



# SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



**19EC621 – IoT and Wireless Sensor Networks**

**Unit -1 Overview of Internet of Things**

## Message communication protocols 6LoWPAN



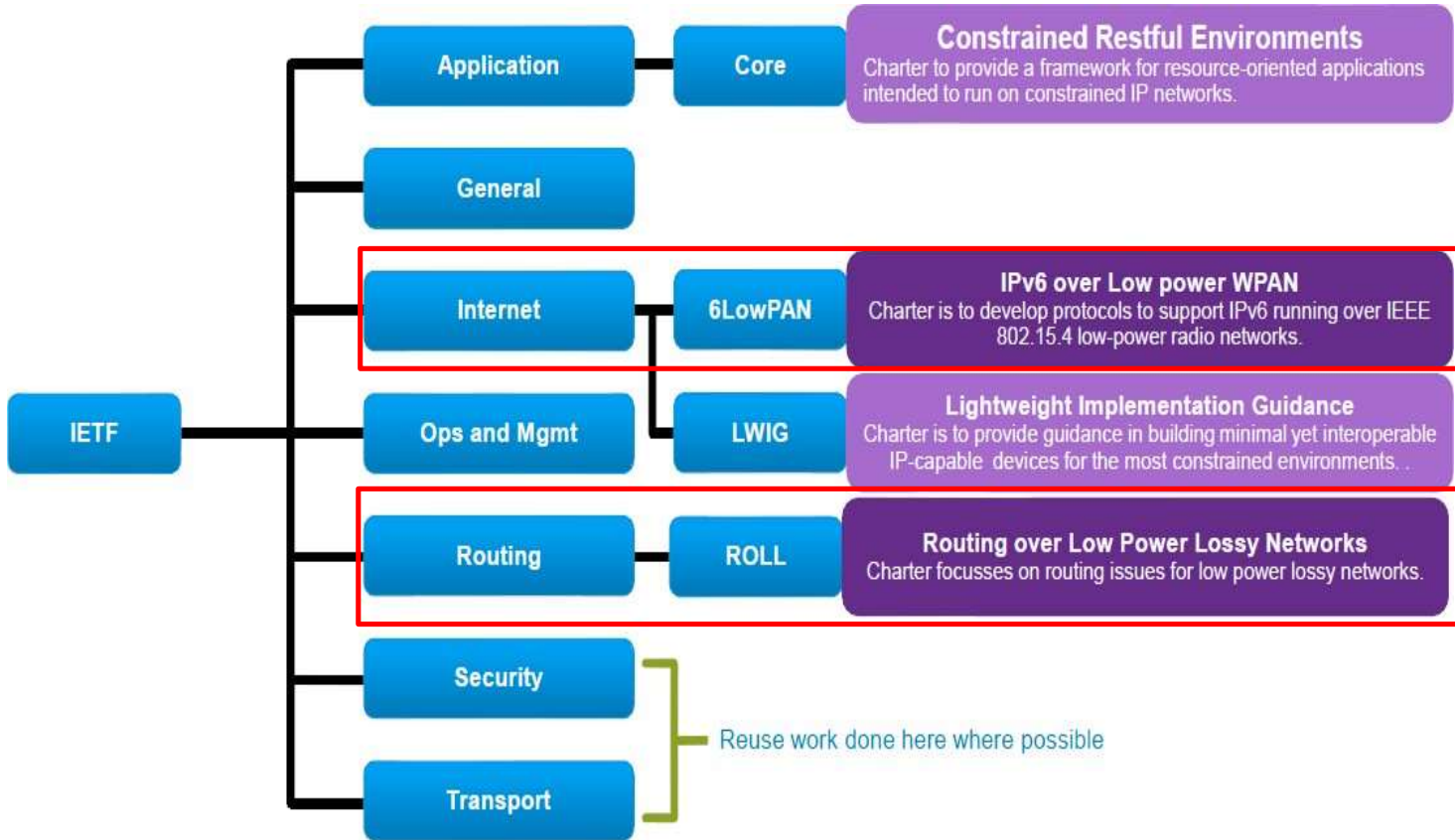


- 6LoWPAN is an acronym of **IPv6** over **Low power Wireless Personal Area Networks**.
- It is designed by the 6LoWPAN working group in IETF (Internet Engineering Task Force).
- RFC 4919 (6LoWPAN Overview, Assumptions, Problem Statement, and Goals) included a detailed review of requirements, which were released in 2007.



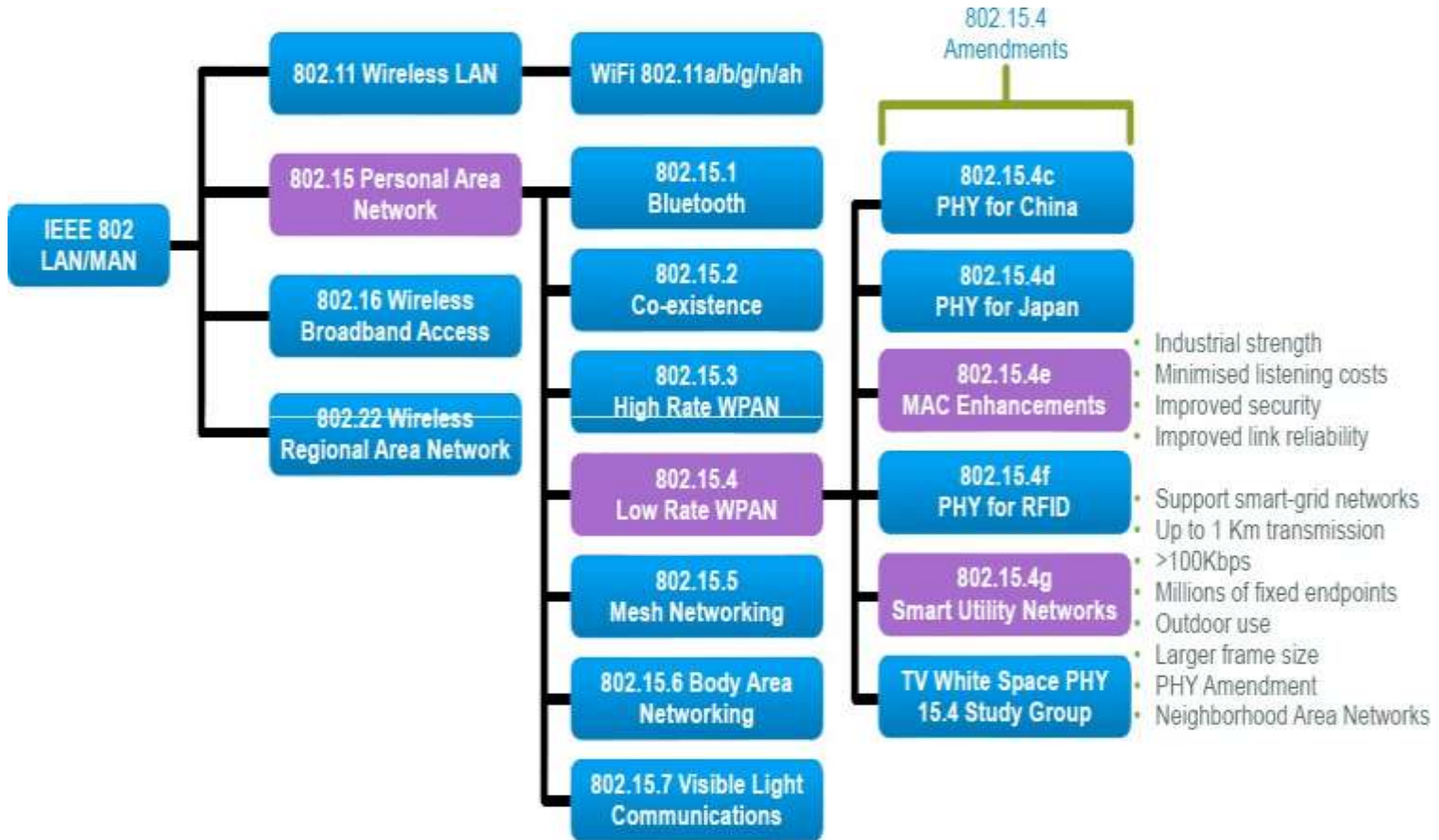


# IETF Low Power Lossy Network Related Working Groups



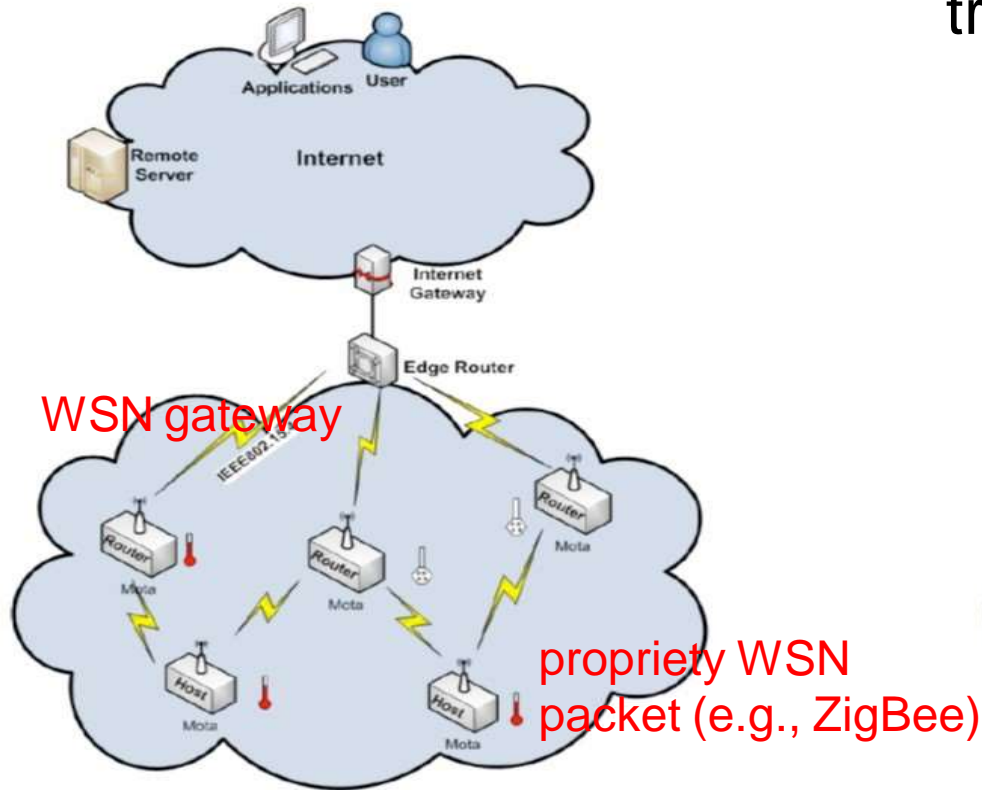


# IEEE Wireless Standards

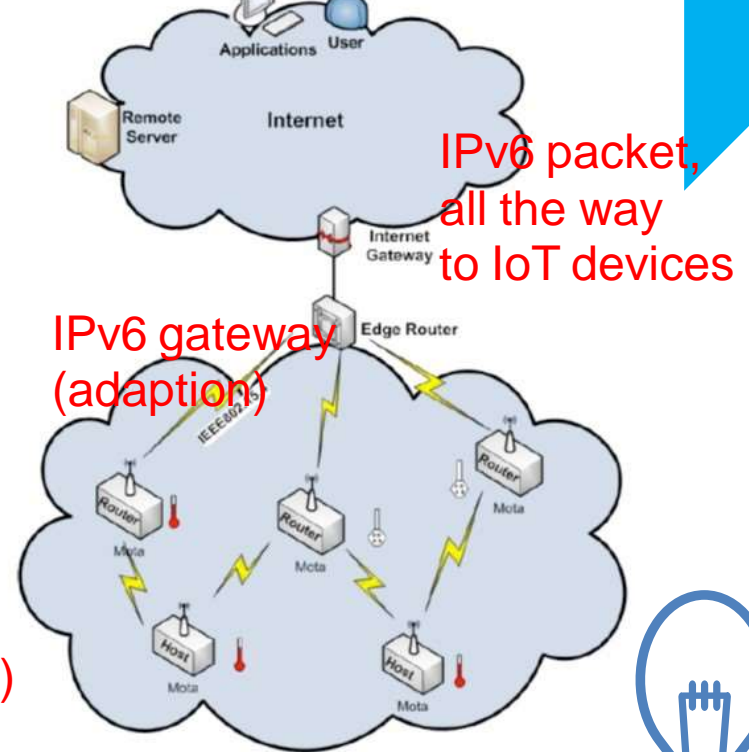


# Goal of 6LowPAN

- Traditional way: 2-stage



- End-to-end IP transmission





# Constraints of LoWPAN



- Low-cost nodes communicating over multiple hops to **cover a large geographical area**
- **Operate unattended for years** on modest batteries.
- **Capabilities are more limited**
  - small frame sizes, low bandwidth, and low transmit power, limited memory and compute power.
- **Proprietary protocols and link-only solutions, presuming that IP was too memory and bandwidth-intensive**





# 6LoWPAN Protocol Stack

### TCP/IP Protocol Stack

HTTP		RTP	
TCP	UDP	ICMP	
IP			
Ethernet MAC			
Ethernet PHY			

Application

Transport

Network

Data Link

Physical

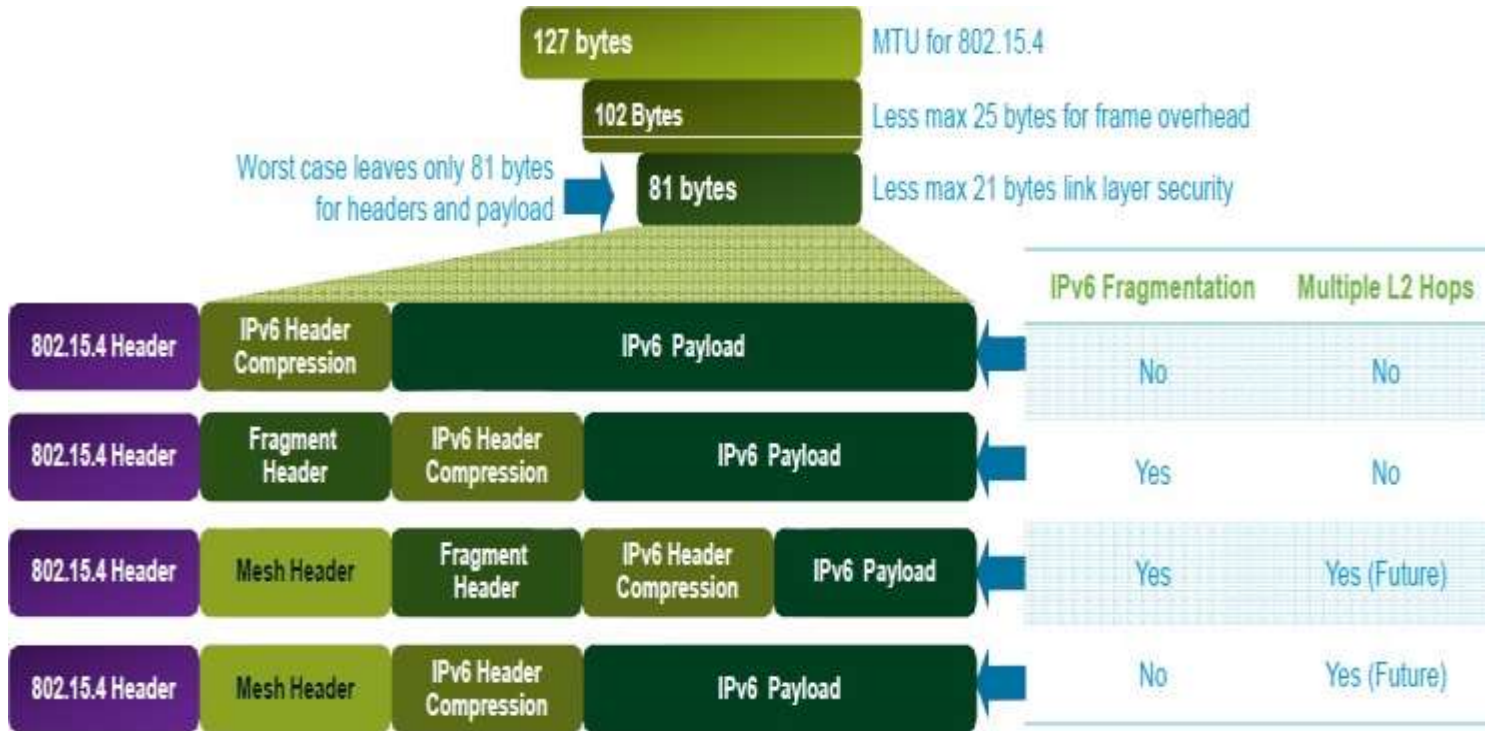
### 6LoWPAN Protocol Stack

Application	
UDP	ICMP
IPv6 with LoWPAN	
IEEE 802.15.4 MAC	
IEEE 802.15.4 PHY	





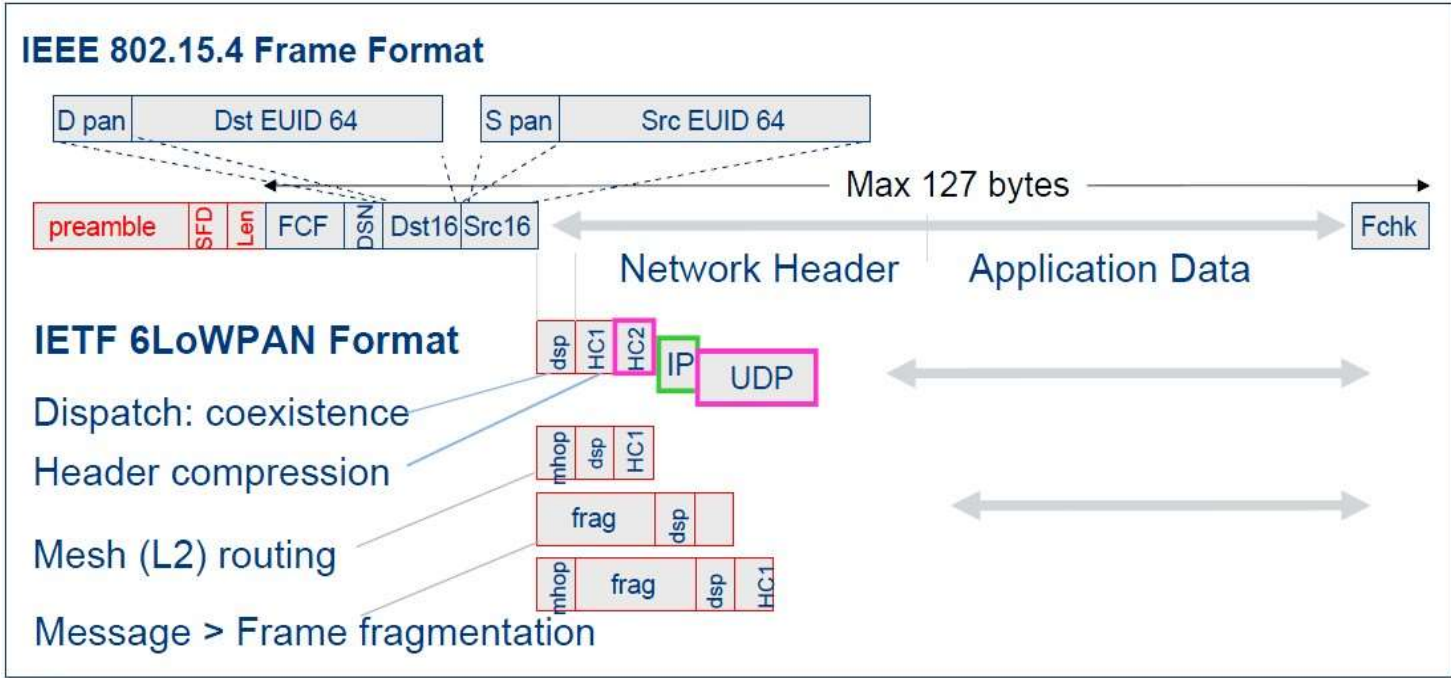
# Typical 6LoWPAN Header Stacks







# 6LoWPAN Format



- Orthogonal stackable header format
- Almost no overhead for the ability to interoperate and scale.
- Pay for only what you use





Thank  
you

