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

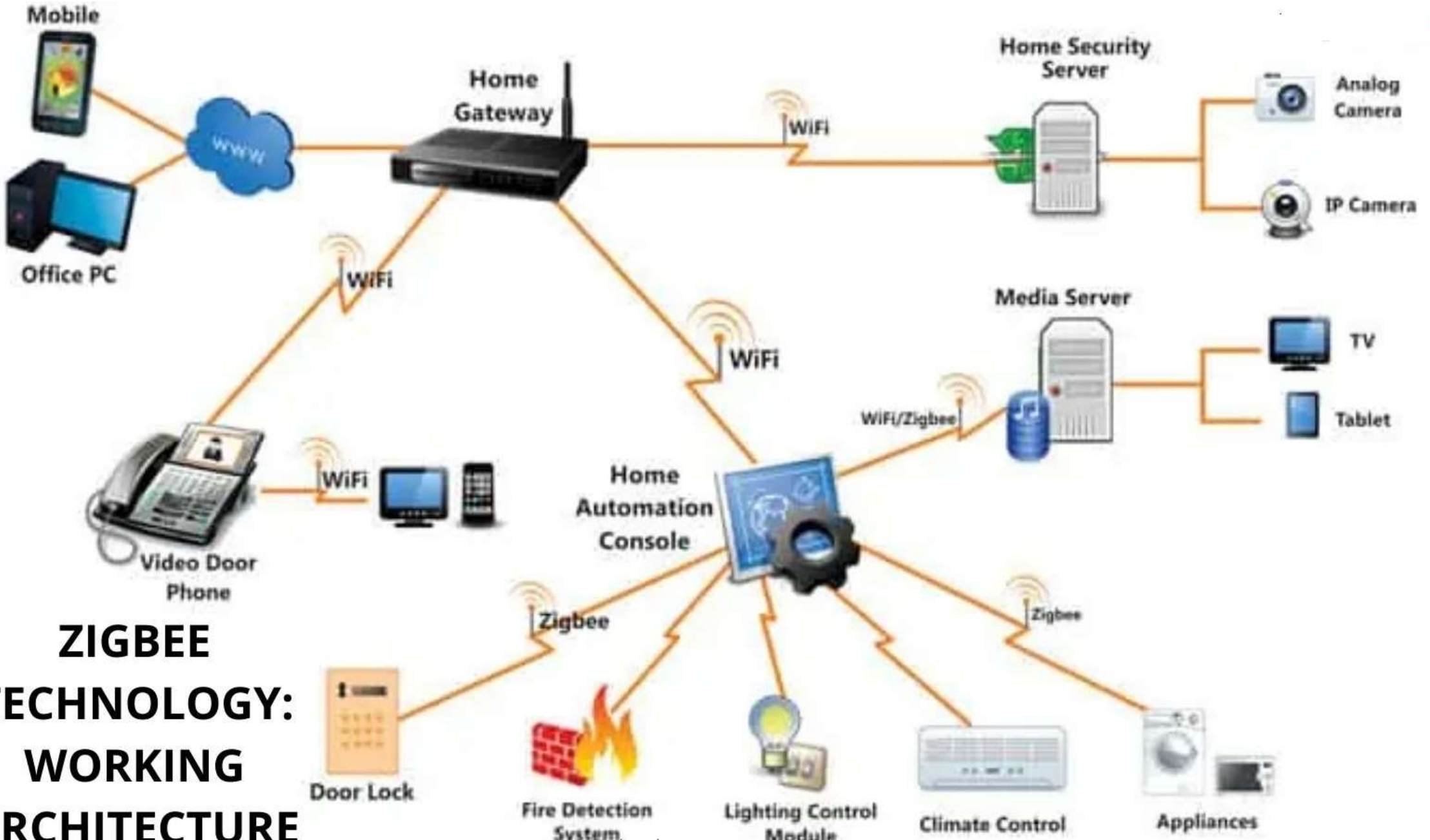
UNIT-V: EMBEDDED SYSTEM APPLICATION DEVELOPMENT

ZIG BEE ARCHITECTURE

ZigBee Architecture and Objectives

- Built on IEEE 802.15.4 standard
- Designed for low-power, low-data-rate applications
- Supports mesh, star, and tree topologies
- Emphasis on reliability, scalability, and security
- Primary goal: seamless, interoperable communication for Io

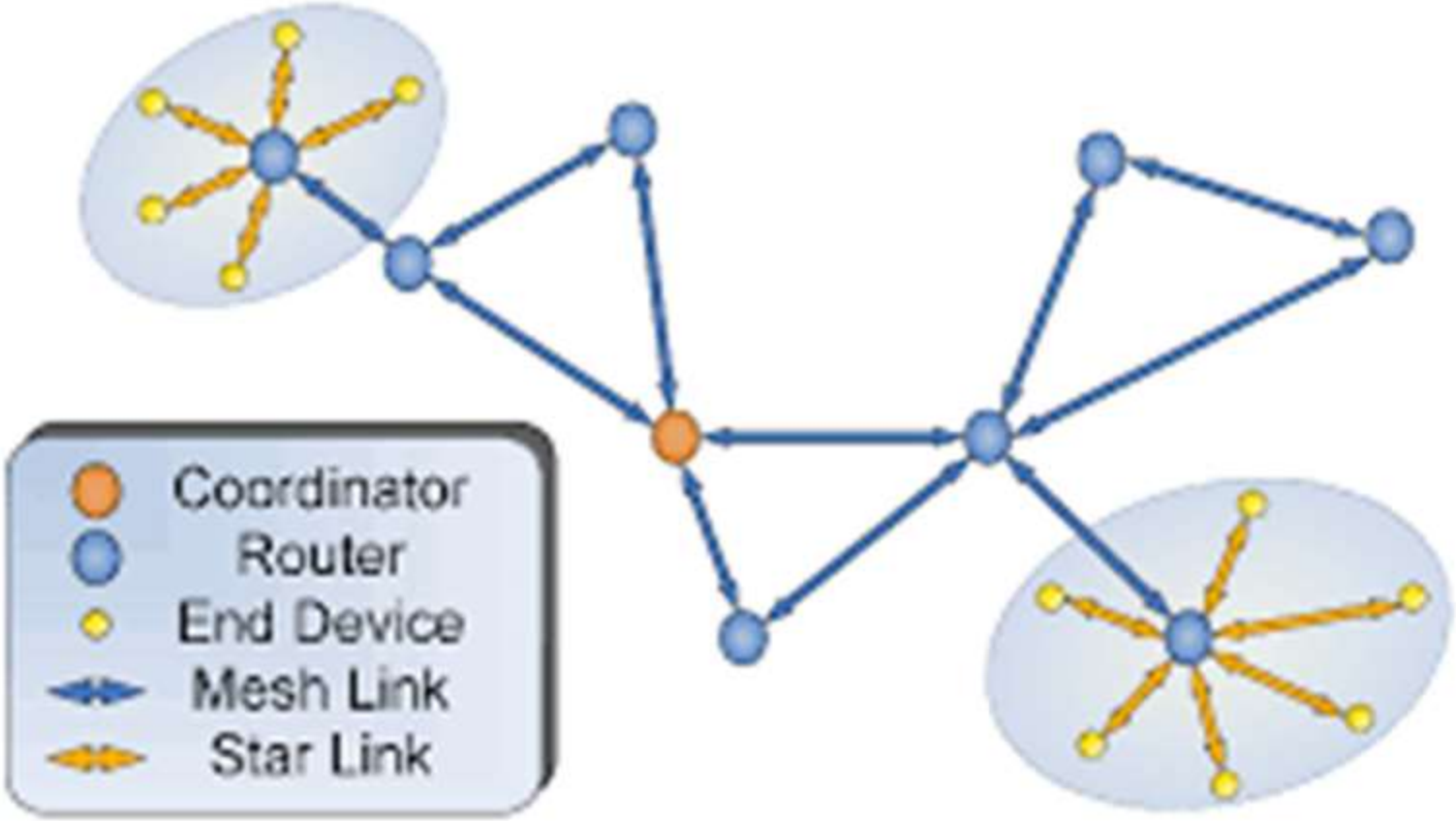
ZIGBEE TECHNOLOGY: WORKING ARCHITECTURE



ZigBee Network Model

- Three device types: Coordinator, Router, End Device
- Coordinator initiates and maintains the network
- Routers relay messages and expand the network
- End Devices are low-power clients
- Supports flexible network formation and scaling

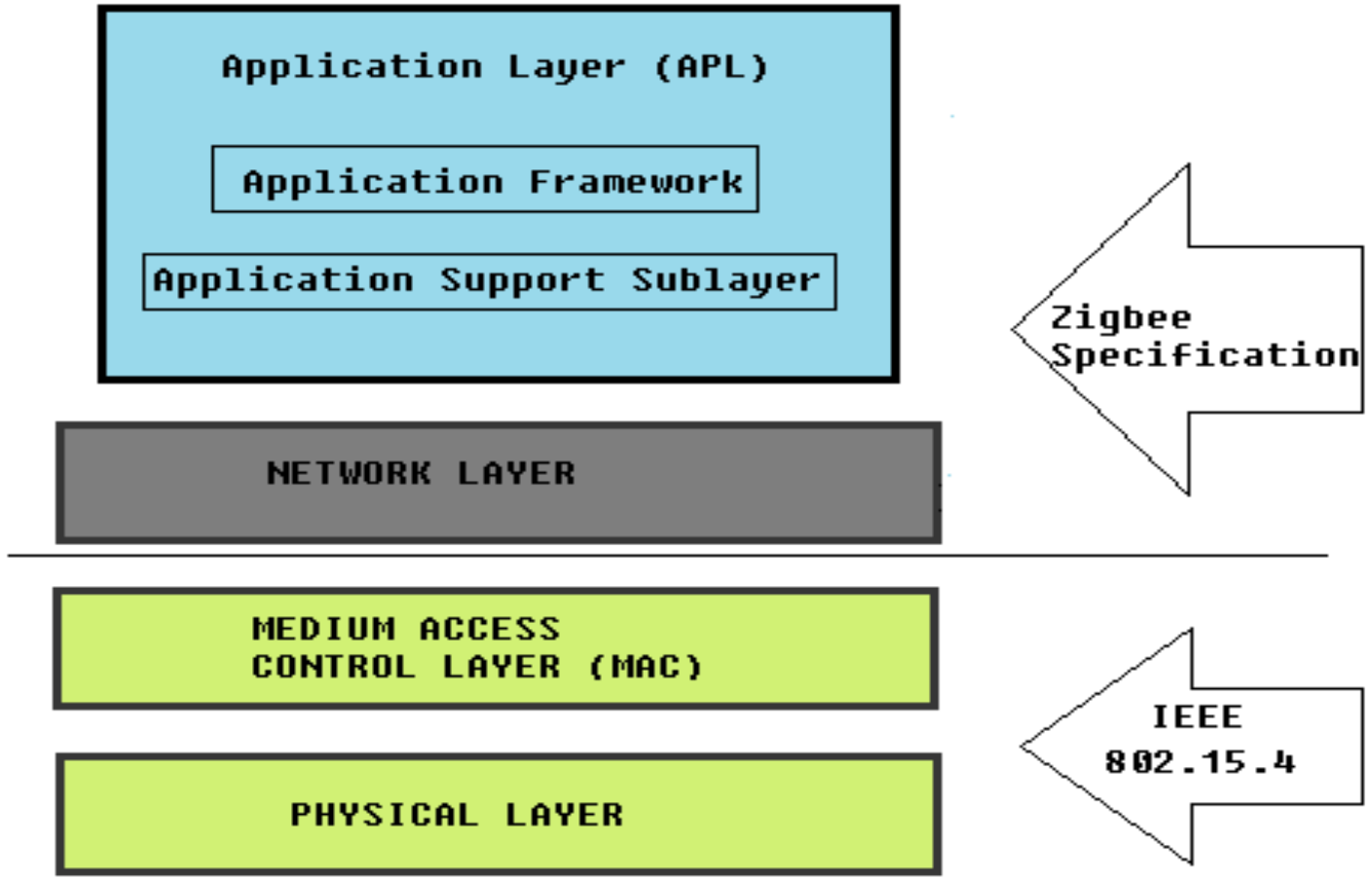
ZigBee Network Model



ZigBee Stack Architecture

- Layers: Physical (PHY), MAC, Network (NWK), Application Support (APS), Application (APL)
- PHY and MAC from IEEE 802.15.4
- NWK layer manages routing, joining, and addressing
- APS provides interface for applications and NWK
- APL handles user-defined profiles and clusters

ZigBee Stack Architecture



ZigBee Network Layer

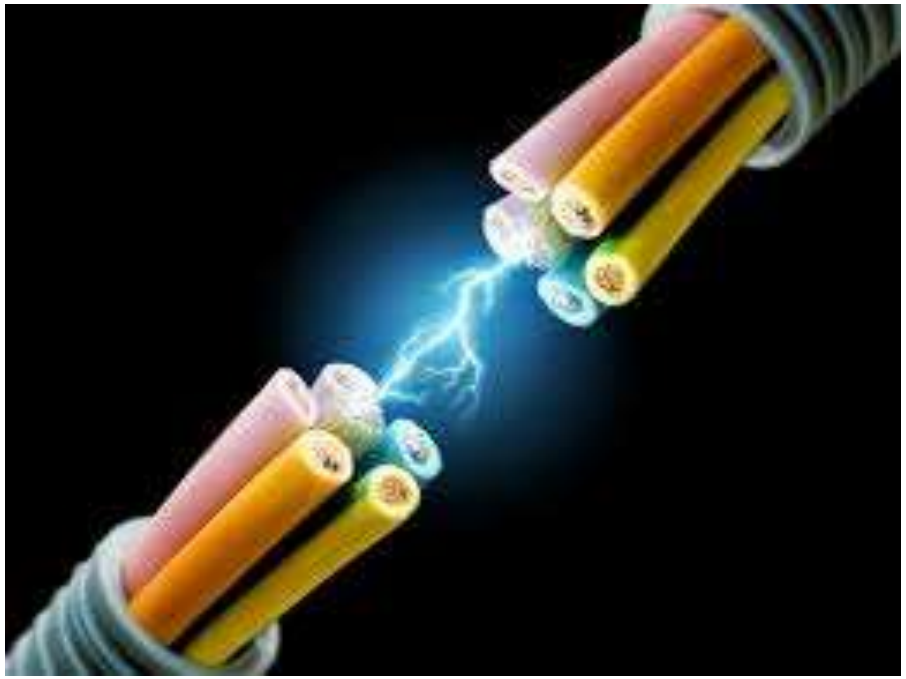
- Manages routing and addressing
- Supports AODV (Ad hoc On-Demand Distance Vector) routing
- Device association and disassociation
- Handles fragmentation and reassembly of messages
- Provides network security and authentication

Applications of ZigBee

- Home and industrial automation
- Smart lighting and HVAC control
- Wireless sensor networks
- Health monitoring systems
- Agricultural and environmental monitoring

Applications of ZigBee

RECAP….



…THANK YOU