Review of Gigabit Fidelity as Future Long-Term Evolution Technology in Nigeria

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Abstract: In the last few decades, mobile wireless communication networks have experienced a remarkable change. The greatest improvements made on wireless technology which plays a dominant role in today's modern life is the Gigabit Fidelity (Gi-Fi) technology. This technology is the world first transceiver integrated on a single chip that operates at 60 GHz on the Complementary Metal-Oxide-Semi conductor (CMOS) technology. It allows the wireless transfer of audio and video data up to 5 gigabits per second at low power consumption within range of 10 meters. This Gi-Fi technology provides a 'high broadband access. In Nigeria, wireless networks have shown their ability to overcome infrastructural challenges. Only global system for mobile telecommunication (GSM) operators despite the multiple wireless technologies used in Nigeria have national scale and coverage. Therefore mobile broadband services are expected to drive increased broadband reach. The paper concisely reviewed gigabit fidelity as future long-term – evolution technology in Nigeria. It is recommended that the government should review tax burden imposed on broadband operators and quickly identify and assign spectrum suitable for broadband communication.
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1. Introduction

Almost everyone is familiar with term Wi-Fi (Wireless Fidelity) which uses 2.4-5GHz Radio Frequency to deliver wireless Internet access around our schools, colleges, homes, offices and in public places. We become quite dependent upon this nearly everywhere service (Pachauri and Singh, 2012). Wired technology and wireless technology are the major divisions of communication technology.

The growth of wireless technology led to the Gigabit Fidelity (Gi-Fi) technology. This technology is the world's first transceiver integrated on a single chip that operates at 60GHz on the Complementary Metal-Oxide – Semi Conductor (CMOS) transfer of audio and video data up to 5 gigabits per second at low power consumption within range of 10 meters.

This technology provides a high broadband access, high speed transfer of data within seconds at a low cost (Ashwini *et al.,* 2016). This new wireless technology was introduced by the Researchers of Melbourne University and the chip developed by the Australian researcher. This review seeks to examine the gigabit fidelity (Gi-Fi) technology as future long-term evolution technology in Nigeria.

1.1 Applications of Gi-Fi

i. This technology can be effectively used in wireless plan networks, inter-vehicles communication systems, Ad-hoc information distribution with point – to – pant network extension, media access control (MAC), imaging and other application.

ii. Gi-Fi technology can be used in broadcasting video signal transmission system in sports stadiums. It can be used by notebooks and other computers to wireless connect virtually all the expansion needed for a docking station, including a secondary display and storage.

iii. Gi-Fi technology can be used to send and receive large amounts of data in a variety of applications. Its fast data synchronization rates enable the rapid transfers of video, bringing the wireless office closer to reality.

iv. Gi-Fi technology is able to transfer gigabits of data within seconds and therefore it can be used for huge data file transmission.

1.2 Broadband Services in Nigeria

Broadband in Nigeria is driven by wireless access technologies. Wireless networks have shown their ability to overcome infrastructural challenges in Nigeria. MTN, Glo, Airtel and 9mobile are the four main GSM operators in Nigeria- all of which also hold 4G UMTS licenses.

Together, these operators serve about 90 % of Nigeria's 86 million subscribers. Analysys Mason has prepared this report for GSMA in 2011 (Mason, 2011) to assess the direct and indirect economic impact of wireless broadband in Nigeria.

It finds that mobile broadband can potentially contribute over 1% of GDP (and 1.7% of non-oil GDP) in 2015, supporting diversification of the economy**.** Although multiple wireless technologies are

used, only GSM operators have national scale and coverage.

MTN, Glo and Airtel have proven their ability to tackle the infrastructural broadband services using HSPA and LTE are expected to continue to drive increased broadband reach. Glo launched the African first LTE network. That is to say that, Mobile broadband had created momentum in the broadband market.

1.3 Possible Impact of wireless broadband (Gi-Fi technology) in Nigeria's Economy

Nigeria's digital economy is burgeoning and would benefit from government commitments to providing online services.

i. Wireless broadband i.e. Gi-Fi will create additional indirect value, mostly outside the oil industrial productivity increases as workers increasingly use email and electronic file exchange, have quicker access to business critical information and can access more distant customers and supplier.

ii. Improved broadband (i.e. Gi-Fi) will also increase the attractive of Nigeria to foreign investors.

iii. Gi-Fi- technology will have a direct revenue impact as more cybercafé users opt for personal broadband access. Also, enterprises service revenue will be driven by demand for high quality connectivity.

1.4 Challenges Facing Increasing Access To Affordability of Broadband in Nigeria

The key challenges include federal tax, rates, administrative burden of local taxes, non-standard site approval and environmental impact assessment processes and poor electricity infrastructure.

Others are awarding spectrum for wireless broadband and co-ordinating deployment of nationwide fibre networks. Although there are apparently multiple fibre networks, the market for transmission is still under developed.

1.5. Conclusion

This technology (Gi-Fi) would ease the pressure on currently utilized spectrum resources, and is desirable for applications that require high transmission broadband and high data transmission security. It would address the growing demands by operators for data centric, high speed and high capacity links for metropolitan environment.

It would also assist to drive the National Wireless Access (NWA) initiative in the country. It would also be useful for the presentation of draft regulatory framework for amateur radio services in the country.

1.6 Recommendations for successful broadband in Nigeria

Federal government should review the tax burden imposed on broadband operators. Implement harmonized levies of government. Continue efforts to rehabilitate the main electricity infrastructure.

The adoption of best practice spectrum policy with spectrum managed by an entity is necessary. Quickly identify and assign spectrum suitable for wireless broadband and finally support a competitive market for nationwide fibre backbone connectivity. The Gi-Fi technology would ease the pressure on currently utilized spectrum resources while addressing the growing demands by GSM operators for data centric, high speed and high capacity links for metropolitan environment.

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