

# **HINOC PHY:**

## **Data Frame & Control Frame Introduction**

**Zhao Hui**  
**Peking University**  
**2013/12/20**



## Probe Frames:

Downlink Probe Frame ( $P_d$ )  
 Uplink Probe Frame ( $P_u$ )

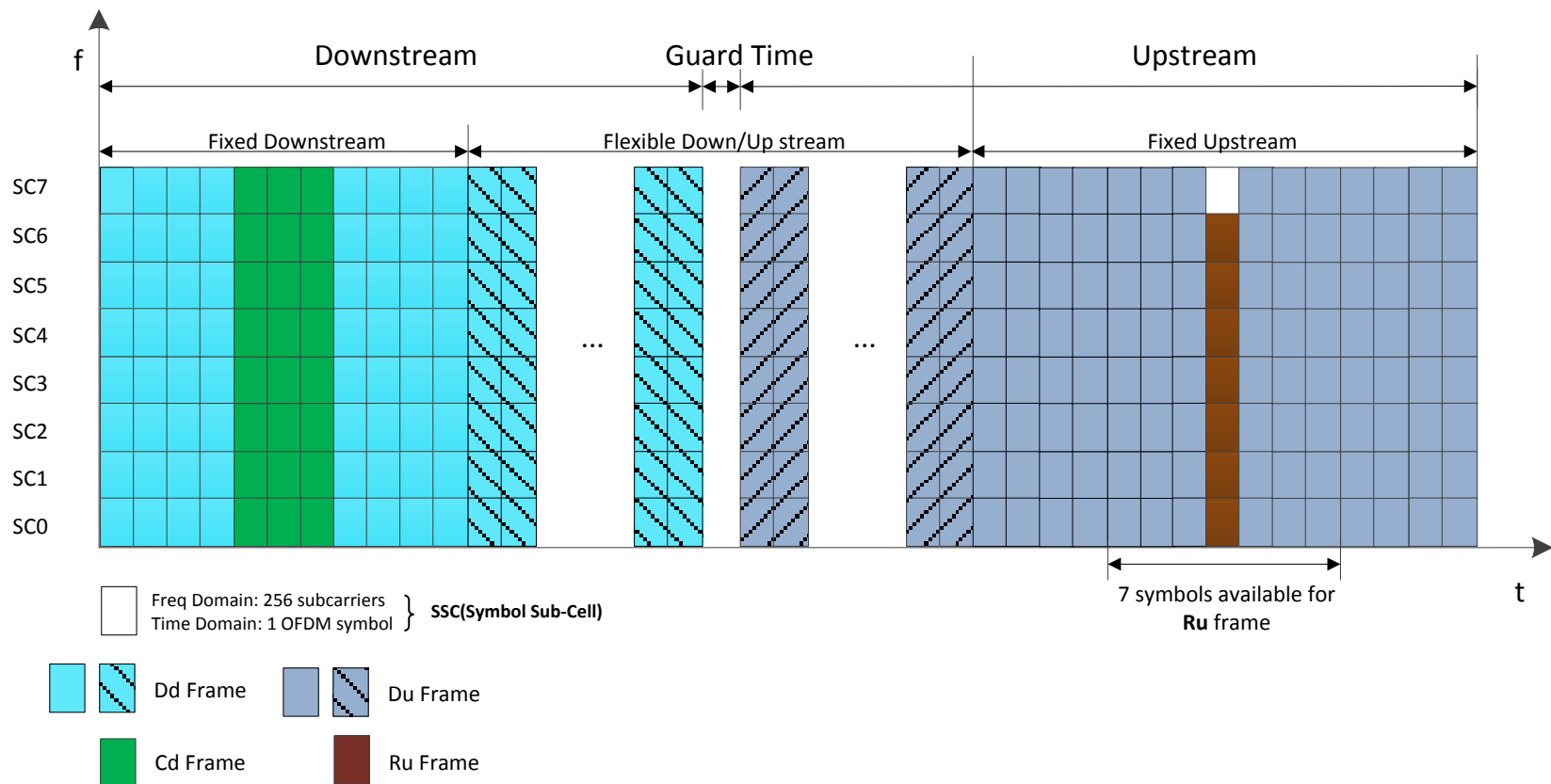
## Data Frames:

Downlink Data Frame ( $D_d$ )  
 Uplink Data Frame ( $D_u$ )

## Control Frame:

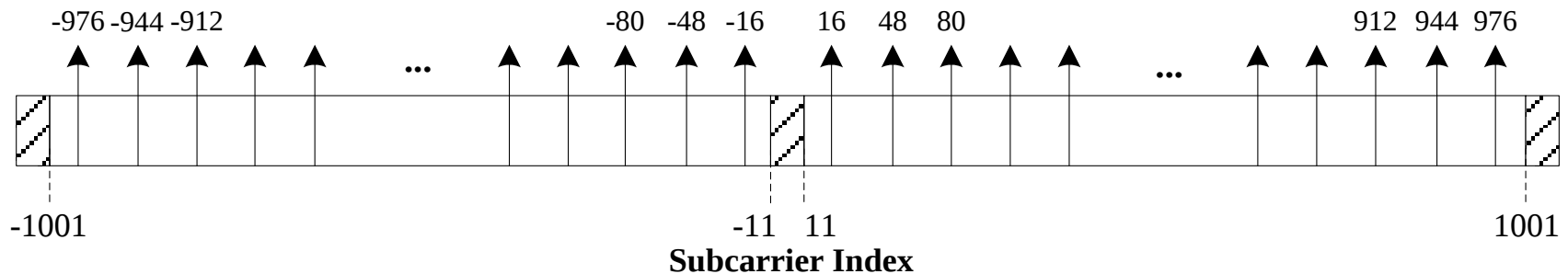
Downlink Control Frame ( $C_d$ )  
 Uplink Report Frame ( $R_u$ )

# MAP Cycle



| CP Length | OFDM Length( $T_{\text{ofdm}}$ ) | MAP Cycle Length        |
|-----------|----------------------------------|-------------------------|
| 0.5us     | 16.5us                           | $139 * T_{\text{ofdm}}$ |
| 1.0us     | 17.0us                           | $146 * T_{\text{ofdm}}$ |
| 2.0us     | 18.us                            | $138 * T_{\text{ofdm}}$ |

- No preamble. Only contain OFDM symbols
- 2048 subcarriers
  - null subcarriers: 66
  - data subcarriers: 1920
  - pilot subcarriers: 62
- Adaptive modulation and coding scheme



Null Subcarrier



Data Subcarrier



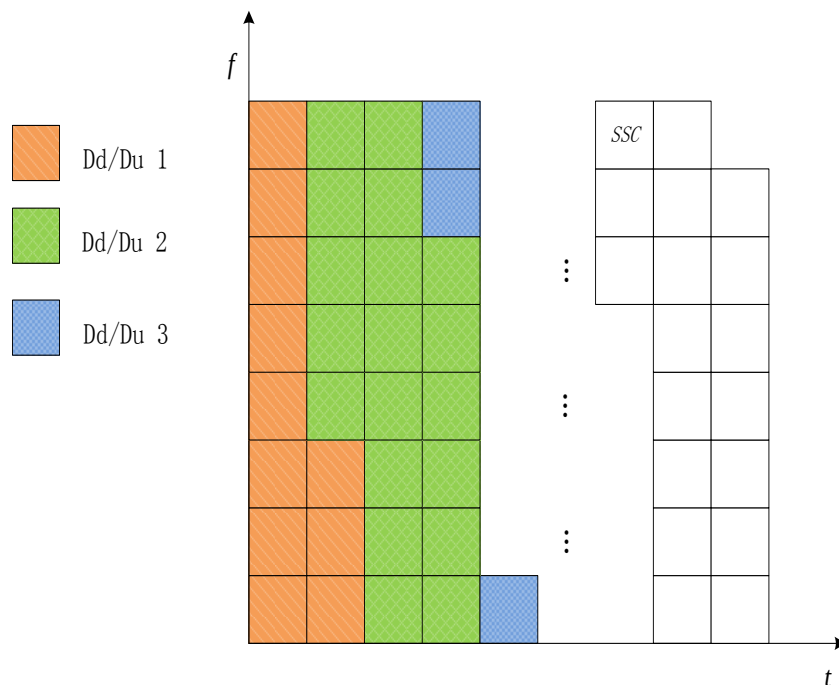
Pilot Subcarrier

- OFDMA Mode

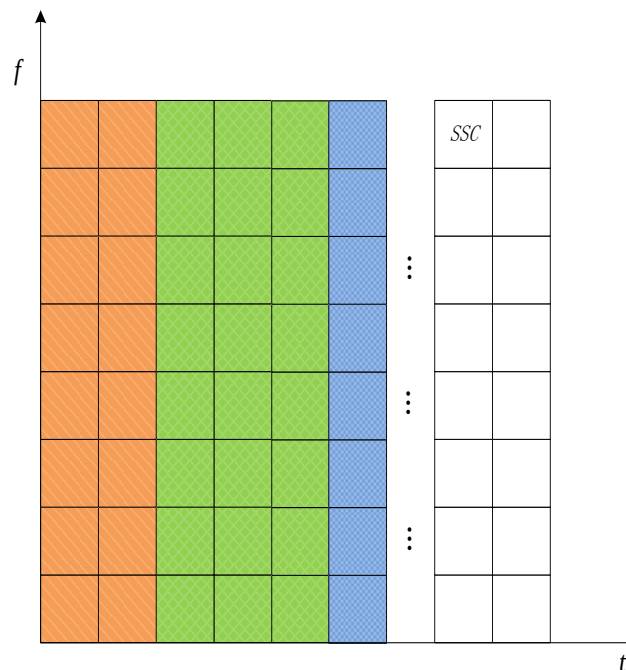
- Each Dd/Du frame occupies any integer SSCs

- TDMA Mode

- Each Dd/Du frame occupies any integer OFDM symbols



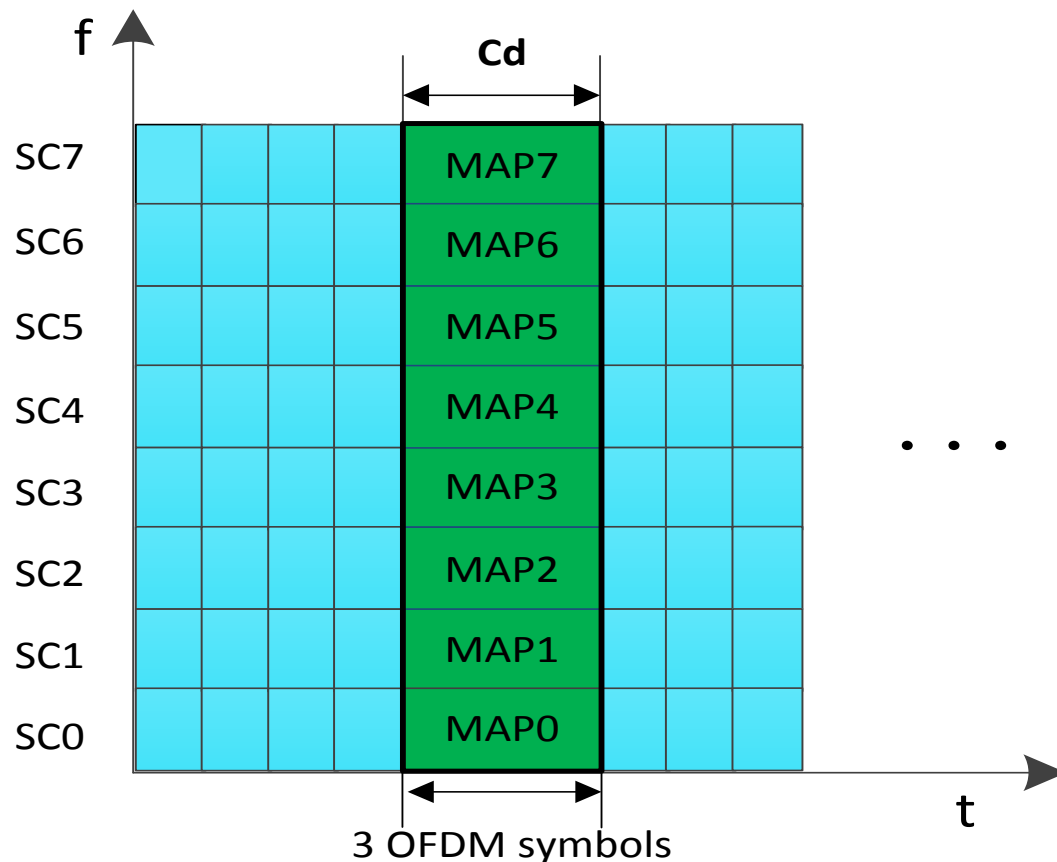
OFDMA Mode



TDMA Mode

- **No preamble. Only contain OFDM symbols**
- **2048 subcarriers**
  - **null subcarriers: 66**
  - **data subcarriers: 1992**
  - **no pilot subcarrier**
- **Fixed OFDM numbers**
- **Fixed modulation: DQPSK**
- **Fixed FEC: BCH(392,248)**

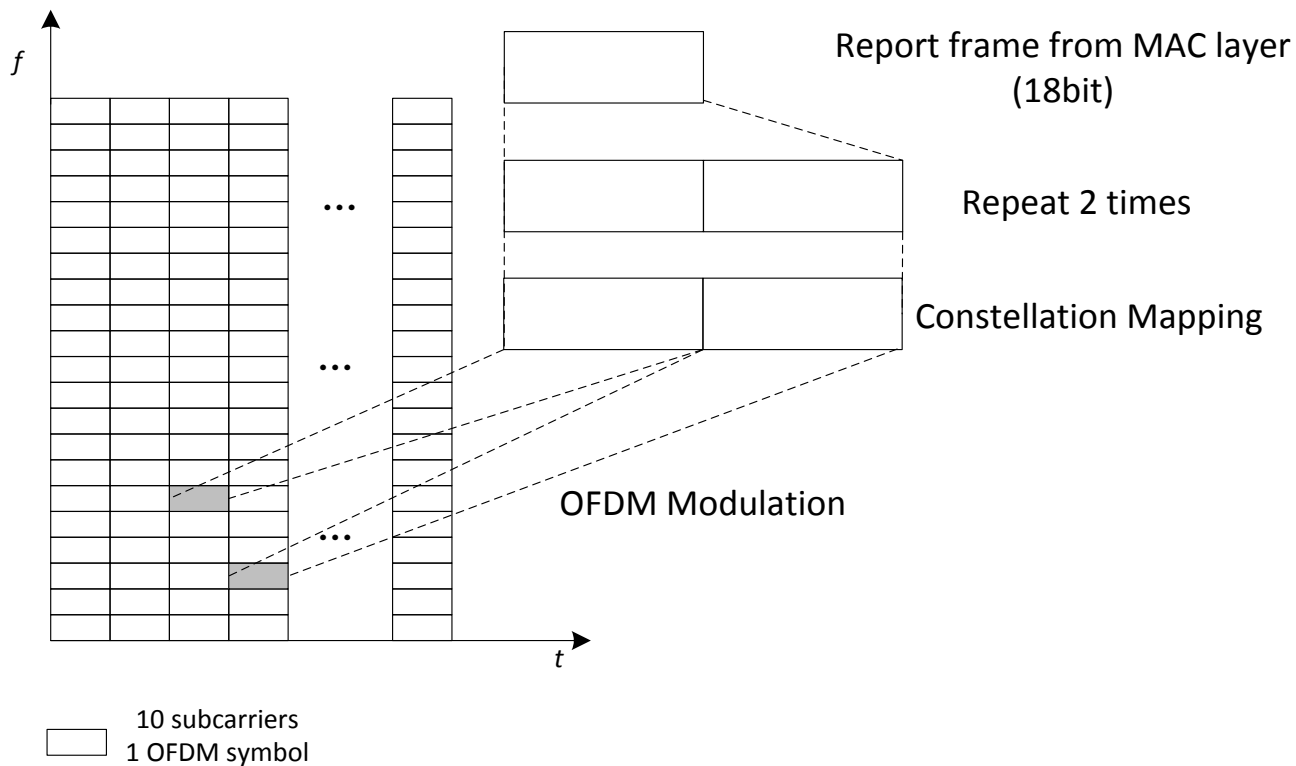
- Each sub-channel (SC, 16MHz) in Cd frame bears a MAP frame of MAC layer which is used to indicate the assignments of the next MAP cycle.



- **No preamble. Only contain OFDM symbols**
- **2048 subcarriers**
  - **null subcarriers: 66**
  - **data subcarriers: 1992**
  - **no pilot subcarrier**
- **OFDM numbers : 1~7**
- **Fixed modulation: DQPSK**
- **No FEC**

## ● OFDMA

- High efficiency in the case of short packets.



**Thank you!**