

# 5G in Mobile Communication

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## ABSTRACT

The 5G Technology stands for fifth Generation of Mobile technology. From generation 1G to 5G the telecommunication over the world has visually perceived a plethora of ameliorations along with ameliorated performance with every passing day. There is expeditious revolution in today mobile computing that has transmuted our day to day life work and let utilizer interact and learn incipient things. This paper additionally fixates on all generations of mobile communication along with 5G Technology. The 5G network additionally provide an affordable broadband with very high haste. The researches of 5G have additionally made development of World Wide Wireless Web (WWW) and Authentic Wireless World. 5G withal fixate on (Voice Over IP) VOIP with enabled contrivances where the utilizer will experience a high caliber of call volume and data transmission. This 5G technology will consummate all the requisites of customers who always want all the advanced features in low quality keenly intellective phone contrivance. The main features of this 5G mobile network is that utilizer can connect to the multiple wireless technologies(wireless network)5G technology can offer accommodations like Documentation and fortifying electronic transactions such as e-billings etc.

## Keywords

Wireless,network,signals,generations, software, technologies

## 1. INTRODUCTION

In year '2008', NASA partnered with Geoff Brown and Machine-to-Machine Perspicacity (M2Mi) Corp to develop 5G communication technology. Where the South Korean IbjngT R&D program of "5G mobile communication system" group was composed. This 5G stands for 5th generation mobile network or

5th generation wireless network. This 5G denotes a major phase in mobile communication and much more advance than 4G.

5G provide good internet which is much more expeditious than 4g Mobile wireless industry had commenced its technology engenderment, revolution and evolution

since early 1970's.5G Technology can transmute the view for wireless technology [2],[7],[8].

There is currently no standard for 5G deployments. The Next Generation Mobile Networks defines the following requisites that a 5G standard should consummate. Tens of megabits of data can be travelled from every user.1GB data/second can be utilized by multiple users in same area. Several hundreds,thousands of simultaneous connections for the wireless network.The efficiency of data has amended as compared to 4G.Coverage along with Signalling have withal been ameliorated.Travelling of packet from one point to another point have additionally reduced significantly. [1],[3]

## 2. EVOLUTION OF WIRELESS TECHNOLOGIES

The evaluation of wireless technologies is discussed as follows [5],[6]:

### 2.1 1G

The first generation of wireless telephone technology was the first mobile telecommunications which was first introduced in 1980s and consummated in early 1990s. It includes features such as:

The Speed limit was upto 2.4kbps.It sanctions the voice calls in 1 country.The network which 1G supported was analog signals.

### 2.2 2G

2G technology is based on GSM(Global system for mobile communication). It was launched in Finland in the year 1991. The network which 2G supports digital signals The Speed limit was upto 64kbps.It includes feature as:a. This 5G technology also enables services such as simple text messages, picturemessages and MMS multimediamediaessage,videoetc. and provides better quality and capacity.

### 2.3 2.5G

This 2.5G is a technology which arrived between the second (2G) and third (3G) generation of mobile telephony. 2.5G is sometimes described as 2G Technology which is cumulated with General Packet Radio Service (GPRS). It includes features such as:

- Phone Calls
- Send/Receive E-mails

- Browsing
- It has Speed ranging from 64-144 kbps
- It also includes with Camera
- Downloading of some data may vary.

### 2.4 3G

3G technology was introduced in year 2000s. Data Transmission speed is much higher as compared to antecedent technology(144kbps- 2Mbps.They were called as “Smart Phones”.

It includes features such as:

- Provides More expeditious Communication
- User can Send/Receive Sizable Voluminous Email Messages
- High Speed Web / More Security
- Video Conferencing(skype) / 3D Gaming(online)
- TV Streaming/ Mobile TV/ Phone Calls
- Downloading of particular file is more expeditious

### 2.5 4G

It includes features such as:

- High-speed data access
- HD quality video streaming
- Capable of providing speed up to 3-4 mbps.
- Highly secured.

## 3. DRAWBACKS FROM PREVIOUS TECHNOLOGIES

### 3.1 1G

- It has very low Voice Quality
- Poor Battery Life
- The phone Size was sizably voluminous
- No Security was provided
- Less storage capacity

### 3.2 2G

- 2G requires vigorous digital signals to avail mobile phones work. If there is no network coverage in any categorical area , digital signals would impuissant.
- These systems are unable to handle involute data such as Videos.

### 3.3 3G

- Expensive fees for 3G Licenses Services’
- High Bandwidth Requisite
- Sumptuous 3G Phones [3].

### 3.4 4G

- Battery uses while implementing 4G technology is more.
- A good quality equipment is required for using such kind of network [4].

## 4. 5G ARCHITECTURE

The 5G Technology architecture consists of highly advanced network elements and those elements are attached to various terminals that can afford itself to upgrade in any situations.

This upgrade is based upon an Intelligent radio system which can programmed and configured dynamically and also includes various features like General packet radio service(GPRS) using this it consumes less battery power while browsing, Exchange data rate for GSM evolution(EDGE) this is an advanced version of General packet radio service(GPRS),3G using this user can make video calling without buffering,Wireless-LAN it is a short range device but it can provide high speed data connection between devices.Long Term Evolution(LTE) is a standard communication for high speed data transmission in mobile

Network.

## 5. GOALS AND VISIONS FOR 5G TECHNOLOGY

- 5G visions to design an authentic wireless world, that is liberate from obstacles/interrupts from the earlier generations.
- This requires an integration of networks. The main aim for 5G is to design a Multi-Bandwidth Data Path by integrating the current and future networks for the incipient authentic wireless world.
- This 5G is fortified by CDMA, UWB and IPv6.
- 5G technology has extraordinary data capabilities and has facility to commix together unrestricted call volumes and illimitable amount of data broadcast within latest mobile operating system.
- The Router and switch technology which are utilized in 5G network will additionally provide high connectivity for wireless contrivance
- This type of technology has capability to fortify all software in it.
- This technology withal aims to distributes internet access to nodes across the world with virtually more expeditious celerity.
- Company such as “HUAWEI” Likely going to develop 5G technology by 2020 [5].

## 6. BENEFITS FROM 5G TECHNOLOGY

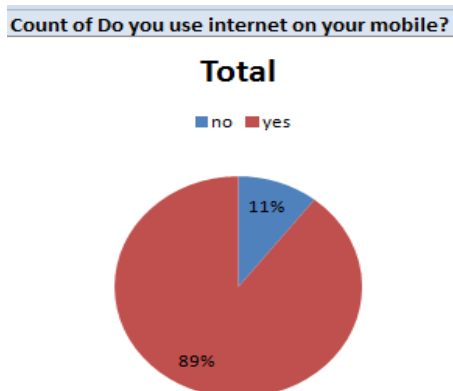
- It provides a High Speed and High Capacity
- 5G technology provides an immensely colossal broadcasting of data in GB.
- All types of multimedia activities such as visually examining T.V, playing games, videos, music can be viewed in High-Definition(HD) Quality.
- More expeditious data transmission that of the previous generations.
- Large Phone Recollection, Dialing Celerity, pellucidity in Audio/Video.

## 7. FEATURES

- The 5G technology offers good resolutions for wireless contrivance users and bi-directional(2-way) astronomically immense bandwidth shaping.
- 5G technology additionally provides with advance billing systems which makes it more captivating to utilize.
- The quality accommodations of 5G technology is predicated on error free technology.
- 5G technology can additionally provide astronomically immense broadcasting of data in Gigabytes.
- The 5G technology network offers enhanced and available connectivity just about the world.
- In 5G technology the internet traffic rates for travelling data from one system to another makes it more precise.
- 5G offers remote management technology from which users can get better and more expeditious data
- The 5G technology can solve remote issues/quandaries.
- The 5G technology additionally support virtual private network [6],[7].

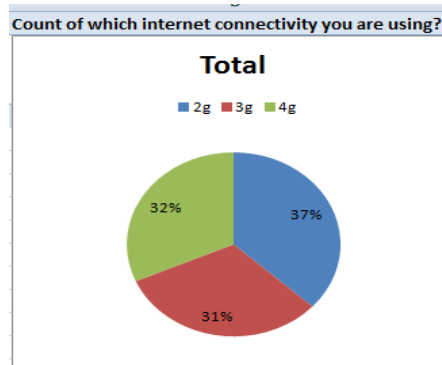
## 8. RELATED WORK AND RESPONSE

Actually, this 5g was taken under consideration by looking on to today's 4g technology and asking peoples that how they like the technology and are the willing to improve the technology which will help your mobile to be efficient by saving battery drainage problem, cost problem etc. Hence this survey was taken by considering various question regarding usage of internet in the mobile. Here are some questions and the response of the survey taken. This report is based on 21 surveys:



**Fig. 1: Total number of users who uses mobile internet**

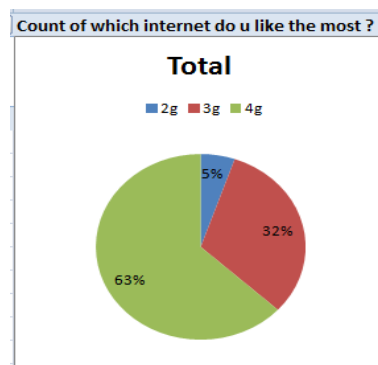
As shown in figure 1 it conclude that 98% of the user are aware of the Internet technology whereas only 2% are not aware of it.



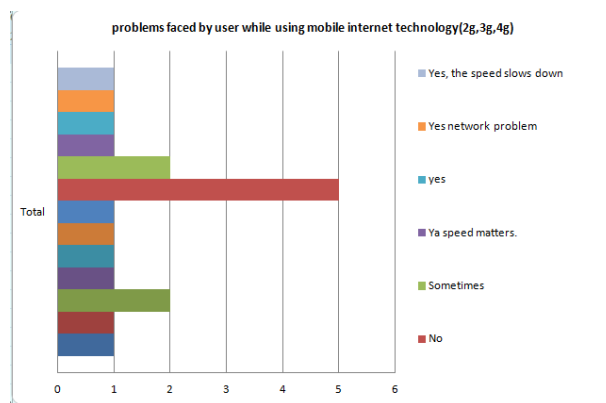
**Fig. 2: Total count of user who uses 2G,3G,and 4G in mobile**

As shown in figure 2 it conclude that 37% of the user are 2g users , 31% of users are 3g users,and 32 % of users are 4g users.

As shown in figure 3 it conclude that the only 5% of users are 2g users and there are higher amount of people who uses 4g(63%) and in middle i.e 3g users are 32% of users only.

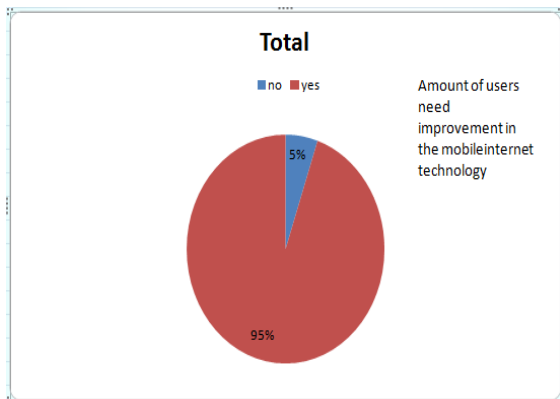


**Fig. 3: Analysis of Internet Technology in Different Age groups**



**Fig. 4: Analysis of issues in mobile Internet Technology**

As show if fig 4 there are 99% of users who are facing problems in using their mobile internet such as battery drain, low data packets, sometimes even network problems are also occurring within their mobiles.



**Fig: 5: Analysis of improvement in mobile Internet Technology**

As shown in figure 6 95% user are demanding for fast internet speed, whereas 5% are happy with the current Internet speed.

According to our survey there are people who required internet connection i.e 5g to be or set into implementation by viewing our application they are trying to tell us that the 5g will make the data adjustment such as it will improve the speed of data parsing in the network and the data which will be given to the user are more as compared to previous data technology and battery problem is also carried out within the network. Technology has so many services that can be offered to common people in day to day life and now, It has been realized that could be a reason why people demanding for faster speed.

## 9. CONCLUSION

- This 5G is going to make good profit in wireless market technologies
- As data traffic has huge growth potential, under 4G existing voice telecom hierarchies will be

moving flat IP architecture whereas the base stations will be directly connected to media gateways.

- 5G will promote concept of Super Core (in 4G Core such as snapdragon, dual-core, quad-core), where all the network operators will be connected one single core and have one single infrastructure, to access the technologies.

## 10. ACKNOWLEDGMENT

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## 11. REFERENCES

- [1]<https://en.wikipedia.org/wiki/5G>
- [2]<http://ieeexplore.ieee.org/document/7169508/>
- [3][www.FreeWiMaxinfo.com](http://www.FreeWiMaxinfo.com)
- [4]<http://hubpages.com/technology/3G-and-4G-Mobile-Services>
- [5]<https://searchenginereports.net/plagiarism-checker/fizzible.com/what-are-the-differences-between-1g-2g-3g-4g-and-5g>
- [6]T.Venkat Narayana Rao, 5g technologies – an anecdote of network service for the future, Journal of Global Research in Computer Science Volume 2 No (7), July 2011 164-170.
- [7]<http://www.ijcaonline.org/volume5/number4/pxc3871282>
- [8]<https://en.wikipedia.org/wiki/5G>