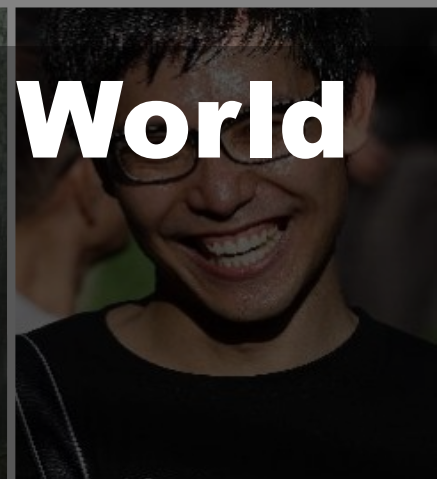
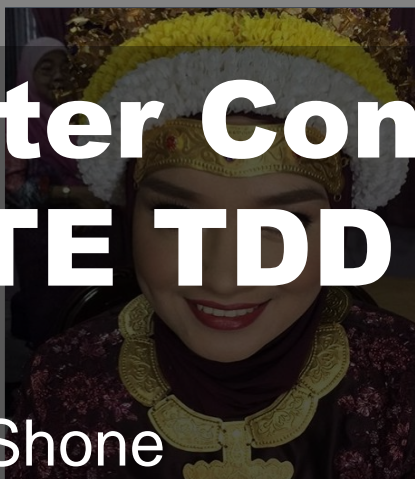
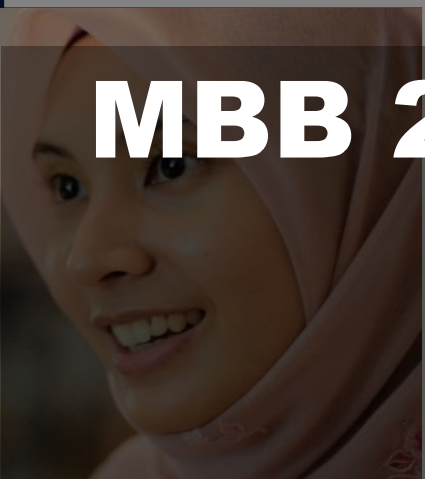




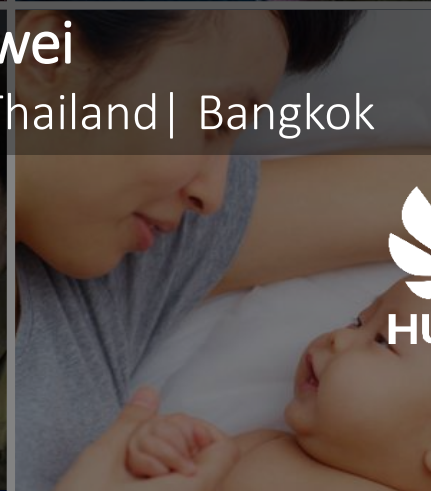
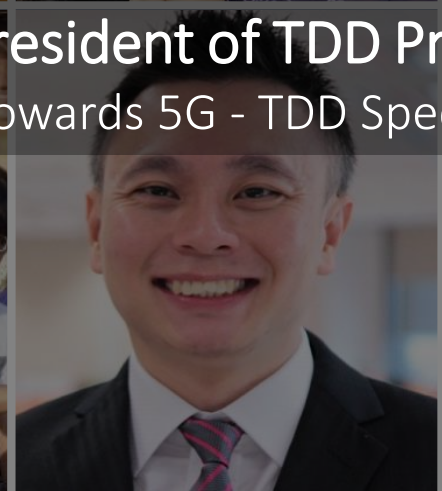
MBB 2020: For a Better Connected World with LTE TDD



Veni Shone

President of TDD Product Line, Huawei

ITU 2016 | 4G Towards 5G - TDD Spectrum Workshop | Thailand | Bangkok



HUAWEI



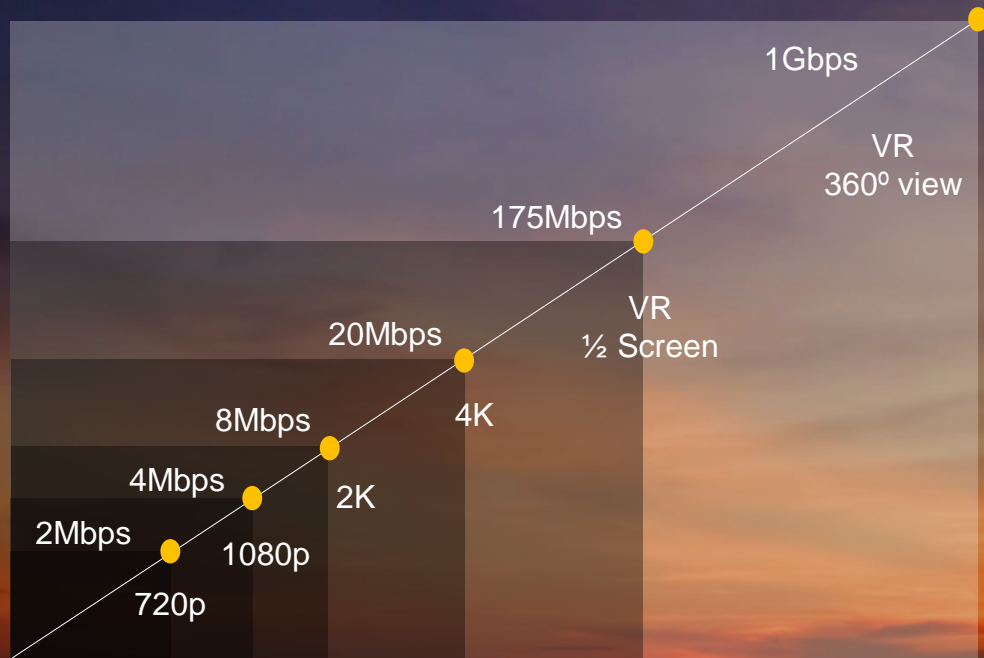
**New Services
In the Near
Future**

**Video for People
WTTX for Home
IoT & Public Safety for Verticals**

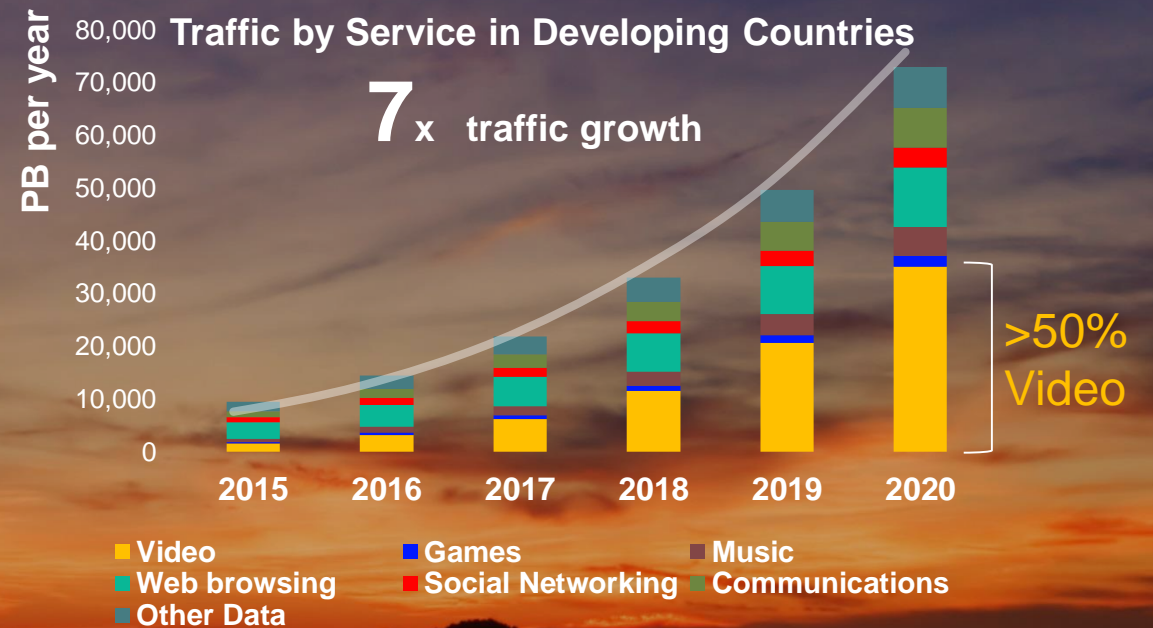
B2C → B2X

Quality Video Experience Requires Large Bandwidth

Human's need-for-video quality drives the need-for-speed



50% smartphone traffic will come from video by 2020

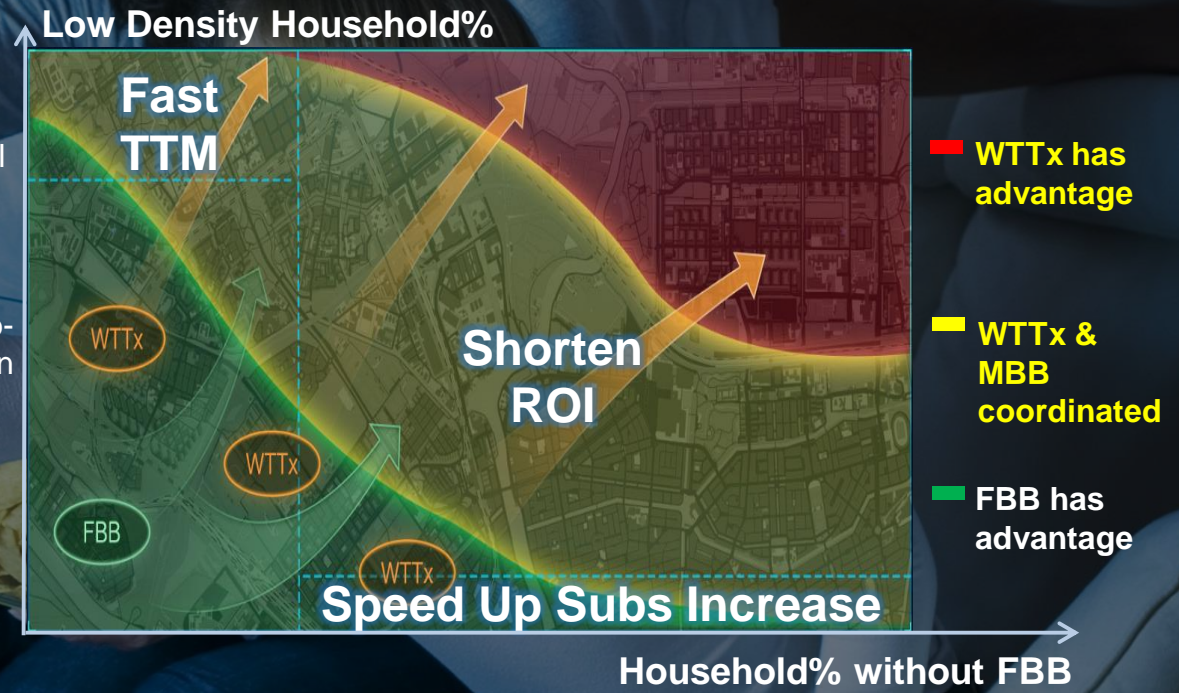
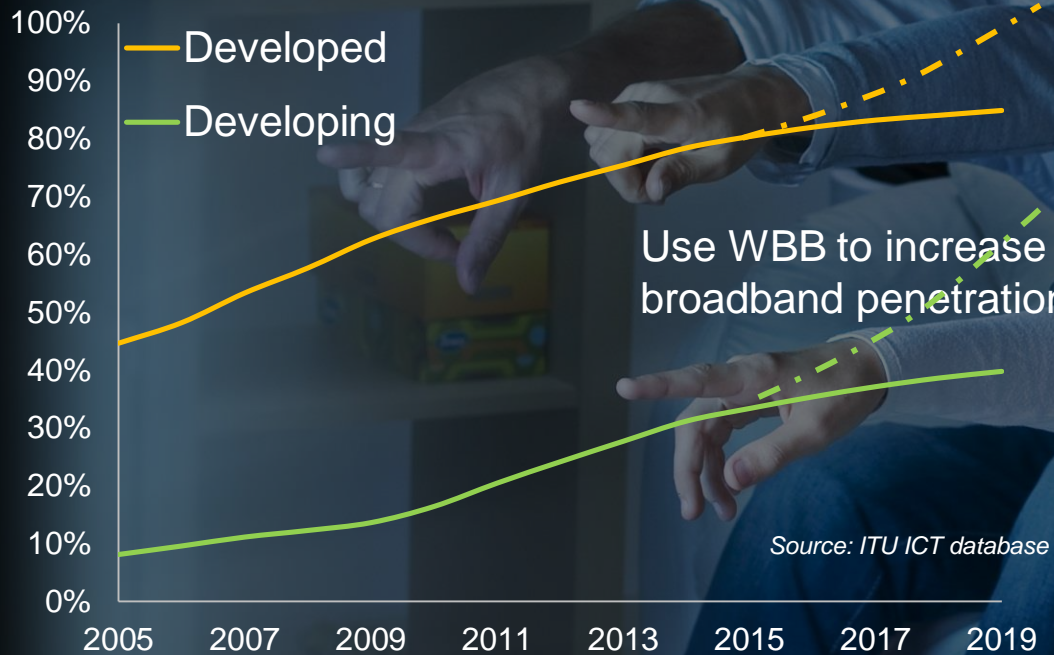


Source: GSMA & mLAB

WTTx Accelerates Home Broadband Development

Huge WTTx Opportunity

WTTx & FBB Synergy Speeds Up HBB Development



Cellular IoT Enables New Life and Work Style



Hi

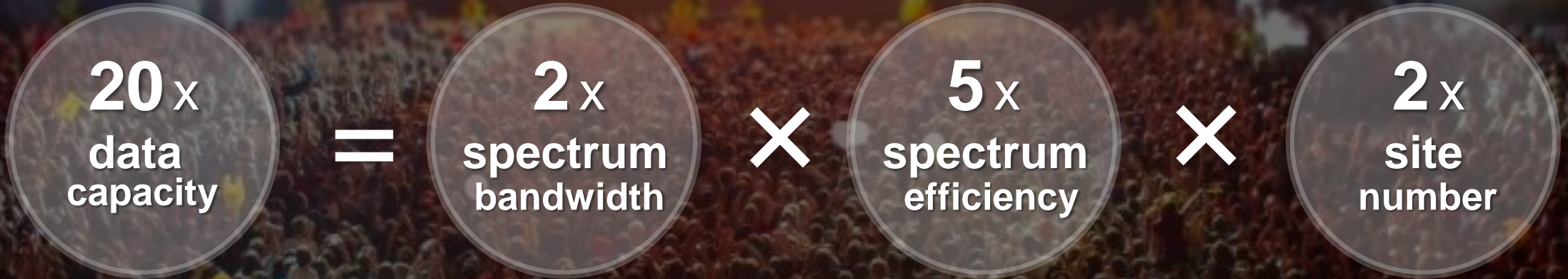


Lo

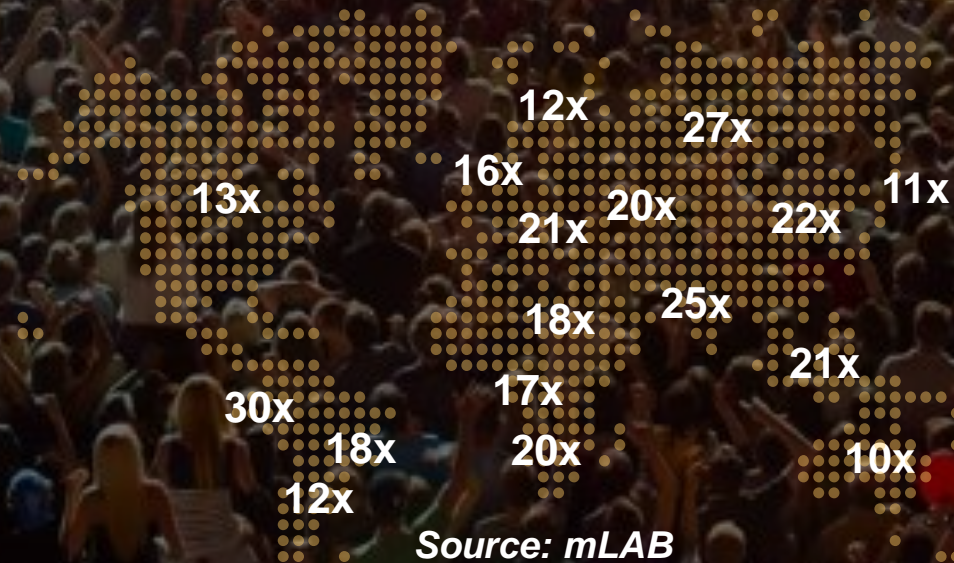
Speed Dependancy

Mobile Data Traffic Increases 20x by 2020

Typical Data Traffic Model (Year 2020)

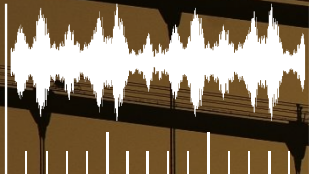


(High Traffic Area)

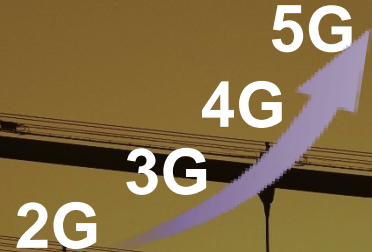


Source: mLAB

Government Actions are Needed



Release more spectrum quickly



Technology neutral for higher efficiency



Policy to Increase Site Density

Release More Spectrum

300MHz
in 2020

per mobile operator
needed (sub-6GHz)

80%

New Candidate Spectrum
Comes from TDD

2.3GHz

3.3GHz

3.5/3.7GHz

2.6GHz

800MHz TDD
Bandwidth

120MHz mobile operator
in 2015 average level

Source: mLAB

License Technology Neutral for Higher Efficiency

TDD's Unique Advantages Over M-MIMO



8T8R

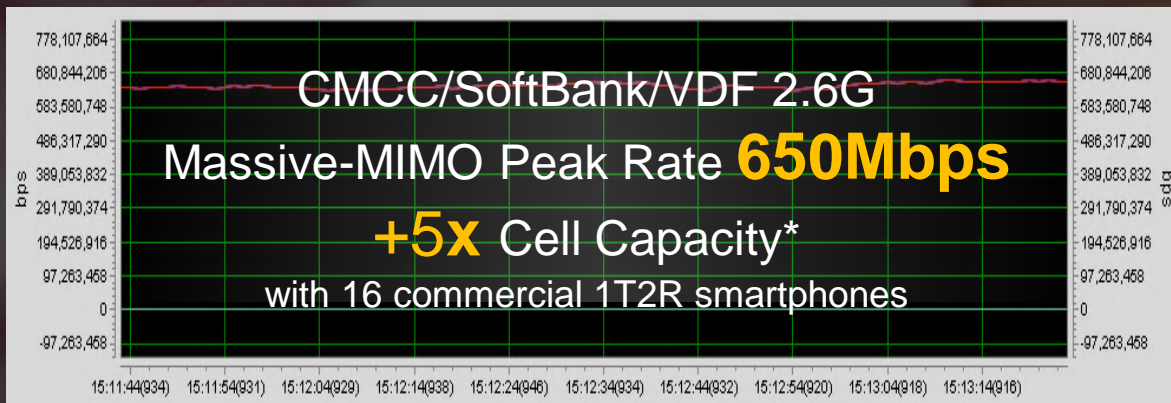


64T64R

.....

Smaller Equipment Size = **Save OPEX**

Support Legacy Device = **Smooth Evolution** to 5G



* 20MHz TDD baseline 110Mbps

Shared Between

Technology

WiMAX

4G

4.5G

...

Application

Public Safety

Personal & Family

IoT

...

C-V2X: China Moved Forward 5.9GHz LTE-V2X Trial For Intelligent Transport System (ITS)

Safeguard C-V2X with licensed spectrum

China

Europe

5905-5925 MHz
for LTE-V2X trial

50M @ 5.9G
30M Unlicensed & 20M
Licensed Technology
Neutral Support

Vehicle-to-BTS: **IMT licensed spectrum**

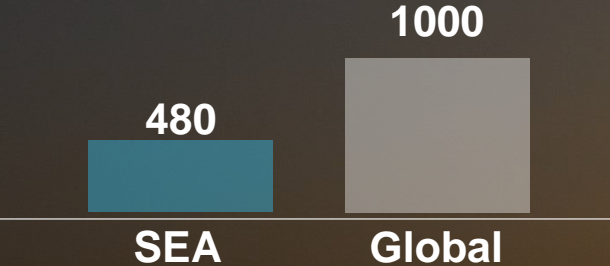
Direct Link (V2X): **dedicated ITS spectrum**
(e.g. 5.9GHz)

Open Public Facility for ICT Infrastructure to Unlock “High Band” True Power

2x Site Density

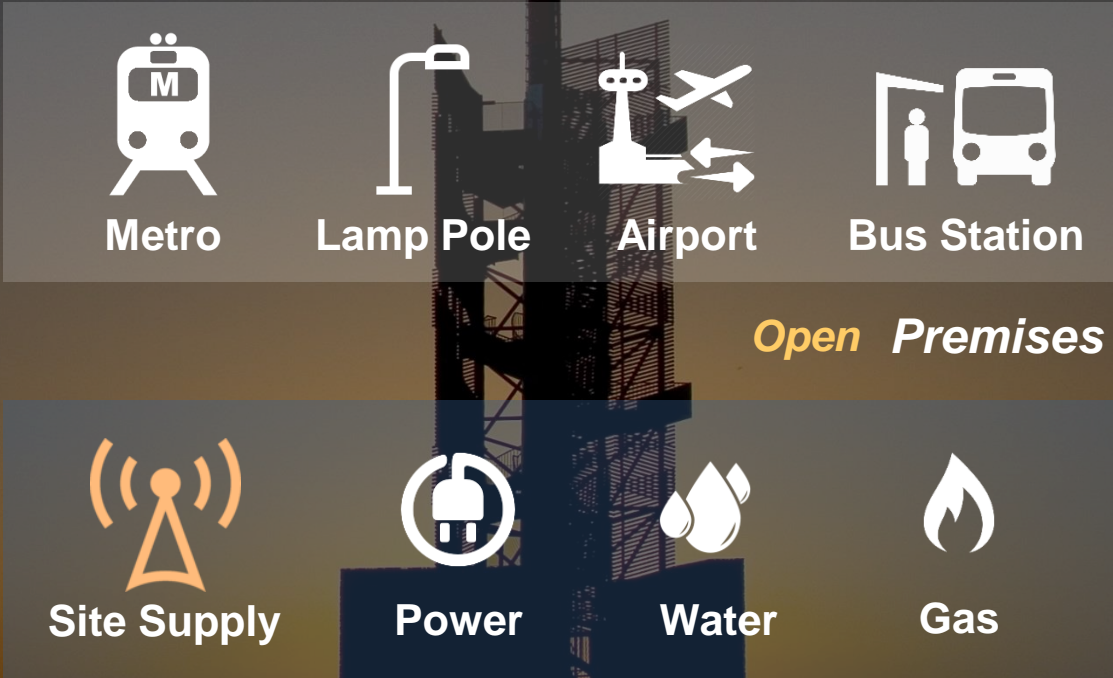
Requirement in SEA

Site Density
(site number / million people)



Source: mLAB

Government can define site supply as “mandatory” utility for selected premises



All Plan at The Same Time Public Utility

Source: China Shandong case

Take Away

Demand

MBB2020
Data
Requirement

x20



TDD Redefines New Experience



Personal



Family



IoT & Public
Safety

Supply

B40 / B41 / B42 / B43
5.9GHz for V2X

Spectrum Release & Migration Plan

All Bands

License Technology Neutral



Public Facilities

Open for Site Development



BANGKOK

Thank you

