DEVELOPMENT OF A NEW NUMBERING PLAN FOR NIGERIA

Draft Final Report

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SECTION 1

1.1 INTRODUCTION

The Nigerian Communications Commission is the main body that is empowered by law to regulate the telecommunications industry in Nigeria. In addition, it also plays an active part in the regulation of the ICT industry. One of the cardinal responsibilities of a utility-oriented regulator is the management of scarce resources. For the telecom industry, numbering plan or an identity plan is an indispensable resource. This allows a subscriber or device connected to a telecom network to be identified by a unique number that is not shared by any other user or device in the network.

NCC consequently has responsibility to manage the numbering resource including making necessary changes to the numbering plan when required. Telecommunication is a fast-changing and technology-driven industry, hence the need for numbering plan to continually evolve to keep track of and adapt to these changes. Recent development in the global telecommunications industry such as M2M communications, the internet of things, over-the-top services and other service made possible by fourth-generation networks and the futuristic 5G/6G technologies have made it imperative for the numbering plan to be reviewed. Also the near total collapse of the fixed network in Nigeria calls for a review of the numbering plan in order to free up resources that are assigned to non-existent users. This numbering plan design is being embarked upon in order to address the above issues.

1.2 DEFINITION OF TERMINOLOGIES

Terminologies used in this write up have the following specific meanings unless otherwise indicated in the body of the document. Other terminologies can be assumed to have the standard meanings attached to them by the telecommunications industry.

Closed numbering plan: A system of number combinations used to identify subscribers to an electronic communications service in which all numbers have the same number of digits. This is normally complemented by a closed dialling plan in which both local and long distance calls involve dialling of the same number of digits, i.e. all the digits in a subscriber number are dialled.

Open Numbering Plan – variable number of digits are used for subscriber numbers and also for local or long-distance calls.

Domestic specific numbers: these are numbers used in a country's internal telephone network which are not accessible from international destinations; and do not conform with ITU E-164 recommendations.

Prepend: the process of adding extra digits at the beginning of an existing telephone number in order to create a new number that complies with a new numbering plan.

Append: addition of extra digits to a number to in order to make it comply with a new numbering plan.

ENUM – Electronic NUmber Mapping: A convergence of numbering, naming and addressing modes of identification on networks which enables a subscriber to use a single E-164 personal number identifier to access various electronic services such as e-mail, website, fax, SMS, IMS etc.

Golden numbers: a set of telephone numbers which are very easy to remember but few in number e.g. 080101010101, 07055555555

National Colour Code part of a base station ID code that uniquely identifies a base station in a geographic area, especially useful along international boundaries where adjacent cell sites installed by different service providers can operate in the same frequency.

Signalling Point Code: An identity given to a node in the CCSS No 7 signalling that either originates, receives or transfers signalling messages

National Numbering Plan (NNP): a plan that specifies the format and structure of the numbers used in identifying devices or subscribers connected to a network, which in turn can also be used for routing and call charging.

1.3 SCOPE OF PROJECT

The numbering plan review exercise is intended to address the items listed below, which are of strategic importance to the continued availability, adaptability and efficient management of the numbering resource.

(a) Service identification codes

(b) Operators identification codes

(c) Aggregate quantity of numbers available per citizen

(d) Dialling plan

(e) ENUM, Full length and short codes

(f) Geographic and non-geographic codes

(g) Numbering fees

(h) Qualification for number assignment of numbers

(i) Fair and equitable assignment procedure

(j) Accommodation of emerging and future services

(k) Number portability

(l) (k) Administrative issues - efficient usage, ease of management, simplified migration procedure etc

The details terms of engagement as stipulated by the Commission are as follows.

Objectives

The Primary objective of the consultancy project is to review the existing NNP with the objective of developing a new NNP that is robust, futuristic and adaptable; and that addresses the numbering needs of the country, taking into account the country's growing population.

Scope of Services

The Consultant's responsibilities shall include but not be limited to:

1. Schedule pre-consultation meetings with staff of the Technical Standards and Network Integrity (TSNI) Department of the Commission to review the terms of reference (TOR) for the consultancy;
2. Identify current limitations in the existing numbering allocation policy and mechanism and recommend a revised numbering allocation policy and mechanism consistent with the new numbering plan, which will comprise the following:
    - Efficient use of numbers
    - Fairness and equity to all applicants
    - Numbering administrative procedures devoid of bottlenecks
    - Easy to implement and manage
3. Review and evaluate existing numbering allocation database;
4. Develop feasibility study for implementation of the new NNP;
5. Develop a new NNP, Create a new numbering scheme and identify leading digits for:
    - Fixed telephony services
    - Mobile telephony services
    - Special numbering services, such as tool-free and vanity number services

6. Propose a transition plan and framework for migration from the current numbering system and/or parallel running of both new and existing numbering system;
7. Recommend a cut –over date of the existing numbering scheme;
8. Define the management machinery of national and international signaling point codes (SPC);
9. If possible, determine which order of digit (e.g. 2nd digit,3rd digit etc.) should be used to identify each network;
10. Suggest minimum and maximum or common digit length for access codes;
11. Recommend best practices mechanism for operators to manage and re-use numbers and defining the periods for quarantine;
12. Facilitate and carry out due consultation meetings with relevant stakeholders in the telecommunication industry in Nigeria as part of the process of delivering the services;
13. Carry out public enlightenment workshops in each of the geo-political zones to sensitize end users and industry stakeholders;
14. Propose best practices numbering fees management;
15. Recommend ideal procedures for conducting technical auditing of the allocated numbering resources;
16. Meet the commission's team to discuss a draft NNP document before making it available to the public;
17. Resolve any other relevant issues regarding the numbering plan;
18. Recommend the appropriate and right size of numbering block to be allocated to services, applicable numbering fees, quarantine period etc.;
19. Recommend and develop appropriate migration strategies for cutting over from the old to the new NNP;
20. Consult with relevant stakeholders and adapting methodologies that cause minimum disruptions to the network and existing NNP;
21. Provide any other services described in the Standard Bidding Document/Terms of Reference stating the scope of services issued by the Commission to the Consultant in respect of the consultancy contract (herewith attached and marked Appendix 1).
22. Prepare and submit progress reports indicated in clause 7 below to the Commission;
23. Observe, advise and submit recommendations on ways to ensure efficient performance of the contract;
24. Carry out any other activities expected to lead to the efficient and timely provision of the services stated herein and in the Consultant's Proposal approved by the Commission.

1.4 GENERAL GUIDING PRINCIPLES:

The exercise is being carried out based on the following general principles to ensure conformance to international best practices, national interests and regional multilateral obligations.

a. Conformance with International Telecommunications Union's recommendation on numbering, addressing and other identification resources. Also issues pertaining to regional bodies such as the African telecommunications Union and ECOWAS were considered.

b. Affordability and universal service obligations

c. Technology neutrality to ensure portability across networks and adaptability to emerging technologies.

d. Embedded number auditing procedures is incorporated in the recommendations so that numbering plan administration can conform to established rules and international best practices.

e. The exercise is carried out in full compliance with the National Communications Act 2003 and the Commissions Numbering Plan Regulations.

f. National objective, such as consumer protection, privacy and national security objectives have been put into consideration in the process of formulating the recommendations.

1.5 PURPOSE, AIMS AND OBJECTIVES OF THE NEW NUMBERING PLAN:

A. Purposes and Usefulness of Numbers

The assignment of numbers and names to devices or subscribers on a telecom network is critical to its proper functioning and operations. The following are the main uses of Numbers

i. Identification of telecom subscribers or devices connected to it.

ii. Differentiation of services and services providers/operators

iii. Routing of calls and messages

iv. Retail billing and costing of services

v. brand identity for commercial ventures

vi. Providing access to special operator service and value-added services.

The above issues give us an indication of the importance numbers to the network. In recognition of this, the Commission is upgrading, expanding and re-designing the numbering system in order to ensure Nigeria derives the maximum benefit from this scarce resource.

B. Main Objectives of the Exercise

- To promote efficiency in the allocation of this scarce national resource.
- To promote competition among service providers.
- To eliminate the risk of running short of all categories of numbers.
- To facilitate the introduction and development of new and innovative services.
- To encourage growth of the telecommunications sector and the attendant job creation and contribution to National Gross Domestic Product (GDP).
- To fast-track administrative procedures for processing application for numbers and their assignment.
- To develop a future-proof numbering system that can accommodate more service providers and an unlimited number of new services without the need for a disruptive change of numbering structure.
- To avoid mass migration of existing citizens' numbers and the possible public inconvenience and the potential catastrophic disruption in services and chaotic situation that can arise if 150 million numbers have to be changed in the national network.
- To provide numbers that will satisfy the needs of the projected 500 million Nigerians and about 1 Billion interconnected machines and devices by the year 2050.

C. Phasing out of Obsolete numbers

There are numbers which are assigned to services which are no more being offered as a result of technological development. Also routing of call in the old networks was based on geographical location. This was so because telephones were installed in fixed locations and connected by wires. The advent of mobile phones has therefore rendered numbering schemes based of geographical location obsolete. This exercise will enable us to withdraw and re-assign such numbers to emerging services coming up in the fast-changing telecom industry.

D. Numbers for Emerging and new Services

In the last few years, new services have emerged and need to be integrated into the telecom environment. Also people are now interested in having all their communication services conveyed by a single device. Services such as voice, data, SMS, Television programs, banking services etc are now being received via a handheld mobile phone. This convergence of services requires upgrading and adapting the numbering plan to accommodate the new habits and culture.

E. Alternative Identification Models

As an offshoot of service convergence, other unique means of identification are now being used to distinguish subscribers on a telecommunication service. Also not only human users are being connected to networks, gadgets and devices can now be recognised by networks and hence deserves their own unique means of identification. These identification models have to be accommodated in the new numbering plan for the country. These include ENUM, M-to-M, IoT, IP which are discussed in more detail in later sections.

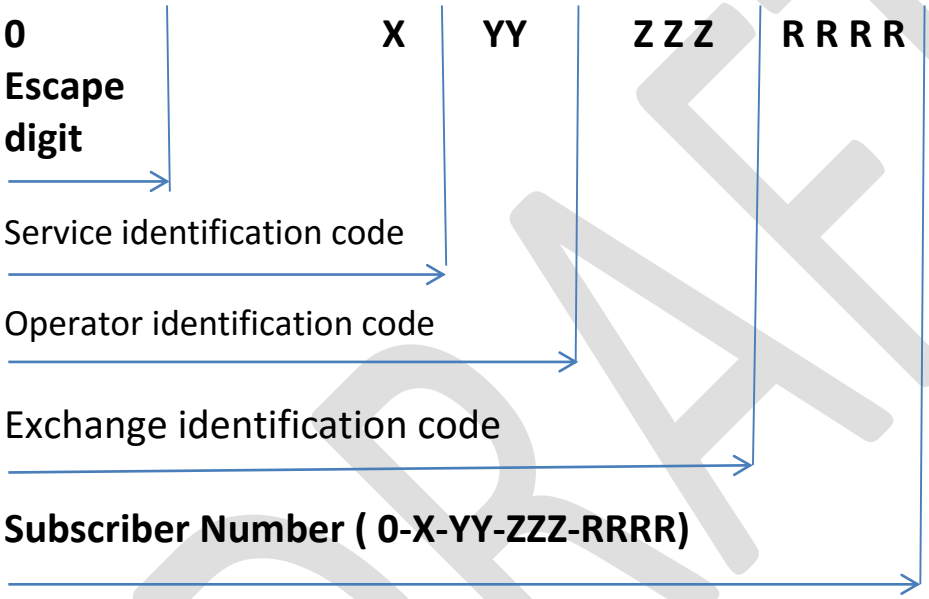
1.6 SOCIO-ECONOMUC CONSIDERATION

Change in numbering plan has social and economic implications. Many citizens have to change their telephone numbers. This can be cumbersome and may even losing contact with relative and associates. Also corporate bodies and even small holder businesses can lose contact with their customers. The Commission is very much conscious of these negative effects and hence the development of the new numbering is being done in a way to minimize disruptions of the social and economic life of Nigerians. We have ensured that 97% of Nigerians need not change their telephone numbers, in fact no mobile number will require any changes. Other metrics and issues such as population growth, disruptive technologies (IoT, OTT), Security, international conventions, financial cost associated with number changes have been put into consideration in developing this new plan.

SECTION 2

2 THE NEW NATIONAL NUMBERING PLAN

2.1 GENERAL STRUCTURE OF SUBSCRIBER NUMBERS



Number of digits assigned to each identification code varies according to the length of the telephone number, the number of exchanges in the network or number of operators/service providers in the country. Digit X or digits XYY can be assigned as area codes where a geographic numbering system is used.

2.2 DETERMINATION OF NUMBER OF DIGITS TO BE USED

The number of digits that make up a telephone number in a country must be chosen in such a way as to minimize dialling error and time spent to analyse the digits; both of which affects quality of service. More digits than necessary should therefore not be used. The major determinant of the minimum number of digits is the population of the country. Present population and projected population for the following 15 to 25 years. Also there is a maximum limit recommended by the International

Telecommunications Union in order to ensure seamless interconnection with other countries who might be calling Nigerian numbers.

A. Nigerian population projections - [up to year 2050 AD]

According to the United Nations projection, Nigeria is expected to have a population of 391 million by the year 2050. Present population is estimated at 191 million. Compared with the population in year 2000 (123 Million), the annual growth rate is 3.2%. (3.2 per cent)

Mathematical Modelling of Nigeria's Population Projection for year 2050. Mathematicians have, in collaboration with biologist, been able to develop a mathematical model that can be used to predict the population of a country or any animal colony over a period of time.
This exponential growth model can be represented by the following equation:
$P(t) = Po\ e^{rt}$

Where
P_t = population at 't' years after the initial population is known
P_o = initial known population at the year of reference
r = population growth rate
t = future time in years at which projected population is desired
e = Euler's constant (2.7)

Using Nigeria's population in 2000 (last census) as a reference point and assuming Nigeria's population growth rate is 3.2% p.a., Nigeria's population at year 2050 can be calculated using the above formula

$$P_{2050} = 123e^{50*0.03} \text{ million}$$
$$= 123 \times 2.7^{1.5} \text{ million}$$
$$= 123 \times 4.43 \text{ million}$$
$$= 545 \text{ million}$$

B. MATHEMATICAL BASIS FOR DETERMINING NUMBER OF DIGITS TO BE USED FOR SUBSCRIBER NUMBERS

Principle number 1: Permutation and Combination – The number of ways of choosing 'r' objects out of 'n' available options is given by the following expression:

Number of combinations = $^{n}C_r = \frac{n!}{(n-r)!r!}$

Since there are 10 possible numbers that can be chosen for each digit of a telephone number, by the above formula, number of options for n=10 and r= 1 is

$$N = \frac{10!}{(10-1)!\ 1!}$$

$$= \frac{10 \times 9!}{9!}$$

$$= 10$$

Consequently, each digit of a telephone number has 10 possible options.

Principle Number 2:
Counting Principle states that if there are 'M' ways (or options) an event A can occur and there 'N' ways (or options) another event B can occur, then the total number of ways (options) both A and B can occur is NxM.

We can apply this principle further in deciding the number of options available for a telephone number with a given number of digits.

Consequently, if we have an n-digit telephone number and each digit has 10 possible options, then the total number of ways we can select 'n' digits is
10 x 10 x10 x10 ……. in 'n' places which is equal to 10 to the power of 'n'.
10 x10 x10 ……in 'n' places = 10^n

By inference, an n-digit numbering plan will give us a total of 10^n unique telephone numbers which can be assigned to 10^n citizens.

Consequently, the minimum or optimum number of digits required for the telephone numbering plan of any country with a population P millions can be obtained by solving for 'n' in the following inequality equation:

$10^n \geq P$ where 'P' is the population in millions

The equation can be solved by finding the log of both sides

i.e. $\text{Log}_{10}10^n \geq \text{Log } P$

For Nigeria, the expected population in 2050 is about 400 million, therefore minimum number of digit required for our numbering plan is

$\text{Log}_{10}\ 10^n \geq \text{Log } 400 \text{ million} \geq \text{Log } (400 \text{x } 10^6)$

$n \geq \text{Log}\ (4x\ 10^8) \geq \text{Log}\ 4 + \text{Log}\ 10^8 \geq 8 + \text{Log}_{10}\ 4$

$n = 8 + 0.6$

since we cannot have fractional telephone numbers, 9 is the nearest whole number that will satisfy the inequality equation. Consequently, the present 10-digit telephone numbers we use in Nigeria will satisfy our population requirement in the next 30 years, up to 2050 and even beyond. This is assuming we have a separate numbering scheme for machine to machine interactions or IoT, may be by using IP addressing or a separate 12-digit E-164 numbering scheme for machine communications only.

C. QUANTITATIVE ANALYSIS OF THE NATIONAL SIGNIFICANT NUMBER

The present numbering plan adopted by Nigeria will provide us with enough codes and numbers for assignment to the following categories of stakeholders in the telecommunication industry:

(a) 6 Billion mobile subscribers (with room for expansion)
(b) 1 Billion fixed subscribers (Expandable)
(c) 1 Billion connected devices (expandable and not including devices identified by electronic addresses – IP v6)
(d) 8 different services
(e) 100 different operators/ service providers

2.3 ITU E-164 GUIDELINES AND RECOMMENDATIONS ON NUMBERING PLAN

The new numbering plan is designed to conform with the following ITU recommendations on numbering to ensure that our telecommunication signaling protocol interfaces seamlessly with the international community.

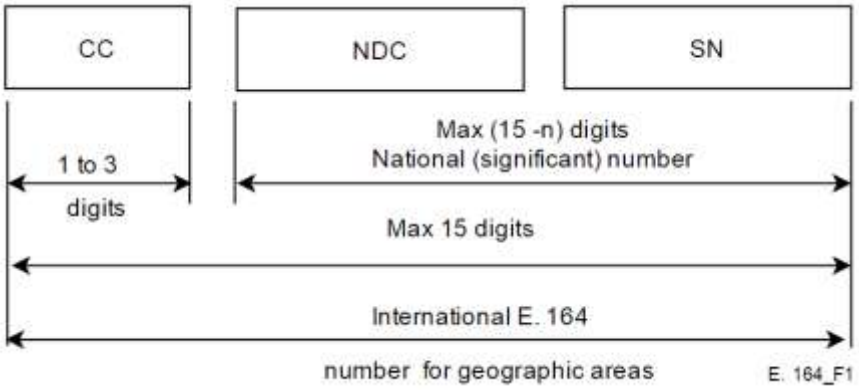


Fig.6.1 E.164 – International E.164 number structure for geographic areas

LEGEND:

CC Country Code for geographic area

NDC National Destination Code

SN Subscriber Number

n Number of digits in the country code

NOTE – National and international prefixes are not part of the international E.164 – number for geographic areas.

The International E.164 – number for global services

The International E. 164 – number for global services is composed of decimal digits that vary depending on the specific services. The international services number code fields are the 3 digits country code for global services and the global subscriber number (GSM). Fig. 6.2 shows the international E.164 – number structure for global services. The use of this format is service specific and is dependent on the numbering requirements as detailed in the appropriate recommendation, e.g., ITU –T Rec.E.169 – Application of Recommendation E.164 numbering plan for universal international free phone numbers for international free phone service.

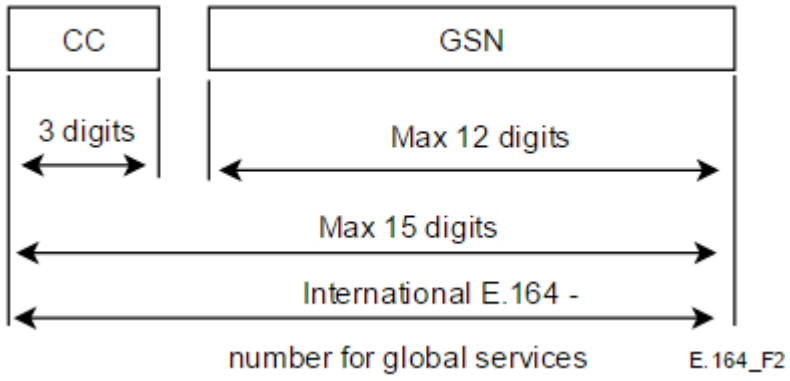


Fig. 6.2: E.164 – International E.164-number structure for global services

LEGEND

CC Country Code for global services

GSN Global Subscriber Number

Note –National and international prefixes are not part of the international E.164-number for global services.

The international E.164-number for networks

The international E.164-number for Networks (Fig. 6.3) is composed of decimal digits arranged in three code fields. The code fields are the three-digit Country Code (CC) for Networks field, the IC field, which varies in length from one to four digits, and the Subscriber Number (SN), which can be up to 15 minus the number of digits in the CC IC fields

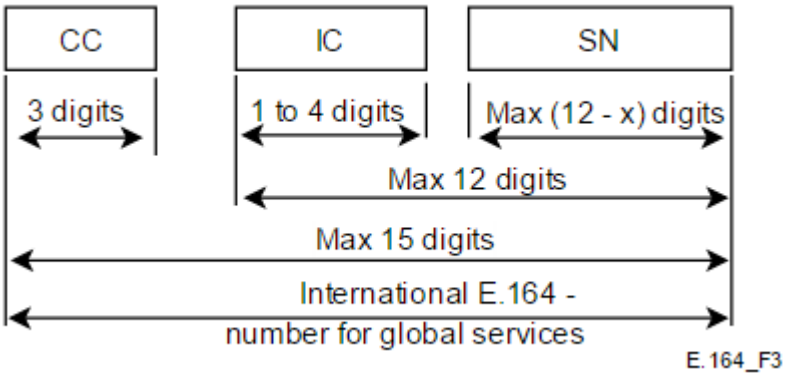


Fig. 6.2: E.164 – International E.164-number structure for global service

LEGEND
CC Country Code for global services
IC Identification Code
SN Subscriber Number
X Number of digits in Identification Code

Note –National and international prefixes are not part of the international E.164-number for global services.

2.4 PREFIX ALLOCATION PLAN (LEAD DIGIT / ESCAPE CODE)

‘0’.

National trunk prefix (for Inter-operator routing)

All numbers that will be used to identify devices, terminals and machines connected to the national telecom network will start with digit “0”. This will be followed by the national Significant Number.

These numbers will be based on and will comply with ITU recommendation E – 164 referenced in paragraph 2.3 above. The lead number ‘0’ identifies calls that can be routed from one operator network to another. Consequently, all numbers to be assigned for mobile service, fixed service and M-to-M service that will be routed across all national

networks must start with prefix '0'. This lead digit will then be followed by service code and operator code.
[0] + [single digit service code] + [two-digit operator code]

'00'.

International

This will be escape code for identifying calls that are meant for or to be routed into other networks outside the Federal Republic of Nigeria. i.e. International calls. Lead number '00' identify calls that can be routed to other national network outside the Federal Republic of Nigeria.

2.5 INTERNATIONAL ACCESS CODE

A. Phasing out of '009' as Nigeria's International Access Code:

Presently '009' is used as the international access code in Nigeria.
This will be replaced with '00' with effect from the date of coming to effect of this new numbering plan guidelines. This is to ensure that Nigeria's code complies with international practices and ITU recommendation E-164 on numbers. Also the use of PLUS (+) symbol as a replacement for both '00' and '009' will be acceptable by network operators as practised internationally.

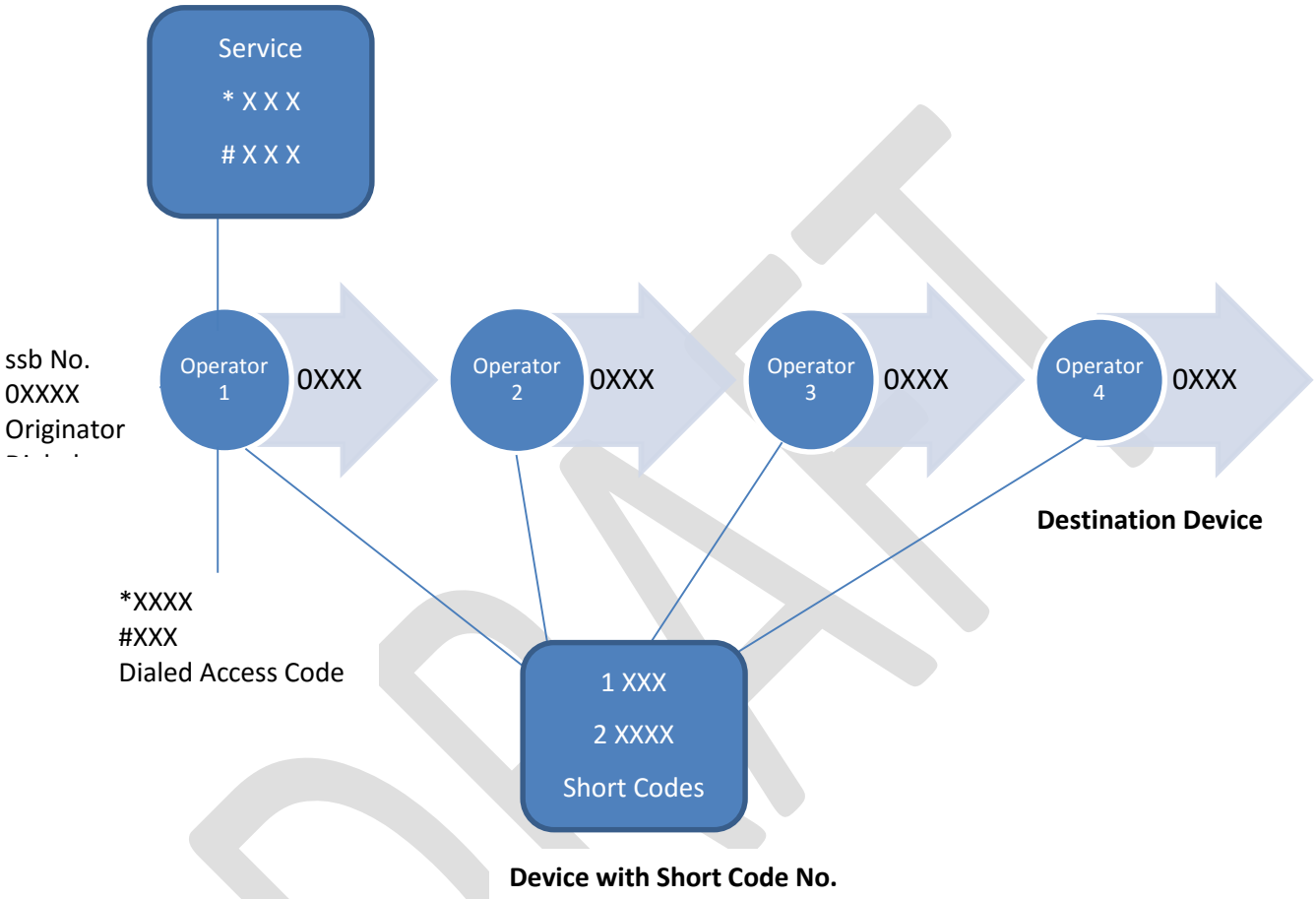
2.6 NON-ZERO LEAD DIGITS ALLOCATION PLAN

(INTRA-NETWORK CALLS)

All numbers starting with other digits rather than '0' Zero, will be used to identify special services that are Internal to specific operator networks, and cannot be routed across networks.

These numbers do not contain service identification codes, nor network identification codes, hence cannot be routed beyond the network on which they are dialled. Devices or machines that are identified by such numbers must have direct links to each operator networks to enable direct connection.

DIAGRAM ILLUSTRATING INTRA-NETWORK and INTER-NETWORK LEAD DIGITS



Non – Zero Lead Digits

'1' Numbers with lead digits 1 will be used to identify services accessed by short codes and offered free of charge. They have 3 digit closed numbers, e.g. 112- emergency Number.

'2' Short Codes:
5 Digit closed Numbers used in accessing value Added Services normally hosted on severs and accessed by SMS, DTMF or e-mail

3. - Reserved for future use

4. - " " "

5. - " " "

6. - " " "

7. - " " "

8. - " " "

9. - Reserved for future use

* VERTICAL SERVICE CODES

\# VERTICAL SERVICE CODES

These are USSD codes used for accessing operator-specific customer services, supplementary services, applications or for identifying features provided by the operator exchange such as call forwarding, group hunting, conference calls etc.

'+ '(Plus sign)

By ITU convention, this can be dialled in place of country code for International calls.

All other symbols or unassigned digits will not be processed by the exchanges/operator switches, if they are dialled as lead digits.

2.7 NATIONAL SIGNIFICANT NUMBER PLAN

A national significant number consists of string of digits following lead digit Zero which can be used to identity a device connected to an operator and which can be accessed from any other operator network within the Federal Republic of Nigeria.

The number has the following format:

"0" – x – y y – z z z z z z z

Where '0' = National Network Code (Assigned by the regulator)
'X' = Service identification Code (assigned by the regulator)
'YY' = Operator Code (assigned by the regulator)
'ZZZZZZZ' = Exchange Code + group subscriber No. (assigned by the operator

" X " is the service identification Code and is used to identify the type of service the device is connected to, or it subscribes to.

A. SERVICE IDENTIFICATION CODES ASSIGNMENT

Service Code X	TYPE OF SERVICE
(0) 0	Not assignable
(0) 1	Reserved ()
(0) 2	Fixed services
(0) 3	Reserved
(0) 4	IoT/ Machine-to-Machine communication
(0) 5	Reserved
(0) 6	Reserved
(0) 7	Mobile Service
(0) 8	Mobile Service
(0) 9	Mobile Service

B. OPERATOR CODES ASSIGNMENT

The next set of two digits immediately following the service identification code is the operator code (YY)

For example the first generation of mobile operators were assigned numbers designed to differentiate one network provider from another as follows:

0	8	02	Econet/ Airtel
		03	MTN
Trunk	mobile	04	Nitel/ ntel
Prefix	service	05	Glo
	Code	09	9Mobile (Etisalat)

The two digit number assigned as operator codes can enable Nigeria to give unique codes to 100 different operators, or 10 different operators if each operator is given a maximum of 10 two-digit codes, which corresponds to 100 million subscribers each, for every service code. The last 7 digits of the 10-digit subscriber number is common to all the service providers and it is their responsibility to assign it to end users.

C. Exchange code and group subscriber number

The last seven digits after the operator code is common to all operators and it is a combination of exchange code and the subscriber number connected to the same exchange as assigned in legacy fixed line services. Modern switches however have a more flexible allocation procedure.

The last seven digits are left to the operator to assign to its switches and subscriber groups. It allows them to identify as many as 10 million unique subscribers, with 10 million unique numbers. The regulator is not involved in the assignment of these digits.

2.8 Network/ Routing codes

2.8.1 National Signalling Point Codes

National Signaling Point Codes (NSPCs) are 14-bits binary codes used to establish direct SS7 signalling links and interconnection with local networks. The following structure is recommended for the use of the 14-bits in the Signaling Point Code for the exchanges in the national networks:

N M L K	J I H G F E D C B A
Operator Identification Codes (4 bits)	Signalling Point Identification (10 bits)
National Signalling Point Codes (14 bits) Bits)	

Table 5.5: National Signalling Point Code (NSPC) format

2.8.2 Operator Identification Code

The 4-bit sub-field 'NMLK 'shall define the network (operator) in which the exchange is located.

2.8.3 Signalling Point Identification

The first sub-field to be transmitted ('JIHGFEDCBA') shall define the exchange, i.e. the Signalling Point within a geographical area defined in the sub-field 'JIH'.

2.8.4 International Signalling Point Codes

ITU-T has specified in the Recommendation Q, 708 the following 14-bit binary format for the identification of the International Signalling Point Codes (ISPC) to be used in the international SS7 Signalling links:

N M L	K J I H G F E 1^0	C IB IA
Operator	Areal Network Codes (8 bits)	Signalling Point

Identification Codes (3 bits)		Identification (3 bits)
Signalling Area Network Code (SANC)		
International Signalling Point Codes (14 bits)		

Table 5.6: International Signalling Point Code (IS PC) format

2.8.5 Operator Identification Codes

The 3-bit sub-field 'NML' defines the world geographical zone where the network is located in.

2.8.6 Areal Network Codes

The 8-bit sub-field 'KJIHGFEO' identifies the geographical area or network within a Specific world zone.

2.8.7 Signalling Point Identification

The 3-bit sub-field 'CBA' identifies the Signalling point (international exchange) within a specific geographical area or network.
The combination of sub-fields 'NML-KJIHGFED' is defined as a Signalling Area /Network Code (SANC). Each country shall be assigned at least one SANC code.

The allocation of the codes in the first sub-field 'CBA' in this 3-8-3 bit structure is left for the Authority with the responsibility to notify the ITU- T Secretariat on the codes used. The 3-bit structure of the 'CBA' sub-field allows 8 International Signalling Point Codes to be used for each SANC code.

2.8.8 Signalling point operator responsibilities

The major responsibilities of the operator relating to SPC are listed below, It is noted that the additional terms and conditions are also applicable as prescribed by the Authority.

- The signalling point operator should inform the Commission of any change of information
- The signalling point operator should inform the Commission about any changes such as its name, its registered office, the name of its contact person or the location where the signalling point is in operation, etc.
- NSPC assigned to the signalling point operator is not allowed to be handed-over or sold or traded to other operators, signalling point operators or other part.

2.9 SERVICE-SPECIFIC NUMBERING SCHEMES

2.9.1 MOBILE SERVICES

The present numbering plan and specific assignment being utilized by the mobile service will be maintained in the newly developed numbering plan for the nation. There will be no need for any changes in number length, operator codes or service codes. Consequently there is no need for any migration plan for all numbers being issued by the mobile operators to their subscribers.

2.9.2 FIXED SERVICES

A new service identification code (0)2 is recommended for assignment to fixed services in replacement of various digits assigned as area codes in the present geographic numbering system. This is mainly to differentiate fixed services from mobile services for billing purposes since fixed services have different termination rates.

Also, fixed services billing is dependent on the distance from the originating caller to the terminating (receiver) equipment.

Where the rate is not distance dependent, then area codes are used only for routing purposes.

Presently, the Nigerian fixed network uses a geographic numbering scheme where different geographical zones are represented by area codes.
The fixed network number also consists of 8 digits including subscriber number and area code.

In order to keep to our closed numbering scheme recommended above, all fixed subscriber numbers will be migrated to a 10-digit number like the mobile counterpart.

A. REASONS FOR ELIMINATING GEOGRAPHIC CODES

i. Fixed lines represent only 0.13% of the total telephone subscription in Nigeria, and it is still declining. This is even based on 2014 data on NCC website.

ii. It is a big waste of scarce resources to reserve, numbers for services that are not being used by the public.

iii. The digits reserved for area codes are preventing the use of certain digits for mobile numbers since the two services have to be fully differentiated.

iv. The elimination of area codes will free up over 1 Billion subscriber numbers which can be assigned to mobile telephone number and machine – to – machine (M2M) communications.

E.g. Because fixed lines in Abuja are assigned ‘09’ as area codes, the following codes, 092, 093, 094, 095, 096, 097, 098 099 cannot be used as starting digits for mobile service until geographic numbering system is passed out. These area codes are tying down a total of 80 Million directory numbers.

The same goes for 01, 02, 03 (IBADAN) 05 (Benin) 06 (Kaduna), 08 (Enugu) area codes.

v. Adoption of fixed-length, 10-digit closed numbering plan will enable a single lead digit '2' assigned to fixed services to cater for 1 Billion fixed numbers instead of a maximum of 1 million directory number options possible with the present 6-digit numbering scheme.
vi. The new generation networks deploy mesh network architecture and IP-centric transport layer protocols which makes geographic numbering schemes obsolete.
vii. Most networks today have in-built mobility management functionalities and hence geographic location is not a constraint to call routing.

Based on the above reasons, area codes/geographical numbering system is here by phased out in Nigeria and replaced with a 10-digit numbering scheme.

B. NEW FIXED NUMBERING STRUCTURE

(a) Geographical codes will be replaced with a new 3-digit operator code
(b) The previous 3-digit operator code assigned by NCC will now form part of the 7-digit subscriber number under the new structure.
(c) All fixed numbers will now start with digit 6 which will form part of the operator code
(d) All fixed numbers will hence forth be 10 digits just like the mobile service numbers.

Symbolic illustration:

0 – 2-YY - XXXXXXX

YY corresponds to operator code
XXXXXXX corresponds to subscriber number

Regulatory implication: NCC will assign new operator codes to all fixed line operators to replace old codes. Also, the old codes will not be withdrawn, they will be added to the subscriber numbers.

C. MIGRATION OF PRESENT FIXED NUMBERS TO NEW FIXED NUMBERS

The present 7-digit numbers can be converted to new numbers by replacing the area codes (1 or 2 digits) with a new 3-digit operator code to be assigned by NCC.

Example: The present NCC's fixed switchboard number assigned by VGC/MTN will be converted as follows.

Present number 0 – 9 - 4617000
New number 0 – 203 – 4617000

Assuming MTN is assigned the operator code '203' for their fixed network.

Recommended fixed operator codes under the new numbering plan:

21st Century Technologies	201
IPNX	202
MTN -fixed service	203
Ntel (NETCOM)	204
Glo Fixed	205
Spectranet	206
Swift networks	207

The last seven (7) digits which corresponds to subscriber number is fully at the discretion of the operator and it can select any number combination from 0000000 to 9999999. The code '200' will be reserved for Vanity numbers or toll free numbering if the need arises in future hence it should not be assigned as a fixed operator code..

2.9.3 NUMBERING STRUCTURE FOR NEW GENERATION NETWORKS AND NEW SERVICES

A. NUMBERING PLAN FOR MACHINE – TO- MACHINE (M2M) COMMUNICATION/IOT

Communications technology is fast– changing and it is being applied to more and more modes of communication among people and even inanimate objects. The advent of smart technologies means that machines are now being built with high-level of automatic capabilities. The advent of machines and objects with embedded Artificial Intelligence enables them to mimic human intelligence, including ability to think or take decisions.

These machines which hitherto had been limited to industrial use such as factory automations are beginning to find their way into homes and non-factory environments. This is taking the world into the era of smart homes, smart cities etc.

It is envisaged that in the next 10 to 15 years, this technology would have become pervasive and of wide use in Nigeria. It is therefore necessary for us to be proactive and ensure that provision is made for it in the new National numbering plan.

B. MODES OF MACHINE – TO – MACHINE COMMUNICATION AND INTERNET 2 THINGS (IOT)

Most machine-to-machine communication will involve automated systems which will dial numbers automatically without the assistance of human beings or people.

There are 3 major modes:

1. M - 2- M:

In this mode, two automated machines communicate with one another without the interference of humans. Numbers are automatically dialled, information is exchanged and calls are initiated or terminated entirely without any human intervention or assistance. Examples include smart electricity meters, medical equipment measuring a patient's vital statistics, banking server sending customer account information to the message server. Most of these will take place either over a local area network (LAN) or over the internet. Since dialling is done automatically numbering used for identification need not be comprehensible by humans.

It is recommended that such communications will involve using domain names or IP addressing to identify connected devices. The use of IP Addressing is recommended for these modes of m-2-m exchange of information.

The commission will arrange for the identification, selection and allocation of IPV6 addresses to operators for use in m-2-m communication networks in conjunction with AFRINIC and the NIG. and Internet Registries at both national and regional levels.

Since the address requirement can go into billions within a few years, directory numbers will not be assigned to such m-2-m connections.

2. Machine - To – Human:

This mode of M – 2 – M communication, the communication is initiated by the machine, and involved a unidirectional transfer of information from machine to a device which has an interface capable of being detected by human beings, either audible or visual, or tactile. Examples include a car that announces how far the petrol in the tank can take it or give an alarm if temperature is going beyond limit.

Such machines are never called by human beings, hence there is no need to design identification numbers which can be understood or dialled by persons.

Consequently, the use of IP addressing for both the call originating machine and the device that display information detectable by human senses.

IP addressing will be assigned to remote devices in such modes of communication.

Example include message severs in Banking which sends SMS alert to GSM phones when there is a transaction on their account.

3. Human – to – machine communications:

These are communication modes in which a human being initiates a call to an automatic device capable of accepting, interpreting and responding to a message from a device control by humans. The caller must dial numbers that are user – friendly and easily dialled by humans.

Although the number can also be dialled by an application which is hosted in a mobile phone or other terminal devices with humanly triggered input methods, such as Icon or menu – driven applications.

The remote machine can also be connected to internet permanently, in which case it can be given an IP address, and communications initiated via an application.

Where the remote machine is connected to a mobile or telephone network, the device must be given a directory number capable of being easily dialled by users, e.g. by text message.

Directory numbers are recommended for such modes of human – to – machine communications.

For this purpose, the service identification number '4' next to escape digit 0, (i.e. 04) is hereby recommended for assignment to human – to - machine communication.

The numbering structure has the following format:

0 - 4 – YY – X X X X X X X X X
4 is the service identification code
YY is the operator code
XXXXXXX XX is the machine number

A 14 digit numbering plan is hereby recommended for M – 2 – M communications in order to avoid early exhaustion of numbers. As said in previous paragraph these could run into billions of interconnected devices over a few years from now.
Operators may not be allowed to use subscriber telephone numbers for M2M communications on their networks to avoid a mix up. The termination rate for telephony/ SMS or data calls may not be the same as those for machine communications hence there is a need to separately identify them.

C. NUMBERING FORMAT FOR M – 2 – M & IoT

i. Pure machine – to – machine communications in which human assistance is not required will deploy IP address for identification and for call routing purpose. However, private m – 2 – m communication networks not connected to the national network a free to use any internal numbering scheme they desire.

ii. Machine - to – human, unidirectional communication will deploy IP Addressing for the originating machines. The terminal equipment providing the human interface will be assigned a normal national number. Such mode of m – 2 – m communications can be implemented using the internet, intranet or PSTN.

iii. Bidirectional or unidirectional Human to – machine mode deployed on a normal mobile or fixed network platform will be assigned a PSTN device numbers for both originating machine and terminating human interface device.

The numbering format for this mode of m – 2 – m communication will be identified using the following numbering format.

0 Z	YY	X X X X X X X X X X X
Service Code (4)	Operator Code	Machine or device number

The remote machine will be assigned a 14 – digit number consisting of 1 digit for service identification, 2 digits for operator (code) identification and 11 digits for the machine number.

The receiving human interface device will be assigned a ten-digit National number (E – 164).
The whole concept of IoT and machine-to-machine communication is still in its formative stage and world-wide standards and operational procedures have not been finalized or harmonized. The Commission will keep a close watch on the concept and come out with updated numbering and standard regulations as the technology evolves.

D. INTRA-COMPANY OR INTRA – ESTABLISHMENT

Mode of M – 2 – M COMMUNICATION

Where the machines communicating with each other belong to an organization or private company no matter the mode of m – 2 – m communication, a directory number or public IP address assignment is not required. Consequently, private communications networks will not be eligible for either public IP or directory numbers assignment, from the National Numbering Plan.

Such can only be assigned when there is communication from one organization to the other.

2.9.4 ENUM - CONVERGED IDENTIFICATION SCHEME

The emergence of new generation networks has made it mandatory for the telecom industry to find innovative ways of seamlessly transiting from one technology platform to another, such as from circuit-switched to Internet protocol. While there had been much progress made in converging the data format and transmission protocols of old and new technologies, separate identifiers are still been used for each generation of technologies. These include the following:

- E-164 telephone numbers used as identifiers in legacy telecommunication networks using SS7 signalling
- Website address and e-mail addresses used identifiers on the internet
- Instant message identifiers
- Voice over IP –sip:guy@201.25.54.36 / sip:guy@company.ng.com or H323 protocol

Presently, connection between these technologies is via interphase protocol converters which are variously named gatekeepers, media gateways,
Unified messaging concept seeks to achieve the capability to re-direct calls from fixed line to mobile number, e-mail address, voice mail system, web pages or even GPS co=ordinates.

ENUM is an initiative to converge all the different numbering, naming and addressing mode into one in such a way that a telephone number can be translated into any other network identifiers with little or no interference from the subscriber.

GSM Association is proposing the use of IP exchange (IPX) for interconnection and exchange of IP communication through the use of Carrier ENUM, distributed databases using the E-i64 number plan. It is envisaged that with time a telephone number will become a personal identifier which will not be associated with any service or operator. It will then be possible to assign telephone numbers directly to end users. This enables the called user to tailor the manner in which they are contacted through a single number. Contact information can also be easily amended, added to, or updated without changing the number used for access.

When using ENUM in the specific implementation proposed above, E.164 numbers are inserted within a single, carefully defined and structured domain of the DNS system. In a purely IP environment, ENUM will allow end users to use their E.164 number as a commonly used ENUM domain name for a variety of applications. It does not change the E.164 numbering plan in any way. This initiative can also facilitate both-way interworking between the circuit-switched networks and new generation IP-based networks.

Although use of ENUM is not required for IP-to-TDM interworking, ENUM records can be established for E.164 numbers without IP connectivity. A call from an IP-based terminal to the SCN will proceed as follows. The Nigerian IP-based terminal related to the E.164 number (+234 513 496 0000) formats the called American user's E.164 number (+ 1 90S 555 1234) into an ENUM domain name (4.3.2.1.5.5.5.S.0.9'.1.e164.TLD) and forwards this to the DNS. This returns the URI (Tel: + 1 90S 555 1234), which initiates the call set-up to the gatekeeper using the 'tel' URI. The gatekeeper then routes the call to the responsible gateway. The call is then routed through that gateway and delivered via the SCN.

An SCN-based user (E.164 number: + 1 90S 555 1234) can contact a customer on an IP-based network through the use of the called user's E.164 number (+234 513 496 0000). When the SCN-initiated call reaches an ENUM enabled gatekeeper, it formats the number into the ENUM domain name 0.0.0.0.6.9.4.3.1.1.4.4.e164.TLD and the DNS returns the URI related to the required H.323

user (h323:user@gk.foo). Another look-up in the Back-End service is then required to look up the IP address for the subscriber's terminal. The call can then be completed to the H.323 client (terminal) related to the E.164 number (+234 513 496 0000). In the H.323 environment, a gatekeeper is the controlling element within a specific H.323 environment and it controls a number of gateways in this H.323 domain.

The security and privacy issues are probably the most important aspects of ENUM to end users. In addition, ENUM relies on applications and services. Application software must become ENUM-enabled for users to be able to access the capability. In some cases, software (e.g., e-mail programs) must be changed to use the ENUM capability when an end user supplies an E.164 number to be translated into the appropriate URI (e.g., mailto:user@host) for the application. In other cases, service providers will need to update software or add new equipment (e.g. IP gateways) to access the DNS for ENUM. Market forces may influence the speed and penetration of such changes within the industry.

Equipment upgrade by network providers, security and privacy issues are some of the factors that will determine how quickly the international community adopts the ENUM numbering scheme. The Commission will keep a close eye on changes ant its introduction and adoption at national level will be guided by the associated developments.

2.10 SPECIAL NUMBERING SCHEMES

2.10.1 VANITY NUMBERS (0700)

Vanity numbers allow corporate bodies to brand their telecom numbers using alphanumeric identities which bear resemblance of their corporate names. This makes it easier for customers to remember.
The prefix ‘0700’ has been allocated by NCC for VANITY numbers. Presently the Commission has licensed multiple service providers to issue out vanity numbers. Issuance of numbers is co-ordinated by NCC to avoid duplication by the various service providers.

2.10.2 TOLL-FREE NUMBERS (0800)

The same arguments that are presented above for the 0700 vanity numbers are applicable to the 0800 numbers.

To make provision for likely future requirements for unique codes for special numbering schemes, the following codes should be reserved for future special numbering schemes.

0400	0500	0600	0700	0800	0900
0440	0550	0660	0770	0880	0990

0444 0555 0666 0777 0888 0999

Consequently, the above numbers should not be assigned to operator as OPERATORS CODES in the mobile or fixed services.

The commission will keep an eye on the following numbering types with the aim of developing necessary frame work for their assignment whenever there are demands for them

(a) Toll free numbers (National and International)
(b) Vanity Numbers
(c) Premium numbers
(d) Golden numbers
(e) Shared-Cost numbers
(f) Personal numbers

2.11 NIGERIAN COMMON SHORT CODES PLAN

Table 2.11a

SHORT CODE RANGE	Total No of unique codes	APPLICATION OR SERVICE	Comments Or Status
100	1		
101	1		
10200 - 102XX	100	Help lines	Assignable
10300 - 103XX	100	Help lines	Assignable
104		SPARE	
105		SPARE	
106		SPARE	
107		SPARE	
108		SPARE	
109		SPARE	

Table 2.11b - SECURITY SERVICES CODES

SHORT CODE RANGE	Total No of unique codes	APPLICATION /SERVICE	Comments or Status
110			
111		NOT ASSIGNABLE	Unusable
112	1	NATIONAL EMMERGENCY NUMBER Emergency Communication center contact number for all emergencies (fire, Ambulance, police, FRSC, NEMA e.t.c	Assigned
11300 - 113XX	100	Private ambulance services including parastatals e.g. NNPC, Julius Berger	Assignable
11400 - 114XX	100	Private fire services	,,
11500 - 115XX	100	Nigerian Red Cross/ Red Crescent/SEMA	,,
116		SPARE	Retained
117		SPARE	,,
118		SPARE	,,
119		SPARE	,,

676 Special temporary allocation to Lagos State RRS emergency services

Table 2.11c - INFORMATION SERVICE CODES

SHORT CODE RANGE	Total no of unique codes	APPLICATION OR SERVICE	Comment or Status
120	1	Network – specific directory information for customers of a network provider	Dialling format *120# Applicable to all operators
121	1		Unassigned
12200 - 122XX	1	International and multilateral organizations (UNO, AU, ECOWAS etc)	Assignable
123	1	Federal government information services	Assignable
12400 - 124XX	100	State governments information services	Assignable
12500 - 125XX	100	Information services from parastatal and MDA's e.g. NAFDAC fake drug detection	Assignable
126		SPARE	Retained
127		SPARE	,,
128		SPARE	,,
129		SPARE	,,

Table 2.17d - CUSTOMER SERVICES

SHORT CODE RANGE	1	APPLICATION OR SERVICE	Comment or status
130	1	Customer Care	Dialling Format *130#
131	1	SPARE	
132	1	SPARE	
133	1	Credit balance	Dial format *133# should give balances in all accounts(Voice, Data & VAS)
134		Recharge (voice accounts)	Dialling format *134* PIN #
135		Recharge (Data accounts)	,, *135* PIN #
136		Recharge(VAS accounts)	,, *136* PIN #
137		SPARE	Assignable in future
138		SPARE	,,
139		SPARE	,,

140 to 149 is reserved for future services

150 Voice mail activation 151 Voice mail retrieval

15100 to 151XX operator-specific USSD codes or internal supervisory and test signal codes

159 Number porting

160 - 169 Spare

170 - 179 ,,

180 - 189 ,,

191 - 199 ,,

NOTES:

(a) All short codes starting with figure '1' (ONE) are toll free. Services rendered should be at no cost to the subscriber.

(b) Allocation of codes starting with 1(one) will be directly administered by NCC

(c) Operators are barred from assigning USSD codes starting with number '1' (one) e.g. *197#

(d) Operators should make it possible for the subscribers to move credit from one of his prepaid account to the other e.g. from VAS account to voice account. However only the account owner should be able to effect such changes.

5 - DIGIT COMMON SHORT CODES

Table 2.11e - BANKING, MOBILE MONEY AND FINANCIAL SERVICES

Short code range	Number of unique codes	Application/ services	Comments or status
20000-20XXX		Spare	
21000-21XXX	1000	Cashless Economy – donations, charities, launching,	
22000-22XXX	1000	Spare	
23000-23XXX	,,	Mobile Banking	
24000-24XXX	,,	Spare	
25000-25XXX	,,	Mobile/ on-line payments	
26000-26XXX	,,	Spare	
27000-27XXX	,,	e-Commerce	
28000-28XXX	,,	e-Commerce	
29000-29XXX	,,	Spare	

Table 2.17f - ADVERTISING AND ENTERTAINMENT

Short code range	Number of unique codes	APPLICATION/ SERVICES	Comment or Status
30000-30XXX	1000	Spare	
31000 – 31XXX	,,	Mobile entertainment – games, music, video, joke, sports e.t.c.	
32000 – 32XXX	,,	Spare	
33000 – 33XXX	,,	Spare	
34000 – 34XXX	,,	Advertisements – telemarketing, coupons, product information,	
35000 – 35XXX	,,	Spare	

36000 – 36XXX	,,	Promotions, e-voting, polls and surveys, text-to-win, quizzes	3 months leases only
37000 – 37XXX	,,	Spare	
38000 – 38XXX	,,	Spare	
39000 – 39XXX	,,	Spare	

40000 – 49999 Spare

Table 2.17g -Commercial Information Services

Short code range	No of Unique codes	Application and services	Comments
50000- 50XXX	1000	Spare	
51000 -51XXX	1000	News, newspaper, breaking news, sport alerts e.t.c.	
52000 – 52XXX	1000	Yellow pages	
53000 – 53XXX	,,	Spare	
54000 – 54XXX	,,	Directory services	
55000 – 55XXX	,,	Database access, content	
56000 - 56XXX	,,	Spare	
57000 – 57XXX	,,	GIS/ Location-based services	
58000 – 58XXX	,,	Spare	
59000 - 59XXX	1000	Spare	

Table 2.17h - LOTTERIES and GAMBLING

665XX	1000	Federal/ state lotteries	3 month leases-renewable
666XX	100	Private/commercial lotteries, gambling, e-casino	
61000 - 6XXXX		Other future services	

7XXXX Spare

8XXXX Spare/ international short codes

9XXXX (not assignable)

900000000000 – 999999999999 Reserved for full length premium numbers

Old and new recharge codes should operate in parallel for 12 months in order to exhaust recharge cards already in the market

2.12 DIALLING PLAN

Nigeria has adopted a closed dialling plan; therefore, the following rules will apply to the dialling process:

i. Digit zero '0' will be the starting digit for all national significant numbers including both local and trunk calls. This is already the dialling plan used on the mobile network.

ii. All telephone numbers will be exactly 10 digits, no more, no less including mobile, fixed, vanity and toll-free numbers.

iii. All the entire 10 digits that make up subscriber number must be dialled including the first zero, the prefix. Where insufficient (9 or less) or excess digits are dialled, the request for connection will be denied and a recorded message or a text message will be sent to notify the subscriber of the error. Also, the entire 14 digits for the machine – to – machine communication must be dialled.

iv. Inclusion of Nigeria's Country Code: When making calls within Nigeria, the country code for Nigeria need not be added. However, if it is added, the national trunk prefix must be discarded, or the call will not be connected.

v. Operators must respond with the right message if a subscriber dials a wrong number to avoid confusing the subscriber or repeated dialling which unnecessarily overloads the processor.

International Calls: All international calls destined for all countries that are members of the United Nations/ ITU will start with the prefix '00', followed by the destination country code and the national significant number.
International toll-free number: The prefix [1-800 is assigned for international toll-free service.

Global networks: dialling global networks based on numbers assigned by the International Telecommunications Union (ITU) does not involve the use of country codes. It can be dialled by using the operator code assigned by ITU. However, such networks do not have interconnection with our national telephone networks.

2.13 ROUTING PLAN

The routing plan will not be predetermined at national level nor be regulated by the Commission.

Each operator will have full freedom to determine the routing plan for its network. However, whatever plan is adopted, quality of service specifications by the regulator must be strictly adhered to.

SECTION 3

3 NUMBERING PLAN ASSIGNMENT PROCEDURES

3.1 RULES AND GUIDELINES FOR NUMBERING PLAN ALLOCATION

Eligibility for Numbering Plan Allocation

A. Numbers are issued for the purpose of identifying end users and terminal devices attached to a telecommunication network. Consequently, only licensees or service providers that are connected to or offer service to end users which require unique identification will be entitled to numbering plan assignment.

In future, the concept of unified communications may make it necessary to issue numbers directly to end users rather than to operators of networks, until then the status quo remains.

B. The category of licencees that are eligible to numbering plan are as indicated in the operating license issued to individual companies.

C. Operators who have VAS license for the purpose of providing Special numbering service as a value added service, such as 0700/0800, will be entitled to numbering plan allocation. However, the assignment does not entitle the operators to build their own network or lease capacity from existing network providers for the purpose of providing an independent end-to-end telephony or data service.

D. Number assignment can be in blocks of 100,000 or blocks of 1,000,000 or in blocks of 10 million numbers.

3.2 INFORMATION TO BE GIVEN

The applicant shall submit application for numbering to the Commission in the prescribed Form duly filled in, signed and sealed, together with all the necessary documents *and* information indicated in the specified Application Form. As per the type of numbering, the applicant should provide the information as mentioned in specified application form. The format of the application form is provided as specified in Annexes of this numbering plan for different types of numbering. It is the duty of the applicant to provide/submit the additional

information if the Commission asks the applicant to submit the additional information relating to the application.

3.3 PUTTING INTO USE

The assigned numbering resources shall be put into use by the assignee not later than 6 months from the date of assignment.

The following issues will be put into account by the Commission when allocating, assigning, reserving or managing numbers:

- The Commission will manage the NNP to ensure that there are sufficient numbers available to meet all reasonable demands that end users, operators and service providers may have.
- The Plan will, where applicable, be compatible with relevant international agreements, standards and recommendations.
- The Plan will, wherever possible, seek to ensure that numbers of different types give a broad indication of service type and/or tariff. so that end users can be aware of the service type they are using, and its likely cost.
- The Commission will assign or reserve numbers in a fair and equitable manner. The Commission will only assign or reserve numbering capacity to operators who meet the eligibility criteria as decided by the Commission.
- The Commission will take into account the need to anticipate growth and innovative services in demand for telecommunications services and, when assigning numbers. In particular, the utilization of previous numbering assignment will be taken into account when considering new requests for number assignment.

3.4 ASSIGNMENT PROCEDURES

3.4.1 Applications

Numbering resources are assigned to any person/organization/company who is licensed to provide telecommunications networks or services, and who requests to be assigned numbering resources. Applications requesting assignment of numbering resources should be addressed to the unit indicated in the application form.

3.4.2 Assignment Procedures and Terms

In general, any assignment will be decided by the Commission not later than 90 calendar days after the submission of application, subject to all necessary information being available. However, the Commission may ask the applicant to submit the additional information relating to the application if deemed necessary. In case of such additional information, the Commission shall decide all matters relating to numbering assignment within 90 days from the date of submission of such additional information by the applicant. As soon as the application has been fully considered and the number lists have been updated, the applicant will be notified in writing of the assignment,

Likewise, the Commission will notify the ITU of the assignment of numbers and number series for the purpose of insertion and announcement in the lTU's Operational Bulletin.

3.4.3 Conditions of assignment

The Commission may lay down specific terms for assigning numbers or number series including the following:

- Assigned short code numbering resource is not transferable and any such transfer of the numbering resource shall be void and the numbering so transferred shall stand cancelled.
- Assigned numbering resource can be surrendered to the Commission.
- The service provider/assignee shall furnish necessary information, statement of accounts regarding use of numbering from time to time as prescribed by the Commission.
- The Commission reserves exclusive right and authority to change the numbering and allocation/assignment procedure from time to time.
- All deed agreement in relation to the use of numbering with other parties must be submitted to the Commission.
- The Authority will reserve exclusive right to decide on the eligibility and • allocation/assignment of numbering.

Assigned numbering resources may be cancelled, but not limited to, under followings:

- If any assignee fails to use the number/s within 6 (six) months after assignment of the number/s
- If the information service provided against the national security and interest.
- if the assignee is engaged in any unfair competition,
- Violation of any of the terms and conditions mentioned in the allocation/assignment procedure,
- Violation of Rules, Regulations and Laws of the Land.
- Definition of the service for which number/s or number series may be used
- as well as any requirements associated with the provision of such service.
- Actual and effective use of number/s or number series
- The latest date on which these shall be put into use

- Maximum period of validity, subject to possible modifications of the. National numbering plan.
- Obligations according to international agreements for the use of number/s or number series.

3.5 PAYMENT FOR ASSIGNED NUMBERING RESOURCES

The number charges to be paid by the service provider/assignee shall be as determined by the Commission. It may formulate separate Pricing/ Policy/ Regulation/Bylaw regarding the pricing of the different types of numbering resources.

3.6 RETURN, WITHDRAWAL, MODIFICATION OR REPLACEMENT

A service provider/assignee may at any time return the numbering resources that the Commission has assigned to him. However, a service provider/assignee may only return complete number series to the same extent as these were assigned. Thus it will not be possible to return parts of number series assigned. Such return may take effect, at the earliest, from the date as decided by the Commission.

The Commission may withdraw numbering resources if this is necessary as a result of modifications in the national numbering plan. Furthermore, withdrawal may be affected if assigned number resources have not been taken into use or are no longer in use or in case of violation of terms set out by the Commission, and if it is deemed necessary for capacity or planning reasons.

Modification or withdrawal or replacement of numbering resources already taken into use is subject to a notice of six months.

3.7 PROCECURE FOR CONSIDERING APPLICATIONS

In considering the application, the Commission will take account of the service provider's/assignee wishes as requested. And if any questions in connection with the application need clarifications, the Commission may ask the applicant to clarify an issue before making any decision. On the basis of the application, the Commission will decide the extent, to which the application may be met, and the specific numbers and number series that may be assigned. In choosing the specific numbers and Number series in the numbering plan, it will be an important consideration that the national numbering plan be valid.

3.8 Refusal of applications and complaints procedure

3.8 REFUSAL OF APPLICATIONS AND COMPLAINTS PROCEDURE

The Commission may refuse an application if the necessary information cannot be made available, or in order to ensure that sufficient overall numbering resources are available within the range of numbers allocated, or any other valid reason decided by the Commission. It may also refuse an application for numbering resources if the service provider/assignee is planning to undertake his own segmentation of such resources, for example according to product types or geographical areas.

3.9 PENALTY PROVISIONS

Penalties may be imposed for violation of the legislation or terms laid down in Pursuance thereof, and also for failure to supply the necessary information to the

Authority as per provision of National Communication Act 2003, NCC's Numbering Plan Regulation and other associated Regulations.

SECTION 4

4 NUMBERING PLAN ADMINISTRATION

Consequent upon the adoption of the above numbering plan, the following rules and regulation shall apply to the administration and assignment of numbering plans.

4.1 Numbering Plan Utilization Audit:

The Commission will conduct regular audit in order to ascertain the level of utilization of numbers assigned to operators. The numbers issued will be categorised as follows:

a. Assigned i.e. total number assigned by the regulator including operator codes
b. Quantity of numbers already assigned and sold to subscribers (SIM cards)
c. Quantity of numbers in trade channels i.e. numbers with assigned SIM cards but not yet sold
d. Revenue generating subscribers during the preceding 90 days prior to the reporting period
e. Quantity of numbers in quarantine

All information supplied will be treated as confidential by the commission.

4.2 There will henceforth be two categories of revenue generating subscribers

I. Revenue generation by received calls only
II. Revenue generation by originated and received calls

Subscriber numbers that have not generated revenue by originating calls will automatically be recovered after 12 consecutive months.

4.3 Prohibition of extra charge on golden numbers by operators.

Henceforth operators are not allowed to charge subscribers any fees for the assignment of golden numbers i.e. numbers that are very easy to remember.

4.4 Tariff for 0700 Vanity numbers and the 0800 toll free number

Should not be more than the price cap set by the commission including the agreed VAS service provider's commission which should not be less than 5% and not more than 15% of basic tariff.

4.5 Invoices for Numbering Plan Renewal Fees:

Operators will be issued invoice every January for numbering plan renewal fee payment, all outstanding payments for number will attract 1% interest per month until they are settled

Changed number announcement:

Subscribers should be provided optional facility of recorded announcement for a period of time any time their telephone numbers are changed. Callers will be diverted to the recorded announcement anytime the old number is dialled. This facility should however be at extra but reasonable cost to the subscriber.

4.6 Number utilization reporting cycle:

Number utilization level will henceforth form part of the regular report to be submitted to the commission as part of the data gathering exercise

4.7 Numbering Plan Fees:

Fees paid by operators for allocated numbers will be as stipulated by NCC at regular intervals and will be subject to review as the Commission may deem appropriate.

4.8 When two telecom companies with different numbering plans become one corporate body through acquisition, merger, joint ventures or other commercial relationships, the numbering plan cannot be merged or decommission without fulfilling the conditions stipulated in the licenses issued to each party.

Numbering plan is a concession and therefore remains the property of government and cannot be transferred in part or in whole.

All numbers not paid for or renewed within a period of 3 consecutive years will be automatically recovered.

4.10. Payment for ported lines:

4.11 Prohibition of location-dependent call tariff

4.12 Bulk discount on numbering Plan fees

4.13 Recovery of Numbers:

If an operator allocated numbering plan goes bankrupt or is under receivership, administration, liquidation, the number assigned shall automatically revert back to the commission. However, the former owner shall be given the right of first refusal in the process of re-allocating the recovered numbers.

4.14 Change of numbering plan usage:

An operator is not allowed to deploy a number assigned for a particular service in operating another service. E.g. using fixed service numbers for mobile service. The numbers are however allocated on the basis of technology neutrality.

4.15 Limitation on Use of Vas Numbering Plan:

Numbering plan assigned for VAS via special numbering service does not qualify the assignee to build and operate its own independent network consisting of switches and transmission systems nor did lease capacity from licensed network providers for the purpose of offering end-to-end service to subscribers assign such numbers. These include the 0700, 0800, 0900 numbers

4.16 Loss of operating license

It will automatically lead to loss of numbering plan assignment.

4.17 Baring the use of short codes and full length numbers for toll free customer service lines by corporate bodies

Operators are not allowed to assign short codes or normal subscriber numbers to corporate bodies for use as customer service toll free lines. This is to avoid confusing the customer with several different codes assigned by different operators. Problems also arise when there is number portability and the subscriber moves to other networks. Some operators may also not recognise such numbers as toll free and innocent subscribers are often made to pay for calls that are supposed to be free. When routing such calls across interconnects points the information pertaining toll-free feature is most times lost.

The interconnecting partner may not recognise the number as toll free and charges the subscriber. Corporate bodies should deploy the 0800 XXXXXXX numbering range allocated by the Commissions for such services. For example, presently ICPC has the following toll free numbers MTN 0803123280-2 and Glo 07056990190, but do not have toll free lines on other networks. The customer is charged, unknowingly, if these numbers are dialled from other networks. Such numbers should henceforth be replaced with the standard 0800 toll free number scheme assigned by NCC as toll free numbers.

4.18 PABX Numbers:

Network operators are at liberty to assign special numbering scheme to PABX's with in-dialling and group hunting capabilities. In which case, only the pilot numbers will be made public where a group of consecutive numbers are assigned to an organization.

All exchanges (switches) must have the capacity to store and process 15 Digits (at least).

A typical UK No. will require dialing 15 digits i.e. 009 – 44 – 7832279501.

4.19 Guidelines on Machine – to – Machine communications:

(a) Only machines which are connected to the national public telecom network will be designed numbers. Private m – 2 – m networks will not be entitled to national numbering plan assignment.

(b) The machine and the receiving human interface terminal device can be on different operator networks.

E.g. A camera installed on third mainland bridge to monitor Traffic can be accessed through a telephone number assigned by MTN network. (MTN SIM Card) Subscribers with SIM Cards issued by Glo or Airtel can dial the Camera number and view what Traffic looks like on third mainland bridge. This will help them plan their journey from Ikeja to Lagos Island.

(a) Only machines with embedded SIM Cards and which are connected to operator networks (mobile or fixed) will be assigned national subscriber numbers, i.e. 05 series.

4.20 RECOMMENDED IMPROVEMENTS TO INTERNAL ADMINISTRATIVE PROCEDURES FOR NUMBERING PLAN ADMINISTRATION BY THE COMMISSION

(a). There is need to install a numbering plan management software that will assist in application processing, record keeping, monitoring of utilization levels, renewal processing e.t.c.

(b) The present numbering plan regulation should be revised to enable it capture IP addressing, domain names and other identifiers applicable to new generation networks.

(c) The Commission should also revise the Enforcement regulations to enable it incorporate offences or regulatory infractions related to numbering plan misuse, including appropriate fines or sanctions.

(d) The Commission should exercise greater control over GLOBAL TELEPHONE networks assigned the 1-8XX numbering plan series by ITU Geneva. The fact that they are not interconnected anyway with the national telecommunications network means that they cannot be monitored via the conventional method adopted for terrestrial networks. These include Thuraya, Iridium, INMARSAT.

(e) Virtual Mobile network operators (VMNO)/ OTT , whenever licensed, would be assigned mobile network codes like the infrastructure-based operators.

(f) The size of number block assigned to an operator should take into consideration the usage rate; both historical and future projections. This will prevent operators sitting on numbers whose network capacity cannot utilize in the next 5 to 10 years. Customer acquisition rate should be a factor for determining the size of number block to be assigned to the operator. Where the operator code has capacity for 10 million numbers (in a 10-digit numbering scheme, the operator can be assigned the first 1 million block of numbers with 2 million reserved for it against the future. Also multiple operators can share the same operator code; in that case the Commission will have to further allocate additional one-digit or two-digit exchange code to each operator.

Exchange codes to each operator.

The commission should regularly publish the utilization level for all assigned numbers annually in accordance with the numbering plan regulation

4.21 Migration/Transition Plan from Old to New Number

One of the primary considerations in preparing the Plan has been to minimise the impact, and hence cost, both to the incumbent and to users of migrating from the current plan to the new one. Migration to the new numbering scheme is relatively simple technically and users have little to learn to be able to translate the old numbers into the new ones. The Authority believes that users will still be able to operate the new numbering Plan even before businesses have completed the updates to their signage and stationery.

The approach to be taken to migration to the new numbering Plan will be consistent throughout the number range and will follow six stages:

- **The pre-announcement stage:** In this period, the commission and the network providers will co-operate to publicise the new numbering system and to make subscribers aware of what is happening and when it will take place. ITU will also be informed 12 months prior to total cutover.
- **Cutover 1 - within 6 months from first date of publication of notice:** At this point, the new numbers will go live and will operate in parallel with the old numbering scheme.
- **Parallel running - within 6 months from Cutover 1:** In this period, both the old and the new numbers will work for subscribers
- **Cutover 2 - within 6 months from Cutover** 2: At this point, the old numbers will be disabled and be released for re-allocation and only the new numbers will work for subscribers
- **The post-announcement stage:** In this stage, if a subscriber tries to dial an old number, they will receive a recorded announcement that the number has changed, together with instructions on how to derive the new number
- **The steady-state:** As the old numbers are re-allocated, the post-announcement will be discontinued until eventually there are no post-announcements and the Plan is fully implemented

RECORDED ANNOUNCEMENT ON CHANGED NUMBERS:

During the 6 months parallel running period, subscribers should be provided a free pre-recorded announcement service telling callers how to convert old fixed service numbers to new one by simply adding extra digits (operator code) to the previous old number whenever the old number is dialled.

ANNEXTURES

ANNEX 1

Format of Application Form for Numbering of Fixed/Mobile Services

(New and Additional Numbers)

To,

The Nigerian Communications Commission

I, hereby, submit an application to obtain the Numbering range to operate the telecommunication service pursuant to the National Communication Act 2003 and NCC's Numbering Plan Regulations :

Applicant Details:

Name of Operator:

Trade Name (if Different):

Physical Address:

P.O.Box No. :

Telephone No. :

Fax No. :

Contact Person :

Name :

Telephone No :

License Detail:

1 a. Name of License

b. License No :

c. Expiry Date :

2a. Name of License:

b. License No :

c. Expiry Date :

3a Name of License :

b License No :

c Expiry Date :

Other licenses: Name:

License no:

Expiry Date:

B. Numbering Resources Details

Capacity of Numbering Resources (s) applied: _____

Type of Service (s) planned: _____

Specific Block of numbers preferred _____

Description of usage plan: _____

Planned activation date: _____

Regulatory Status:

License renewal fee outstanding; Yes No: Last renewal fee paid:

AOL.

Up to date (all licenses held)

Not up to date

Last AOL paid in 20 ……..

Numbering plan fees outstanding? * Yes * No

Spectrum Fees outstanding? * Yes * No

Regulatory infractions fines outstanding: Yes No

Information Requirement Report up-to-date? * Yes * No last report date:

Existing numbering resources assignments and utilization within the requested service category, in the format below (if any):

Assigned Block of Numbers	**Capacity**	**Numbers Utilized in the Block**	**% Utilization**	**Remarks**

Utilisation Level = $\frac{\text{Telephone No's (TNs) Assigned}}{\text{Total Numbering Resources in Applicant's Inventory}} \times 100$ %

Estimate utilization in the next 12 months:

C Declaration:

(i/we) hereby declare that the information and documents given by (me/us) in this application form are to the best of (my/Our) knowledge true and correct and that any false declaration or information will render the application invalid and will automatically lead to the withdrawal of whatever numbers have been allocated on the basis of this application

Signature of the Applicant: _____

Name: _____

Position Held: _____

Company Name: _____

Date: _____

ANNEX 2

Format of Application Form for National Signalling Point Code/ International Signalling Point Code

To,

The Nigerian Communications Commission

Plot 324 Aguyi Ironsi St, Maitama, Abuja,

_____

I, hereby, submit an application to obtain the NSPC/ISPC to operate the telecommunication service pursuant to the National Communication Act 2003 and NCC Numbering Plan Regulations as per the following details:

Application Details:

Name of Operator:

Physical Address:

P.O.Box No:

Telephone No:

Fax No. :

Contact Person:

Name:

Telephone No:

Email address:

License Detail:

Name of License:

License No:

NSPC/ISPC Details:

Nature of use in the network (more than one function may apply):

STP – Signal Transfer point

SEP – Signalling End point

SCCP – Signalling Connection Control Part

ISC – International Switching Center

GMSC – Gateway Mobile Switching Center

LR – Location Register (home or Visitors)

OMC – Operation and Maintenance Center

SCP – Service Control point

SSP – Service Switching Point

Signalling point manufacturer/type

Proposed name of signalling point

Physical address of the signalling point

In-service date of the signalling point (month/Year)

Identification of at least one planned MTP signalling relation

6.1 name and address of distant signalling point

6.2. location of distant signalling point

6.3. ISPC of distant signalling point

Existing signalling code(s) (if any)

Declaration:

{ i/we} hereby declare that the information and documents given by {me/us} in this application form are to the best of { my/our} knowledge true and correct and that any false declaration or information will render the application invalid and will automatically lead to the withdrawal of whatever codes have been allocated on the basis of this application:

Signature of the Applicant: _____

Name: _____

Position Held: _____

Company Name: _____

Date: _____

ANNEX 3

NCC RESPONSE / CONFIRMATION OF APPLICATION FOR NUMBERS

Date of Application : _____

Date of Receipt : _____

Date of Response : _____

Effective Date : _____

Operator's Contact Information :

Company/ Entity Name: _____

_____

Phone : _____

Signature of NTRC Representative

_____

Fax : _____

Name (Print)