Sri SAI RAM ENGINEERING COLLEGE
INSTITUTE OF TECHNOLOGY
West Tambaram, Chennai - 44

Sairam INSTITUTIONS

SAIRAM DIGITAL RESOURCES

UNIT NO 5 MULTI USER RADIO COMMUNICATION

5.5 BLUETOOTH

YEAR II SEM III

EC8394

ANALOG AND DIGITAL COMMUNICATION

ELECTRONICS & COMMUNICATION ENGINEERING

4 QUALITY EDUCATION

What is Bluetooth?

- Short-range communications technology
- Intended to replace cables connecting portable and/or fixed devices
- Still able to maintain a high level of security
- Defines uniform structure for wide range of devices to connect and communicate
- Key features are
  - Robustness, low power, and cost

- Intended to create a PAN
- Operating range of 10 metres, with optional 100 metre mode.
- Transmission power of 1 mW
- Operates in free ISM band [2.4000 – 2.4835 GHz]

Basic Uses

- Cable replacement
- Voice and Data access points
- Ad-hoc/temporary networking
  - – Up to 8 devices can be networked at a time

Start of the Bluetooth?

- Ericsson Mobile Communication
- Bluetooth Special Interest Group (SIG)
  - Ericsson, Toshiba, Intel, Nokia, & IBM

-The Bluetooth Special Interest Group (SIG) is formed with five companies.
-The Bluetooth SIG welcomes its 400th member by the end of the year.
-The name *Bluetooth* is officially adopted.

-The *Bluetooth* 1.0 Specification is released.
-The Bluetooth SIG hosts the first UnPlugFest for member engineers.

-First mobile phone.
-First PC Card.
-Prototype mouse and laptop demonstrated at CeBIT 2000.
-Prototype USB dongle shown at COMDEX.
-First Headset.

- First printer.
- First laptop.
- First hands-free car kit.
- First hands-free car kit with speech recognition.
- The Bluetooth SIG, Inc. is formed as a privately-held trade association.

- First keyboard and mouse combo.
- First GPS receiver.
- *Bluetooth* wireless qualified products now number 500.
- IEEE approves the 802.15.1 specification to conform with *Bluetooth* wireless technology.
- First digital camera.

- First MP3 player.
- *Bluetooth* Core Specification Version 1.2 adopted by the Bluetooth SIG.
- Shipment of *Bluetooth* enabled products hits rate of 1 million per week.
- First FDA-approved medical system.

-The Bluetooth SIG adopts Core Specification Version 2.0 + Enhanced Data Rate (EDR).
-*Bluetooth* technology reaches an installed base of 250 million devices.
-Product-shipment rate surpasses 3 million per week.
-First stereo headphones.

-Product shipments soar to 5 million chipsets per week.
-The Bluetooth SIG welcomes its 4,000th member.
-The Bluetooth SIG Headquarters opens in Bellevue, WA; regional offices open in Malmo, Sweden and Hong Kong.
-First Sunglasses.

-First watch.
-First picture frame.
-*Bluetooth* wireless reaches an installed base of 1 billion devices.
-*Bluetooth* enabled devices ship at a rate of 10 million per week.
-The Bluetooth SIG announces it will integrate *Bluetooth* technology with the WiMedia Alliance version of UWB.

-First television.

-The Bluetooth SIG welcomes its 8,000th member.

-***SIGnature***, The *Bluetooth* quarterly, makes its debut at the Bluetooth SIG's All Hands Meeting in Vienna, Austria.

-Bluetooth SIG Executive Director, Michael Foley, wins Telematics Leadership Award.

-2008 marks *Bluetooth* technology's 10 year anniversary - no other wireless technology has grown to be shipping nearly 2 Billion products in 10 years.

-The Bluetooth SIG welcomes its 10,000th member.

Bluetooth SIG Executive Director, Michael Foley, is named one of RCR Wireless News' Mobile Movers & Shakers for 2008.

-The Bluetooth SIG adopts Core Specification Version 3.0 + HS making *Bluetooth* high speed technology a reality

-The Bluetooth SIG welcomes its 12,000th member

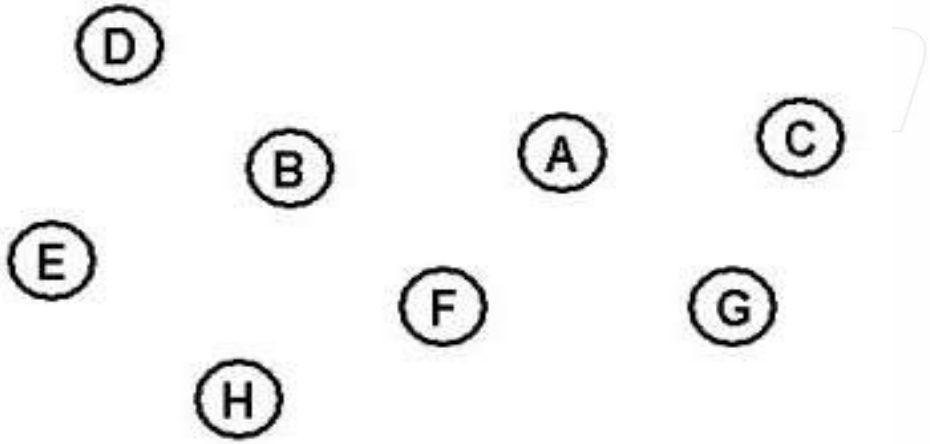
-The Bluetooth SIG All Hands Meeting is held in Tokyo—the first AHM in APAC

APPLICATIONS

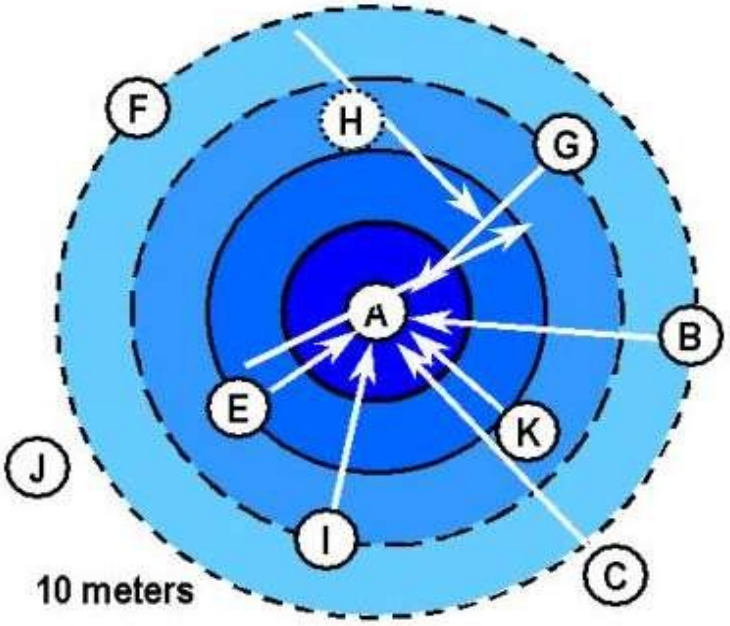
- Telephones
- Headsets
- Computers
- Computer accessories
- LAN peripherals
- Multimedia Devices

How does Bluetooth Work?

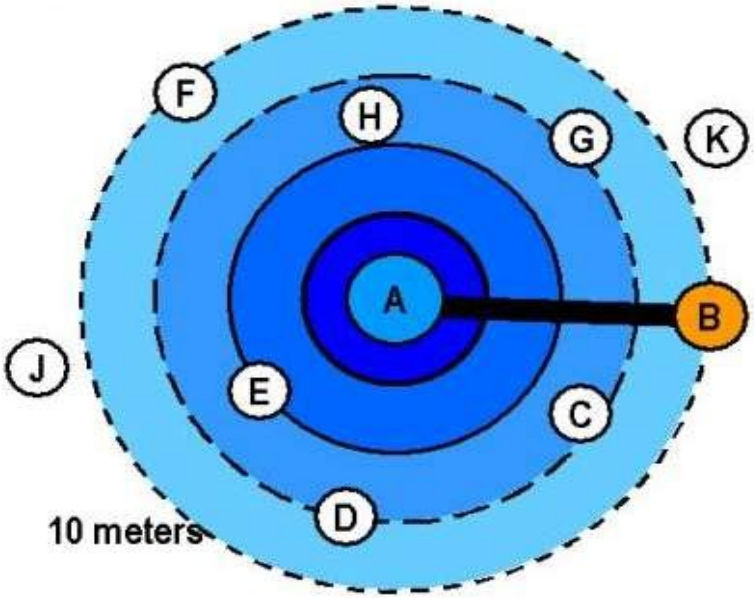
- When device is put in discoverable mode, each device only knows about itself.



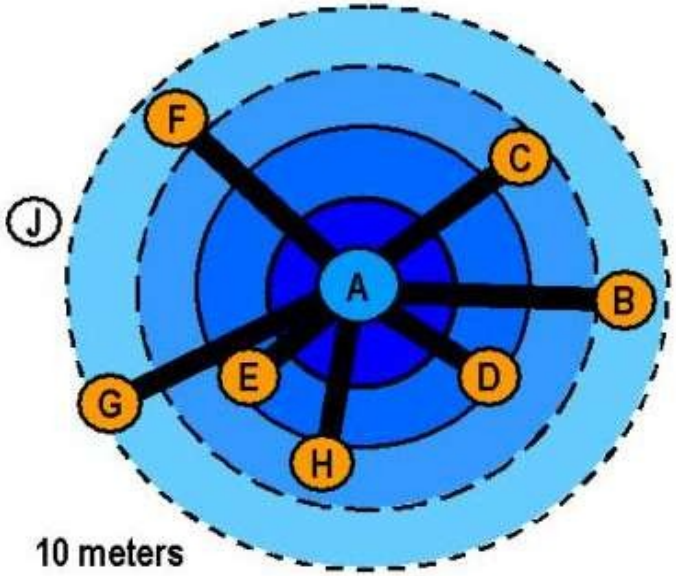
- **INQUIRY** identifies who else is in the range



- **PAGING** creates a link between a device



- **EXPANDING** creates link between following devices



Advantages

- Offers a great deal of possibilities
- Freedom from cables
- Accuracy in Local Area Networks (LAN)
- Operating range of up to 100 metres
- Low power and low processing
- Applications are virtually endless
- Inexpensive
- Does not need to be configured
- Security features of authentication, authorization, and encryption

Disadvantages

- Data rate of only 1 MBps.
- Open to interception and attack
- Battery use increased on devices
- Cannot work in a long distance environment

COSTS O BLUETOOTH

- Uses low-cost transceiver microchips
- Estimated to cost around $4 to manufacture
- Operates on unlicensed radio spectrum
  – No charge in communication between devices
- Only cost associated is for the actual product that is enabled with Bluetooth

https://youtu.be/u4L4GUmXHV8

https://youtu.be/CkhA7s5GIGc