

Ensuring Rapid Uptake of Broadband Internet Using Nigeria's Domain Name

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Abstract --The need has come for Nigeria to participate in the cyberspace by increasing local content and advancing the patronage of made in Nigeria ICT products. As it is, the time to adopt a uniform flag in the cyberspace by Nigerians has become imminent as a larger proportion of the current global economy is online based. The Nigerian Internet users have grown from two million in 2005 to over 44million, which puts the country as one of the fastest growing internet user in sub-Saharan Africa. While this presents an opportunity to grow the economy at a geometric progression, it is also important to ensure the security of Nigeria's cyberspace. This paper examines the critical role of ICT in modern economies across the globe and opines that while it is expedient for countries to fly their flags and participate in the cyberspace, every effort to make Nigeria an integral part of the new trend must be harnessed for national development. The paper however warns on the coming chaos arising from the adoption.

Index Terms: Cyberspace, Domain-name, Scammers, Data-centres, Upgrade, Host-name.

I. INTRODUCTION

DEFINITION: A domain name represents an Internet Protocol (IP) resource, such as a personal computer used to access the Internet, a server computer hosting a website, or the website itself or any other service communicated via the internet. Domain name is a unique address that can be used on the Internet. It is what you see in the address bar after the “www” in your web browser and it is what comes after the “@” sign in an email address. Domain names consist of two parts. For example, in “monster.ca”, the “.ca” represents what is known as the top level domain (TLD) and the “monster” represents the second level domain, and that is the actual name. The same name, which can be up to 63 characters long, can be used with different TLD such as .com, .org, and .net [7]. There are also country specific Top Level Domains such as .fr for France and .de for Germany. When a domain name is used in a web address “www” is usually put in front of it to indicate that typing that name into your web browser will take you to a website. Domain name holders can set up a website with that address and also use it for email address. When you are a domain name holder, you get to decide what is in front of the @-sign in the email address.

HOW THE DOMAIN NAME WORKS

Each computer connected to the Internet has a unique Internet Protocol (IP). The IP address consists of four sets of numbers for example 195.234.53.199. To be able to connect to any given computer via the Internet, you need to know its IP address, but because numbers are hard to remember domain names are used instead. The domain name system (DNS) then translates the domain name you

entered into your browser into the correct IP address. This is done automatically and you as a user need not worry about it [4].

HOW THE DOMAIN NAMES ARE SPELLED

First and foremost, domain names are organised from right to left with general descriptors to the right and specific descriptors to the left. It is like family surnames to the right, specific person names to the left. These descriptors are called domain. The “top level domain” (TLD or parent domain) is to the far right of a domain name. Mid level domain (children and grand children) are in the middle. The machine name, often “www” is to the far left. The levels of domains are separated by periods (‘dots’). For instance, in “about.com”, about is the mid-level domain, .com is the top level domain. In “japantimes.co.jp”, “Japan times” is the smaller mid – level domain. “.co is the large mid-level domain and “.jp” is the top-level domain. In “Spain.info”, “Spain” is the mid-level domain; “.info” is the top-level domain [7][4].

THE TECHNICAL REQUIREMENTS OF HOW DOMAIN NAMES ARE REGISTERED

In the process of registering a domain name and maintaining authority over the new name space created, registrars use several key pieces of information connected with a domain, namely:

- **Administrative contact:** A registrant usually designates an administrative contact to manage the domain name. The administrative contact usually has the highest level of control over the domain. Management functions delegated to the administrative contacts may include management of business information, such as name of record, postal address, and contact information of the official registrant of the domain and the obligation to conform to the requirements of the domain registry in order to retain the right to use a domain name. Furthermore the administrative contact installs additional contact information for technical and billing functions.
- **Technical contact:** The technical contact manages the name servers of a domain name. The functions of a technical contact include assuring conformance of the configurations of the domain name with the requirements of the domain registry, maintaining the domain zone records and providing continuous functionality of the name servers (that leads to the accessibility of the domain name).
- **Billing contact:** The party responsible for receiving billing invoices from the domain name registrar and paying applicable fees.
- **Name servers:** Most registrars provide two or more name servers as part of the registration service. However, a registrant may specify its own

authoritative name servers to host a domain's resource records. The registrar's policies govern the number of servers and the type of server information required. Some providers require a hostname and the corresponding IP address or just the hostname, which must be resolvable either in the new domain, or exist elsewhere. Based on traditional requirements, typically a minimum of two servers is required.

- Domain names may be formed from the set of alphanumeric ASCII characters (a-z, A-Z, 0-9), but characters are case-insensitive. In addition, the hyphen is permitted if it is surrounded by some characters or digits, i.e. it is not the start or end of a label. Labels are always separated by the full stop (period) character in the textual name representation. According to the Nigeria Internet Registration Association (NiRA), the body charged with the management of the country code Top Level Domain (ccTLD), .ng is the two character country code reserve for, and used in Nigeria in consonance with the unique identities upon which a global Internet is predicated. This is otherwise referred to as Nigeria's ccTLD. A ccTLD is used or reserved for specific countries, sovereign states or independent territories in the Domain Name System. .ng like our currency, the naira and the +234 country code, is the official Internet Council for Assigned names and Numbers (ICANN) approved ccTLD for Nigeria.

II. DOMAIN NAME AND LOWERING THE COST OF INTERNET

The adoption of the nation's ccTLD name has far-reaching economic and societal benefits for the nation, in addition to significantly lowering costs for the Internet users. Here we condemn individuals and organisations that use domain names such as .co.uk, .com, .za in their websites and email addresses. This is because there is no comparison between Nigeria and countries that have discovered the inherent benefits of keeping Internet traffic local. Most countries of the world today relate their in terms of Information and Communication Technology (ICT) to the number of domain names and impact of such on their gross domestic product (GDP). Tokelau is a small island with a population is about 1,500 but with a GDP that has risen higher than Nigeria's because of increment in ICT. The country is among the world's top 20 domain names with correspondingly high GDP. The United Kingdom, UK, has about 11 million domain names. This means one in every five citizens use the country's domain name. South Africa is 1:100^[2]. The same cannot be said of Nigeria which has only 40,000 registered domain names that is ratio 1:12,000. In Nigeria for us to hit the global average, we need at least 800,000 registered domain names and for ratio 1:5 to be achievable, we need 30 million.

III. DOMAIN NAME (.ng) IN BROADBAND GROWTH

Government services under the .ng domain like electronic payment of salaries and application forms for government services will encourage faster adoption of broadband internet services. If more Nigerians can get to use the .ng domain name and integrate the Internet, broadband services computers and various mobile telephony devices into their daily lives, the country would witness an information revolution that would impact positively on all segments of the economy^[4]. Adoption of .ng could rake in huge foreign exchange earnings for the economy and make possible 50 per cent growth rate in Internet usage over the next decade. With enabling regulatory policies, it is possible to achieve an average of 50 per cent growth rate in Internet usage over the next decade. This would translate to more Nigerian content on the World Wide Web, thereby counteracting the pervasiveness of 419 scammers; .ng could attract 50 per cent of this figure. The advantage of the sheer size of our population makes the figure enormous^[1].

IV. UPGRADING DOMAIN NAME REGISTER

The domain name is Nigeria's unique identifier or signature on the World Wide Web as approved by ICANN. It is therefore critical to upgrade it to facilitate its growth and contribution to the economy. The vision is to benchmark the .ng registry with world class registries and maximize efforts to increase the uptake of the .ng domain to 250,000 within a short period. As a result therefore, it is paramount that the technical infrastructure of the registry be made more robust. The NiRA said they are trying to invest N11 million in equipment upgrade for the achievement of the target, adding that such infrastructure investment would focus on network subsystem and server upgrade, power systems upgrade, redundant bandwidth provisioning and customer support system^[3]. To attain the 250,000 number, NiRA should target MDAs, businesses, educational institutions and individuals who use the Internet on daily bases.

V. CREATING MORE INTERNET EXCHANGE POINT (IXPN)

The internet exchange point is one of those communication infrastructures aimed at ensuring that Nigeria's Internet traffic remains localised, for even distribution of services. Apart from the ones in Lagos and Abuja, Nigerians are looking forward to two more centres to be commissioned in Kano and Port Harcourt by June 2012. It is a well known fact that in communication that one of the most cost effective ways of managing the Internet traffic of any nation is to ensure that domestic Internet traffic is kept within the nation. The Internet exchange points will increase speed of internet services across the country, and the quest to reduce cost of Internet connectivity, improved quality of Internet services and above all, keep the nation's local Internet traffic local^[2].

This facility will go long way in checkmating the imbalance in the global telecommunication connectivity that forces some nations of the world to send local traffic designed for local destinations through international hubs located outside their countries. This attracts extra cost and consumes more international bandwidth which means that this facility would save the nation some foreign exchange when fully implemented. Furthermore, this would lead to immediate drop in connectivity costs which is expected as well as cost savings of more than \$20 million in offshore Internet bandwidth payment in the first year of operation according to NCC.

VI. DOMAIN NAME AND E-COMMERCE

In the world of electronic commerce (e-commerce), having a domain name, especially a local one, will often give the buyer more confidence when making a purchase as they consider the site to be local, therefore governed under the same laws as the buyer. This makes it easier to follow up on sales and make complaints if any problems occur during the purchase of the product. It also helps to settle any nerves if the buyer is able to see a street address that they recognize, rather than a foreign address. A local domain name would also enable a business owner identify potential and existing customers in any part of the country, their need and culture. In addition to improving e-commerce, experts say local top level domain names can stimulate economic development in all sectors of the economy ^{[3][1]}.

VII. DOMAIN NAME IN RE-BRANDING NIGERIA

Corporate Nigerians should tow the path of being identified by the truly Nigerian brand on the World Wide Web with pride. The usage of .ng by credible Nigerians and corporate citizens will facilitate the needful change of the current battered image of the country on the Internet. A wide adaptation of .ng by Nigerians shall constitute a good tool in the effort to project the good people of Nigeria and the nation. No doubt our collective adaptation of the .ng will be a strong tool in reversing the adverse publicity projected by foreign media. This bad image war will be won on local and international fronts when institutions of government, credible real and legal persons and entities in Nigeria adopt the use of the .ng, not just from a consumerism perspective but by generating Nigerian content on the Internet ^{[3][1]}. The national assembly too should enact policies that would enforce the adoption of the .ng domain name and emails for government-to-government, government-to-business and government-to-citizen transactions to engender economic growth and vitality. Government should put in place a legislative mandate that would compel the adoption of a government policy to recognize only .ng domain and emails for government-to-government, government-to-business and government-to-citizen transaction.

VIII. DOMAIN NAME IN E-GOVERNANCE

The Guardian Newspaper issue of Tuesday, August 21, 2012 reported that despite the repeated calls and intensive campaigns, over 70 per cent of Most Ministries, Departments and Agencies (MDAs), corporate organization and non-governmental bodies, were yet to comply with government's directive on the need to migrate to Nigeria's domain name, the .ng. It was learnt that only 35 per cent of the nation's MDAs had complied with the directive while 90 per cent of companies and organizations operating in the country were indifferent to the directive ^[5]. Apart from the domain name earning the country a formal identification on the web, it is capable of creating jobs. The Nigeria Internet Registration Agency (NiRA) say they are targeting 250,000 domain names in the .ng registry to contribute N250 million yearly to the economy adding that the body has the potential to create over 50,000 jobs directly and indirectly for Nigerians. Reports had it that in 2009, Austrian top-level domain name the .AT contributed over €13.5 million to the Austrian economy with the contribution growing each year. Indeed to boost its adoption in Nigeria, the National Information Technology Development Agency (NITDA) and (NiRA) should organize a sensitization workshop on the need to ensure usage of Nigeria's top-level domain name. Utilization of the .gov.ng domain name by all MDAs and corporate organizations in the country is a critical step in the implementation of the country's e-governance strategy ^{[1][5]}. A mass migration to the .ng domain by the MDAs and other Nigerians will ensure the implementation of the first step in the country's e-governance strategy aimed at connecting government within itself and with the citizens of Nigeria on a safe common platform that will increase local traffic and thus reduce overall cost of governance.

IX. HOSTING OF DOMAIN NAME AND SECURITY IMPLICATIONS

It is note worthy here to remind organizations and governments Ministries, Departments and Agencies (MDAs) of the incalculable harm being done on our economy when they host critical company and government information at servers located abroad. Aside revenue repatriation to offshore organizations who own these servers and data centres, security of critical information and database is at stake ^[5]. A lot of government agencies, banks and other organisations host sensitive information in servers located abroad. This poses serious security risks not only to the organisations but to the Nigerian nation at large. If these servers are infiltrated, there would be serious problems. To address this, the Federal Government should make it mandatory for government officials to use only .ng domain name in websites and email addresses and deny individuals without such, critical government services such as National ID registration, international passport and company registration. In developed countries such as

Germany and some parts of UK, by law, citizens cannot use any other website except the country's domain name (.ge in the case of Germany).

X. THE COMING CHAOS

The Internet Corporation for Assigned Names and Numbers, ICANN is a non-profit organization that was created during the President Clinton's (USA) administration to, among other things; loosen the control that one company, Network Solutions, exercised over the domain name registration process. But now ICANN is itself a monopoly. It has the freedom to mint new "generic top-level domain"(gTLDs) and incorporate them into the "root zone file", the master list that matches human readable URLs (such as www.technologyreview.com) with the numeric Internet Protocol addresses that are used to route packets between computers. And it is employing this freedom to orchestrate the biggest land rush in the history of the Internet. During a four-and-a-half-month application period that closed on May 30, 2012 ICANN collected more than 1,900 proposals for new gTLDs. As expected, hundreds of companies applied for gTLDs corresponding to their brand names- .aetna, .barclays, .mcdonalds and the like. But applicants also asked for the rights to hundreds of generic terms, such as .health, .mail, .music, and .pizz. There is no general shortage of web addresses. If there were, we might have seen businesses flocking to other new domains ICANN has already introduced over the past decade. ICANN says it is opening up these domains to promote completion and choice in the domain name industry. But confusion and profiteering are the more likely results. For instance, if you come across a URL like shoes. buy; how will you who are behind it? Could it be Amazon, Google or any other company who have applied for control of the .buy domain? Whoever gets it could sell sub domains to someone else. Again Amazon could sell footwear at shoes. buy and charge the Gap for the rights to shirts. buy. or say you are planning to visit Hungary. Should you go to Buderpest.hu, currently the city's official site or risk going to a new site like tourism.buderpest and hope that you do not stumble onto a phishing site in the process [7]. This is the consequence of conflicting interest that has continued to be there even till this day.

XI. CONCLUSION

Rather than registering our emails, websites and other Internet presence in foreign names and hosting our Internet abroad, where our information could be tampered with, it would be more beneficial to us as individuals, businesses and as a nation to adopt the .ng domain name. To achieve this, the NiRA should review and update relevant policies concerning the registry, registrants and registrars: strength industry engagement; improve complaints and dispute resolution mechanisms as well as develop a memorandum of understanding for registry

operators. The National assembly should enact policies that would enforce the adoption of the .ng domain name and email for government-to-government, government – to-business and government –to- citizen transactions to engender economic growth and vitality.

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