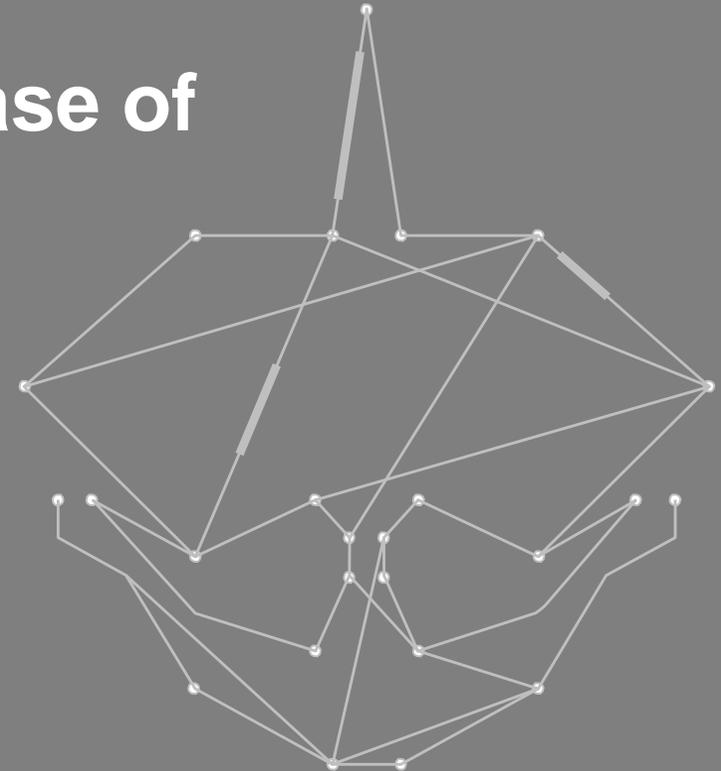


Positive benefits of timely release of 700MHz for Mobile Broadband

ASEAN-GSMA Workshop

13th Aug 2018



Advancing Asia

2017



| | |
|------------|-----------------|
| REVENUE | RM 24.4 billion |
| PAT | RM 1.2 billion |
| MARKET CAP | RM 49.7 billion |
| CUSTOMERS | ~ 350 million |
| EMPLOYEES | 27,000 |
| COUNTRIES | 11 |

Digital Telco

celcom, XL axiata, robi, Dialog, Smart, Ncell, m1, Idea

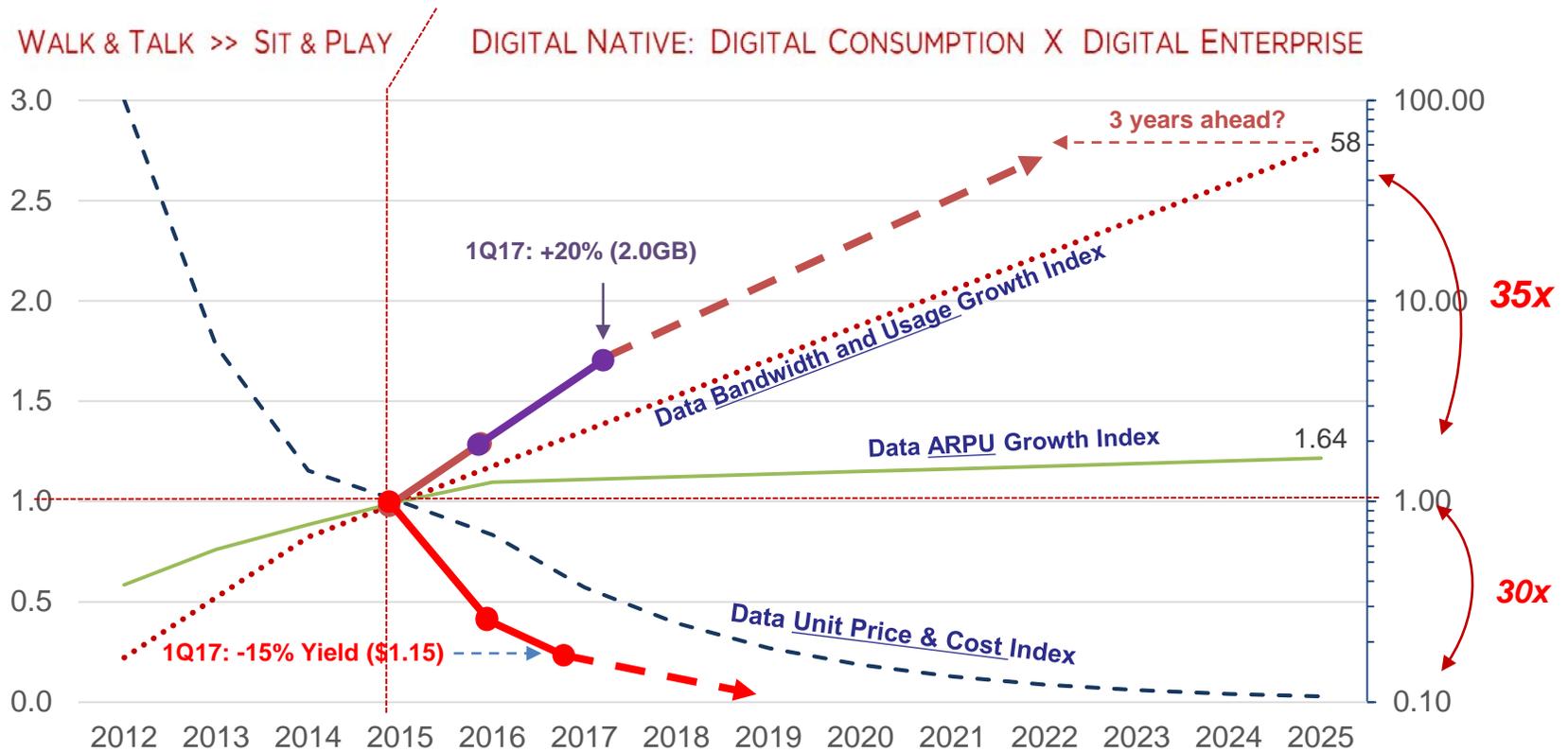
Digital Businesses

Boost, ada, apigate, SPAND

Infrastructure

eco

Over 2016-17 average data usage has risen faster, and Data Yield has fallen faster than we had forecast in early 2016...



Notes: Applies Nielsen's Bandwidth Law driven by AR/VR, UHD, 5G and IoT; Data Pricing and ARPU analysed using Malaysia operator data 2012-15

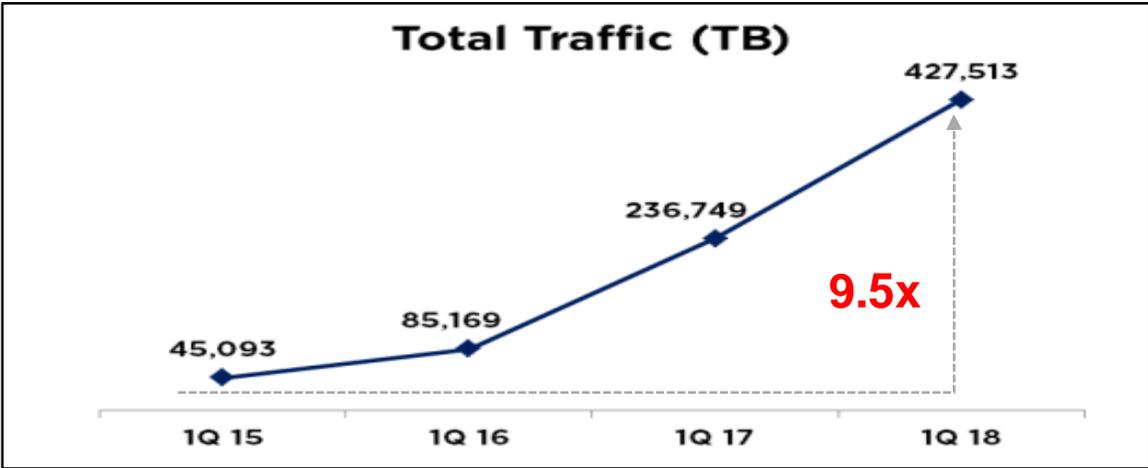


...and we don't see any slowdown coming with mobile usage now topping 5 hours per day, and most consumption to be video.



| Average MB/user/month | Malaysia | Indonesia | Bangladesh |
|-----------------------|----------|-----------|------------|
| 2013 | 617 | 160 | - |
| 2014 | 1,077 | 398 | 108 |
| 2015 | 1,690 | 740 | 222 |
| 2016 | 3,604 | 1,726 | 491 |
| 2017 | 6,548 | 2,531 | 636 |

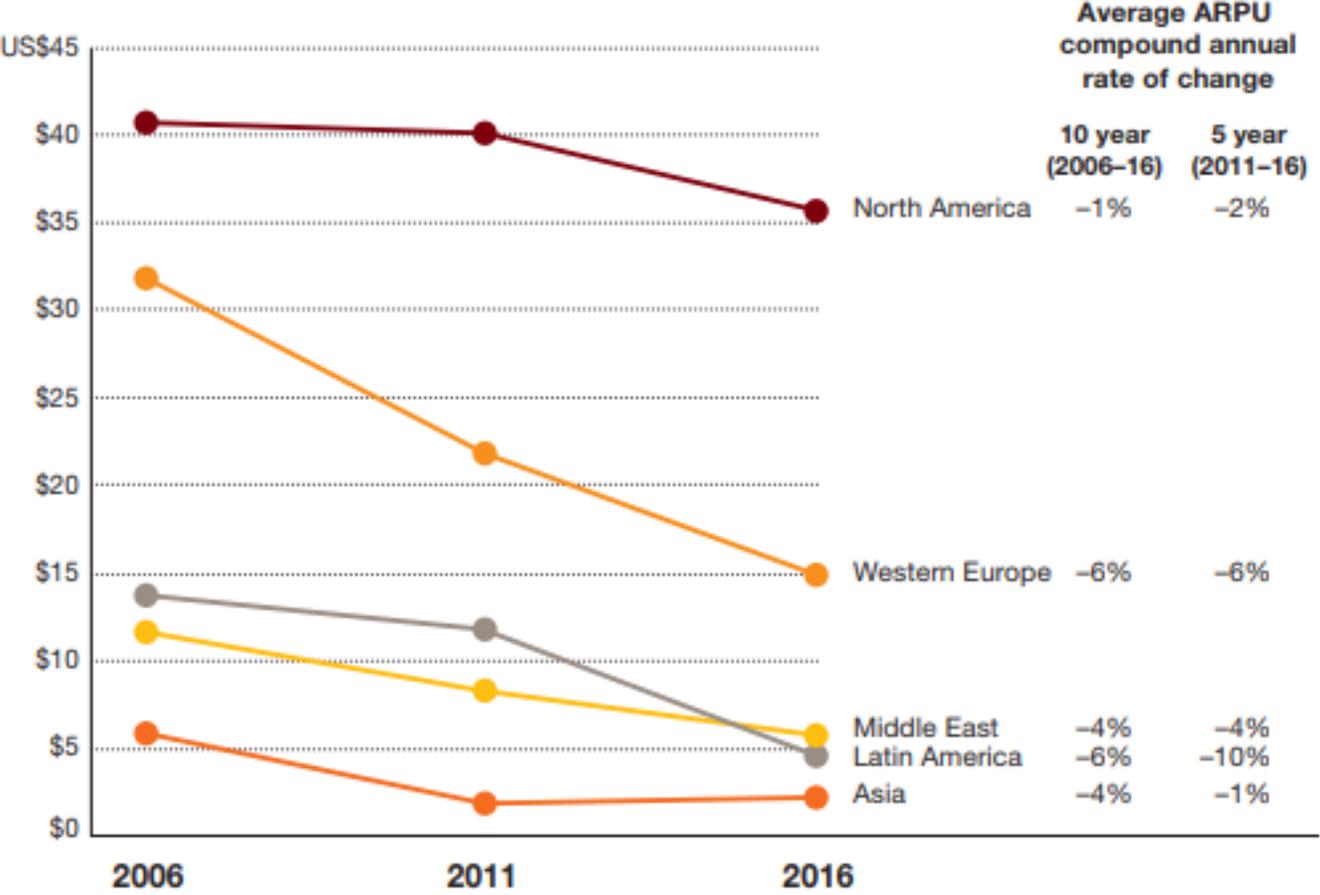
Mobile Data Traffic for XL Axiata Indonesia



Source: GSMAi, Axiata analysis, various



However, the economics of Building Connectivity moving forward is significantly challenging



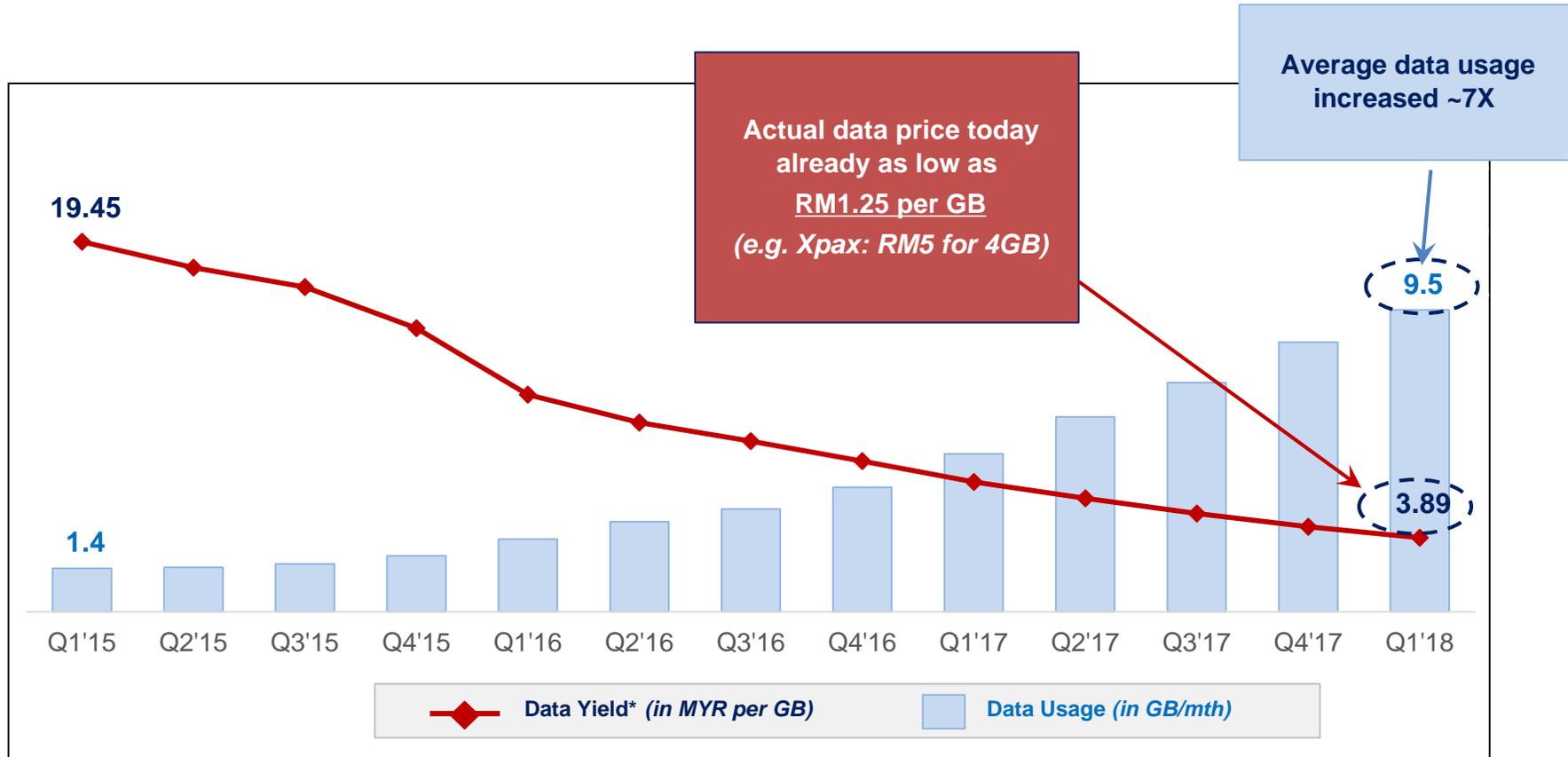
Source: Strategy&

**ARPUs falling in every region due to intense competition; especially in saturated markets
 In Asia, this problem is exacerbated with very low ARPUs to start with**



Examples: Malaysia

Data usage had increased ~7X since Q1'15 as effective data price fell by 80%



Source: Axiata analysis

* Data yield i.e. effective data price. Derived based on total data revenue divided by total data traffic for each quarter.



State of 4G deployments

| | Year Launched | Expected 4G/LTE pop. cov. by end 2018 |
|-------------------------------------------------------------------------------------|---------------|---------------------------------------|
|  | 2013 | 92% |
|  | 2014 | 93% |
|  | 2018 | 66% |
|  | 2013 | 89% |
|  | 2017 | 14% |
|  | 2014 | 70% |

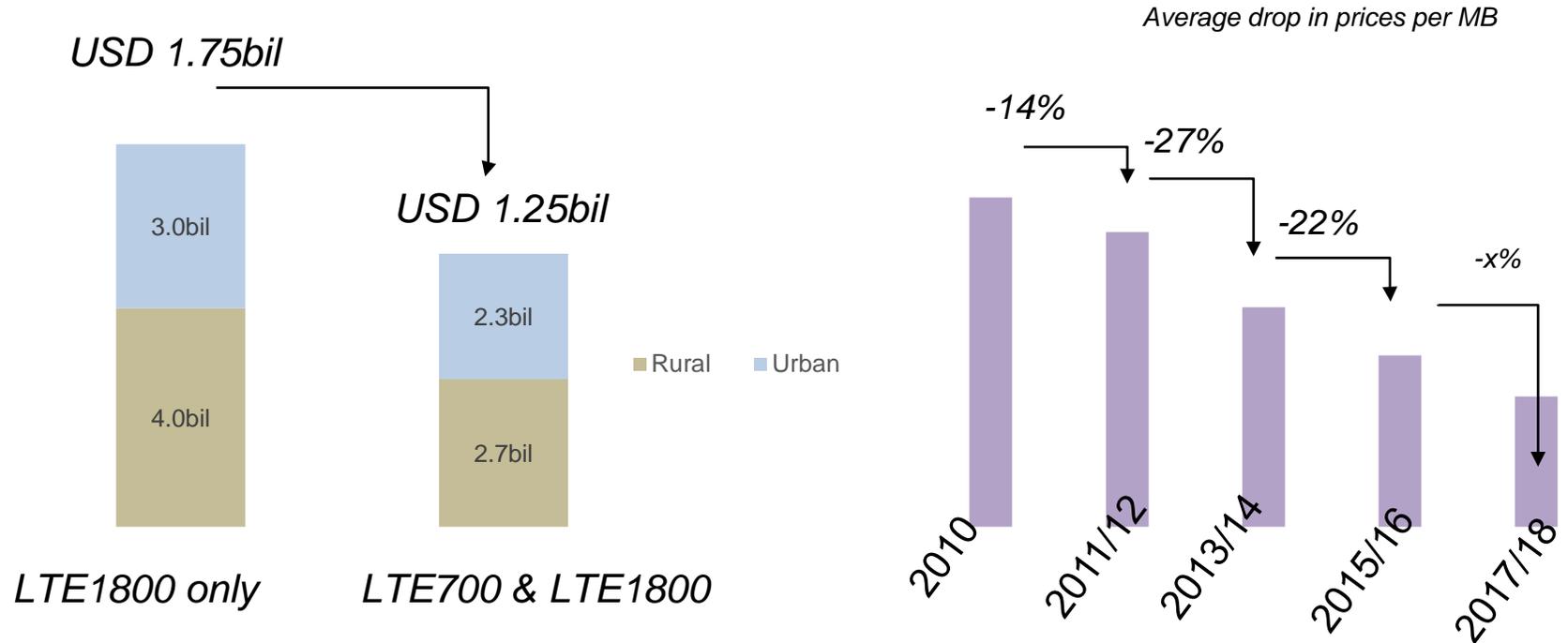
Source: Axiata AGM2018

| | Spectrum Used for Mobile | | | | | |
|---------------------------------------------------------------------------------------|--------------------------|-----|------|------|------|------|
| | 700 | 900 | 1800 | 2100 | 2300 | 2600 |
|  | | | | | | |
|  | | | | | | |
|  | | | | | | |
|  | | | | | F | |
|  | | | | | | |
|  | | | | | | |

700 and 2.6 bands are critical bands to maximize 4G/LTE coverage and capacity



The case for Digital Dividend is well accepted – 700MHz band is ideal for rural connectivity and 2nd wall penetration

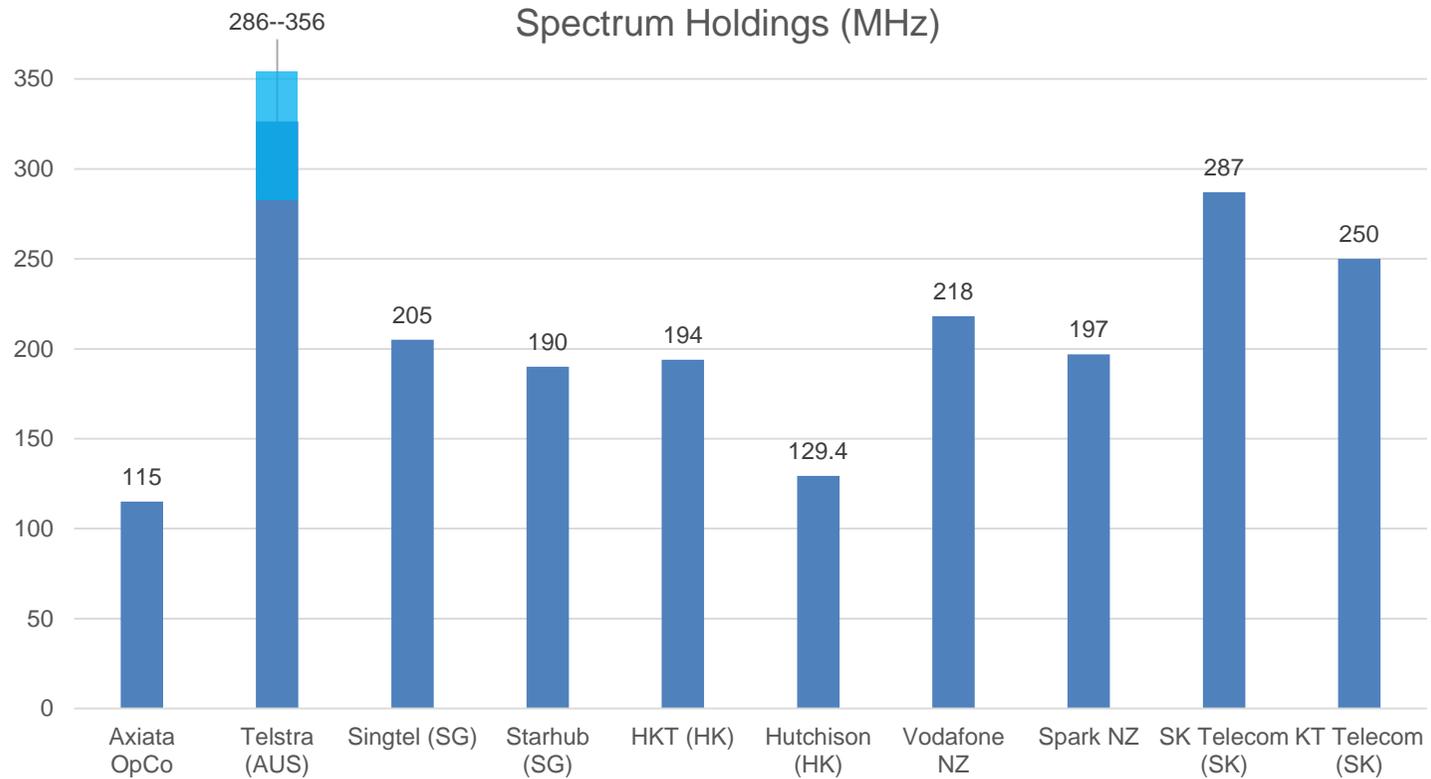


Source: Axiata analysis, 2016

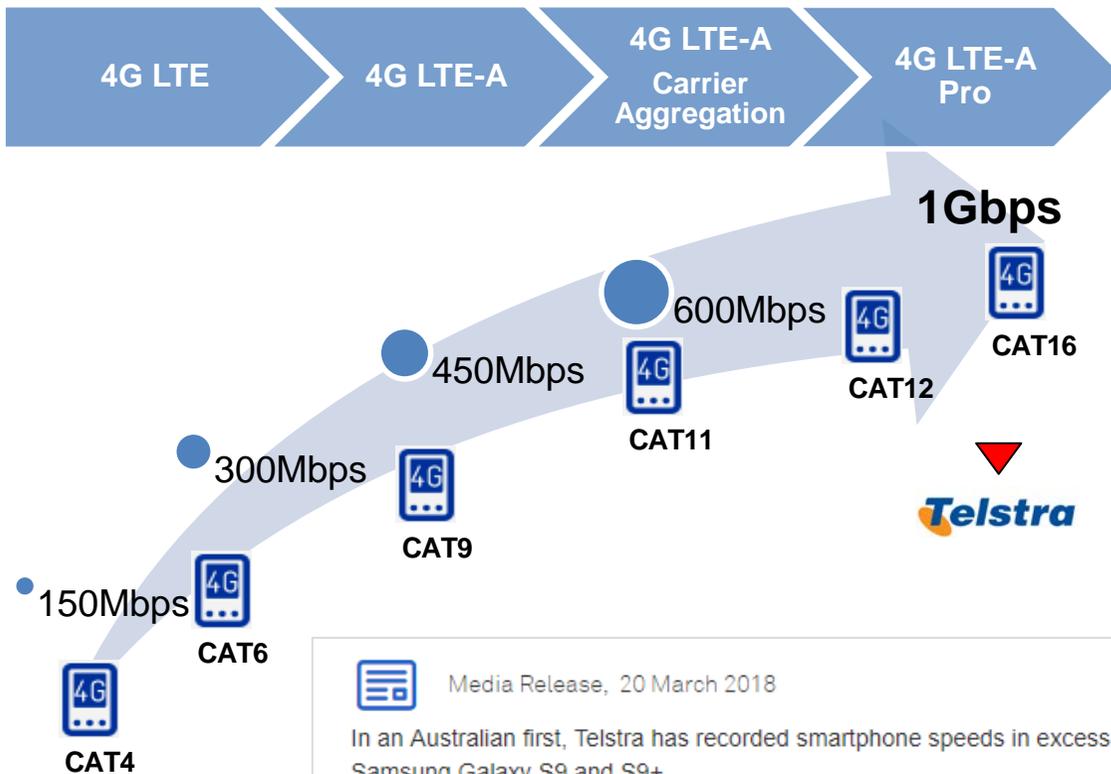
Network cost savings up to USD0.5 bil in Capex/Opex for Malaysia; could lead to more affordable services



Current Spectrum Holdings of Major MNOs in APAC



Large amounts of spectrum holdings enable MNOs to offer higher headline speeds; and is important for developing countries with poor fixed infrastructure



| MHz | Telstra |
|------|----------|
| 700 | 2x20 |
| 850 | 2x10 |
| 900 | 2x8.4 |
| 1800 | 2x20 |
| 2100 | 2x15 |
| 2300 | 28->98 * |
| 2600 | 2x40 |
| 3.4 | 32.5 * |

* Regional licenses



Media Release, 20 March 2018

In an Australian first, Telstra has recorded smartphone speeds in excess of 1 gigabit per second (Gbps) on a commercial network using the new Samsung Galaxy S9 and S9+.

Kevin Teoh, Telstra's Head of Mobiles said: "This is the first time in Australia that speeds in excess of 1Gbps have been demonstrated on a commercial network with a commercial smartphone".

"While customers using these phones on Telstra's 4GX service will typically see download speeds in the range of 5-300Mbps – tests like these show that, from time to time, Galaxy S9 and S9+ owners may see significantly higher speeds in Telstra's gigabit-enabled coverage areas."



EU institutions agree plan to allocate 700MHz band to mobile in 2020



Written by [DTVE Reporter](#) | 16 December 2016 @ 12:49



European Commission vice-

European institutions have agreed on a plan to coordinate the use of 700MHz band – hitherto used for digital-terrestrial broadcasting – for mobile applications.

The European Parliament, the Council and the European Commission have agreed on how to coordinate the use of the 700 MHz band across European borders, which they believe will facilitate the introduction of 5G mobile services as of 2020.

Under the plan, the 700MHz band should be assigned to mobile operators and made available for wireless broadband use by June 30 2020 at the latest in all EU Member states. Duly justified exceptions – on grounds defined in the



1. 700MHz is vital part of effort to have more spectrum (at affordable price levels) to meet exponential consumer demand
2. Timing of clearance of 700MHz band vital for the region; due to border interference and coordination issues, it is important for neighboring countries to constantly be in discussion on ASO execution plans.
3. In ASEAN, only Philippines has implemented APT700.
4. Economic benefits of utilizing 700MHz for 4G/LTE diminishes the longer its availability is delayed; nevertheless, it is still important and operators will put it to good use as soon as it is available.



Thank You

