EMERGENCE OF 4G TECHNOLOGY IN INDIA AND ITS FUTURE IMPLICATIONS

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ABSTRACT

The pace of technological development and its impact on the society has emerged into a brand new world of innovations and up gradation. Not much time has passed when people could not dare to think of using internet with so high speeds that on the click of the mouse or touch of the screen of the mobile one is able to upload the file size of 3 mb or 100 mb or even 200 mb in seconds. With the increasing human need of faster internet speeds, the research and development of this technology led to the emergence of 4G. This article will discuss about the features of 4G and the edge it provides once operational. It will also discuss its impact on India and the barriers in implementing this technology. At the end it will give some suggestions to overcome these barriers.

KEYWORDS: VAS Services, Wireless Technology, Wireless Broadband, Mobile Money.

INTRODUCTION

Lets have basic understanding of the concept so that a even a layman can understand what we are talking about. In telecommunications, 4G is the fourth generation of mobile phone mobile communication technology standards. It is a successor of the third generation (3G) standards. A 4G system provides mobile ultra-broadband Internet access, for example to laptops with USB wireless modems, to smartphones, and to other mobile devices. Conceivable applications include amended mobile web access, IP telephony, gaming services, high-definition mobile TV, video conferencing, 3D television and Cloud Computing.

Two 4G candidate systems are commercially deployed: the Mobile WiMAX standard (at first in South Korea in 2006), and the first-release Long Term Evolution (LTE) standard (in Oslo, Norway since 2009). It has however been debated if these first-release versions should be considered to be 4G or not, as discussed in the technical definition section below.

In the U.S., Sprint Nextel has deployed Mobile WiMAX networks since 2008, and MetroPCS was the first operator to offer LTE service in 2010. USB wireless modems have been available since the start, while WiMAX smartphones have been available since 2010 and LTE smartphones since 2011. Equipment made for different continents are not always compatible, because of different frequency bands. Mobile WiMAX are currently (April 2012) not available for the European market.

INDIAN STORY OF 4G AND ITS ADVANTAGES

India although is a late entrant into this arena but its future is very bright. BSNL launched India's first 4G services 4G WIMAX Broadband Services in Kochi Kerala on 4 June 2011.

Bharti Airtel also has launched India's first 4G service, using TD-LTE technology, in Kolkata, Pune & Bengaluru. Fourteen months prior to the official launch in Kolkata, a group consisting of China Mobile, Bharti Airtel and Softbank Mobile came together, called Global TD-LTE Initiative (GTI) in Barcelona, Spain and they signed the commitment towards TD-LTE standards for the Asian region. Reliance Jio Infocomm Limited lead by Shri Mukesh Ambani won a pan-India BWA license through its acquisition of Infotel Broadband Services Limited thereby becoming the only operator to have Nation wide 4G Licenses. Apart from these six other companies including Tikona Digital and Qualcomm won selected BWA circles. It must be noted that Airtel's 4G network does not support mainstream 4G phones such as Apple iPhone 5, Samsung Galaxy S III, Nokia Lumia 920 among others. However as per unconfirmed sources when Reliance Jio Infocomm launches its services later this year they are likely to overcome this issue by way of offering a Small Wi Fi Pocket Router which can connect to your handsets/laptops/tablets and one can access 4G services even on Non 4G Enabled handsets.

ADVANTAGES TO DIFFERENT SECTORS

The advantage of this technology can be seen in various sectors such as telecommunication, healthcare, education etc. Telecommunication Sector will benefit in many ways like emergence of new markets with new demand for Technology, new market strategies will be required.

Online diagnosis will become possible in Healthcare sector and specialist Doctors can be consulted online so that emergency situations can be handled very efficiently even in remote locations. So an elderly who is suffering from acute health problems can take online consultations from a Leading Medical practitioner sitting anywhere in the world. Similarly a Local Surgeon can take Live help while performing a Surgery , from a very senior professor specialised in a very typical surgery even though he is at the other corner of the word.

Government Organizations can improve their performance with the use of 4G technologies by reducing cost of travel, Instant access to monitor performance of any employee and Instant update on all government projects implemented and work in progress. Educational Institutions will have a wider spectrum of use such as

quickly tracking student and teacher performance, Evaluation of practices followed in education system, Video conferencing with other schools/colleges, online guest lectures, Infrastructure tracking, Online tutoring, etc. There is a possibility that a students will no longer have to carry such heavy School Bags, instead they can just walk-in to the School/college with a Tablet or a Mini Lap top in their hand, access all the books, complete the tasks given and get the same evaluated by the respective teachers – All this can be real time online facilities made available on 4G network.

Electronics Industry will see an escalation in demand for new products, new enterprises will emerge and competition will increase. On Individual it will also have a very good impact like watching videos with HD quality, and high quality video calls. So more and more people will start using a handset while watching and talking it instead of listening it.

Private Institutions can track each and every move of an employee, many more business trips can be avoided and high quality video conferencing will become the natural way.In Banking sector mobile banking will be efficient and secure than before and can pave the way for virtual draft and cheque in future.

GROWTH OF 4G IN INDIA AND ITS TARGET SEGMENT

4G in India is at a very nascent stage and expected to take on the market with a bang. 3G adoption in India remains subdued at 10-12 million users even after almost 2 years of its launch due to various issues like poor network quality as operators are cash-strapped to spend on 3G expansion, low penetration of 3G enabled handsets, unavailability of local content, absence of a good application. Even if 3G picks up in 2 years from now, most of the users will be mobile users with a less data requirement like accessing e-mails and web-portals leaving the space of other portable mobile devices like tablets, laptops, gaming etc requiring high speed broadband for live HD video streaming, gaming etc unoccupied, paving the way for 4G which is far more faster than 3G.

Worldwide, for 4G, Wi-Max is more widely adopted technology than Long Term Evolution (LTE) having a user base almost four times that of the latter but the latter is growing at a much faster pace than the former. North America, Japan and China are the major drivers of LTE worldwide. North America accounts for more than 40% of LTE's global presence. Out of the eight entities in India who get 4G licenses, only BSNL and MTNL have opted for Wi-Max platform whereas private companies opted for LTE. The difference between Wi-Max and LTE is not as different as GSM and CDMA apart from being promoted by two different associations – Institute of Electrical and Electronics Engineers (IEEE) and 3rd Generation Partnership Project (3GPP) respectively. Wi-Max has capacity to accommodate voice which LTE does not but LTE allows better integration with 2G and 3G as compared to Wi-Max. As per recent statement given by Telecom Minister of the Country , Operators using LTE platform will also be able to offer Voice Services, But How and when, it is yet to be cleared. So now the game is split wide upon in front of our eyes and 4G has a choice to target customer in the near future in wide variety.

The Target Segment

The following customer base can be targeted by 4G-

1) A group of 30 million post-paid subscribers, who on an average pay more than Rs. 500 a month as their mobile bill which is approximately 5 times the prepaid users.

2) It can also target 460 million subscribers who have handset supporting internet and have subscribed to one or the other form of mobile data services. More than hundred million carrying a 3G enabled handsets offer a sizeable target group for 3G services.

3) 150 million internet users in the country are a very good target.

4) Hundreds of thousands new tablet users being added every year and their quest for higher speeds will ultimately pave the way for 4G.

5) Millions of potential TV viewers waiting for the cheaper video-on-demand facility in their drawing rooms, and

6) Hundreds of thousands of Small and Medium Enterprises waiting for the high speed internet connectivity offer the target group for 4G services.

7) The entire Education, Medical and Legal fraternity will try and adopt the services to take First movers advantage in their respective geography.

IMPEDIMENTS TO GROWTH OF 4G IN INDIA

The future of 4G in India is very bright because of its features and Indian requirements. Despite that there are numerous factors that can play negative role in the growth of 4G business in India. These are discussed as follows-

a) Almost everyone end up upgrading to 2G and 3G services. It was because of a wireless system which is fearful. These upgrades were incremental which do not require a complete reworking of the system, and that's why they are cheaper. The required equipment is in mass production in other places around the globe and is already developed. If we go by unconfirmed reports from sources, 4G Players are also likely to adopt cheaper equipment route to get into every household, but in case adopting a new equipment/handset becomes mandatory for accessing 4G services, it would certainly become a bottleneck in Growth of 4G Services in india.

b) Unlike 2G and 3G where spectrum bands are fairly uniform across various countries resulting into mass production of handsets bringing down the handset prices, 4G is offered in different frequency bands in different countries. Around 1/3 rd of subscribers of 4G today, majorly in the US, served by Verizon and AT&T, are on 700 MHz band whereas Europe uses 2.6 GHz band. Japan & China are using 2.5 GHz and 2.1 GHz respectively. In India, every private company has received 4G spectrum in 2.3 GHz whereas BSNL and MTNL have it in 2.5 GHz. This puts limitations on interoperability of 4G devices across regions with different spectrum bands. This also leads to fragmented production of the devices (handsets, USB modems, tablets etc) leading to higher costs, at least at the beginning, until the OEMs come out with devices compatible with more 4G frequencies.

c) 4G, unlike 3G, does not offer Voice-based services through mobile networks but as Voice-over-Internet-Protocol (VoIP). The main difference between normal telephony and internet telephony is that in normal telephony, circuit switching technology is used, whereas Internet Telephony is based on packet switching technology. In the developed markets like US and Sweden where 4G has been rolled out, it is offered as a data only package, integrated with 3G packages for voice. A user who is logged on to a 4G network will be seamlessly transferred to a 3G network the moment he receives a voice call.

d) Voice-over- LTE (VoLTE) is a new form of VoIP and is under trial phase in some of the countries. In India, not all the 4G service providers have the option to provide seamless 4G, 3G and 2G service offering both data and voice services on the same handset as only Bharti, Aircel, BSNL and MTNL among 4G licensees have 2G/3G licenses. This can be a possibility in future if government accepts TRAI's recommendation to make the spectrum technology neutral allowing the operator to provide 2G, 3G or 4G services using the same spectrum.

e) As there is a lack of clarity whether VoIP will be mellowed fully in India, currently 4G services are limited only for data related usage.

f) One of the biggest barrier to the growth of this sector is prevailing system of portability and file clearing process which is lengthy that if one has adopted, it will lead to the loss of money and time.

SUGGESTIONS

Below is the list of suggestions that can be of immense help if implemented. These suggestions have been extracted after having discussions with top professionals of this sector. Various websites pertaining to the telecom sector have been researched including that of regulator and major newspapers.

Entity	S.No	Suggestion
TRAI	1	A nation wide drive in the form of marketing campaign by the regulator will pave way for the awareness and importance of this product.
	2	The mobile handset companies should be instructed to kick start the production of 4Genabled handsets as soon as possible.
	3	Apart from capacity, Quality of Service (QoS) models and Key Performance Indicators (KPI) are completely different in 4G. A comprehensive study is required to investigate such models in detail and enable appropriate monitoring mechanisms
	4	Ensuring that the infrastructure for security deployed for 4G should be scalable and accounts for new usage patterns like social networking, peer to peer applications.
	5	Promoting IPv6 for 4G deployments which is required to scale for nation-wide broadband internet use.
Telcos	1	Unlike 3G, tariffs for 4G should be affordable so that everyone can afford it paving the way for economies of scale.
	2	More and more telcos should be allowed to enter this arena so as to ensure the growth of this segment. Otherwise it will become difficult for handful of players to survive in the longer run.
	3	Competition should be healthy not cut-throat. This will ensure the viability of the business in the longer run. Since India is such a big market everyone will have his piece of pie.
	4	The emphasis should be on quality and speed rather than other factors. These two things are so much important that even if you are bit expensive one will opt to have you.
	5	Continuous effort in the direction of educating the clients by healthy marketing campaigns and regular awareness drives.

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