1. WIFI (Wireless Fidelity) :→

WIFI known as (WLAN) is a popular technology that allows computer or an electronic device to exchange data using radio waves (wireless) over a computer network to provide high-speed Internet connection. It ranges from 32m depending upon your wireless router.

WIFI has a wireless router which receives and transmits the information from the allowed computer and devices through the internet. WIFI operates on frequency of 2.4 GHz or 5 GHz which is termed as IEEE 802.11 standards. Various standard present in the market are

a) 802.11b :→ First version. slowest and least expensive standard. operates in 2.4 GHz frequency and has speed upto 11 mbps.

b) 802.11g ⇒ operates in 2.4 GHz speed upto 54 mbps

c) 802.11a ⇒ operates in 5 GHz speed 54 mbps

2. WIMAX (Worldwide Interoperability for Microwave Access)

WIMAX provide wireless broadband Internet Access which is termed as Metropolitan wireless IEEE 802.16 standard. WIMAX is Ip based which can provide broadband wireless Access upto 30 miles (50km) for fixed station and 3-10 miles (5-15 km) for mobile station.

Any portable devices, Laptops can easily get access to the internet at any time from any place in the coverage area of WIMAX. Digital service line (DSL) or cable Internet are been replaced by WIMAX. It operates in 2-11 GHz frequency and can provide data rates 30Mbps to 1 Gbps.

3) UMB (Ultra Mobile BroadBand)

Ultra Mobile Broad Band was named for next generation application to improve CDMA 2000.

Ultra Mobile Broadband is based on (TCP/IP) network technologies and also named as Next Generation Radio

system. It provides data rates upto 280 Mbps and also termed as 4G mobile communication. It supports voice, data/multimedia services on the same packet based network architectur

4) LTE (Long Term Evolution) :→

Long Term Evolution is mobile Communication standard for 4G. The technology provides high speed data for mobile phones and data terminal. The goal of LTE is to increase speed of wireless data network using digital signal process - ing techniques and is based on Ip technol - ogy. Its downlink rate is 200 mbps and uplink is 75 mbps.

5) IMT-2000 (International Mobile Telecommunicat -2000

It is Third (3G) generation mobile network. IMT-2000 employs wide band Code Division multiple Access (W-CDMA) radio Access to offer great spectral efficiency and bandwidth to mobile network

It supports upto 2 Mbps datarate.
It is packet based transmission of text, digitized voice, video and multimedia which also allows video conferencing of available high bandwidth.

* Evolution beyond 5G

The 6G, the Evolution beyond 5G will be emerging technologies with terahertz communication, holographic beamforming and A.I powered network management System.

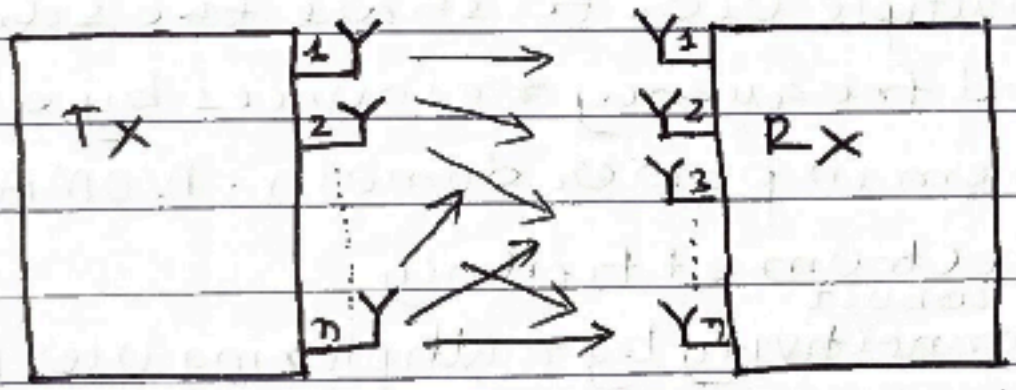
Wireless communication from first to Fifth generation shows the rapid technological advancement in the evolution of shifting from analog to digital, emergence of mobile broadband, increase the reliance on higher frequency and advanced signal processing techniques.

The evolution beyond 5G will

1. Enhance coverage and capacity
2. Reduced Latency
3. Increased Connectivity
4. Enhanced security
5. Integration with other technology.

* Multiple Input Multiple output (MIMO)

Multiple Input Multiple output (MIMO) is a wireless technology that uses multiple transmitter and receiver to transfer more data at the same time. It increases the capacity of the channel as the signal can take many path to reach the receiver.

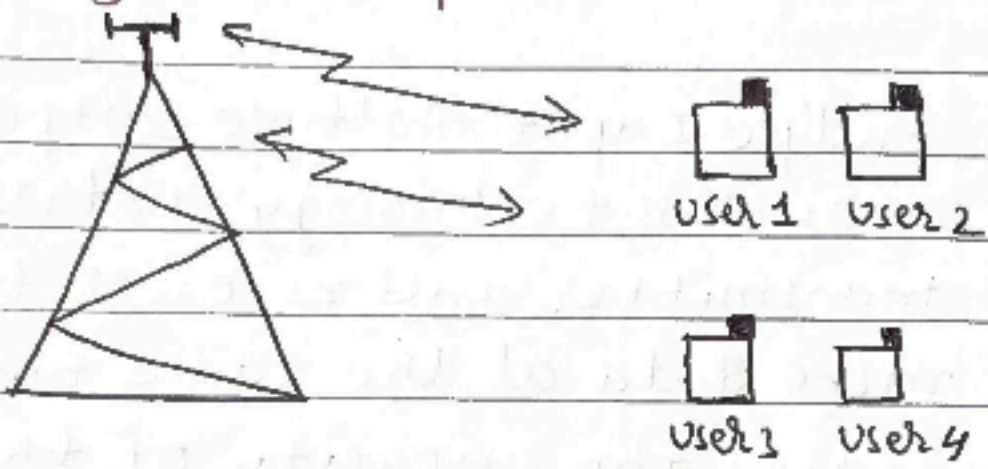


Multiple Input Multiple output

Multiple Input Multiple output (MIMO) antenna system considered as Smart Antennas are used in modern wireless standard in IEE 802.11n, 3GppLTE and mobile WiMAX system. Multiple Input Multiple output MIMO technology has following benefits.

1. super Data Rates, Range and Reliability
2. Multiple Antenna Configuration overcomes the effect of fading.

* Non-orthogonal Multiple Access (NOMA)



Non orthogonal Multiple Access (NOMA) is a multiple Access technique that enables multiple user to share the same time and frequency resources by differentiating them in power domain. NOMA enhances

1. spectrum efficiency
2. Robust Connectivity by multiplexing user based on power level.
3. Flexibility
4. Mitigating multiple access interference.

Future wireless Beyond 5G (B5G) and 6G will be of high data speed and accomodating 10 billions of mobile user around the Globe. NOMA and MIMO will be the new cutting edge technology for B5G and 6G offering massive datarates and efficient Connectivity with less interference and fading.