NCC

NIGERIAN COMMUNICATIONS COMMISSION

Open Access Model for Next Generation Optic Fibre Broadband Network

The Nigerian Model

Industry Consultation Paper

November 2013

Contents

1 Introduction

The Nigerian Communications Commission (NCC) on July 26, 2012 held the first industry consultation on Broadband Initiative with the theme "Demand as catalyst for broadband services in Nigeria". The consultation was to engage the industry stakeholders on the future direction of the Next Generation Broadband Network (NBN) in Nigeria. Thereafter, the NCC conducted one-on-one sessions with select Operators/industry stakeholders between the 15th – 22nd July, 2013 on the strategic objectives for the deployment of nationwide optic fibre infrastructure for broadband, as well as to seek their input on this initiative.

This industry consultation paper presents the revised model for the backbone and metropolitan optic fibre infrastructure for broadband deployment in Nigeria, based on inputs obtained from various stakeholders groups. This paper also includes wholesale wireless last mile access through the issuance of available 2.3GHz spectrum to complement existing solutions.

A second round of industry stakeholders' workshop is proposed for the 15th November, 2013 to discuss stakeholder feedback on the proposed model for the deployment of the nationwide broadband fibre infrastructure in Nigeria.

2 Background

The Nigerian Vision 20:2020 economic transformation blueprint is a long term plan for stimulating Nigeria's economic growth and launching the country onto a path of sustained and rapid socio-economic development.

As part of the mission to achieve global economic competitiveness, there is need for cost effective widespread deployment of robust national and metropolitan optic fibre transmission network. Effective deployment would include ensuring an even playing field where infrastructure sharing takes place.

Thus, the Commission is committed to putting in place a new broadband deployment environment through an 'Open Access Model' in line with the National Broadband Plan. The "Open Access Model" has been examined as the model for optic fibre transmission network deployment to bridge the current gap and deliver fast and reliable broadband services to households and businesses. The model is also envisaged to address the challenges of congested and unplanned towns, the challenges around infrastructure sharing and other issues such as high cost of Right of Way.

Additional, the Open Access Model will potentially help optimize the cost of broadband access across Nigeria and ensure that all operators, whether large or small, have equal access to broadband infrastructure. In this regard, the NBN is envisaged to be an open-access carrier-neutral backbone and metropolitan fibre network that spurs service innovation. The NBN framework will provide an open-access, non-discriminatory and non-exclusive pricing to all service providers.

The objective of this initiative is to stimulate a new national broadband network that is not only more widespread but also faster and more secure than what is available today, thereby stimulating other sectors of the economy and leading to higher

economic spinoffs for Nigeria. In addition, it will offer efficient connectivity as well as ultra high-speed broadband services that are available, affordable and sustainable.

3   Current Broadband Environment

The National ICT policy placed internet penetration in Nigeria at 28% and broadband penetration for both mobile and fixed broadband is estimated to be 6.1%.

Internet access costs are still considered high and this is mainly attributed to the lack of a comprehensive domestic fibre backbone within the country connecting the Local Government Areas (LGAs) (except between the state capitals) as well as wide spread and expansive metropolitan fibre mesh network within the cities.

It is estimated that about 56% of the 774 LGAs have backbone optic fibre present. However, it is also noted that the presence of fibre in an LGA does not necessarily mean that high capacity transmission services or dark fibre services are available from existing operators at competitive prices.

Notwithstanding recent progress, fibre deployment in the country has been plagued by myriad difficulties ranging from administrative procedures regarding rights of way permits, to poor urban and regional planning. Some of the challenges which need to be addressed in the country include:

a)   Multiple taxation/Right of Way issues

b)   Unplanned towns and cities

c)   Damage to fibre cables

d)   Poor Infrastructure sharing

e)   Security challenges and vandalism

Key Imperatives for successful Nationwide Broadband Network Deployment

The growth of broadband will be driven by the following initiatives:

a)   A robust National Broadband policy to support an open access broadband model and deployment of a nationwide broadband network. These will ensure sustained investment and ensure greater penetration of broadband in the country

b)   Harmonised and reduced Right of Way (ROW) cost for all tiers of governments – There are ongoing efforts by the Honourable Minister of Communication Technology to agree and harmonise RoW charges across states through the National Economic Council and the Presidency

c)   Harmonisation of taxes to prevent multiple taxation by all tiers of governments

d)   Government policies and initiatives including support for e-governance and growth of e-commerce

e)   Resolution of the security concerns, vandalism and damaged cables due to road construction in the country

f)   A robust telecommunication regulatory regime encouraging non-discriminatory and price competitive open access to support nationwide fibre deployment and provision of transmission and fibre services

4   Open Access Broadband Network Model for Nigeria

In order to achieve the Nigeria Vision 20:2020 economic transformation blueprint, there is a need for a long term widespread deployment of a robust nationwide comprehensive backbone and metropolitan fibre infrastructure. The following highlights the salient principles for a national open access broadband network:

a) Nationwide fibre penetration

The broad objective of the Nigerian National Broadband Plan is to target a fivefold increase in broadband penetration by 2017 over the 2012 penetration levels. This can be achieved by extending the backbone fibre infrastructure network to beyond state capitals into metropolitan areas in Nigeria bringing it as close to potential customers as required to encourage and support investments in "last mile" technologies and systems by the private sector..

b) Non-discriminatory and open access

Existing nationwide operators are vertically integrated with end to end service offerings riding on their own infrastructure. There is also duplication of fibre infrastructure on some routes while there is lack of access to fibre infrastructure in other areas. On certain routes, limited capacity swaps are being implemented between operators to enhance coverage and/or provide redundancy. Most operators also build fibre only in commercially viable areas, to follow demand of their own retail services rather than lead it; the industry fibre deployment is concentrated and sub-optimal leaving large parts of the country including metropolitan areas without any access to fibre optic infrastructure. Even where fibre is available, there is little wholesale capacity available in the market on open access basis and at reasonable prices. Hence, there is currently very limited wholesale dark fibre and limited wholesale bandwidth availability on a geographically widespread non-discriminatory and open access basis.

c) Optimized Deployment Strategy

Notwithstanding NCC's aim to provide nationwide backbone and metropolitan fibre coverage, a phased roll-out deployment strategy that focuses on proof-of-concept for commercial viability in select parts of Nigeria is crucial. Towards this end, existing stakeholders will be consulted for the deployment phasing and structuring a sustainable business model that benefits whole of the industry while achieving the objective of greater broadband penetration towards stronger economic impact.

d) Co-operation of Existing Operators

There are quite a number of existing operators that have already laid fibre infrastructure in certain parts of Nigeria, mostly intercity. In order to move towards the long term deployment of a robust nationwide comprehensive backbone and metropolitan fibre infrastructure, cooperation of existing operators is envisaged to drive faster rollout and cost efficient delivery of the infrastructure, thereby benefitting all the stakeholders involved.

5   **Industry Structure model for NBN deployment in Nigeria**

A typical NBN network and services infrastructure can be segregated into three main layers:

a) *Passive Infrastructure layer (Layer 1):* Responsible for the design, build and operation of the passive NBN infrastructure (e.g. rollout of fibre, maintenance of ducts, handholes and manholes).

b) *Wholesale layer (Layer 2):* Responsible for the design, build and operation of the active NBN infrastructure (e.g. terminal equipment, optic fibre electronics, routers, switches, data centers).

c) *Retail Service Providers (RSP)*: Purchase bandwidth connectivity from wholesale operator (s) and compete with each others in providing competitive and innovative services to end-users.

The current industry structure in Nigeria consists of integrated operators offering end-to-end services and long distance operators offering wholesale services amongst others. This structure, which has served the country well in terms of penetration of mobile services, has faced limitation in terms of increasing availability and penetration of high speed broadband infrastructure and services.

To achieve the objective of a nationwide broadband metropolitan and backbone deployment on an open access, non-discriminatory basis, the following industry model is proposed as shown below.
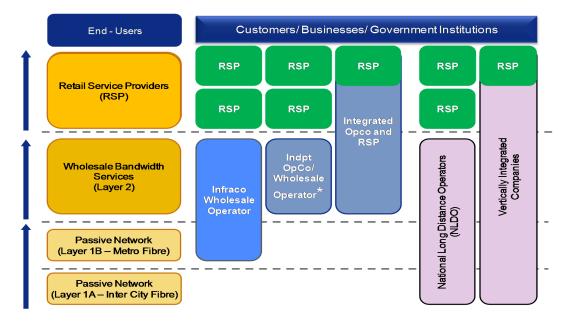
Figure 1: Industry Structure for Nigeria

This proposed industry structure consists of the following players:

a) InfraCos (Layer 1B and Layer 2): Licensed InfraCo(s) that are geographically focused. InfraCos would:

  - Provide wholesale Layer 2 transmission services on a non discriminatory, open access, price regulated basis. InfraCos may also provide Layer 1 (dark fibre) services on commercial basis.

  - Focus on the deployment of metropolitan fibre and provide transmission services, available at access points (Fibre to the Node or Neighborhood - FTTN) to access seekers

  - Leverage existing inter-city fibre to deploy their services

  - Purchase/lease transmission or long haul fibre capacity from other providers, where available, for the purpose of interconnection

  - Customers will include:

    i. Wholesale Wireless Last Mile Operators

    ii. RSPs that require wholesale bandwidth

    iii. Independent operators/ wholesale operators who require to lease transmission services and

    iv. Other access seekers such as Vertically Integrated Operators and NLDOs.

b) Wholesale Wireless Last Mile Provider (Layer 2):

  - Last mile connectivity will be deployed using a mixture of existing technologies, including wireless and fibre optic broadband.

  - In addition, the available 2.3GHZ spectrum license will be auctioned to provide last mile wireless access on a wholesale basis.

  - The Wholesale Wireless Last Mile Provider will interconnect with the InfraCo at their Points of Access (PoA) thereby creating an integrated broadband service nationwide to homes/ businesses.

c) Vertically Integrated Telco Companies: Consists of mainly existing private telcos that have presence across the three layers. Accounting separation and price regulation (between wholesale Layer 1 and/or Layer 2 and RSP business) to be considered to bring transparency and cost reflective pricing.

a) National Long Distance Operators (NLDOs): Consists of private companies that construct own and operate transmission networks for carrying long distance telecommunications services within Nigeria.

b) Retail Service Providers (RSP):

  - The RSPs are expected to ride on the wholesale last mile provider to provide services to homes, businesses and schools; and

- RSPs will however have flexibility to obtain services from variety of operators and can leverage on other operators beyond InfraCos to meet end-user needs.

The proposed structure allows existing players to operate on the basis of business as usual, with the option of transferring/leasing their inter-city and existing metropolitan fibre infrastructure to the InfraCos.

The main reasons for the proposed industry structure can be summarized as follows:

a) There is already the presence of substantial intercity backbone fibre infrastructure covering various trunk routes in the country. It is assessed that it is more effective for InfraCos to potentially leverage intercity Layer 2 transmission services and/or dark fibre capacity from existing operators rather than introduce another company constructing and owning inter-city fibre. The leasing / ownership transfer of existing intercity (Layer 1 and / or Layer 2) bandwidth is envisaged to happen between the existing licenses and InfraCos under commercially acceptable terms within the overall regulatory regime of the NCC.

b) There is limited fibre penetration in the metropolitan areas due to limited deployment by existing licensees. InfraCos will facilitate this by providing metropolitan fibre wholesale Layer 2 and Layer 1B services.

c) There is also a lack of end-to-end open access transmission services available on a widespread geographic basis. InfraCos can address this by providing end-to-end services leveraging fibre infrastructure provided by the InfraCos and other wholesale suppliers to the InfraCos.

d) The InfraCos are prohibited from offering RSP services or last mile connectivity to ensure they do not distort the existing competitive RSP landscape in the country.

In summary, the proposed industry structure offers InfraCos as entities that complement the existing industry players by focussing on the market gap (primarily metropolitan fibre) and offering non-discriminatory open access wholesale bandwidth services to the industry players. This is expected to offer uplift in the business plans of the existing players while achieving the national objectives of deeper penetration and higher broadband services take-up in the country. The InfraCos may leverage the existing intercity fibre to offer a more seamless wholesale service delivery at Layer 1 and Layer 2.

6   Value Proposition and Key Features of the InfraCo

The value proposition and key features of the Infraco includes the following:

a) <u>Commercial Viability</u>
InfraCos are envisioned to be entities that are commercially viable, providing access to metropolitan fibre[1] infrastructure Layer 2 services at regulated prices. The InfraCos mandate is to deploy backbone and metropolitan fibre infrastructure within its assigned region or state. The InfraCos will be offered one-off subsidy based on the peculiarity of the business model and geographical coverage to better meet the NCC objectives and realize the national broadband vision.

b) <u>Last Mile</u>
The InfraCo's mandate would cover metropolitan fibre infrastructure element. Metropolitan Fibre reaches into urban areas but does not include "the last mile" (connection to consumer premises). The 2.3GHZ spectrum license will provide last mile wireless access on a wholesale basis.

c) <u>End to End service</u>
InfraCo is expected to offer end-to-end open access transmission services that are available on a widespread geographic basis. InfraCo is expected to achieve this by leveraging fibre infrastructure provided by other wholesale suppliers to InfraCos. It is noted that InfraCos end to end services do not include the "last mile".

d) <u>Economies of Scale</u>
InfraCos can act as the aggregator of fibre assets and transmission services, acquiring and/or leasing to consolidate existing fibre assets from incumbents, and building their own fibre infrastructure and re-leasing them out on a non-discriminatory, open access basis. Economies of scale for the fibre infrastructure by consolidation can minimize the ROW challenges faced by the industry, lead to optimization of capital as well as operating costs, and hence competitive prices.

e) <u>System Redundancy</u>
By aggregating fibre infrastructure and transmission services, InfraCos would be in a better position to be able to increase redundancy, or system availability, of the fibre infrastructure and transmission services. The formation of dark fibre infrastructure rings allows use of electronics that automatically configures when a single cable cut occurs. This translates to less and shorter "downtimes" and can help mitigate service interruptions caused by accidental cutting of fibres.

In essence, by leveraging on these points, InfraCo can potentially offer backbone and metropolitan transmission and fibre infrastructure services with lower costs and with higher system availability, hence providing fibre infrastructure at rates that are more affordable than current market rates in Nigeria.

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[1] Metropolitan Fibre in this context is defined as backbone fibre in urban areas and does not cover last mile to the premises.

7   Multiple Infraco Concept

Based on the analysis in the preceding section which makes the case for the nationwide broadband backbone and metropolitan fibre infrastructure and transmission services on an open access basis, the next logical step is to determine suitable implementation structure in terms of a single nationwide InfraCo company for the whole of Nigeria, or multiple InfraCos, based on defined geographical regions. The following section examines the suitability of a single InfraCo vis-à-vis a multiple InfraCos.

1. *Fiber and Internet Penetration*

   The rate of fibre penetration varies widely between different geographical regions and states in the country. Fibre infrastructure is also not evenly distributed throughout the whole country as more fibre infrastructure is deployed in more commercially viable states.

   In terms of internet penetration, statistics show that the internet penetration can be as high as 27% in states like Lagos, while the internet penetration is less than 5% for the vast majority of the other states in Nigeria. Based on this, the amount of fibre infrastructure deployed and the potential demand for fibre services for each geographical area is distinct and different from the rest, implying that a multiple InfraCo concept may be more suited for Nigeria.

2. *Regulatory and Tax Regimes*

   Each state government has unique regulatory regimes and distinct tax laws. In most cases, they are not harmonized across states. For example, Rights-of-Way (RoW) charges are a major component of the costs for fibre deployment and these RoW charges can vary significantly from region to region, and state to state. In addition to the ongoing efforts by the Honourable Minister of Communication Technology to agree and harmonise RoW charges across states through the National Economic Council and the Presidency, by introducing multiple InfraCos, each InfraCo can better structure its commercial strategy to suit the regulatory and tax regimes for each region.

3. *Socio-economic Factors*

   Similar to other developing countries, there is a lack of homogeneity in the country in terms of socio-economic factors when you compare the political and/or financial centres to the rest of the rural areas. As expected, population, population density, GDP per capital, access to core infrastructure, etc, will be higher in some states compared to others.

   By default, the commercial strategy, the timetable of roll-out and technical architecture for fibre deployment will be different in each of these geographical areas. This supports the notion of a multiple InfraCo concept.

4. *Local Geography*

The topology of the land will have a great impact on the technical architecture of the fibre infrastructure. A large part of the capital costs for laying fibre is attributed to construction costs – soil type, cable routing, etc. The large land mass of the country means that every region and state in Nigeria has a unique topological profile. Furthermore, detailed design studies are needed to be undertaken in order to determine the unique fibre deployment strategy and technical architecture for each geographical area.

A multiple InfraCo concept is assessed as more suited for the provision and management of transmission services as well as the deployment of metropolitan fibre infrastructure in the country.

8   Key Parameters for Structuring the Multiple InfraCos

The following are the parameters to be considered in the design of the structure for the multiple InfraCo:

a. Deployment Strategy

Given the size of Nigeria and complexity of fibre deployment that comes with it, a phased deployment of fibre is recommended. The deployment strategy for InfraCos should be to focus on the most commercially viable areas (i.e. areas with the highest demand) during the first phase, and extend to other areas in a phased manner. There will be initial one-off Government subsidy to InfraCos, depending on the business case to assist with initial roll-out.

b. Number of InfraCos

Based on the unique topological features and characteristic traits of each of the geopolitical zones, it is assessed that the best way to allocate geographic areas to the InfraCos will be based on the geopolitical zones. In addition, Lagos state can be treated as separate geographical area for the InfraCo due to its economic importance. Thus a total of 7 InfraCos are envisaged in the country for provision of nationwide transmission and fibre services to support broadband.

c. Interconnection Between the Fibre Rings

All the InfraCos must be interconnected to ensure universal and seamless Layer 2 wholesale access throughout Nigeria. This structure would be finalized based on various technical, commercial and legal principles and to ensure that the InfraCos are commercially viable.

d. Industry Partnerships

The InfraCos will be structured such that it encourages fibre infrastructure stakeholders to partner with the InfraCos to share fibre infrastructure. These arrangements could include transfer of existing fibre assets to InfraCos and/or lease of fibres to InfraCos. InfraCos could potentially act as aggregators by buying (taking ownership) and/or leasing dark fibre and transmission services from other operators and in some cases building new fibre. This will result in InfraCos being able to provide metropolitan transmission and fibre services to access seekers. Overall, this approach will allow InfraCos to use a combination of fibre assets to produce robust (higher redundancy) metropolitan fibre infrastructure and transmission services in Nigeria.

e. Revenue Sharing Mechanism

In addition to the ongoing efforts of the Honourable Minister of Communication Technology to agree and harmonise RoW charges across states through the National Economic Council and the Presidency, to potentially address the high RoW costs, InfraCo structure will take into account innovative structuring options including revenue sharing mechanisms with States to reduce upfront RoW costs. This mechanism needs to be finalized with the States / geopolitical regions as it will have a strong bearing on the business proposition of the InfraCos.

f. Service Offerings

The InfraCo would offer both wholesale bandwidth services (Layer 2) and dark fibre (Layer 1) services. End to end seamless availability of layer 2 services throughout the country on completion of InfraCo(s) rollout would set the stage for vibrant and all pervasive broadband services in Nigeria.

9   Technical Overview

The NBN backbone and metropolitan system is required to provide reliable widespread high capacity broadband to all geographic areas of Nigeria. The NBN system would include but not limited to:

a) Providing open access Layer 2 active fibre transmission services on a geographically widespread end-to-end basis. Layer 1 dark fibre services may also be offered on case by case basis.

b) Providing points of access (PoA) on a 10x10km grid basis in commercially viable areas. These PoA would be on the InfraCos metropolitan fibre.

c) Be designed, implemented and operated to support reliable connectivity.

d) Must be highly protected in a ring arrangement and shall support self-healing technologies.

e) Providing Points of Access (PoA) where "last mile" technologies can be connected to NBN. A PoA is a location where access seekers can access Layer 2 services. Access seekers may connect last mile technologies at PoAs.

9.1 Technical Architecture

The overall architectural considerations of the backbone and metropolitan fibre system are:

a) Use of Fibre Rings
Use of rings in which segments of the ring are geographically diverse is essential for reliability. The ring structure means that a single cable cut does not stop the provision of service over the ring.

b) Use of Secure Routes and Construction
Use of underground construction on secure routes will assist in reliable operation. Corrugated duct fibre may be used for faster and secured installations as well. Fibre on overhead power lines may also be used.

c) Minimisation of Cost
Selection of routes for new fibre that avoid areas of high construction cost such as difficult soil types, steep terrain and areas subject to flooding. Capital costs would also be minimised through access to existing fibre infrastructure by lease of high capacity layer 2 services and/or by lease of dark fibre.

d) Hierarchy of Fibre Rings
Ring layout should allow for initial rings to be formed and brought into service and allow for future rings to be formed and brought into service without disruption of rings that are already in service. The technical architecture that is proposed is for a hierarchy of 3 layers of rings - national intercity rings, regional intercity rings and metropolitan rings. This is described below:

1) National Intercity Rings

The National intercity fibre systems are already well developed and are owned and operated by existing operators. These cross between States and in some cases between Geopolitical zones and regions.

It is envisaged that InfraCos would utilise these existing fibre systems by leasing transmission services and/or dark fibre from existing operators. InfraCos would form reliable intercity "rings" by leasing from multiple existing operators. InfraCos would cooperate and interconnect to provide national end to end services.

InfraCo Points of Access (PoA) for InfraCo customers to connect electronics would be provided at multiple locations on intercity "rings". LGAs may be connected in some cases direct to Intercity Rings (via a PoA). These PoAs are the locations at which access seekers connect "last mile" technologies and/or central service provision equipment.

2) <u>Regional Intercity Rings</u>

The number of Regional Rings is expected to be in the range of 1-4 per region (an estimated 12-18 across Nigeria). It is envisaged that InfraCos would form Regional Rings through a combination of new construction and utilisation of existing fibre systems by leasing transmission services and/or dark fibre from existing operators. InfraCos would form reliable Regional Rings by leasing from multiple existing operators and by InfraCos construction where required. These rings would typically be within a region and may be within a State. These would typically be connected at one or more points to an Intercity Ring. Points of Access (PoA) for InfraCos customers to connect electronics would be provided at multiple locations on each ring.

3) <u>Metropolitan Fibre Rings</u>

The role of the metropolitan or local rings is to provide extension of the broadband backbone to PoA locations close enough to customer locations that will support the "last mile" investments by other service providers.

It is envisaged that InfraCos would form Metropolitan Rings through a combination of new construction and utilisation of existing fibre systems by leasing transmission services and/or dark fibre from existing operators. InfraCos would form reliable Metropolitan Rings by leasing from multiple existing operators and by InfraCos construction.

It is anticipated that each Metropolitan Ring would serve in the range of 2-10 LGAs. Target areas within LGAs would be divided into a 10km square grid, with a designated point-of-access. The backbone and metropolitan optic fibre deployed on each Metropolitan Ring will pass through each PoA, and would be dimensioned with sufficient fibres to allow multiple access seekers at each PoA[2]. A conceptual diagram of this approach is shown below.

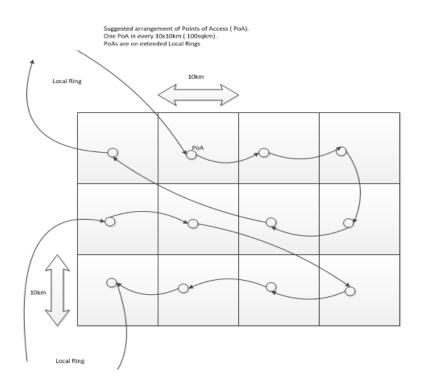[2] Each access seeker would require only 1 or 2 fibres.

Figure 3: Overview of the 10km by 10km square grid methodology for LGAs

The 10X10 grid is conceptual and the actual design and implementation will vary according to regions and specific situations in each metropolitan area.

10   Regulatory and Legal Overview

The InfraCo(s) will be regulated entities and the key regulatory principles to be followed would include the following:

a) Implementation of Access List Controls on Key Intercity Routes and Infrastructure

There may be a requirement to implement Access List controls for network facilities providers and network service providers to provide access to their network facilities or network services, listed in the Access List, to InfraCos. This would facilitate InfraCo's access to existing fibre infrastructure to speed up deployment and reduce duplication of critical network infrastructure.

b) Licence Conditions for Infraco

The provisions for the InfraCo license will reflect the following:
1) Require the InfraCo to provide Layer 1B and Layer 2 services.
2) Require the InfraCo to be structurally separate from RSPs
3) Allow the Commission to regulate the InfraCo's tariffs
4) Require the InfraCos to interconnect with each other
5) Subjected to performance standards based on achievement of pre-agreed milestones.

11   Commercial and Business Overview

Infraco Scope of Services

The scope of services envisaged for the InfraCo is as follows:

a) Roll out and manage active fibre infrastructure focusing on the metropolitan segment within regions. This may include backbone fibre transferred and/or leased from existing operators. Note that this does not include international fibre to and from Nigeria.

b) Offer Layer 2 (active fibre) and on a non discriminatory, open access, price regulated basis. InfraCos may also provide Layer 1 (dark fibre) services on commercial basis. Innovative ways of packaging the service offerings may have to be explored based on the requirements of the market and the stakeholders.

c) The Wholesale Wireless Provider will provide wholesale "last mile" access connectivity to homes and businesses. Other last mile connectivity could be explored based on economics and traffic (Mobile wireless, other fixed wireless, FTTH and HFC - Hybrid Fibre-Coaxial).

Ownership of Infraco

There will be no Federal Government ownership of InfraCos, however State and Local Governments may be encouraged to partner with the InfraCos and potentially obtain revenue sharing in exchange for RoW and other concessions to InfraCos.

Customers

The customers for the InfraCo services would be the existing and new telecommunications players.

a) RSPs

The Retail Service Providers are expected to be customers of InfraCo's Layer 2 bandwidth services.

b) Integrated Telcos

The existing telecom players can utilise the InfraCos Layer 2 services and dark fibre to run their services. These players may also offer pure bandwidth products to the end-customers, re-sellers, demand aggregators as well as pure play RSPs.

c) Wholesale Wireless Last Mile Providers

The Wholesale Wireless Provider will interconnect with the InfraCo at their POI and/or POA thereby creating an integrated broadband service nationwide to homes/ businesses.

d) Pure Operating Companies (OpCos)

Some pure OpCos may come up that may only offer services to RSPs by providing Layer 2 bandwidth services. They may act as bandwidth integrators and provide services to existing as well as new future RSPs.

Key Commercial Issues

It order for InfraCo to succeed, it is critical for InfraCos to have a unique selling proposition and addresses the existing industry challenges in an effective fashion. The following sections identify these challenges and propose possible solutions.

a) High RoW charges

In addition to the ongoing efforts of the Honourable Minister of Communication Technology to agree and harmonise RoW charges across states through the National Economic Council and the Presidency, to reduce the burden of RoW charges, the InfraCos may offer each state that provides the ROWs a share of revenue in exchange for ROW. This mechanism will allow each state to have a stake in the success of fibre deployment while defraying the upfront costs for InfraCos.

b) Lack of Funding Sources

Besides equity and debt funding sources required to fund InfraCos, other innovative sources of funding will need to be tapped to ensure the viability of this enterprise. This includes funding by way of fibre or equity contribution from existing players. Fibre contribution provides an avenue whereby InfraCos can obtain fibre asset without incurring construction and site risks.

c) Need for Inter-InfraCo Cooperation

Customers should be able to readily purchase end to end backbone and metropolitan connectivity spanning multiple InfraCos. This could be achieved by requiring each InfraCo to offer connectivity at fixed wholesale rates to the other InfraCos who could bundle them together for the customer.

d) Regulation and Monitoring of InfraCos

Specific regulatory guidelines will be set-out by the NCC to manage the InfraCos to ensure appropriate regulation of pricing, prevention of collusion, dispute resolution, and audit checks to ensure the technical architecture maintains its' stated performance and QoS requirements in terms of reliability, bandwidth performance and redundancy.

12   Invitation to Comment

NCC invites the industry to comment on the matters stated above and any other related issues not covered in this consultation document but which are considered to be relevant to the development of the NBN.

NCC reserves the right to make public all or parts of any submissions made in response to this consultation, and to disclose the identity of the respondent. Any part of the response which the respondent considers is commercially sensitive must be clearly stated.

The next round of Industry Stakeholder consultation forum would be held on the 15th of November 2013.

Please submit enquiries via e-mail to:

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