

INDONESIA SPECTRUM ROADMAP FOR BROADBAND DEVELOPMENT

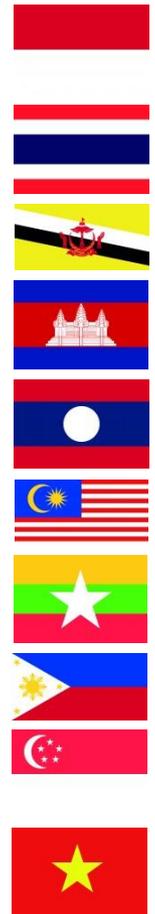


GSMA Workshop
Manila, Philippines,, 21 AUGUST 2017

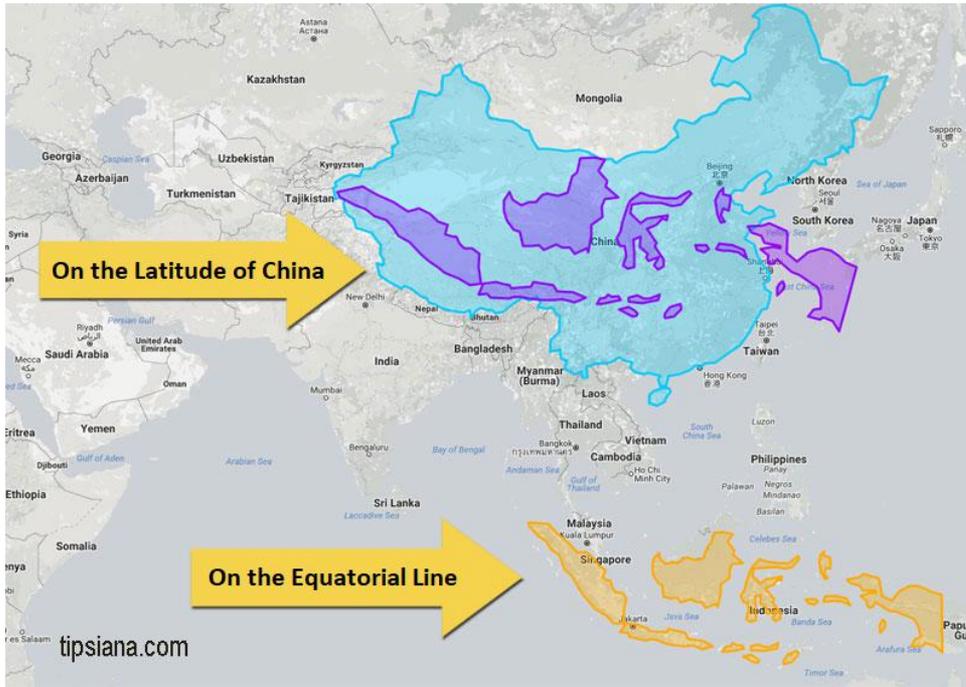


Spectrum Planning for Fixed and Land Mobile Services Division
DG of Postal and Information Technology
Resources and Equipment
Ministry of Communication and Information Technology (MCIT)
Republic of Indonesia

INDONESIA AS PART OF SOUTHEAST ASIAN NATIONS



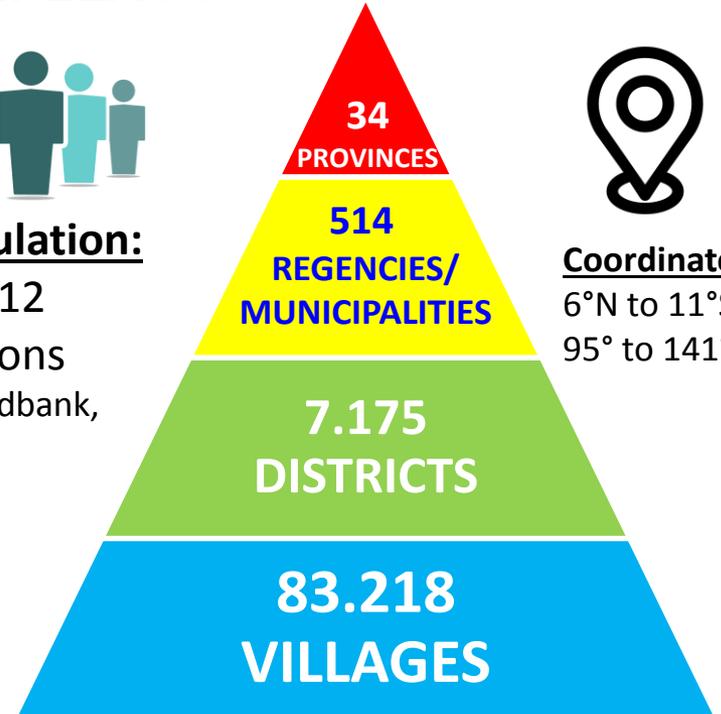
INDONESIA : HIGH AND DIVERSE CONNECTIVITY DEMAND IN THE LARGEST ARCHIPELAGO



Population:
261.12
Millions
(Worldbank,
2016)



Coordinate :
6°N to 11°S
95° to 141°E



About 50% of the total population, 132.7 million people, is connected to the Internet, making Indonesia the 5th largest market in the world.

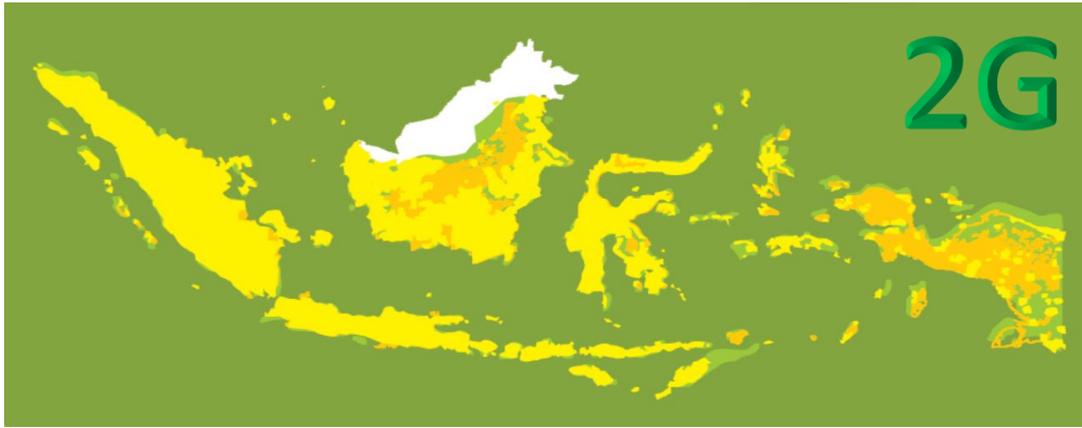


The capital of Indonesia (Jakarta) has been named the world's number one "Tweeting City", Indonesia has the 4th highest number of active Twitter users and the 4th highest number of Facebook users in the world.



Instagram, WhatsApp, Line and Path are some of the popular platforms in Indonesia.

Source : Export.gov



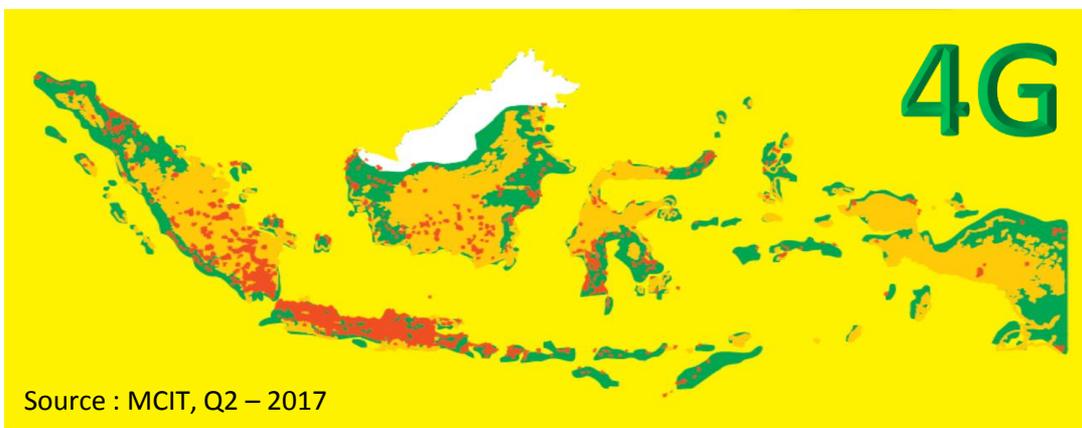
Territory of Indonesia : 1.899.753 sq. km
 Coverage of 2G Signal : 1.118.381 sq. km
(58,87 % of Indonesian Territory)

Indonesia populated areas :
 44.565 sq. km
 Indonesia populated areas covered by 2G Signal :
 43.714 sq. km **(98,11 % of total populated areas)**



Territory of Indonesia : 1.899.753 sq. km
 Coverage of 3G Signal : 516.586 sq. km
(27,19 % of Indonesian Territory)

Indonesia populated areas :
 44.565 sq. km
 Indonesia populated areas covered by 3G Signal :
 40.078 sq. km **(89,93 % of total populated areas)**

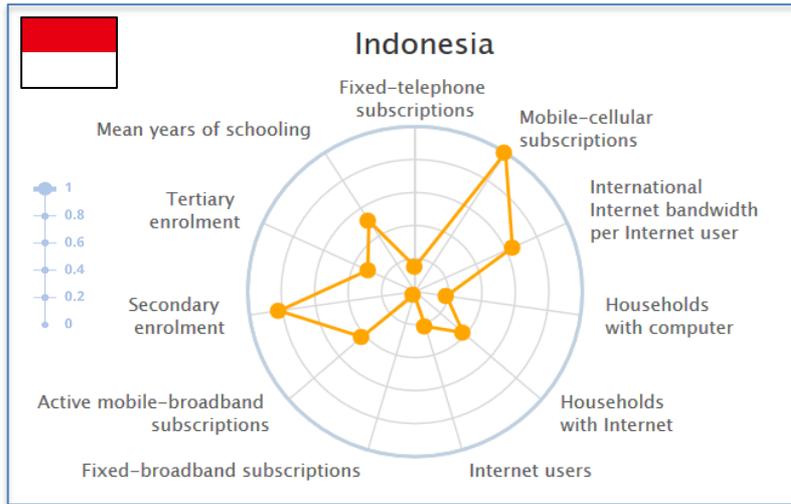


Territory of Indonesia : 1.899.753 sq. km
 Coverage of 4G Signal : 234.481 sq. km
(12,3 % of Indonesian Territory)

Indonesia populated areas :
 44.565 sq. km
 Indonesia populated areas covered by 4G Signal :
 30.097 sq. km **(67,5 % of total populated areas)**

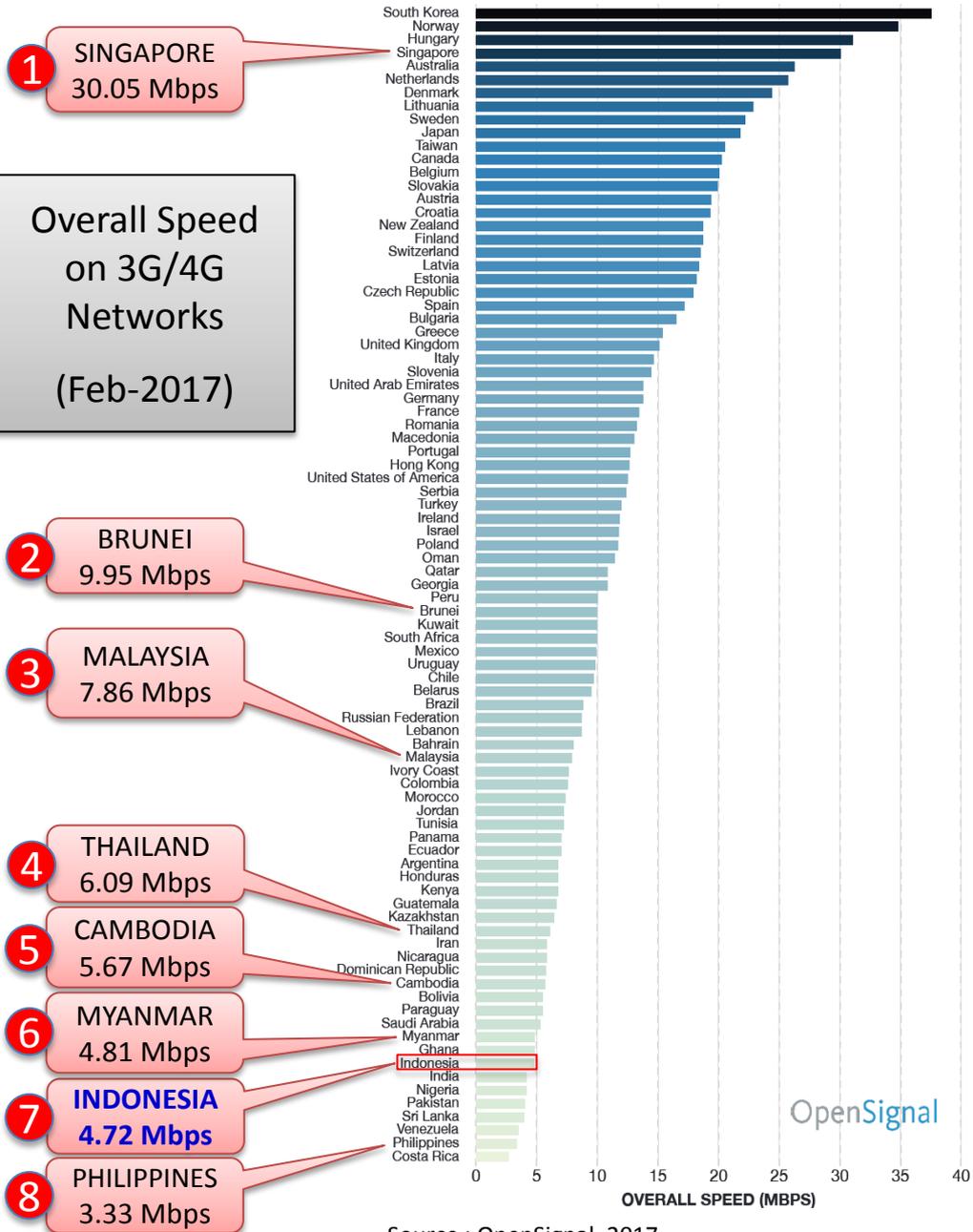
Source : MCIT, Q2 – 2017

ICT DEVELOPMENT INDEX (IDI) 2016

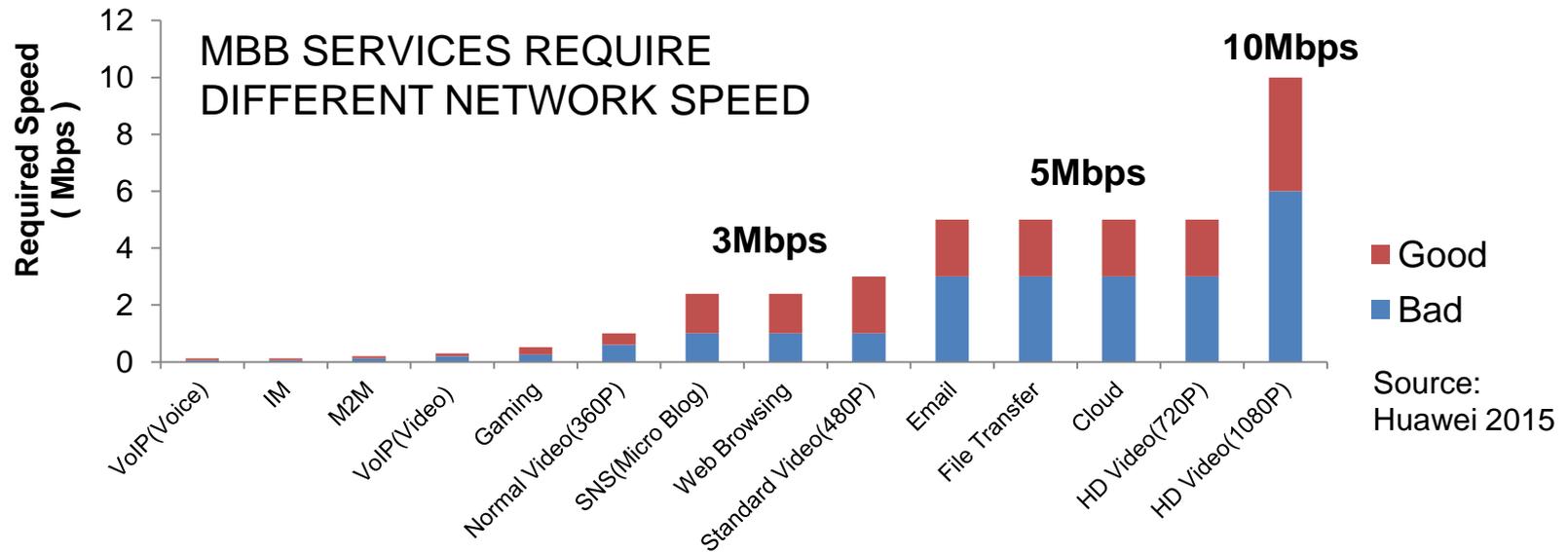


20	Singapore	(IDI 2016 = 7,95)
61	Malaysia	(IDI 2016 = 6,22)
77	Brunei Darussalam	(IDI 2016 = 5,33)
82	Thailand	(IDI 2016 = 5,18)
105	Vietnam	(IDI 2016 = 4,29)
107	Philippines	(IDI 2016 = 4,28)
115	Indonesia	(IDI 2016 = 3,86)
125	Cambodia	(IDI 2016 = 3,12)
140	Myanmar	(IDI 2016 = 2,54)
144	Lao P.D.R	(IDI 2016 = 2,45)

Source : ITU (<https://www.itu.int/net4/ITU-D/idi/2016/>)

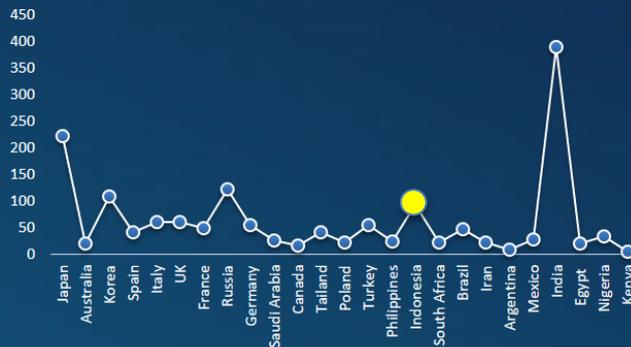


USER ALWAYS HUNGER FOR SPEED AND CAPACITY



Site Number (thousands)

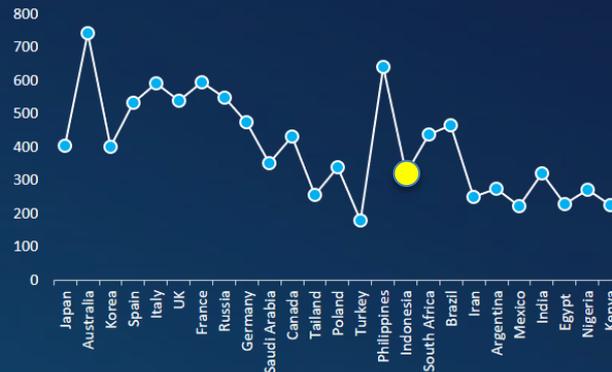
Site Number



NEED MORE SITE

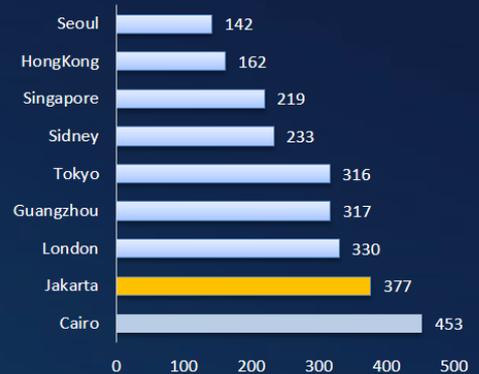
In Use Spectrum (MHz)

In Use Spectrum



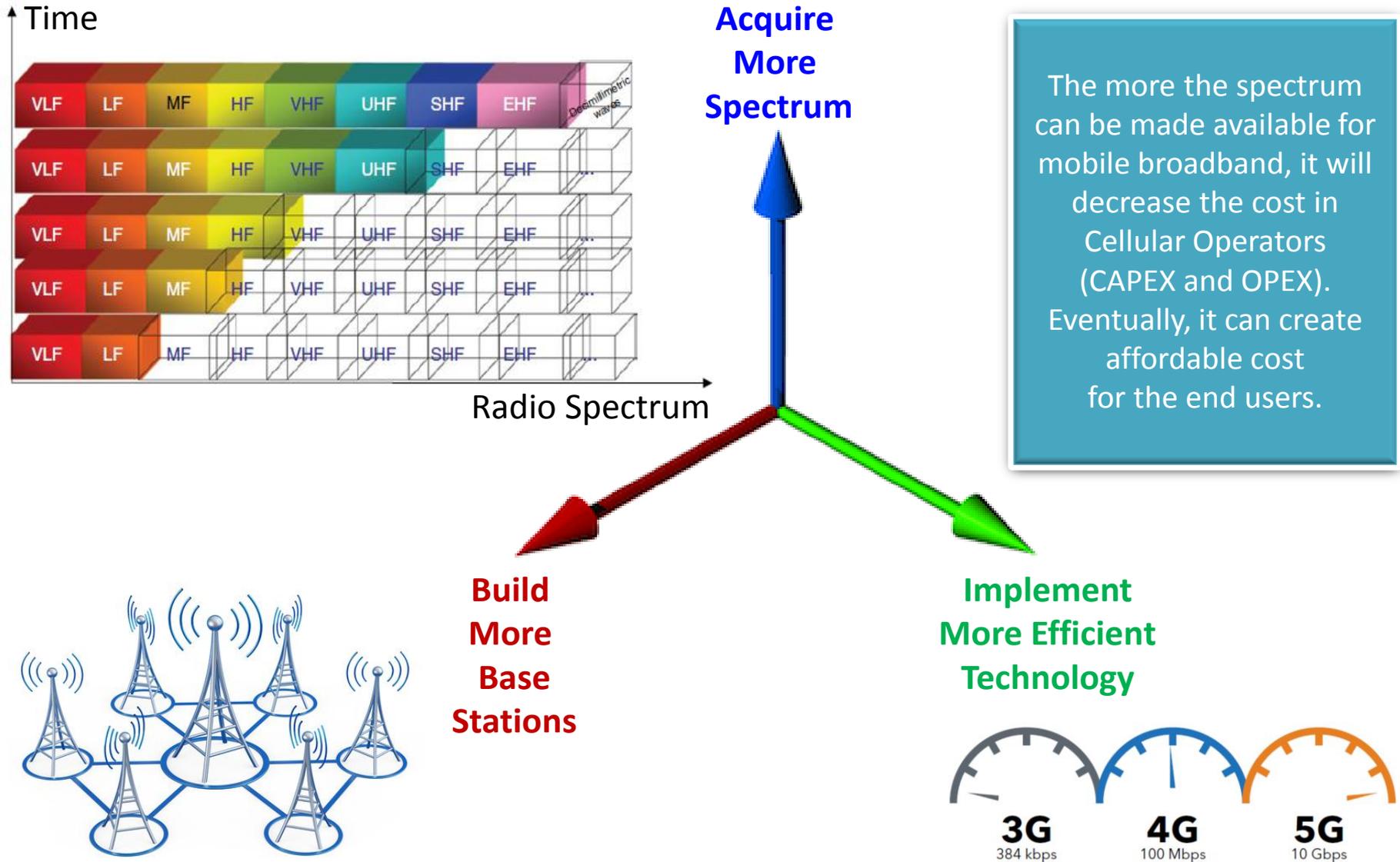
NEED MORE SPECTRUM

City average Inter-Site Distance (m)

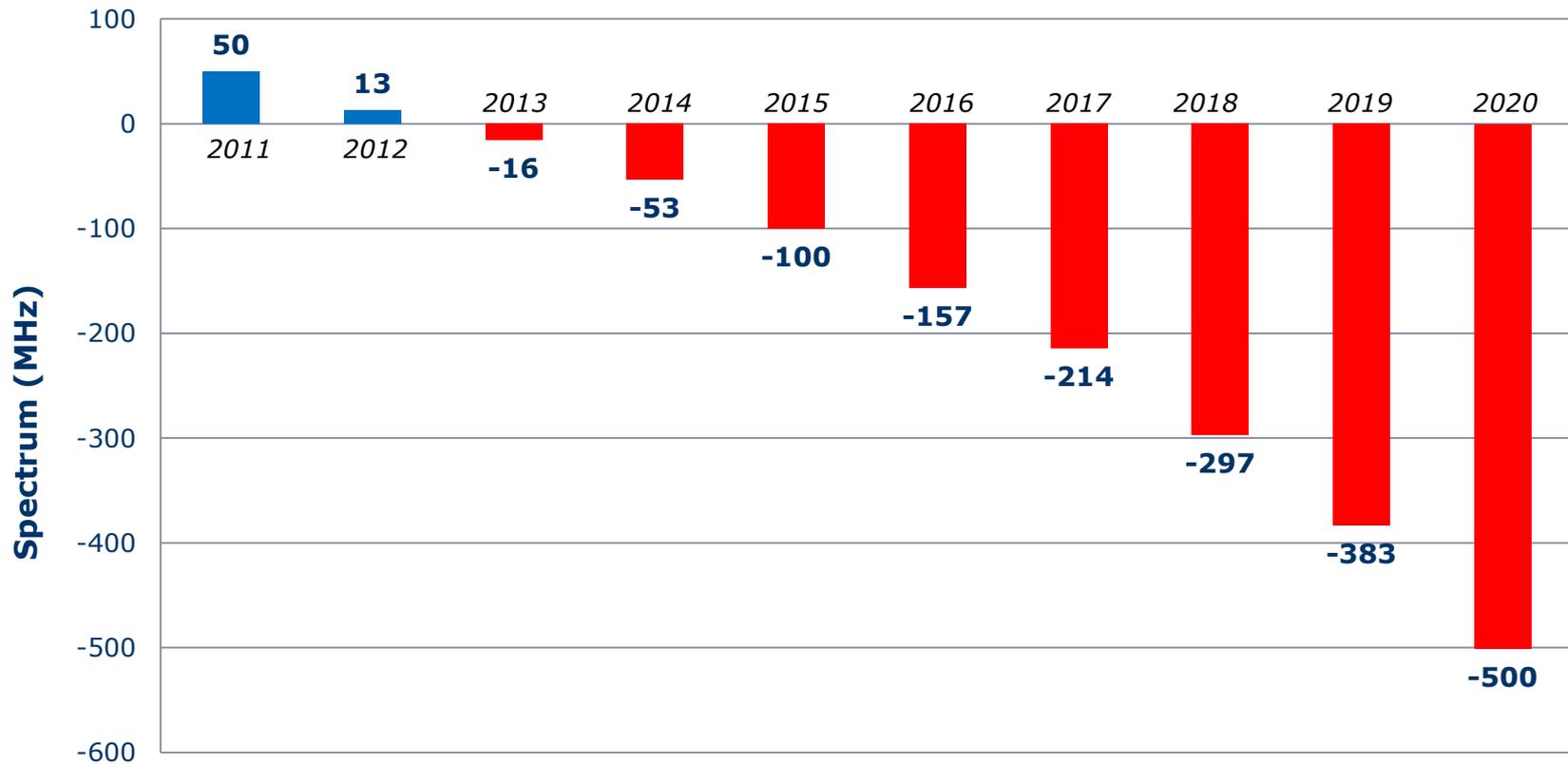


Source: Huawei 2016

HOW TO OVERCOME HIGH GROWTH OF DATA TRAFFIC



SPECTRUM DEMAND FORECAST FOR MOBILE BROADBAND IN INDONESIA

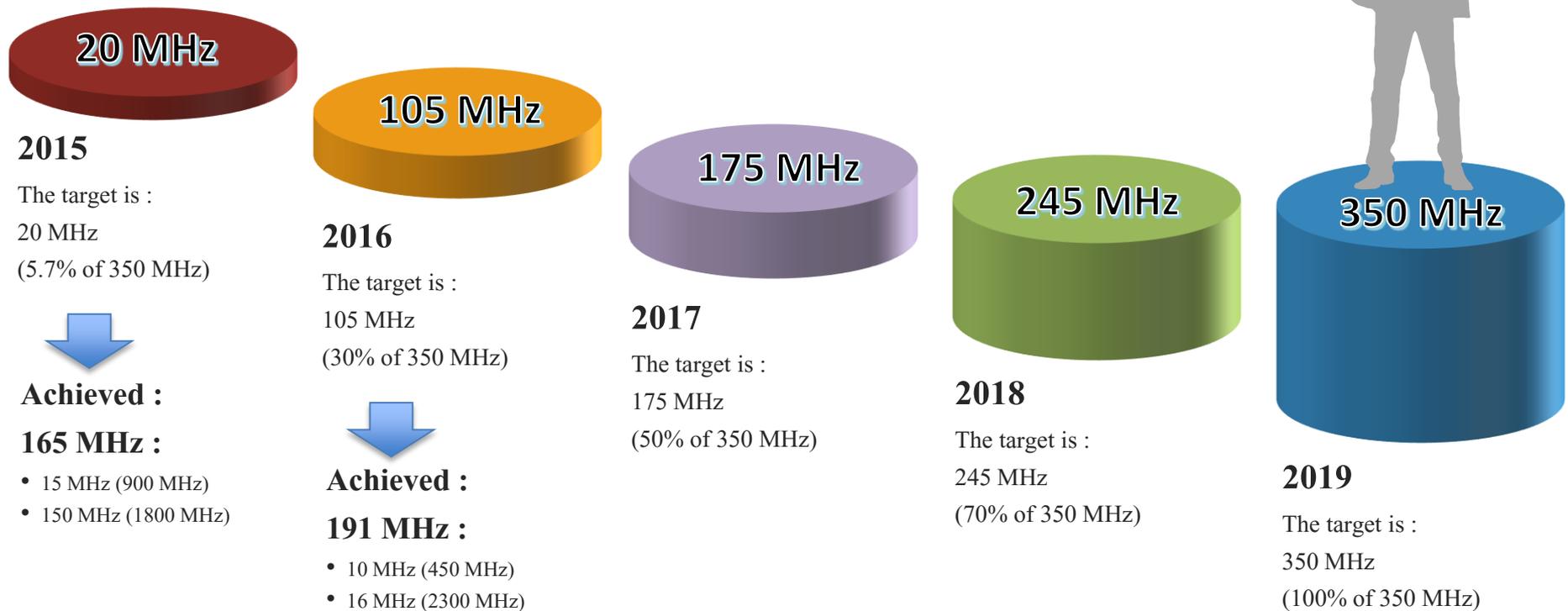


Notes :

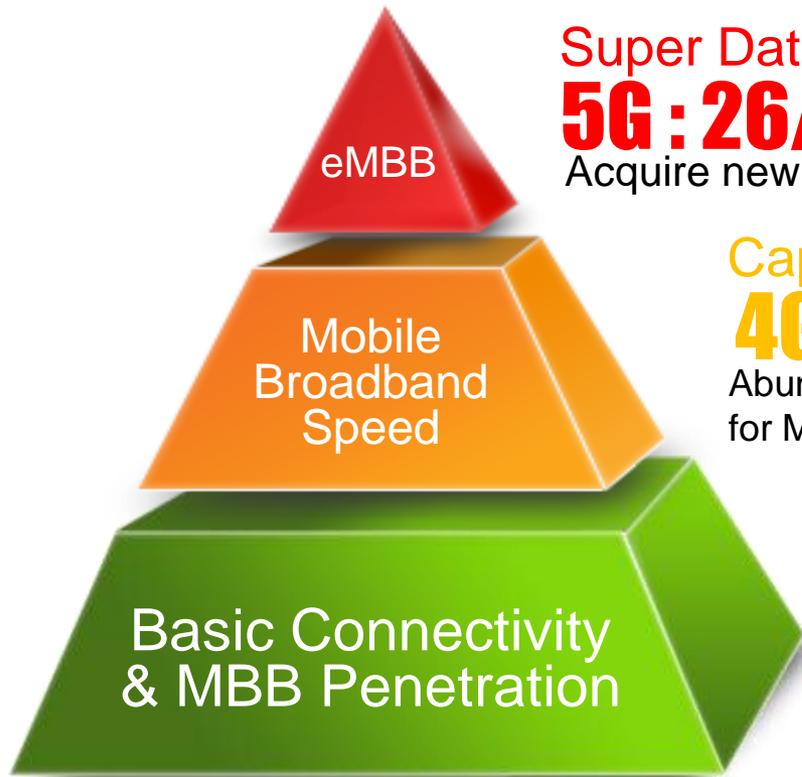
- 1) This spectrum demand forecast was made in 2014.
- 2) Growth of data traffic was predicted 60% per year.
- 3) Growth of Site/Base Station Tower was predicted 28.8% per year.

TARGET ON PROVIDING ADDITIONAL SPECTRUM FOR MOBILE BROADBAND 2015 – 2019 IN INDONESIA

On June 2015, The Minister of ICT in Indonesia stipulated a Ministerial Regulation No. 22 Year 2015 regarding Strategical Plan of MCIT for The Year 2015 – 2019. One of the target to be fulfilled in 2019 is that MCIT should provide 350 MHz of additional spectrum for mobile broadband. This target is planned to gradually achieved in cumulative approach, year by year.



PLAN FOR MOBILE BROADBAND SPECTRUM IN INDONESIA



Super Data Layer

5G : 26/28 GHz *

**) Still under consideration*

Acquire new high band to provide new tech. (5G) in a timely manner

Capacity Layer

4G : 1.4/1.8/1.9/2.1/2.3/2.6* GHz

**) Need to Reallocate BSS*

Abundant middle band frequency for capacity to fulfill the needs for Mobile Broadband data rate

Coverage Layer

2G/3G/4G : 450/700*/800/900 MHz

**) Await for the New Broadcasting Act*

Release Digital Dividend APT700 to enhance deep coverage of Mobile Broadband

2G / 3G / 4G

New Spectrum Expected to be Made Available for 5G (IMT-2020)

450 MHz

3 GHz

6 GHz

10 GHz

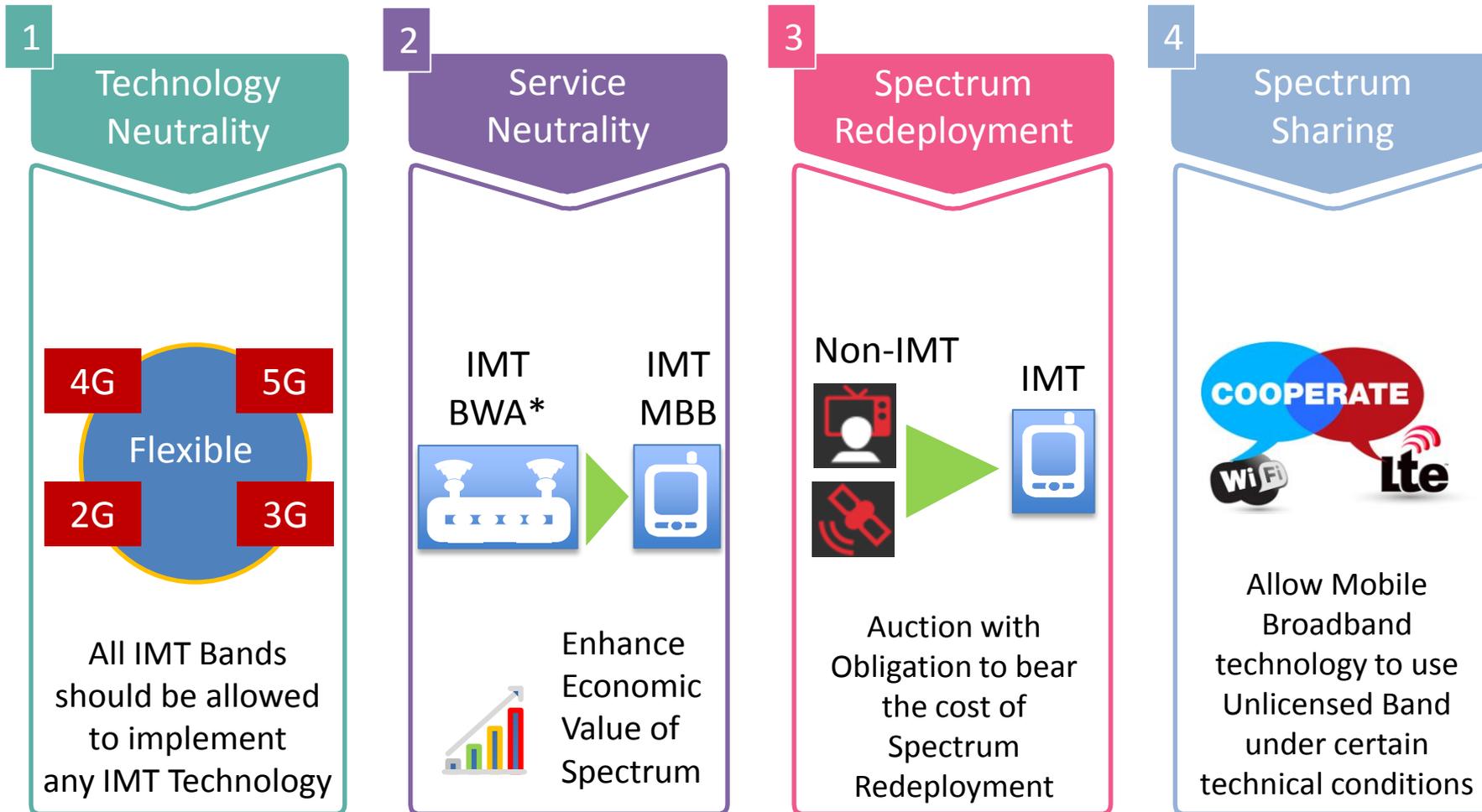
30 GHz

90 GHz

← Continuous coverage, high mobility and reliability

Higher capacity and massive throughput →

WHAT THE REGULATOR CAN DO TO PROVIDE MORE SPECTRUM FOR MOBILE BROADBAND



* Broadband Wireless Access = Wireless Broadband for Fixed / Nomadic Uses Cases only

POLICY OF TECHNOLOGY NEUTRALITY IN INDONESIA

450 MHz

450 – 457.5 // 460 – 467.5 MHz

Since 2016, the operator who had the License is allowed to implement any kind of technology to provide cellular services

2300 MHz

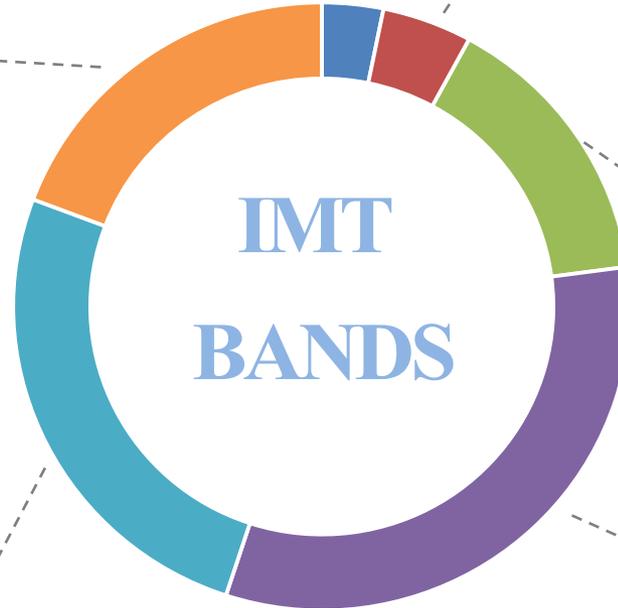
2300 – 2390 MHz

- Band 2300 – 2330 MHz is going to be auctioned in near future for mobile broadband.
- Band 2330 – 2360 MHz is the new assigned band for reallocated PCS1900 (the migration took 2 years to be completed : 2014 – 2016).
- Band 2360 – 2390 MHz is still licensed only for IMT BWA (only for fixed / nomadic, not mobile uses). In the process of operators consolidation in order to implement Service Neutrality.

2100 MHz

1920 – 1980 // 2110 – 2170 MHz

- 2100 MHz Band is already regulated as one of the bands to implement Technology Neutrality in this year (2017).
- Band 1970 – 1980 // 2160 – 2170 MHz is going to be auctioned in near future for mobile broadband.



800 MHz

824 – 835 // 869 – 880 MHz

Since 2014, the operators who had the License are allowed to implement any kind of technology to provide cellular services. To optimize, a refarming process was first conducted in this band. It took 2 years to be completed : 2014 – 2016.

900 MHz

880 – 915 // 925 – 960 MHz

Cellular Operators in this Band are allowed to implement Technology Neutrality since 2012, 2014 and 2015.

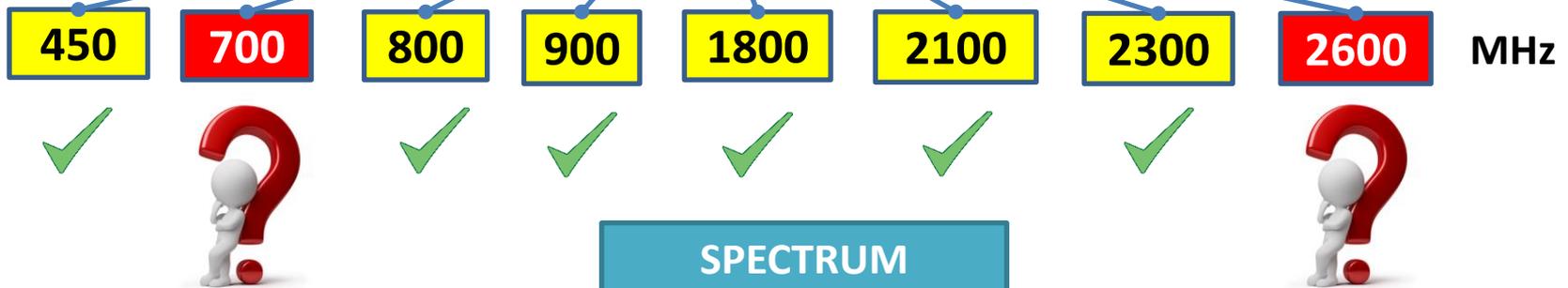
1800 MHz

1710 – 1785 // 1805 – 1880 MHz

Cellular Operators in this Band are allowed to implement Technology Neutrality since 2015. However, in order to have a contiguous block for each Operator, in 2015 there was a refarming process between those Operators in this Band.

PLAN ON SPECTRUM REDEPLOYMENT IN INDONESIA

4G SPECTRUM AVAILABLE IN INDONESIA



1. Current condition : used by Analog TV.
2. Future plan : APT 700 Band Plan for Mobile Broadband and PPDR
3. Constraint : Analog Switch Off should first wait for the new Broadcasting Act.

SPECTRUM REDEPLOYMENT

1. The new entrant compensate existing spectrum users
2. The compensation can be calculated as an obligation of the auction winner.
3. The auction winner can not directly uses the band.

1. Current condition : most of the band is used for Broadcasting Satellite Service (BSS) to provide Pay-TV
2. Future plan : Mobile Broadband
3. Constraint : Reallocating BSS and migrating end user equipment.

LTE-U AND LAA UNLOCKS 5 GHz SPECTRUM FOR 4G/LTE

LAA :

LTE Primary Carrier

Licensed Spectrum

LTE Secondary Carrier

Unlicensed Spectrum



5 GHz Spectrum



Source : Ericsson, 2017



LTE Macro Performance



LAA Unlicensed

1+ Gbps

LTE Small Cells

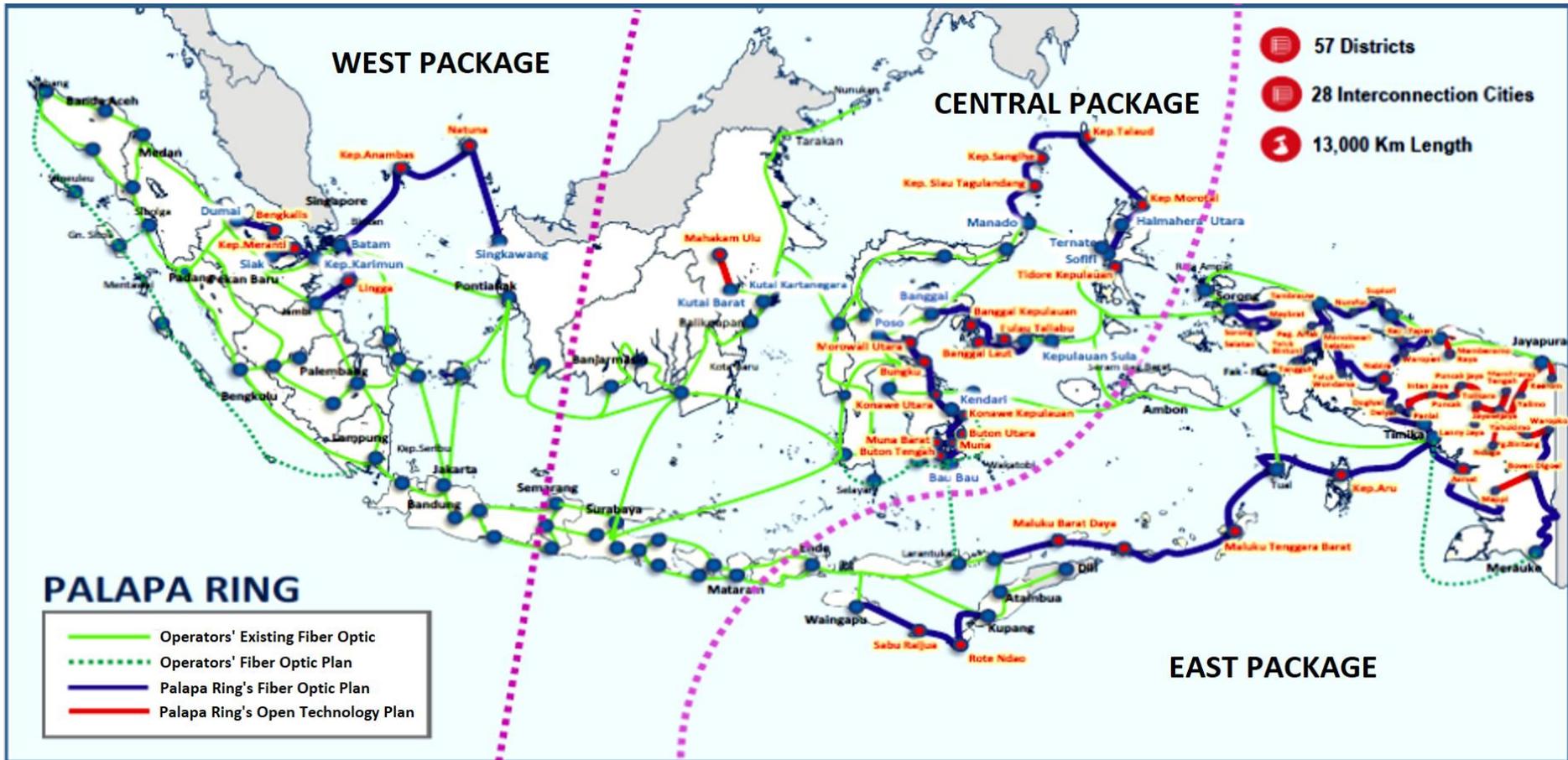
improved performance

Regulator must ensure the LTE-U/LAA equipment equipped with these features :

1. Listen Before Talk (LBT) and
2. Dynamic Channel Selection (DCS).

This technology especially suitable for providing better indoor connectivity.

PROJECT ON NATIONAL BACKBONE NETWORK : PALAPA RING



**PROGRESS
UPDATE
W4 – JULY 2017**



**WEST PACKAGE:
72 %**

**CENTRAL PACKAGE:
24 %**

**EAST PACKAGE:
14 %**

THANK YOU



Towards The Indonesian Information Society