Telecommunications Infrastructure

Posts and Telecommunications Department

agenda

- Overview of telecoms sector in Myanmar

- Infrastructure development

- Enabling regulatory framework for infrastructure sharing

overview of telecoms sector in Myanmar

- Population – 51.419420 Million (29 th March 2014)
- Area –   678 500 Square Kilo meter
- Ministry – Ministry of Communications and Information Technology
- Regulator – Posts and Telecommunications Department
- Nationwide Integrated Telecoms Operators –
  - Myanma Posts and Telecommunications
  - Ooredoo Myanmar,
  - Telenor Myanmar
- Legal framework – Telecoms Law (2013)
  - Licensing Rule
  - Interconnection Rule
  - Spectrum Rule
  - Numbering Rule
  - Consumer Protection Rule
- Tele density – 45 %
- Internet penetration – 20% (mostly mobile internet)

sector liberation

Sector Liberalisation started in late 2012 with assistance from ITU, WB, APT, ADB

legal reform –
- telecoms law November, 2013
- relevant rules

Institution reform
- Independent Regulator to be established by 2015
- Corporatization of MPT
- Separation of posts from telecoms
- Creation of National Cybersecurity Department (ITCS) within MCIT

International Tender for 2 Nationwide Telecoms Licenses conducted in 2013 to issue 2 new *Integrated Nationwide Licenses*

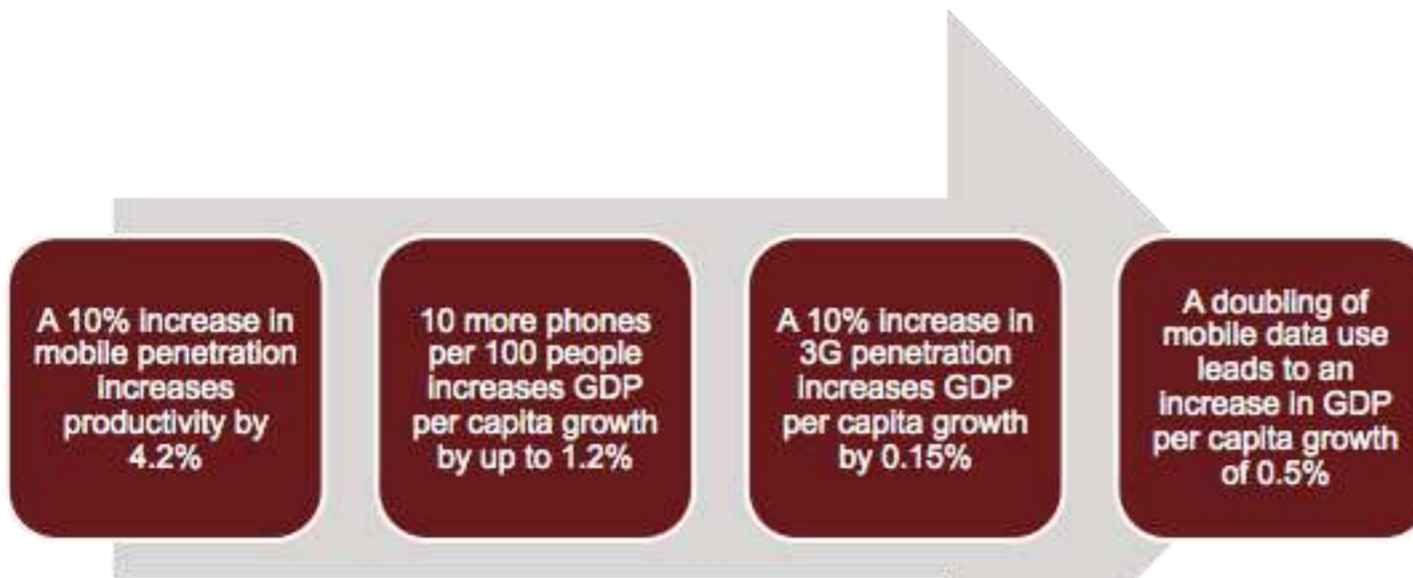**Fourth similar license** will be issued to a Myanmar Operator

Licensing regime 4 license categories - NFS-C, AS, NS and NFS-I

Number of licensees: 28

License category	Number of licenses
NFS-I	8
NS	1
AS	5
NFS-C	14

broadband development

MCIT puts emphasis on mobile broadband development

A 10% increase in mobile penetration increases productivity by 4.2%

10 more phones per 100 people increases GDP per capita growth by up to 1.2%

A 10% increase in 3G penetration increases GDP per capita growth by 0.15%

A doubling of mobile data use leads to an increase in GDP per capita growth of 0.5%

Increased mobile penetration and data usage brings many rewards.

A 10% increase in the penetration of broadband services in low and middle-income countries accelerates economic growth by 1.38%

A 10% increase in broadband household penetration delivers a boost to a country's GDP that ranges from 0.1 to 1.4%

A 10% increase in broadband penetration translates into a 1.5% increase in a country's labour productivity over the following 5 years

Countries with 80% broadband penetration are more than twice as innovative as countries with 40% penetration

Mobile broadband brings huge benefits to economies:

Sources: World Bank, McKinsey & Company, Mobile broadband for the masses (2009), Booz & Company, Digital Highways: The Role of Government In 21st-Century Infrastructure (2009)

infrastructure development

- Myanmar Government has committed to bring penetration to both urban and rural areas
- Some areas are not economically viable for operators to roll-out and may not cover sufficiently
- Previously, Government Operator –MPT had rolled out into rural and less profitable areas with Government fund, and it had seriously impaired effective roll out
- The Telecoms Law has provisions to set out provisions for Universal Service
  - US Policy and
  - US Fund
- MCIT is receiving assistance to develop US Policy framework from WB

infrastructure development

- for telecoms sector development including broadband development, basic infrastructure needs to be well developed

- the three most critical infrastructure today are -

    - fiber

    - tower

    - Spectrum

as the trend today is *mobile broadband*

broadband

- All mobile operators are facing challenges from increasing data demand
- rural areas also demand internet coverage
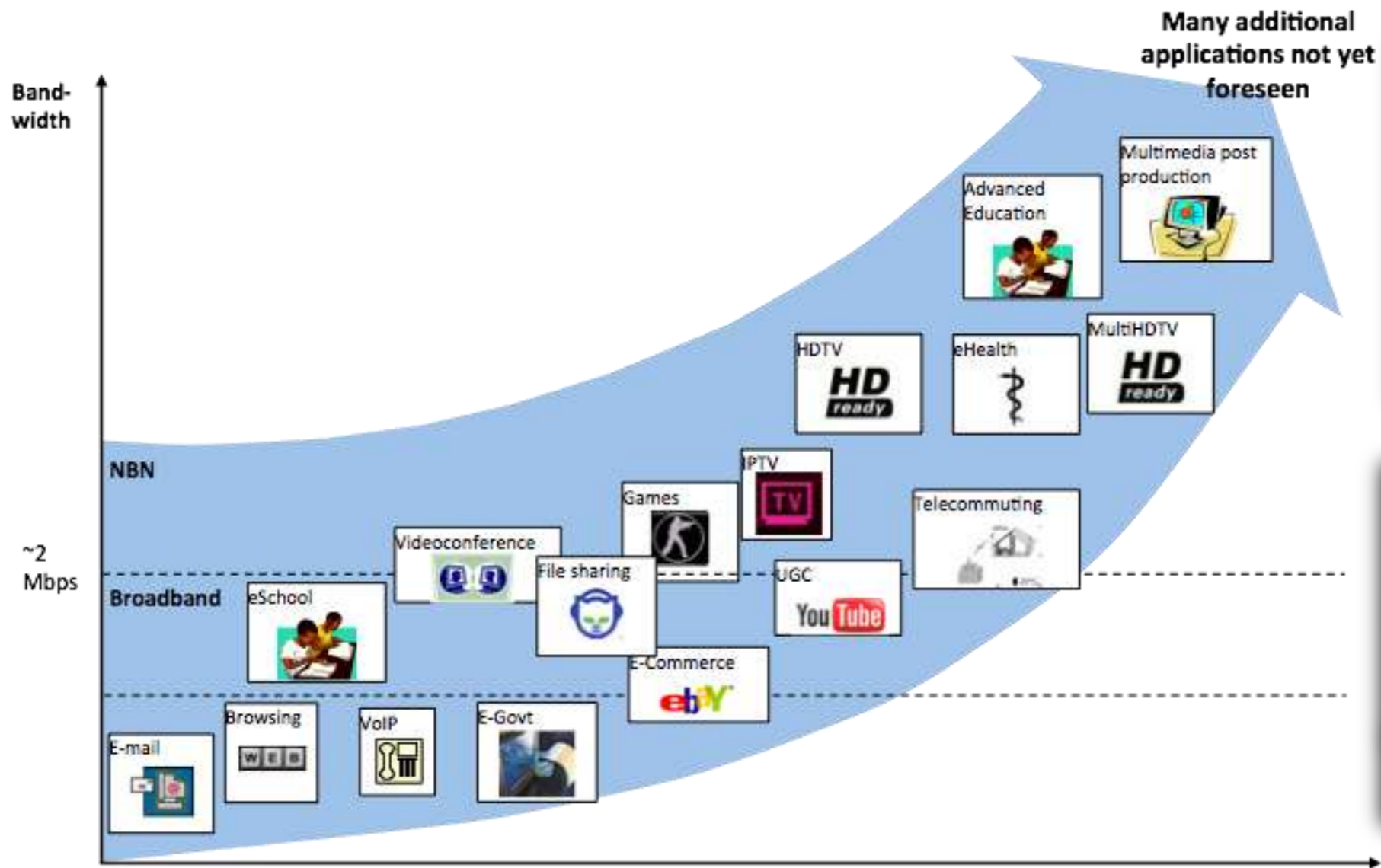
In Myanmar, demand for data is huge, even in rural areas, pushing the demand of infra from MNO high

today, PTD has issued licenses for the provision of *BB Internet* and demand for infra will explode

As the range of applications explodes and the user experience demands more data, bandwidth requirement increases

infrastructure development

- As Myanmar's telecoms sector development is just at the initial stage, infrastructure yet needs to develop

- Today, with liberalisation, investment in infrastructure including fibre and tower infra is increasing significantly

- Telecoms Law encourages infrastructure sharing to reduce cost and impact to nature
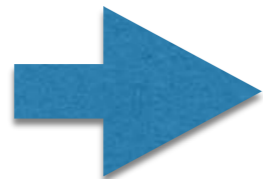
infrastructure ➡️ fiber length - 12774km + 10218km planned
tower - ~ 3000 built

infrastructure development

| Type of Sharing	Strategic Drivers
Passive	
Site (co-location)	• Reduced site acquisition times for new entrants • Access to locations of strategic importance, particularly where space for new sites is limited • Increased likelihood of obtaining planning permission for new sites • Reduced opex (site lease) • Expansion into previously unprofitable areas by reducing capex and opex requirements • Environmental and alleged health concerns, for example, increasing pressure from environmental groups on existing operators to reduce the number of cell sites due to health concerns
Mast (tower) times	• Reduced site acquisition and build completion • Reduced capex (site build) • Reduced environmental and visual impact
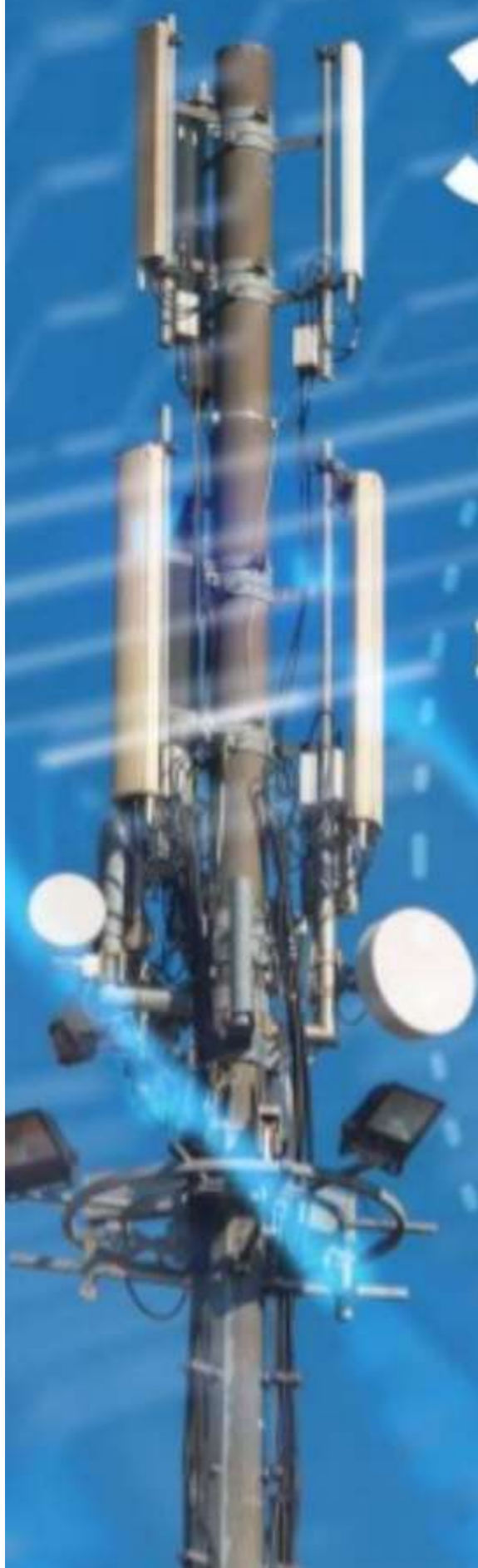
physical fiber sharing

Pros:
No duplication on the infrastructure deployment

Cons:
•Big initial investment on the infrastructure, ROI is a doubt
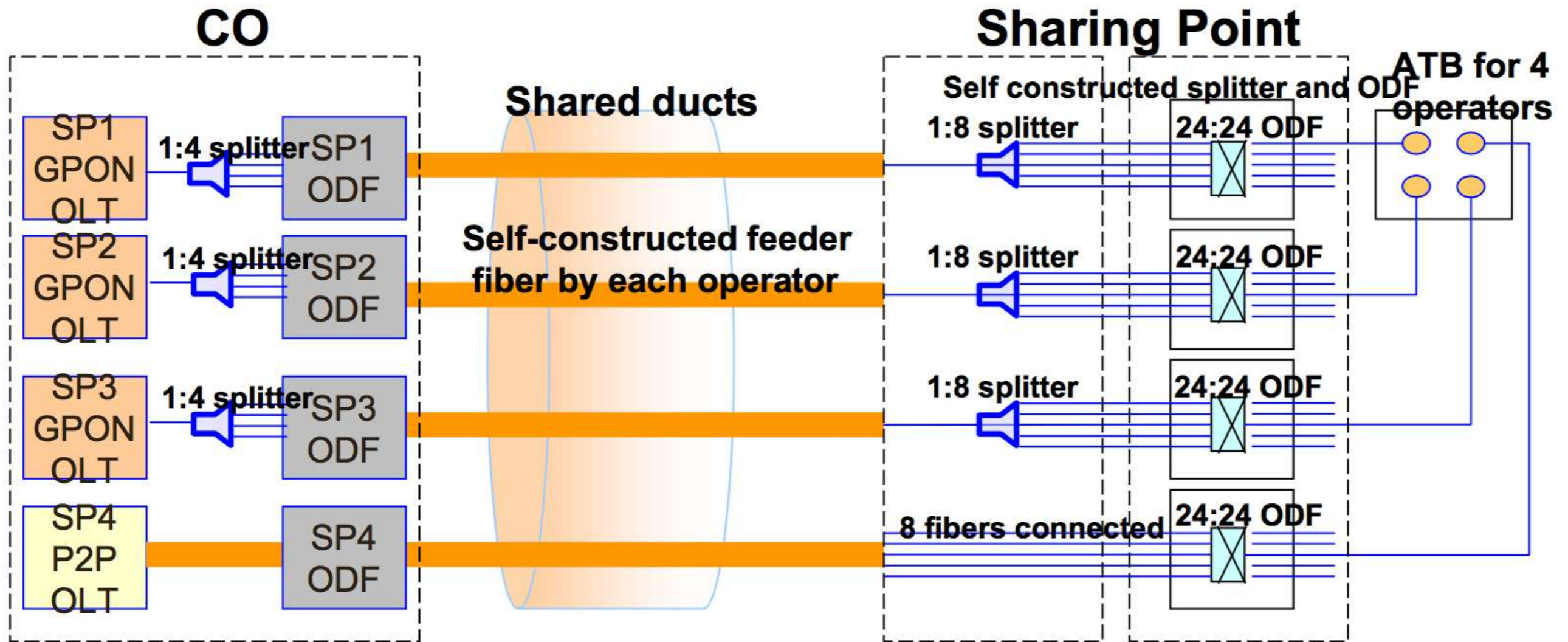•Limited to GPON architecture
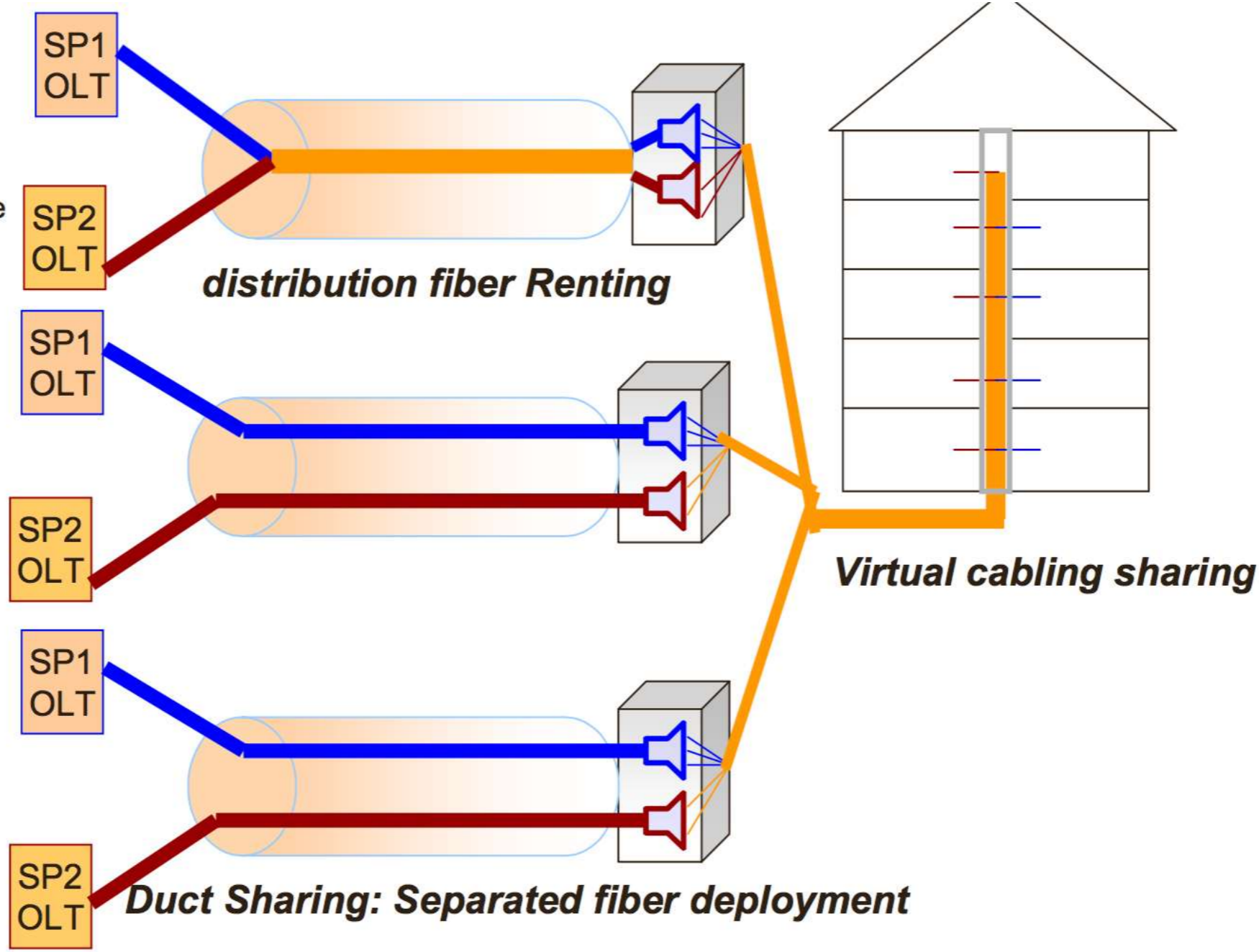
Pros:
•Share the initial investment and risk

Cons:
•Lose the control to OLOs
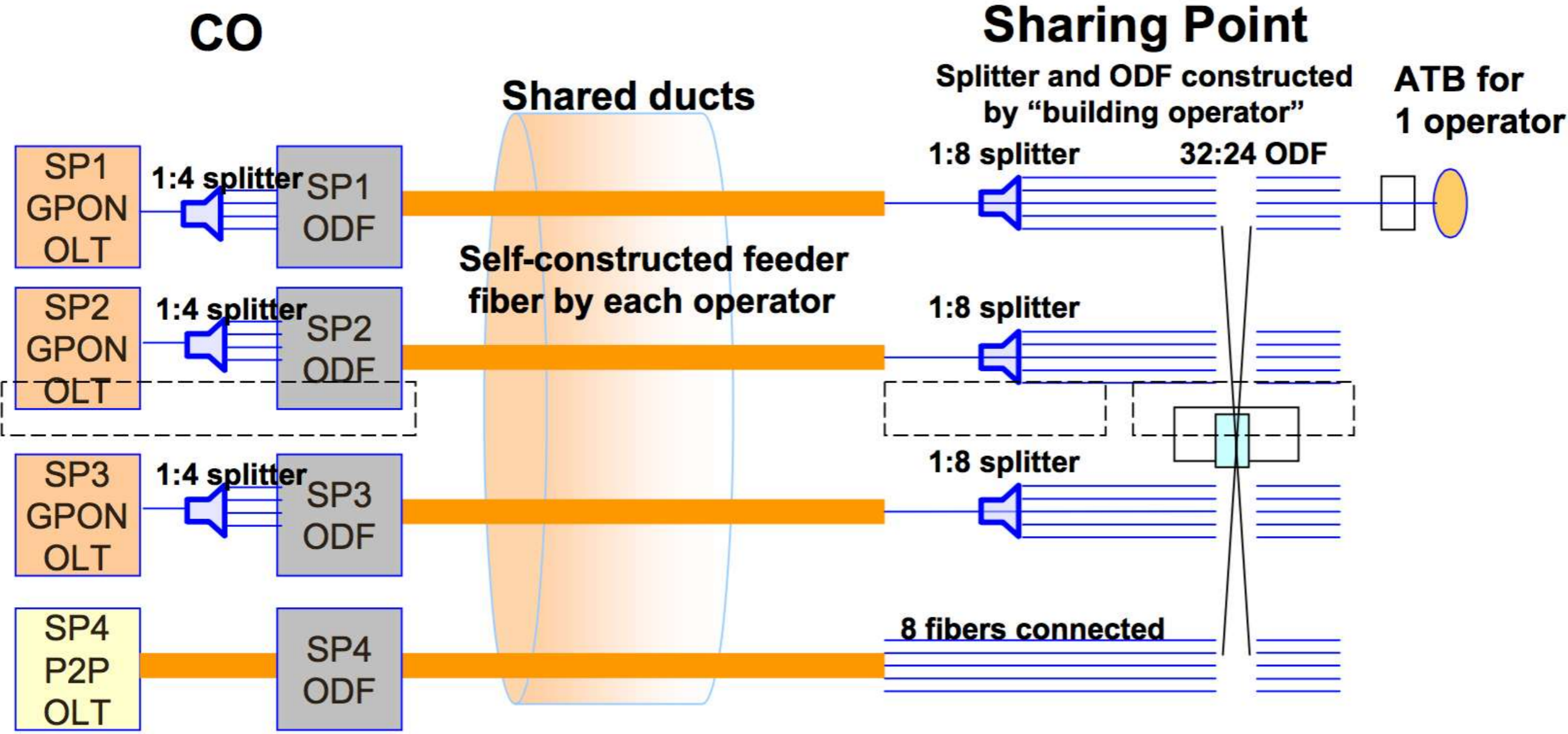•Limited to GPON architecture

SP1 OLT
SP2 OLT

distribution fiber Renting

SP1 OLT
SP2 OLT

SP1 OLT
SP2 OLT

Duct Sharing: Separated fiber deployment

Virtual cabling sharing

single fiber sharing (@ sharing point)

3

what type of sharing is happening in Myanmar?

"The Department may manage *infrastructure sharing* in order to reduce unnecessary cost and to lessen impact to the environment when licensees erect or install network facilities"

Telecoms Law Chapter XII. 49

1). Tower sharing
2). Fiber sharing
      a) trench sharing
      b) duct sharing
      c) pole sharing
      d) OPGW

challenges & issues

1) clarity & regulatory certainty
    a) approval process
    b) pricing & rate setting
    3) capacity management
    4) access to utility infrastructures
2) cooperation from stakeholders & utility infrastructure providers
3) ownership and management
4) compliance issues
5) complaints &

Redundant costs

Fibre optic cable
Operator 1
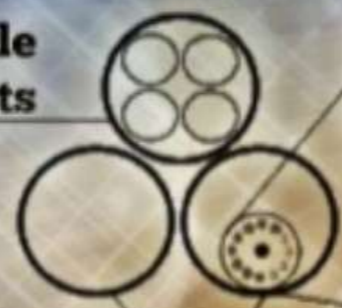
Fib

recommended models
for sharing fibre among operators

Open-access fibre model

FibreCo duct and fibre configuration

Around 25% already sold
Remainder of infrastructure
available to sell to others

Multiple
Microducts

Main Fibre
Cable
>100 Fibre
Strands

Multiple Ducts

Each pair of fibre strands is capable of carrying more than
4,000 Gbps of capacity -
more than adequate for each single SP's requirements

Important asset most
suitable for infrastructure
but most often wasted

open access model

Open access synergies can unlock fibre investment

	SELF BUILT	CONSORTIUM	OPEN-ACCESS
Primary Proponents	- Incumbent fixed-line operators - Utility backed carriers - Rail/power	- Big 5 MNOs - Next tier fixed-line operators	- Next tier MNOs - Next tier ISPs - Municipalities
Typical Ownership Construct	Governement	Private	Private and/or public
Infrastructure access	Closed – typically sell bandwidth only	Closed – typically sell bandwidth only	Open – Bandwidth, wavelengths and fibre
Operational Model	No SLA	Limited SLA	Carrier-grade SLA
Scope for duplication of infrastructure	High – some competitors require network independence	Medium – Consortium members duplicate each others infrastructure	Low – Optimised network designed for sharing and rational economic behaviour
Effective input cost per customer for 1st 6 fibres	Very high	Medium	Low
Scope for service innovation	Low	Medium	High

cross sector sharing

sharing infrastructure within Telecom and across Energy, Transport, and roads, Sectors is a Win-Win Situation

OPGW is laid along   Electricity Transmission Lines for Operation & Maintenance of Electricity System; and railway lines for telecom connectivity;

Electricity Sector and Railways use could be less than 0.01 percent of total capacity.

Now, Electricity and Railways have plans to earn more money by selling the surplus capacity to telecom market and contribute to growth of Telecom and Internet connectivity.

rights of way along highway is still a potential source

road construction & infrastructure sharing

- Road Construction involves lot of earth work and trenching, which constitute 70-80 percent of Optical Fiber System Cost, so why to duplicate this trenching work- Once for road construction and then again for Optical Fiber Cable?

- The typical incremental cost for laying HDPE pipe at the time of construction of road could be less than 0.02 percent of total road construction cost.

- Once this pipe is laid at the time of road construction then telecom companies can simply pull the optical fiber cable inside this pipe and duplication of trenching is avoided. This will save lot of money and increase road life and quality.

- In addition, no inconvenience, no damage to infrastructure by multiple

Telecom Connectivity Helps in implementation of Intelligent Transport System (ITS).

important issue

- when cross sector sharing happens, the sharing should happen on **open access model**

- **exclusivity (e.g.,** exclusivity contract**)**in such sharing could lead to anti-competitive behaviours

Public-Private-Partnership

- today telecoms law and licensing regime encourage PPP in infrastructure building

- Myanmar is still lagging behind in both domestic infrastructure build up and international connectivity

- a huge potential for international and domestic investors

- investment in infrastructure is long term and government needs establish mechanism to protect investors

what protection international investors would like to see ?

other key considerations

- MCIT has adopted enabling policy framework for telecoms sector development
  - BB development is high agenda
- wireless broadband is quick solution to bring BB coverage to large areas in short time scale
- MCIT may consider early release of spectrum for BB development
- fixed BB is also necessary to develop
- new players are bringing new technologies
- policy, regulatory framework needs to be right
  - receiving support from ITU, WB etc.,
- USO may be considered to provide necessary support
- technology neutral licensing approach to support BB services
- as voice coverage increases, more attention will be given to BB development

recommendation for next step

- telecoms industry is quickly developing

- slow infrastructure development will become major roadblock for quality service and min reason for affordability

- national level coordination committee on cross sector infrastructure sharing cold be established

questions?