



Overview, Demand and Implementation of 5 G with respect to Current Era

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ABSTRACT

Adaptations in field of technology is now become a key requirement for the purpose globalization of world, and business communication etc. The main point of success in w-less is the quality of service in different field with different categories. From beginning the revolution of w-less technology, each birth of generation (old G to current G) have proved themselves italicized for their user in all fields of w-less technology. Currently these successfully categories in w-less utilize the user with many applications like video conferencing, access to their require information and other massive services but today technology still consist of some demerits which paralyzed their user lives. The knowledge of this research consist of comparison of Generations from old to younger G, their demerits and what are expectation from the upcoming G. How it will recover current problems and challenges will face by it in future. This paper will also provide the techniques that how tomorrow G will overcome today lengthy upgrades and services with news program daily.

Keywords: *Today technology services, tomorrow technology services, 0-5G.*

1. INTRODUCTION

The physical less data transfer techniques are not as modern as we think like in stone ages the people were using fire for the purposes of sending information from far apart locations. And with time being and by cause of key requirements these ideas gradually and slowly converted to modern and now we are in more advance.

Especially the current growths from below few years in fields of technology explore themselves with a tremendous rate in short space of time. Radio waves portion of electromagnetic waves used by today w-less technology. From last decades after some short spaces of time the technology got unique changes and these differences are known by names 0G, 1G, 2G,3G,4G and the next will be represented by 5G. These latest challenges have changed the way of people work. Like a fact that each good/object has a life cycle from rise to down, so each backward generations was the hero of its duration in the field of technology but with the increase of subscribers and advance requirements each generation face bundle of limitations which causes of switching to next G. Hence now we are in 4G from previous 3 to 5 years. 4G replaced the old Gs with more and advance applications but still it show itself a limited version in some advance challenges. So now the researcher or working on 5th G that updates and supports 4G before ground state. Today w-less and mobile technologies are going towards over all Internet Protocol basis [1]. The rapid successions of technology growth and use of intelligent phones are inducing unprecedented situations for the researchers of w-less fields to maintain hurdles in B-width in whole globe [2], [3]. The devices used by each G are shown in Fig: 1, 2 and 3 with speed, services and population of visitors.

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Fig: 1 [4]

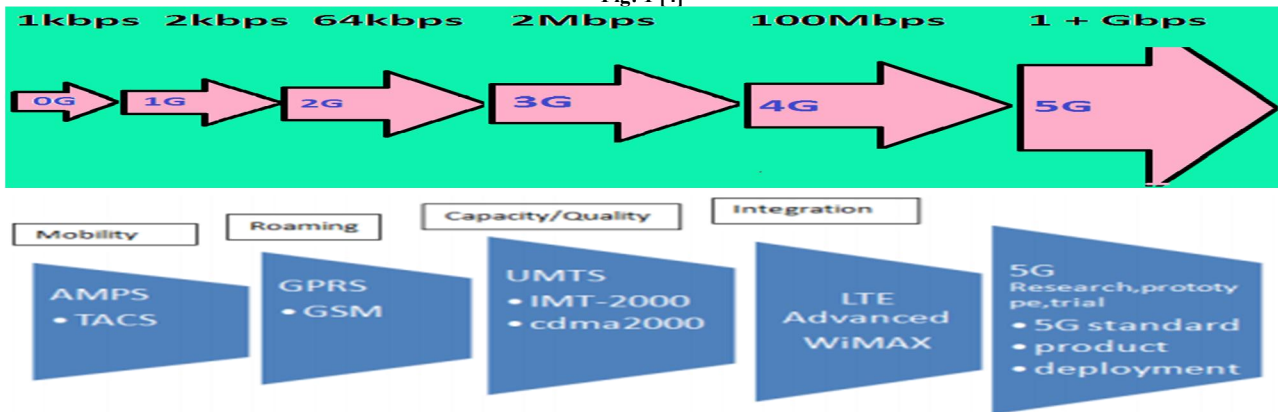


Fig. 2. [3]

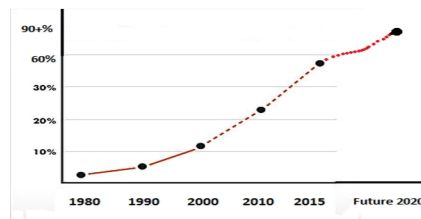


Fig. 3. [5]



This paper investigates briefly the lunched versions of w-less technology and has a great explanation on future technology on the basis of quality of service, education, business, in the field of medicine, for the purpose of security and all other features that we expected from 5G which are not capable for current Gs. The explanation is available under below topic voice. Z-G can also refer to telephone technology. This technology becomes reason of switching to modern Gs. MTS (Mobile Telephone System), IMTS (Improved Mobile Telephone Service), AMTS (Advanced Mobile Telephone System), PLT (Public Land Mobile Telephony) and MTD (Mobile telephony system D) technologies were used by Z-Generation [7].



The brief discussion on 1-Generation in different steps is:

Duration: The period of first G was from 1980 to 1990. Where it's all responsibilities of services transfer to 2-Generation.

System: The standard of 1-Generation was consisting of analogue system and preliminary this system was switched for military used then forwarded to common users.

Technologies: 1-G used technologies were NMT (Nordic Mobile Telephone in English), AMPS (Advanced Mobile Phone System), CDPD (Cellular Digital Packet Data), Mobitex and DataTAC [7].

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Applications and services: The visitors become able of voice calling in a specific area with low speed (2kbps) and poor quality of services. But it was appreciated a lot at its time and modify to next G with less hard work.

1-G cell phones: The sample of mobile phones used by 1-generation shown in Fig: 4



Fig : 4 [8]



The data rates are upgraded to 64kbps with new modern digital standard. More capacity provide by 2-G to its subscribers.

Duration: This technology lunch in 1990's and replaced by 3rd G in 2000. Exists and working in full digital format.

Standards: The standards used by 2-G are GSM (Global System for Mobile Communications), GPRS (General Packet Radio Service), EDGE (EGPRS) (Enhanced Data rates for GSM Evolution), HSCSD (High-Speed Circuit-Switched Data), iDEN (Integrated Digital Enhanced Network, D-AMPS (Digital AMPS), IS-95, PDC (Personal Digital Cellular), CSD (Circuit Switched Data), PHS (Personal Handy-phone System), WiDEN (Wideband Integrated Dispatch Enhanced Network) and CDMA2000 (1xRTT/IS-2000 [7].

Application and services: The key change from first-G was digital system from analogue. It allows SMS (Short Message Service) and use the capacity of bandwidth from 50 to 250 KHz. Next to 2G, 2.5G system uses packet switched and circuit switched domain and provide data rate up to 144 kbps. Like GPRS, CDMA and EDGE [9].

Samples: The samples of 2nd- Generation are show in Fig: 5.



Fig: 5 [10]



3rd- Generation is fully packet switch existence generation. The applications are improved and limitations are decreased with a rise in speed. Its features are.

Duration: The people become familiar and starting interest in the use of physical less technology. So for the purpose of business and sophisticated changes in old –Generations, 3rd-Generation started its life cycle graph in 2000 and still provides services to globe.

Standards: CDMA 2000, EVDO, UMTS, EDGE, IXRTT and WCDMA are the typically branded used by Trainbands-Generation additionally with a bandwidth of 10Mbs and 2Mpbs of speed [11].

Applications and services: its handsets become very popular in market and users reached to billions. 3rd-Generation has a reasonable cost against 2-G. 3-G proved itself as a growth engine in services of Internet Protocol (through which users can access to require documentation easily from everywhere), group audio and video conferencing calls and multimedia that help people in a comfortable life design. Moreover it has a large space of data sending and receiving and has times of speed form previous of w-less technologies.

Cell phones sample: Hand sets of 3-G design in touch screen technology for first time in evolution of technology. It has better performance and battery life as shown in Fig: 6.



Fig. 6. [12]



4-G first present in Japan at the year of 2005 with No of times supersede on 3-G. 4-G brought us from paralyzed life such that now people are capable of managing their office work from roads, buses while travelling and from their home lawn while enjoying with their kids anytime. The great work done in 4-G is IPv4 up graded to IPv6 that produce a great space in the area of internet technology. Hence the problems of I-address have been solved. 4-G ha superficial quality of service like HD video calling, MIMO functions, self organized functions, MMS, audio and video cha, digital video broad casting, powerful security, multifunction at a time and self organized network [13]. Up to 100 Mega per second speed it can provide services. It has seamless connectivity with Ex-Gs as shown in Fig: 7.

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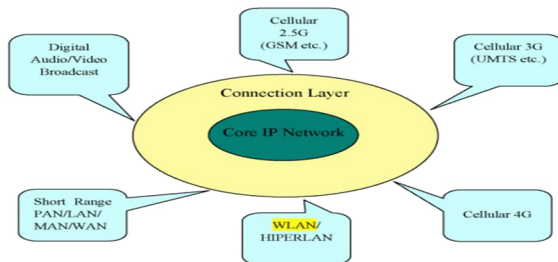


Fig. 7. [14]

After the successor on previously Gs 4-G enhanced to LTE (Long term evolution) it is a cluster version for all Ex-Gs. it is more reliable has good scheme of arrangement for data rate cost per bit. Can operate several services same time. LTE succeeded and proceed on all old Generation and make suitable connectivity too. So it's become easy for each G of users for the purpose of linkage with each other. OFDMA, SCFDMA and IMT advanced are the used standard by LTE. Multiple access tasks, extensive multiple input multiple output channel transmission techniques enhanced coordination among multiple cell sites called coordinated multipoint (CoMP) transmission/reception and close proximity with other field of technologies were agreed as the goal structures for LTE [15]. All of these a lot of features these all previous and current technologies have several problems like these cant utilize by a normal users. It has tough software techniques moreover the battery life and high securities for access information are making the real disturbance for their candidates. Over come on these problems the users desire such a technology which depends on the structure of their own thinking

and techniques. Such future technology represented by name 5th Generation of w-less technology. Here we have a long overview on 5th that how previously Ex-Gs will be occupied by 5-G.

Under 4-G uses cell phones sample shown in Fig: 8.



Fig. 8. [16]



This is the goal of researcher and members that there must be such a technology which is wisdom by itself, which is more flexible for other fields of entire globe, where no fear of loss, which is easily understand by candidates, which is access to everyone, which is time saver, which less programmable, which help us to cluster all globe for us and which give us all those facility more than our thoughts and our ideas. Mobile phones sample shown in Fig².



5G
Fig. 9. [21]

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2. ARCHITECTURE OF 5G

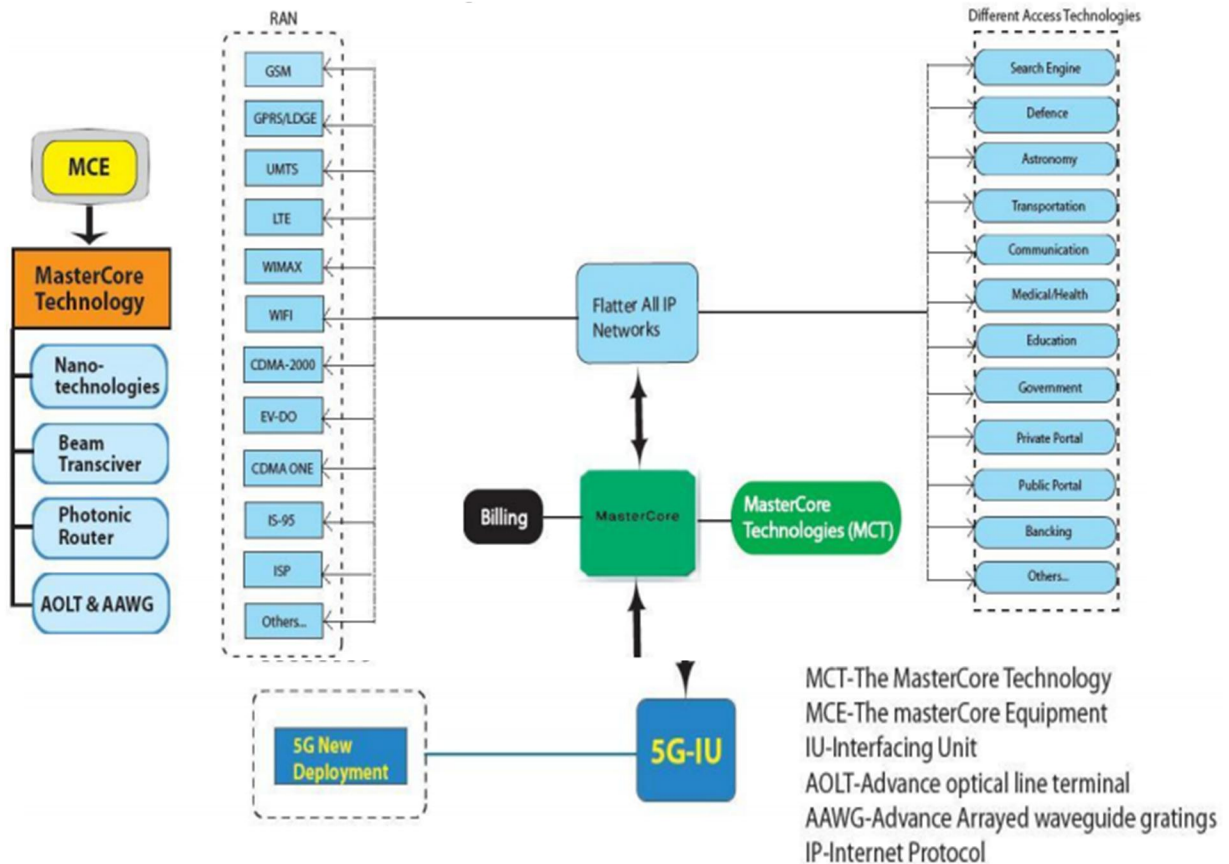


Fig. 10. [22]

3. AIM OF 5-G

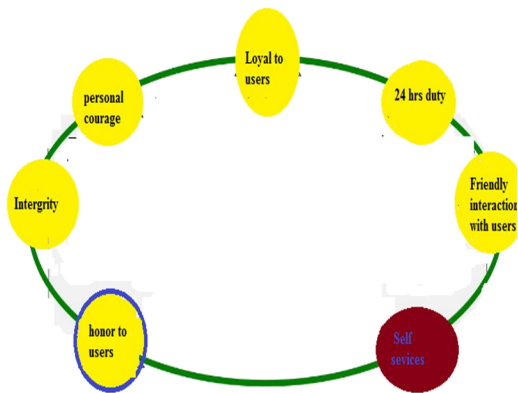


Fig. 11.

These all things will be available by 5-G it will justice to all and it will make the globe green for us. The features of 5-G will be are as follow:

i. Key Features of Pent-Generation

- W-less technology have a great space in emerging market so it will provide a greatest benefit like easy implantation and work by technique of self organized, Better speed, high reliable and better performance than other Generations, a large life cycle and work up to long duration, ability to support all protocols easily additionally better performance over TCP over IP, will be legislative technology and has all the power to protect the secrets of candidates from criminals, Have ability to inform its user on the time being if there are any problems his/her device, User device have ability to block harmful data on the basis of self organize arrangement., Can have power to vanish unwanted data from device also provide high range facility to members, No physical interaction completely w-less, It has additional applications, benefiting from mobile connectivity are home automation, smart transportation, security, and e-books [17].

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- In 5-G each smart phone will be consist of its own home address and IP address so chances of crime and hacking of data ratio will be down and will provide a speed in Gbps.
- Has capability of self programming and self intelligence.
- It will allow friendly interaction to its candidates.
- WISDOM service ability, and work on the basis of anywhere anytime 24 o 7 with open system based architecture and advance probability
- OTP (open control protocol is the terminology will protect enhance data speed for the desire used system.
- WWW (world-wide-wireless-web) is the new internet protocol that will present by 5-G.
- Will has ability of few numbers less latency than Ex- Gs.
- Tremendous bandwidth, tremendous frequency in GHz which will remove the fear of limitations.
- Fast downloading and uploading and having ability of storing large information using less space and short duration.
- Zero distances networking and low latency.

✓ Will issue unique pattern, unique structure, and will have regular manners for its users. This will not indicate too much viscous to its elements and will provide real world applications

✓ In 5-G the smart phones will self charged, self scanner, self organizer and will perform other critical process information that provide facility of buying and selling of objects using easy techniques.

✓ It will support all entire areas like in election point of view digital voting system where member can support his/her hero from everywhere in earth. The user device will be so intelligence that will characteristics of to find out daily temperature, accurate time on the basis of locations, will proved service of storing daily records, generate more useful functions on the basis of work, time and place and will provide friendly situations too.

As this is a known fact that only property of any element is its quality of work and quality employed by 5-G will be never seen by the visitors in earlier versions. The quality in education, where students can get access to every informative data, quality in natural disaster it will warn the community before any large loss using some sensitive device. The rules of charges and other packages and equality will be for all users. And a user can change its applications by own want and It will be a cloud working device where the users can connect their home devices from his/her own handset and can edit his/her applications. There will be a unique IP selection method for every user which will be for all his/connected devices and they will utilize it from everywhere even from moon. The solemn assurance of 5G is: to expand the possibilities of what mobile networks can do, and to extend upon what services they can deliver [20].

ii. Quality of service (QoS) of 5-G

When new ideas and new service overcome on current system of technology and completely upgrade it then it is given name a new generation of technology. Like 2-G replaced 1-G problems, 3-G overcome on the quality of service of 2-G- and 4-G handle 3-G with more techniques more sophisticated standards. The targeted functions of QoS will be as follow.

- ✓ The main success will be in major growth in economics.
- ✓ Criminal graph ratio will be down.
- ✓ It will exhibit same properties in all glob.

iii. Comparison with 1-G to 4-G [18],[19].

Qualities	Meth-G	Eth-G	Prop-G	But-G	Pent-G
Starting life cycle period	1980	1990	2000	2010	Expected in 2020
Standards	AMTP	GSM,GPRS, EDGE	WCDMA CDMA-200 TD-SCDMA	All access convergence including: OFMDA, MC-CDMA Network-LMPS	All access convergence including CDMA, and BDMA and more advance single standard for all duration of technology.
Working Technology based	Analog based	Digital based	Broad bandwidth CDMA,IP and provide digital cellular system technology	Unified IP And seamless combination Of broadband LAN/WAN/ PAN and WLAN	Unified IP and seamless combination of broadband, LAN/WAN/PAN/WLAN and more new more massive technologies employed for 5-G.

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Bandwidth service	2-kb/sec	64-kb/sec	2-Mb/sec	100-Mb/sec	>Mb/sec
MIMO Tech	Not available	Without this technology	out of MIMO	Available	Massive MIMO based
System Network	based on PSTN	Working on PSTN	Network of packet used	Internet technology	Advance internet service technology
Privacy	No security	not perfect secure	secure till some based	More secure but difficult in implementation	Will provide easy techniques of security to members.
Latency	In Mins	Up to 30Sec	10 sec	Milliseconds	Below nanoseconds
Use of technology	Implementation via circuit switching	Combination of circuit and packet switching	Deign on packet	All converted to packet	Quiet packet switching based

iv. Features in the field of Medicine

Today technology play a role it the field of medical in some particular part in world.. In current situation the world faced many problems in medical area the no of diseases rise day to day. Here the goal points of 5-G that how it can bring changes in field of medical and how it can help us to decrease disease ratio.

- A small disease can cause of cancer or HIV so it will provide all diagnosis facility to each without large expenses and also till some extent guidelines for treatment.
- The use of modern devices like MRI.ECG etc can be implemented easily no difficult installation and a doctor can save the check data of a patient up to long space of duration which is easy way in treatment.
- Can start check up the health of a baby from womb of his/her mother. More advance devices for purpose of operations and other emergencies and also dynamics digital device which can use also for military purpose and accident places.

v. Goals in the fields of education

More than 50% part of world is uneducated and 50% of the remaining educated just so name means they know can't help the society in real world problems and this is the problem which involves the glob in crime and other unpleasant activities. The getting of higher education is now the thirst for each country and each member which is difficult for 3rd world countries to arrange the modern necessary tools for education. This issue can solved by 5-G. We can utilize their Labs, their skills and Lectures, HD videos lectures from far away distances will help the students in practical tasks and they can register their selves

with any industry for purpose of learning also can attain jobs as well.

Key goals in the field of business

According to an investigation research that 25% percent of whole world economy depend on technology ways. The 5-G will make it more up. The real time functions will bring people to buy their products from every place of world using WWW technology. All of markets will be convert to emerging market and there will fear of security the customers can check the quality of their desire products and they avail opportunities using easy payment process. 5G will search the condition of goods and foods in nanosecond so a great privacy damage things.

vi. Features in field of entertainment

People will cordially thanks to 5-G in this era. Sports, music and movies are the portions of entertainment in which people really want to improve. Tomorrow-G of mobile and network technology will support people to watch online sports game, shows, movies and music with HD, not stop and periodic audio and videos on roads, from beds and from top of mountains.

vii. How it can change life way of people and the system of a country

5-G will be a mighty revolution in Field of w-less technology. It will provide all the power of taking benefits from this beautiful universe. The sovereign and legislative body of a country can take decisions from every place on the basis of their gravest responsibilities. They can design infrastructure for country for building, educations, employees' responsibilities schedules other onerous meets. They can handle millions of works in a day. No need to visit and check the quality of new making project. The evil of nepotism and jobbery will be decrease, and people can avail each and every moment of their lives directly or indirectly with PEACE.

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3. CONCLUSION

In this research paper our focus was about the evolution of wireless technologies from earlier to future with additionally their key role in globe and mutually interaction among human and machine especially on 5-G. It is discussed that how these technologies and the future coming one are beneficial for us and entire globe. Our main investigation was consist of 5G technology that how it will be? What are its features will be in various fields? And how it will work? We concluded that the coming technology will have all of those possibilities which are exist on demand list. The service will be able to provide high data, reliable networking, more secure, large capacity, massive MIMO, radio access and enhance bandwidth and better quality of service. It will have the power to support earlier and coming technology. It will behave like translator among different standards of technology. The main focus in the field of technology is Quality of Service. Technology means to provide a comfortable path, and 5G have all of those possibilities according the bundle of demand list. It will strongly support the other fields such as medicine, agriculture sports, education and other field and subfield etc. 4G and 5G techniques provide adequate user services with lower battery energy use, lower outage probability (better coverage), high data rates in larger parts of the coverage field, economical or no traffic fees due to low infrastructure deployment costs, or higher aggregate capacity for many simultaneous users.[17]. Hope this journal will provide a great knowledge to visitors.

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