MINISTRY OF COMMUNICATION AND INFORMATION TECHNOLOGY
REPUBLIC OF INDONESIA

Spectrum Management in Indonesia

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Presented in
Workshop on Spectrum Management and
Harmonized use of Spectrum Resource

Nadi, 29 November 2017

DIRECTORATE OF SPECTRUM POLICY AND PLANNING

DGSDPPI - DIREKTORAT JENDERAL SUMBER DAYA DAN PERANGKAT POS DAN INFORMATIKA

SPECTRUM HARMONIZATION

ORBIT SATELITE

BROADCAST MARITIME AERONAUTICS

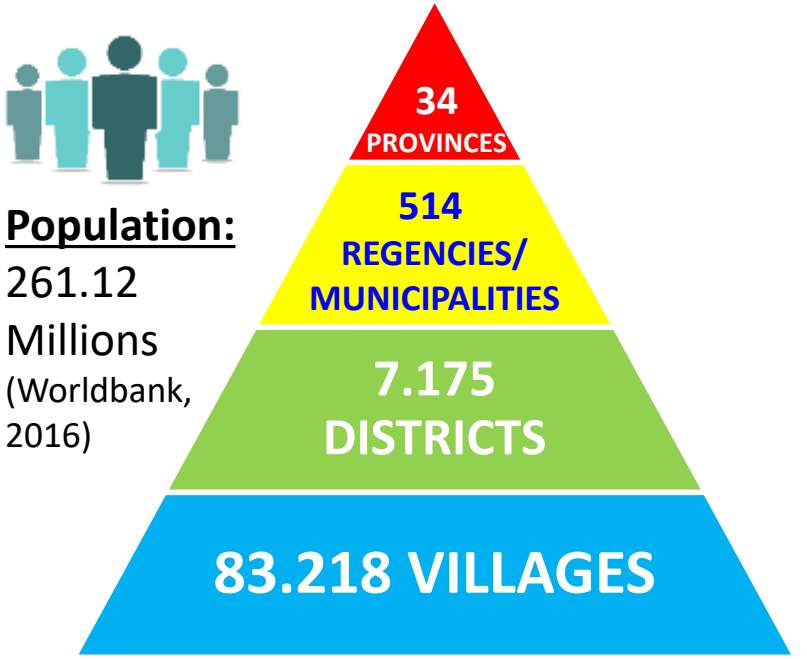
FIXED & MOBILE

SPECTRUM ECONOMICS

challenge

- Border Coordination
- Analog Switch Over
- Fisherman Radio
- Spectrum Fee, Incentive
- Reallocation BSS
- Spectrum for Mobile Broadband

Population:
261.12 Millions
(Worldbank, 2016)



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

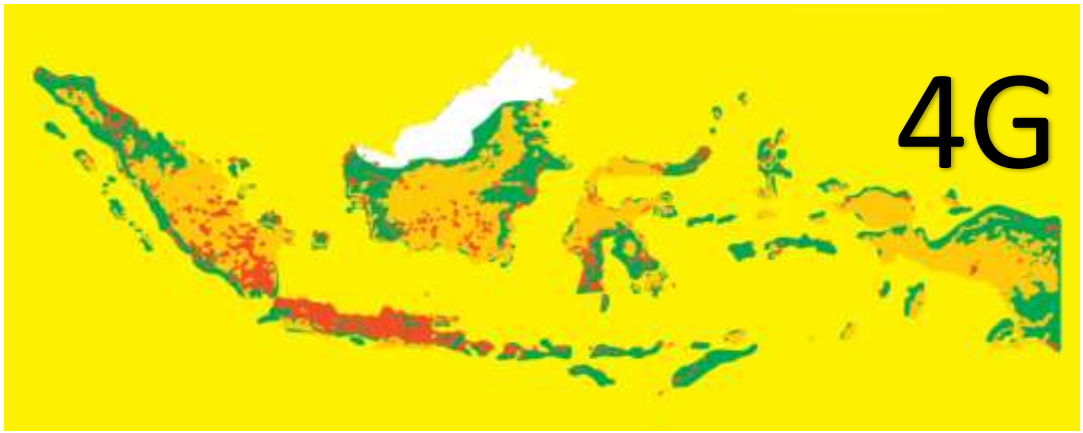
The capital of Indonesia (Jakarta) has been named the world's number one "Tweeting City", Indonesia has the 4th highest number of active Twitter users and the 4th highest number of Facebook users in the world.

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)

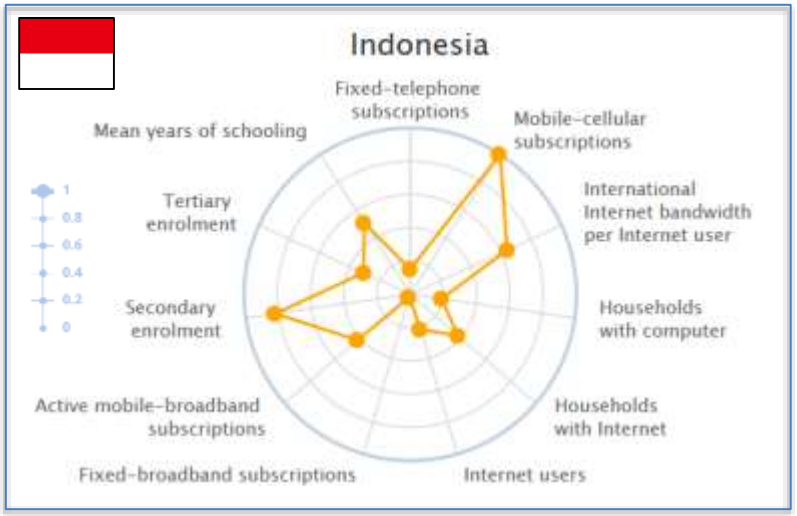
Indonesia populated areas :
44.565 sq. km
Indonesia populated areas covered by 3G Signal :
40.078 sq. km (**89,93 % of total populated areas)**



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)**

ICT DEVELOPMENT INDEX (IDI) 2016



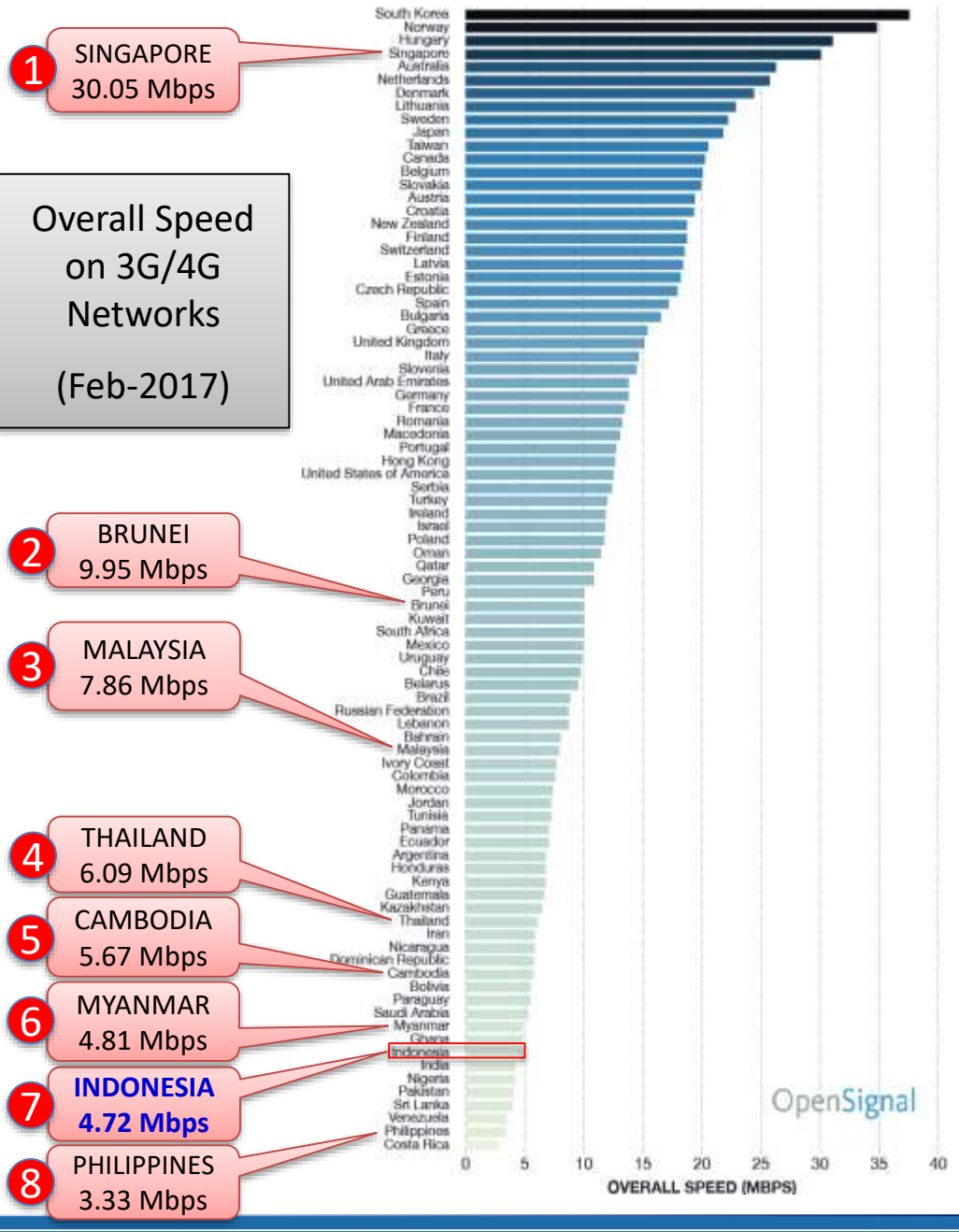
20	Singapore	(IDI 2016 = 7,95)
61	Malaysia	(IDI 2016 = 6,22)
77	Brunei Darussalam	(IDI 2016 = 5,33)
82	Thailand	(IDI 2016 = 5,18)
105	Vietnam	(IDI 2016 = 4,29)
107	Philippines	(IDI 2016 = 4,28)
115	**Indonesia**	**(IDI 2016 = 3,86)**
125	Cambodia	(IDI 2016 = 3,12)
140	Myanmar	(IDI 2016 = 2,54)
144	Lao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

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

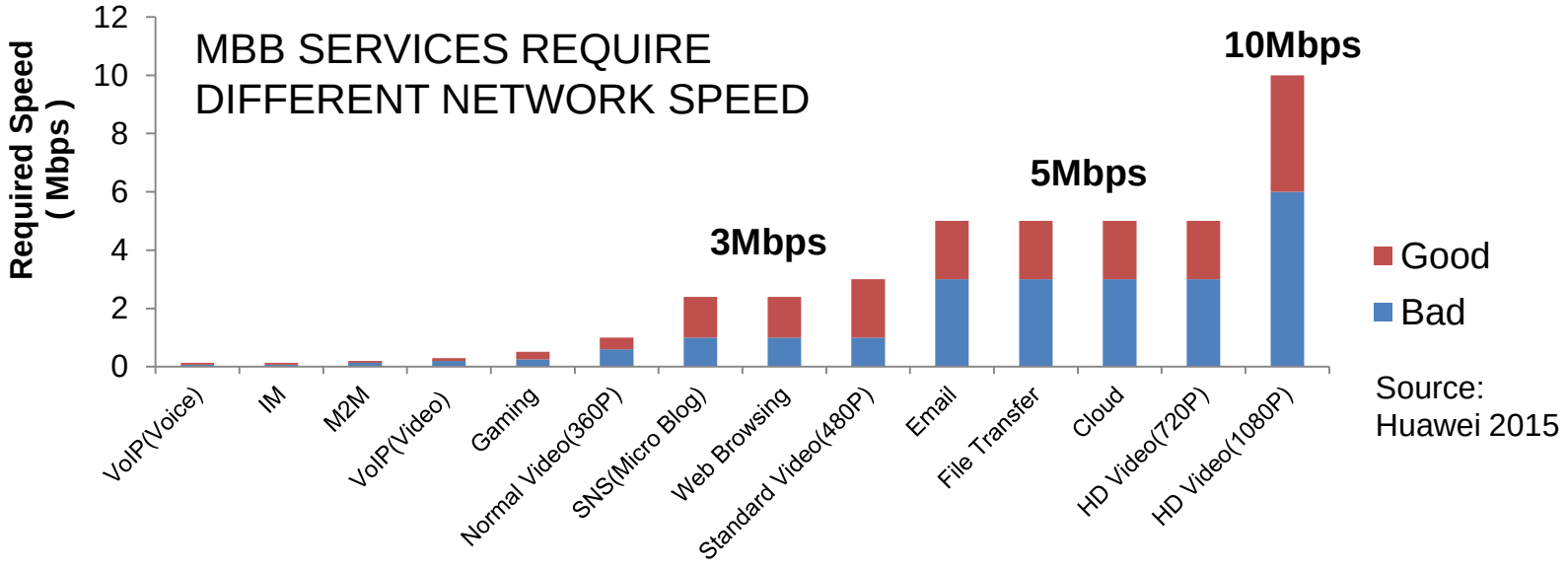
Source : OpenSignal, 2017

Overall Speed on 3G/4G Networks

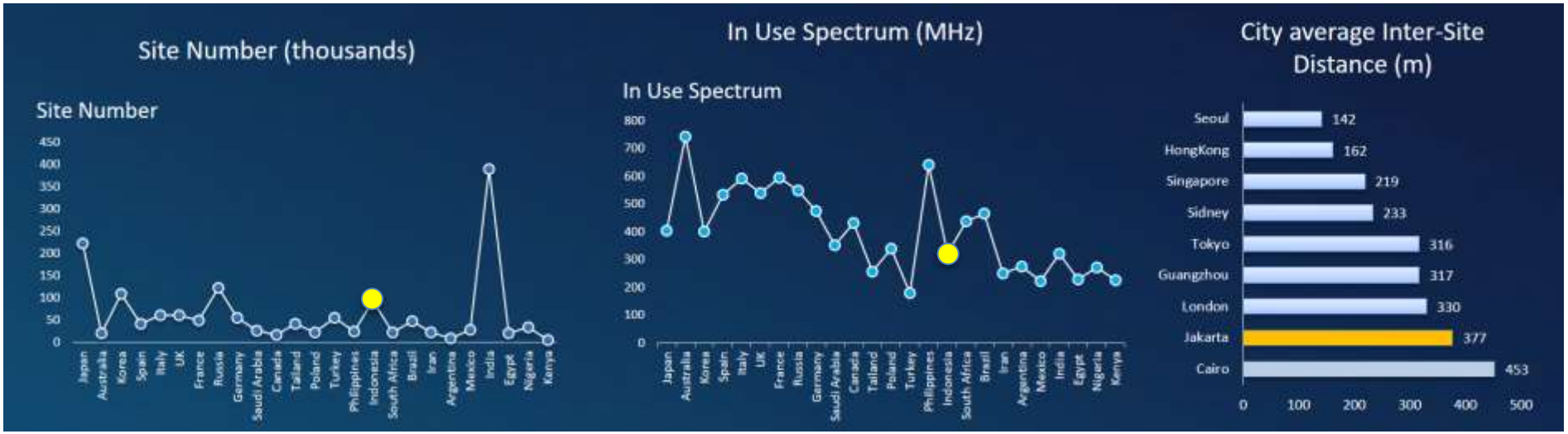
(Feb-2017)



USER ALWAYS HUNGER FOR SPEED AND CAPACITY



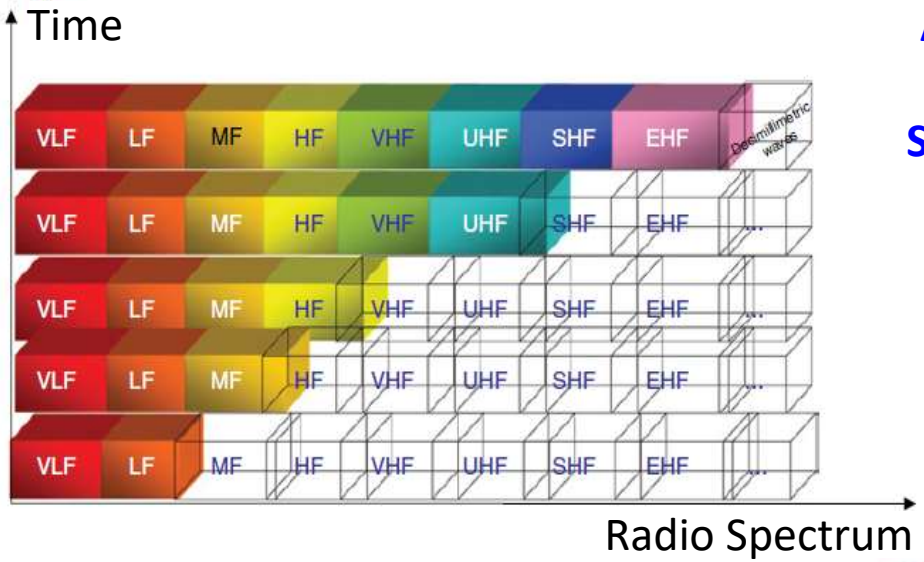
Source: Huawei 2015



NEED MORE SITE

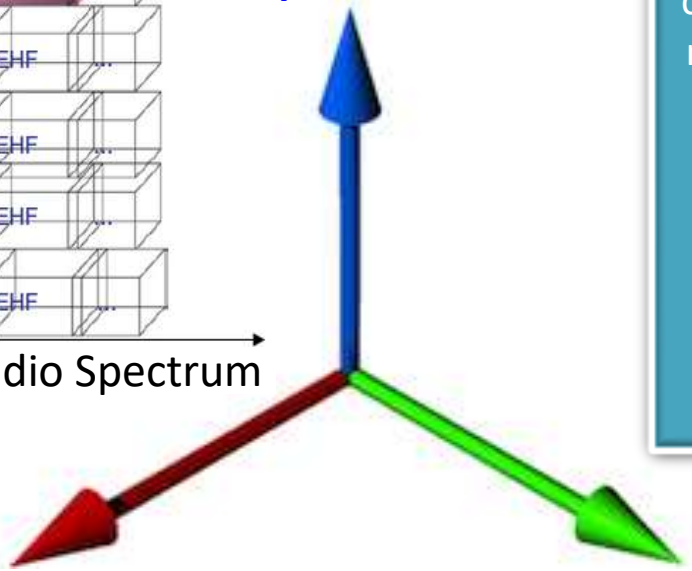
NEED MORE SPECTRUM

Source: Huawei 2016



Acquire More Spectrum

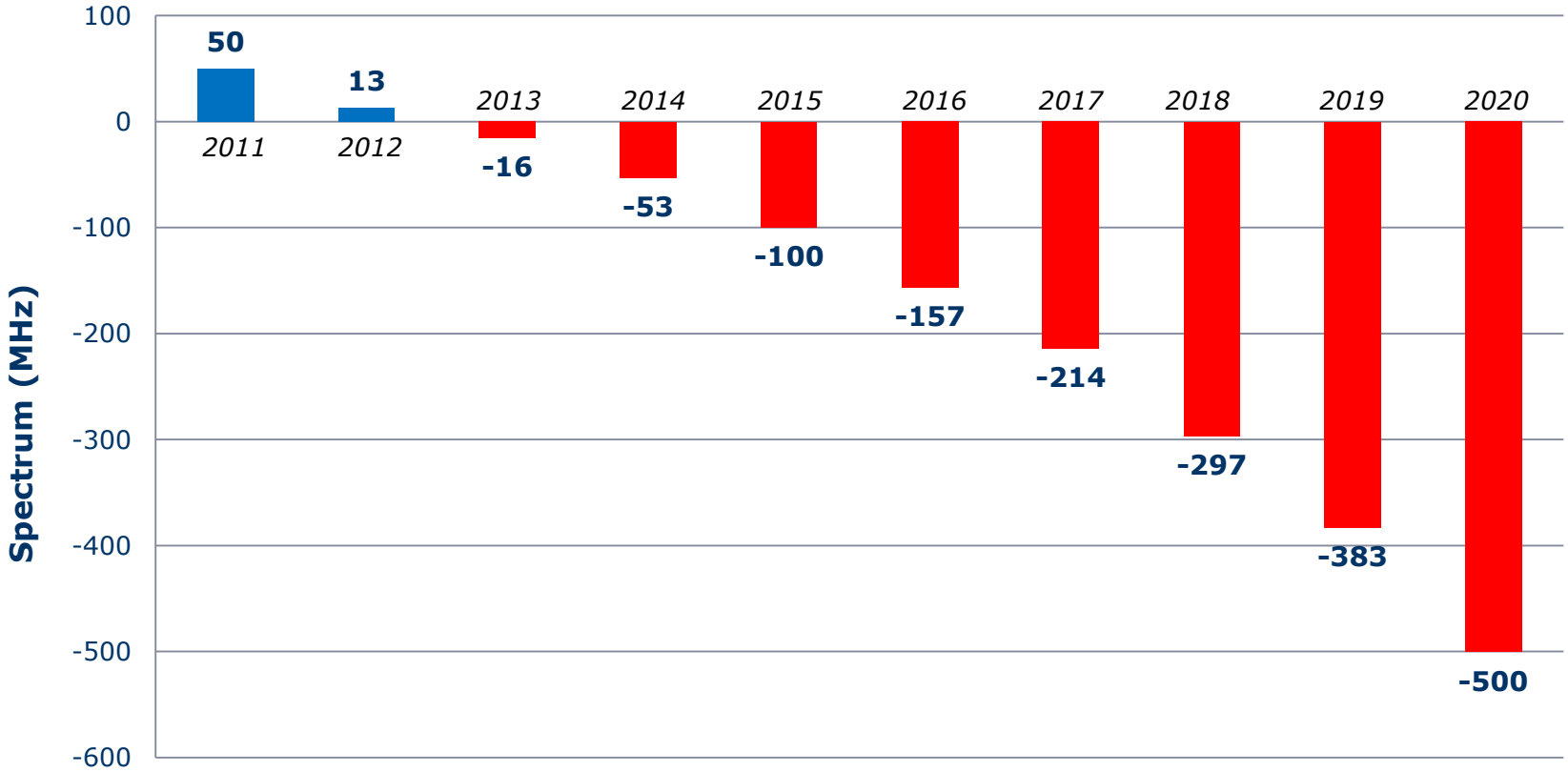
The more the spectrum can be made available for mobile broadband, it will decrease the cost in Cellular Operators (CAPEX and OPEX). Eventually, it can create affordable cost for the end users.



Build More Base Stations

Implement More Efficient Technology

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.

2015

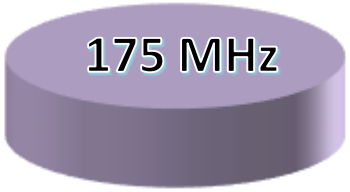
The target is :
20 MHz
(5.7% of 350 MHz)

Achieved :
165 MHz :
- 15 MHz (900 MHz)
- 150 MHz (1800 MHz)

2016

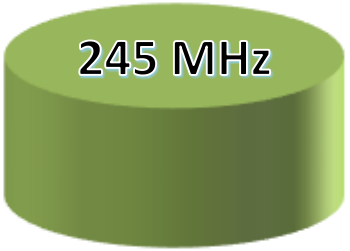
The target is :
105 MHz
(30% of 350 MHz)

Achieved :
191 MHz :
- 10 MHz (450 MHz)
- 16 MHz (2300 MHz)



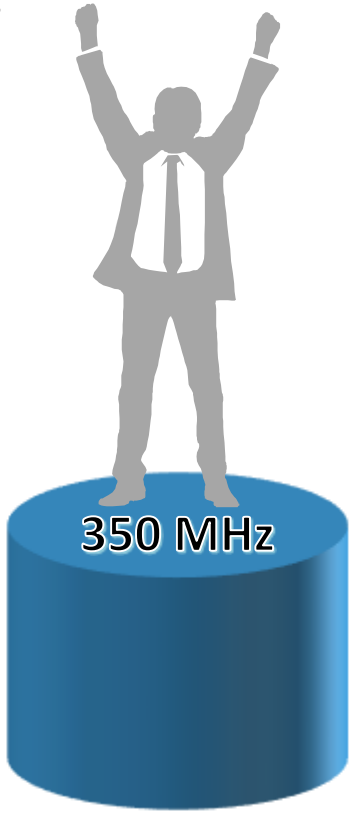
2017

The target is :
175 MHz
(50% of 350 MHz)



2018

The target is :
245 MHz
(70% of 350 MHz)



2019

The target is :
350 MHz
(100% of 350 MHz)

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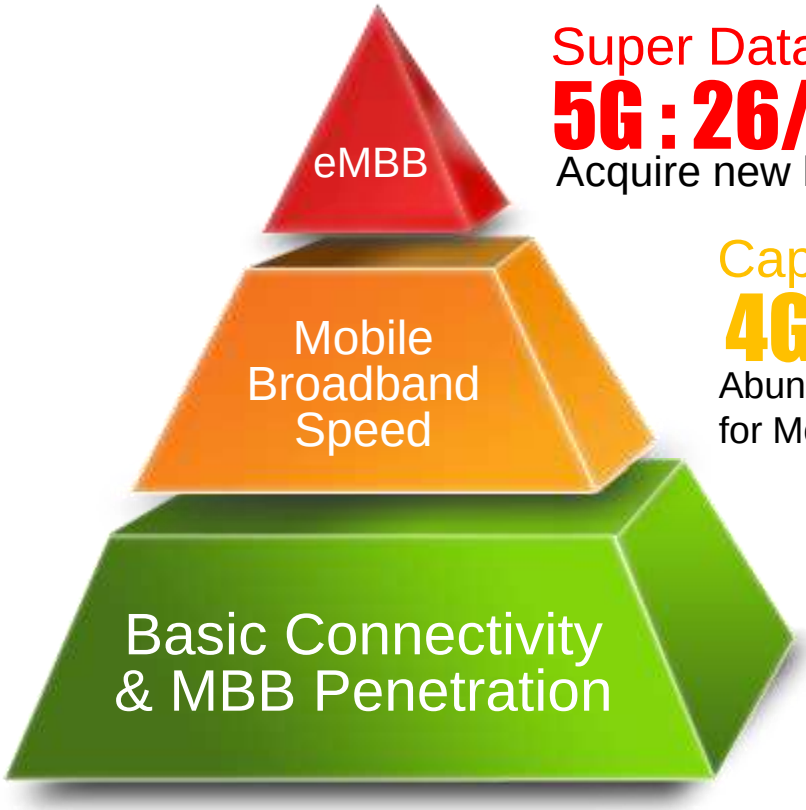
PLAN FOR MOBILE BROADBAND SPECTRUM IN INDONESIA



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

*) *Need to Reallocate BSS*

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

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

Coverage Layer

*) *Await for the New Broadcasting Act*

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

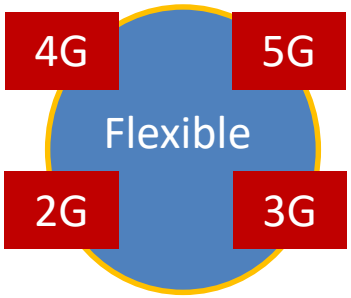
Release Digital Dividend APT700 to enhance deep coverage of Mobile Broadband

2G / 3G / 4G

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

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

1 Technology Neutrality



All IMT Bands should be allowed to implement any IMT Technology

2 Service Neutrality

IMT BWA* → IMT MBB

Enhance Economic Value of Spectrum

3 Spectrum Redeployment

Non-IMT → IMT

Auction with Obligation to bear the cost of Spectrum Redeployment

4 Spectrum Sharing

Allow Mobile Broadband technology to use Unlicensed Band under certain technical conditions

* 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

800 MHz

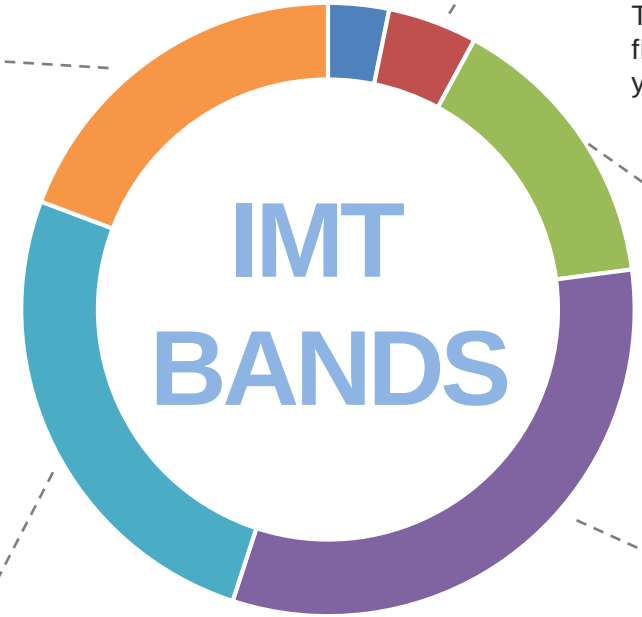
824 – 835 // 869 – 880 MHz

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.

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.



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.

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.

PLAN ON SPECTRUM REDEPLOYMENT IN INDONESIA

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4G SPECTRUM AVAILABLE IN INDONESIA

450	700	800	900	1800	2100	2300	2600	MHz
✓	?	✓	✓	✓	✓	✓	?	

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.

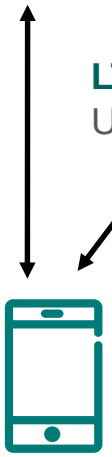
1. Current condition : most of the band is used for Broadcasting Satellite Service (BSS) to provide Pay-TV
2. Future plan : Mobile Broadband
3. Constraint : Reallocating BSS and migrating end user equipment.

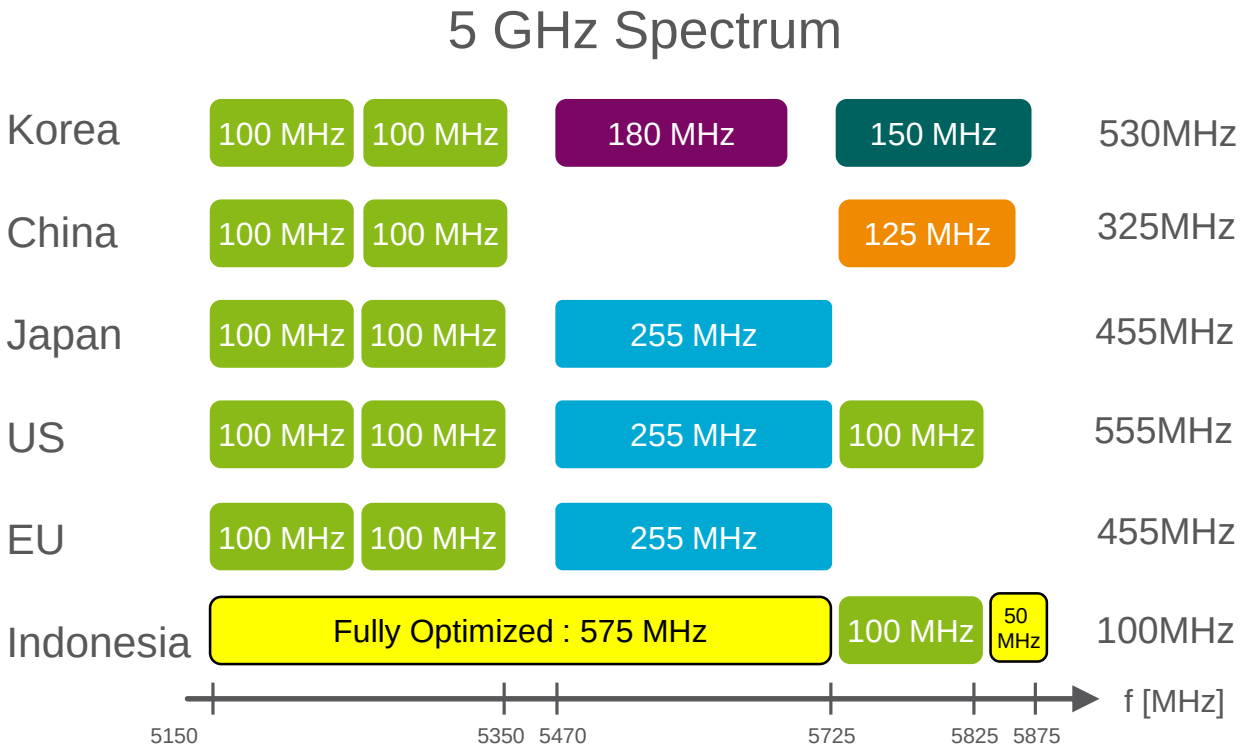
LTE-U AND LAA UNLOCKS 5 GHz SPECTRUM FOR 4G/LTE

LAA :

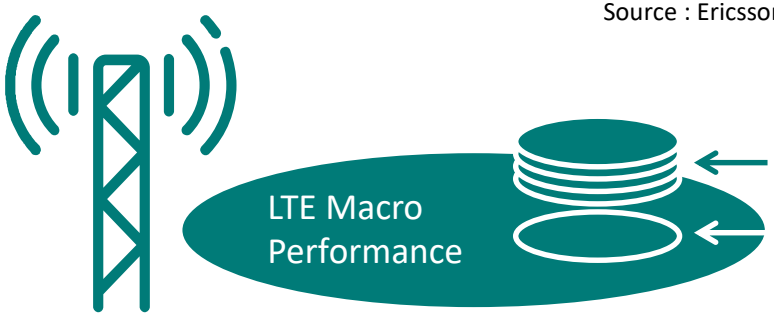
LTE Primary Carrier
Licensed Spectrum

LTE Secondary Carrier
Unlicensed Spectrum





Source : Ericsson, 2017



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.

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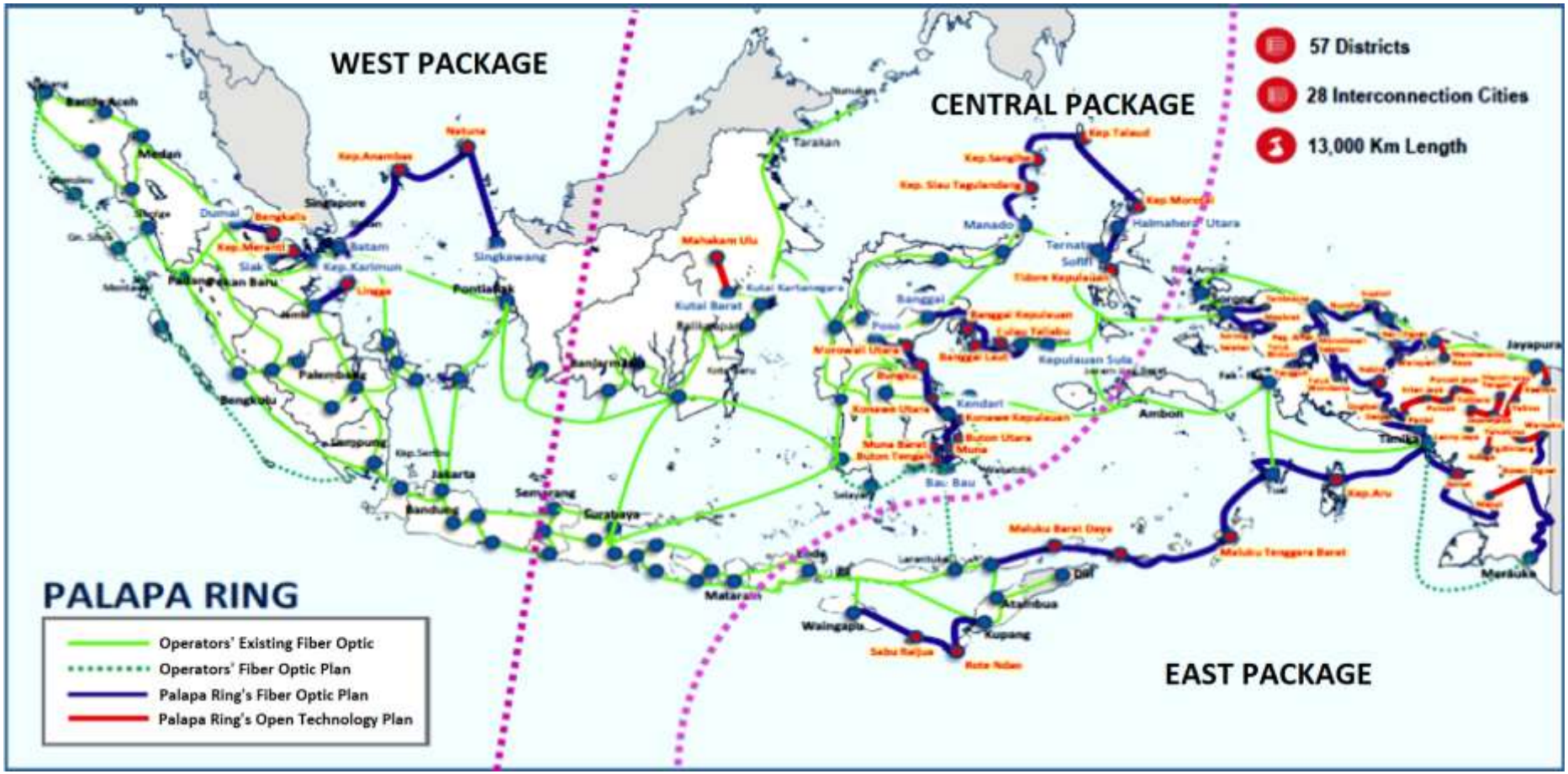
PROJECT ON NATIONAL BACKBONE NETWORK : PALAPA RING



PROGRESS UPDATE W4 – JULY 2017

WEST PACKAGE:	CENTRAL PACKAGE:	EAST PACKAGE:
72 %	24 %	14 %

THANK YOU

wonderful indonesia