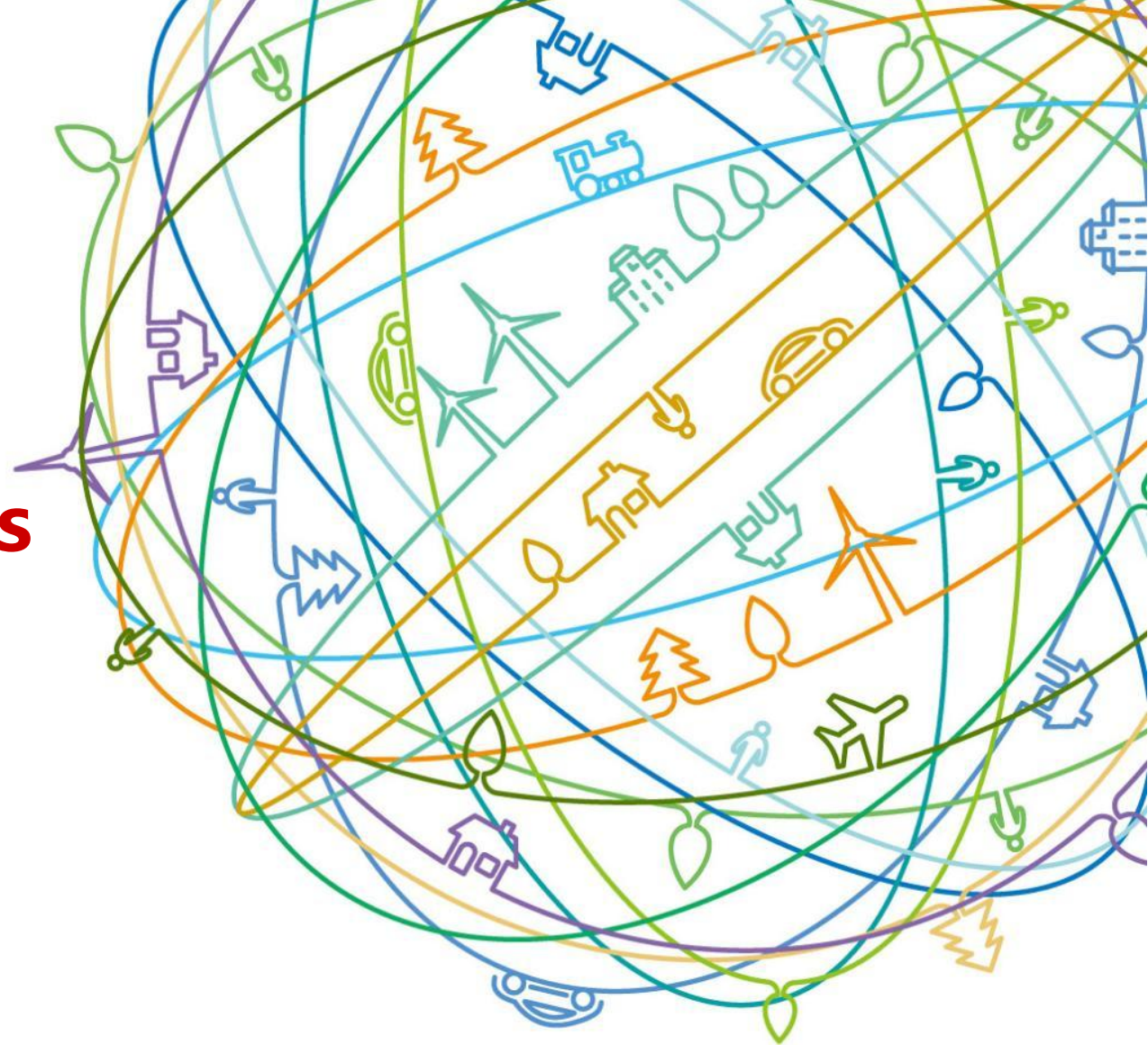


# One LTE, Multiple Spectrums and Rich Services

Ultra Mobile Broadband



HUAWEI TECHNOLOGIES CO., LTD.

[www.huawei.com](http://www.huawei.com)

# Content

## MBB Industry Findings

One LTE Inspiring the Best Experience



# Finding #1: LTE Driving Big Data Consumption

## Data Consumption

South Korea



**2.5 GB**

Monthly traffic  
per LTE user

**257%**

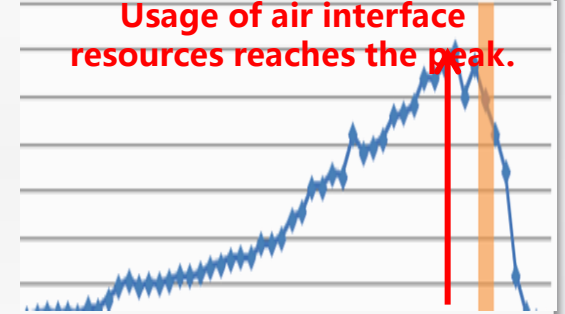
Traffic growth  
vs.3G

## Air Interface Bottleneck

2014 New Year's Eve in Seoul



Usage of air interface  
resources reaches the peak.



High traffic leads to network congestion in Jonggak area in Seoul.

- ✓ Air interface resource usage **>90%**
- ✓ **8.2 GB** traffic generated in 5 minutes

**CA Required to Aggregate Spectrum**

# Finding #2: MBB Connections Rapidly Increasing

51% MBB connection increased  
in 3 months

2013.10 National Day



- **423** connected users per cell
- **10** times of that when network was built



**51%**  
Growth @  
3 months



2014 New Year's Eve

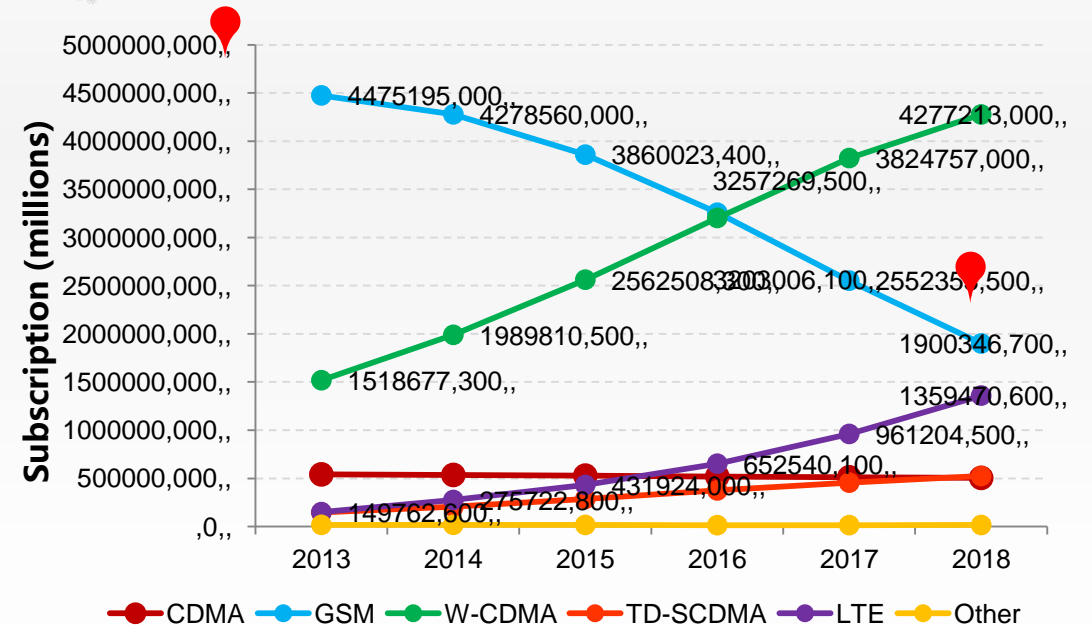


- **638** connected users per cell
- **15** times of that when network was built

2.5B 2G User will Migrate to MBB in  
Next 5 years



## Global Subscription Forecast



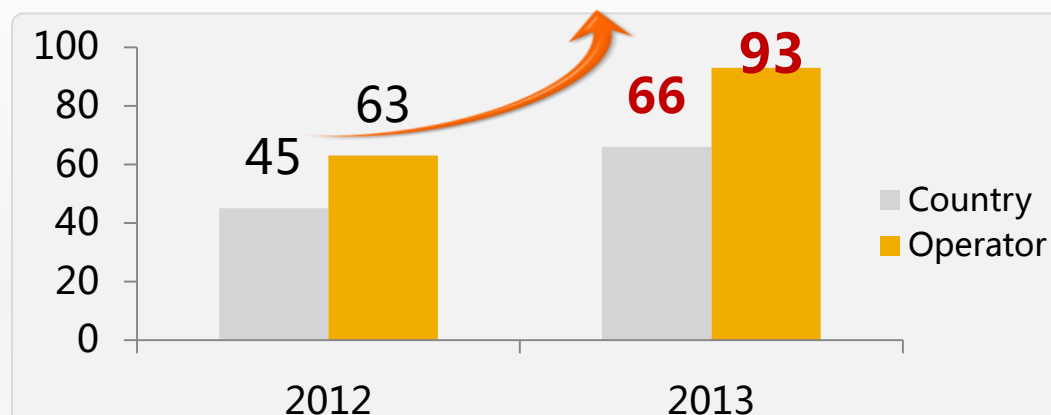
Source: Informa



# Finding #3: HD Voice & Video are being Main Service



## HD Voice Deployment Fast Growth



### 250+ HD Voice Devices

Huawei P6s



iphone 5/5s

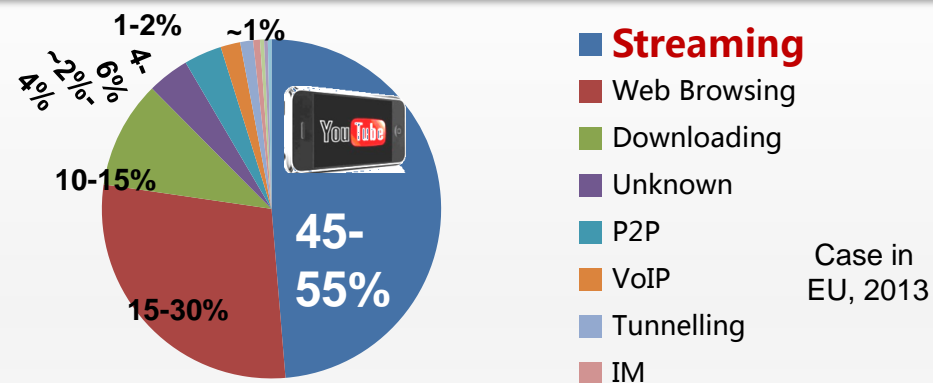


Samsung S4



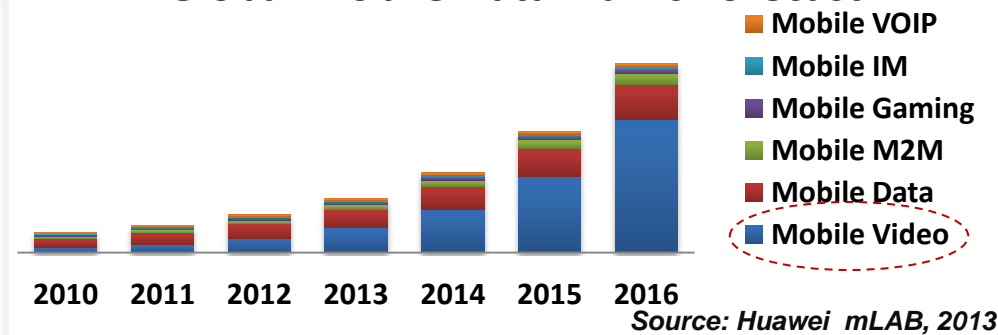
**90%** surveyed users preferred HD voice instead of OTT VoIP in Spain

## Video Contributed ~50% MBB Traffic



Global Mobile Video traffic CAGR is over **75%**

### Global Mobile Data Traffic Forecast



# Finding #4: FDD&TDD Convergence Leads to One LTE

## The Common Ground of GTI Summit : One LTE



**Craig Ehrlich**  
GTI Chief man

*GTI Target:  
Develop TDD  
and promote  
TDD&FDD  
Convergence*



**Anne Bouverot**  
GSMA General Secretary

*Hope all  
members and  
partners to build  
a TDD&FDD  
convergence  
network*



**Shang Bing**  
Vice Director, Ministry of Industry  
and Information Technology

*To accelerate  
the TDD&FDD  
convergence  
and global  
roaming  
progress*



**Li Yue**  
CEO, CMCC

*CMCC will  
expand the TDD  
scalability to  
500,000 sites  
and sell  
100,000,000  
terminals to  
ensure the  
network faster  
and the price  
affordable*



**Steve Pusey,**  
VDF CTO

*Vodafone will  
align Huawei  
demonstrate  
FDD+TDD CA in  
2014MWC and  
will plan to  
deploy LTE  
TDD/FDD  
convergence  
network globally*



**Song Ben,**  
Special Consultant of  
SBM CEO

*TD-LTE is the  
correct choice  
for SoftBank.  
SoftBank will  
drive  
TDD&FDD  
convergence  
and will deploy  
3.5G TDD in  
future.*

## The Progress of Eco-System



**2014Q3,**  
3GPP freeze  
FDD+TDD CA  
standardization



**2014Q4,**  
TDD+FDD CA  
pre-commercial  
test



**2015,**  
TDD+FDD CA  
commercial



# Content

MBB Industry Findings

**One LTE Inspiring the Best Experience**

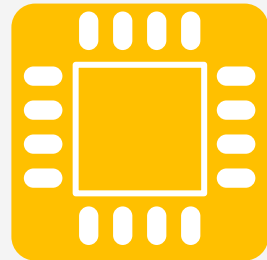


# One LTE: Inspiring the Best Experience

## One LTE



**Spectrum**



**Device**



**Network**



## Best Experience

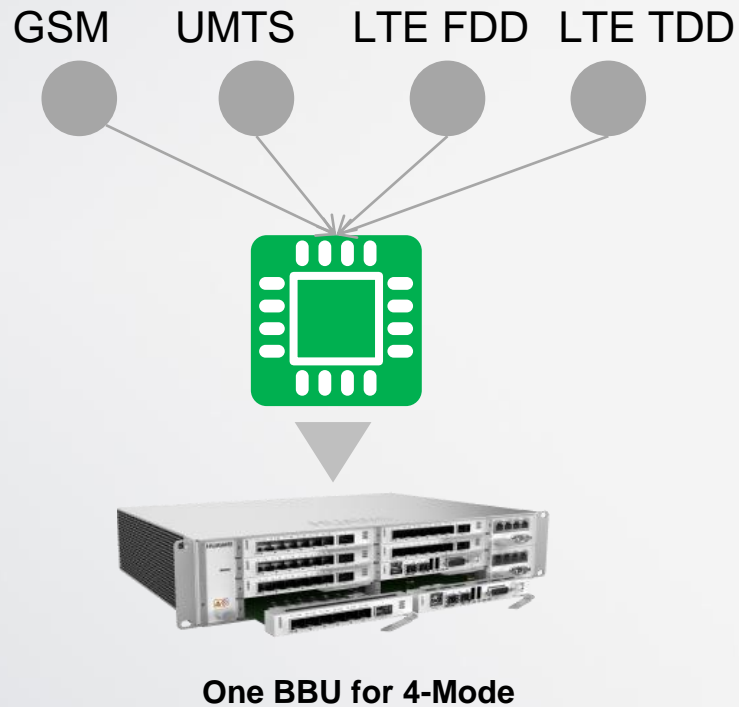


**Ultra Fast Experience**  
**Voice Experience**  
**Video Experience**

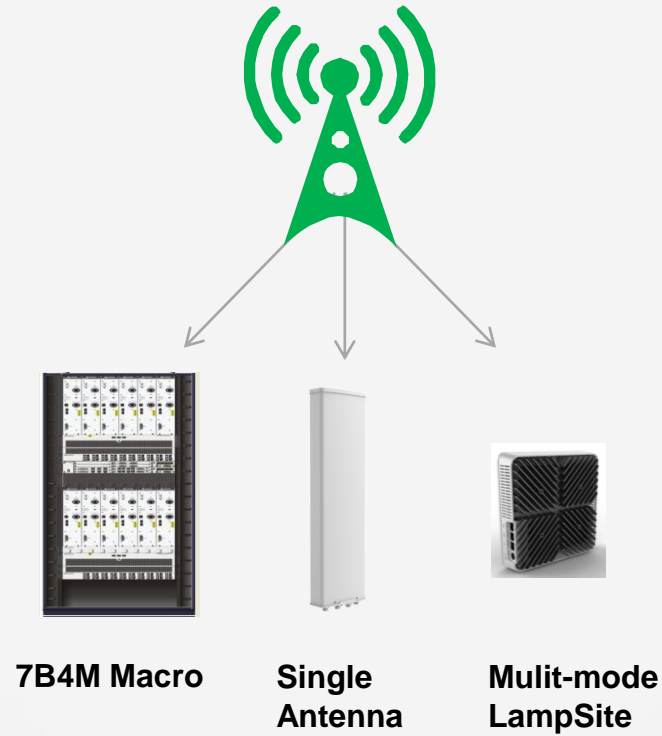


# One LTE Network for FDD&TDD Convergence

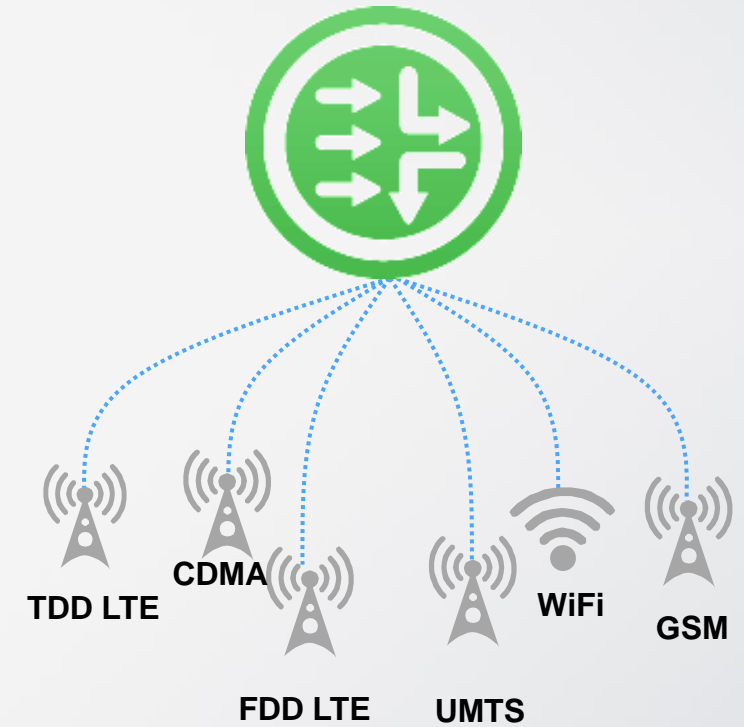
## One Baseband



## One Radio



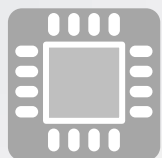
## SingleEPC



# One LTE, One Experience



## Multi-Mode Chipset for One LTE



5-Modes & 13 bands:  
G/U/TDS/TDD/FDD

Baseband Chipset:  
•Balong 710/720

CPU+Baseband:  
•Kirin 910/920



7-Modes & 16 bands:  
G/U/C/EVDO/TDS/TDD/FDD



Baseband Chipset:  
•MDM9X25/35



CPU+Baseband:  
•Snapdragon  
800/808/810

## One LTE, One Experience



- Ascend D2
- Ascend P6S
- Ascend Mate2
- >10 types in 2014



Ascend X1



iPhone

Samsung  
GALAXY

htc  
quietly brilliant

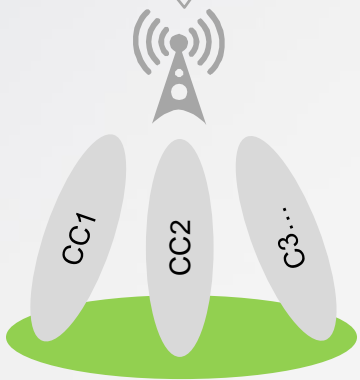
NOKIA

lenovo

oppo

# FDD&TDD CA for Ultra Fast Experience

## Multiple Component Carriers

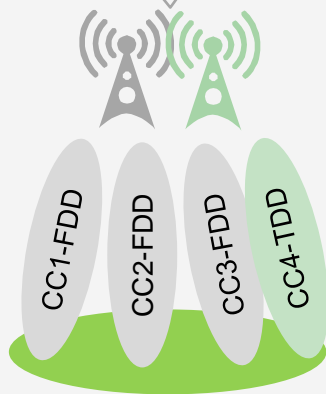


**LG U+** **FDD: 1st LTE 3CC CA in 2014 MWC, Up to 450Mbps**



**SoftBank** **TDD: Softbank live network, 4CC CA demo 770 Mbps**

## FDD & TDD CA

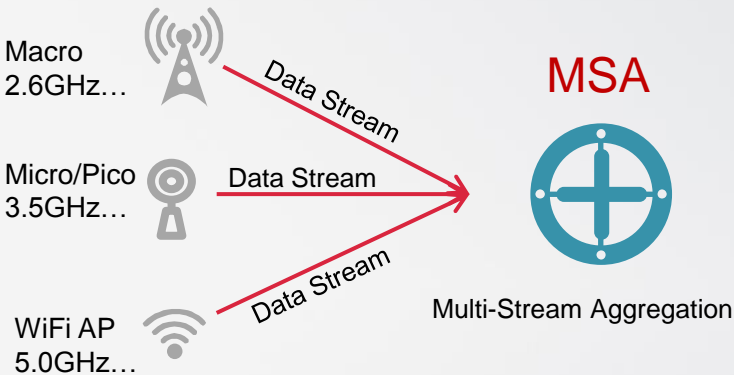


**vodafone**

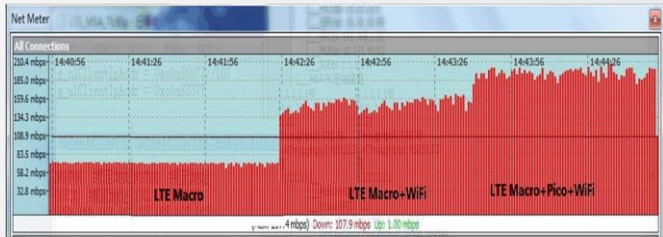
**1st FDD&TDD 4CC CA  
Peak throughput : 500 Mbps**



## Multi Stream Aggregation



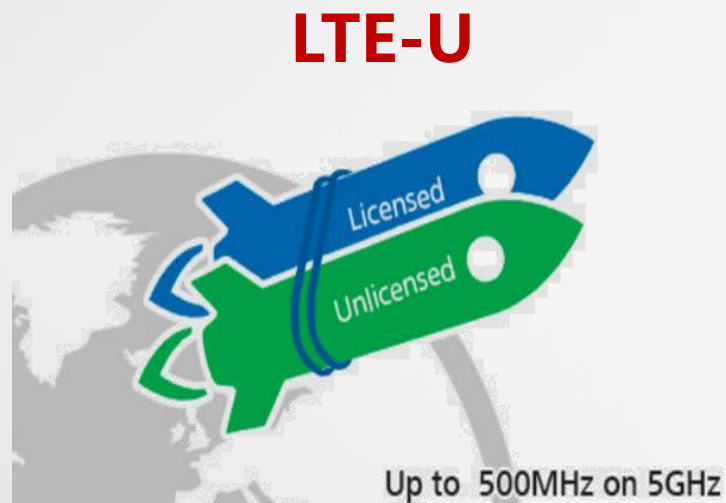
## World 1st Live Demo in Shanghai



# LTE-U Extends LTE Benefits to Unlicensed Spectrum



Live Demo for NGMN in Hongkong, Jan, 2014



**Pico(Prototype)**



Base  
Band



**Unlicensed**

80MHz@5.8G

**Licensed**

20MHz@1.8G

**CA**

**740+Mbps**

**Downlink Throughput**

**Research**

**Prototype**

**Pre-commercial  
Setup**

**Commercial  
Launch**

**2013**

**2014**

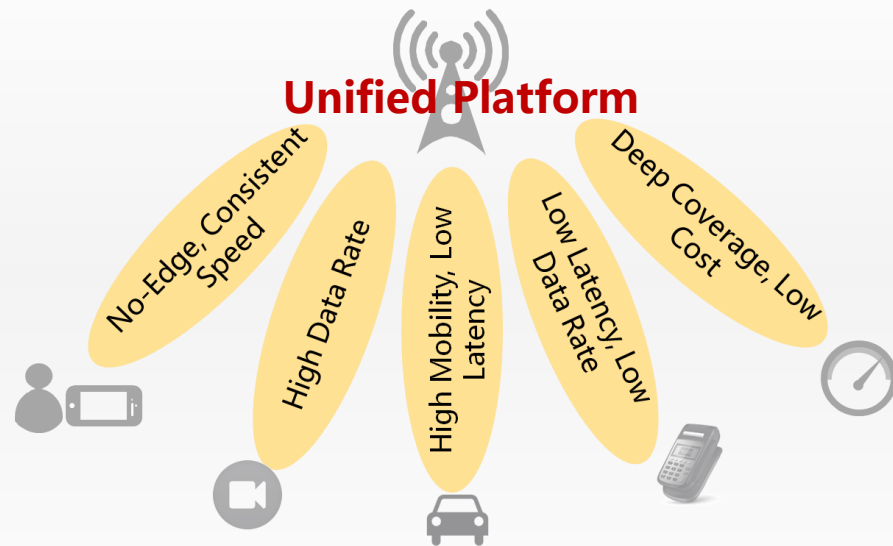
**2015**

**2016**

# LTE-M: Bring New Opportunities to Operators

M2M technologies for smart metering applications

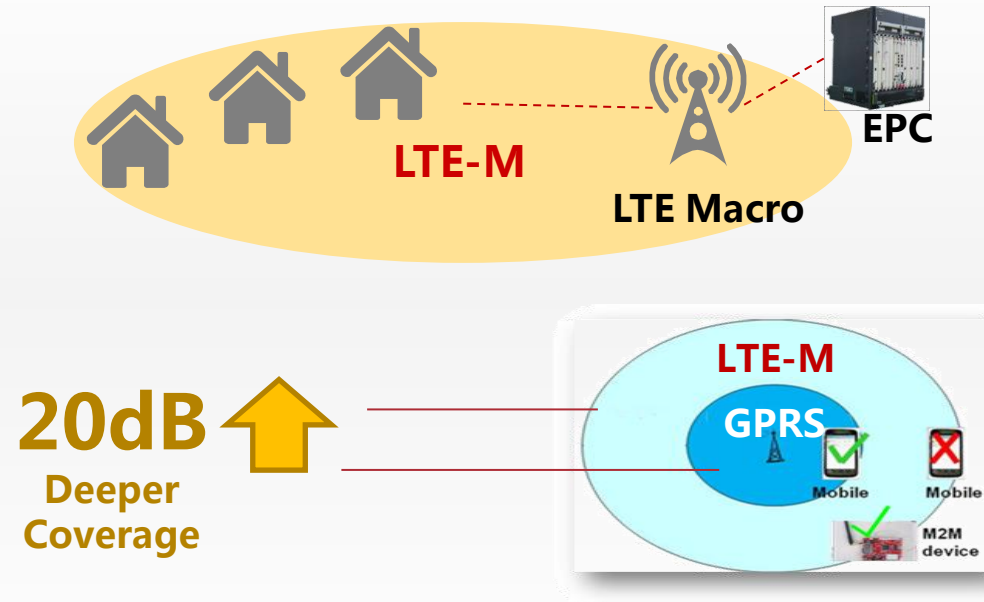
## LTE-M: One eNodeB, Multiple Pipes



## Fast to Deploy LTE-M Network



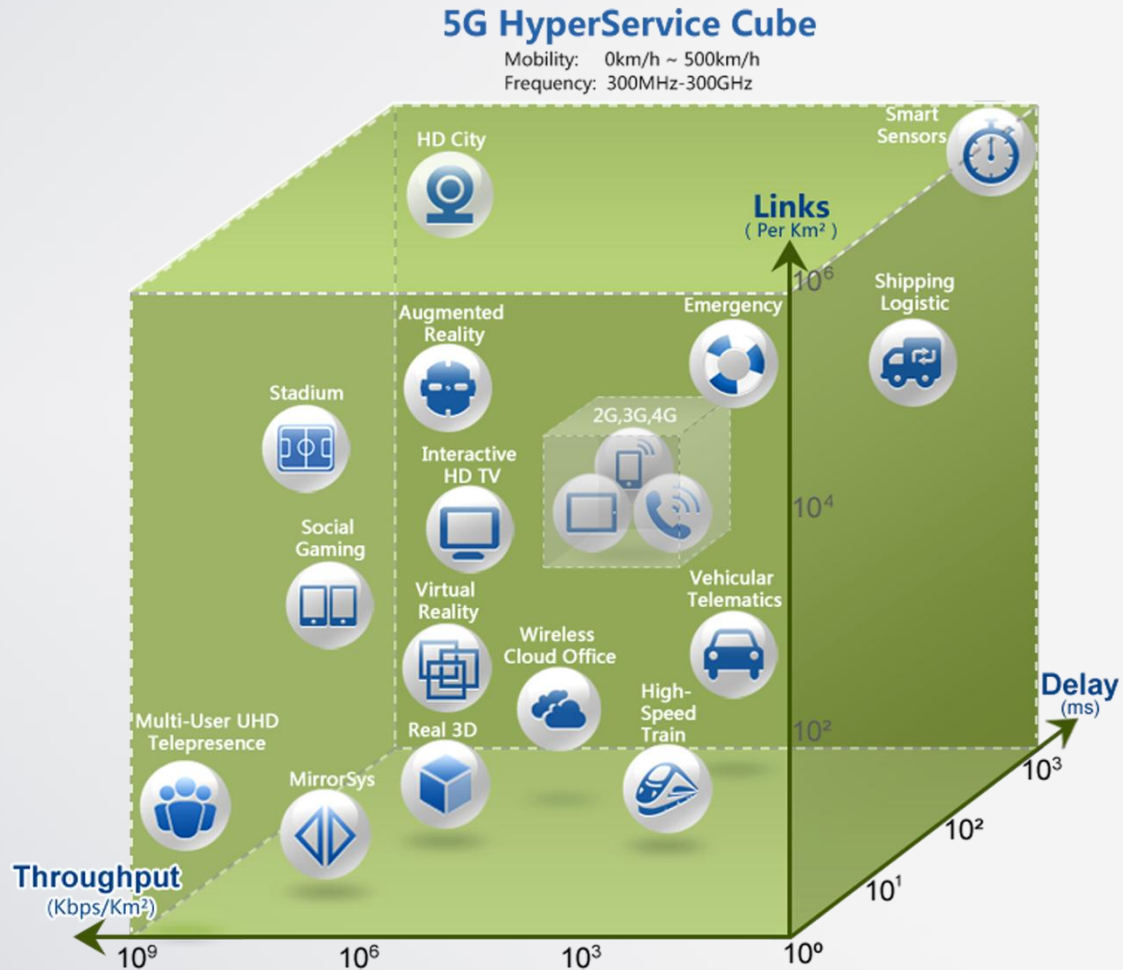
## Case: Optimized Access Technology for VDF Smart Meter



- LTE-M get **deep coverage**, **20 dB gain**, **8 to 10 times coverage radius**
- Massive connection: **10k to 100k** connections with a single cell
- Low power consumption: **battery life up to 10 years**



# 5G Discovery for Future Ultra Broadband Everywhere



## 5G Ultra-Node™



# Thank you

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