

# **FEDERAL REPUBLIC OF NIGERIA**



## **NATIONAL INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FINAL DRAFT POLICY**

**By**

**Ministry Of Communication Technology**

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## **Executive summary**

ICT has been acknowledged to be one of the most critical tools underpinning socio economic development in the 21<sup>st</sup> century. Its global importance has led to numerous countries transforming their ICT sectors to lend support to other critical sectors in terms of efficiency, productivity and transparency, thus aiding job creation, better governance and overall socio economic development.

Nigeria has embarked upon this path and during 2011 created the Ministry of Communication Technology to ensure better coordination of ICT activities and development in Nigeria. This National ICT Policy lays out the inputs required to strengthen all productive sectors and ultimately transform Nigeria into a knowledge based, and globally competitive country, in alignment with the National Vision 20:20 objectives. It establishes a comprehensive framework for the ICT sector that will encourage and stimulate investment and also enable rapid expansion of ICT networks and services that are accessible to all at reasonable costs.

To ensure inclusiveness, the policy is the product of broad based consultation drawn from the public and private sectors & academia, critical analysis of the regulatory and legal environment, evaluation of institutional framework models, and an assessment of other pertinent realities of the ICT development in Nigeria over recent years, especially following liberalization of the telecommunications sector in 1999.

As the services delivered across ICT systems, applications and tools increasingly leverage the same technical resources; there has been a global evolution towards convergence in order to ensure holistic management of scarce resources and to strengthen independent regulatory oversight. This ICT policy therefore has convergence of regulatory activities across Telecommunications, Broadcasting, IT, and Postal services, as one of the critical pillars of ICT sector development.

The sector has witnessed the fused discharge of both regulatory and development activities across critical subsectors, which has led to suboptimal performance in many respects. The policy therefore addresses a clearer delineation of duties, specializations and focus. With respect to broadcasting a clear distinction is made

between the content and technical regulation activities, and accordingly the policy addresses the need to transfer technical regulatory responsibilities in the broadcasting sector to the converged regulator, in addition to regulatory responsibilities currently exercised by NITDA and NIPOST, thus ensuring that the objective of holistic ICT regulation is achieved

Recognizing the need for more comprehensive ICT development, the policy addresses the need for consolidation of ICT development activities under a ICT development agency (ICTDA), to ensure proactive targeted resource application and holistic development planning, in collaboration with the private sector. This will ensure increase in local content participation especially for the production of hardware, and software development, thus creating jobs and accelerating human capacity development of Nigerians in the ICT sector, and indeed across other sectors.

The National ICT policy addresses 23 thematic areas that are of critical importance, including Policy and Regulatory framework, Internet and Broadband development, Local content, Coordinated ICT development across all sectors, National Security and safety amongst others.

To deliver on the stated objectives a government institutional structure comprising of the following is captured within the ICT policy;

- i. The Ministry of Communication Technology
- ii. The Converged regulator
- iii. The ICT Development Agency
- iv. The Public Postal Operator
- v. Government owned institutions

The National ICT policy will be used to develop action plans for the ICT sector and also serve as a guide for development of cross sectoral policies and specific implementation guidelines. It therefore includes a sector review mechanism that emphasizes collation of accurate data, benchmarked assessments and dissemination of same through sector reports.

## **PREAMBLE:**

On the 17th of July 2011 the President and Commander-in-Chief of the Nigerian Armed Forces of the Federal Republic of Nigeria, Dr. Goodluck Ebele Jonathan appointed a Minister for the new Ministry of Communication Technology. The President's action was a culmination of many years of consultations between Government and ICT stakeholders, which resulted in several policy recommendations and reports.

The Hon Minister of Communication Technology, Mrs. Omobola Johnson, on 25th August 2011, set up an Adhoc Committee to harmonize all the various policies for the different sectors in the ICT industry (Telecommunications, Broadcasting, Information Technology and Postal Services). The Committee was inaugurated on 25th August 2011 by the Honourable Minister at the Conference room of the Ministry and given a 6-week timeframe within which to conclude its assignment.

The Term of Reference for the Committee was:

- To harmonize all existing Policies in the Information and Communications Technology Sector into a Single Information and Communications Technology Policy.

The National ICT Policy Committee was chaired by Professor Raymond Akwule, and included members from the ICT industry, the general private sector, Government, civil society, academia and others. The Committee produced an initial draft policy document which was presented to National and international stakeholders for review and comments. Following their input the committee was then charged with ensuring that the eventual Policy document captures all relevant contribution, and addresses the socio-economic development of Nigeria, as it relates to ICT.

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## **1.0 INTRODUCTION**

### **1.1 Background**

Over the years, the Federal Government of Nigeria has initiated or adopted several related policies and laws aimed at guiding the development of the ICT sector and harnessing its huge potential for national development. But Nigeria, like other nations, faces the inevitability of the technical, content, economic, institutional and regulatory convergence in a digital era of the global ICT industry. Nigeria must therefore continue to evolve new ICT policy frameworks to accommodate convergence and maximize the potential of ICT for national development.

This National ICT Policy aims to produce a framework that will enhance the ability of the ICT sector to propel the socio-economic development which is critical to Nigeria's vision of becoming a top 20 economy by the year 2020. Concurrently, the policy document will be used to develop action plans, sub-sectoral policies and specific implementation strategies.

## **2.0 VISION AND MISSION STATEMENT**

### **2.1 Vision**

Nigeria as a knowledge-based and globally competitive society.

### **2.2 Mission**

To fully integrate Information and Communication Technologies into the socio-economic development of Nigeria, in order to transform Nigeria into a knowledge-based economy.

### 3.0 ICT IN THE CONTEXT OF NIGERIA'S VISION 20:2020

The long-term strategic vision for the ICT sector was elaborated upon in the National Development Plan titled "Nigeria Vision 20:2020". According to the document:

*The increasing globalization driven by ICT makes it imperative for Nigeria as an emerging market to irreversibly consider the application and promotion of ICT strategy to facilitate its rapid growth and development. This will involve the development of a vibrant ICT sector to drive and expand the national production frontiers in agriculture, manufacturing and service sectors. It would also require the application of the new knowledge to drive other soft sectors: governance, entertainments, public services, media sector, tourism, et cetera.*

The Vision 20:2020 document further acknowledges the following:

*In respect of knowledge and digital divide the situation remains worrisome. This is, in terms of knowledge generation, penetration of ICT, access to and usage of internet and telephone penetration (fixed and mobile) and physical infrastructure. The knowledge and digital divide cuts across geographical, gender and cultural dimensions. It exists among the 36 states of the Federation plus the Federal Capital Territory, the 774 Local Governments, rural and urban areas, men and women, rich and poor, young and old, able bodied and disabled, illiterate and educated.*

This National ICT Policy has been developed to organize the sector for performance and efficiency, so that it supports the development goals of Nigeria's Vision 20:2020. For many countries, the emerging ICT sector is fast catching up and even exceeding the economic contribution of many traditional areas of national economies. In

addition the sector is increasingly enhancing the value of every other sector by facilitating their contribution to national socio-economic growth. The ICT sector propels economic growth directly in some instances, for example, through increased economic and other national output, employment and, over time, enhanced productivity within the sector. But in addition, the sector facilitates economic growth indirectly, for example, by enhancing the speed and quality of information flows, business efficiency, access to markets, as well as managing people and processes and propelling diffusion of innovation.

The National Vision 20:2020 document indicates the role of ICT in respect of several sectors and offers specific examples as to how ICT can propel development of the national socio-economic sub sector with respect to Agriculture, Oil and Gas, Health, Education, Finance, Employment and Productivity, Governance, Infrastructure Support, Knowledge-Based Economy, and Research and Development.

#### **4.0 ICT POLICY DEVELOPMENT IN NIGERIA**

Prior to 1999, development in the ICT sector of Nigeria was generally assessed to be far below expectation, for a country of its size and resources. For example, total fixed telephone lines were less than 400,000 while regular internet users were less than 200,000. From a policy and regulatory standpoint, the Federal Government of Nigeria adopted the National Telecommunications Policy (NTP) in 2000 to guide the development of the telecommunications industry in Nigeria. This was followed by the enactment of the Nigerian Communications Act (NCA) 2003 to give legal effect to the NTP. Previously, the National Mass Communications Policy recommended the creation of a regulatory body to regulate Broadcasting and this led to the promulgation of Decree 38 of 1992 that established the National Broadcasting Commission (NBC).

In a similar vein, the National Information Technology Policy was approved in 2001 to guide the IT industry in Nigeria, and was followed by the enactment of the National Information Technology Development Agency Act 2007, which provided the legal platform for the creation of the National Information Technology Development Agency (NITDA). It is noteworthy that there has never been a national postal policy; however, Decree No. 41 of 1992 established the Nigeria Postal Service (NIPOST) to provide postal services in Nigeria.

These policy and regulatory developments along with other government and private sector initiatives have resulted in significant improvement of the ICT sector. For instance, the national installed capacity has moved from approximately 400,000 available fixed telephone lines pre-1999 to over 90.5 million available mobile telephone lines by the first quarter of 2011, making Nigeria's telecommunications market the fastest growing in Africa. There is now modest ICT deployment in the functioning of government organizations, as well as in the private sector. In addition, ICT now drives fairly significant breadth of activities in the financial and oil and gas sectors while various e-Government initiatives are ongoing in various departments across the three tiers of government.

#### 4.1 Industry Indicators

Latest available figures from The National Bureau of Statistics, and other industry sources indicate the following:

S/N	Indicator		Source
i.	Individual access to Mobile telephones	63.9%	National Bureau of statistics report on 'access to ICT services'
ii.	Individual ownership of mobile handsets	43.6%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
iii.	Household Ownership of mobile telephones.	59% (representing 70.6% of those with access)	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
iv.	Access to fixed Telephony	0.4%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
v.	Access to computers	4.5%	2011 Annual NBS/CBN socio economic report: access to ICT
vi.	Television access	67.6%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
vii.	Radio access	41.2%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
viii.	Ownership of radio	41.2%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
ix.	Internet connections	6.5%	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
x.	Internet users	0.02	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC (based on population of 160m and 0.3% of access).
xi.	Broadcasting stations in operation nationwide	291	Nigerian Broadcasting Corporation
xii.	Broadband penetration	6.1%	ITU – International Telecommunications Union
xiii.	Post offices including postal agencies and post shops	2,015	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC
xiv.	Licensed courier companies	250	NIPOST – Nigerian Postal Service
xv.	People employed in communication sector	4.969 million - 1,124 (female) - 3.845 (male)	2009 Collaborative survey of socio economic activity in Nigeria by the NBS/CBN/NCC

#### Footnote

NCC - Nigerian Communications Commission

NBS - National Bureau of Statistics

CBN - Central Bank of Nigeria

NIPOST – Nigerian Postal Service

## **5.0 Industry Structure and Sub-Sectoral Profiles**

### **5.1 Current Government Institutional Structure**

A Ministry of Communication Technology has been created recently, and the following Agencies were brought under its purview: Nigerian Communications Commission (NCC), National Information Technology Development Agency (NITDA), and Nigerian Postal Service (NIPOST). Two Limited Liability Companies that are wholly owned by Government - Nigeria Communications Satellite Limited and Galaxy Backbone Plc - have also been brought under the Ministry.

The ICT Industry today comprises of the following distinct sectors as described below:

#### **5.1.1 Telecommunications**

There has been tremendous advancement in the development of the telecommunications (telephony) sector in Nigeria, particularly since the commencement of mobile services using GSM technology in 2001. Nigeria in recent years has been adjudged as the fastest growing mobile market in Africa and one of the fastest in the world.

The telecommunications sector is governed by the Nigerian Communications Act 2003 (NCA 2003), and The Wireless Telegraphy Act, 1990. The NCA 2003 affirms the Nigerian Communications Commission (NCC) as the independent regulatory authority for the telecommunications sector. The objectives of the regulator include:

- i. Creating an enabling regulatory environment to facilitate the supply of telecommunications services and facilities;
- ii. Facilitating the entry of private entrepreneurs into the telecommunications market;
- iii. Promoting fair competition and efficient market conduct among all players in the industry; and

- iv. Establishing the Universal Service Provision Fund to promote the widespread, availability and usage of network services and application services throughout Nigeria.

With the liberalization of the industry in the year 2000, several services and licenses have been introduced into the sector. These include:

- i. Fixed Telephony;
- ii. Cellular Mobile Telephony;
- iii. Long Distance Transmission;
- iv. Global Mobile Personal Communications Services;
- v. International Data Access;
- vi. High Speed Data Transmission;
- vii. Value Added Services;
- viii. Interconnect services
- ix. Internet Service; and
- x. Unified Access Service License.

The telecoms network comprises the following:

There are five (5) licensees using Global System for Mobile Communications (GSM), and Eight (8) licensees using Code Division Multiple Access (CDMA) in the country. A number of other operators also exist in other market segments, including the following; Interconnect Exchange Houses, International Data Access License (IDA), Fixed Wireless Networks, amongst others. The current telecommunications sector is highly competitive though with a huge market share imbalance between the GSM players and CDMA players, with the market share currently at 91% and 9% respectively.

In 2006, the NCC in response to technology convergence introduced the Unified Access Service Licenses (UASL's). The UASL is a technology neutral license that enables holders to offer a variety of services including voice, data, and ISP services, amongst others.



The growth in subscriber lines and tele-density has been very impressive. From a modest start of about 400,000 fixed and 25,000 mobile telephone lines in 2001, the industry by July 2011 had an active base of about 90 million subscribers representing a tele-density of 60. This growth was the result of continued uptake of digital mobile services, (with about 98% market share) and the adoption of a Unified Licensing Regime.

The Communications sector has actively contributed to Gross Domestic Product (GDP). The percentage share of GDP from Communications, according to NCC, rose from 0.06 in 1999 to 2.39 in 2007, 2.90 in 2008, and 3.66 in 2009.

The National Bureau of Statistics (NBS) report on the year 2011 performance of the various sectors of the country's economy, stated that the ICT sector's growth at 35 per cent, makes it the fastest growing sector of the Nigerian economy. The combined ICT sector contributed 5.46% to the nation's Gross Domestic Product (GDP) in 2011.

Private investment in the telecoms subsector rose from US\$50 million in the year 1999, to US\$18.0 billion, at the end of 2009, and to about \$25 billion at the end of 2010.

Some of the achievements in the telecom sector have been supported by extensive optical fiber projects across the country, as well as the deployment of satellite communications. The NCC initiated the Wire Nigeria Project (WIN), and the States Accelerated Broadband Initiative (SABI).

The USPF is a mechanism to extend service to unserved and underserved areas of the country. The NCC contributes 40% of Annual Operating Levy (AOL) received to the Fund. Projects under the fund include:

- i. School Access Program;
- ii. Community Communication Centres;
- iii. Backbone Transmission Infrastructure;

- iv. Rural Broadband Internet Project; and
- v. Accelerated Mobile Phone Expansion Project.

Despite this growth, a substantial part of the country (approximately 20%) remains uncovered, therefore lacking access to even basic voice services. Furthermore, only a minor percentage of the population has access to qualitative multimedia broadband services including the Internet.

#### **5.1.2 Information Technology**

The promulgation of the indigenization decree in 1977 led to the increase in the number of indigenous vendors in the computer business, and stimulated more aggressive marketing by the vendors which in turn resulted in a significant increase in the number of computer installations and usage in the country.

Before 1999, development in the IT sector of Nigeria was minimal. For instance, regular internet users were less than 200,000 out of a population of over one hundred and sixty seven million people. The Federal Government therefore embarked on major reforms in the sector which included:

- i. Development and launch of National Policy on Information Technology in 2001 and the establishment of NITDA to implement the policy, co-ordinate, and regulate information technology development in the country; and
- ii. Establishment of the Nigeria Internet Registration Association (NIRA) in 2006 to increase Nigeria's presence in the cyberspace.

The National Assembly passed NITDA's enabling Act into law in April, 2007. According to NITDA Act of 2007, the mandates of the Agency include the following:

- i. Creating a framework for the planning, research, development, standardization, application, coordination, monitoring, evaluation and regulation of Information Technology practices, activities and systems;
- ii. Providing guidelines to facilitate the establishment and maintenance of appropriate infrastructure for information technology and systems;

- iii. Developing guidelines for electronic governance, networking of public and private sector establishments; and for the standardization and certification of Information Technology Systems in Nigeria;
- iv. Rendering advisory services in all information technology matters to the public and private sectors and creating incentives to promote the use of information technology in all spheres of life in Nigeria including the setting up of Information Technology parks;
- v. Introducing appropriate regulatory policies and incentives to encourage private sector investment in the Information Technology industry;
- vi. Determining critical areas in Information Technology requiring research intervention and facilitating Research and Development in those areas;
- vii. Advising the Government on ways of promoting the development of Information Technology in Nigeria including introducing appropriate information technology legislation, to enhance national security and the vibrancy of the industry;
- viii. Development and implementation of standards, guidelines and regulatory framework for Information Technology; and
- ix. Accelerating Internet and Intranet penetration in Nigeria and promoting sound Internet governance by giving effect to the Second Schedule of NITDA Act, which deals with the governance of the Nigeria Country Code top Level domain name (ng).

Various efforts by NITDA and other stakeholders have culminated in significant development in the IT sector.

The hardware market in Nigeria is currently shared between global multinationals and about five local Original Equipment Manufacturers (OEMs). Analysts project that the Nigerian PC market, which is still in its infancy, is expected to expand by 21.5% annually on average from 2009 to 2014, with a notable shift towards mobility which would increase sales of laptops, and other mobile devices.

Approximately 90% of the software used in Nigeria is being imported. However, efforts are being made to encourage the patronage of “Made in Nigeria Software” to leverage the low entry barriers inherent in the sector, and to grow a local software

economy that will create employment opportunities and also save the country from the huge foreign exchange currently expended on foreign software annually.

Government initiatives and policies have led to the creation of the requisite enabling environment thereby leading to both local and foreign direct investment in IT development in Nigeria. Prices of IT equipment and services have fallen considerably in keeping with global trends. This will make services and equipment available to more Nigerians as well as enable access to online information.

The potential in the Nigerian IT industry is enormous, mainly because the market is vast and citizens are proven early-adopters of new technologies that are now the modern tools of sustainable socio-economic development.

### **5.1.3 Postal Services**

NIPOST is the dominant operator and regulator of the sector. It has a network of 1,065 post offices and more than 3,000 additional postal agencies distributed across 547 of the 774 local government areas in Nigeria. This extensive network penetration into rural areas along with the variety of services offered, have enabled NIPOST to serve as a platform for the promotion of social, financial and digital inclusion.

There are 250 licensed courier operators in the country, in addition to a large number of courier grey market operators. As at the end of 2010 the annual turnover of the industry was over Three Hundred and Fifty Billion Naira (=N= 350,000,000,000). However, the dual role of NIPOST as a regulator and operator compromises its effectiveness.

The Postal Sector is an amalgam of transport, logistics and distribution, and related entities that are involved in the linking of communities by movement of messages, information, goods and services. The postal sector is empowered to do the following:

- i. Collection (pick up), transportation and distribution of letter mail (letters, newspapers, journals, periodicals, brochures, leaflets and similar printed matters), parcels and packages, express and courier dispatches, whether for domestic or foreign destinations;

- ii. Post office counter services;
- iii. Other postal services which include mailbox rental services, "*poste restante*" services, philately and public postal services;
- iv. Licensing of private postal operators;
- v. Providing financial services; and
- vi. Providing e-Services.

The other stakeholders in the postal sector are:

- i. Private Postal Operators;
- ii. Public Private Partners, including the Postal Agencies;
- iii. Operators such as Aviation Handling Companies, Customs, and the Police; etc;
- iv. Financial Services Operators; and
- v. E-Services Providers.

The postal code system developed by NIPOST in 2000, and an efficient addressing framework are key tools required for the repositioning of NIPOST. Its current operations are hampered by the fact that most of the country does not have well-organized street naming and house numbering address systems by Local Government Authorities.

NIPOST also faces substantial competition from private sector operators in the postal sector. International and local courier companies and transport companies are competing with NIPOST in various segments of the postal market; not only in the market for courier items, but also in the letter and parcel markets. To date, approximately 250 courier firms have been legally licensed. However, many transport companies (legal and illegal) are active in the postal market.

NIPOST is also confronted with substitution of physical mail by electronic communications such as fax and email. Although these means of electronic communication are not yet pervasive in Nigeria, they will certainly become important factors in the future.

Several Public Private Partnership (PPP) initiatives have been developed within the sector, notable among which are:

- i. NETPOST Limited: Created to provide ICT services through NIPOST's network of post offices around the country;
- ii. National Mail Route Network: An outsourced service to private transport operators to assist NIPOST in its mail distribution system;
- iii. Post Cash: A financial service product for international and local cash remittances; and
- iv. National Cargo Services: Setup for transportation and delivery of cargo (items weighing above 50kg).

The competition in the postal sector provides choices for business customers and consumers alike. However, the competitive terrain does not appear to have motivated NIPOST to make fundamental improvements in terms of its efficiency and product offerings. One of the reasons adduced for this is the fact that the Federal Government of Nigeria (FGN), still covers any losses incurred by the agency.

Therefore, a restructuring of NIPOST - including the removal of its regulatory function and, in the least, corporatization of the agency – is being pursued.

#### **5.1.4 Broadcasting**

Broadcasting plays a very important role in the lives of the citizens worldwide and is the most effective means of reaching the largest number of people simultaneously. The Federal, Regional and State governments monopolized broadcasting in Nigeria, until the promulgation of Decree 38 of 1992 (as amended) which established the National Broadcasting Commission (NBC) and charged it with the responsibility of regulating and controlling the broadcasting industry in the country. The law empowers the Commission to license broadcast stations, allocate frequencies, regulate content and, generally set standards for quality broadcasting in the country. According to the Act, the Commission's Mandate includes the following:

- i. Advising the Federal Government generally on the implementation of National Mass Communication Policy with particular reference to broadcasting;

- ii. Receiving and processing applications for the establishment, ownership and operation of broadcasting stations;
- iii. Recommending applications through the Minister to the President, Commander-in-Chief of Armed Forces for grants of radio and television licenses;
- iv. Establishing and enforcing a National Broadcasting Code that contains guidelines on a variety of issues including licensing, sanctions, etc; and setting standards with regard to the content and quality of materials for broadcast.
- v. Initiating and harmonising Government policies on trans-border direct transmission and reception in Nigeria;
- vi. Monitoring broadcasting or harmful emission, interference and illegal broadcasting;
- vii. Approving the transmitter power, location of stations, area of coverage; and
- viii. Regulating the types of broadcast equipment to be used.

The categories of broadcasting services include:

- i. Terrestrial and Satellite free-to-air sound/television;
- ii. Satellite subscription direct-to-home sound broadcasting;
- iii. Community broadcasting;
- iv. Content distribution service (syndication); and
- v. Internet broadcast.

The legislative, regulatory and licensing framework for the broadcast sector is transparent and liberalized, and seeks to regulate broadcasting only in circumstances where market forces are inadequate to realize public policy objectives. According to the current policy, broadcast licenses will not be granted to any religious organization or political party. Private and community interests are encouraged to contribute to the development of the industry, while foreign interests are also encouraged to invest and assist in developing broadcast services in the country.

Today, as a result of the deregulation of the Nigerian broadcast industry, the number of Federal, State and private broadcasting stations in operation in the country has, as at 2012, risen to 291, from less than 30 before deregulation. This comprises of:

- i. 100 radio stations;
- ii. 147 Television stations;
- iii. 35 Cable Retransmission Stations known as MMDS; and
- iv. 4 Direct to Home (DTH) Stations.

Based on ITU recommendations, Nigeria, along with other countries has committed to transit from analogue to digital terrestrial broadcasting and broadcasting on the VHF band. Consequently, the Commission has set a June 17, 2015 deadline for the switchover from analogue to digital broadcasting.

The advent of digital broadcasting will undoubtedly increase the number of channels and introduce a diverse range of content. The NBC will therefore require a more robust approach to the critical content regulation of the broadcast sector.

The Federal Government recognizes that there are different funding models for broadcasting services, which contribute to the achievement of public interest objectives in unique ways. This facilitates the provision of a range of broadcasting services through both Government and private sector funding.

The Commission is also seeking ways to encourage training and skill development within the sector to increase the quality and quantity of broadcast professionals in Nigeria.

In addition to the above listed agencies, the Nigerian ICT Industry is driven mainly by the private sector comprising operators, suppliers and investors.



## 6.0 POLICY OBJECTIVES

The main objective of the National ICT Policy is to provide a comprehensive framework for the ICT sector which encourages investment, enables the rapid expansion of ICT networks and services that are accessible to all at reasonable costs, strengthens all productive sectors, and facilitates the transformation to a knowledge-based economy.

The specific objectives of this National ICT Policy therefore are:

- i. To ensure that the potential of convergence is harnessed in the ICT sector, notably in the areas of regulation, operation, and service delivery;
- ii. To unify all ICT Policy Administrators under The Ministry of Communication Technology;
- iii. To facilitate the development of an appropriate legal framework for effective implementation of ICT policies;
- iv. To promote universal access to high quality and advanced Information and Communication Technologies and services;
- v. To develop and enhance indigenous capacity in ICTs and software development;
- vi. To ensure the country's effective participation in regional and international ICT fora in order to promote ICT development in Nigeria, meet the country's international obligations and derive maximum benefit from international cooperation in these areas;
- vii. To actualize the implementation of an administrative and legal framework for the transition to digital broadcasting and ensure a smooth switchover in accordance with ITU guidelines;
- viii. To develop the framework for the implementation of Community Broadcasting in Nigeria;
- ix. To reposition the Postal subsector so that Nigerians will have universal access to more robust and efficient postal services and provide for financial and digital inclusion through its extensive infrastructure;
- x. To pursue the elimination of multiple regulation and taxation in the ICT sector;

- xi. To foster the development of Broadband services that will enable Nigerians enjoy the benefits of globalization and convergence;
- xii. To ensure an enabling environment, and provide incentives in order to sustain investments into the Information and Communications (ICT) sector in Nigeria;
- xiii. To promote cyber, digital, ICT infrastructure, and national security; and
- xiv. To utilize ICT in energizing and supporting the various programs and sectors that contribute to Nigeria's socioeconomic development including Agriculture, Education, Finance, Health, Justice Administration, Oil and Gas, Power, Small & Medium Sized Enterprises, Solid Minerals, Sports, Trade and Commerce, Transport, Youth Development.

## **7.0 POLICY FOCUS AREAS**

### **7.1 Policy, Legal, and Regulatory Framework**

The reality of technological and market convergence implies that existing policies relating to the ICT sector in Nigeria are in need of a review. Most of the objectives in the existing policies have been overtaken by technological advancement and market transformation worldwide. A key requirement is the development of appropriate policies, as well as legal and regulatory framework that foster an enabling, and agile environment.

#### **7.1.1 Situation Analysis**

Currently, there are various uncoordinated policies guiding different facets of the Nigerian ICT sector, just as there are several laws relating to different aspects of the sector. Apart from the fact that these policies and laws are uncoordinated, there are gaps and a lack of cohesion, which make them ineffective support bases for the converged ICT sector, especially in the context of the fast evolving developments in the digital world. Therefore, there is an urgent need to harmonize all existing policies into a unified and comprehensive ICT Policy that would guide the entire sector, as well as to review all existing ICT-related legislation with a view to providing a proactive legal framework that can support convergence and the other rapid developments in the digital world.

#### **7.1.2 Policy Objectives**

- i. To review existing legislation and facilitate, where necessary, the enactment of laws that would enhance the development of ICT sector for national growth;
- ii. To facilitate the enactment of appropriate legislation that ensures protection of physical ICT infrastructure, addresses cyber security, and enhances national security; and
- iii. To prevent the occurrence of multiple regulations and taxation, the occurrence of which is a disincentive to investors.

### **7.1.3 Strategies**

The Government will:

- i. Review and harmonize all existing Laws;
- ii. Enact new laws, where necessary, to fill gaps and further support development of the sector; and
- iii. Amend the relevant sections of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) to permit the issuance of broadcasting licenses by the Converged Regulator.

## **7.2 ICT Infrastructure**

Globalization continues to break down geographic and other traditional barriers to fast paced economic activity and commerce, making it imperative that Nigeria urgently accelerates the development of its National ICT Infrastructure, in order to support national development and global competitiveness.

### **7.2.1 Situation Analysis**

The relative paucity of ICT infrastructure in the country has greatly hindered the provision of efficient and affordable ICT services to the citizens, and has adversely affected the socio-economic development of Nigeria. Government shall therefore develop and deploy national information infrastructure for national transformation with a view to attaining its vision 20:2020. The ICT policy focus should include:

- i. National ICT backbone and Broadband infrastructure;
- ii. Infrastructure that will foster digital literacy and Internet usage;
- iii. Reasonably priced Universal Access to ICT;
- iv. Protection of ICT infrastructure, including national and civil databases;
- v. National physical infrastructure (including power); and
- vi. Financial systems infrastructure.

### **7.2.2 Objectives**

- i. To facilitate and support development of efficient and secure nationwide ICT infrastructure that will support national broadband connectivity and accelerate socio-economic development;
- ii. To connect all Federal & State networks to a National fiber backbone; and
- iii. To provide reliable, accessible, secure and reasonably priced ICT connectivity to national and international ICT Infrastructure.

### **7.2.3 Strategies**

The Government will:

- i. Encourage the upgrading and expansion of ICT infrastructure;
- ii. Support the accelerated deployment of fiber optic and wireless backbone infrastructure that ensures high bandwidth availability, and universal access throughout the country;
- iii. Encourage the development and interconnection of all National Databases;
- iv. Coordinate the integration of national e-Government network infrastructure and services;
- v. Ensure appropriate security for ICT infrastructure nationwide;
- vi. Advocate the acceleration of the ongoing power sector reforms which are critical to the development of the ICT industry;
- vii. Facilitate expedient access to Rights of Way (ROW) over public land, and access to other state-owned infrastructural resources; and
- viii. Provide institutional support for addressing the incidence of multiple taxation and regulation in the ICT sector.

## **7.3 Internet and Broadband**

Internet and Broadband have been globally acknowledged as a critical pillar for transformation to a knowledge-based economy. It is also widely acknowledged that broadband infrastructure is an enabler for economic and social growth in the digital economy. Broadband has the potential of enabling entire new industries, and introducing significant efficiencies into education delivery, health care provision, energy management, public safety, government/citizen interaction, and the overall organization and dissemination of knowledge, and distribution of wealth.

### **7.3.1 Situation Analysis**

Although there are some initiatives aimed at deploying broadband in Nigeria, many challenges remain, especially with the deployment of a national fiber optic based network to distribute approximately 10 terabytes of capacity already delivered to landing points in Nigeria. Therefore, there is an urgent need to accelerate the pace of ongoing efforts, and also to introduce new initiatives to address this and other challenges. This is necessary for the actualization of the developmental goals of vision 20:2020. The Government will therefore pursue, by the end of 2017, a five-fold increase in broadband penetration over the 2012 penetration rate.

### **7.3.2 Objectives**

- i. To accelerate the penetration of reasonably priced broadband Internet in the country;
- ii. To foster broadband usage for national development; and
- iii. To ensure the rapid development of a broadband policy support and implementation framework.

### **7.3.3 Strategies**

The Government will:

- i. Provide periodic review of the broadband penetration targets in order to determine further action for broadband expansion;
- ii. Promote both supply, and demand side policies that create incentives for broadband backbone and access network deployment;
- iii. Facilitate broadband development and deployment, leveraging on existing universal service frameworks;
- iv. Provide special incentives to operators to encourage them to increase their investment in broadband rollout;
- v. Promote e-Government and other e-services that would foster broadband usages;
- vi. Enhance the equitable distribution of the value and/or benefits of telecoms infrastructure (in general) and broadband (in particular) amongst the Nigerian population;

- vii. Enhance the capabilities of the Nigerian population to make use of, and contribute to broadband, and in so doing increase its relevance to the socio economic development of the country and its populace; and
- viii. Establish a methodology for assessing progress of broadband development in Nigeria in a structured way that (i) highlights and (ii) seeks to address bottlenecks along/across all layers.

#### **7.4 Capacity Building**

Transformation to a knowledge-based economy requires significant investment in the development of ICT skills. These skills are required to support innovation, infrastructure and effective business models that underpin a knowledge-based society.

##### **7.4.1 Situation Analysis**

Proficiency in ICT is still very low among ICT professionals and the general populace. This translates to a huge skills gap which in turn signposts untapped benefits that ICT could potentially deliver to Nigeria's socio economic development. Therefore, strengthening of ICT human capital should be accorded the highest priority.

##### **7.4.2 Objectives**

- i. To integrate ICT into the national education curriculum;
- ii. To promote the culture of lifelong learning;
- iii. To promote development of ICT skilled personnel; and
- iv. To support training and capacity building among public sector employees in the development and use of ICT tools and applications to improve the delivery of Government services.

##### **7.4.3 Strategies**

The Government will:

- i. Facilitate the establishment of globally competitive training institutions in the field of ICT;
- ii. Introduce mandatory training and appropriate courses in ICT at all tiers of education;

- iii. Encourage continuous training for professionals through specialized training institutes (e.g. Digital Bridge Institute, Abuja; NTA College, Jos; Radio Nigeria Training School, Lagos; etc);
- iv. Foster an ICT driven educational administration environment;
- v. Train and retool teachers and facilitators at all levels, to enhance their ICT competence;
- vi. Promote ICT awareness and proficiency in mass and non-formal education with emphasis on children, youth, women, and the physically challenged;
- vii. Promote the development of instructional materials in electronic format; and
- viii. Develop and implement ICT training programs for public sector employees, in connection with the implementation and institutionalization of e-Government and other digital functions within Government offices.

## **7.5 Universal Access and Service**

It is globally acknowledged that citizen's access to ICT networks and services is a desirable national development goal. However, in many developing countries including Nigeria, significant portions of the population are either unserved or underserved. Lack of access has obvious consequences for national development such as stymied digital literacy, and diminished participation in elections and democratic governance.

### **7.5.1 Situation Analysis**

A large proportion of Nigerians live in rural areas and most of these rural communities do not have access to basic ICT services. In addition, some Nigerians reside in urban areas that are unserved or underserved. Consequently, urgent intervention is needed to ensure provision of Universal Access and delivery of quality services through the nationwide development of ICT infrastructure and services. Of prime importance are basic voice /data services, Broadband Internet access, related facilities and applications.

Nigeria, following international best practices is addressing the challenges through the development of various initiatives in the sector. It is important that the pursuit of the goals of universal access/service be accelerated as indicated in Vision 20:2020.



Government shall therefore encourage and promote Universal Access and Services for all citizens of Nigeria through effective public and private partnerships.

#### **7.5.2 Objectives**

- i. To extend universal access/service nationwide in the shortest possible time;
- ii. To ensure ubiquitous broadband presence nationwide for citizens access to the information super-highway;
- iii. To ensure that citizens have access to all ICT services at reasonable prices; and
- iv. To ensure that ICT contributes to national growth and improves the welfare of the citizens.

#### **7.5.3 Strategies**

The Government will:

- i. Extend the definition of universal service/access to incorporate digital literacy and nationwide broadband presence;
- ii. Utilize existing infrastructure (Post Offices, Schools, Libraries) to extend universal access/service;
- iii. Promote the use of e-Services nationwide for all population groups, including in remote and underserved areas;
- iv. Evaluate existing funding mechanisms to improve efficient use of resources in pursuit of universal access/service;
- v. Continue to promote aggressive and rapid fiber-optic network deployment through a regime of incentives and subsidies as well as the promotion of public private partnerships;
- vi. Provide personal computers in public places (e.g. post offices, schools, public libraries, etc.) in small and large communities to help low-income segments of society gain access to the internet and for educational purposes;
- vii. Increase the use of Universal Service Provision Funds for effective and efficient delivery of intervention services to unserved and underserved areas of the country; and
- viii. Ensure that marginalized groups become an integral part of the ICT stakeholder community, as participants, innovators, leaders and beneficiaries of the knowledge economy in Nigeria's emergent information society.

## **7.6 Transition from Analogue to Digital Broadcasting**

There is a current global trend towards conversion from analogue to digital broadcasting. Some of the benefits of transition include higher quality reception, access to more channels, and availability of a wider spectrum of value added services.

### **7.6.1 Situation Analysis**

Transition from analogue to digital broadcasting has significant implications for subscribers, the regulator, content providers, and the Government. These challenges range from financial considerations to content integrity, and the entire management of the transition process. There is also the issue of how to mobilize indigenous participation, especially in the production of Set Top Boxes. It is important for Nigeria to take advantage of the opportunities inherent within this transformation.

Government shall therefore facilitate a National Broadcasting System that promotes freedom of expression, access to information and knowledge, as well as ensures transparency and accountability in governance. The Government therefore needs to urgently address these challenges before the ITU changeover date of June 17, 2015.

### **7.6.2 Policy Objectives**

- i. To comply with ITU mandate of transiting from analogue to digital broadcasting by June 2015;
- ii. To properly manage the digital dividend that will result from the transition; and
- iii. To facilitate and promote reasonably priced Community Broadcasting as a tool for promoting universal access and the Rights to Freedom of Expression.

### **7.6.3 Strategies**

The Government will:

- i. Provide a clear roadmap for harvesting the “digital dividend” spectrum, and ensure competitive allocation and efficient use of the resource;
- ii. Ensure compliance of transiting by the ITU mandated date;
- iii. Embark on appropriate publicity campaign for the purpose of sensitizing the general public on the transition from analogue to digital broadcasting;

- iv. Ensure availability and cost effectiveness of set top boxes;
- v. Encourage and facilitate local manufacturing of set top boxes; and
- vi. Develop a licensing regime for signal distributors.

## **7.7 Community Broadcasting**

Community broadcasting has been acknowledged as a critical tool for promoting universal access and the Rights to Freedom of Expression. Community broadcasting typically augments the services of the National Broadcasting System by attending to needs that cannot be adequately addressed at Federal, State and Local levels by public and commercial broadcast operators. Community-based broadcasting stations will contribute towards bringing the nation's ethnic communities and special interest groups into focus. It will also empower them with access to, and the ability to send and share information.

### **7.7.1 Situation Analysis**

Community broadcasting in Nigeria has been minimal and yet it is acknowledged that community broadcasting can play a useful role in national development by targeting specific groups and/or communities. Efforts should therefore be made to promote a robust community broadcasting culture, including IP-based retransmission of broadcast signals.

### **7.7.2 Objectives**

- i. To implement full community broadcasting in Nigeria;
- ii. To facilitate widespread access to broadcasting; and
- iii. To ensure appropriate content that educates, enlightens and empowers Nigerians.

### **7.7.3 Strategies**

The Government will:

- i. Create an enabling framework and environment that will further the advancement of community broadcasting sector in Nigeria; and
- ii. Amend the relevant sections of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) to permit the issuance of broadcasting licenses, including community radio by the Converged Regulator.

## **7.8 ICT and Youth**

The youth are critical catalysts in Nigeria's socio - economic development plans, and are acknowledged as an ICT-oriented generation. For Nigeria to harness the huge potential that ICT offers, it is important to leverage ICTs for positive youth orientation and development, as well as to ensure that youths use ICTs responsibly and productively.

### **7.8.1 Situation Analysis**

The National Youth Policy defines anyone between the ages of 18 and 35 as a Nigerian Youth. According to population statistics, seventy percent (70%) of Nigeria's 167-million population fall into this group, making it foundational and critical to National development. However, unemployment, under-employment, and lack of entrepreneurial skills and / or opportunities present a very serious potential for increased social ills.

### **7.8.2 Objectives**

- i. To leverage ICT in addressing Youth-specific development and orientation issues; and
- ii. To ensure that the Youth use ICT responsibly and for positive purposes.

### **7.8.3 Strategies**

The Government will:

- i. Promote the use of ICTs, in partnership with Youth-focused bodies and relevant MDA's to deliver information and content that emphasize National Unity, tolerance and ethical values;
- ii. Support the delivery of programmes designed to ensure that the youth focus on positive application of ICT;
- iii. Promote Incentive and support schemes targeted at youth entrepreneurship initiatives in ICT;
- iv. Ensure that the youth are protected adequately in cyberspace; and
- v. Promote the utilisation of ICT in education delivery and management; and its incorporation in education curriculum at all levels.

## **7.9 Local Content In Software and Hardware Development**

The increasing focus on local content development as a mechanism for improving local skills, and generating sustainable jobs for Nigerians is a core aspect of Federal Government of Nigeria's transformation agenda across numerous critical sectors, including the ICT sector.

### **7.9.1 Situation Analysis**

ICT local content (including software and hardware) remains grossly under developed in Nigeria. Although many reasons are adduced for this - including the high cost of production and scarcity of expertise – the fact remains that there is an over-dependence on foreign importation of software and hardware and this has led to diminished opportunity for domestic economic empowerment, and contributed to limited capacity building within the context of ICT. In addition, given the quantum of hardware devices, and software applications imported into, and used within Nigeria, there has been considerable drain on Nigeria's foreign exchange. Therefore, there is the urgent need to boost domestic participation in the ICT industry by incentivizing local hardware and software companies to increase local content.

### **7.9.2 Software Development**

The software industry is a multi-billion dollar industry and Nigeria can benefit tremendously from developing its own domestic software industry to create applications for aspects of human endeavour including Agriculture (e-Agriculture), Business (e-Business), Education (eLearning), Governance (e-Government), Health (e-Health) etc. This can cater for both domestic and export markets.

### **7.9.3 Objectives**

- vi. To position Nigeria as a leader in software development where the software industry becomes a major contributor to national wealth;
- vii. To provide incentives for the growth of the software industry;
- viii. To promote software development education in the country;
- ix. To encourage promotion of software development and content for local and export markets;

- x. To ensure rapid indigenization and domestication of high technology ICT products and services; and
- xi. To encourage the attainment of a significant increase in local content of ICT software and services by 2015.

#### **7.9.4 Strategies**

The Government will:

- i. Encourage indigenous software developers to meet international standards;
- ii. Provide incentives and initiatives that will significantly increase the number of software developers within the next five years;
- iii. Build a strong interface between the software industry, academia and also the business world to improve relevance of the end product;
- iv. Promote collaboration amongst software developers;
- v. Ensure that security and privacy in software information systems are maintained;
- vi. Ensure that intellectual property rights are protected;
- vii. Promote international certification of indigenous software;
- viii. Encourage the creation of major software projects as platform for indigenous software industry;
- ix. Promote the patronage of indigenous software products and services;
- x. Promote Free and Open Source Software (FOSS) development, education and use in the country;
- xi. Pursue the development of an ICT Local Content Plan and guidelines for Nigeria by 2013;
- xii. Digitize local content in areas such as Government and education archives, music, film, tourism, etc; and
- xiii. Digitize and make available online local content.

#### **7.10 Hardware Production**

Hardware is required to unlock the value of software tools and applications. It has the potential to form a major part of an economy that supports the innovative output of Nigerian developers. Government will endeavour to ensure that by the end of 2015, at least 50% of Personal Computers in use within Nigeria will be made in

Nigeria; and by the end of 2017, 50% of internet-enabled devices used within Nigeria will be made in Nigeria.

#### **7.10.1 Objectives**

- i. To promote and support the local design and manufacture of ICT hardware;
- ii. To establish appropriate standards for the production of efficient and cost-effective hardware; and
- iii. To significantly increase the number of Nigerians that own ICT hardware/devices.

#### **7.10.2 Strategies**

The Government will:

- i. Encourage the establishment and expansion of domestic capacity to produce hardware for the ICT sector;
- ii. Encourage the local design and manufacture of ICT hardware that conforms to global standards;
- iii. Promote the diffusion of ICT knowledge for optimal use of hardware;
- iv. Facilitate low cost, individual ownership or access to computers for every Nigerian;
- v. Ensure rapid indigenization and domestication of high technology ICT products and services;
- vi. Encourage joint ventures between Nigerian and foreign enterprises towards the production of ICT equipment;
- vii. Encourage the patronage of locally manufactured ICT products;
- viii. Encourage research and development of appropriate ICT devices for the physically challenged to enable them enjoy the benefits of the ICT revolution in the country;
- ix. Encourage manufacturers to set up factories for the manufacture of Set Top Boxes that are required for the transition from analogue to digital broadcasting by 2014; and
- x. Provide incentives to encourage Foreign Direct Investment for local manufacturing.

### **7.11 Safety and National Security**

The protection of life and property as well as the promotion of national security is vital for overall economic development. ICT presents opportunities that can be leveraged to strengthen the protection of the citizen and the Nation's territorial integrity.

### **7.12 Situation Analysis**

#### **a. Cyber Digital Security**

Major challenges facing the country in the area of ICT development include cyber crime and underutilization of ICTs for strengthening overall national security. There is no 'Certified Emergency Response Team (CERT)', nor electronic authentication framework. The lack of appropriate legislation and coordination of the activities of various security arms of government continue to militate against implementation of effective measures to combat cyber crime. Government intends to address the formidable privacy, capacity, and content challenges to ensure the potentials are realized.



## **b. Infrastructure Security**

ICT development continues to be adversely impacted by both negligent and deliberate damage to ICT infrastructure. This is a disincentive to investors, even as it threatens existing investments, and must therefore be urgently addressed.

## **c. National Security**

ICT has the potential to significantly enhance the safety of lives and property in Nigeria. Although ICT is increasingly being leveraged by security agencies, the policy must provide support for increased utilization of ICT systems and tools for intelligence gathering, crime detection, and enhanced security.

### **7.12.1 Objectives**

- i. To enhance crime detection, intelligence gathering, and national security, including physical and cyber security;
- ii. To protect the rights and privacy of the citizens;
- iii. To foster information sharing among security agencies;
- iv. To ensure protection of the child in cyberspace; and
- v. To build confidence in the use of ICT networks and services.

### **7.12.2 Strategies**

The Government will:

- i. Ensure capacity development of its institutions and collaborate with regional and international agencies to contain cyber crimes;
- ii. Encourage the review of existing legal instruments pertaining to procedural and evidential law to permit the usage of electronic evidence, recognition of “cyberspace” and to address jurisdictional issues;
- iii. Ensure that operators take all necessary steps to prevent the use of their ICT networks and facilities for the commission of crimes;
- iv. Ensure the use of ICT for the protection of life and property of all citizens;
- v. Ensure the provision of ICT services for emergency and distress situations in all parts of the country (on land, sea, and air), and support international co-operation;

- vi. Ensure that laws relating to ICT offences are periodically reviewed and enforced;
- vii. Ensure that all the necessary legislative instruments for the administration of the ICT industry are in place and adequate;
- viii. Ensure the protection of data;
- ix. Ensure the protection of ICT Infrastructure which serves as Critical National Infrastructure;
- x. Ensure, within the shortest possible time, the provision of dedicated National Emergency Lines for distress calls in all parts of the country, especially for child safety, law enforcement, road safety and national emergencies;
- xi. Facilitate the urgent establishment of a Computer Emergency Readiness and Response ecosystem with apex, sectoral and institutional Computer Emergency Response Teams (CERT's), as needed, to serve as standby teams of experts that are able to respond to national emergencies, especially cyber-threats, attacks and cyber warfare; and
- xii. Ensure that current security measures and hacking countermeasures are frequently applied and updated on the nation (.ng) top-level domain.

### **7.13 Coordinated ICT Development across All Sectors**

Coordination amongst MDA's in respect of ICT services will eliminate overlaps, create more efficiency, reduce government expenditure and encourage holistic planning of ICT deployments, capacity building, and utilization.

#### **7.13.1 Situation Analysis**

ICT development in Nigeria is hampered by the lack of a cohesive framework that unites sector development plans with a broader ICT policy environment. This has resulted in uneven development across the various sectors, capacity gaps, duplication of efforts and resources, and a lack of holistic policy implementation. Appropriate measures should therefore be put in place to create an enabling environment that will enhance effective and coordinated ICT development across all sectors.

### **7.13.2 Objectives**

- i. To drive the development and update of ICT plans across all sectors of the Nigerian economy; and
- ii. To encourage and promote effective use of ICT in Governance within every sector and program, including:
  - Agriculture
  - Education
  - Finance
  - Health
  - Justice Administration
  - Oil and gas
  - Power
  - Small & Medium Sized enterprises
  - Solid minerals
  - Sports
  - Trade and Commerce
  - Transport
  - Youth Development

### **7.13.3 Strategies**

The Government will:

- i. Promote mechanisms for interfacing between its sectors and tiers to drive the development of ICT plans;
- ii. Develop a sector-specific timetable to facilitate timely and organized production of sector-specific plans, working with the relevant sectors and tiers of government; and
- iii. Ensure that by the end of 2015, all sectors would have developed (where non-existent), or updated their ICT Development Plans that are aligned to this National ICT Policy Document.

## **7.14 Research, Development, and Innovation**

Research, Development, and Innovation (RDI) is a strategic imperative for the attainment of sustainable development and competitiveness. Research is necessary for the technological development of the nation and for reaping the enormous

benefits that exist in the ICT sector of the economy. Therefore, by the end of 2015, a National Research and Development Agenda would have been developed and approved.

#### **7.14.1 Situation Analysis**

Although there is some research and development (R&D) activity in the general area of Science and Technology, R&D in the specific area of ICT is, at best, very minimal in Nigeria. This adversely impacts innovation, reduces growth potential, and continues to constrain the realization of Nigeria's huge ICT prospects. Therefore, to reverse the trend, there is a need to promote R&D activities to stimulate and sustain innovation in ICT.

#### **7.14.2 Objectives**

- i. To stimulate and encourage Research, Development and Innovation in ICT;
- ii. To harness and utilize the results of Research, Development and Innovation in ICT;
- iii. To ensure that adequate resources are provided for ICT related research;
- iv. To enhance collaboration among stakeholders in the design, execution, documentation and exchange of research ideas and results; and
- v. To ensure that by the end of 2015, a National Research and Development Agenda would have been developed and approved.

#### **7.14.3 Strategies**

The Government will:

- i. Promote collaborative R&D in ICT and encourage stakeholders to support such efforts in relevant institutions;
- ii. Identify R&D focus areas with the involvement of Industry, Academia and Research institutions by 2013;
- iii. Set, review, and implement guidelines for ICT research and development initiatives;
- iv. Ensure development of national ICT standards, as well as contribute to global standards;
- v. Encourage collaborative ICT R&D in hardware and software as well as high-end computing and socio-economic issues;

- vi. Facilitate and nurture local ICT content development; and
- vii. Undertake collaborative research, advocacy, and consultation to monitor the impact of the adoption of ICT initiatives on the society and disseminate the findings as appropriate.

### **7.15 Investment and Funding**

Investment and funding are critical to the success of any national ICT development plan and programs. Typically, sources for such funding would include Government, the private sector, as well as international organizations. Government has the critical role of creating an enabling environment that will attract investment and funding from these various stakeholders.

#### **7.15.1 Situation Analysis**

Although the ICT sector has witnessed tremendous investments over recent years, the occurrence of multiple regulation and taxation - a phenomenon where players in the ICT sector are subjected to various rules, regulations and taxes, for the same aspect of a “service providers” operation, by different tiers and agencies of Government (Federal, State and Local) – tends to discourage investors, consequently threatening investments and potentially depriving the sector of the necessary funding required for ICT improvement and expansion. Therefore, these issues must be urgently and appropriately addressed.

#### **7.15.2 Objectives**

- i. To create an enabling environment and facilitate foreign direct investment as well as national private sector investment in the ICT industry;
- ii. To further deregulate, liberalise and increase competition in the ICT sector;
- iii. To encourage public-private partnerships for the development of ICT;
- iv. To provide funding of government ICT projects through appropriate budgetary allocation; and
- v. To pursue elimination of multiple regulation and taxation within the ICT sector.

### **7.15.3 Strategies**

The Government will:

- i. Provide incentives such as appropriate tax and import duty reliefs;
- ii. Facilitate the grant for pioneer status to qualified companies to encourage investment in the ICT sector;
- iii. Provide appropriate fiscal incentives to encourage local manufacture of ICT equipment and development of software;
- iv. Streamline procedures and requirements for the importation of ICT equipment;
- v. In collaboration with relevant agencies of Government, take practical steps to reduce the occurrence of multiple regulation and taxation in ICT; and
- vi. Adopt financing models that foster indigenous ICT entrepreneurship including venture capital and private equity.

### **7.16 Public Private Partnership**

Partnerships between the government and the private sector have tremendous potential for the qualitative delivery of ICT infrastructure projects, innovation, skills acquisition, and outreach of government services to Nigerians. Recognizing the private sector as the main engine of economic growth, Government is keen to foster a conducive environment for the functioning of viable, impactful and sustainable PPP initiatives.

#### **7.16.1 Situation Analysis**

Private sector participation has been identified as a major catalyst in ICT development across the globe. However, often times, there is confusion as to roles, levels of contribution, and rules of overall engagement thus leading to fragmented outcomes. Nigeria is therefore yet to take full advantage of the enormous potentials inherent in public-private-partnership in ICT development. The necessary enabling environment should therefore be created for the realization of these benefits.

### **7.16.2 Objectives**

- i. To increase ICT related PPP's for overall sector and Nigeria's socio economic development; and
- ii. To ensure that PPP's are impactful, sustainable and beneficial to both public and private sector participants, and the end beneficiaries.

### **7.16.3 Strategies**

The Government will:

- i. Ensure effective cooperation amongst MDA's that are relevant for the proper operation of PPP's;
- ii. Ensure a clear framework of Intellectual Property Protection and other terms of engagement with the private sector exists, to encourage increased private sector confidence and investment into PPP's;
- iii. Ensure that all proposed PPP projects are subjected to viability and sustainability assessments;
- iv. Promote awareness of PPP opportunities to the private sector; and
- v. Ensure, where appropriate, incentive schemes to accelerate take off of ICT PPP projects.

## **7.17 Reform of the Postal Sector**

A ubiquitous and viable postal network - comprising of both private and public infrastructure - is a key enabler for the attainment of the developmental goals of the country. The sector has significant potential for job creation, and in addition to facilitating the dissemination of goods and services, a sustainable postal network is a catalyst for the adoption of ICTs by the public, a disseminator of social benefits, and a facilitator of the financial and logistical capabilities necessary to stimulate and increase commerce.

### **7.17.1 Situation Analysis**

Nigeria's population of over 167 million people and huge landmass of approximately 910,771 Square Kilometers are factors that contribute to the challenges of meeting Universal Service Postal Obligations. Furthermore, overlapping regulatory and operational functions, the incidence of grey operators, absence of an accurate addressing system, and the unavailability of an up-to-date street-mapping system

are additional factors that impair the efficient operation of the Postal Sector. The Government must therefore reorganize and reposition the Postal sector to ensure it can sustainably deliver efficient Postal services to Nigerians.

#### **7.17.2 Objectives**

- i. To reform and stimulate the development and growth of the postal sector in Nigeria;
- ii. To expand, strengthen and incorporate the postal network into the national infrastructure for attaining a knowledge-based economy;
- iii. To harness the national postal network for the attainment of financial and digital inclusion, as well as job creation; and
- iv. To harness the public postal network for effective government administration and delivery of government services.

#### **7.17.3 Strategies**

The Government will:

- i. As a matter of urgency and priority, accelerate and complete the reform of the sector through the passing of the Postal Bill which shall provide for the separation of the postal regulatory functions from the operations of the public postal operator, and allow for the corporatization of the public postal operator;
- ii. Ensure the restructuring and corporatization of the Public Postal Operator to achieve greater efficiency and effectiveness in the discharge of its functions;
- iii. Implement Postal Universal Service Obligations and enforce access to quality and affordable universal postal service;
- iv. Promote competition in non-exclusive Postal services; and
- v. Utilize the public postal network for government administration and delivery of government services.

### **7.18 Business Process Outsourcing**

Business Process Outsourcing is a global multi-billion dollar industry. Many nations have capitalized upon the outsourcing opportunity to transform their economies and increase global competitiveness. A number of developing nations are also devoting significant resources to growing the Business Process Outsourcing (BPO) industry, and thereby making it a significant contributor to gross domestic product (GDP).



Nigeria is particularly well positioned to participate in this industry, because its official language is English, and it has a large, fairly well educated, and relatively inexpensive labour force.

#### **7.18.1 Situation Analysis**

Although the Business Process Outsourcing (BPO) global market is estimated to be worth hundreds of billions, lack of a robust framework, security concerns, perceived lack of local skills, etc are among the factors that have prevented Nigerian organizations from participating effectively in, and benefitting from, the BPO opportunity.

Therefore, it is important - especially as Government continues to stimulate the creation of jobs - to urgently promote a conducive environment that will enable Nigerian firms to invest in and participate in the global BPO economy.

#### **7.18.2 Objectives**

- i. To develop a globally competitive Information Technology Enabled Services (ITES) sector in Nigeria;
- ii. To facilitate the diversification of the national economy through the development of a vibrant outsourcing sector, including developing an export-oriented ICT product and service delivery industry;
- iii. To accelerate human resource and ICT infrastructure development to support growth in the outsourcing sector; and
- iv. To ensure an integrated and coherent effort and coordination between all tiers of Government.

#### **7.18.3 Strategies**

The Government will:

- i. Promote human capacity development, as well as an enabling, legal, regulatory, technological, and infrastructural environment for the sustainable development of the outsourcing sector in Nigeria;
- ii. Ensure that all participants in the outsourcing subsector conform to international standards and best practices;

- iii. Fund appropriate ICT infrastructure development that will support reliable outsourcing businesses; and
- iv. Provide incentives (such as tax relief, pioneer status or other appropriate incentive) to encourage strong private sector leadership of the sector.

### **7.19 Management of Scarce Resources**

The effective and efficient deployment of ICT requires prudent and judicious management of some scarce natural resources or government influenced assets, which include radio frequency spectrum, electronic addressing system, right of way, and orbital slots. It is imperative that appropriate measures are adopted to maximize the economic and social benefits that Nigerians derive from the use of these scarce resources.

#### **7.19.1 Situation Analysis**

The resources required for broadcasting, the implementation of ICT infrastructure, and even the deployment of orbital assets, are globally acknowledged to be scarce. Overlapping regulatory functions, bureaucracy, and a less-than-holistic approach to the management of these resources are challenges that have an adverse effect on the overall pace of ICT development in Nigeria. It is therefore very important for the Government to urgently put in place a framework for the efficient management of these scarce natural resources and government-influenced assets.

#### **7.19.2 Objectives**

- i. To ensure effective planning, allocation, licensing, utilization, assignment and monitoring of spectrum;
- ii. To ensure judicious allocation and use of electronic addressing systems;
- iii. To plan and coordinate the allocation of 'right of way' to ICT facilities providers;
- iv. To devise a national plan for effective co-ordination of Nigeria's orbital assets;
- v. To ensure that operators gain flexibility for underutilized spectrum to promote new and more innovative broadband services;
- vi. To ensure licenses are assigned transparently; and
- vii. To ensure harmonization of IEEE 802.11ac (5GHz), IEEE 802.11ad (60 GHz) standards in accord with ETSI, European Union and ITU recommendations.

### **7.19.3 Strategies**

The Government will:

- i. Ensure the effective allocation and management of bulk and commercial spectrum;
- ii. Ensure the judicious allocation of numbers based on an open non-discriminatory and transparent basis;
- iii. Ensure coordination between the relevant agencies that are involved in issuing right of way for ICT infrastructure deployment;
- iv. Ensure, in consultation with ITU, the proper coordination and utilization of orbital space for effective national development; and
- v. Encourage deployment of ICT services in underserved and unserved areas, by identifying appropriate frequencies which could be allocated as license exempt frequencies to service providers for deployment of services in the rural areas.

## **7.20 Regional / International Co-operation and Collaboration**

International cooperation is essential for development of the ICT sector. It affords countries the opportunity to share experiences and to set common standards and policies for ICT development. It is important to maximize participation in relevant international fora in order to accelerate Nigeria's full integration into the global information society.

### **7.20.1 Situation Analysis**

ICT development has significant dependencies on international standards development discoveries and knowledge exchange. Whilst Nigeria has been a participant in international fora, the participation has not been maximized for a number of reasons including lack of coordination, and short planning cycles. To ensure that Nigeria derives maximum benefits from these international engagements, it is important for Government to establish a clear mechanism for Nigeria's effective participation in regional and international cooperation and collaboration efforts.

### **7.20.2 Policy Objectives**

- i. To promote effective participation of Nigeria in the activities of various international organizations;
- ii. To ensure that Nigeria adopts international best practices and standards in the ICT industry;
- iii. To promote existing and future markets for Nigerian ICT products and services; and
- iv. To advance the harmonization of ICT policies and legal framework across the region.

### **7.20.3 Strategies**

The Government will:

- i. Ensure effective participation by Nigeria at all relevant regional and international fora through adequate planning and formulation of Nigeria's position and strategies;
- ii. Comply with all membership obligations and provide requisite support to regional and international organizations;
- iii. Actively pursue international agreements that promote Nigeria's ICT development agenda;
- iv. Support and participate in sub-regional and regional policy harmonization initiatives embarked upon by regional organizations;
- v. Ensure that Nigeria occupies strategic positions in regional and international organizations;
- vi. Ensure effective implementation and monitoring of collaborative agreements; and
- vii. Promote participation in international fora of all stakeholders such as the Academia, Civil Societies, Diaspora, Private Sector, and Youth.

## **7.21 ICT and the Environment**

Preservation and enhancement of the environment is an established and growing worldwide concern. There is increasing interest in the impact of ICT activities on the environment. Accordingly, the relationship between ICT and the environment is given significant attention in national ICT development plans. Government and ICT

operatives shall seek to pursue a policy of 'green communications' that aims to minimize any adverse impact or footprint of ICT development on the environment.

#### **7.21.1 Situation Analysis**

Despite the huge benefits of pervasive ICT deployments, there are significant concerns that need to be addressed, with respect to the adverse impact and other consequences associated with ICT infrastructure and equipment including CO<sub>2</sub> emissions, radioactivity and e-waste. E-waste is a recent and emerging issue arising substantially out of the operations and effusions in the ICT sector. The situation is further compounded in Nigeria by the importation and dumping of electronic and electrical waste. Present environmental laws and regulations do not adequately address the challenges posed by e-waste. To appropriately manage these environmental challenges, Government needs to urgently put in place effective policies, strategies and enactments to mitigate the adverse impact of ICT on the environment.

#### **7.21.2 Objectives**

- i. To promote the use of environmentally friendly and sustainable ICT;
- ii. To monitor the relationship between the environment and ICT;
- iii. To utilize ICT to minimize environmental degradation and manage natural disasters;
- iv. To simultaneously encourage service providers to embrace alternative energy sources to power their infrastructure, and thus enhance qualitative and effective service provision; and
- v. To adequately provide for the collection, disposal, treatment and recycling of e-waste.

#### **7.21.3 Strategies**

The Government will:

- i. Commit to initiatives, policies and programs that ensure that the environment is adequately protected;
- ii. Promote colocation, renewable energy and green initiatives as a means of minimizing impact of ICT infrastructure on the environment;

- iii. Partner with international agencies such as the International Telecommunication Union (ITU) and the domestic and international industry to promote research on 'green communications';
- iv. Promote the implementation within Nigeria of international or regional initiatives and programmes on the environment that have been duly adopted by Nigeria;
- v. Partner and collaborate with the relevant environmental protection MDA's to promote matters of the environment in relation to the ICT sector;
- vi. Sign up to existing conventions that deal with the control and disposal of hazardous wastes;
- vii. Develop specific policies and regulatory framework for the management and control of e-waste; and
- viii. Partner with relevant Specialized NGOs and donor agencies that deal specifically with control, management and disposal of e-waste.

## **7.22 ICT and the Consumer**

The consumer is the ultimate reason for the provision of ICT services and products. Therefore, efforts must be made to ensure that goods and services offered in Nigeria conform to international standards, and also comply with guidelines set by the Regulator. It is also important that the consumer is provided with mediums through which they can air their grievances and /or provide feedback to Government.

### **7.22.1 Situation Analysis**

The increase in service, device and equipment availability presents new challenges for consumers in terms of quality assurance, safety standards and other considerations. Furthermore, the consumer experience in Nigeria in the context of ICT services and equipment continues to be diluted as a result of uneven quality of service, influx of substandard equipment, and at times, unclear consumer protection responsibilities. It is therefore important for the Government to ensure operation of a well-defined and effective consumer protection framework.

### **7.22.2 Objectives**

- i. To ensure that the consumer is adequately protected in respect of the quality of ICT products and services within Nigeria; and
- ii. To ensure that the consumer has access to platforms that will facilitate feedback to relevant Government institutions.

### **7.22.3 Strategies**

The Government will:

- i. Ensure that consumer protection legislation is updated to reflect evolving trends;
- ii. Strengthen the powers and capacity of the regulator to protect consumers;
- iii. Promote the implementation of Government interaction platforms and processes;
- iv. Promote awareness campaigns that inform consumers about their rights; and
- v. Ensure measurement of Consumer satisfaction through the promotion and publication of frequent consumer satisfaction surveys and fora.

## **7.23 ICT and the Civil Society**

Civil society has an increasingly relevant role to play in Nigeria's Socio economic development. ICTs present opportunities to collate, evaluate and diffuse information in pursuit of civil society's goals.

### **7.23.1 Situation Analysis**

ICTs represent powerful tools that can help civil society organizations to transform, strengthen, and extend their operations. However, funding constraints, scarcity of skills, and other factors currently prevent civil society organizations from maximizing the potential of ICTs. Given their critical role in the society, Government should urgently create policies and strategies that address these challenges.

### **7.23.2 Objectives**

- i. To promote the responsible utilization of ICTs within Civil Society groups in order to strengthen and extend their operations; and
- ii. To foster increased use of ICTs for interaction and collaboration between civil society and government.

### **7.23.3 Strategies**

The Government will:

- i. Ensure support for the acquisition of ICT and capacity building for Civil Society organizations;
- ii. Promote initiatives that focus on the responsible use of ICTs especially in respect of privacy and dissemination of information; and
- iii. Ensure availability of platforms and processes to facilitate Government interaction with Civil Society groups.

### **7.24 Open Data and ICT**

Open Data deals strategically with how certain data within government confines should be made freely available to the public, and allow republishing without restrictions. Having an open data policy would help to improve governance and support implementation of the new Nigeria Freedom of Information Act (2001).

#### **7.24.1 Situation analysis**

Following the passage of the FOI bill by the Federal Government of Nigeria, it is important to establish a framework that supports the adoption of the Open Data initiative. ICT and Open Data policy thrusts will focus on how certain data within the government confines will be made freely available to the public, for viewing and republishing without restrictions.

#### **7.24.2 Objectives**

- i. To strengthen the role of citizens and civic societies by providing data, in machine readable formats, from various sectors of the economy;
- ii. To encourage the development of innovative products using publicly available data; and
- iii. To ensure that a portal is always up and running, which provides necessary data from all sectors.



### 7.24.3 Strategies

The Government will:

- i. Ensure that a knowledge exchange platform is developed which allows MDA's to exchange experiences and ideas on available projects;
- ii. Ensure that regular workshops, conferences and seminars are done in conjunction with all stakeholders in order to ensure effective publishing of data;
- iii. Encourage the development of innovative applications that can provide insights and analysis into publicly available data; and
- iv. Coordinate the creation of a portal platform where all relevant data from MDA's are maintained and are always available.

## **8.0 PROPOSED SECTORAL STRUCTURE**

### **8.1 Proposed Government Institutional Structure**

The proposed Nigeria ICT Government institutional structure will consist of the following components:

- i. Ministry responsible for Communications and Information Technology;
- ii. The Converged ICT Regulator (Telecommunications + Broadcasting + Postal + IT);
- iii. The ICT Development Agency;
- iv. The Public Postal Operator (NIPOST);
- v. Government Owned Companies (1) Galaxy Backbone PLC; and (2) NigComSat Plc.

### **8.2 The Role of the Government**

The role of Government in the ICT sector includes:

- i. Providing overall direction for national ICT development;
- ii. Ensuring policy consistency of ICT sector with other national policies, international best practices and conventions; and
- iii. Enacting necessary laws, and taking other required and necessary measures promptly in support of the National ICT Policy.

### **8.3 The Role of the Ministry**

The Ministry formulates broad ICT Policy. Specific roles of the Ministry shall include the following:

- i. Proposing policy options and recommending to Government such measures as legislation, fiscal incentives, etc;
- ii. Monitoring the implementation of government policy in the industry;
- iii. Providing leadership and direction to the National Council on ICT;
- iv. Ensuring compliance with the provisions of sections 26 – 30 NCA 2003 (as amended), in respect of the National Frequency Management Council's frequency allocation role;
- v. Ensuring that the Policy is continually reviewed and aligned to the overall developmental goals of the country and the aspirations of the Government, in consultation with all stakeholders in the industry;

- vi. Ensuring that the ICT sector provides needed support to other sectors of the national economy;
- vii. Liaising with other Ministries on matters affecting the ICT sector that require inter-ministerial intervention;
- viii. Ensuring and co-coordinating national representation and participation in regional and international organizations and activities;
- ix. Liaising with the National Assembly on ICT matters;
- x. Managing the general ICT policy framework for the Federal Republic of Nigeria;
- xi. Conducting comprehensive Impact Analysis of ICT initiatives; and
- xii. Ensuring, in collaboration with other relevant MDA's, the availability of comprehensive and accurate ICT data.

#### **8.4 The Role of the Converged Regulator**

The existing telecommunications regulator will transition into a converged ICT regulator by subsuming the communications technology regulatory functions of the NBC (including signal broadcasting, spectrum allocation, broadcast equipment type approval etc), as well as the existing and relevant regulatory functions of NIPOST and NITDA. The necessary modifications in existing policies and laws will be made to facilitate achievement of the objectives and goals of converged regulation. In addition, the converged regulator will be independent and will ensure that each of the subsectors (telecoms, IT, broadcasting and postal) is given maximum and equal attention.

The roles of the Converged Regulator shall include the following:

- i. Developing and administering a comprehensive regulatory regime for the ICT sector;
- ii. Regulating the ICT industry in line with government policies, objectives and goals;
- iii. Promoting, encouraging and protecting private sector led investment in the industry through a fair and competitive ICT environment, as well as economic and technical regulation of the sector;

- iv. Ensuring a level playing field for all participants through equal opportunity and equal access to relevant information, markets and resources such as spectrum and electronic addressing system;
- v. Promoting Universal Access to ICT services, including developing regulations and designing a framework to guide the attainment of Universal Access, as well as enabling funding to help finance investment in ICT for unserved and underserved populations;
- vi. Ensuring a conducive regulatory environment that promotes the provision of Universal Service Postal Obligations;
- vii. Establishing and enforcing technical/operational standards and practices as well as Quality of Service (QoS) standards;
- viii. Balancing regulatory concerns in order to ensure that the interest of all Stakeholders are carefully considered and protected;
- ix. Ensuring equitable and transparent assignment of scarce resources such as radio frequency spectrum allocated to it by the National Frequency Management Council for (commercial ICT providers), electronic addressing system, broadcast service providers, internet names and addresses among others, and promoting efficient use of same;
- x. Promoting transparency in consultation and rulemaking, including undertaking Regulatory Impact Assessments (RIA) on proposed regulatory initiatives;
- xi. Promote and ensure infrastructure sharing among facility and service providers to enhance efficient investment decisions, promote competition and minimize the impact of ICTs on the environment;
- xii. Reviewing current licensing categories to ensure compliance with the converged framework;
- xiii. Preparing and implementing programmes and plans that ensure regulation is responsive to, and supports the development of the ICT industry, and the provision of ICT services in Nigeria;
- xiv. Advising the Minister on the formulation of the general policies for the ICT industry and generally on matters relating to the ICT industry in the exercise of the Minister's functions and responsibilities;
- xv. Generally advising and assisting ICT industry stakeholders and practitioners with regulatory advice with a view to the development of the industry;

- xvi. Developing and implementing consumer protection and awareness standards for customers of ICT services to ensure fairness and transparency, in the provision of valuable services;
- xvii. Publishing periodic reports to provide Performance Assessment of the Sector;
- xviii. Ensuring that tariff setting rules shall be transparent, with stable, predictable and understandable standards for current prices and for changes to those prices over time; and
- xix. Applying Universal Service Provision Fund (USPF) resources to support of Universal Access objectives.

#### **8.5 The Role of the ICT Development Agency**

The current IT development agency will have its mandate expanded to coordinating and driving development across the entire ICT sector. The ICTDA is to be headed by a Chief Executive and shall carry out the following functions:

- i. Formulate plans for ICT initiatives as appropriate;
- ii. Provide support to the private sector where appropriate to implement ICT developmental initiatives;
- iii. Identify emerging global ICT trends and evaluate their potential impact on Nigerian ICT Industries;
- iv. Facilitate the successful implementation of e-government initiatives by setting standards and guidelines;
- v. Develop frameworks and guidelines, including interoperability and e-government frameworks, for development and use of ICT in the Government;
- vi. Facilitate and promote an enabling environment for nurturing and development of indigenous and competitive ICT content;
- vii. Conduct studies to aid ICT sector development;
- viii. Advise the Minister on the formulation of general policies that aid the development of the ICT industry;
- ix. Generally advise and assist ICT industry stakeholders and practitioners with a view to development of the industry;
- x. Provide general guidelines for MDA ICT projects and procurements to eliminate duplication and ensure efficient use of government resources;

- xi. Encourage ICT capacity building programme among MDAs, the legislature and the judiciary to assist in the transformation of the country into a knowledge driven economy;
- xii. Encourage the development of the outsourcing industry in collaboration with other relevant agencies of Government and the Private sector;
- xiii. Provide support for research in higher institutions of learning;
- xiv. Provide the basis and wherewithal for construction of ICT Parks in the country; and
- xv. Apply NITDEF resources to support all required ICT development intervention and efforts, and local content development, especially in respect of large - scale capacity building initiatives.

#### **8.6 The Role of the Public Postal Operator**

The Public Postal Operator will:

- i. Restructure and upgrade its organization and operations to effectively deliver on its Universal Service obligations and operate on a sustainable commercial basis;
- ii. Optimize current and future deployment of physical locations/outlets to maximize the reach of the public postal network, by ensuring that there is at least one public postal outlet in every Local Government Area by 2015;
- iii. Leverage its physical infrastructure network to achieve social, digital and financial inclusion; and
- iv. Establish and maintain a National Addressing Plan, and in collaboration with relevant institutions implement national addresses by 2015.

#### **8.7 The Role of Government owned companies**

Galaxy Backbone PLC and NigComSat were created for specific purposes in respect of government ICT infrastructure provision, and exploitation of satellite technology, respectively. Although government continues to consider the privatization of these companies, they will continue to focus on the delivery of efficient services that serve the interests of both Government and the private sector, in line with standards set by the ICT development agency and within industry regulatory rules and guidelines.

Galaxy Backbone PLC will:

- i. Provide Government's connectivity requirements, leveraging infrastructure and services of the private sector, as appropriate;
- ii. Provide data hosting and management services for government MDA's;
- iii. Provide advisory services to MDA's in respect of connectivity and data hosting services; and
- iv. Provide advisory services in respect of hosting and connectivity for transversal government applications.

NigComSat will:

- i. Continue to pursue commercial exploitation of the Federal Government's investment in NigComSat-1R and other assets; and
- ii. Continue to provide Government with security and other required information obtained through the satellite resources under its management.

## **9.0 POLICY IMPLEMENTATION AND REVIEW**

Successful implementation of any national policy program must be reflected in positive, tangible and impactful outcomes. The National ICT policy will be used to:

- i. Develop action plans for the ICT sector; and
- ii. Serve as a guide for developing cross-sectoral policies, and specific implementation guidelines as appropriate.

Therefore, it is important that the policy itself, and the initiatives derived from it are subjected to an effective monitoring and review framework. This framework will incorporate benchmarks, comprehensive key performance indicators, and project monitoring / assessment framework process.

To enshrine accountability and transparency, the Policy Implementation Review process will ensure reports are produced at predetermined periods to provide comprehensive updates on the initiatives. The Ministry of Communication Technology will produce a report on all sectoral activities on an annual basis.

## **10.0 CONCLUSION**

This National ICT Policy is the end result of the harmonization of various existing ICT related policies, laws and committee reports, and input from industry stakeholders.

In addition to the consultations that took place during the harmonization process, a subsequent broad-based stakeholder input from industry bodies, regulators, legal practitioners, civil society, consumer associations, service providers, and technocrats, among many others, has enriched the policy document significantly.

The process has carefully considered the background, history and challenges facing the ICT industry in Nigeria that constrain the sector's ability to support the developmental goals of the country, especially its vision to be a global top 20 economy by the year 2020.

To the extent possible, the interest, views and opinions of every relevant constituency were sought, captured and taken into account as appropriate. The National ICT Policy is therefore, all inclusive.



## **APPENDIX 1 - LIST OF REFERENCE MATERIALS**

The Committee in carrying out its assignment considered the following documents:

- Final Report of the Committee for the Review of Communication Policy for Nigeria;
- Report of the Presidential Task Force on Restructuring of Government Institutions/Organizations in Telecommunications and ICT Sector in Nigeria;
- Bureau of Public Enterprise – Draft Report on National Postal Sector Policy (May 2009);
- The First National Implementation Plan for Vision 20:2020 Vol. 1;
- The First National Implementation Plan for Vision 20:2020 Vol. II;
- National Mass Communication Policy;
- Draft Document on Broadcasting Policy;
- Nigerian Communications Act, 2003;
- Report of the Presidential Committee on Master plan and Roadmap for the Implementation of Information and Communications Technology for National Development (Sept. 2010);
- Nigerian Policy for Information Technology;
- National Outsourcing Policy and Institutional Framework for Nigeria (Jan. 2007);
- National Information Technology Development Agency Act, 2007;
- National Broadcasting Commission Act 1992 as amended;
- Nigerian Postal Service Act 2004;
- Draft Communications Policy (2011);
- National Telecommunications Policy, 2000;
- NASDR Act 2010;
- ICRC Act 2007;
- CAC Act 1990;
- NOTAP Act 1992;
- The ICT in Education Policy 2010; and
- CPN Act 49 of 1993.

## **APPENDIX 2 - SELECTED TARGET DATES**

S/N	Objective / Strategy	Target year end
1.	Identify R&D focus areas with the involvement of Industry, Academia and Research institutions.	2013
2	Provide institutional support for addressing the incidence of multiple taxation and regulation in the ICT sector.	2013
3	Provide a clear roadmap for harvesting the “digital dividend” spectrum and ensure competitive allocation of the resource.	2013
4	Implement steps that will encourage manufacturers to set up factories for the manufacture of Set Top Boxes that are required for the transition from analogue to digital broadcasting.	2013
5	Pursue the development of an <u>ICT Local Content Plan</u> for Nigeria	2013
6	Develop and implement ICT training programs for public sector employees, in connection with introduction of e-Government and other digital functions within Government offices; and	2013
7	Coordinated ICT Development in All sectors: By end of 2015, all sectors would have developed (where none exists) or updated their ICT for Development Plans that are aligned to this Policy document.	2014
8	Create a Computer Emergency Readiness and Response ecosystem with apex, sectoral and institutional Computer Emergency Response Teams (CERT’s), as needed, to serve as standby teams of experts that are able to respond to national emergencies, especially cyber-threats, attacks and cyber warfare.	2014
9	Introduce mandatory training and appropriate courses in ICT at all tiers of education.	2014
10	Develop a licensing regime for signal distributors	2014
11	Ensure that traditionally marginalized groups become an integral part of the ICT stakeholder community, as participants, innovators, leaders and beneficiaries of the knowledge economy in the emergent information society in Nigeria.	2014

S/N	Objective / Strategy	Target year end
12	Establish a methodology for assessing progress of broadband development in Nigeria in a structured way that (i) highlights and (ii) seek to address bottlenecks along/across all layers.	2015
13	<b><u>Hardware Production:</u></b> By end of 2015, at least 50% of Personal Computers in use within Nigeria will be made in Nigeria.	2015
14	<b><u>Transition from Analogue to Digital Broadcasting:</u></b> By the end of 2015, Nigeria would have fully complied with the ITU recommendations for transition from analogue to digital broadcasting.	2015
15	By the end of 2017, the country would have achieved 100% radio coverage.	2015
16.	By the end of 2017, at least 50% of Internet enabled device used in Nigeria will be made in Nigeria.	2017
17.	By the end of 2017, there would be a five-fold increase in Broadband penetration over the 2012 penetration rate.	2017
18.	<b><u>Universal Access and Service:</u></b> By the end of 2017, the country would have achieved a five-fold increase in the National Internet Access rate over the 2011 Access rate.	2017

### **APPENDIX 3 – COMMITTEE MEMBERS**

Prof. Raymond <b>Akwule</b>	President DBI	Chairman
Engr. Ngozi <b>Ogujiofor</b>	MCT	Member
Mrs Alheri <b>Saidu</b>	NBC	Member
Mrs. Yetunde <b>Akinloye</b>	NCC	Member
Dr. Vincent <b>Olatunji</b>	NITDA	Member
Abdul-Karim <b>Baba</b>	NIPOST	Member
Mr. Ayoola <b>Oke</b>	SA (Telecoms)	Member
Dr. Abiodun <b>Jagun</b>	SA (T & P)	Member
Mr. Ola <b>Ogunneye</b>	SA (IT)	Member
Professor Kayode <b>Odusote</b>	Foundation for Sustainable Health Development	Member
Mr Nnamdi <b>Ezeigbo</b>	Slot Systems	Member
Mr Jibril <b>Ahmed</b>	MICT, Kano State	Member
Mr Ben <b>Nwaroh</b>	Crimson Partners	Member
Professor Godswill <b>Obioma</b>	NERDC	Member
Dr Ndidi <b>Nnoli - Edozien</b>	Growing Business Foundation	Member
Mr Paul <b>Usoro</b> (SAN)	Paul Usoro & Co	Member
Miss Yemi <b>Adamolekun</b>	'Enough is Enough' Coalition	Member
Engr Titi <b>Omo -Ettu</b>	Telecom Answers associates	Member
Mr Chineye <b>Mba -Uzoukwu</b>	Infographics	Member
Mr Saheed <b>Adepoju</b>	Encipher Limited	Member
Mr Olufemi <b>Adeagbo</b>	Comnavig ICT consultants	Consultant

#### **APPENDIX 4 - LIST OF ACRONYMS**

- (ATU) African Telecommunications Union
- (AU) African Union
- (AUB) African Union of Broadcasting
- (ALTON) Association of Licensed Telecom Operators of Nigeria
- (ATCON) Association of Telecommunications companies of Nigeria
- (BON) Broadcasting Organizations of Nigeria
- (CDMA) Code Division Multiple Access
- (CTO) Commonwealth Telecommunications Organisation
- (CSPs) Communication Service Providers
- (CERT) Computer Emergency Response Team
- (CANI) Computer for all Nigerian Initiative
- (CPRCN) Computer Professionals Registration Council of Nigeria
- (DVB) Digital Video Broadcasting
- (DTH) Direct to Home
- (ETF) Education Trust Fund
- (NEMA) National Emergency Management Agency
- (FGN) Federal Government of Nigeria
- (FME) Federal Ministry of Education
- (FMST) Federal Ministry of Science and Technology
- (FRCN) Federal Radio Corporation of Nigeria
- (FDI) Foreign Direct Investment
- (GSM) Global System of Mobile Communications
- (HMCT) Honourable Minister of Communications Technology
- (HMST) Honourable Minister, Science and Technology
- (ITAN) Information Technology Association of Nigeria
- (NBTE) National Board for Technical Education
- (ISPON) Institute of Software Practitioners of Nigeria
- (ICN) Interconnect Clearing House of Nigeria
- (IMSO) International Mobile Satellite Organisation
- (ICANN) Internet Corporation for Assigned Names and Numbers
- (IXPN) Internet Exchange Point Network

(IP) Internet protocol  
(IPTV) Internet Protocol Television  
(ISP) Internet Service Provider  
(KPI) Key Performance Indicator  
(KBE) Knowledge Based Economy  
(ICHS) Licensed Interconnect Clearing Houses  
(LGA) Local Government Area  
(MDG) Millennium Development Goal  
(MOIC) Ministry of Information and Communications  
(MDA) Ministry, Department and Agency  
(M&E) Monitoring and Evaluation  
(NBC) National Broadcasting Commission  
(NFVCB) National Film & Video Censors Board  
(NFMCC) National Frequency Management Council  
(NIMC) National Identity Management Commission  
(NITDA) National Information Technology Development  
(NITDEF) National Information Technology Development Fund  
(NOTAP) National Office for Technology Acquisition and Promotion  
(NOA) National Orientation Agency  
(NPC) National Planning Commission  
(NRFP) National Radio Frequency Plan  
(NASRDA) National Space Research and Development Agency  
(NTP) National Telecommunications Policy  
(NTA) National Television Authority  
(NAN) News Agency of Nigeria  
(NCS) Nigeria Computer Society  
(NITEL) Nigeria Telecommunication Ltd  
(NCA) Nigerian Communications Act 2003  
(NCC) Nigerian Communications Commission  
(NigComSat) Nigerian Communications Satellite Ltd  
(NFC) Nigerian Film Corporation  
(NIG) Nigerian Internet Group  
(NIRA) Nigerian Internet Registration Association  
(NIPC) Nigerian Investment Promotion Commission

(NIMASA) Nigerian Maritime Administration and Safety Agency  
(NIPOST) Nigerian Postal Services  
(NPC) Nigerian Press Council  
(OHCSF) Office of the Head of the Civil Service of the Federation  
(WiN) Wire Nigeria  
(OEM) Original Equipment Manufacturer  
(PC) Personal Computer  
(PTDF) Petroleum Trust Development Fund  
(PKI) Public Key Infrastructure  
(PPP) Public Private Partnership  
(PSAP) Public Safety Answering Point  
(QoS) Quality of Service  
(RASCOM) Regional African Satellite Communications Organisation  
(R & D) Research and Development  
(RUBI) Rural Broadband Initiative  
(RITC) Rural Information Technology Centre  
(RTP) Rural Telephony Project  
(STBs) Set Top Boxes  
(SABI) State Accelerated Broadband Initiative  
(SIM) Subscribers Identification Module  
(TV) Television  
(UN) United Nations  
(UNECA) United Nations Economic Commission for Africa  
(UASLs) Universal Access Service Licences  
(USPF) Universal Service Provision Fund  
(VSAT) Very Small Aperture Terminal  
(VON) Voice of Nigeria  
(VOIP) Voice Over Internet Protocol  
(WATRA) West African Telecommunications Regulatory Authority  
(WTO) World Trade Organisation

## APPENDIX 5 – GLOSSARY OF TERMS

B	
<b>Benchmarking</b>	The continuous process of measuring product, services and practices against recognized leaders.
<b>BPO (Business Process Outsourcing)</b>	Entrusting one or more IT integrated-type business processes to an external service provider.
<b>Broadband</b>	A signaling method that handles a wide range of frequencies, thus allowing the transmission of high quality audio and visual signals.
<b>Broadcasting</b>	Transmission of visual and audio content, from a source and for reception by multiple members of the public or group.
<b>Colocation</b>	Colocation refers to a situation where different operators share common infrastructure like towers, power, security, space etc to achieve logistic and financial advantage.
<b>Computer</b>	Means any electronic, magnetic, optical or other high-speed data processing device or system which performs logical, arithmetic and memory functions by manipulations of electronic, magnetic or optical impulses, and includes all input, output, processing, storage, software and communication facilities which are connected or related as a system or network.
<b>Computer Emergency Response Team (CERT)</b>	This is a name given to expert groups that handle computer security incidents. CERT's can exist at multiple layers i.e. National, sectoral, institutional etc.
<b>CCTLD.NG</b>	Country Code Top-Level domain (ccTLD) is an Internet top-level domain generally used or reserved for a country or a sovereign.
<b>Community Radio</b>	Community stations serve geographic communities and communities of interest. They broadcast content that is popular and relevant to a local, specific audience but is often overlooked by commercial or mass-media broadcasters. Community radio stations are operated, owned, and influenced by the communities they serve.
<b>Convergence</b>	Technological convergence is the tendency for different technological systems to evolve toward performing similar tasks.
<b>CDMA</b>	Code-Division Multiple Access (CMDA) refers to any of several protocols used in so-called second-generation (2G) and third-generation (3G) wireless communications. As the term implies, CDMA is a form of multiplexing, which allows numerous signals to occupy a single transmission channel, optimizing the use of available bandwidth.
<b>Cloud computing</b>	Cloud computing encompasses any free, subscription-based, or pay-per-use service that leverages the internet to extend ICT



	capabilities. This could be for many purposes such as back up, hosting services, collaborative applications, data drop and pick services, etc.
<b>D</b>	
<b>DNSSEC</b>	The Domain Name System Security Extensions (DNSSEC) is a suite of Internet Engineering Task Force (IETF) specifications for securing certain kinds of information provided by the Domain Name System (DNS) as used on Internet Protocol (IP) networks. It is a set of extensions to DNS which provide to DNS clients (resolvers) origin authentication of DNS data, authenticated denial of existence, and data integrity, but not availability or confidentiality.
<b>Digital Economy</b>	The Digital Economy is the global network of economic and social activities that are enabled by platforms such as the internet, mobile and sensor networks. The Digital Economy is also sometimes called the Internet Economy, the New Economy, or Web Economy.
<b>Digital broadcasting</b>	Digital Broadcasting is the practice of using digital data rather than analogue waveforms to carry broadcasts over television channels or assigned radio frequency bands. It is becoming increasingly popular for television usage (especially satellite television).
<b>Digital Links</b>	Digital Links generally have more efficient bandwidth usage than analog links, which allows a content provider more room to provide services, or to provide a higher-quality signal than had been previously available.
<b>Digital literacy</b>	Digital literacy is the ability to locate, organize, understand, evaluate, and analyze information using digital technology.
<b>DTH (Direct to Home)</b>	The Direct-To-Home (DTH) service is a digital satellite service that provides television services direct to subscribers anywhere in the country.
<b>E</b>	
<b>e–Applications</b>	These are Applications that leverage ICT programs, infrastructure and devices.
<b>e-Business</b>	e-Business is the application of ICT to support and manage all the activities of business.
<b>e-Commerce</b>	The transfer of value for goods and /or services through electronic media.
<b>e-Document</b>	A document that exists in any electronic format.
<b>e-Government</b>	Government’s use of ICT to enhance the management of its activities.
<b>e-Health</b>	Health services and information delivered or enhanced through the use of ICTs.
<b>e-Signature</b>	A signature that identifies and authenticates a particular person as the source of an electronic message and the contents of the message.
<b>ETSI</b>	The European Telecommunications Standards Institute (ETSI) is a not-for-profit organization that has over 700 ETSI member organizations drawn from 62 countries across 5 continents. It

	produces globally applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and internet technologies and is recognized by the European Union (EU) as a European Standards Organization.
<b>Exclusive services</b>	These include Postal services of articles up to the specified reserved weight (currently 500g); issuance of postage stamps; philatelic products, pre-stamped envelopes, pre-stamped postcards, aerogrammes and international reply coupons; private letters boxes and bags; domestic and international postal and money orders; and Slogan Die publicity services.
<b>F</b>	
<b>Fixed Wireless</b>	The operation of wireless devices or systems used to connect two fixed locations with a radio or other wireless link.
<b>FOSS</b>	Free and Open Source Software (F/OSS, FOSS) Open-Source Software (FOSS) is software that is both free software and open source.
<b>Fiber Optic Cable</b>	A high capacity transmission medium that uses glass (or plastic) threads (fibers) to transmit data digitally.
<b>G</b>	
<b>Gateway</b>	This is either hardware or software that serves as a bridge between two networks so that data can be transferred between a numbers of computers.
<b>Green Communications</b>	Energy efficient information and communications technologies (ICT) that reduce total carbon emissions.
<b>GSM</b>	Global System for Mobile Communications (GSM) is a standards based network for mobile communications system operating at 900 – 1800 mhz.
<b>H</b>	
<b>Hardware</b>	The physical interconnections, systems and devices required to store and execute software programs.
<b>I</b>	
<b>ICT</b>	Information and Communications Technology is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them.
<b>ICT Enabled Services</b>	A special form of outsourcing service of non-core activities to a third party who owns and manages the process; this being driven by the need of the organization to reduce operating costs on various elements and hence increase profitability such as call centre, back office.
<b>IEEE 802.11</b>	A body of standards for implementing wireless local area network (WLAN) computer communication in the 2.4, 3.6 and 5 GHz frequency bands. They provide the framework for wireless network products using the WIFI brand.

<b>Info Structure</b>	An Info Structure is the layout of information in a manner that enables it to be navigated.
<b>Information Society</b>	A term used to describe a modern population that is conversant with — and actively using — information and communications technology. A society where the creation and exchange of information is a key social and economic activity.
<b>Infrastructure Deployment Office</b>	An office to coordinate various telecommunications and technology projects and agencies.
<b>Intellectual Property</b>	Intellectual property can be described as legal recognition and granting of exclusive rights in respect of original ideas and or creations. These include musical, technological, literary, software processes and applications and artistic works.
<b>Interconnection</b>	Refers to physical and logical linking of two separate networks so that customers of one network can reach and communicate with customers of the other network.
<b>International Data Access License (IDA)</b>	The Licensee is authorised to provide and operate International Data Access (IDA) connectivity whether one-way or two-way, point-to-point, point to multipoint for voice, data or vision or any other kind of message for reception within Nigeria or any other international destination.
<b>Internet</b>	A "network of networks" linking millions of computers worldwide for communications purposes.
<b>The Internet Protocol (IP)</b>	The main communications protocol leveraged for relaying network packets across a connected network using the internet Protocol suite.
<b>IP based retransmission</b>	A Service that allows users to retransmit terrestrial digital broadcasting using IP Multicast. IP multicast, similar to TV broadcasting, allows users to distribute content simultaneously to a group of interested receivers on the IP network.
<b>ITU – international Telecommunications Union</b>	The United Nations agency that is responsible for coordinating shared global use of spectrum, setting global telecommunications standards and also for ICT development.
<b>K</b>	
<b>Knowledge Economy</b>	The knowledge economy is a term that refers either to an economy of knowledge focused on the production and management of knowledge.
<b>L</b>	
<b>Liberalization</b>	Refers to the relaxation of Government regulation or formerly rigid or constraining degree of regulation. This creates greater freedom to market entry, providing the operators with greater flexibility to invest, alter operations and services, and fix or negotiate tariffs.
<b>License</b>	An authorization granted by a regulatory authority for the provision of ICT services or for use of the radio frequency spectrum.
<b>M</b>	
<b>MDA</b>	Ministries, Department and Agencies of the Federal Government of Nigeria.
<b>MIU's</b>	Mobile Internet Units are vehicular-based computer centers,

	equipped with Internet technology usually with the goal of bringing Computer Technology awareness and Internet access to rural populations.
<b>MMDS</b>	MMDS (Multichannel Multipoint Distribution Service) is a POINT to MULTIPPOINT broadcast service operating in the 2.0 to 2.9 GHz. Range that is capable of delivering multiple channels of analogue and digital television programming.
<b>Multiple Regulation</b>	Used to describe a situation where players in the ICT sector are subjected to various rules, and regulations for the same aspect of a service providers operation, by different tiers and agencies of Government.
<b>Multiple Taxation</b>	Used to describe a situation where players in the ICT sector are subjected to various taxes, for the same aspect of a service providers operation, by different tiers and agencies of Government.
<b>N</b>	
<b>National digital archive</b>	A National Digital Archive is an electronic collection of past national records. It contains primary source documents that have accumulated over the course of an individual or organization's lifetime, and are kept to show proof or general records.
<b>Non-exclusive postal Services</b>	These include courier services, parcel services, direct mail marketing services, postal financial services, electronic and hybrid mail, distribution of publications, and agency services.
<b>O</b>	
<b>Open data</b>	Open data promotes the notion that certain data sets should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control.
<b>Open Source Software</b>	Software for which the original program instructions, the source code, are made available so that users can access, modify, and redistribute it. This is increasingly becoming free FOSS (free and open source software and license based variants).
<b>Operator</b>	Means a person or organisation that operates ICT facilities and/or services of telecommunications, broadcasting, IT applications or postal services.
<b>Outsourcing</b>	Entrusting one or more IT integrated-type business processes to an external service provider.
<b>P</b>	
<b>Portal</b>	A Website that provides a one - stop shop to a variety of services by transferring the user to the application.
<b>Poste Restante</b>	A service where mail is held by the post office until the recipient calls for it. It is a common destination for mail for people who are visiting a particular location and have no need, or no way, of having mail delivered directly to their place of residence at that time.
<b>PPP</b>	Public private partnership is a partnership approach that sees government and the private sector bringing their assets

	together, thus sharing risk/reward in the delivery of a project, projects and/or service.
<b>Q</b>	
<b>QOS</b>	Quality of service is most commonly used to denote the measure of performance that obtains within a communications network.
<b>R</b>	
<b>Regulation</b>	Means the process of ensuring that public utilities operate in accordance with legal rules. These rules may govern the offering of service by an operator and includes practices, classification and definitions.
<b>S</b>	
<b>SABI</b>	A scheme designed by NCC to take broadband infrastructure to all the 36 state capitals of the country as well as urban and semi-urban centers.
<b>Set Top Boxes</b>	An information appliance device that generally contains a tuner and connects to a television set and an external source of signal, turning the signal into content which is then displayed on the television screen or other display device. Set-top boxes are used in cable television and satellite television systems, to transform the signal from the cable or satellite to a form that can be used by the television set or other receiver. It also enhances the quality of signal from cable or satellite.
<b>Spectrum</b>	The word spectrum refers to a collection of various types of electromagnetic radiations of different wavelengths. Spectrum or airwaves are the radio frequencies on which all communication signals travel. Radio frequencies are used for different types of services like space communication, mobile communication, broadcasting, radio navigation, mobile satellite service, aeronautical satellite services, defence communication etc. Radio frequency is a natural resource, that will deplete when used, and will be wasted if used inefficiently.
<b>Software</b>	A collection of computer programs and associated data that provides the instructions for telling a computer what to do, and how to do it in order to achieve particular outcomes.
<b>T</b>	
<b>Telecommunication</b>	Any domestic or international transmission of information by wire, radio waves, optical media or other electromagnetic systems, between or among points of user's choosing.
<b>Teledensity</b>	A means of expressing the number of telephone services per hundred persons. Tele-density is sometimes also used to express the number of telephone services per hundred households.
<b>Telemedicine</b>	Access to shared and remote /distant medical examination, diagnosis and treatment by means of telecommunications and Information and Communications Technology.
<b>U</b>	
<b>Ultra-high</b>	Designates the ITU radio frequency range of electromagnetic

<b>frequency (UHF)</b>	waves between 300 MHz and 3GHz.
<b>Universal access</b>	Service available, as far as possible, to all the people without discrimination on any basis with adequate facilities at reasonable cost.
<b>Universal Service</b>	Service available, as far as possible, to all the people without discrimination on any basis with adequate facilities at reasonable cost.
<b>Universal service obligation</b>	A legal requirement that sets specific minimum levels of attainment for service elements of a postal service (or a set of postal services) that serves substantially all persons in the Nation.
<b>Universal Service Access license</b>	UASL is a technology neutral license that enables holders to offer a variety of services including voice, data, and ISP services amongst others.
<b>Universal Service Provision Fund</b>	USPF was created by the NCA 2003 to facilitate the achievement of national policy goals for universal service and universal access to Information and Communication Technologies (ICTs) in rural, un-served and under-served areas in Nigeria.
<b>V</b>	
<b>VHF (Very high frequency)</b>	The ITU denoted radio frequency range from 30 MHz to 300 MHz. VHF is commonly used for broadcast, FM radio broadcast, television broadcast, land mobile stations (emergency, business, private use and military), long range data communication with radio modems, amateur radio, marine communications, air traffic control communications and air navigation systems.
<b>Vision 20:2020</b>	The Nigerian national vision document which lays out the country's vision of becoming one of the world's top 20 economies by the year 2020, and the steps need to achieve the vision.
<b>VSAT</b>	VSAT stands for "Very Small Aperture Terminal"; a very small satellite transmitting and receiving station can transfer data, video, and voice via satellite using different frequency bands like C, KU, and KA.
<b>W</b>	
<b>WIN</b>	Acronym for NCC's Wire Nigeria initiative to increase internet coverage within Nigeria.

