

Infrastructure Sharing and Open Access Models: An Overview

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Session Outline



- The context and scope of infrastructure sharing strategies
- Infrastructure sharing benefits
- Challenges for Infrastructure Sharing
- The policy and regulatory framework for encouraging Infrastructure Sharing

Key Network Infrastructure Needs



- Optic fibre links between all neighbouring countries – at least two or more physically independent links are required for reliability and competitive pricing
- International submarine cable landings - at least two or more independent submarine cable landings are required for reliability and competitive pricing
- Competitively priced and reliable national backbones

Key Network Infrastructure Needs



- Sufficient middle mile infrastructure reaching small population centres
- High capacity links from mobile base stations to backhaul
- Consumer choice of affordable fixed and mobile broadband retail/local loop providers
- Efficient interconnection between IP networks and with public voice networks (mobile and fixed)

Internet Infrastructure: Layers and Institutional Frameworks



Layers 1-4:

- Lit Cables
- Radios & Satellites
- Switches & Routers
- Servers & Storage
- Energy, AirCon and Housing
- Numbering and IP address/ASN allocation
- Interconnection

Primary Stakeholders:

- Telecom Operators – fixed, mobile, satellite
- Internet Access Providers
- Data Centre Operators
- IXPs
- Public/Consumer associations
- Government - telco regulators

But Also Layer 0: Passive Infrastructure



Important often less well understood and more amenable for infrastructure sharing:

- **Land & Rights of Way**
- **Ducts and Fibre**
- **Sites & Masts**
- **Radio Spectrum**
- **Orbital slots**

Primary stakeholders:

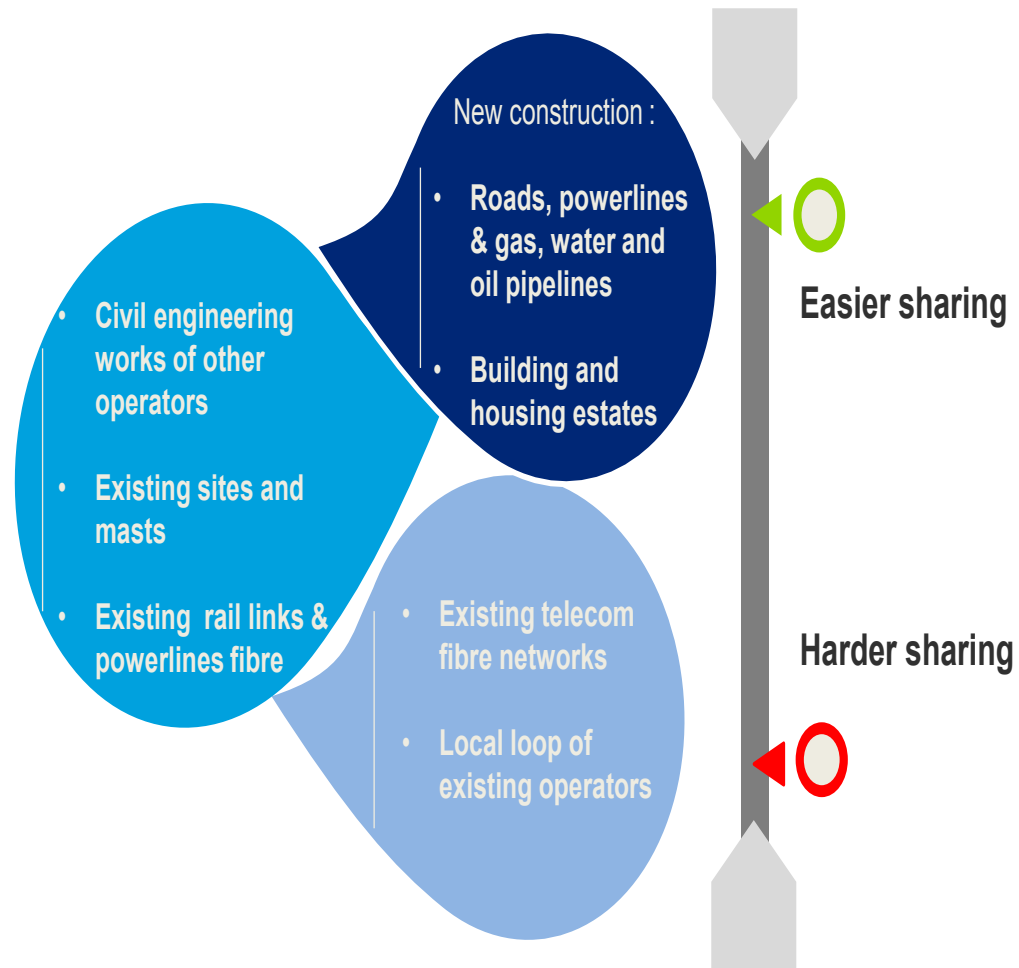
- Governments & Regulators
- Land Owners
- Dark Fibre & Mast Operators
- Utility Infrastructure Operators: Rail, Energy, Roads, Water, Waste
- Various national and local authorities, and parastatals
- People living/working in close proximity to facilities

Scope and Ease of Infrastructure Sharing



Scope of Infrastructure sharing

Ease of Infrastructure sharing



Major Benefits of Infrastructure Sharing



Reduced Opex and Capex & Release of capital assets

Lower barriers to entry increase competition

Lower asset duplication:

Expansion of network and coverage

Lower service prices

Reduced visual and environmental impact

Increase in take up and connectivity

Economic & Social Benefits

Infrastructure Sharing Benefits: APC/Deloitte Study Results



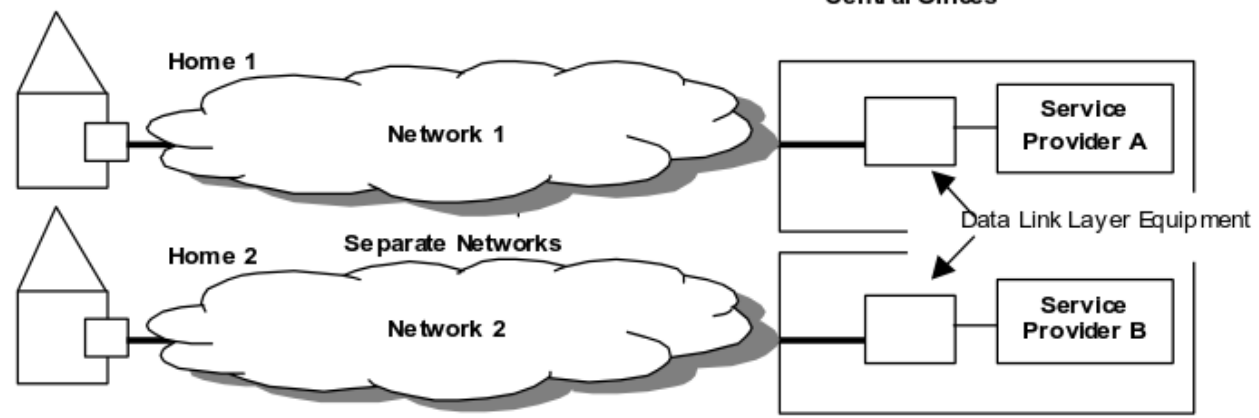
- In fibre deployment 80-90% of the cost is in the civil works for the ducting – if this can be shared, the savings are very substantial - \$16m per operator saved for a 1000km of fibre shared by 3.
- Similarly, duplication of masts massively increases the cost for providers rolling out last mile wireless networks - Across a network of 10,000 towers costing an average of \$80 000 per site, a two-way sharing agreement across all mobile sites could save operators up to \$365m per year.

Infrastructure Sharing Benefits: APC/Deloitte Study Results

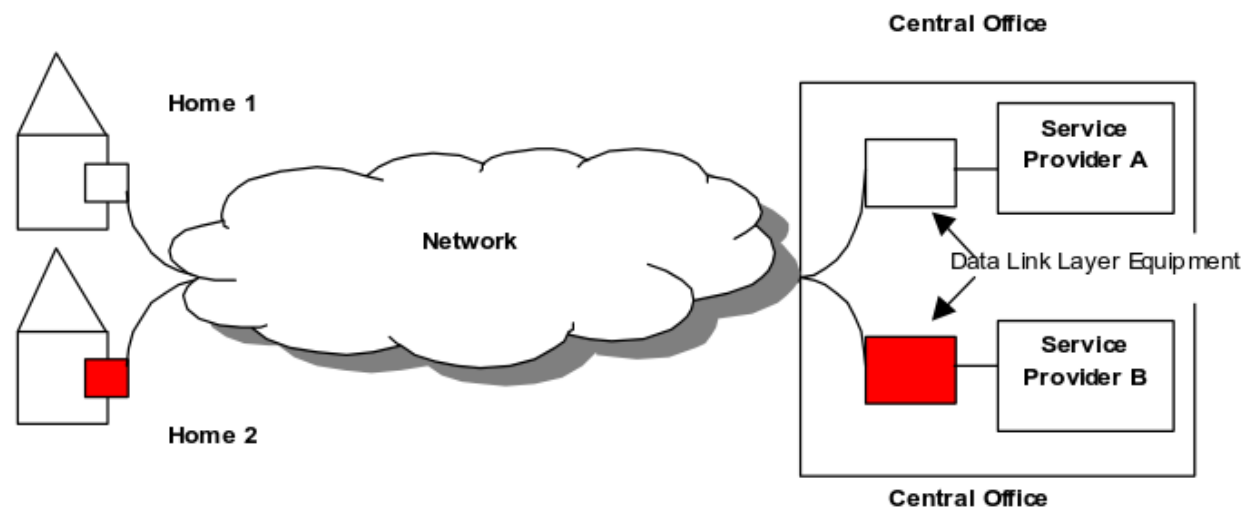


- Gaining access to rights of way can be highly costly and time-consuming
- Massive savings can be made by implementing dig once policies requiring operators to share civil works and masts, or requiring all new transport or energy infrastructure to include ducts - coordinating network roll-out with road construction is estimated to add only 0.9-2% to the total cost of the road

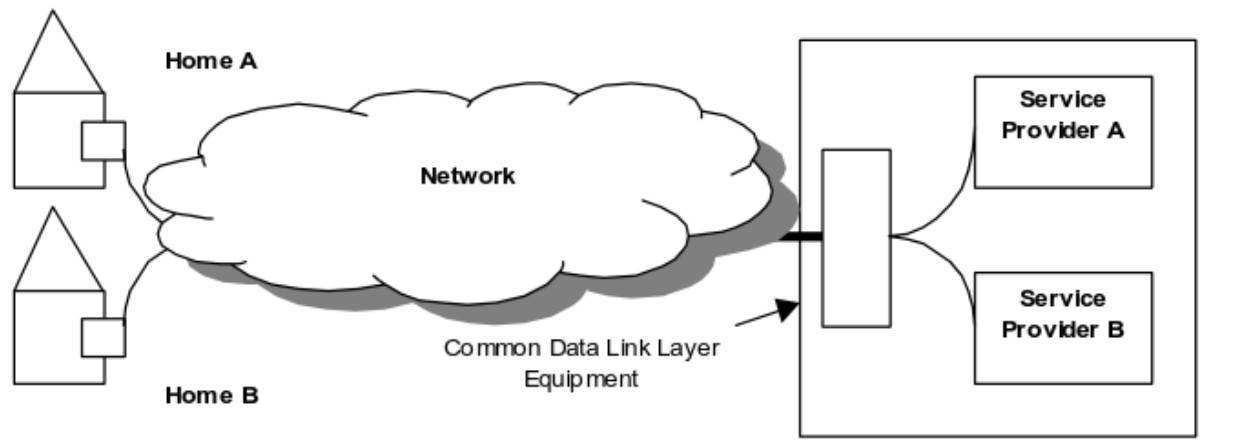
Local
Loop
Sharing
FTTx



Facilities
Competition



Unbundled
Network
Elements



Open Access

Burundi's national fibre backbone - The Burundi Backbone System (BBS)



Before Burundi gained access to an international fibre cable in 2012, internet access was dependent on expensive satellite connections and was limited to a small number of urban subscribers. In rural areas the backbone network remained underdeveloped .

To solve this problem the government created a PPP with the Burundi Backbone System (BBS) in 2010. BBS is a company that was formed as a joint venture between four of the country's leading telecom operators and one ISP.

The World Bank provided the Burundian government with a loan of US\$11.5m to help finance the US\$25m project.

The project involves the creation of a 1,250km fibre optic backbone connecting all 17 provinces. Network connection points at the borders with Rwanda and Tanzania will provide the landlocked country with access to the landing points of international submarine cables in Mombasa and Dar es Salaam.

Although the BBS has been relatively successful, a number of implementation issues have emerged. For example, the government commissioned the Metropolitan Area Network (MAN) in Bujumbura with the aim of connecting government institutions with fibre. This was reportedly seen as a sign of disengagement with the BBS, as part of which 75km of access network were also being constructed in Bujumbura. In addition, the government awarded an additional licence to Viettel, who are rolling out their own national 3G network without using the national backbone. This potentially jeopardises the return on the investment for the operators.

Broadband InfraCo – South Africa



Broadband InfraCo, a South African state-owned enterprise, was founded in 2007 to help drive down the costs of terrestrial fibre in the country by operating the national fibre network assets of the electricity provider Eskom and Transtel, the telecom arm of the national railway company. Since its creation, Broadband Infraco expanded the network based on the original fibre cables on Eskom's power transmission lines and Transtel's railway infrastructure.

In order to facilitate the entry of a second national operator, initially Broadband Infraco leased its network only to Neotel. In 2010, Broadband Infraco launched its commercial services to the broader telecommunications market.

The launch of the network was delayed due to a lack of coordination between its shareholder, the Department of Public Enterprises, and the Department of Communications, which was responsible for the licensing, and it could not keep the interest of the network operators who proceeded to invest in their own networks, undermining the InfraCo business model.

National Optical Backbone in Cote d'Ivoire



While Cote d'Ivoire has a high mobile penetration rate (91%), the country had only about 1m internet users by 2013. Currently, 85% of internet users reside in the capital Abidjan.

In order to bring broadband access to the country's more rural areas, the government begun construction of a state-owned National Fibre Optical Backbone in 2012. The project is financed with the help of the National Telecommunications Fund, which is funded by taxes paid by operators.

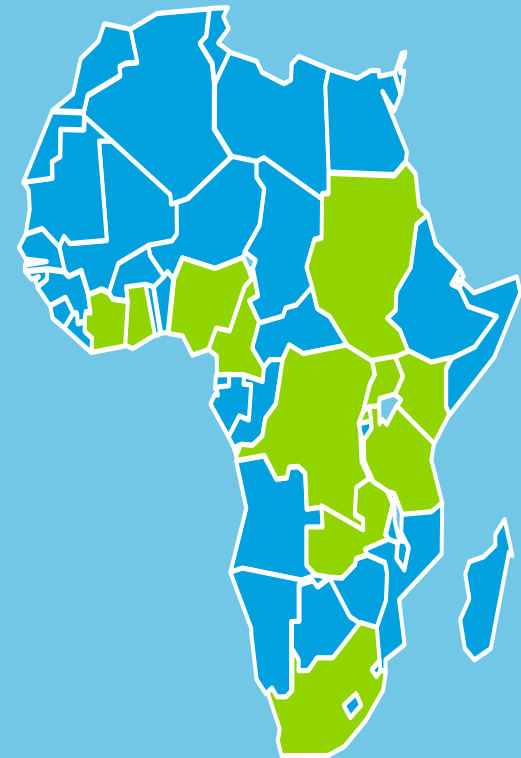
Upon completion, the network is expected to measure 6,700km and connect up to 30% of the country's population to the internet. Phase I was completed in 2012 and Phase II started in 2013. The final three stages are scheduled to begin in 2014.

Africa's rising tower business and the case of Eaton Towers in Kenya, Uganda and Ghana



Estimates indicate that, while in 2013 17% of Africa's 150,000 towers were owned or operated by towercos, this number is expected to increase to 38.8% by the end of 2014.

Eaton Towers, a pan-African tower company, entered sale and lease back agreements with Orange and Warid in Uganda; outsourcing of operations agreements with Orange and Telkom in Kenya; and with Vodafone in Ghana. Besides the maintenance of existing sites the deals also involve the construction of new towers, expanding operator's coverage while reducing cost. With about 2,400 towers, Eaton Tower's is currently the fourth largest tower company in Africa.



 Countries with operations by tower companies

Key Policy Issues for Infrastructure Sharing and Open Access



- Passive infrastructure sharing requirements
e.g WB requirements for funding power grids
- New fibre and mast build out standards to support sharing
- Telco infrastructure sharing requirements as part of Interconnection and Collocation rules
E.g. Nigeria - any operator has the right to request sharing from another

Key Policy Issues for Infrastructure Sharing and Open Access



- **In-building planning requirements**

e.g Botswana, Rwanda

- **Active infrastructure sharing**

e.g Mobile Roaming, and Wholesale networks (govt and private); Rwanda ORN, Tanzania NICTBB, or SA Broadband Infraco, Liquid

- **Duct sharing policies & dig-once land-use planning rules**

e.g France

Key Policy Issues for Infrastructure Sharing and Open Access



- Limiting the cost and procedures for rights of way
E.g. Brazil Pole rental price
- Simplification of cross-border digging procedures
E.g. EAC
- Fair/open access to fibre backbones and submarine landing stations
E.g. ACE Landing stations & national wholesale operators
- Multi-sectoral infrastructure databases and GIS
E.g., Germany and Turkey



Thank you!

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