**The different types of Mobile Telephony (Cellular) Systems**

**1G:**

As a matter of first importance when we discuss 1G etc what does this G stand for? Well, it stands for Generation, so 1G is the first generation of mobile communication systems.

In the 1970’s privately owned businesses began building up their own particular correspondence frameworks to advance existing frameworks further. Those private frameworks were Analogue mobile phone systems (AMPS) utilized in parts of America and the United Kingdom. Total Access Communications Systems (TACS) and Nordic Mobile Telephone (NMT) were also used in parts of Europe. These created frameworks are now what is known as the first Generation of mobile communication frameworks.

**2G:**

2G alludes to the second era in light of GSM and was developed in the late 1980s. It utilises computerised signals for voice transmission. The principal focal point of this innovation was on advanced flags and gives individuals the ability to convey content and picture messages at low speed.

The GSM innovation was ceaselessly enhanced to give better administrations which prompted improvement of cutting-edge Technology in the vicinity of 2g and 3g mobile networks.

**3G:**

Third Generation (3G) is likewise in light of GSM and was propelled in the year 2000. The point of this innovation was to offer rapid information across the world. The first innovation was enhanced to permit information up to 14 Mbps and all the more utilising bundle exchanging. It utilises Wide Band Wireless Networks with which clearness is expanded. It likewise offers information administrations, access to TV/Video, Data, Text, etc. as well as new administrations like Global Roaming is now possible. It works at a scope of 2100MHz and has a data transmission of 15-20MHz utilised for High-speed network access and video visiting.

The 3G mobile framework was called a UMTS (Universal Mobile Telecommunication System) in Europe, while CDMA2000 is the name of American 3G variation.

**4G:**

4G offers a much improved downloading rate of up to 100Mbps. 4G gives the same element advantages as 3G but also includes extra administrations like Multi-Media Newspapers, watching TV programs online using services such as Netflix with a lot more clarity due to the send/receive speeds of Data now being significantly quicker than past ages. It introduced us to the Mobile Social Media and Mobile App world used how it is today. LTE (Long Term Evolution) is considered a 4G innovation.

**What is Next?**

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra low latency (Latency is gap time, or transmission time for a packet of data. We look at this in two ways: one-way latency is the time between when a packet is sent and when it’s received by the recipient, and roundtrip latency is the time between the transmission of a packet and the reception of acknowledgement.), more reliability, massive network capacity, increased availability, and a more uniform user experience to more users. Higher performance and improved efficiency empower new user experiences and connects new industries.

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G is based on OFDM (Orthogonal frequency-division multiplexing), a method of modulating a digital signal across several different channels to reduce interference. 5G uses 5G NR air interface alongside OFDM principles. 5G also uses wider bandwidth technologies such as sub-6 GHz and mmWave.

Like 4G LTE, 5G OFDM operates based on the same mobile networking principles. However, the new 5G NR air interface can further enhance OFDM to deliver a much higher degree of flexibility and scalability. This could provide more 5G access to more people and things for a variety of different use cases.

5G will bring wider bandwidths by expanding the usage of spectrum resources, from sub-3 GHz used in 4G to 100 GHz and beyond. 5G can operate in both lower bands (e.g., sub-6 GHz) as well as mmWave (e.g., 24 GHz and up), which will bring extreme capacity, multi-Gbps throughput, and low latency.

5G is designed to not only deliver faster, better mobile broadband services compared to 4G LTE, but can also expand into new service areas such as mission-critical communications and connecting the massive IoT. This is enabled by many new 5G NR air interface design techniques, such as a new self-contained TDD subframe design

**WHY 5G IS BETTER THAN 4G**

here are several reasons that 5G will be better than 4G:

• 5G is significantly faster than 4G  
• 5G has more capacity than 4G  
• 5G has significantly lower latency than 4G  
• 5G is a unified platform that is more capable than 4G  
• 5G uses spectrum better than 4G

**5G is a unified platform that is more capable than 4G.**  
While 4G LTE focused on delivering much faster mobile broadband services than 3G, 5G is designed to be a unified, more capable platform that not only elevates mobile broadband experiences, but also supports new services such as mission-critical communications and the massive IoT. 5G can also natively support all spectrum types (licensed, shared, unlicensed) and bands (low, mid, high), a wide range of deployment models (from traditional macro-cells to hotspots), and new ways to interconnect (such as device-to-device and multi-hop mesh).

**5G uses spectrum better than 4G.**  
5G is also designed to get the most out of every bit of spectrum across a wide array of available spectrum regulatory paradigms and bands—from low bands below 1 GHz, to mid bands from 1 GHz to 6 GHz, to high bands known as millimeter wave (mmWave).

**5G is faster than 4G.**  
5G can be significantly faster than 4G, delivering up to 20 Gigabits-per-second (Gbps) peak data rates and 100+ Megabits-per-second (Mbps) average data rates.

**5G has more capacity than 4G.**  
5G is designed to support a 100x increase in traffic capacity and network efficiency.1

**5G has lower latency than 4G.**  
5G has significantly lower latency to deliver more instantaneous, real-time access: a 10x decrease in end-to-end latency down to 1ms.1

## Q: Where is 5G being used?

A: Broadly speaking, 5G is used across three main types of connected services, including enhanced mobile broadband, mission-critical communications, and the massive IoT. A defining capability of 5G is that it is designed for forward compatibility—the ability to flexibly support future services that are unknown today.

**Enhanced mobile broadband**  
In addition to making our smartphones better, 5G mobile technology can usher in new immersive experiences such as VR and AR with faster, more uniform data rates, lower latency, and lower cost-per-bit.

**Mission-critical communications**  
5G can enable new services that can transform industries with ultra-reliable, available, low-latency links like remote control of critical infrastructure, vehicles, and medical procedures.

**Massive IoT**  
5G is meant to seamlessly connect a massive number of embedded sensors in virtually everything through the ability to scale down in data rates, power, and mobility—providing extremely lean and low-cost connectivity solutions.







