

# 6G Technology

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**Abstract** - Wireless communications is the transferring of information between two or more points which are not physically connected. Distances can be short, which is used for television remote control and even far distance which is used for deep-space radio communications. The paper deals with the evolutions of technologies and its advantages and comparative study on 3g, 4g, 5g and 6g and overview of 6g technology.

**Key Words:** 1G, 2G, 2.5G, 3G, 4G, 5G, 6G

## 1. INTRODUCTION TO MOBILE TECHNOLOGY

Mobile technology is technology which is portable. A variety of tasks can be performed at anytime and anywhere. It allows those tasks to be performed via cellular phone, vehicles, and laptops. GPS route framework, a web browser, and instant messenger framework, a video gaming framework. There are numerous transmissions medium like radio wave, microwave, infra-red, GPS and Bluetooth is utilized to exchange of information by means of voice, content, video, 2-dimensional barcodes and the sky is the limit from there. Technology is progressively its request in numerous organizations and individuals' close to home utilize particularly versatile innovation.

### Advantages

- Access speed
- Higher Efficiency
- Reduced Cost of Operations
- Endless Possibilities
- Increase Availability of Social Networks

### Disadvantages

- Mobile devices expose valuable data to unauthorized people if the proper precautions are not taken to ensure that the devices and the data which is accessed are kept safe.
- Digital Divide among Patients
- Security Issues
- Lack of Information Control
- Safety and privacy

## 2. COMPARISON OF VARIOUS TECHNOLOGIES

### A. Comparison Between 1G, 2G/2.5G and 3G Technologies

Features	1G	2G/2.5G	3G
<b>Deployment</b>	1970-1984	1980-1999	1990-2002
<b>Bandwidth</b>	2 Kbps	14-64 Kbps	2 Mbps
<b>Technology</b>	Analog Cellular	Digital Celular	Broadband/ CDMA/ IP Technology
<b>Service</b>	Mobile Telepho ny	Digital Voice, Short Messaging	Integrated High Audio, Video & Data
<b>Multiplexing</b>	FDMA	TDMA/ CDMA	CDMA
<b>Switching</b>	Circuit	Circuit / Circuit for Access N/W and Air Interface	Packet except for air interface
<b>Core Network</b>	PSTN	PSTN	Packet Network
<b>Handoff</b>	Horizont al	Horizontal	Horizontal

### B. Comparison between 4G and 5G Technologies

Features	4G	5G
<b>Deployment</b>	2000-2010	2014-2015
<b>Bandwidth</b>	20 Mbps	>1Gbps
<b>Technology</b>	Unified IP & Seamless combo of LAN/ WAN/ WLAN /PAN	4G+WWW
<b>Service</b>	Dynamic Information Access, Variable Devices	Dynamic Information Access, Variable Devices with AI capabilities
<b>Multiplexing</b>	CDMA	CDMA
<b>Switching</b>	All Packet	All Packet
<b>Core Network</b>	Internet	Internet
<b>Handoff</b>	Horizontal & Vertical	Horizontal & Vertical

### 3. WIRELESS NETWORKS

6G is proposed to integrate 5G with satellite networks for global coverage. 6g technology is considered to be cheap and Fast Internet Technology. It provides high data rates and fast Internet speed to access on air through wireless and mobile devices with data ranges up-to 11 Gbps when travelling far distances. The goal of 6g technology is to provide multimedia, internet connectivity and weather information services to the mobile users. Nano Antennas which is designed is implemented at different geographical locations like along roadsides, villages, malls, airports, hospitals to broadcast high speed electromagnetic signals. The globe is decorated by fly sensors with the help of 6G technology. They will provide information to their remote observer station. The point to point wireless communication networks transmit super- fast broad band signals through the air at high speed optical fibers lines to transmit the secured information from transmitters to destinations.

#### A. 5G Technology

5G technology refers to fifth generation technology, which was started in 2010. It provides up-to 25Mbps connectivity speed. It supports the virtual private network. The speed of uploading and downloading the file is very high. It consumes low battery and strong bandwidth up-to 40 MHz. It is cheap in rates and can be used by multi user. 5G is complete wireless communication with no limitations.



#### Features

- Faster response time
- High capacity
- Wider range of applications
- Connectivity Speed up-to 25 Mbps
- More software option to upgrade
- Large broadcasting
- Less traffic
- Bi-directional, large bandwidth
- Supports virtual private network

#### Advantages

- High resolution and bi-directional large bandwidth shaping.
- Technology to gather all networks on one platform.
- More effective and efficient.
- Technology to facilitate subscriber supervision tools for the quick action.
- Most likely, will provide a huge broadcasting data (in Gigabit), which will support more than 60,000 connections.
- Easily manageable with the previous generations.
- Technological sound to support heterogeneous services (including private network).
- Possible to provide uniform, uninterrupted, and consistent connectivity across the world.

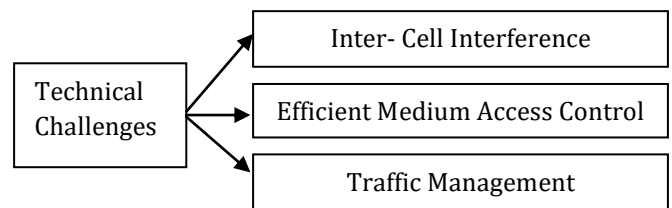
#### Disadvantages

- High cost
- Research
- Infra structure
- Security issues
- Technology is still under process and research on its viability is going on.
- The speed, this technology is claiming seems difficult to achieve (in future, it might be) because of the incompetent 5G.



#### Challenges

##### 1. Technical Challenges

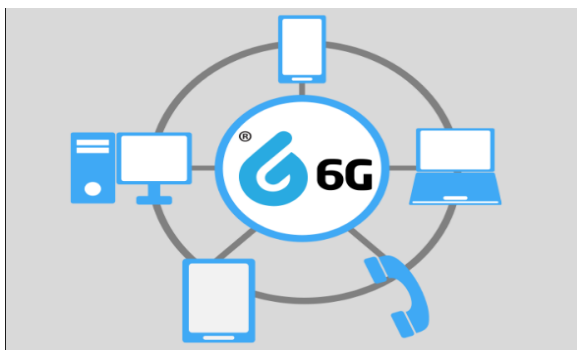


## 2. Common Challenges



## B. 6G Technology

6g technology refers to the sixth generation technology. It is proposed to integrate 5G technology for a global coverage. For resource monitoring and weather information multimedia video and high-speed Internet connectivity and the Earth imaging satellite networks are used. To integrate these three kinds of satellite like telecommunication, navigation, multimedia networks which provide global positions, internet connectivity with high speed and for mobile user’s weather information services are major three objectives for 6g technology.



### Advantages

- Ultra fast to access Internet.
- Data rates up to 10-11 Gbps.
- Home automation and other related applications.
- Smart Homes, Cities and Villages.
- Used in the production of Energy from galactic world.
- Space technology and Defense applications will be modified with 6G networks.
- Home based ATM systems.
- Satellite to Satellite Communication for the development of mankind.
- Natural Calamities will be controlled with 6G networks.
- Sea to Space Communication

## 4. COMPARISON BETWEEN 5G AND 6G TECHNOLOGES

Features	5G	6G
<b>Year</b>	2015	After 5G onwards
<b>Speed</b>	1Gbps and Higher	10 to 11Gbps
<b>Technology</b>	4G+WWW	5G+Satellite
<b>Standards</b>	WiMAX LAS CDMA, OFDM, MC-CDMA, UWB, Network-LMDS, IPv6	GPS, COMPASS, GLONASS, Galileo systems
<b>Core Network</b>	Internet	Internet
<b>Handoff</b>	Horizontal & Vertical	Horizontal & Vertical

## 5. CONCLUSION

Today mobile phones consist of everything ranging from the smallest size, largest phone memory, speed dialing, video player, audio player, and camera and so on. Recently with the development of internets and Bluetooth technology data sharing has become a child's play. The 6th generation (6G) wireless mobile communication networks integrate satellites for global coverage. It can be a combination of nanocore and artificial intelligence, where all the network operators will be connected to one single core. As in evolution and explosion, many will become extinct but some will change the world. In 6G the cost of mobile call will be relatively high but in 7G this problem will be improved and the cost of call will be reduced and lower level user will be benefited.

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