Prototype of Control and User plane splitting Heterogeneous Cellular Networks

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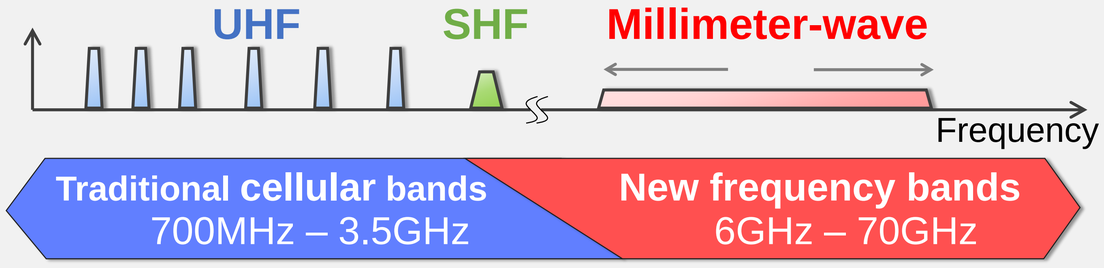
Project website: **http://www.miweba.eu/**

Concept & Architecture of C/U-splitting HetNet*

* HetNet: Heterogeneous Networks

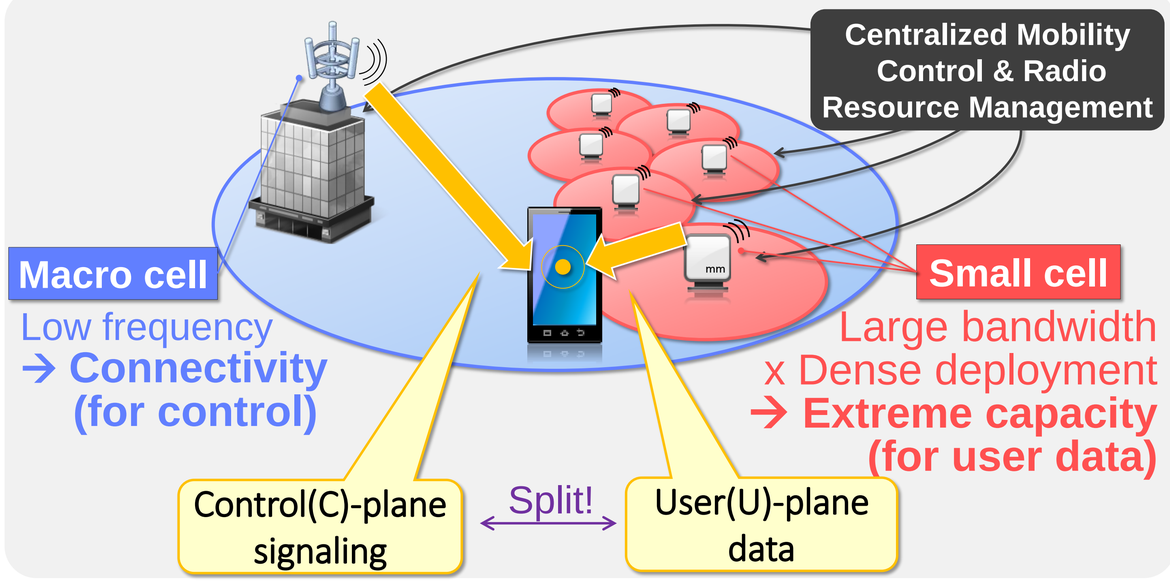
Background



Propagation Characteristics	☺ Good low penetration loss	☹ Tricky high penetration loss
Available Bandwidth	☹ Poor heavily utilized	☺ Rich not utilized for mobile

Get the advantages of both bands

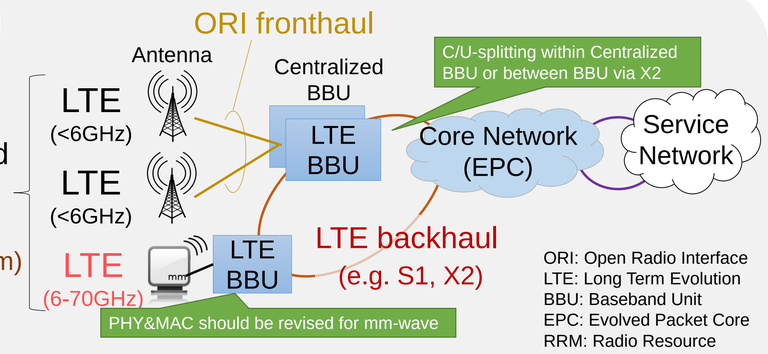
Concept of C/U-splitting HetNet



Architectural alternatives

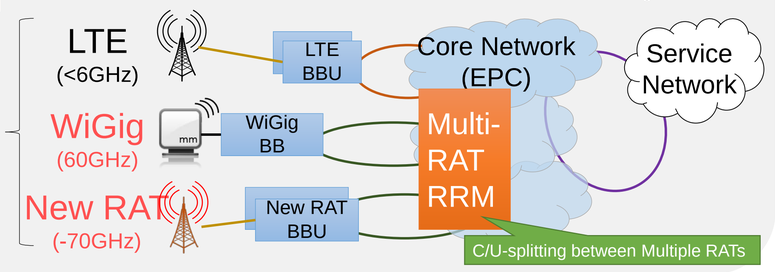
- **Single-RAT solution**

Unified architecture of LTE-Advanced (LTE-A) and Further enhanced LTE-A (including both licensed and *license-assisted* unlicensed spectrum)

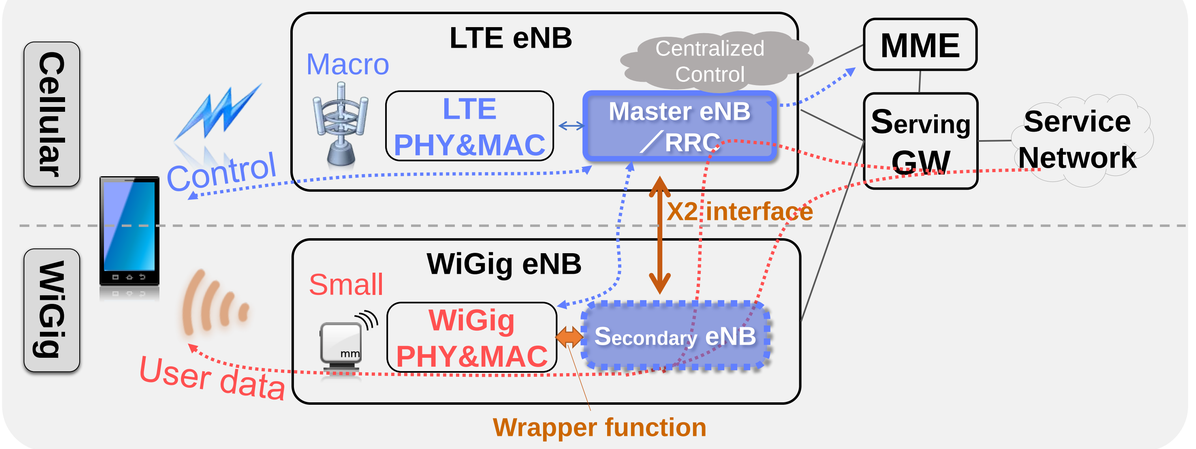


- **Multi-RAT solution**

Interworking between Multiple Radio Access Technologies (RATs) (including further enhanced LTE, Wi-Fi, WiGig or New 5G RAT)



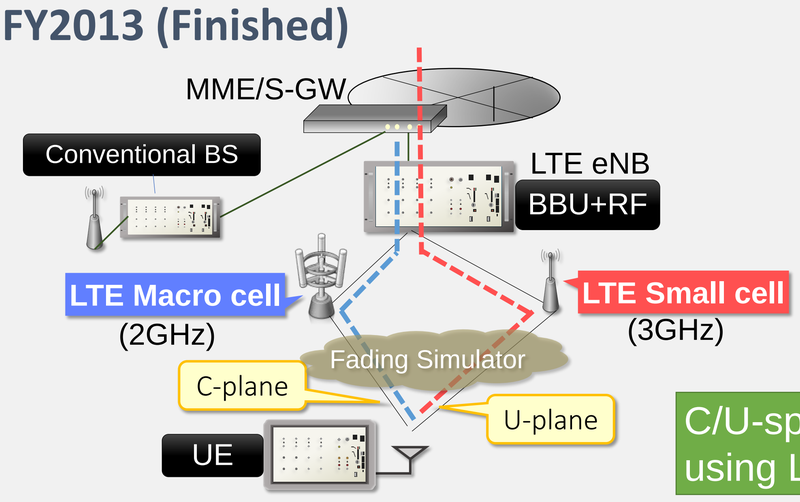
Architecture of MiWEBA prototype using LTE and WiGig *(under development)*



Prototype of C/U-splitting HetNet

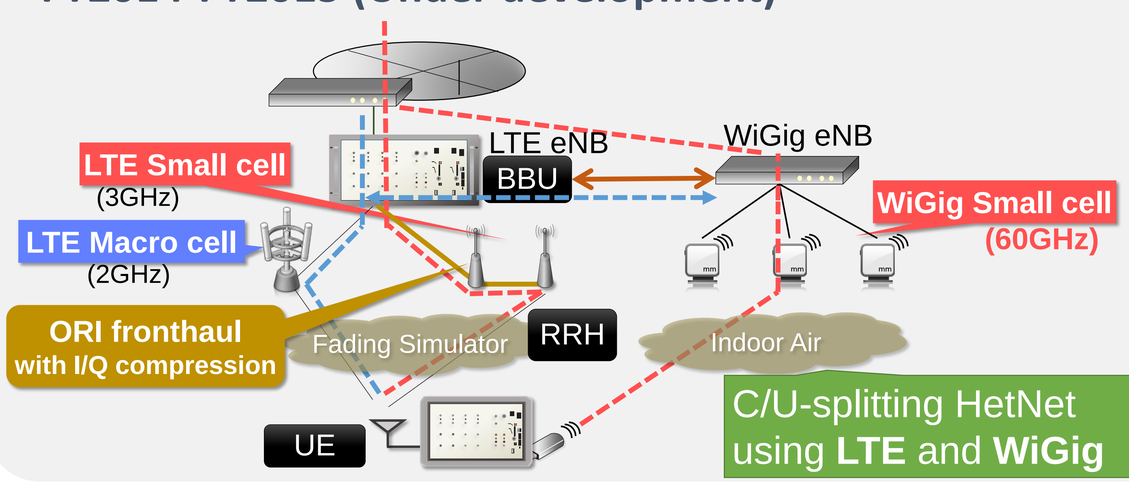
Development plan

- **FY2013 (Finished)**



C/U-splitting HetNet using LTE (2GHz/3GHz)

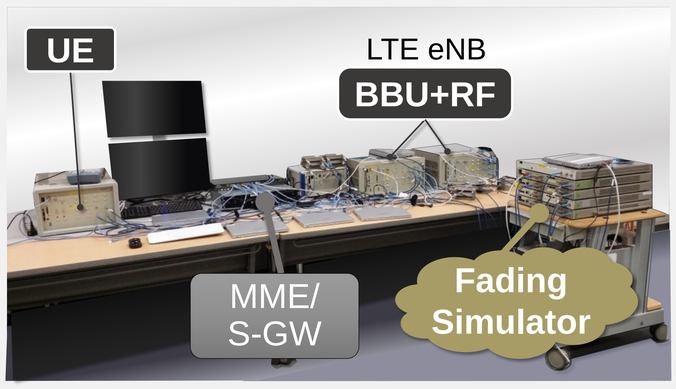
- **FY2014-FY2015 (Under development)**



C/U-splitting HetNet using **LTE** and **WiGig**

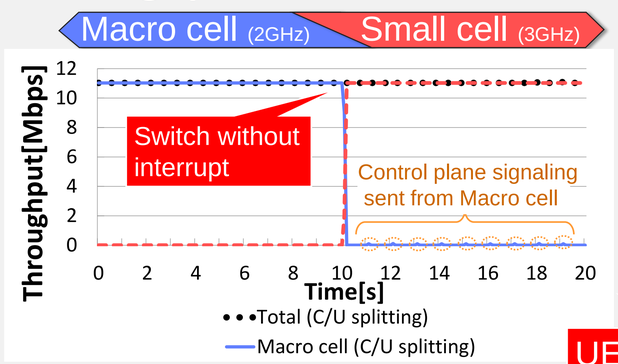
C/U-splitting HetNet using LTE

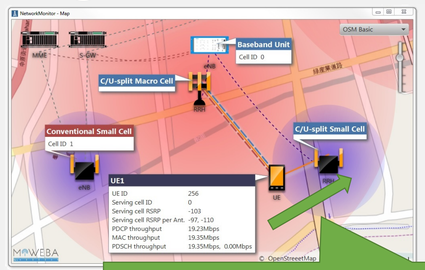
- **Developed hardware**



Parameter	Value
Radio Access	DL: OFDMA UL: SC-FDMA
DL Carrier freq.	Macro: 2160MHz Small: 3385MHz
DL bandwidth	10MHz
Antenna conf.	1x1 (SISO)
Radio access technology	LTE based

- **Throughput test result while moving UE**





Move UE from Macro to Small

UE receives the U-plane data from small cell, while keeping the C-plane handled by macro cell

Panasonic