Global Telecommunications Center

GSMA Mobile Asia Expo 2012: post-event report

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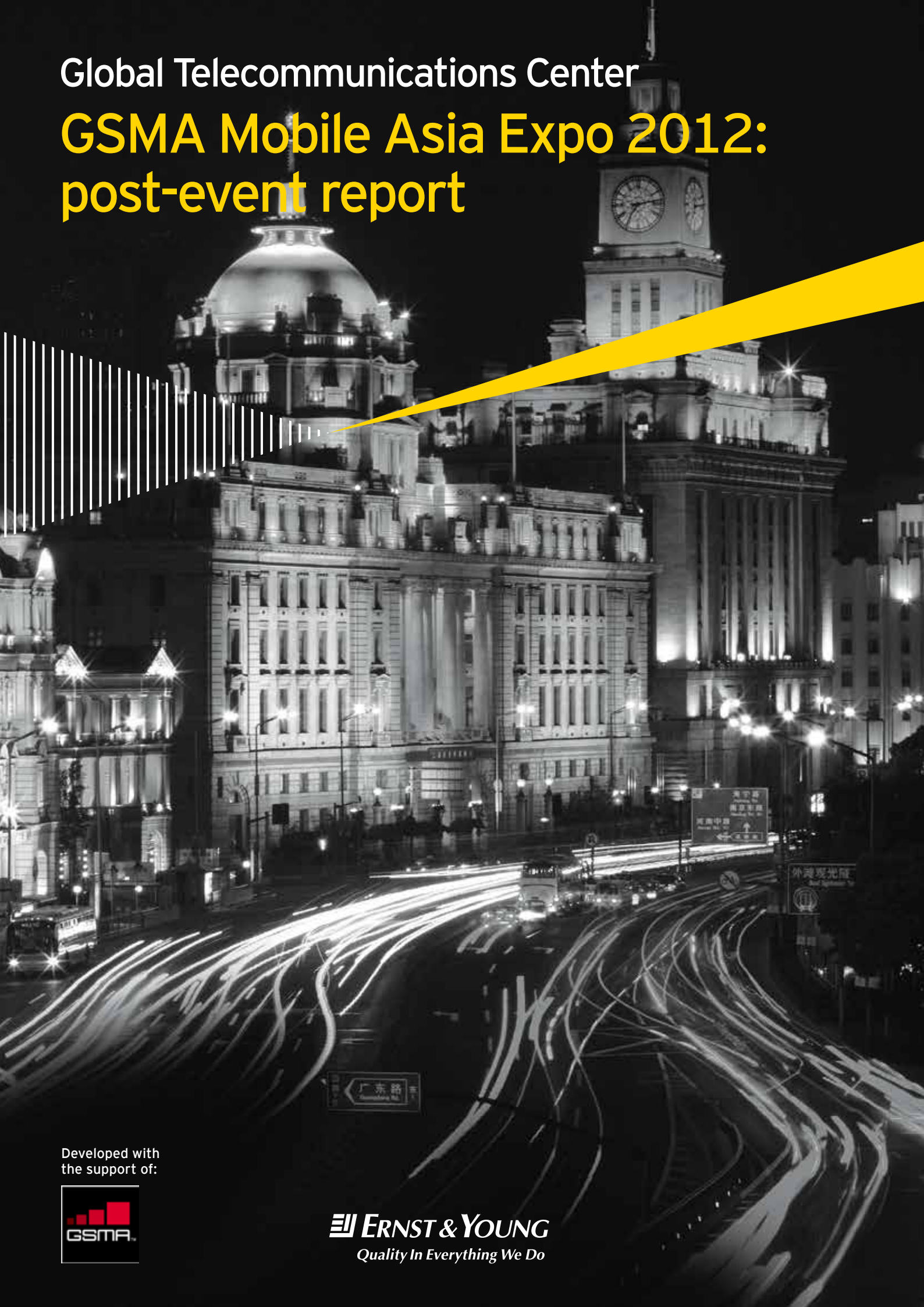
Foreword

Telecommunications is causing a revolution in the growth of business and industry as well as in every aspect of our lives, and the GSMA Mobile Asia Congress highlighted how mobile is underpinning this revolution. Everywhere we look, mobility is the agent of change. In these times of government austerity, mobile and remote solutions have been touted as ways to create efficiency while improving usage and take-up. We have seen through many of the discussions at Mobile Asia Expo that this is becoming a reality.

The advent of the embedded mobile offers many opportunities to telecoms companies. Operators look for new opportunities to monetize the vast amounts of traffic forecast to travel over their data networks and to ways to engage in markets traditionally far from the core competence of telecommunications. Embedded SIMs offer a route into retail, automotive and utilities businesses as well as sustaining the rapid increase in social media and consumer content.

In banking, mobile is increasing the size of the target market through remittance services to unbanked populations. In developed economies, users are benefiting from smarter, less time-consuming services. Regulatory and collaborative hurdles remain, but customer acceptance of the benefits of truly mobile and cashless payment is growing. It is clear mobile money has an important part to play in the evolution of the banking sector.

In the deployment of health services, we see mobile factoring into a massive increase in the number of wireless-based health projects around the world. MHealth is yet to achieve scale but it is a reality. With greater collaboration between ecosystem players, telecom operators have a unique opportunity to help craft the answer to the global healthcare funding crisis.

As the research provider to the GSMA Mobile Asia Expo, Ernst & Young has the privilege of summarizing the dynamic nature of the discussions held in Shanghai this year. I would like to thank both the GSMA and Ernst & Young's team of analysts in helping to compile this summary document. I hope you enjoy this document as it attempts to illustrate the nature of the New Mobile Era.

Jonathan Dharmapalan
Global Telecommunications Leader
Ernst & Young

01 Introduction

Asia-Pacific is a heterogeneous market with countries at different stages of economic maturity, infrastructure development and technology adoption. Mobile is important for the region and mobile penetration is high regardless of market maturity, variations in GDP and fixed-line infrastructure. Mobile solutions have a unique role leading to considerable social and economic dividends, including driving scalability in facilitating many services, especially in rural areas.

GSMA Mobile Asia Expo highlighted the changing scenario of the mobile industry, globally as well as across Asia-Pacific, which is now dominated by data. Data volumes in the region are growing exponentially, boosted by the rising popularity of smartphone and tablets. The surge in data traffic is placing enormous pressure on operators' already limited network capacity. Some interesting statistics presented at the three-day event included:

▸ 10% increase in the mobile penetration leads led to a 0.6% increase in a developed country's GDP and a 0.8% increase in a developing country's GDP. (World Bank)

▸ Global mobile connections reached 6.8 billion in June, with more than half of those connections being in Asia-Pacific, and China alone constituting one billion. (Wireless Intelligence)

▸ In the first quarter of 2012, worldwide smartphone shipment reached 147.3 million units; Asia-Pacific accounted for more than 40% of the total shipment, a 61% year-to-year increase.

Industry restructuring is giving rise to a new value chain with many more players present now – content, platform and device are all integrated to provide diversified services to customers. The operators are facing challenges as they are no longer at the core of the industry, seen by their declining market position when compared with internet and over-the-top companies' phenomenal rise. The growth of traditional telecom business is also rapidly declining, not only with respect to voice business, but also for value-added services such as SMS and MMS.

Various keynote sessions focused on collaboration and the need for innovation through partnerships between the mobile industry and other industries, such as banking, health care, education and automotive, offering new value propositions to customers. The speed to market of these new innovations is also critical to compete with new contenders in the industry. It was highlighted that operators need to use customer analytics effectively and tailor their unique solutions and services accordingly. However, they must also balance customers' privacy and security concerns.

To meet the data demand, operators in the region are rapidly rolling out 4G networks as one of the strategies to relieve network strain. Adoptions of such network technologies are bringing new possibilities for the industry. However, multiple technology convergence needs new business models and services. Developing these business models will include new partnerships, organization capabilities and product innovation. Collaboration around network builds is required to reduce inefficiencies.

Mobile operators, device makers, equipment providers, software companies and internet companies, as well as government delegations, identified some key focus areas for the next phase of mobile growth across Asia-Pacific:

- Relevance is important – services, solution, markets, customer segment
- Focus on experience
- Moving toward collaboration from competition
- Moving toward managing complexity from managing scale
- Moving toward customer centricity from product centricity

"We are entering a new era where mobile truly is transforming how the world communicates, how business is conducted and how people live their lives. We are very proud of the contribution that the GSMA and the Mobile Asia Expo have in furthering this transformation."

John Hoffman
CEO of the GSMA Ltd.

02

Event overview and highlights

The inaugural GSMA Mobile Asia Expo was held in Shanghai on 20-22 June 2012. More than 15,500 visitors from 81 markets attended the conference and exhibition, attracting executives from mobile operators, software companies, device makers, equipment providers and internet companies, as well as government delegations.

Table 1. Top 10 markets by attendance

Market	Attendance percentage
People's Republic of China	83%
Japan	3%
United States	2%
Republic of Korea	2%
Singapore	2%
Hong Kong	1%
United Kingdom	1%
Taiwan	1%
India	0.4%
Malaysia	0.3%

Source: GSMA.

Exhibition attendance: a new wave of prosumers

For the first time at a GSMA event, professional consumers – prosumers – were invited to attend alongside executives from the mobile industry. Shanghai is home to thousands of sophisticated, technology-savvy consumers, and Mobile Asia Expo offered this audience the opportunity to experience the latest in mobile technologies, products and services.

"The strong attendance of the first Mobile Asia Expo is indicative of the impact and importance of mobile in China and throughout Asia."

John Hoffman
CEO of the GSMA Ltd.

Table 2. Age group

Age group (years)	Percentage
18-24	12%
25-29	26%
30-34	31%
35-40	18%
41-49	9%
50+	5%

Source: GSMA.

Figure 1. Job functions (rounded-up numbers)

- ■ Consumer Interest in Mobile Technology/Consumer Electronics
- ■ Foreign Trade (Wholesale/Retail)
- ■ Government/Association
- ■ Logistics
- ■ Manufacturing
- ■ Mobile Industry
- ■ Others
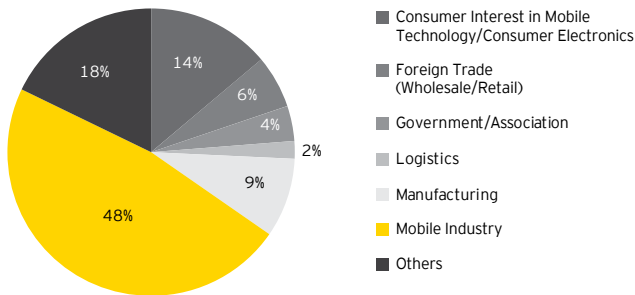
Source: GSMA.

Table 3. Top 10 markets by prosumer attendees

Market	Attendance percentage
People's Republic of China	93%
Republic of Korea	1%
Japan	1%
Taiwan	0.7%
Mexico	0.6%
Hong Kong	0.4%
United States	0.4%
India	0.2%
Indonesia	0.2%
Thailand	0.2%

Source: GSMA.

Table 4. Top 10 markets by prosumers identified as mobile operator employees

Market	Attendance percentage
People's Republic of China	75%
Japan	6%
United States	3%
Republic of Korea	2%
Hong Kong	2%
Philippines	1%
United Kingdom	1%
Mongolia	1%
Taiwan	1%
Italy	1%

Source: GSMA.

High levels of conference participation

The two-day conference program drew over 1,800 attendees with more than 60% participation from C-level executives.

Senior executives from companies such as Alcatel-Lucent, Bharti Airtel, China Mobile, China Unicom, Datang Telecom Group, HTC, Nokia, NTT DOCOMO, Smart Communications and ZTE delivered keynote presentations highlighting trends and opportunities in the mobile industry. The conference also included focused sessions on a number of topics including applications, devices, embedded mobile, mobile payments, mHealth, mobile advertising, network evolution, retail in mobile and social media.

Mobile Asia Expo also hosted several GSMA seminars and meetings, as well as partner meetings including the GTI Asia Conference and the China Unicom Partner Meeting.

Table 5. Conference attendance details

Job Function

Job function	Percentage
C-level/Owner	31%
Manager	22%
Director	19%
Vice President	11%
Others	9%
Technical/Engineer	3%
Administrative	2%
Consultant	2%
Analyst	1%
Specialist	1%

Source: GSMA.

Table 6. Top 10 markets by conference attendees (excluding press)

Market	Attendance percentage
People's Republic of China	57%
Republic of Korea	6%
United States	5%
Japan	4%
Hong Kong	4%
Singapore	3%
United Kingdom	2%
Taiwan	2%
India	1%
Philippines	1%

Source: GSMA.

Market activity

Market activity	Percentage
Mobile Network Operator	32%
Others	15%
Government/Regulatory/Association	7%
Application Development	5%
Finance/Banking/Insurance	5%
Service Provider	5%
IT/Hardware Manufacturer	5%
Software Development Vendor	4%
Network Infrastructure Vendor	4%
Broadcast/Media	3%
Mobile Advertising/Marketing	3%
Device Manufacturer	3%
Test/Measurement Vendor	2%
Mobile Content Provider	1%
Wireless Component Manufacturer	1%
Fixed Network Operator	1%
Integrated Solution Vendor (software only)	1%
Systems Integrator	1%
Venture Capital	1%
Mobile Virtual Network Operator	1%
Value Added Reseller	1%

First ever Public Policy Forum

GSMA hosted its first Public Policy Forum during Mobile Asia Expo, bringing together representatives of ministries and regulatory bodies as well as industry experts from 15 markets around the Asia-Pacific region to gain insights and share perspectives on the deployment and adoption of mobile broadband. Among the more than 70 attendees at the half-day seminar were policymakers from Bangladesh, China, Indonesia, Iran, Nigeria, Singapore, Thailand and Vietnam.

Rich with relevant and timely information for regulators and policymakers, the Asia-Pacific Public Policy Forum 2012 featured presentations from five industry experts, covering China's success in delivering mobile access to its people, national broadband planning, projections on mobile data demand, creating an environment for mobile broadband to proliferate, and new research measuring the opportunity cost of fragmentation of the Digital Dividend spectrum in Asia-Pacific. The two panel sessions – on mobile investment and regional harmonisation – prompted lively debate and probative questions from forum participants.

China Mobile was the Platinum Sponsor and Qualcomm was the Bronze Sponsor for the Public Policy Forum.

Business Exhibition Visitor Pass (BEVP) breakout

BEVP group consists of mobile and telecommunications as well as vertical industry professionals.These passes were issued to those with a business-to-business focus at the Congress:

Table 7. Attendance by

Job function

Job function	Percentage
C-level/Owner	28%
Manager	27%
Director	13%
Technical/Engineer	13%
Other	5%
Vice President	4%
Analyst	3%
Consultant	3%
Specialist	3%
Administrative	2%

Source: GSMA.

Table 8. Top 10 markets by attendees

Market	Attendance percentage
People's Republic of China	85%
Japan	3%
Hong Kong	2%
Republic of Korea	2%
United States	1%
Taiwan	1%
Singapore	0.7%
Malaysia	0.5%
United Kingdom	0.4%
Yemen	0.4%

Source: GSMA.

Market activity

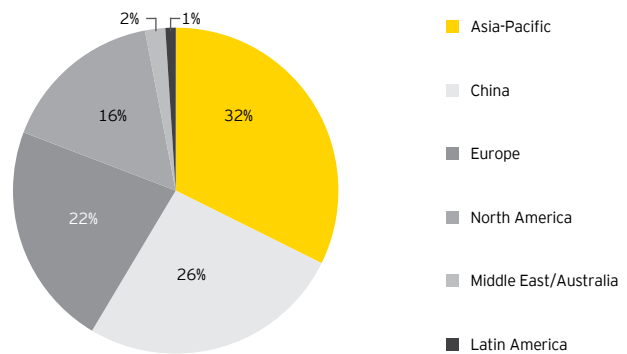| Market activity	Percentage
Mobile Network Operator	26%
Application Development	9%
Others	8%
Broadcast/Media	7%
Service Provider	6%
Device Manufacturer	6%
IT/Hardware Manufacturer	6%
Mobile Advertising/Marketing	4%
Network Infrastructure Vendor	4%
Finance/Banking/Insurance	4%
Software Development Vendor	4%
Wireless Component Manufacturer	3%
Automotive/Transportation/Manufacturing	2%
Systems Integrator	2%
Government/Regulatory/Association	2%
Mobile Content Provider	2%
Value Added Reseller	1%
Integrated Solution Vendor (software only)	1%
Venture Capital	1%
Test/Measurement Vendor	1%
Fixed Network Operator	0.4%
Biotechnology/Healthcare/Pharmaceuticals	0.3%
Mobile Virtual Network Operator	0.3%
OSS/Billing Vendor	0.3%

Successful three-day exhibition

The three-day exhibition saw approximately 200 companies occupy over 8,000 square meters of exhibition and business meeting space at Mobile Asia Expo. Prominent exhibitors included BMW, China Mobile, China Unicom, Cisco, Datang Telecom Group, Huawei, IBM, MasterCard, Mozilla, NEC, Nokia, NTT DOCOMO, Orange, PayPal, SanDisk, Telecom Italia Sparkle, Tencent, Visa, Yahoo! and ZTE.

Other highlights of the exhibition included new consumer-oriented spaces such as the Angry Birds Zone, the Augmented Life Zone, the Mobile Gaming Zone and the Mobile Fashion Zone, as well as the Innovation Lab, which hosted 25 company presentations over three days.

Like other GSMA events, the Mobile Asia Expo also included App Planet, a focused event designed to bring together the many critical elements of the mobile application ecosystem under one roof. Companies including China Mobile, Nokia and Research in Motion each held application developer conferences as part of

the program. In addition to App Planet, MAE12 also featured the MNO Cloud Forum and the mPowered Brands Open Forum, as well as a presentation of the winners in the Smarter App Challenge developers' competition.

Figure 2. Exhibitors by regions (rounded down numbers)

- Asia-Pacific
- China
- Europe
- North America
- Middle East/Australia
- Latin America

Source: GSMA.

Figure 3. Exhibitor business types (primary category)

Category	%
Mobile App Platform/App Developers/Content Developers	22%
Network infrastructure	12%
Software Development	8%
Testing and Quality Assurance	6%
Wireless Component Manufacturer	6%
Mobile Accessories	5%
Association/Trade Bodies	5%
Mobile Money/NFC	4%
Handset Manufacturer	4%
Mobile Network Operator	4%
Mobile Advertising/Marketing	3%
Messaging	3%
System integrator	3%
Consulting	3%
OSS/Billing/CRM	2%
IT/Hardware Manufacturer	2%
Consumer Electronics	2%
Roaming and hubbing Solution	2%
Mobile Health	1%
Media	1%
Mobile Virtual Network Operator	1%
Green Technology/Smart Grid	1%
Automotive Transportation	1%

Source: GSMA.

Figure 4. Category frequency among MAE exhibitors

Category	%
Mobile Money and NFC	21%
Mobile Apps	20%
Mobile Enterprise Solutions and Services	15%
Mobile Entertainment	12%
Messaging	10%
LTE Network Infrastructure	10%
Mobile Advertising and Marketing	9%
Devices	8%
Cloud Services	8%
Voice Products and Services	7%
Test and Measurement Equipment	7%
Consumer Electronics	7%
Consulting and Engineering Services	7%
Infrastructure	7%
Mobile Internet	6%
Systems Integration	6%
Mobile Security	6%
Device Accessories	5%
Semiconductors	5%
Roaming Solutions	4%
Business Support Systems (BSS)	4%
Network Operator	4%
IP Networking Equipment	3%
Network Management	3%
Monitoring Systems and Equipment	3%
Managed Network Services	3%
Device Management	3%
Data Analysis	3%
Content Management	3%
Telecommunications Authorities/Associations	2%
Mobile Health Services and Solutions	2%
Location Technologies and Services	2%
Environment/Green Services and Solutions	2%
CRM Systems	2%
Backhaul Solutions	2%
Network Operating Software	2%
Middleware	2%
Intellectual Property	2%
In-Building Systems	2%
Education and Training	2%
Outsourcing	1%
Operational Support Systems (OSS)	1%
Network Planning and Design	1%
M2M/Telemetry Systems	1%
Books and Publications	1%

Source: GSMA.

03

Conference session insights

Embedded mobile as an agent of change

Embedded mobility solutions have a vital role to play in the decade to come, bringing new functionalities to the home and ensuring a range of industry efficiencies. Falling component costs, regulatory support and industry cooperation are unlocking the embedded mobile opportunity: the total addressable revenue from all connected devices and services is forecast to reach US$1.8 trillion by 2020.[1]

Many supply-side enablers are now in place. Looking ahead, the challenge will be to communicate the benefits of machine-to-machine (M2M) solutions to different industries while working with other value chain players to aggregate the competencies required serving customers effectively.

Meeting diverse needs across a number of industries

Many businesses are now seeing tangible benefits of M2M machine-to-machine, which is encouraging further investment in the technology across different sectors. Industries such as automotive and utilities are already harnessing the benefits of embedded mobility, while embedded technology has a key role to play in transformation of the public sector.

Panelists highlighted the example of a flood management system in Rio de Janeiro, Brazil, as well as a sensor system used on Singapore's bus network that provides passenger location information to help reduce traffic congestion.

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1. Machina Research.

Figure 5. Embedded mobility use cases per industry sector

Application areas	**Automotive**	**Logistics and Fleet management**	**Monitoring/ automation**	**Remote sales and payments**	**Security/ surveillance**	**Health care**
Applications (examples)	‣ Infotainment and positioning services ‣ Active security ‣ Post crash systems ‣ Pay-as-the-drive solutions ‣ Remote diagnostics ‣ Traffic control systems	‣ Logistics planning and optimization ‣ Fleet vehicle management ‣ Navigation ‣ Fuel management ‣ Sensors ‣ Carbon footprint	‣ Smart metering ‣ Smart grid ‣ Field equipment management ‣ Facility management ‣ Public surveillance and safety	‣ Remote sales management ‣ Remote credit card applications ‣ Mobile point of sales e.g. taxis and vending machines ‣ E-commerce	‣ Cameras ‣ Alarms and surveillance systems	‣ Telemedicine ‣ Remote monitoring
Potential industry alliances (examples)	‣ Automotive ‣ Diversified industrial products ‣ Safety ‣ Media & entertainment ‣ Insurance	‣ Transportation ‣ Construction ‣ Diversified industrial products ‣ Car leasing companies	‣ Utilities ‣ Real estate ‣ Chemicals ‣ Oil and gas ‣ Retail ‣ Government and public sector	‣ Retail ‣ Banking	‣ Security ‣ Government and public sector	‣ Health care providers ‣ Life sciences ‣ Insurance

Source: Ernst & Young analysis.

Technology solutions for M2M are now largely available, yet the value chain is also increasingly complex. As one panelist noted, the acceleration of these solutions increasingly hinges on selecting the right kind of business model to generate sustainable ROI. Some of the approaches discussed during the event included:

‣ **SIM Cards + Connectivity (over-the-top players, OTT) –** Operators provide SIM cards and connectivity, and enterprise implements its own M2M infrastructure

‣ **M2M Infrastructure Services –** Operator provide connectivity and infrastructure in an "Infrastructure as a Service" business model across different industries

‣ **M2M Application Services –** Operators provide industry-specific M2M Application Services in a "Software as a Service" business model, in addition to M2M infrastructure services, SIM cards and connectivity

> "China has positioned mobile technology at the center of its expansion, from a booming car industry to the rapid development of new 'smart' cities, creating efficiencies and consumer benefits through cross-industry collaboration."
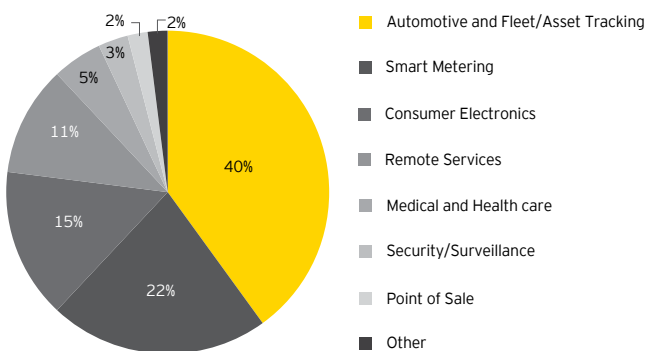>
> Michael O'Hara
> Chief Marketing Officer, GSMA Ltd.

Acting as the partner of choice

Given the growing range of use cases and enterprise needs served by embedded mobility, the ability to work collaboratively lies at the heart of M2M solutions. On the connectivity side, operators can form alliances to boost the coverage of their solutions to suit their multinational corporate (MNC) clients.

At the same time, vertical alliances are especially important in what remains a fragmented value chain. Working effectively with systems integrators and application developers can help meet end-user needs, bearing in mind that operators can act as channel partners while bringing credibility to new ventures. Crucially, continuing dialogue with customers can help formulate viable M2M propositions that are customized to their needs.

Governments also have an important enabling role to play – one that caters to a cross-industry perspective that brings different industries together. Meanwhile, standardization groups can also do more to attract more investment into embedded mobility, with areas such as service delivery platforms, device management and data security all requiring ongoing scrutiny. The GSMA Connected Living program, which will soon enter its third year, is a market development program designed to help operators accelerate the usage of wireless connectivity through a wide range of devices and services.

Figure 6. Distribution of publicly announced M2M contract by verticals

- Automotive and Fleet/Asset Tracking
- Smart Metering
- Consumer Electronics
- Remote Services
- Medical and Health care
- Security/Surveillance
- Point of Sale
- Other

Source: InformaTM May 2012.

Building scalable mobile money services

Mobile money is one of the best-established new growth segments in the mobile industry. At this year's Mobile Asia Expo, panelists tackled the issue of boosting payments take-up across societies and geographies. A variety of challenges arose as a result, from levels of technology innovation and regulatory oversight to how mobile-based solutions will coexist within a range of existing payments channels, particularly in developed markets.

New types of mobile payments services are appearing all the time, yet the risk remains that customer awareness and regulatory clarity lag high rates of innovation. In this light, the different entities in the ecosystem have to prioritize customer acceptance and interoperability if mobile money is to deliver on its promises of convenience for end-user and payments industry alike.

Sustaining the Near Field Communication (NFC) growth story

Asia is notable for the growing number of proximity payment solutions now available to consumers. Various enablers are in place: perhaps most importantly, NFC-capable handsets are sufficiently available. At the same time, joint ventures between mobile operators and retail banks are widening addressable markets, with governments also recognizing the transformational role of proximity mobile payments.

However, as NFC solutions proliferate, the risks of technology fragmentation become more pronounced. The fragmentation of technologies – existence of embedded, SD card-based and Universal Subscriber Identity Module (USIM) solutions – for providing the secure element in proximity payments was seen as an obstacle to interoperability.

With NFC services standing at an inflection point, all players should consider the road map for new use cases. To this end, a focus on value-added scenarios, whether in terms of mTicketing or security services, should be top-of-mind if contactless payments are to demonstrate their credentials compared with alternative payment channels.

Increasing confidence for customers

When considering the range of mobile payments propositions – from technology-light domestic money transfer propositions through to cross-border solutions for businesses – one crucial theme emerging from Mobile Asia Expo was the importance of customer acceptance.

Knowledge from pilot projects can be repurposed to create a more customer-centric framework for new solutions. Important lessons learned in developed Asia include the need for merchants to embrace new payments methods – only through this can the wider benefits of NFC-enabled m-commerce be fully realized. At the same time, government agencies also have a primary enabling role to play in increasing public awareness, particularly as national payment platforms come to the fore.

In emerging markets, where domestic mobile remittance is well-established, business models need to be revisited regularly to ensure that the right bolt-on products are targeted at the right customer segments, whether unbanked or under-banked. Overcoming privacy concerns can help unlock a wider range of shopping-based use cases for NFC while security credentials, once tackled at the technology level, have to be articulated effectively to all types of mobile payment users.

Figure 7. Survey: Usage drivers for mobile payment services

■ % occasional users stating greater trust in service provider would make them use the service more regularly

■ % occasional users stating improved security/privacy features would make them use the service more regularly

Source: Ernst & Young Mobile Consumer survey, June 2012.

Isolating challenges and opportunities in cross-border services

While emergence of cross-sector collaboration at a national level has dominated much of the recent news flow in mobile payments, cross-border services present a different set of challenges. Given that these are not cash-replacement models, such propositions present a more attractive revenue opportunity; however, the risks in terms of money laundering and financial controls make this a difficult market to enter.

Looking ahead, regulatory constraints will vary from country to country: new types of partnerships can help broaden the kinds of international solutions made available. Foreign exchange (FX) capabilities are an integral part of the cross-border business case while the needs of specific customer segments require greater focus. SME users have been underserved and could benefit greatly from mobile payments' increased convenience.

Creating sustainable solutions in mHealth

The burden on health care systems remains considerable, as aging populations and the poor reach of health care infrastructure places additional pressures on the costs to treat patients. The high coverage levels of mobile infrastructure coupled with rising penetration of smart devices places telecommunications at the forefront of greater sophistication and efficiency in health care delivery.

There are currently more than 500 mobile health projects in operation around the world. MHealth capabilities will be crucial in helping countries reach their Millennium Development Goals through a range of services and applications such as:

‣ Public wellness applications

‣ Health information

‣ Health surveillance

‣ Remote diagnostics

‣ Patient monitoring and compliance

MHealth as an evolution, not revolution

According to one panelist, the adoption of mHealth services is set to be evolutionary rather than revolutionary. Stakeholders should realize that mHealth functionality will coexist alongside traditional forms of health care delivery. For the stakeholders involved, changing mindsets, perceptions and behaviors will take time.

Accelerating the migration to mHealth use cases will pivot on the contribution of stakeholders at all levels of the value chain. NGOs and the medical community can drive innovation at the application level, while health care providers in both the public and private sectors can build mHealth into their digital strategies. For their part, technology and telecommunications providers need to collaborate effectively while governments and different regulatory agencies can provide a common platform for growth.

Panelists observed that mobile operators have a unique role to play as facilitators of mHealth services, particularly as the ecosystem of providers becomes more complex. Mobile service providers have a number of attributes – from the ownership of key infrastructure to existing partnering models – that can help them drive mHealth opportunities.

Accelerating adoption rates

Local market factors will need to be heeded, particularly in terms of national health priorities. For example, where traditional health care infrastructure is lacking, remote diagnostics, treatment and information delivered via mobile technology will be important. In countries where health care costs are rising, patient monitoring and compliance solutions can make existing health care systems more efficient.

For solutions to gain national scale, governments around the world need an mHealth policy that is jointly owned by health and telecommunications sectors. Operators need to become trusted partners of policy makers to avoid duplicating effort. Cooperation to achieve Millennium Development Goals – such as reductions child mortality, better maternal health and prevention of communicable diseases – is a case in point.

Stakeholders can also do much to speed the adoption of new services among key end-user groups. The move to new technologies to deliver health care also requires a patient-centric approach, one that fundamentally empowers patients in ways that can produce more efficient monitoring and diagnosis techniques.

Other areas such as health care administration and public health programs also require focus. Aligning incentives for health care professionals and hospitals to adopt mHealth will help make new solutions pervasive. Meanwhile, as the rate of information sharing increases, new opportunities will appear. All players in the ecosystem must be ready to accommodate new use cases.
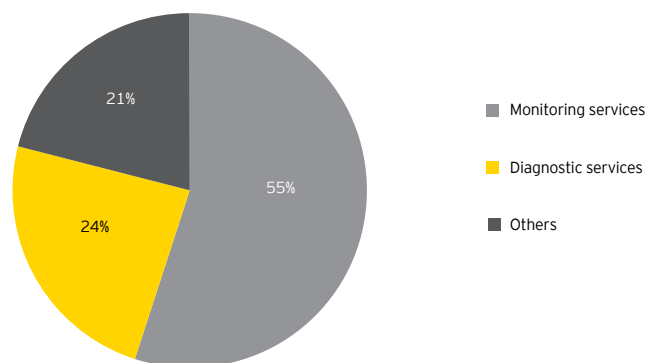
Figure 8. Asia-Pacific mHealth market opportunity in 2017

Revenues (US$b)

Service categories
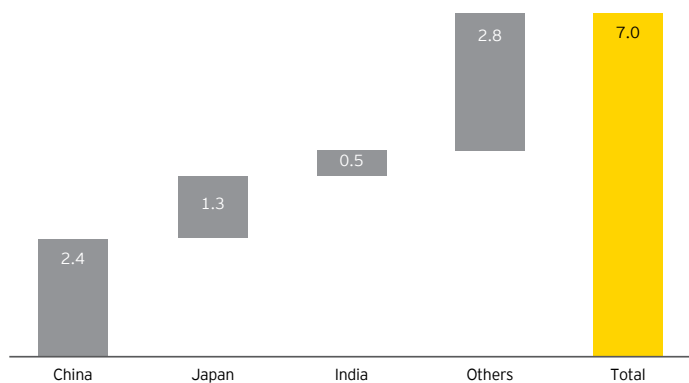
Source: GSMA – Mobile Health – Enabling Health Care, 2011.

Industry insight: mHealth in China

More Chinese citizens with rising incomes are able to purchase private health care packages, options and insurance. The resulting cost of health care has hit 4.5% of gross domestic product in China and is expected to grow rapidly.

To expand health care while containing costs, China is expected to create the world's biggest mobile health market by 2017, bringing monitoring and diagnosis applications and information to a widespread population with poor access today.

Source: Ernst & Young analysis.

Kiosks and mobile phones are now among the enablers used for consultations in remote regions of the country. Individuals can submit information such as blood lipid values into a One Stop Medical Report terminal, for example, which returns reference values and the clinical significance of the patient's input, along with a health assessment and advice on actions to maintain or improve health. The terminal might indicate high cholesterol or possible diseases, suggest that a hospital diagnosis is required and help book appointments.

Adding value with mobile marketing and advertising

Mobile marketing and advertising remains an area of considerable promise, particularly as new types of device see the mobile channel account for a greater share of media minutes. In one recent survey, 38% of online consumers report watching video on their phones at least once a day.[2] The mobile device holds many advantages for marketers, such as location sensitivity and the ability to act as a media viewing hub.

Figure 9. Mobile advertising spending forecast
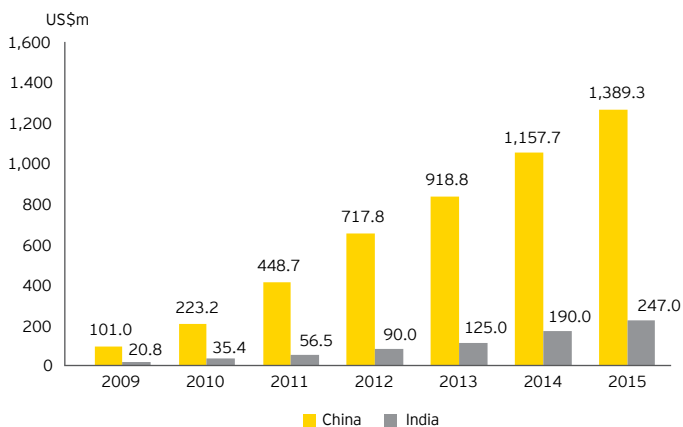
Source: eMarketer, April 2011.

Set against this are the challenges of limitations in screen size and the sheer growth and the differences in market maturity across the Asia-Pacific region. Some markets in the region are the scene of innovative approaches to mobile marketing while ecosystems are still forming in others.

Mobile offers new insights on the consumer journey

The mobile channel can capture different elements of the consumer purchasing journey, which can be repurposed to generate higher returns for retailers. For example, mobile media can provide greater insights around customer needs, while driving product recommendations and price comparisons. The more personalized shopping experience driven by mobile can generate greater convenience, increase order sizes and, ultimately, drive customer loyalty.

However, panelists noted that many retailers still focus on traditional media channels to market their services. Utility and simplicity are vital components of the mobile marketing and retail customer experience – retailers can do more to exploit mobile media to smooth the purchasing journey as they seek a more detailed understanding of their customers' behavior.

Nevertheless, challenges remain. In one panel discussion, a payment service provider indicated that poor payment experience is discouraging consumers to purchase via mobile, with consumers demanding greater certainty on data privacy and security. Meanwhile, mobile as a share of advertising budgets still underperforms mobile's share of time spent viewing media. Placing mobile technology at the heart of multichannel strategies can provide new parameters for evaluating return on investment.

2. ''Global Report: Multi-Screen Media Usage,'' Nielsen, www.nielsen.com, 2012.

Shifting roles for operators

Operators will underpin the mobile advertising ecosystem and its monetization in years to come. Service providers already have many years' experience in providing mobile content and applications to end users.

In markets migrating from feature phone to smartphone capabilities, operators are in a strong position to shape new customer experiences while existing solutions based on SMS and USSD will maintain relevance in certain contexts. Operators are already starting to build a single view of their customers across territories and devices, putting them in a strong position to lead new ecosystems.

In the past, advertising-supported business models have struggled to gain traction. However, the scope for new charging models is widening as mobile data usage evolves in new directions. In a recent survey conducted by Ernst & Young, a significant portion of online consumers are receptive to ad-funded mobile data services:

Figure 10. Consumer payment preferences for mobile applications

Q. What is your preferred payment method for mobile applications?

■ Free, but with in-app adverts
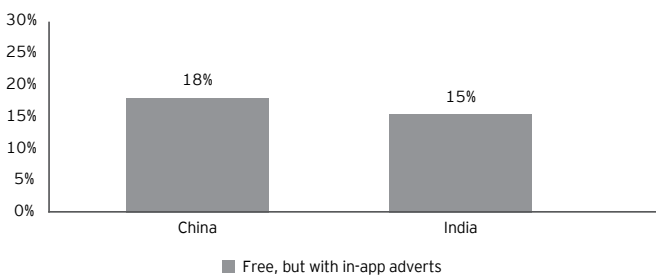
Source: Ernst & Young Mobile Consumer survey, June 2012.

Meeting customer expectations for mobile cloud

Mobile operators are increasingly keen on offering cloud-based mobile services. One study estimates that the market for cloud solutions for small to medium businesses in the Asia-Pacific region will grow at 1.5 times the rate of traditional ICT technologies in 2012 to reach US$16.5b.[3]

Cloud computing presents a huge opportunity to operators, helping them to avoid being marginalized as bit-pipe providers. The commoditization of internet bandwidth is an ongoing trend, yet cloud services provide new routes to offset this by allowing the operator's network to be used to power intelligent services available on smart devices. Using intelligent functions, operators will be able to offer many different services to consumers and enterprises alike.

Delivering tangible benefits to customers

Customers will become more discerning when selecting services. This will eventually promote healthy competition between operators to provide services that drive usage and deliver new types of customer experiences.

The flexibility and cost benefits of cloud-based services will provide customers with numerous benefits. Improved provisioning for businesses along with the ubiquitous availability of applications to employees are areas where mobile cloud solutions can add significant value.

The needs of small to medium businesses are well-suited to mobile cloud functionality, building upon the fast-growing penetration of smart devices in these organizations. Moreover, mobile already accounts for a significant proportion of overall ICT spend at smaller enterprises. By offering their own or partner-led cloud services, operators can widen their service portfolios and generate higher levels of customer stickiness by providing scalable cloud platforms.

Nevertheless, plenty of challenges remain. During the conference sessions, panelists mentioned a number of key customer concerns that providers of cloud services should consider:

‣ Ensuring interoperability and maturity of the infrastructure

‣ Enhanced security of data stored in the cloud

‣ Protection for the party that owns the data

‣ Delivering acceptable return on investments

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3. AMI Partners "Cloud computing market for SMBs in Asia-Pacific to reach US$16.bn in 2012" February 2012.

Keeping pace with changing technology cycles

Operators and technology suppliers should take heed of a range of factors that will alter the demand dynamics of mobile cloud solutions. For one, the increasing trend towards Bring Your Own Device (BYOD) in the enterprise shows how consumer preferences are informing connectivity in the workplace.

Mobile device management becomes vital in this context, since security concerns could otherwise undermine cost savings. At the same time, the growing trend toward remote working is creating new demand scenarios for mobile cloud capabilities.

In the consumer space, revenue-sharing models can help operators deliver cloud services such as music streaming to end users. Services such as parental controls and enhanced security credentials represent an opportunity for cloud providers to differentiate their offerings.

The cloud delivery model opens up new opportunities for end users to access and pay for services. In this light, operators should consider how best to interact with technology suppliers as traditional cloud services are extended to mobile devices and unique mobile cloud propositions appear that exploit location and presence capabilities.

Table 9. Telecom cloud offerings to different customer segments

Customers / Services	Large enterprises	Small and medium enterprises	Government	Cloud service providers
Network infrastructure services				√
Public cloud services		√		
Private cloud services	√		√	
M2M cloud services	√	√		
Application aggregators	√	√	√	
Wholesale cloud services				√
Cloud brokers	√	√	√	

Source: Ernst & Young analysis.

Industry insight: Government cloud initiatives in Asia-Pacific

The governments of China, Japan and Singapore are already investing to create economic regions of cloud technology development, while migrating their own information technology infrastructures to cloud services to lead by example. The Chinese government has announced that five cities would host cloud computing innovation centers, while Singapore's government is offering businesses incentives to adopt cloud computing.

Protecting the privacy of Asian consumers amid all this innovation has become complex. Privacy attitudes and regulations differ, sometimes significantly, throughout the Asia-Pacific. Privacy becomes exponentially more complex if a company turns over its data to a potentially borderless cloud service provider. This has led to a call for countries to harmonize their laws on cloud computing to reduce inconsistencies in regards to privacy.

Source: Ernst & Young analysis.

Recent data shows that smartphone penetration in Asia still lags behind Western Europe and the United States. Yet the growing penetration of smartphones provides a huge platform for application developers, particularly with the launch of more low-cost smartphones.
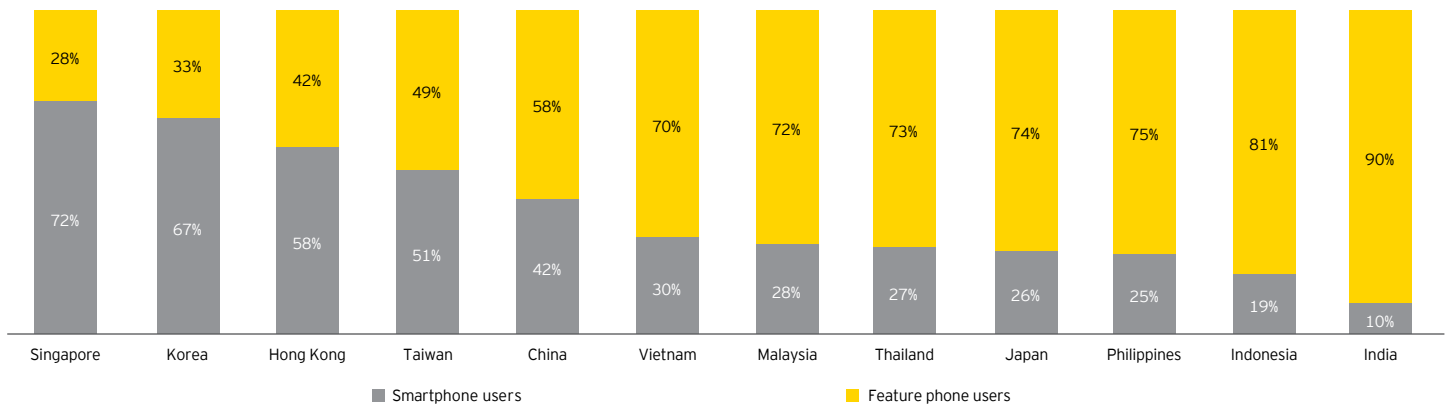
China to drive the low-cost smartphone market

The large developing economies in Asia-Pacific make low-cost devices a critical driver for mobile broadband adoption. With this, handset manufacturers are making efforts to produce low-cost smartphones while operators aim to introduce devices cheaper than $100 to tap the rural market and expand market share as user growth slows.

Low-end smartphones will soon take market share from feature phones in Asia, with the market likely to witness heavy competition in the next few years. One panelist noted that 75% of the region's population will be living in cities by 2050. Despite rising affluence in many markets, partnerships will play a vital role in ensuring that new devices are affordable for consumers. Chinese brands can leverage a low-cost manufacturing and innovation environment to deliver this.

Technology vendors should cater to the needs of two distinct customer groups in Asia – the high-end smartphone market driven by youths and professionals and the low-end feature-phone segment dominated by migrant workers, the elderly and rural populations. As current data shows, the make-up of the device market varies substantially between countries:

Figure 11. Handset type by market for users aged 16-64 years

	Singapore	Korea	Hong Kong	Taiwan	China	Vietnam	Malaysia	Thailand	Japan	Philippines	Indonesia	India
Feature phone users	28%	33%	42%	49%	58%	70%	72%	73%	74%	75%	81%	90%
Smartphone users	72%	67%	58%	51%	42%	30%	28%	27%	26%	25%	19%	10%

Source: Nielsen, June 2012.

Collaboration creates the connected world

During the conference, platform providers, Internet ventures and application developers expressed an open attitude toward partnerships across the industry value chain to sustain mobile app economy. As one platform provider highlighted, they are looking for global partners to help create the future of smart devices. Cooperation models in local content, media and advertising, as well as marketing, are all being considered.

Handset makers are just as keen on an open mobile ecosystem. One industry adviser concluded that operators, device makers and network providers must work together to provide guidance to companies impacted by the connected world.

Over-the-top players are bullish about social media services having greater potential compared with other application categories in the foreseeable future. Mobile operators should move fast to capitalize on this and collaborate to support the monetization of social networks on the device. While mobile apps usage is high, there are many market scenarios where the most popular app categories can drive additional take-up:

Figure 12. Mobile app usage by country: percentage of people who use apps among all mobile-phone users

Country	Percentage
Singapore	65%
Korea	81%
Hong Kong	74%
Taiwan	66%
China	71%
Vietnam	31%
Malaysia	63%
Thailand	43%
Japan	81%
Philippines	22%
Indonesia	31%
India	13%

Source: Nielsen, June 2012.

Collaboration can underpin the app industry's development, improving the quality of offerings while generating direct and indirect revenue streams. This is particularly important given the fragmented nature of the app marketplace and the rise of competing smartphone operating systems.

Considering a new network landscape

The topic of network investment was in the spotlight during the 2012 Mobile Asia Expo. With ever-increasing network pressure cited as an imminent industry-wide challenge, telecom operators have acknowledged the pressing need to ramp up investment in the network to accommodate the growing volume of activity. One of the Chinese operators expects mobile data traffic to surge more than 150% this year.

That said, operators are also investing in networks as a way of differentiation. As one equipment manufacturer mentioned, it is critical for operators to "invest strategically in their network assets, allowing them to launch new services." Small cell deployments and Wi-Fi offload represent two key routes to coping with increased network loads, particularly in urban areas. Meanwhile, operators in South Korea and Australia are making plans to move toward LTE 2.0 (LTE-Advanced) soon, looking to integrate Rich Communications Services (RCS) and VoLTE-based services to provide differentiated service quality.

Network equipment underpins service innovation

Network equipment vendors are the likely beneficiaries of this boom in data traffic. They view networks as an essential bridge between the handheld devices and cloud content.

To enable new business models, the new infrastructure landscape must be open, trusted, scalable and programmable, in contrast to legacy environments characterized by inefficiencies and inadequate performance. More effective network evolution strategies can reduce the total cost of ownership, improve customer experience and more rapidly monetize service.

Reconsidering the threat posed by OTT services

CTOs of major Asian mobile operators shared the view that data explosion driven by OTT services is among their biggest concerns over their networks. One remark came from a Japanese telco that not just data volumes but usage patterns are creating issues, as witnessed in the operator's recent network outages.

With the increased penetration of smartphones, both telcos and vendors see the need for "smart network management" to help address capacity issues. They believe operators have to leverage the key assets in their networks including real-time subscriber activity, applications and network intelligence and build an architecture that harvests this intelligence to monetize the network.

Optimism on new network standards

Telecom operators and network vendors in Asia continue to support the TD-LTE standard in 4G. Seven commercial TD-LTE networks are now in operation worldwide, with many more in trials. More mobile operators are now supporting the standard because of its cost-effectiveness in spectrum costing, reported ease of deployment and delivery of best customer experience. One India operator commented that there is "no other wireless technology that can offer consumers an experience that even comes close to TD-LTE." This also stems from the fact that at the moment FDD spectrum is not available to Indian operators for 4G services. This is true for operators in China as well. Both the countries see the technology as an alternative to fixed broadband.

While the TD-LTE value chain is increasingly mature, all parties are waiting for multimode TD-LTE chipsets to help drive the availability of terminal devices. TD-LTE smartphones are expected to launch in scale in 2013. Currently, 43 devices support multiband frequencies for FDD LTE. New versions of chipsets are being developed, which are expected to support multiple bands of LTE on a single chipset, including FDD LTE and TD-LTE.

Prioritizing more advanced support systems

Operators can use latent advantages when it comes to managing the user experience and realizing tiered quality of service. To create a smart pipe that offsets disruptive threats to operators' service portfolios, operators also have to invest in the OSS/BSS systems to make their network assets more intelligent.

Additional capabilities in billing and analytics are essential. Cooperation is the keyword: mobile operators should work more closely with their suppliers to establish new business models.

Figure 13. The evolution of mobile infrastructure technologies and business models

Technology Model			
RF	3G		4G
Radio technology	Hardware		Software-defined
Backhaul	Circuit-switched		Packet-switched
Packet transport	IPv4		IPv6
Voice	Circuit-switched		IMS-based
Macrocells	Macrocells		Macro, Pico, Femto

Business Model			
Revenue	Voice-dominant		Data-dominant
Network operations	Internal		Outsourced
Service architecture	Network attached		Cloud-based
Service delivery	Walled garden		Hosted, OTT Partners

Source: Cisco.

Monetizing social media

Users of mobile social media have increased explosively in the last two years. However, for most operators this phenomenal growth has not translated into a commensurate revenue increase. One of the operators present highlighted that the launch of instant messaging service did not offset the drop in their SMS revenues. Many Asia-Pacific players face challenges such as:

‣ Lower purchasing power with higher price sensitivity

‣ Underdeveloped digital advertisements market

‣ Lower credit card penetration and other electronic payment mechanisms

It's critical for operators in Asia to think creatively when it comes to monetizing social media. Local constraints should be considered by developing new charging models. To begin with, mobile operators can leverage their local market knowledge, while also taking advantage of micro-billing capabilities.

Avoiding customer confusion

Social media services inherently have a global network effect, but building one's own social network will be a niche strategy for many. Operators need to challenge their own thinking regarding white-label strategies, given the potential to confuse end users with multiple in-country or cross-country brands.

Some localization – in terms of language, for example – is essential, but user interfaces and basic functions should remain consistent across countries. Customizing everything may not have a positive long-term outcome, so social media enablers should isolate areas where offerings can be made more special. Examples highlighted as ways to monetize social media included:

‣ Bring mobile branding capabilities from digital world to real world (from online world to offline world), such as physical stores, merchandizing, theme parks, etc.

‣ Charge fee to VIP/select customers for providing special feature functions

‣ Restaurant recommendation, such as digital advertisement, in group chatting when the users are talking about having dinner together

Industry insight: Mitigating risks in social media

Mobility not only compounds the opportunity but also the complexity of social media in Asia. Mobile-social can clearly accelerate word-of-mouth at scale as it also empowers a business's customers. Across borders, it can also magnify the risks inherent in social media, including reputational risk from culture to culture, the possibility of contravening local regulations and the risk of falling on deaf ears by being out of the local context.

Because the impact of social media is so new, most organizations are now only considering risk assessments to outline the pros and cons of social media. Developing a strategy should be top-of-mind for businesses today. Beyond solid business objectives and messaging, key components of that strategy should include analytical tools and procedures, company policy, employee training and routine social media audits.

Source: Ernst & Young analysis.

Contacts

Jonathan Dharmapalan	Global Telecommunications Leader jonathan.dharmapalan@ey.com
Pat Hyek	Global Technology Industry Leader pat.hyek@ey.com
David McGregor	Asia-Pacific Telecommunications Leader david.mcgregor@au.ey.com
Joe Tsang	Asia-Pacific Technology Industry Leader joe.tsang@cn.ey.com

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