**“ Bluetooth “**

Bluetooth technology is a short-range communications technology that is simple, safe, and there are everywhere. It is intended to replace the cables that connect the device to maintain a high level of security. The key features of Bluetooth technology are robustness, low power, and low cost. Bluetooth specification defines a uniform structure for a wide range of devices to connect and communicate with each other.

When a Bluetooth device is turned on and connected to each other, this is called a couple. A Bluetooth connection is activated by an electronic device that allows devices to communicate wirelessly via short-range, ad hoc networks known as piconets. Piconet established dynamically and automatically as Bluetooth enabled devices so that they can enter and leave radio proximity meaning you can connect anytime, anywhere.

Bluetooth technology was created in 1994 by engineers at Ericsson, a Swedish company. In 1998, a group of companies agreed to work together using Bluetooth technology as a way to connect their products. These companies formed the Bluetooth Special Interest Group (SIG), an organization devoted to maintaining the technology. This means that no single company "owns" Bluetooth technology, but many members of the Bluetooth SIG are working together to develop Bluetooth technology.

'Bluetooth' is the code name for the SIG when first formed. The name "Bluetooth" is from the 10th century Danish King Harald Blatand - or Harold Bluetooth in English. King Blatand instrumental in uniting warring factions in parts of what is now Norway, Sweden and Denmark - such as Bluetooth technology is designed to enable collaboration between different business sectors, such as computing, mobile phones, and automotive industries.

Bluetooth special interest group (SIG) is a global trade organization that oversees the development of the Bluetooth specification and the promotion and protection of the Bluetooth brand. Powered by industry-leading companies, the Bluetooth SIG empowers more than 17,000 member companies to collaborate, innovate and guide Bluetooth wireless technology.

A2DP (Advanced Audio Distribution Profile) is a Bluetooth profile for streaming audio, such as music phone to headphones. A2DP supports stereo audio and one-way, not two-way. High speed Bluetooth technology allows you to quickly send video, music and other large files between your device.

Bluetooth function is often activated in the software, without Bluetooth on / off the device. In computers, cell phones, or other display, this may be done by selecting the menu item of software called "Turn on Bluetooth," "Turn on the Bluetooth radio," or something similar.

A Bluetooth profile provides manufacturers with detailed explanations of how to design a particular function to a Bluetooth enabled device. An example is the Hands-Free Profile. For a mobile phone to connect to wireless headsets, they must support the Hands-Free Profile. Profiles that support Bluetooth-enabled devices are usually listed in the user manual or the specifications for such devices.

Each device in a piconet can also simultaneously communicate with up to seven other devices. It is a single piconet and each device can also belong to the same piconet. This means you can connect a Bluetooth device is almost unlimited.

A fundamental strength of Bluetooth wireless technology is the ability to simultaneously handle data and voice transmissions. which provides users with a variety of innovative solutions such as hands-free headsets for voice calls printing and fax capabilities, and synchronization for PCs and mobile phones, just to name a few.

Range Bluetooth technology is application specific. Core Specification mandates a minimum range of 10 meters or 30 feet, but there is no set limit and manufacturers can manage implementations to provide the range necessary to support the use cases for their solution. Bluetooth provides product developers both link layer and application layer definitions, which supports data and voice applications.

Bluetooth technology operates in the unlicensed industrial, scientific and medical band (ISM) in the 2.4 to 2.485 GHz, using a spread spectrum, frequency hopping, full-duplex signal at a nominal rate of 1600 hops / sec. The 2.4 GHz ISM band is available and unlicensed in most countries. Bluetooth adaptive frequency hopping technology (AFH) capability is designed to reduce interference between wireless technologies sharing the 2.4 GHz spectrum. AFH works within the spectrum to take advantage of the available frequencies. This is done by technology that detects other devices in the spectrum and avoiding the frequencies they use. This adaptive hopping among 79 frequencies at 1 MHz intervals provide a high level of interference immunity, and also allows for more efficient transmission within the spectrum.

Range is application specific, and although various minimum mandated by Core specification, there are no boundaries and the manufacturer can adjust the implementation to support the use. Range may vary depending on the class of radio used in the implementation of a:

- Class 3 radios - have a range of up to 1 meter or 3 meter

- Class 2 radios - most commonly found in mobile devices - have a range of 10 meters or 33 feet

- Class 1 radios - used primarily in industrial use cases - have a range of 100 meters or 300 feet

The most commonly used radio is Class 2 and uses 2.5 mW of power. Bluetooth is designed to have very low power consumption. This is reinforced in the specification by allowing the radio to be turned off when inactive. Bluetooth low energy technology, optimized for devices that require maximum battery life instead of the high data transfer speeds, consume between 1/2 and 1/100 the power of classic Bluetooth technology. Generic Alternate MAC / PHY in Version 3.0 HS allows for the discovery of AMP remote high speed and turns on the radio only when needed for data transfer benefits of power optimization and assist in security radio.

Bluetooth technology also uses radio waves. The biggest difference between Bluetooth technology and devices such as FM radio and TV is the distance. Radio and TV are meant to broadcast to many people for miles or kilometers. Bluetooth technology sends information in your personal space, called Personal Area Network or your "PAN" in the distance up to 50 meters (164 feet).

In Bluetooth, there is a Service Discovery Protocol (SDP) is a protocol peer-to-peer without relying on a centralized, third-party service records infrastructure. The Service Discovery Application Profile (SDAP) is a usage scenario describes the function of Application Service Discovery. It consists of suggested can be implemented in the SDP. Primitive is used both by the local device services discovered on the remote device, and also by other Bluetooth profiles that need to advertise services via SDP.

Bluetooth provides a number of low-power modes and each suited for different types of applications. Before deciding on the power management mode to use, maximum latency allowed and radio traffic patterns expected from the application must be considered. Applications with very low latency or requirements to submit very often even may make it efficient to use a low power mode for overhead going in and out of it. Bluetooth security is used to protect the services offered by the device as well as enforce exclusivity, allowing only a very specific devices to connect.

Examples of Bluetooth version 4.0, Palm OS support has been put in place for the wireless Bluetooth. Adds Bluetooth wireless technology to a Palm device frees users from having to try to line up the two physical devices while they are on the road. Bluetooth technology makes the traditional Palm OS applications such as use of the Internet and easier in the mobile environment and introduce opportunities for communication applications using object push.

The Palm OS Bluetooth Support Package currently supports five Bluetooth profiles defined in the Bluetooth Specification 1.1: Generic Access Profile (GAP), Serial Port Profile, Dial-up Networking Profile, LAN Access Profile, Object Push and Profile.The determined values ​​and language by GAP built into the Bluetooth Library and other Bluetooth components. The main purpose of GAP is to create a friendly and consistent user experience, which is also considered an important goal in the profile OS. Bluetooth Support Package includes a new virtual serial driver (VDRV), which provides support for Serial Port Profile. Using Bluetooth VDRV enables existing serial-based applications quickly updated to take advantage of Bluetooth technology, and an easy way to create a new Bluetooth applications.

Bluetooth is a system, multiplexed address-based protocol stack. Bluetooth technology must know which devices and services on the device will speak, but must also actively create the underlying baseband connection. Most Bluetooth radio is not able to accept incoming connection when trying to make outbound connections. For this reason, it is necessary for an application to indicate whether to initiate or receive a link Asynchronous Connectionless (ACL) and RFCOMM connections.

Bluetooth wireless technology has a device that can support up to three full-duplex audio channel SCO, or voice channel supports up to two channels of data simultaneously transfer.Those using three coding schemes: CVSD, μ-law PCM, and A-law PCM. CVSD more robust to errors and can support a higher quality of the link is good. However, PCM is cheap and readily available in many commercial devices

There are two routes for the audio to the Bluetooth system: directly to baseband or through HCI, may experience latency routes due to control flow of data between the host and the low layers.The Bluetooth SCO link provides toll quality suitable for carrying voice calls. For high quality audio (such as those required for music), SCO link does not provide adequate quality. There are three audio profiles: Headset, Intercom, and Wireless Telephony. Bluetooth wireless technology in accordance with the requirements of the Personal Information Base (PIB) for a variety of reasons:

* Chip / chip set and associated components at low cost.
* Bluetooth Module typically have a small form factor makes them suitable to be installed on the handheld device / mobile.
* Bluetooth is a low power, making it suitable for devices that need to run on batteries.
* The technology is available in a wide range of devices (PDAs, mobile phones, laptops) provides a variety of candidates Terminal Data Access.
* ISM band is used to link the Bluetooth radio is available free worldwide license.

Using Bluetooth profiles, PIB application can use a standard protocol stacks and features, it allows applications to be easily integrated with Bluetooth protocol stack.