

# Metro Underground Fibre Optic Network: Challenges & Choices

## Fiber@Home

- Introduction
  - Country's first NTTN Telecom company
- License & Obligations
  - Awarded on Jan., 07,2008; Reach 5% of Upazillas in year one; year two 10% ... to 100% in the 10<sup>th</sup> year
- Transmission Network Unification
  - Trends in the world with multioperators
- Work Start
- Deployment

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# Metro Underground Fibre Optic Network: Challenges & Choices

## Areas

- Challenges faced
- Choices available
- Choices made
- Network choices
- Technology adopted

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# Metro Underground Fibre Optic Network: Challenges & Choices

## Challenges

- Unique challenges
  - Working in Bangladesh, where major infrastructure is yet to be in place
- Major Operators existing in Networks
- Strategies in selecting areas
- City authorities permission, compensation and approach to making a convincing issue
- Open trench or HDD

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## Choices available

- Choice of areas
  - Residential or commercial
  - Which residential or commercial
- Choice of C.O.
- Method of underground ducting
  - Open trenching
  - Horizontal direct drilling
- Technology
  - GPON, MPLS or transmission

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## Choices made

- Both open trench and HDD
- Residential secured and potential
- Pilot project
  - Deployment of GPON in a major R/A
- Data Services
  - Deployment of Data services to service providers
- Voice grade services

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## Selection of Fibre Cable

### – Choices

- Tubular underground type
- Aerial (not considered)
- Ribbon with higher cores

### – Selection

- 144, 96, 48 core underground
- Choice of Microfibre via micro/innerduct is also under consideration
- Ribbon fibre cable also in serious consideration

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## Network choices

- Multiple Fibre Rings
  - Fibre Rings within rings
  - Accommodating multiple Service providers
- Technology
  - SDH Rings with STM-1 and E1 drops
  - MPLS rings with multiple data grade service including VPN
    - Currently with Cisco 7600 series
  - GPON, RF video via GPON

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## Major Issues

- Ventures
  - Telcos venturing from own network to NTTN
  - Data services aerial to underground
  - Triple play
- Society and Highrises
  - Discussion with society authorities
  - Discussion with high rise building owners

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## Data services via SDH

- Multi play Manufacturing trend
  - {especially with Transmission eqpt manufacturers}
- Manufacturers incorporation of FE ports
  - {serving speeds of 10/100 Mbps Ethernet}

## Multi-services via GPON

- ITU-T G.984 standard
  - Allows for triple play; ONTs coming with min 4FE ports and 2POTs
  - 2.488 (Gbit/s) of downstream BW, and 1.244 Gbit/s of upstream U/G FO Network
  - RFTV or IPTV can be incorporated

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## Why NTTN and Fibre Network

- Technical innovations in optical networking have altered the economics for Telecom networks
- New service offerings are feasible to a number of different markets.
- More aggressive transformation of the network infrastructure leads to business and technical challenges that must be addressed and Fiber@Home has taken up that challenge
- A robust, underground, secured fiber optic network of international standards can only meet the opportunities and challenges for continued technical innovations

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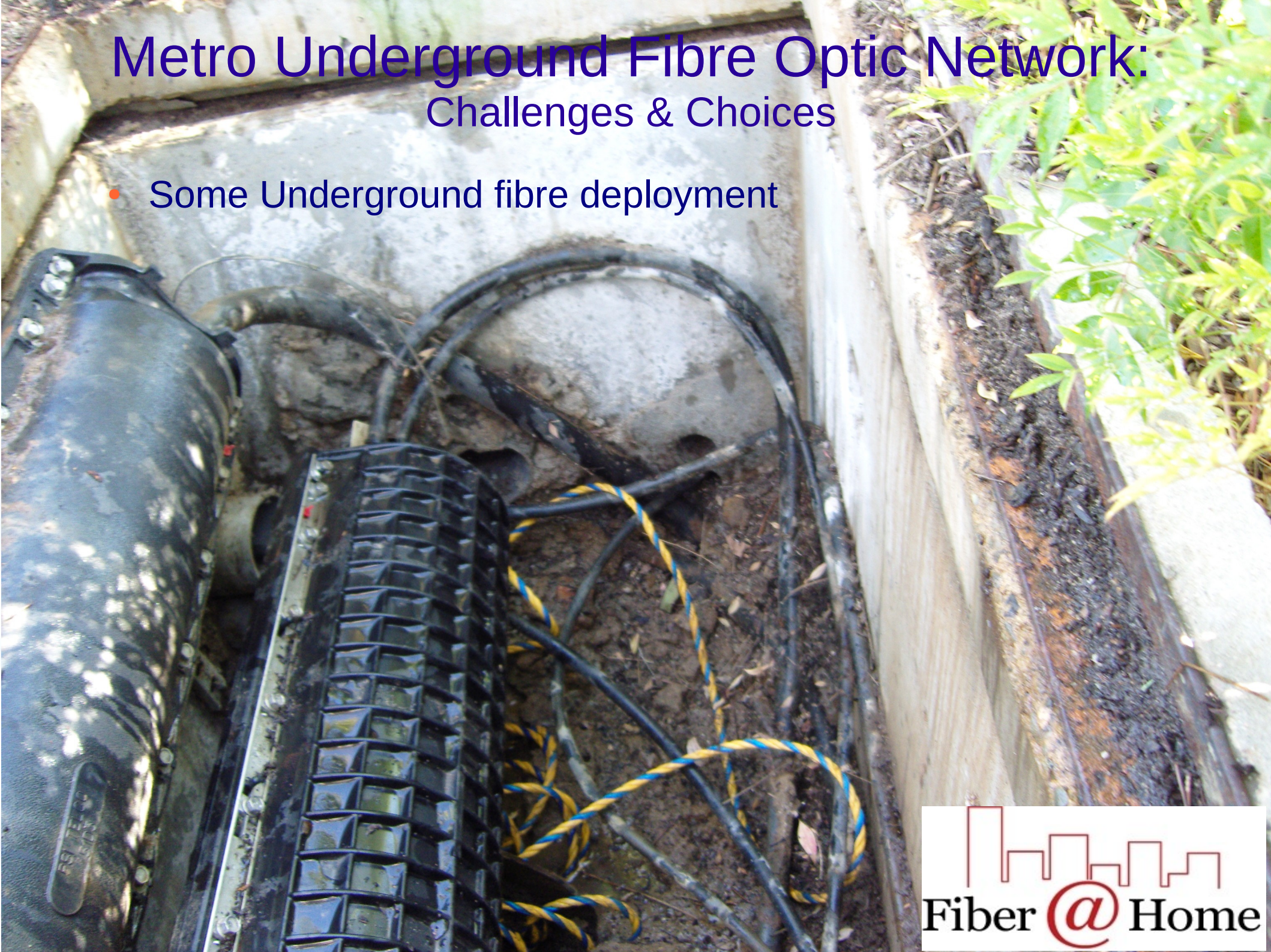
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- Some Underground fibre deployment



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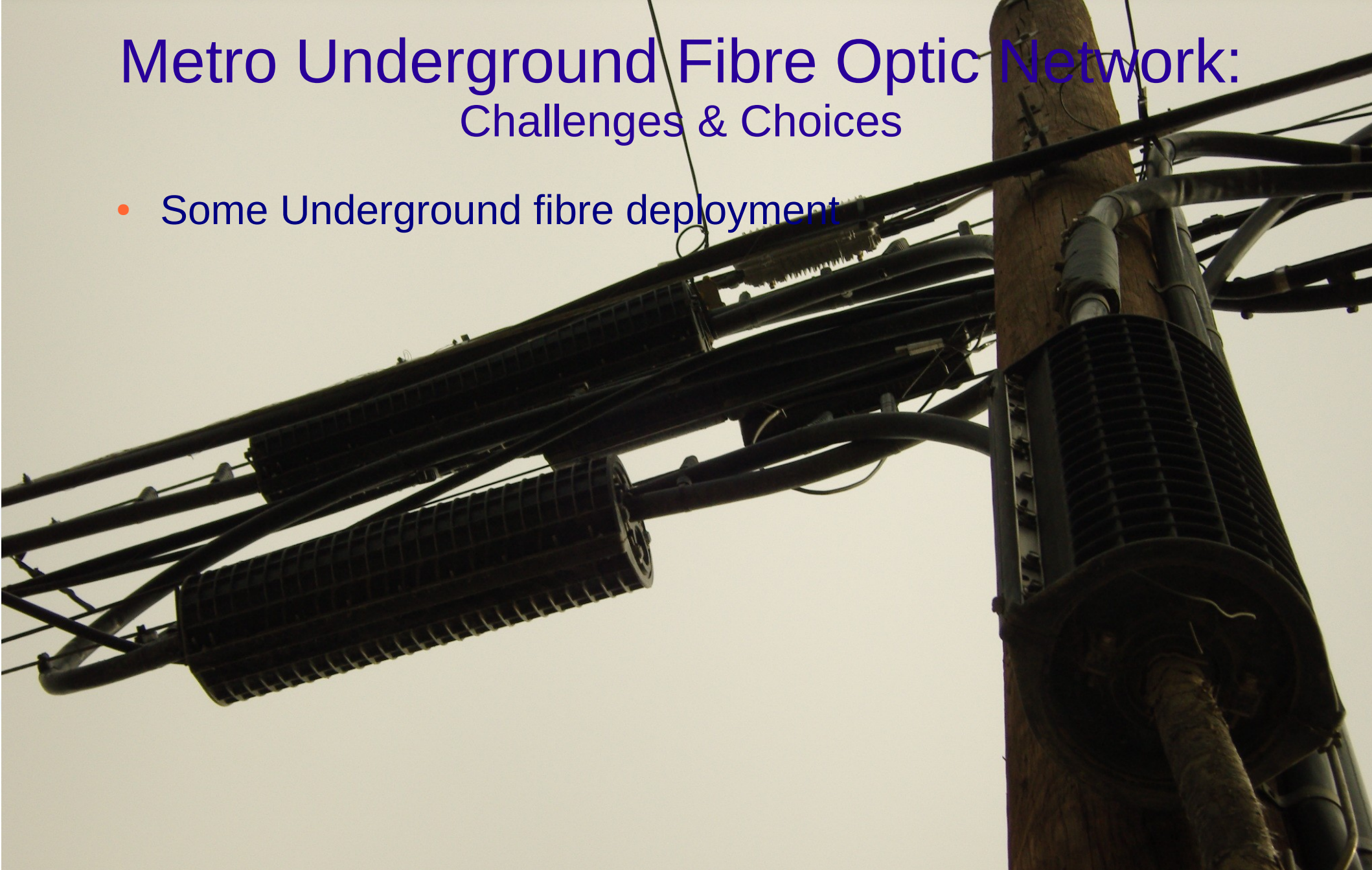


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# Dhaka Metro Underground Optical fibre Network Backbone Covering around 100km as of Jan., 28, 2010

