ERICSSON

SOUTH EAST ASIA AND OCEANIA

ERICSSON MOBILITY REPORT APPENDIX

JUNE 2015

MARKET OVERVIEW

Key figures: South East Asia and Oceania

	2014	2020	CAGR 2014–2020
Mobile subscriptions (million)	950	1,240	4%
Smartphone subscriptions (million)	230	790	25%
Data traffic per active smartphone (GB/month)	1.2	4	20%
Total mobile traffic (PB/month)	350	3,000	45%

South East Asia and Oceania is a truly diverse region, both culturally and in terms of market maturity for information and communications technology (ICT).

Three key trends have been identified as having a significant impact on the ICT sector in the region. These are:

Youth culture – the region's youth segment is crucial in driving the use of apps, smartphones and mobile data services, particularly in developing markets.

Urbanization – urban growth will continue in the future, with ICT supporting social development.

Rise of the smartphones – the increasing availability of smartphones in lower price ranges gives more consumers the chance to get online. In the region's developing countries such as Indonesia, Thailand and Philippines, the smartphone is the primary device for accessing most internet services.

As urbanization continues, the youth and smartphones continue to be key drivers for the current evolution of communication and connectivity.

Social networking, instant messaging and video streaming dominate

The mobile phone is an important tool for accessing online services. The region continues to be a leader when it comes to adopting social media and instant messaging services.

In the South East Asia and Oceania region, social networking, instant messaging and video streaming are among the top five app categories actively used by smartphone users in the countries shown in the graph on next page. Despite the similarities, each nation has its differences, especially for instant messaging apps. For example, in Australia and Philippines, Facebook Messenger is the top instant messaging app, but in Singapore and Malaysia, WhatsApp tops the list. Likewise, in Indonesia BlackBerry Messenger (BBM) is the leading instant messaging app for smartphones, but LINE is preferred in Thailand.

Top five smartphone apps based on Monthly Active Users (MAU)

	Australia	Indonesia	Malaysia
1	Facebook	BBM	WhatsApp
2	Google Maps	YouTube	Facebook
3	YouTube	WhatsApp	YouTube
4	Facebook Messenger	Facebook	Facebook Messenger
5	Chrome	LINE	WeChat

	Philippines	Singapore	Thailand
1	Facebook	WhatsApp	LINE
2	Facebook Messenger	Facebook	Facebook
3	Viber	YouTube	YouTube
4	YouTube	Google Maps	Facebook Messenger
5	Instagram	Facebook Messenger	Google Maps

Source: Ericsson analysis based on Mobidia data for the top 25 Android and iOS smartphone apps in each country, February 2015

The connected future is nearing reality

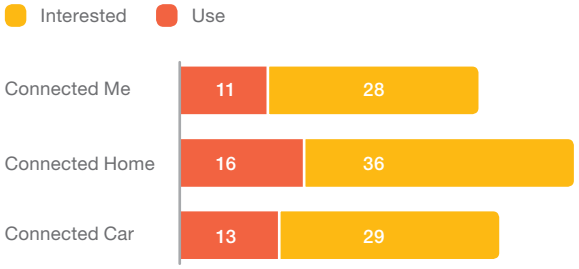
The internet is becoming an important part of consumers' lives in the region. As a result, users increasingly expect to be able to use their internet connection as part of their daily activities and interactions.

There is good potential for new connected services among consumers in South East Asia and Oceania. Wearable technology, such as Fitbit or smart watches (Connected Me), interactive cars (Connected Car) and household items (Connected Home) are still in their infancy. Higher usage is observed in Australia, Singapore and Malaysia. However, based on consumer interest, the usage of different connected services is expected to increase along with the growth of internet adoption.

Network performance is set to evolve along with the growing demand for new services. To capitalize on this opportunity, different initiatives from telecommunication service providers and utilities companies are underway in the region.

Machine-to-Machine (M2M) communication is expected to take off in the region, driven by declining costs, improved coverage, more capable radio technologies and regulatory mandates. At the end of 2014, there were around 10 million cellular M2M devices in use in South East Asia and Oceania.

Usage and interest in connected services, South East Asia and Oceania



Source: Ericsson ConsumerLab (2014)
Base: Regular internet users, 16–60 years old in Malaysia, Singapore, Australia, Indonesia, Philippines, Thailand and Vietnam

New connected services

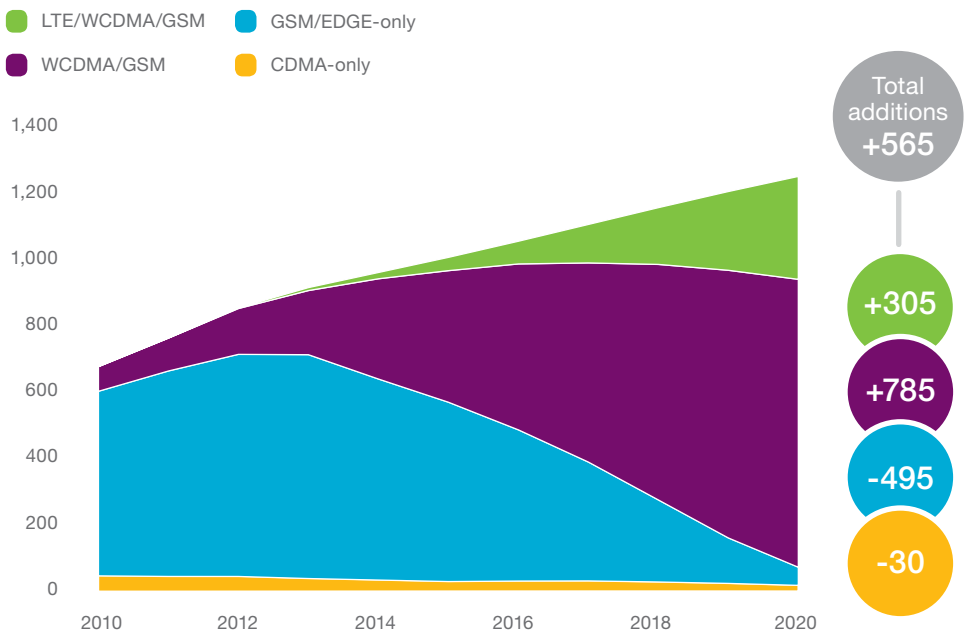
Connected Me: Using wearable technology (such as Fitbit or smart watches)

Connected Car: Connecting your car to other devices to download apps, access online services, or control features on your car from your phone

Connected Home: Connecting your home to devices or the internet, for example to control temperature or lighting, or to play music

MOBILE SUBSCRIPTIONS

Mobile subscriptions, South East Asia and Oceania (million)



Top countries globally by net additions, Q1 2015

India	+26 million
China	+8 million
Myanmar	**+5 million**
Indonesia	**+4 million**
Japan	+4 million
Nigeria	+4 million
USA	+3 million
Brazil	+3 million
Congo	+2 million
Bangladesh	**+2 million**
Vietnam	**+2 million**

4 countries in the region are among the top countries globally for net additions

The region has witnessed strong growth of both WCDMA/HSPA and LTE over the last few months. LTE uptake is being spearheaded by developed ICT markets such as Singapore and Australia, where breakthrough innovations such as FDD/TDD LTE Carrier Aggregation, Voice over LTE (VoLTE) and LTE Broadcast have been trialled or are currently being deployed. Continuous enhancements in multi-band LTE Carrier Aggregation are also seeing network speed increasing rapidly in these countries. LTE subscriptions are expected to continue to grow in the region throughout 2015 as countries such as Thailand, Indonesia and Philippines start deploying LTE networks, while others await upcoming spectrum auctions.

Mobile technologies are evolving rapidly

Developing countries in South East Asia will be home to a strong uptake in WCDMA/HSPA over the next five years as users upgrade from GSM/EDGE-only subscriptions to access faster speeds and newer devices. By the end of the forecast period, WCDMA will be the dominant technology in the region.

In the region's mature ICT markets where WCDMA/HSPA already hosts the majority of existing mobile subscriptions, mobile operators have a very low number of GSM/EDGE-only subscriptions. This situation can open the door for service providers to consider refarming their 2G spectrum to 3G/4G in order to gain spectrum efficiencies as well as cost savings in their operations.

Two important mobility metrics to consider when looking into ICT maturity are mobile broadband and smartphone penetration

Mobile subscriptions are increasing globally, and in most countries in the South East Asia and Oceania region mobile penetration has already exceeded 100 percent. The region continues to experience strong growth in new mobile subscriptions, with Myanmar, Indonesia, Bangladesh and Vietnam among the top countries globally by net additions.

Mature markets such as Australia and Singapore, where LTE is widely available, have a very high mobile broadband penetration, already exceeding 90 percent. Developing markets on the other hand, still have a long way to go, which offers a unique opportunity for mobile operators to enhance the mobile broadband experience for users.

By the end of 2014, smartphone penetration exceeded 80 percent in Australia and reached more than 90 percent in Singapore. However, for the region as a whole, penetration was 25 percent, due to lower uptake in developing countries. This provides an exceptional growth opportunity for service providers and device manufacturers in South East Asia as users consume more data through newer and faster devices.

As device affordability increases, smartphone adoption for the region steadily grows

By 2020 it is expected that there will be almost 800 million smartphone subscriptions in South East Asia and Oceania. While developed markets are key battlefields for high-end devices, low-end smartphones will make an important contribution to increasing smartphone penetration in developing markets.

Data traffic growth will continue unabated

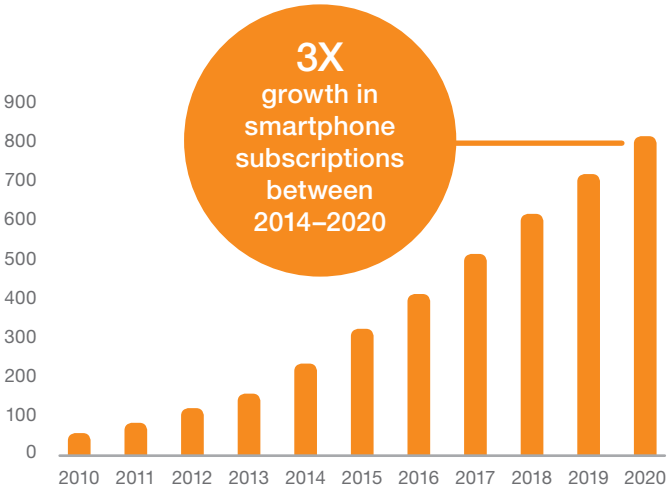
While voice traffic remains flat, growth in data will see regional traffic close in on 3 Exabytes (10^{18}) per month by 2020. This will bring opportunities for service providers as traffic in their networks rises. It will also result in challenges as user demands increase at the same time.[1]

As a result, mobile operators should ensure that they not only have the capabilities to deliver these large amounts of data, but also that they can do so reliably and efficiently. Service providers should continue to develop new business models that will allow them to monetize data growth and see a return on their network investments in a data-centric world.

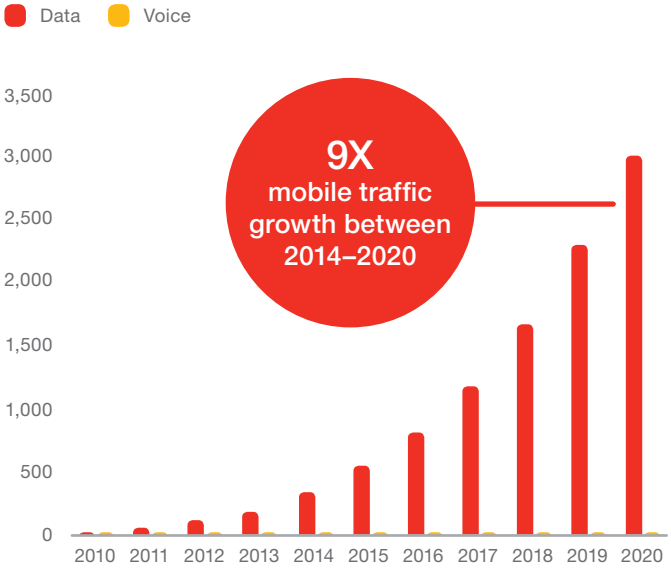
Monthly data traffic in the region will approach 3 Exabytes by 2020

[1] Ericsson ConsumerLab (2014)

Smartphone subscriptions, South East Asia and Oceania (million)



Mobile traffic, South East Asia and Oceania (EB/month)



NETWORK PERFORMANCE

LTE networks are currently available in only a few countries in the region, and as a result the gap in network performance between mature ICT countries and developing ones not only still exists, but has widened.

As service providers increase their efforts to migrate users to faster, more efficient technologies, we expect to see a ramp-up in the speeds that networks in developing markets can deliver. By deploying highly efficient technologies such as Dual-Carrier HSPA (DC-HSPA), there is potential for network performance to greatly improve in several South East Asian countries in the short term. Median speeds in those countries can then come closer to the levels experienced in developed countries, prior to the introduction of LTE.

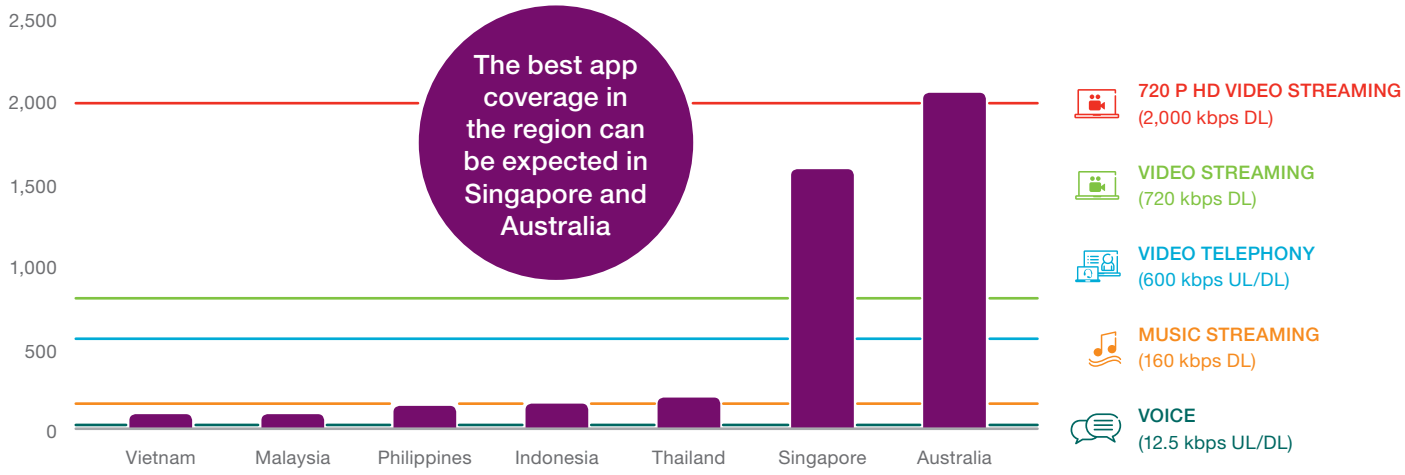
In Singapore, expanded LTE coverage and increased spectrum allocation for LTE by the major carriers continued to improve median and peak speeds over the last quarter. With the ongoing introduction of LTE carrier aggregation, a further boost in speeds is expected throughout 2015 as more devices that support the standard become commercially available. In Australia, activation of the APT700 spectrum for LTE as well as LTE carrier aggregation rollouts offering peak speeds of up to 450 Mbps, are also underway.

Aggregation of multiple LTE bands – enabling the possibility of delivering downlink speeds of 300 Mbps and beyond, will further enhance the overall performance of the region's LTE networks. These improvements will, in turn, translate into faster speeds in general, as has been observed with the peak and median regional throughputs over the last few months.

APP COVERAGE

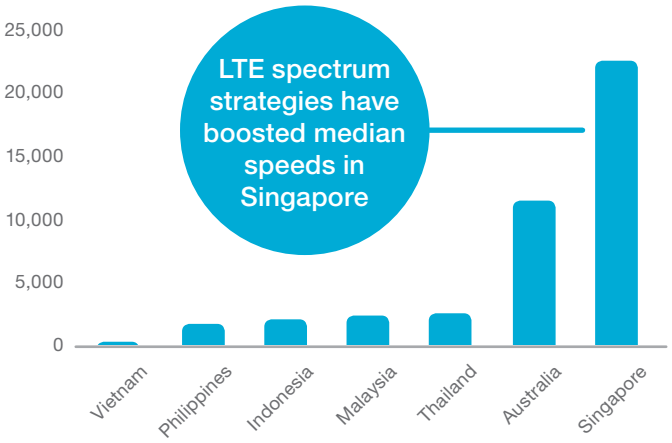
App coverage is the geographical area where an app works as expected. To the extent that apps have different network performance requirements, and network performance varies with distance from radio base stations, in effect each app has a unique amount of coverage.

App coverage based on cell-edge downlink throughput (kbps)
(90 percent probability of getting a certain speed or higher)



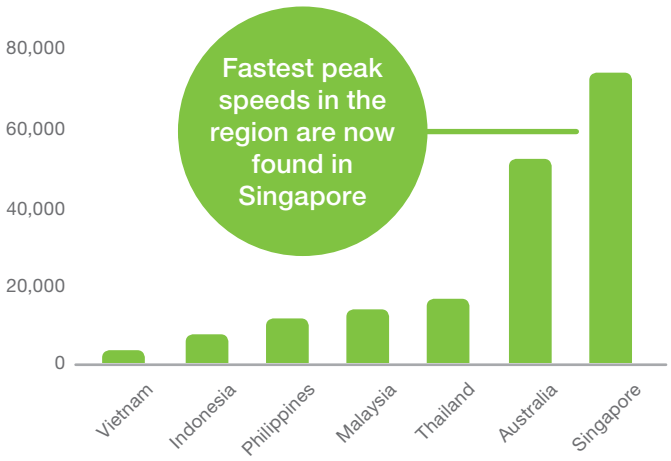
Note: Thresholds depicted are indicative and based on typical smart devices
Source: Analysis performed by Ericsson based on Ookla's NetMetrics data from Speedtest.net 2015

Median downlink throughput (kbps)
(50 percent probability of getting a certain speed or higher)



Source: Analysis performed by Ericsson based on Ookla's NetMetrics data from Speedtest.net 2015

Peak downlink throughput (kbps)
(10 percent probability of getting a certain speed or higher)



Source: Analysis performed by Ericsson based on Ookla's NetMetrics data from Speedtest.net 2015

Ericsson's analysis of Speedtest.net data from Ookla shows that data-intensive applications, such as video streaming, could easily be delivered by mobile networks in Singapore and Australia. However the same services could be a challenge for operators to deliver in the remaining South East Asian countries. As users discover new ways to consume data, it will be of greater importance for service providers to be able to fulfill that demand. With the performance of streaming becoming more significant as users consume music and videos on-the-go, it makes sense for operators to ensure such services can be delivered throughout the coverage area.

A challenging situation for app coverage is the cell-edge experience (or indoor experience as we move toward borderless cells), which describes the poorest coverage situation users can expect from their networks. Depending on several factors, ranging from geographical to urban development conditions, the ultimate challenge for service providers could be providing ubiquitous coverage for vast countries or providing network capacity or indoor coverage in big cities where skyscrapers are abundant. For operators to be able to deliver a consistent experience for their users' most popular apps, they must ensure users' particular app coverage demands are catered for in different traffic situations and geographical areas.

Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, business and society to fulfill their potential and create a more sustainable future.

Our services, software and infrastructure – especially in mobility, broadband and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities.

With approximately 115,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership. We support networks that connect more than 2.5 billion subscribers. Forty percent of the world's mobile traffic is carried over Ericsson networks. And our investments in research and development ensure that our solutions – and our customers – stay in front.

Founded in 1876, Ericsson has its headquarters in Stockholm, Sweden. Net sales in 2014 were SEK 228.0 billion (USD 33.1 billion). Ericsson is listed on NASDAQ OMX stock exchange in Stockholm and the NASDAQ in New York.

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