

# Advanced Wireless Communication

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**Abstract-** One of the fastest and wide developing field is wireless communication. There are millions and billions of users who use these wireless communications. There are also new technical efforts and challenges that are upcoming and getting developed. But in every wireless application there will be some defects and by these problems some wireless applications gets rejected. The term wireless refers to the electronic or electrical operation. It is defined as the transfer of the informations without any wires or electrical conductors. The distances for the wireless communication involved may be short or very long .Wireless communications is generally known as a one of the branch of telecommunication.

## I. WIRELESS COMMUNICATION

Wireless communication includes the transmission of information over a distance without the help of wires and cables. Wireless communication is a kind of data communication. wireless communication is performed wirelessly. It is a method of connecting and communicating between two devices using wireless communication devices. Wireless communication works through electromagnetic signals.

## II. FEATURES OF WIRELESS COMMUNICATION:

The distances of signal transmission can be anywhere between few meters.

For example :TV remote will send signals between only few meters

But radio communication send signals between thousands of kilometres

Cellular telephony uses Wireless communication , accessing internet through wireless communication, wireless home networking etc..

### Examples of applications of radio wireless technology

GPS units, wireless mice, keyboards and headphones, radio, satellite television, and cordless telephones.

## WIRELESS-ADVANTAGES

Wireless communication includes transfer of information without any physical contact or connection between two or more devices<sup>[1]</sup>. , wireless communication has many advantages because of the absence of any physical connection

## ADVANTAGES OF WIRELESS COMMUNICATION:. COST EFFECTIVENESS

Wired communication involves the use of wires. In wireless communication does not require physical connection or maintenance . Hence the cost is low.

### Flexibility

Wireless communication enables people to communicate without bothering about their location. It is not mandatory to be in an office or in some telephone booth in order to pass and receive messages.

### Convenience

Wireless communication devices like mobile phones are simple and easy to use and anyone can access them wherever they may be.In wireless communication it does not need any physical contact to receive or pass messages.

Example –WIFI is one of the example for the wireless communication. Ie it does not use cables.

### Speed

Wireless communication has Improved very well it can also be seen in speed.The speed and accuracy of the network connectivity and accessability were increased.

Example – A remote car which is wireless is more faster than the wired one.

Whereas the wired one operates system slower. a machine can be easily stoped in wireless control if its working went wrong .

**Accessibility**

Where the ground lines can't be properly located in remote areas the wireless communication provide easy accessibility .

Example – now online education is possible in remote areas . Educators does not need to travel wide areas to teach their lessons.

**Constant Connectivity**

Constant connectivity also make sure ,that people can respond to emergencies quickly.

Example – constant connectivity will be provided in even we move from place to place or while you travel.

whereas a wired land line can not provide constant connectivity

**III. WIRELESS-DIS ADVANTAGES**

The wireless signals can be easily captured by the un authorized users in air.

It is important to secure the wireless network so the unauthorized users cannot misuse the information<sup>[2]</sup>.

**IV. TYPES OF WIRELESS COMMUNICATION**

The various types of wireless communication includes infrared communication, wireless communication, broadcast radio, satellite communication, Bluetooth, Zigbee etc.

**Satellite Communication**

Satellite communication is a type of wireless communication technology, that is self contained. It is most widely spread all over the world to allow users to get connected. When the signal is sent to the satellite then, the signal is amplified by the satellite and it will be sent back to the antenna which on the earth .the two important components of the Satellite communication is space segment and the ground segment. The ground segment contains fixed or mobile transmission, reception and ancillary equipment and the space segment is the satellite itself.

**Infrared Communication**

Infrared wireless communication communicates information through infrared radiation . IR is electromagnetic energy that is longer than red light. It is used in security control, TV remote control. In the electromagnetic spectrum, infrared radiation lies in between the microwaves and vision lights<sup>[4]</sup>. Also it is used as the source of communication.

**Broadcast Radio**

The broadcast radio communication is the first open radio wireless communication technology , and it is still used nowadays. To speak over short distance Handy multichannel radios is used by user sailors used citizen's band and maritime radios for communication. Ham radio enthusiasts share emergency datas and frequency communication aids throughout disasters using their powerful broadcasting gear, and even communicate digital information using the radio frequency spectrums.

**Radio**

For example, you can take a radio station. When the RJ says you are listening to FM, what he/she will really means is signals are being broadcasted at a frequency of some megahertz, that successively means to the transmitter at the station is periodic at a frequency of some Cycles/second.

When you like to listen to FM, you have to tune the radio to adjust the specific frequency and you will gain perfect audio reception<sup>[3]</sup>.

**Microwave Communication**

It is an effective type of communication, this transmission uses radio waves, and the wavelengths of radio waves are measured in centimeters. Two methods are used for the data or information transmission. There are two methods and they are satellite method and the terrestrial method.

**Wi-Fi**

Wi-Fi is a low power wireless communication. Wi-Fi is used by various electronic devices like smart phones, laptops, etc. router works as a communication hub In this setup, a router works as a communication hub . These networks allow users to connect only within close to a router. WiFi affords portability .it is very common in networking applications<sup>[5]</sup> . These networks can be protected with passwords for the security purposes, otherwise it will be accessed by others.

## Mobile Communication Systems

The improvement of mobile networks is developed by generations. Many users communicate through single frequency band in mobile phones. The two examples of wireless signals are Cellular and cordless phones. Cell phones have a larger range of networks. But the Cordless phones have a limited range. Like GPS devices, some phones use signals from satellites to communicate.

## Bluetooth Technology

The function of the Bluetooth is that allows to connect different electronic devices wirelessly for the transfer of the data. Cell phones are connected to hands free earphones, mouse, wireless keyboard<sup>[6]</sup>. In Bluetooth device the information is shared from one device to another device. This technology has various functions and it is used mostly in the wireless communication market.

## V. CONCLUSION

wireless communication will generally improve the mode of communication and there are some technological challenges that are to be addressed. wireless communications is something that people could expect as technology advances. It also has lots of benefits and will make the world more efficient. It will be more important for the users in future and changes the globe's technical features in future.

## REFERENCES

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