What is WiMAX Technology…?

- WiMAX (Worldwide Interoperability for Microwave Access) is a communication technology for wirelessly delivering high-speed Internet service to large geographical areas.
- The 2005 WiMAX revision provided bit rates up to 40 Mbit/s with the 2011 update up to 1 Gbit/s.
- It is a part of a “fourth generation,” or 4G, of wireless-communication technology.
- WiMax far surpasses the 30-metre (100-foot) wireless range of a Wi-Fi local area network (WLAN), offering a metropolitan area network (WMAN) with a signal radius of about 50 km (30 miles).
- The name "WiMAX" was created by the WiMAX Forum, which was formed in June 2001 to promote conformity and interoperability (electronics systems when information or services can be exchanged directly and satisfactorily between them and/or their users) of the standard.
- WiMax offers data-transfer rates of up to 75 Mbit/s, which is superior to cable-modem and DSL connections.
• WiMAX refers to interoperable implementations of the IEEE 802.16 family of wireless-networks standards ratified by the WiMAX Forum.
• Similarly, Wi-Fi, refers to interoperable implementations of the IEEE 802.11 Wireless LAN standards certified by the Wi-Fi Alliance.
• Mobile WiMAX (originally based on 802.16e-2005) is the revision that was deployed in many countries, and basis of current revisions such as 802.16m-2011.
• WiMAX is sometimes referred to as "Wi-Fi" and can be used for a number of applications including broadband connections, cellular backhaul, hotspots, etc. It is similar to Wi-Fi but it can also permit usage at much greater distances.

The bandwidth and range of WiMAX make it suitable for the following potential applications:
• Providing portable mobile broadband connectivity across cities and countries through a variety of devices.
• Providing a wireless alternative to cable and digital subscriber line (DSL) for "last mile" broadband access.
• Providing data, telecommunications (VoIP) and IPTV services
• Providing a source of Internet connectivity as part of a business continuity plan.
A WiMAX system consists of two parts:

- A WiMAX tower, similar in concept to a cell-phone tower. A single WiMAX tower can provide coverage 50km Radius (30 miles)

- A Wimax receiver – It is a stand alone box or PCMCIA cards which is located in your computer or laptop. It is also called customer promise equipment's.
A WiMAX tower station can connect directly to the Internet using a high-bandwidth, wired connection (for example, a T3 line). It can also connect to another WiMAX tower using a line-of-sight, microwave link. This connection to a second tower (often referred to as a backhaul).
What this points out is that WiMAX actually can provide two forms of wireless services:

- **There is line-of-sight service**, where a fixed dish antenna points straight at the WiMAX tower from a rooftop or pole. The line-of-sight connection is stronger and more stable, so it's able to send a lot of data with fewer errors. Line-of-sight transmissions use higher frequencies, with ranges reaching a possible 66 GHz. At higher frequencies, there is less interference and lots more bandwidth.

- **There is the non-line-of-sight**, WiFi sort of service, where a small antenna on your computer connects to the tower. In this mode, WiMAX uses a lower frequency range -- 2 GHz to 11 GHz (similar to WiFi).
WiMAX Technology at Home

- An Internet service provider sets up a WiMAX base station 10 miles from your home. You would buy a WiMAX-enabled computer or upgrade your old computer to add WiMAX capability. You would receive a special encryption code that would give you access to the base station. The base station would beam data from the Internet to your computer (at speeds potentially higher than today's cable modems).
- If you have a home network, things wouldn't change much. The WiMAX base station would send data to a WiMAX-enabled router, which would then send the data to the different computers on your network. You could even combine WiFi with WiMAX by having the router send the data to the computers via WiFi.
- The WiMAX protocol is designed to accommodate several different methods of data transmission, one of which is Voice Over Internet Protocol (VoIP). VoIP allows people to make local, long-distance and even international calls through a broadband Internet connection, bypassing phone companies entirely.
Wimax Services

- Wimax offer point to point or point to multipoint network. It employs radio signal which carry both voice and data signals.
- Wimax network is allowing various types of devices to communicate. Wimax Services facilitate you with security cameras through which you can secure your business such as colleges, school, offices, shopping mall, jewelry shops, mobile shops etc. Wimax services also providing time lapse security recorder for your home or business security, spy security cameras which can protect you from spy, nanny cam, monitors and other equipments through which you can secure your home or any type of business without any fear of theft and make confident about security conditions.

Why WiMAX Technology

- Wimax technology is expected to do more for Metropolitan Area Networks (MANs) and what Wi-Fi has done for local area networks (LANs). Wimax is not projected to replace Wi-Fi, but to complement it by connecting Wi-Fi networks to each other or the Internet through high-speed wireless links.
Advantages of Wimax Technology

- **Coverage**
The single station of Wimax can operate and provide coverage for hundred of users at a time and manage sending and receiving of data at very high speed with full of network security.

- **High Speed**
The High speed of connectivity over long distance and high speed voice makes it more demanded in hardly populated areas plus compacted areas.

- **Multi-functionality with in Wimax Technology**
Wimax Technology perform a variety of task at a time such as offering high speed internet, providing telephone service, transformation of data, video streaming, voice application etc.

- **Wimax, cheap network**
Wimax is a well known wireless network now days because it provide a low cost network substitute to internet services offered via ADSL, modem or local area network.
Disadvantages of Wimax Technology

- **Lack of Quality**
The Wimax network has lack of quality service because there are hundreds of people trying to get access at the same tower so due to heavy traffic it is very hard to maintain high quality.

- **Expensive network**
The most disadvantage of Wimax is its installation and operational cost. Due to heavy structure, tower, antennas etc makes the Wimax network collectively high cost network.

- **Bad Weather**
The quality of services decreases in rainy season because the weather condition could interrupt the signal which may cause of bad signal and broadcasting may be stop or interrupted.

- **Power consuming**
Wimax network is very heavy in structure therefore need much electrical support for running the overall network.
Thank you