

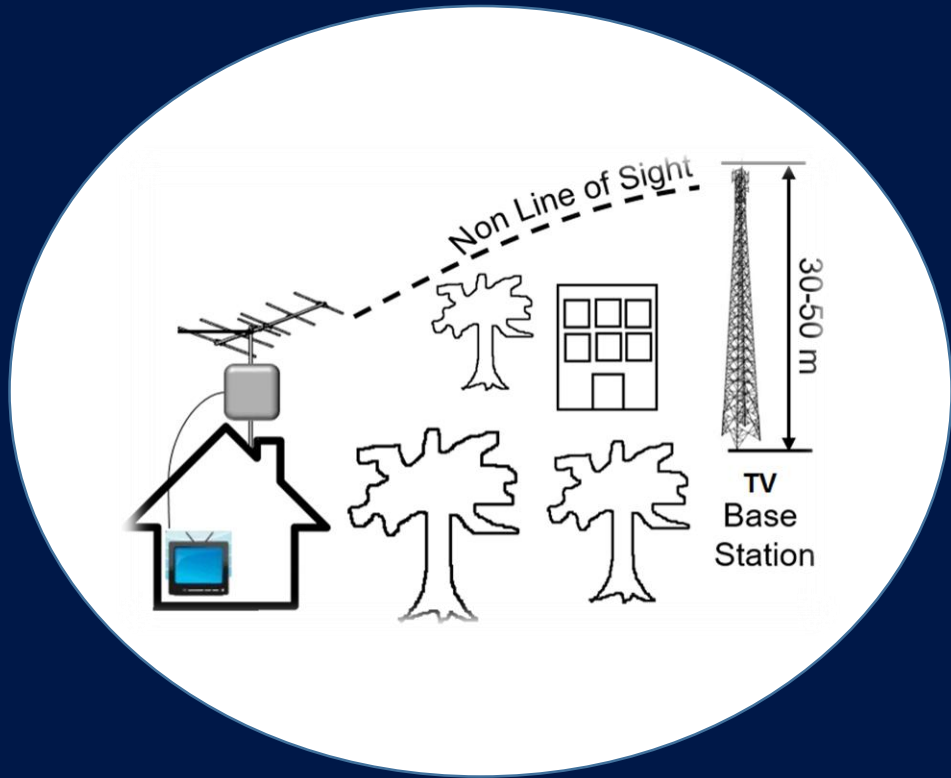
“Proposal of multiservice schemes over DTMB System, based on LDM multiplexing technique”

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Outline

- Motivation. Why multiservices???
- Multiplexing Technique
 - ✓ LDM
- Two Proposed Schemes over the DTMB system
- Key parameters to consider
- Simulation results. Coverage Analysis
- Conclusions
- Further research

Motivation



Terrestrial broadcasting
system

VS.

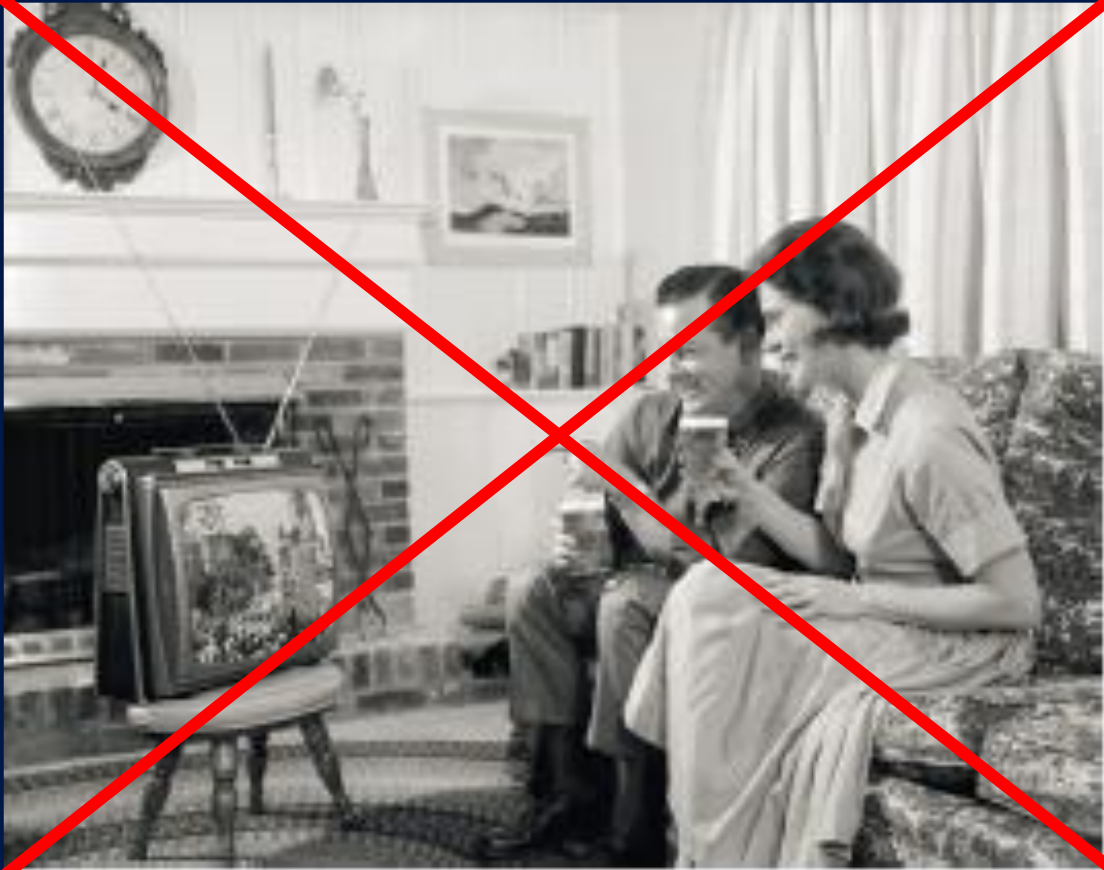
Mobile Broadband
services



Main priorities of the new generation digital terrestrial television systems



- Need for a more flexible use of the spectrum.
- Mobile/indoor performance improvement.
- Robustness against multipath scenarios over SNF networks
- Capability of offering simultaneously multiple services



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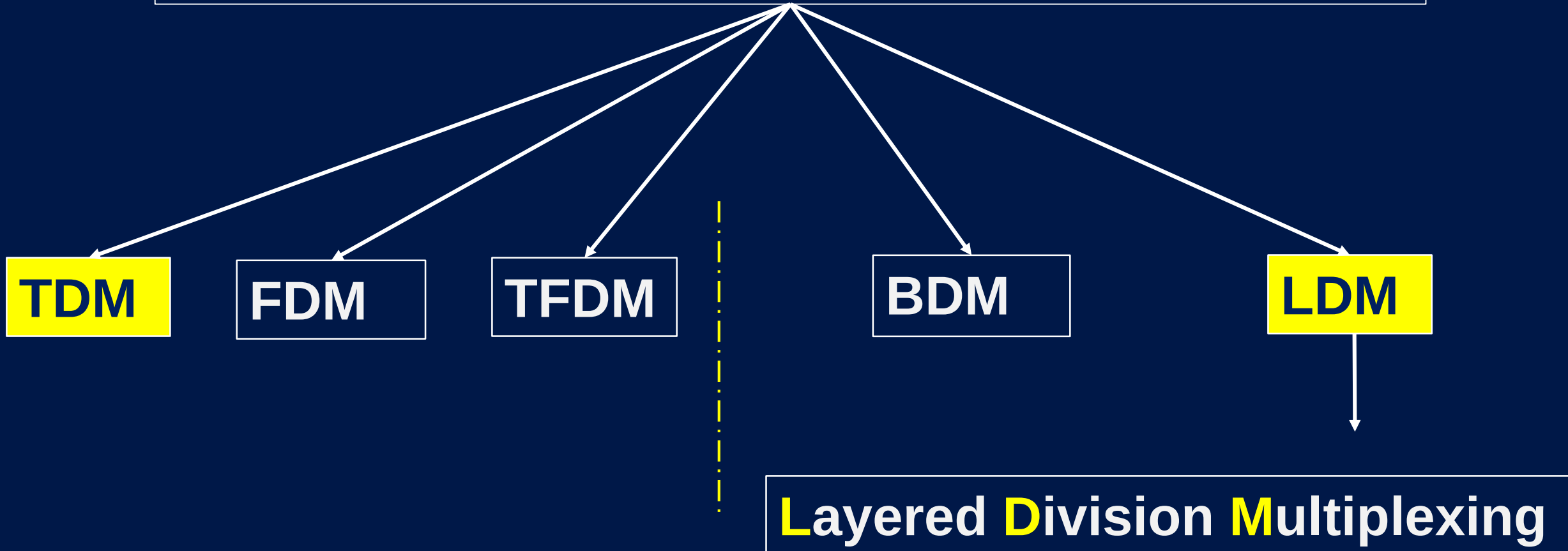
Goal



Propose a novel **multiservice scheme over DTMB**, allowing **simultaneous transmission** of original and additional services, based on Layered Division Multiplexing (**LDM**) technique.

Multiservices: How implement it?

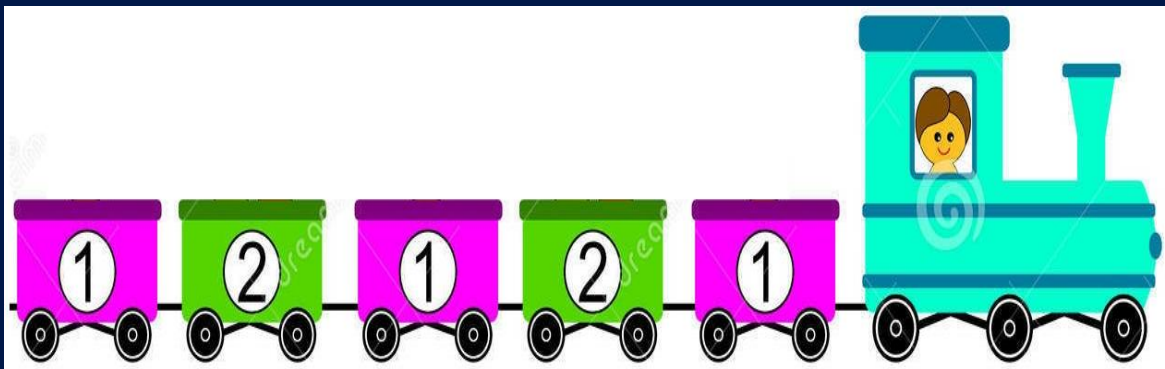
Multiplexing techniques for multiservices



TDM

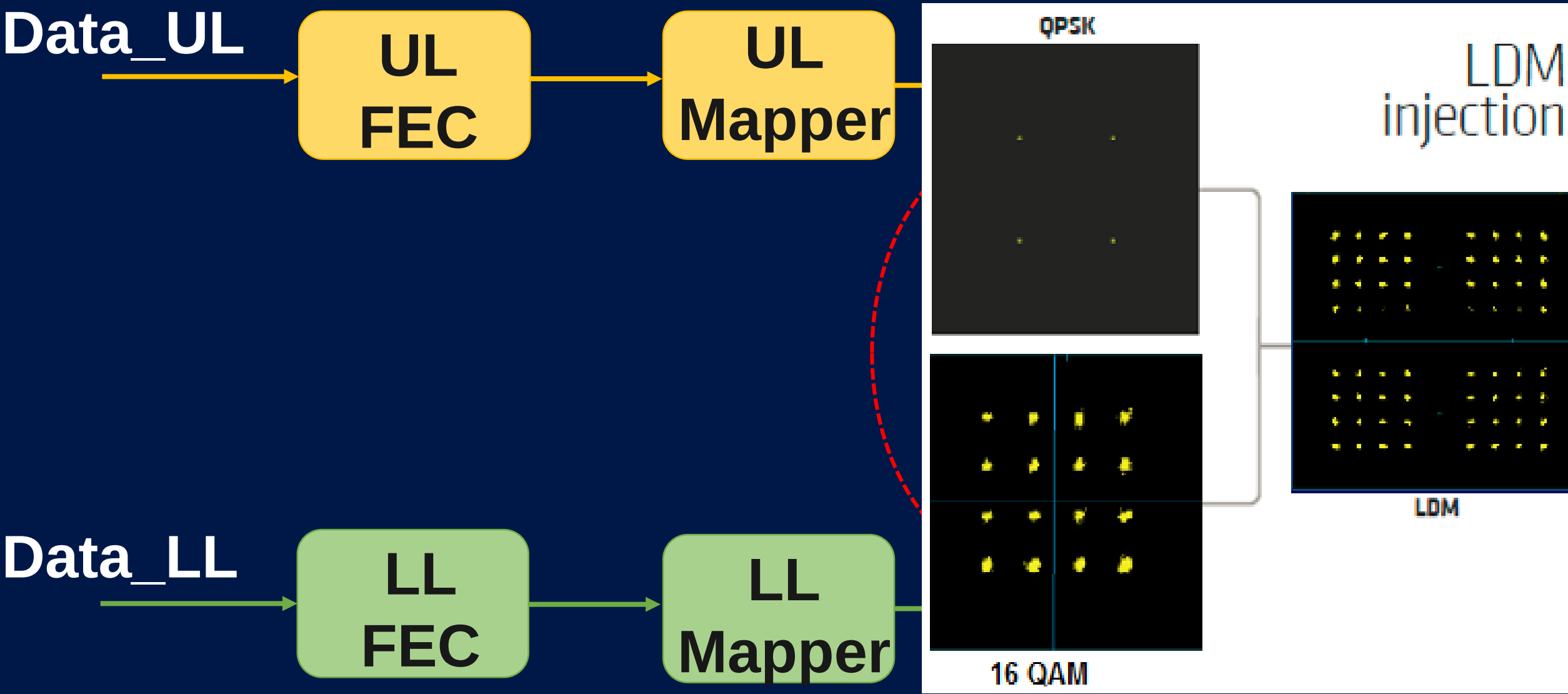


LDM

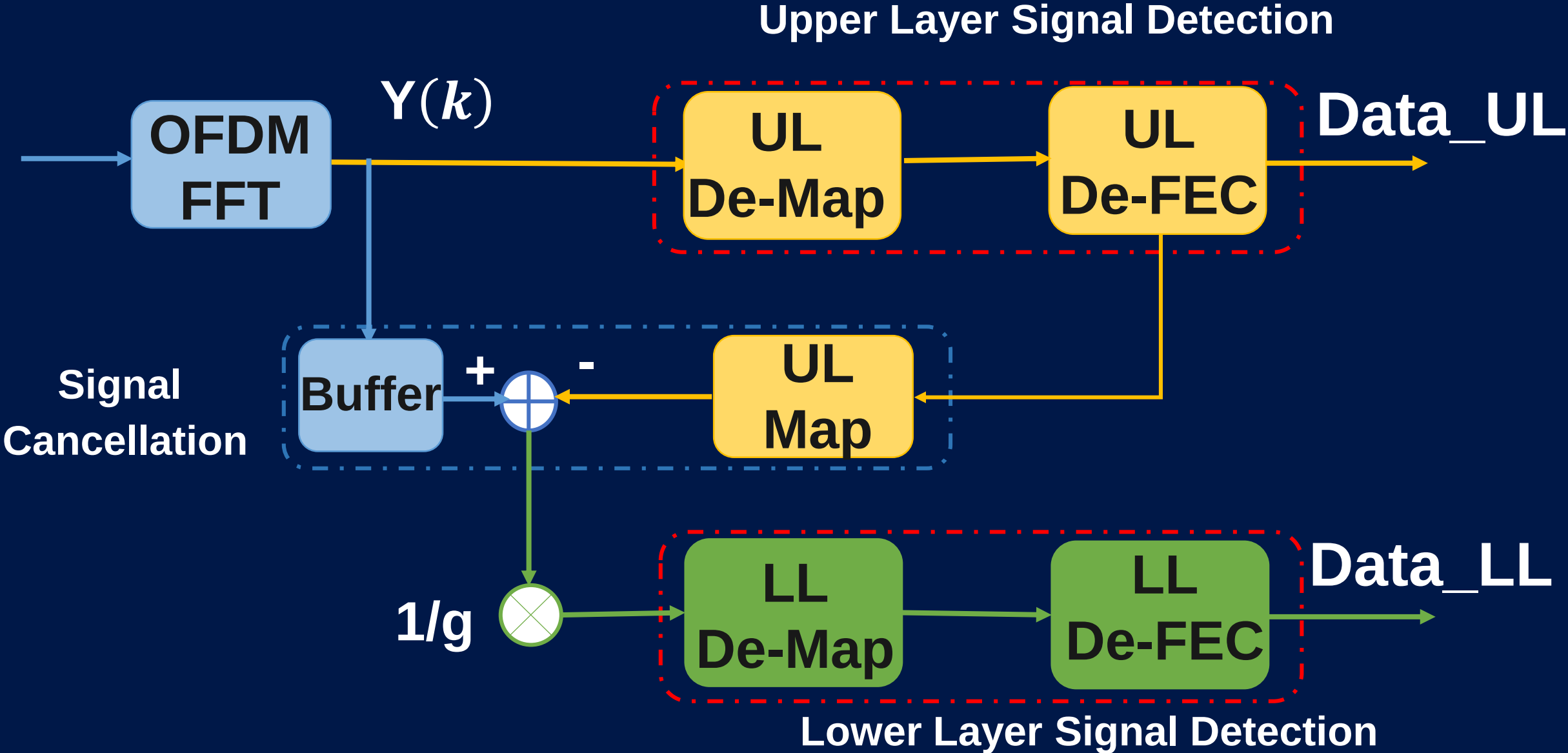


BW=6MHz

LDM transmitter structure



LDM receiver structure



Two Proposed Schemes over the DTMB system

Scheme1: Mobile and Fixed services delivery in LDM-based DTMB system

Scheme2: Global service delivery and local content insertion through a DTMB-SFN network

Key parameters to consider

- Injection level (adjustable power).
- Signal Cancellation: channel estimation techniques.
- Scheme 1: Mobile/Fixed service capacity.
- Scheme 2: Local content insertion. Original/Added service capacity.
- Reception SNR threshold degradation due to additional service insertion.
- Global coverage degradation vs. Additional service insertion.

Proposed Scheme Configuration

Scheme 1

Mobile Service

Capacity	Signal Conf
4 / 6 (Mbps)	4QAM/ FEC=0.4/0.6

+

Fixed Service

Capacity	Signal Conf
12, 18, 24 (Mbps)	16,64QAM/ FEC=0.6/0.8

Scheme 2

Global Service

Capacity	Signal Conf
12, 18, 24 (Mbps)	16,64QAM/ FEC=0.6/0.8

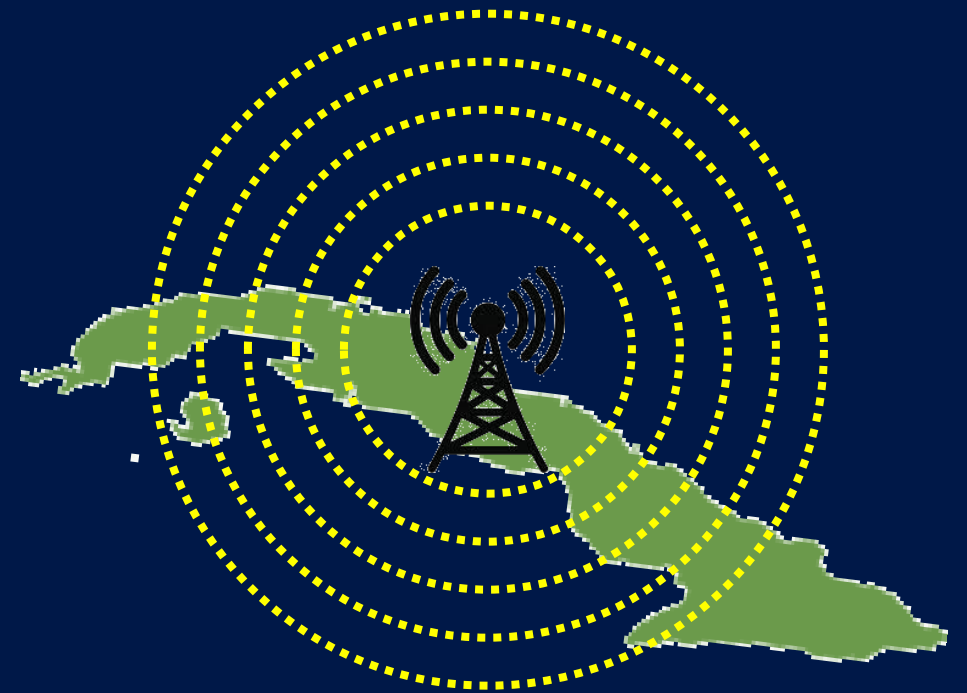
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Local Content

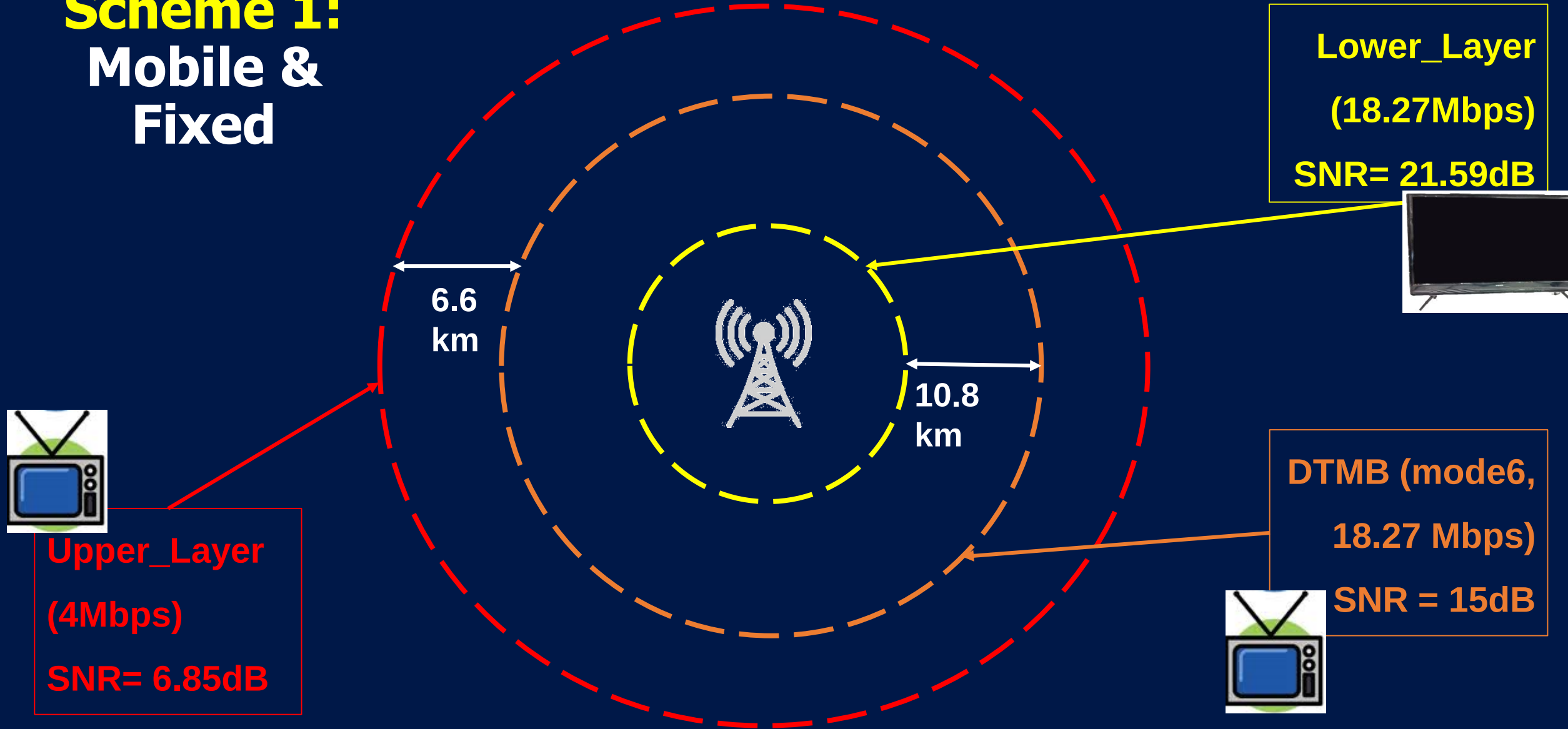
Capacity	Signal Conf
4 / 6 (Mbps)	4QAM/ FEC=0.4/0.6

Simulation Results

Coverage Analysis



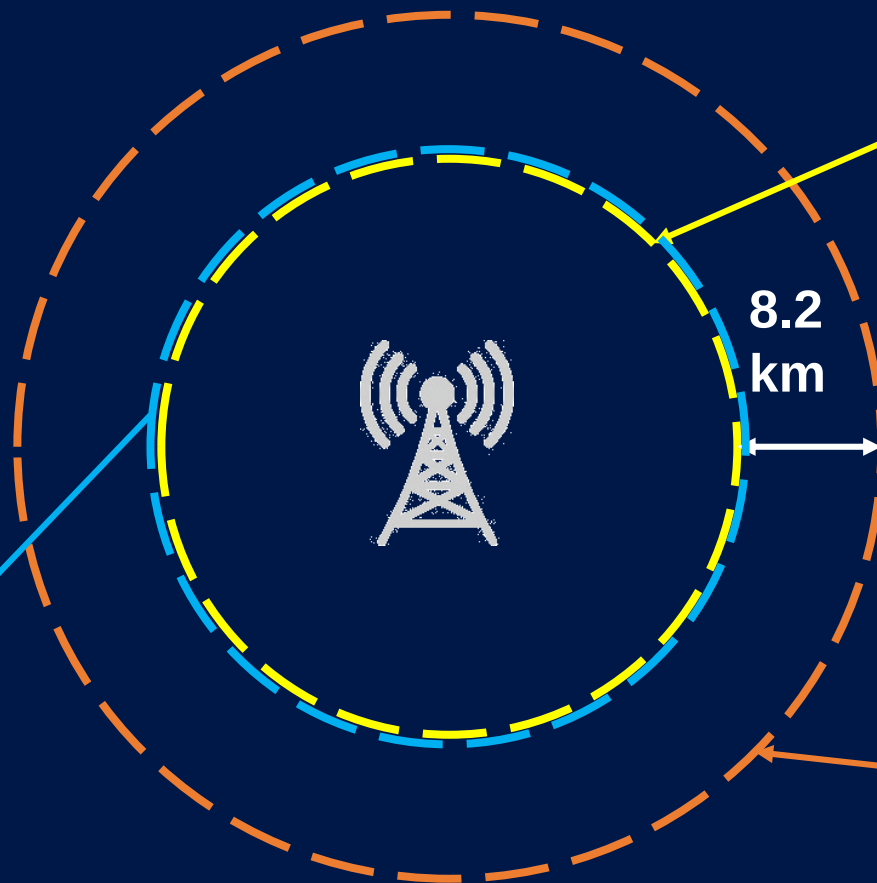
Scheme 1: Mobile & Fixed



Scheme 2: **SFN/local** **insertion**



LL, local content
(SNR = 19.8dB) for
C = 4Mbps



UL, global content
(SNR = 19.8dB) for
C = 18.27Mbps



DTMB (mode6,
18.27 Mbps)
SNR = 15dB

Conclusions

- LDM is a multiplexing scheme, that can mix different services with different reception conditions in one RF channel.
- By using LDM, two multiservice transmission scheme over DTMB were proposed.

Further research

- Include the estimation channel module for be in capacity of realize multipath channel simulation analysis.
- For Scheme 2: evaluate the system performance considering the overlapping areas and the interferences due to multiple transmitters.

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