

# HINOC MAC Introduction

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# Introduction

## ● Functions and Mechanisms

- In **TDD** mode, **OFDMA/TDMA** supported
- Up to **64 terminals** (HMs) supported
- Basic Sub-Channel (SC) and extended Sub-Channel introduced to **support multiple terminal with different bandwidth**
- **Report-Grant mechanism** used to realize various dynamic bandwidth allocation
- Using **Ru frame** to transmit uplink report simultaneous to realize uplink reports rapidly and simply

# Introduction

- **Fixed and short MAP cycle** used to decrease transmission latency
- **Packing and fragmentation mechanisms** used to increase throughput and transmission efficiency
- **Admission/Maintenance (Adaptive Modulation and Coding)**
- **Ranging** supported to improve protocol efficiency
- **ARQ** optionally supported to improve reliability of transmission
- **Extended Information Sub-frame** optionally supported to improve scalability
- **MAC protocol is designed based on HINOC2.0 PHY Proposal**

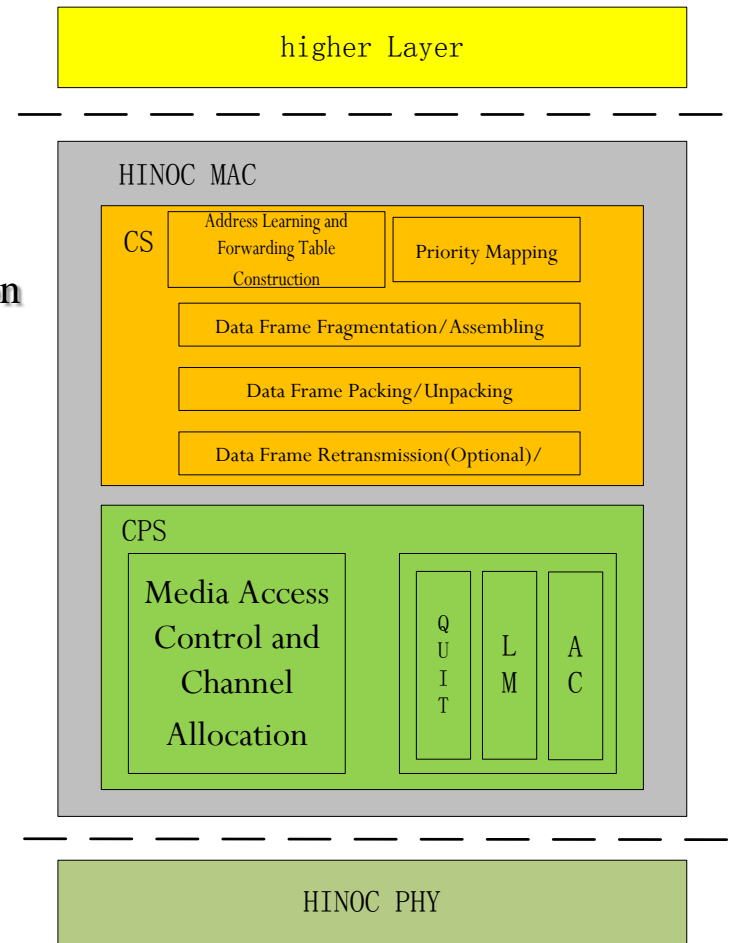
# MAC Structure

## ■ CS(Convergence Sublayer): adaptation between the function of the CPS and the higher layer entity

- Address Learning and Forwarding Table Construction
- Priority Mapping
- Data Frame Fragmentation/Assembling
- Data Frame Packing/Unpacking
- Data Frame Retransmission(Optional)

## ■ CPS(Common Part Sublayer)

- Media Access Control and Channel Allocation
- Node Admission/Quitting
- Link Maintenance

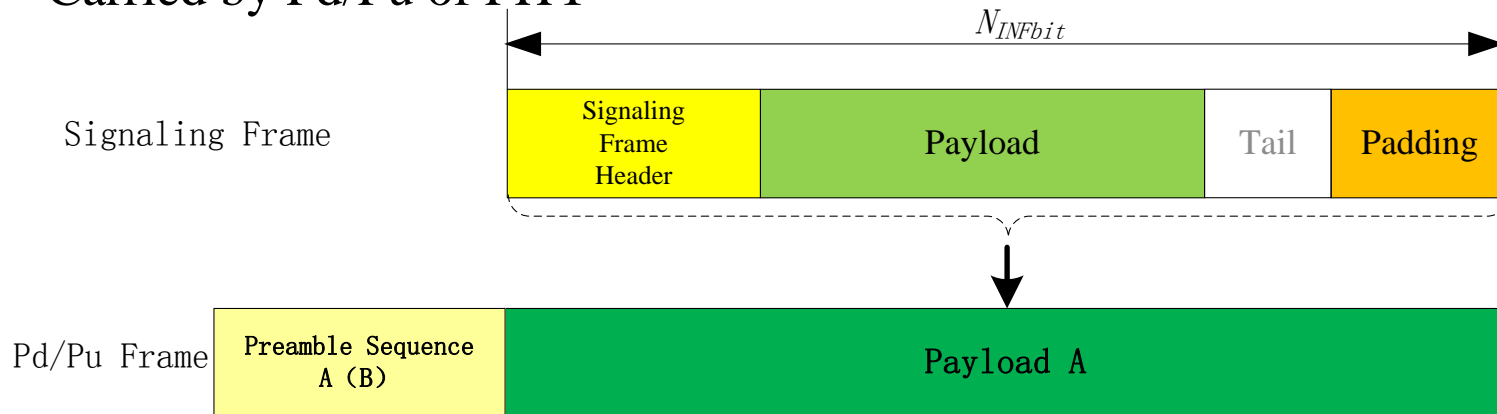


# MAC Frame type

- **Frame Type**
  - **Signaling Frame:** used for AC/LM QUIT
  - **Control Frame:** used for channel allocation
  - **Data Frame:** used for carrying EMAC frame
  - **Broadcast Frame:** for further study

# Signaling Frame

- Signaling Frame
  - Downlink signaling frames and uplink signaling frames divided
  - Signaling frames are used in the signaling exchange between HB/HM during the procedure of node admission, node quitting and link maintenance.
  - Carried by Pd/Pu of PHY

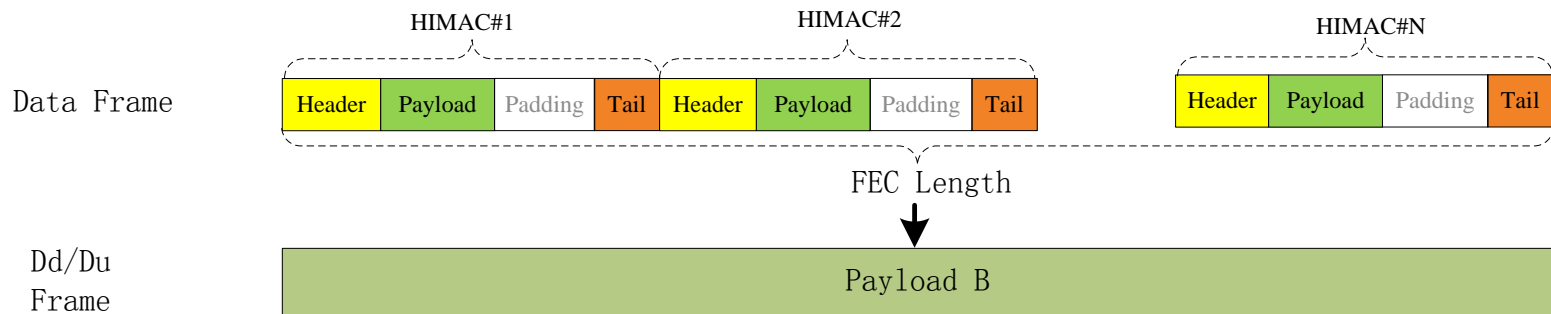


# Control Frame

- Control Frame
  - Used in queue report and channel allocation
  - **Two types** of Control Frame are defined:**MAP and R Frame**
    - **MAP frame**: used to announce a channel plan by HB ,transmitted in broadcast mode and carried by Cd of PHY
    - **R frame**: used by HM to transmit queue report to HB, carried by Ru of PHY.  
all HMs can simultaneously transmit the R frame in one OFDM symbol .
  - **The length** of MAP and R frame is **fixed**

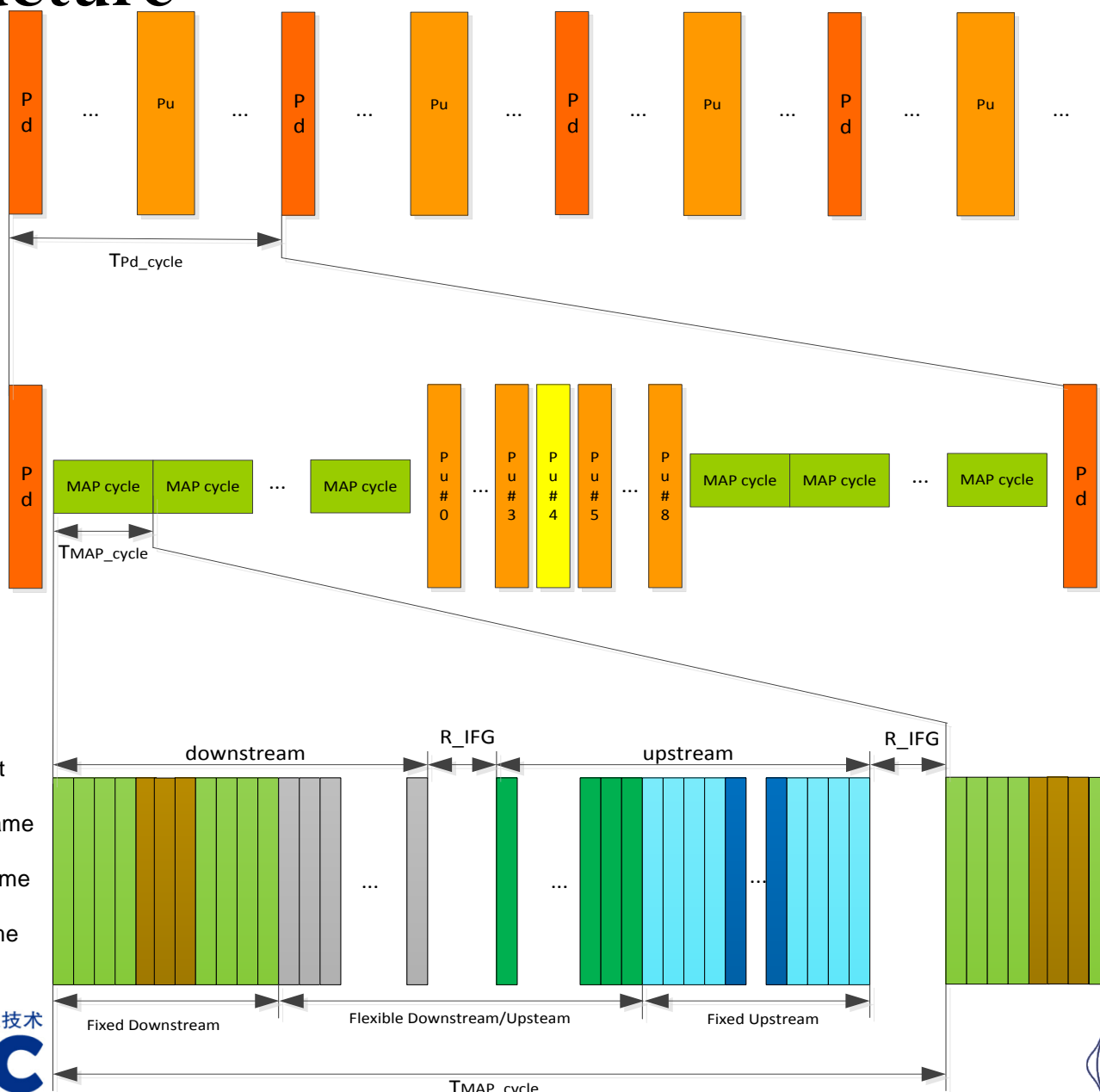
# Data Frame

- Data Frame
  - Data frame used to carry Ethernet application
  - Carried in Dd/Du of PHY





# ● Frame Structure



- Slot to transmit Pd
- Slot to transmit Pu
- Slot to transmit Pu Only support 1.0
- A map cycle

- A OFDM symbol for transmit
- Brown : symbol for MAP Frame
- Dark Blue :symbol for R Frame
- Other: symbol for DataFrame

# Thanks!