

One such service is Global roaming. Its advantage is that it provides greater security but its biggest disadvantages are its cost and poor performance. Although it is possible that some of the weaknesses at physical layer will still exist in 4G system.

2.5 4G Generation

This generation in addition to usual voice and other services of 3G, provides mobile broadband internet access, for example to laptop with wireless modems, to smart phones and other mobile devices. It promises a downloading speed of 100 Mbps. It finds its applications in mobile web access, high definition mobile TV, video conferencing, 3D television and cloud computing. Also it sends data much faster than that of previous generations.

2.6 5G Technology

5G stands for 5th generation wireless system. It denotes the next major phase of mobile telecommunication beyond the current 4G standards. Here researches are being made on development of Wireless World Wide Web (WWW), Dynamic Ad hoc Wireless Network (DAWN) and Real Wireless World. It has 10 times more capacity than previous generations. Lower cost than its predecessors and expected throughput speed of 1 Gbps and connectivity speed of 25 Mbps. It is a complete wireless communication with no limitations and is based on Open Wireless Architecture (OWA).

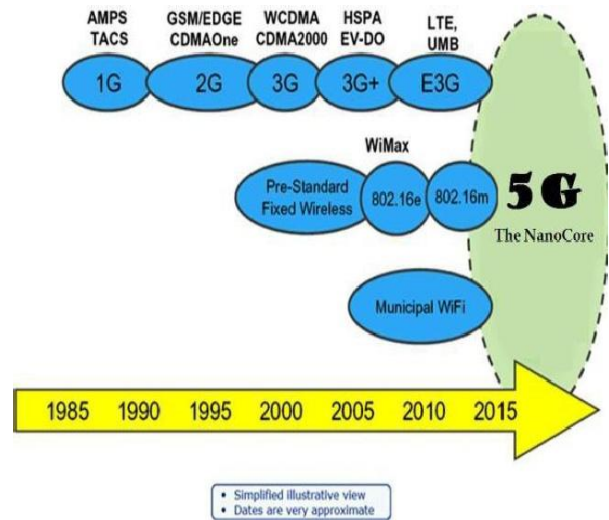


Figure 1: Evolution of Different Generations

3. Architecture of 5G

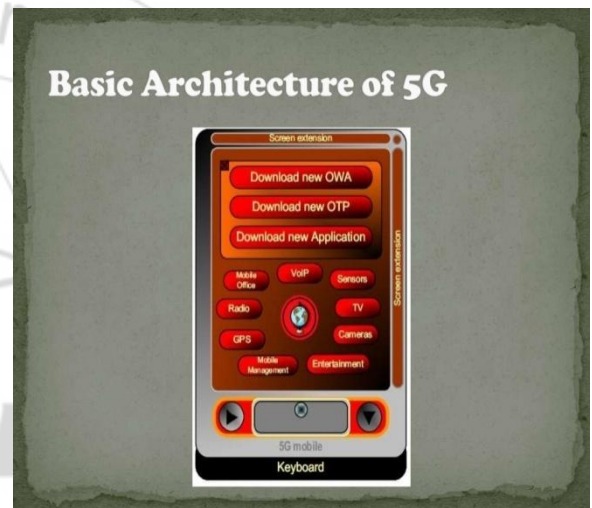


Figure 2: Architecture of 5G

4. Comparison

Table 1: Comparison Table of Different Generations

Generation	Definition	Throughput Speed	Technology	Time Period	Features	Disadvantages
1G	Analog	14.4 kbps	AMPS, NMT, FDMA	1970-1980	Phones are used for voice only	Unsecured Communication
2G	Digital narrow band circuit data	9.6/14.4 kbps	TDMA, CDMA	1990-2000	The phone conversations were digitally encrypted by allowing multiple users on a single channel	At higher frequencies, if weaker digital signal is transmitted by a cell phone, it may not be sufficient to reach a cell tower
2.5G	Packet Data	171.2 kbps (peak) 20-40 kbps	GPRS	2001-2004	Introduced data services for mobile starting with SMS, MMS, picture messages	It does not necessarily provides faster services
3G	Digital broadband packet data	3.1 Mbps (peak) 500-700 kbps	CDMA 2000, UMTS, EDGE	2004-2005	Universal access and portability across different device types are made possible	Poor performance and costly
3.5G	Packet data	14.4 Mbps (peak) 1-3 Mbps	HSPA	2006-2010	Supports higher throughput	Costly

4G	Digital broadband packet All IP very high throughput	100-300 Mbps (peak) 3-5 Mbps 100 Mbps (Wifi)	WiMax, LTE, Wifi	2010-2012	Provides mobile broadband internet access, cloud computing, IP telephony. Worldwide roaming is not a distant dream	Connectivity is still limited to certain specified carriers and regions, poor battery life
5G	Flat IP network	Expected up to 1 Gbps	OFDM, LAS-CDMA	Probably 2015-2016	It is not used officially, 10 times more capacity than predecessor, lower cost and more faster	
6G	Not Yet	Expected in terabit range	Not yet	Probably in 2020s	It can be a combination of nano core and artificial intelligence,	

5. How 5G will Help

5.1 Key Concepts

- Real wireless world with no limitations with access and zone issues.
- Wearable devices with AI capabilities
- IPv6, where a visiting care of mobile IP address is assigned according to location and connected network
- One unified global standard
- Smart radio
- The user can simultaneously be connected with several wireless access technology
- Multiple concurrent data transfer path
- Also supported by LAS-CDMA, OFDM, Network-LMDS
- The router and switch technology provides high connectivity
- High altitude stratospheric platform station (HAPS) system

5.2 Features of 5G

- Offers high resolution for cell phone users with large bandwidth
- Advanced billing interface
- Subscriber supervision tools for fast actions
- Large broadcasting of data in Gigabyte
- Traffic statistics can be made more accurate
- Remote diagnostics has a great future
- Supports virtual private network

5.3 Beyond 5G

- Complete wireless network with no limitation
- Incredible transmission speed in terabit range
- Zero distance connectivity between people
- It will maximize data throughput and input output operations per second
- High internet access speed without any fluctuations can be achieved
- The future scope will be incredible if nanocore combines with artificial intelligence
- Intelligent Robot can be controlled
- We might have a single nanocore for all nations
- Probability of expansion in data center configuration options

6. Conclusion

5G technology and its beyond technology is going to prove a new revolution period for mobile wireless communication. Also nanotechnology and cloud computing are the next great technology wave. The upcoming technologies has a bright future because it can handle best technologies with reasonable costs that can be easily used by the customers. The upcoming technologies will promote concept of nanocore where all the network operators will be connected to one single core and have one infrastructure, regardless of their access technologies. As in evolution and explosion, many will become extinct but some will change the world. So we pursue the strategy of diversified portfolio

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