10.0 Wireless Technology

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Introduction

- In wireless communication wireless signal (radio) are used to send data through the air between devices, instead of physical cable.

- Wireless technology used for mobile ICT equipment e.g mobile phones and also for wireless networking.

- Other examples of wireless technology: GPS units,, computer mouse and keyboards, satellite television, cordless telephones, etc

GPS

CORDLESS TELEPHONE

MOBILE PHONE / HP

WIRELESS KEYBOARD & MOUSE

Uses

- Access e-mail anywhere and anytime using hand phones or other mobile devices
- Travelers with portable computers can connect to the Internet through access point in the airports, or any public locations.
- Users can connect devices on their desktop to synchronize data and transfer files with other devices at home

Type of wireless networking

- Wireless wide area networks (WWANs)
- Wireless metropolitan area networks (WMANs)
- Wireless local area networks (WLANs)
- Wireless personal area networks (WPANs)

Wireless technology

- Infra Red
- Wireless local area networks (WLANs) , WiFi
- Broadband wireless.
- Bluetooth
- WiMax

Infra Red

- Send data via infrared light rays
- short distance
- IrDA (*Infrared Data Association*) is the industry standard for wireless communication with infrared light.
- transfer speed ranges from 2400 bps to 4 Mbps.

Bluetooth

- Normally used for wireless personal area networks (PANs).
- Designed for short range communication <10 m
- Connect and exchange information between devices such as mobile phones, laptops, PCs, printers, digital cameras etc
- Uses short-range radio frequency.
- Data speed up to 3Mbps
- Devices that uses bluetooth technology ……

Broadband

- **Broadband wireless access** : a technology provides access to high-speed wireless over a wide area for devices such as personal computers to data networks.

- bandwidth greater than 1 MHz and supporting data rates greater than 1.5 Mbit/s

Wireless local area networks (WLANs)

- WLANs are based on the IEEE 802.11 standard.
- IEEE 802.11 standard is a standard that has been developed by IEEE (Institute of Electrical and Eletronic Engineers) to differentiate between the various technology families
- There are three physical layers for WLANs: two radio frequency specifications (RF - direct sequence and frequency hopping spread spectrum) and one infrared (IR).
- **Wi-Fi** underlying this technology

Wireless local area networks (WLANs)

- **WLAN** configurations vary from simple, independent, peer-to-peer connections between a set of PCs, to more complex, intra-building infrastructure networks.

- Wireless solutions :
  1. A point-to-point solution is used to bridge between two local area networks, and to provide an alternative to cable between two geographically distant locations (up to 30 miles).
  2. Point-to-multi-point solutions connect several, separate locations to one single location or building.

WiMax

- Extend the range of wireless network, up to 30 miles
- Speed up to 70Mbps,
- Provides internet access to fixed location with larger coverage

Mobile Phone : 1G, 2G, 3G, 4G

- **1 G : first-generation** wireless telephone technology. Uses analog technology only for voice communication

- **2G** : phones use digital technology and networks. l allowed for the introduction of digital data services, such as text data

Mobile Phone : 1G, 2G, 3G, 4G

1G mobile phone	2G mobile phone

Mobile Phone : 1G, 2G, 3G, 4G

- **3G** The advantage 3G networks have over 2G networks is speed. 3G networks are built to handle the needs of today's wireless users. This standard of wireless networks increases the speed of internet browsing, picture and video messaging, and handheld GPS use.

Mobile Phone : 1G, 2G, 3G, 4G

- **4G** provides increased speeds in data transmission.
- IP-based system, like modern computer networks.
- The speeds between 100 Mbit/s and 1 Gbit/s.

THANK YOU