



# **SNS COLLEGE OF TECHNOLOGY**

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## **19EEE305 / EMBEDDED SYSTEMS III YEAR / VI SEMESTER**

### **UNIT-V: EMBEDDED SYSTEM APPLICATION DEVELOPMENT**

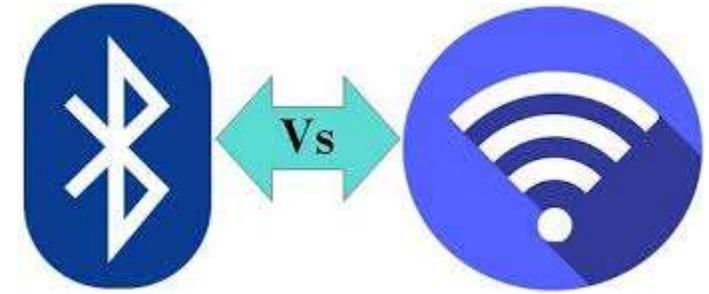
## **BLUETOOTH - OVERVIEW**



# Bluetooth Overview



- Wireless standard: IEEE 802.15.1
- Short-range communication technology
- Developed by Ericsson, now managed by Bluetooth SIG
- Used for audio, wearables, peripherals
- Versions: Classic, BLE (Bluetooth Low Energy)

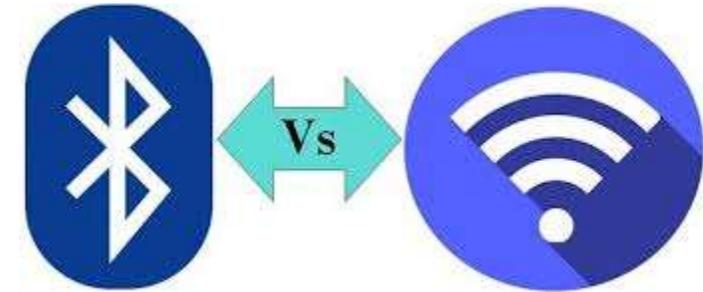




# Bluetooth Power Levels



- Class 1: 100mW (100 meters range)
- Class 2: 2.5mW (10 meters range)
- Class 3: 1mW (1 meter range)
- Impact on battery and performance
- BLE for ultra-low power consumption

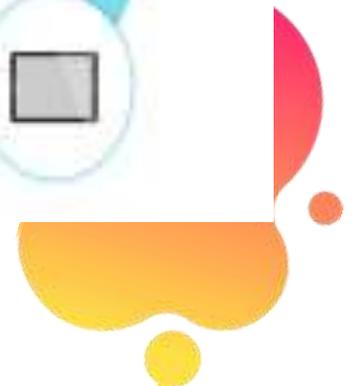




# Bluetooth Communication Model



- Piconet and Scatternet
- Master-slave relationship
- Device discovery and pairing
- Frequency hopping spread spectrum
- Logical transport channels





# Bluetooth Baseband and Packet Structure



- Baseband layer for physical control
- Synchronous/Asynchronous communication
- Slot-based data transmission
- Packet structure: Access Code, Header, Payload
- Error correction and ARQ





# Bluetooth Packet Types and Timing

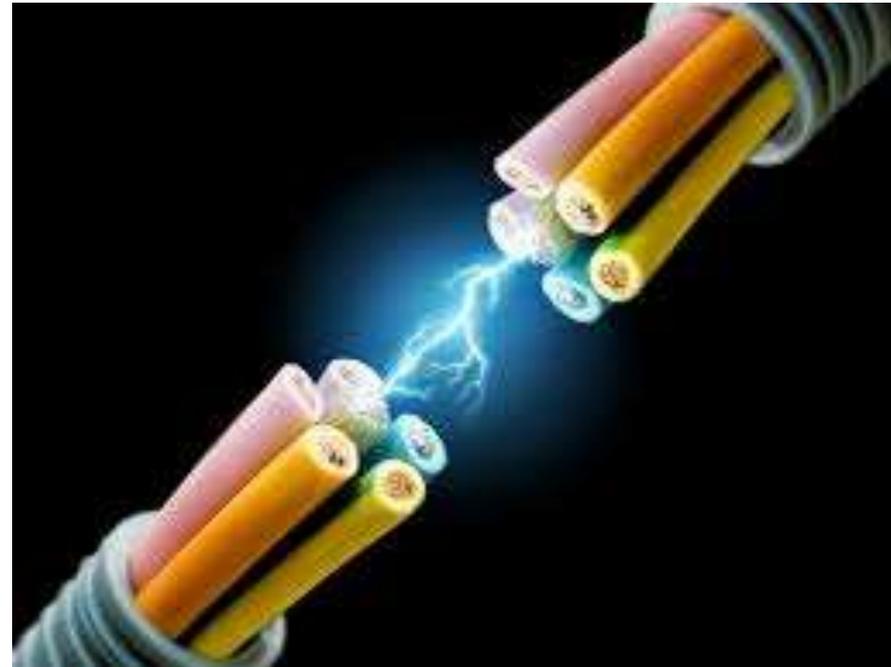


- Packet types: DM, DH, AUX
- Packet formats: 1-slot, 3-slot, 5-slot
- Headers: AM\_ADDR, SEQN, ARQN
- Slot timing (625 $\mu$ s per slot)
- Time-division duplexing (TDD)





# RECAP...



# ...THANK YOU

