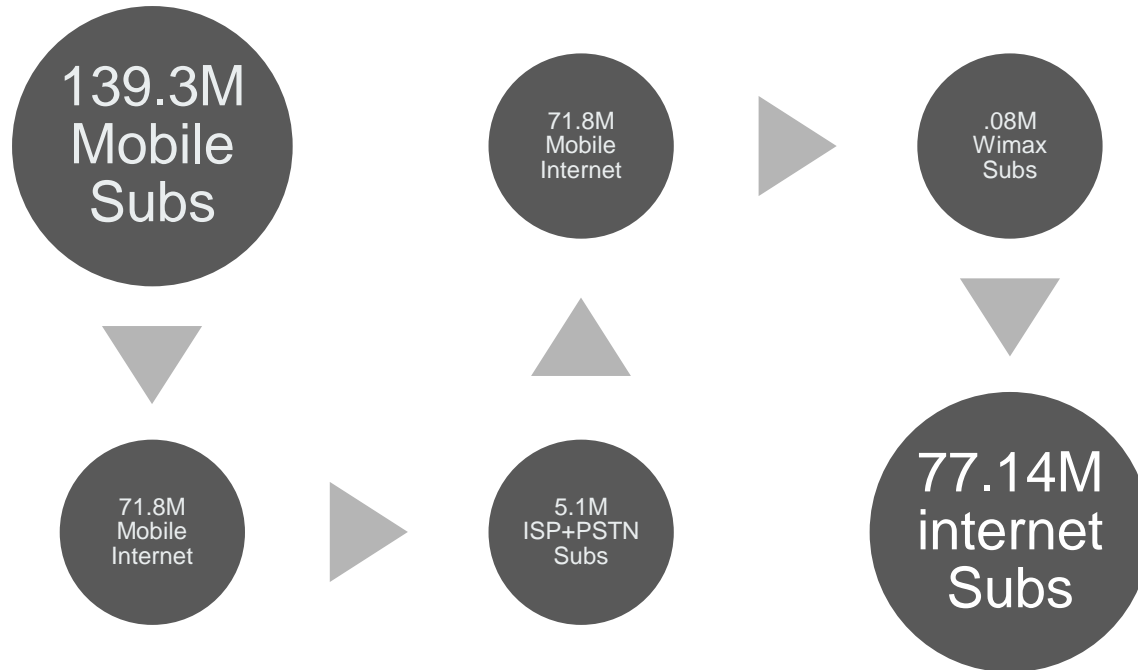
Appx 190K Site requires
True Broadband with
2.25Pb of transmission
capacity

Historical Ride & Our Data Services Systems & Projects

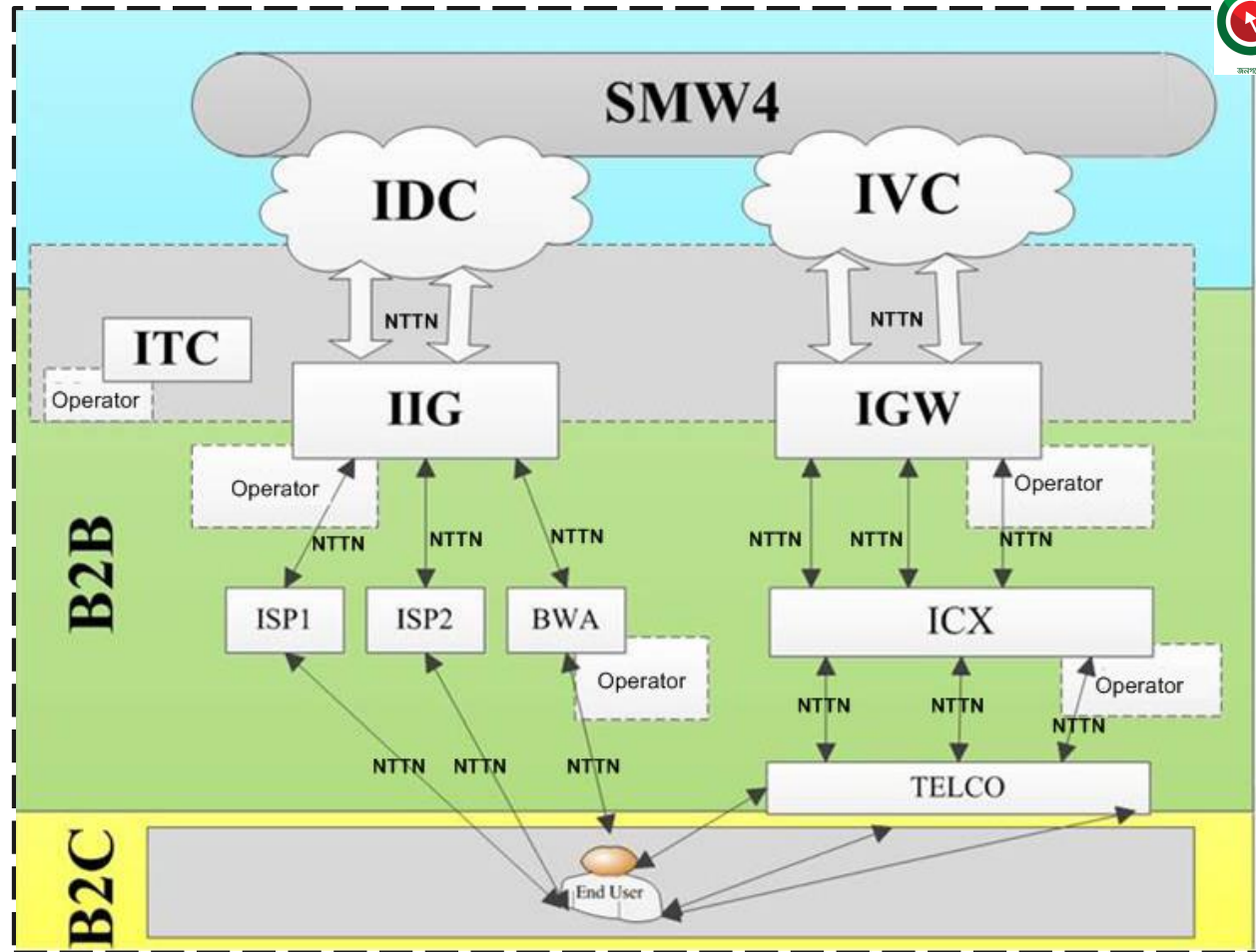
Timeline to Internet Journey



BTRC Statistics as of Aug-2017



ILDTS 2010 Value Chain





Value Chain Players

Sub-Sea
Cable- 02

Int'l Terrestrial
Cable- 06

Int'l Internet
Gateway- 37

Interconnection
Exchange
(ICX)- 26

Wimax
Operator- 02

GSM Operator-
04

ISP- 126

NIX- 02

Vsat- 12

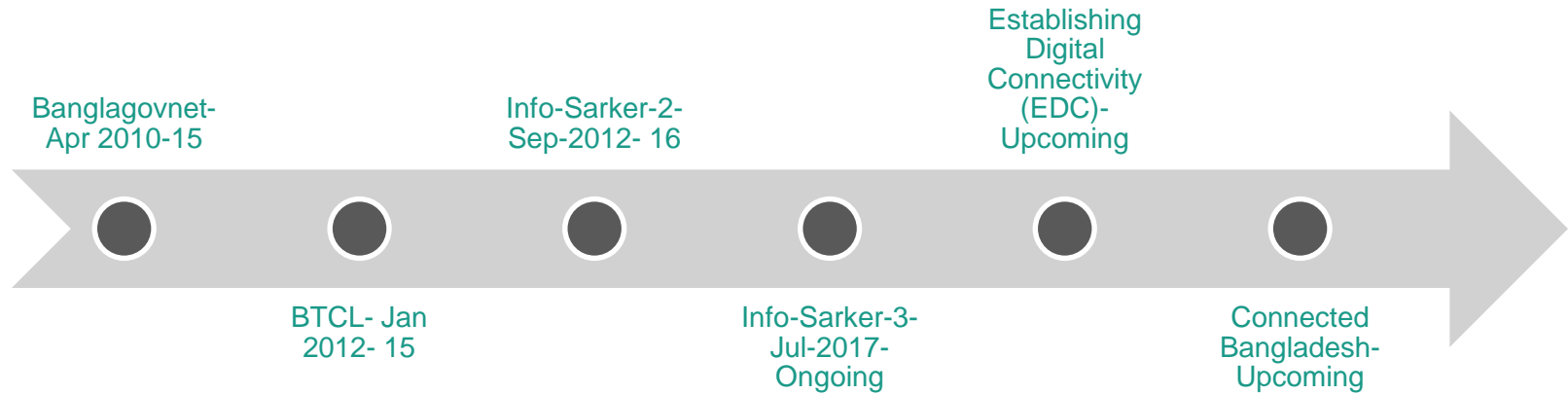


Visible Challenges

- Lack of adequate infrastructure facility for FTTx
- Slow paced domestic transmission network
- Complex Data service value chain from wholesale to access market
- Insufficient broadband wireless access through Wimax/LTE
- Expensive 2G/3G wireless internet services from Telcos
- Adequate domestic online contents and ICT services
- Lack of local effective application service provisioning and ICT business development activities

Project initiatives and National Network Design

GOB Initiatives to address e-services



BTCL 1000 Union Fiber Connectivity

Optical Fibre Cable Network development in 1212 Union Parishad (1006 Union Parishad). Project began 1 Jan 2012 and till date 1048 unions covered. BTCL laid over 11 Thousand of fiber till these unions.

Banglagovnet & Info-Sarker-2

Bangla-GovNet project being implemented by BCC builds the ICT Backbone Network up to the district headquarters. Info-Sarker extends this network up to the upazilla level, connects the government offices at district and upazilla level.

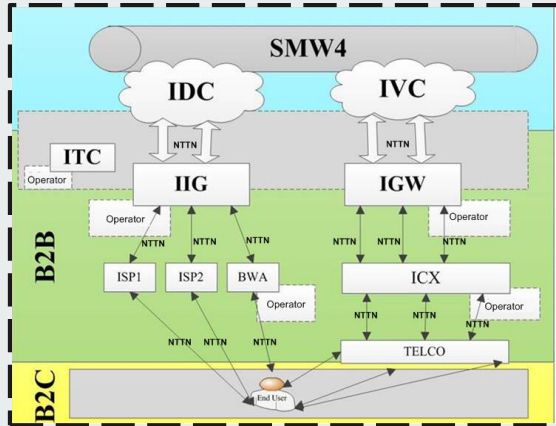
Info-Sarker-3

Optical Fiber Connectivity to 2600 unions with nearly 19 Thousand of fiber deployment worth nearly 158 M USD. Project status- on-going.

Establishment Digital Connectivity (EDC)- Upcoming

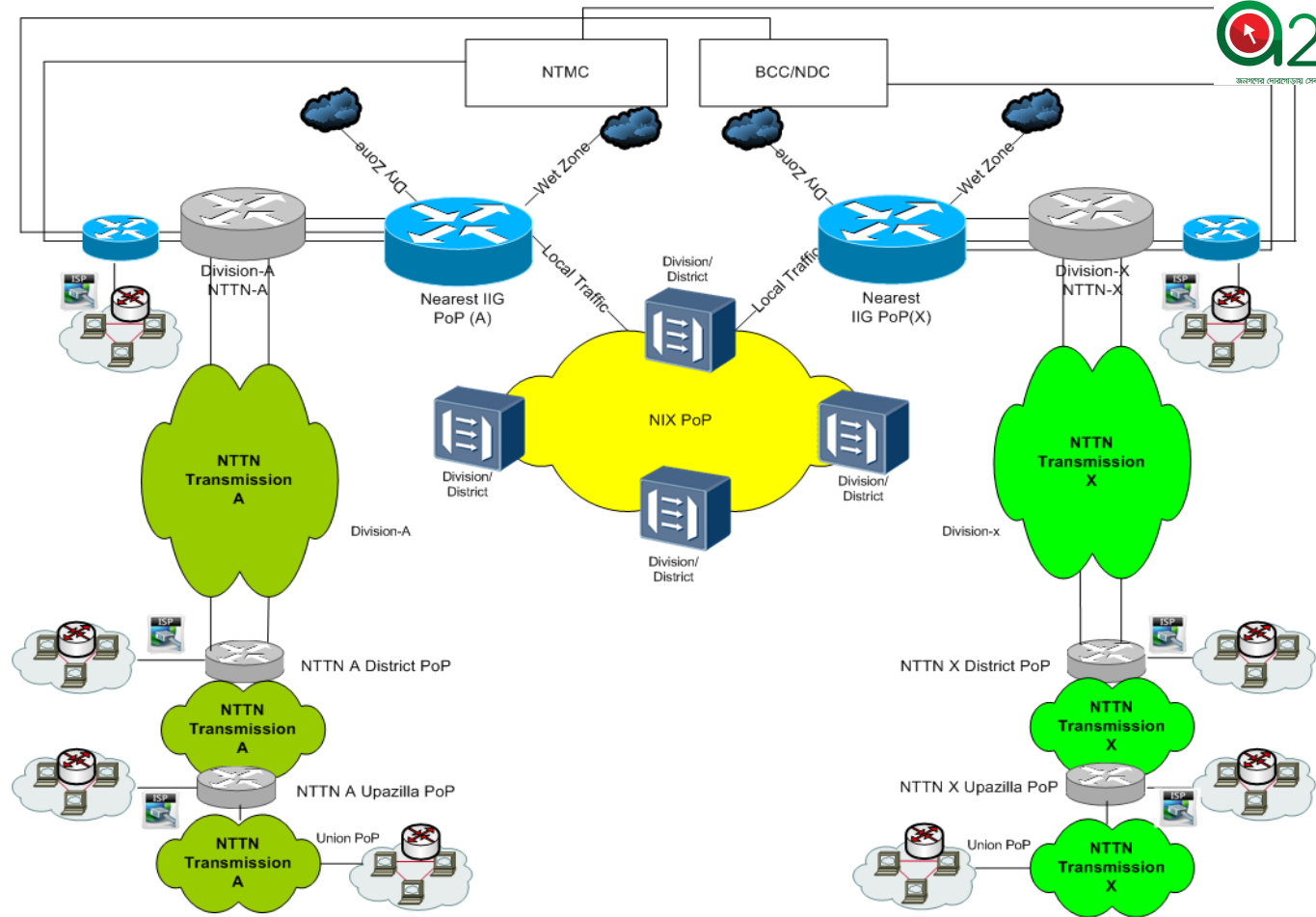
In Progress. Having 13 scopes including 200K location connectivity, LAN infra development & POI establishment on 22 District. Project Worth 1 B USD.

Need for a National Network Design

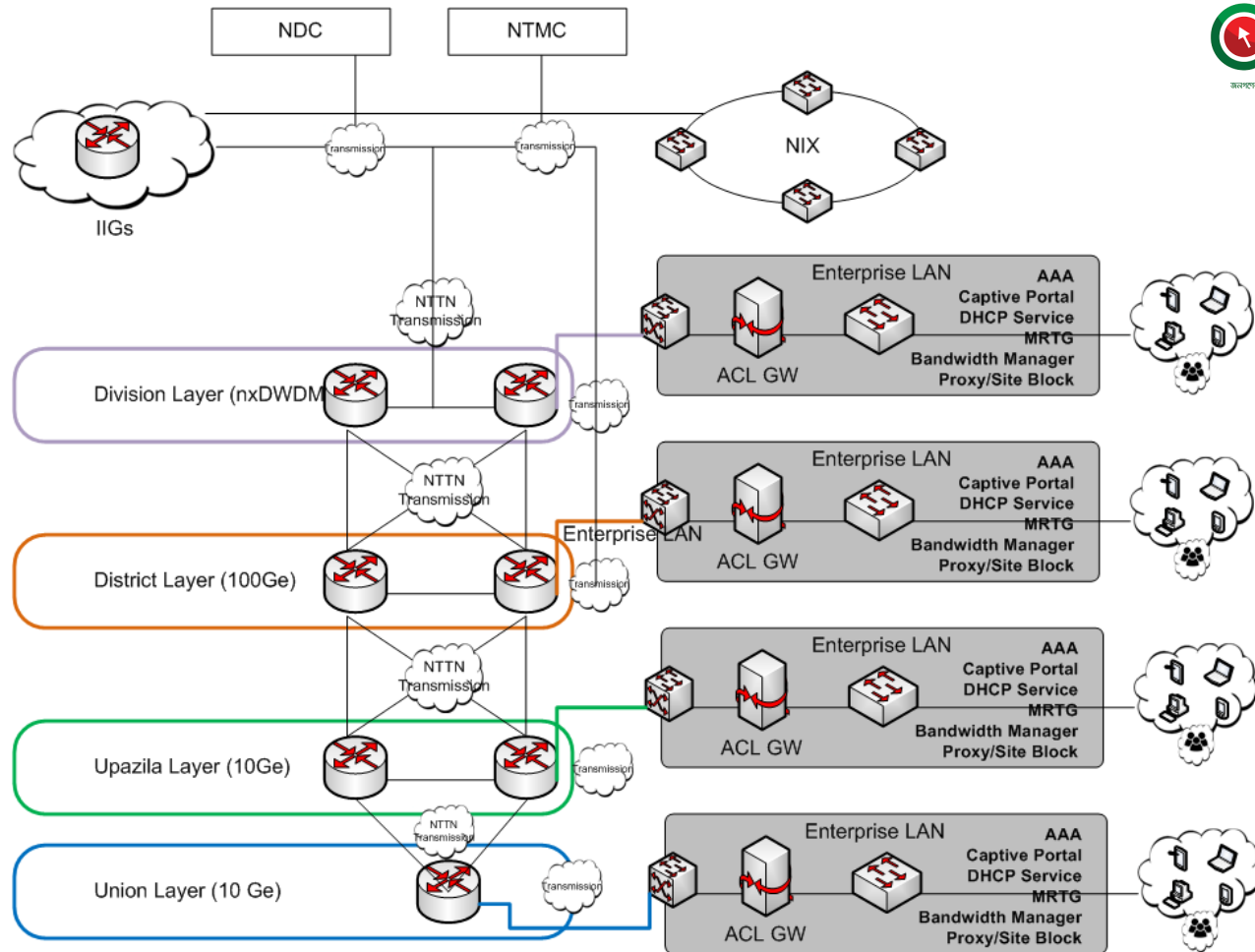


- Coordination of licensed operators regime between transit, transmission and access service provider
- Lack of content delivery network services (VOD, CDN, IM, IoT...)
- Global Service penetration
- Data & content security within geo-boundary
- Lack of NIX delivery point to maintain an effective QoS
- Last mile Enterprise FTTX/LAN/Public Access delivery nodes
- Service convergence between Telco & ICT ecosystem

National Network High Level Design



National Network High Level Design- Layered



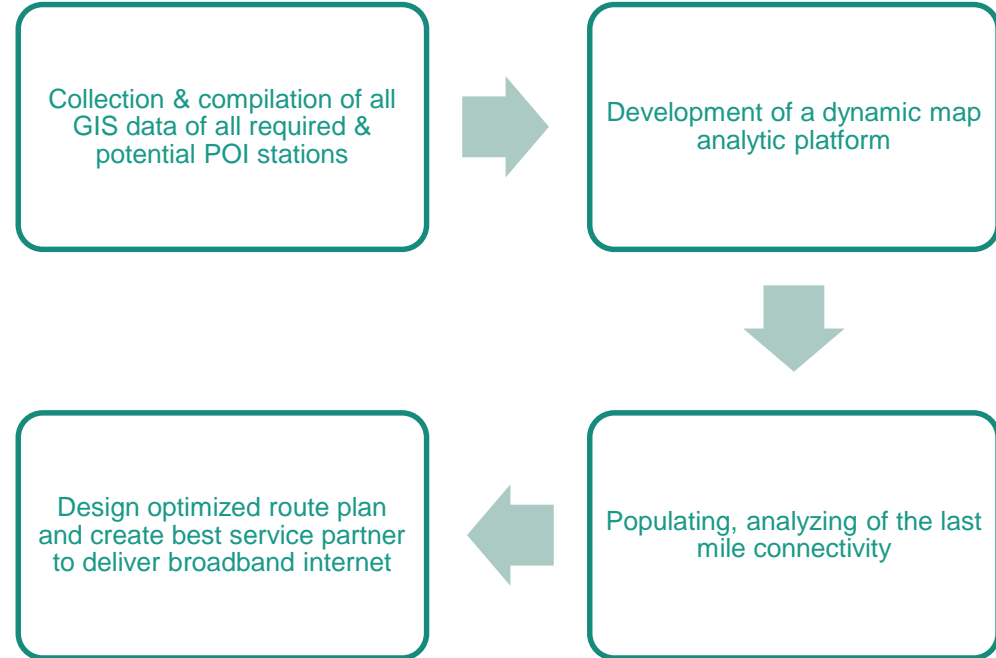
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Recommendations from NND

- Multi POP IIG and NIX to be created at suitable & selected regional (district) level.
- Office category and usage to be adopted at last mile Enterprise LAN framework.
- Low level detailed specifications and standardized set of technology to be analyzed and adopted for nationwide transmission.
- For standardized enterprise LAN installation and maintenance outsourced system integrator or managed service provider to be appointed with predefined SLA.
- Proper survey to be conducted for dimensioning of standardized enterprise LAN.
- National Internet Exchange (NIX) must be actively used and both public and private NIX requires to inter connect.
- Interconnection between IIGs and NIX to be established.
- Quality of Service should be ensured at the subscriber ends. The end users must get their bandwidth as per defined SLA between the provider and subscriber for enterprise LAN.
- In order to cater large domestic data transmission, transmission capacity of NTTN providers to be upgraded at union 10 Ge, Upazilla 10 Ge, District to division 100 Ge DWDM).

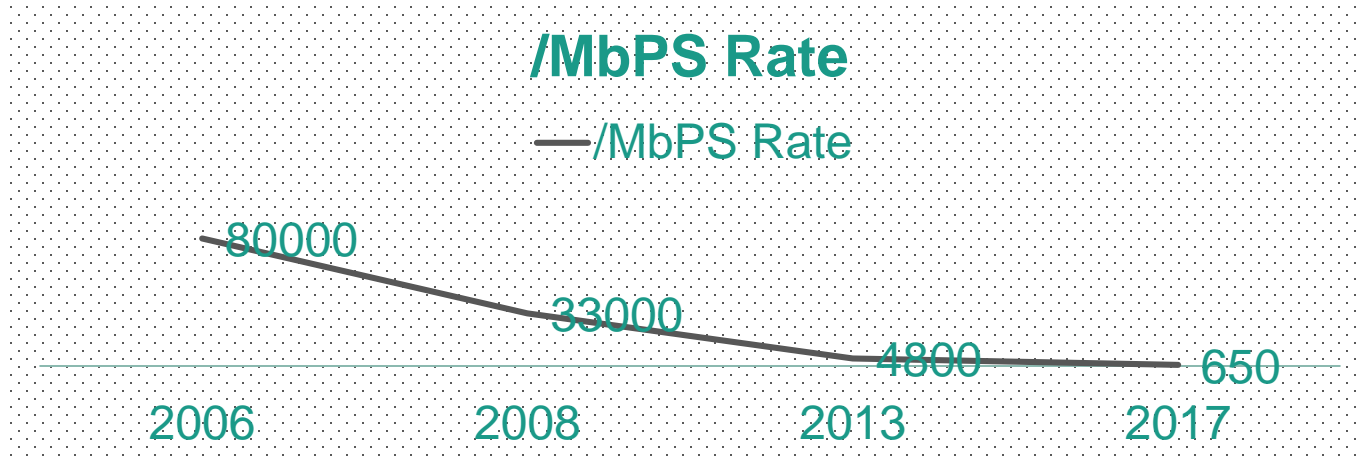
GIS for National Network

A2I has identified the potential connectivity end entity which is about 190 thousand, but, most of these POIs (point of interests) have no visibility comparing to the existing fiber optic network in the country. Therefore, A2I already took an initiative to build a NNGIS (National Network GIS) system which is a decisional platform to bring visibility and perform necessary analytical task by collecting GIS source data from various relevant stakeholders. Currently BTRC is expanding the platform.



Internet Affordability

Internet Price at gateway level



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According to Alliance for Affordable Internet (A4AI)- a World Wide Web Foundation organization, affordable internet is-

“1GB of mobile broadband priced at 2% or less of average monthly income.”

Policy towards Affordable Internet

Policy & Regulation for Competition

Broadband policy

Public access policies & use of USAF

Infrastructure Sharing

Spectrum for Wireless Data



41%
**INTERNET
PENETRATION**
(A4AI, 2016)



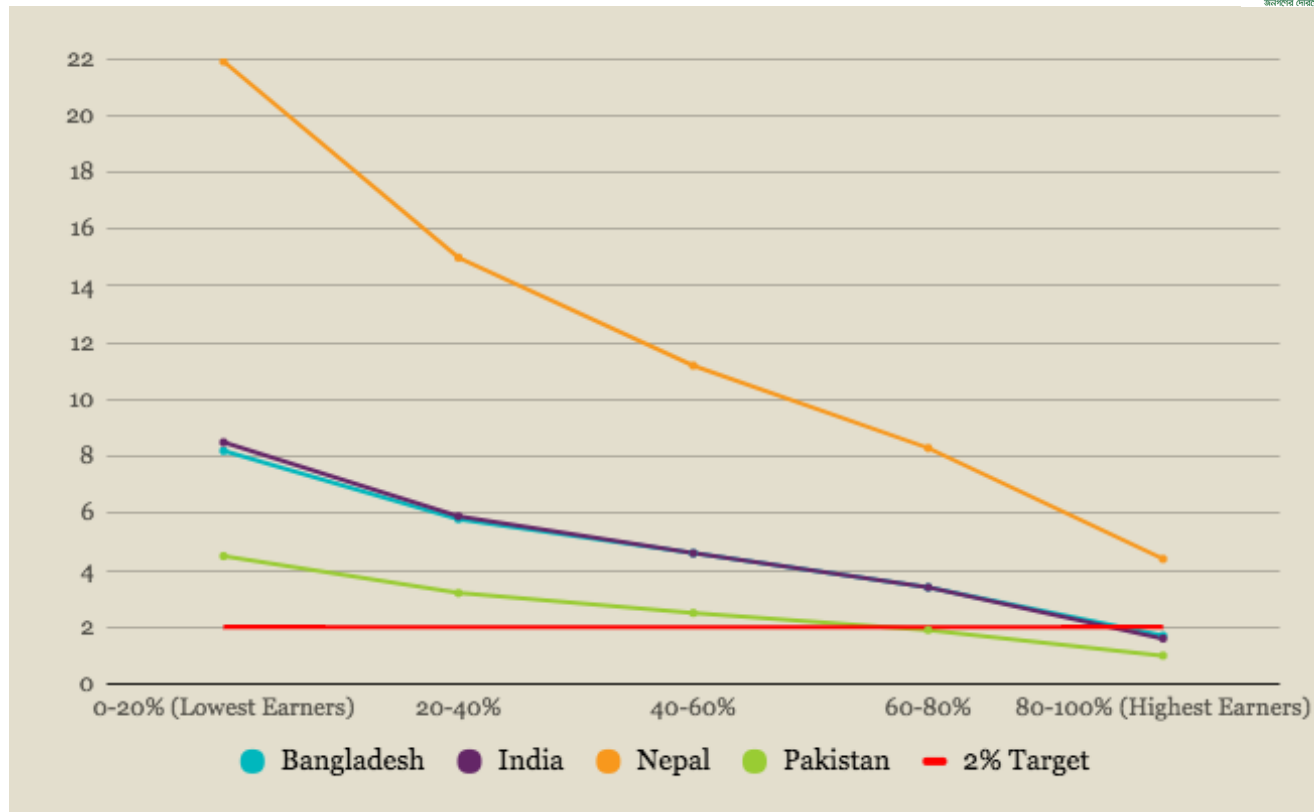
18%
**MOBILE
BROADBAND
PENETRATION**
(GSMA, 2016)



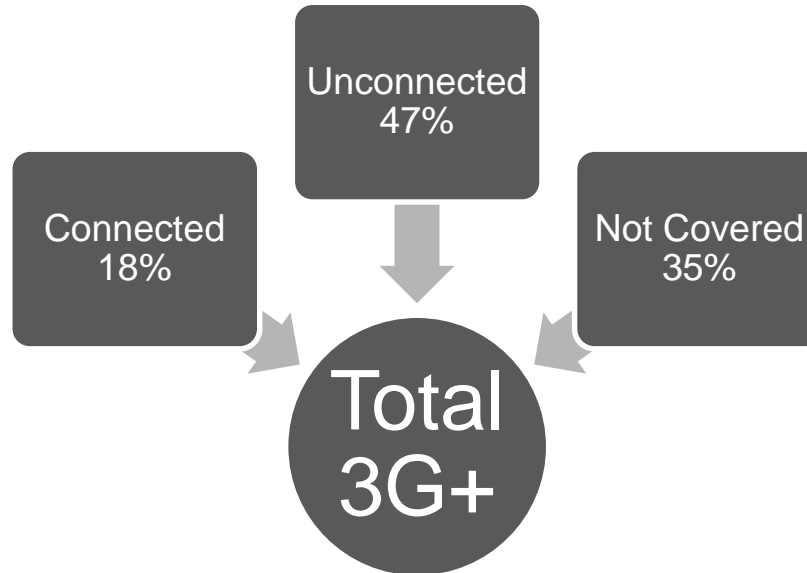
4%
**COST OF 1GB
MOBILE PREPAID
DATA**

Internet Affordability in Bangladesh (A4AI-2016)

Affordability amongst Neighboring Countries



3G Coverage in Bangladesh extends to 65% of the population (GSMA-2016)



Sustainability Approach

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Considerable Components in thought process

- Coming up with decisional GIS based last mile connectivity infrastructure design.
- Already reached 1200+ union fiber nodes. Upcoming 2600 unions more to be connected by June-2018. Remaining 740+ by Dec-2018.
- Establishing nationwide point of interconnection centers to empower access network service players.
- Over a thousand key locations of area under public wifi services.
- 4 Tier Data Center for rapidly growing national content hosting and delivery network establishment.
- Ensuring QoS of various initiatives

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Sustainability through NND

Domestic traffic retention through NIX aggregation at divisional level

Decentralized connectivity establishment through regional/remote ISPs

No additional Transmission network is suggested to build. We already have more than 78 thousand KM of fiber laid. Reaching to unreached (upazilla to union) to be build by GoB initiative.

The backbone network is considered of 4 tier hierarchy- Division/Metro, District, Upazila, Union

Enterprise LAN network may have provision to adopt redundant internet service provider

Nationwide/Zonal/Category ISPs will be appointed as managed internet service provider

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Sustainability through NND- Contd.

Deliver internet service to last mile Internet Subscriber/facility from nearest NTTN PoP.

Create/Manage last mile internet connection establishment (Enterprise LAN) on customer premise.

Respective ISPs at Union, Upazilla and District aggregation point will terminate to NTTN's district POP and interconnects NIX for local traffic handling. In division and metro area it will connect to the nearest NIX.

Data that do not belong to local content services will be delivered to IIG/ITC network.

Nationwide Point of Presence of IIGs

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Sustainable Approach

A number of projects (mid size to mega size) have been completed or are underway to bring fiber connectivity to nearly 190 Thousand government offices, schools, clinics, police stations, etc. But they are creating more management and operational silos. A proper coordination needs between different projects for resource sharing, combined QoS & fault handling process.

Most of the case the projects are not considering about the service layer but only emphatic about laying fiber. We need to think about proactive 'service owners'. More inclusions on Private-Public Partnership.

MNOs will go into 4G roll-out but the big question is will it become another largely urban phenomenon?

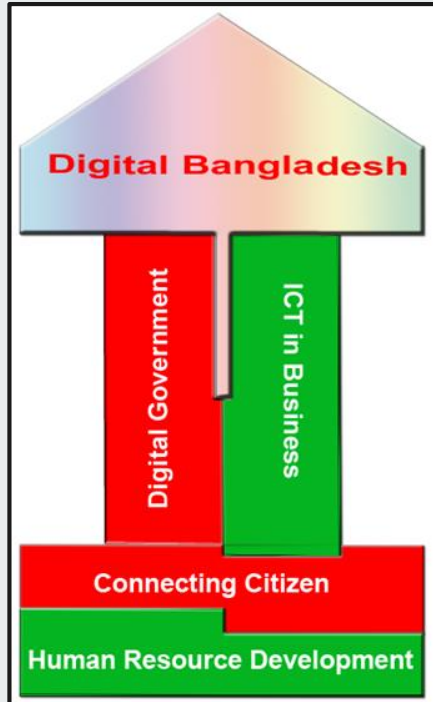
Need a proper broadband strategy and action plan focused for citizen centric public internet access.

Incentivize infrastructure deployment and resource sharing

Priorities & expand public access initiatives

Looking Forward

- Focus on fundamental Infrastructure Development instead Ad-Hoc.
- Establishing capacity in other ICT enablers
- More Public Internet Service Points/zones
- Prioritize on Wireless Data Services (4G/5G/LTE)
- Expand online contents and services
- Building partnership with relevant national & International communities
- Escalation of institutional capacity to increase digital literacy



Digital Bangladesh as Key Ingredient to Achieve Vision 2021.

Digital Bangladesh is not a technology-centric vision, but a vision for socio-economic transformation using technologies that are in the hands of millions. The issue of equity, which is a fundamental principle in our constitution and the main driver of our National Strategy for Accelerated Poverty Reduction (NSPR), is central to the vision.

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Be Unreasonable

Reasonable Approach

- Follow models of the ICT-rich nations

Unreasonable Approach

- Don't follow anybody
- Identify own development problems
- Learn from developing 'ICT-learning nations' and developed 'ICT-rich nations'
- Design/co-design development innovations
- Support field level innovators



Thank You