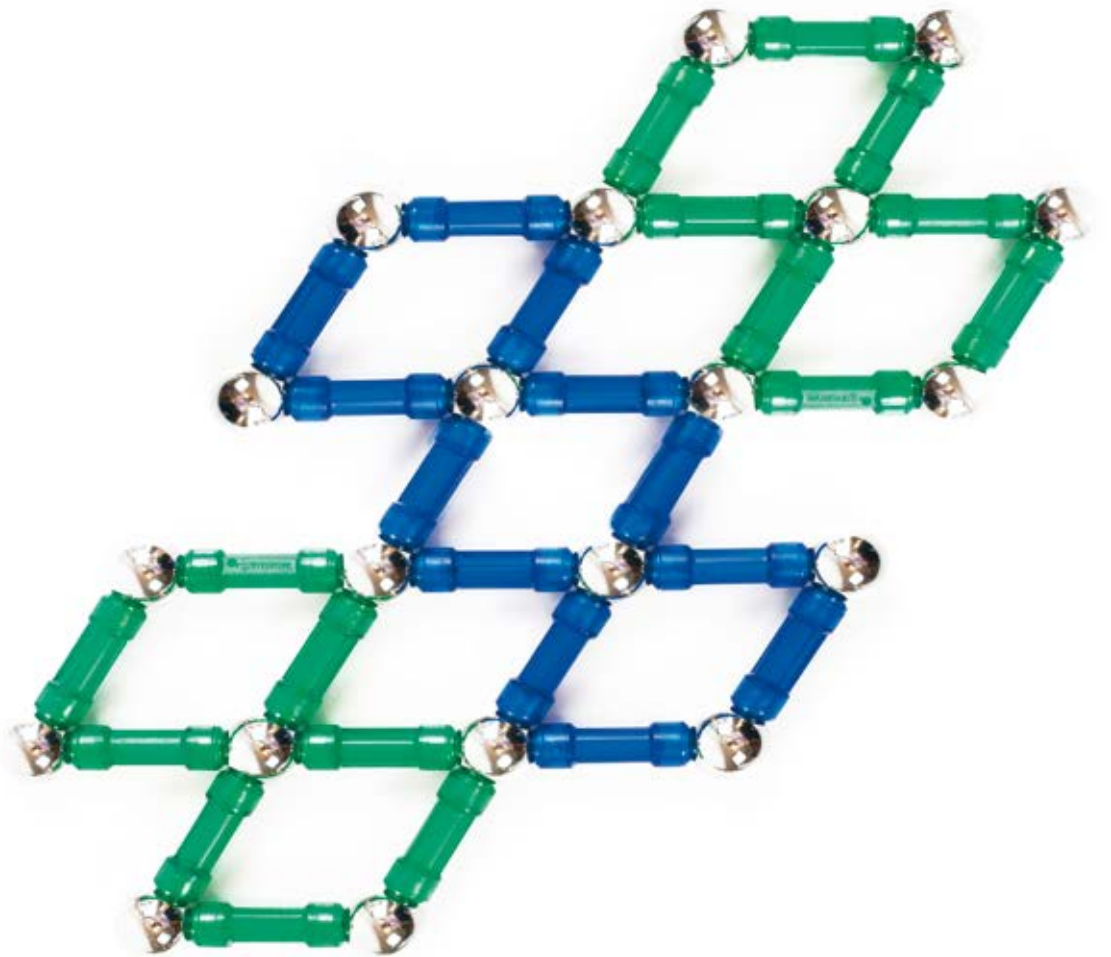




The state of the global
mobile consumer, 2013
Divergence deepens



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Foreword

Mobile's reach is greater than ever, and its continuing adoption is driving not just consumer behaviors but also business strategy. More and more companies are declaring that they are going mobile first. Yet what is mobile? It is an industry that has phenomenal momentum and scale, but it is also one that is increasingly diverse. There are multiple standards, with 4G coexisting with 3G and 2G. Smartphones now ship over a billion a year, but the smartphone category describes a broad range of capability, price and capability. Short messaging service (SMS) used to be the only way of exchanging text between devices, today there are a rising range of options for doing so.

The State of the Global Mobile Consumer report analyses four of the key sub-trends we see happening in the mobile industry:

- Device proliferation. Consumers are using more portable devices than ever, with a growing number of these being mobile Internet connected. With continued growth in both the number of users and the number of connected devices per user, traffic volumes are very likely to continue to grow rapidly (see *Multiple multipliers: drivers of data traffic*).
- The rise of the new generation of smartphone user. Baby Boomers are increasingly adopting smartphones, but they may not exploit their full breadth of capabilities. As the base of smartphones continues to expand into the older age groups, patterns of device usage are likely to stratify (see *Baby boomers become smartphone surfers*).
- LTE raises the importance of network sharing. Early LTE subscribers have generally been content with the speeds received. Strong customer satisfaction with LTE services should encourage others to take up LTE and this in turn should lead to rising data volumes. In order for the deployment and operation of dense LTE coverage to be sustainable, operators may need to revisit options for network sharing (see *LTE data surge raises the stakes for network-sharing*).
- The evolution of mobile messaging. Whereas ten years ago, two services represented essentially 100 percent of communication usage, today consumers make regular use of literally dozens of services, apps and content providers. The change is a milestone on the road toward a new carrier business model, focusing on networks and data (see *Messaging: reasons to be cheerful*).

We hope you find these set of insights from the Deloitte Global Mobile Consumer Survey useful and we welcome further conversations based on the full data sets.



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About the research

Data cited in this report are based on a 20-country online survey of 38,650 mobile phone users around the world. All research has been undertaken via online research. Fieldwork took place between May and July 2013.

The samples for Belgium, Finland, France, Germany, Japan, Netherlands, Portugal, Singapore, South Korea, Spain, United Kingdom, United States are nationally representative. All samples in these countries were 2,000+ except Finland (1,000), Portugal (607), UK (4,020).

In Argentina, Brazil, China, India, Indonesia, Mexico, Russia, Turkey, the online research approach used leads to a high concentration of urban professionals. These respondents are likely to be relatively high earners within their country. All samples in these countries were 2,000+ except Turkey (1,000).

The questions for this survey were written by Deloitte member firms. The multinational online research program was managed by Ipsos MORI.

The question set for this survey was standard across all respondents except where information about the local market was specifically requested. For example in the United States we asked additional questions about using personal devices for business related purposes.

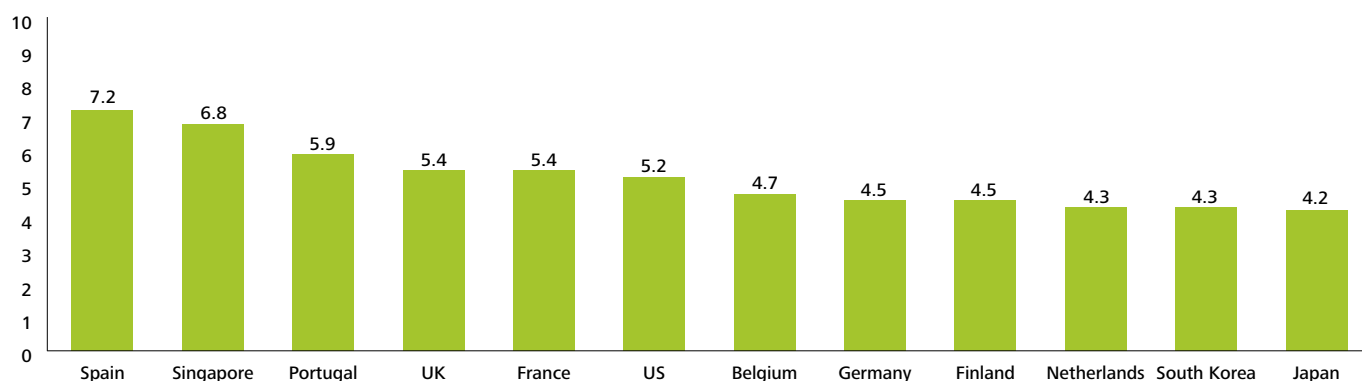
Questions were asked in a local official language in all countries and country specific examples were provided. Questions pertaining to spend were all asked in local currency. Currency ranges were tailored to local purchasing power where appropriate.

Multiple multipliers: drivers of data traffic

Consumers are using a variety of portable devices¹. The Global Mobile Consumer Survey (GMCS) found that consumers in developed markets and urban professionals in developing markets on average own or have access to between four to eight devices (Figures 1 and 2). A growing proportion of those devices are connected to a mobile network; especially smartphones and tablets and to some extent laptops. The GMCS shows that ownership of Internet-connected devices increased in all countries surveyed in 2012 and 2013 (Figures 3 and 4). By the end of 2013, more than 2 billion smartphones, 300 million tablets and one billion portable PCs are expected to be in use globally².

Figure 1. Average number of portable devices owned per respondent, by country (developed markets).
Question: Which devices do you own or have access to? How many?

Average number of devices



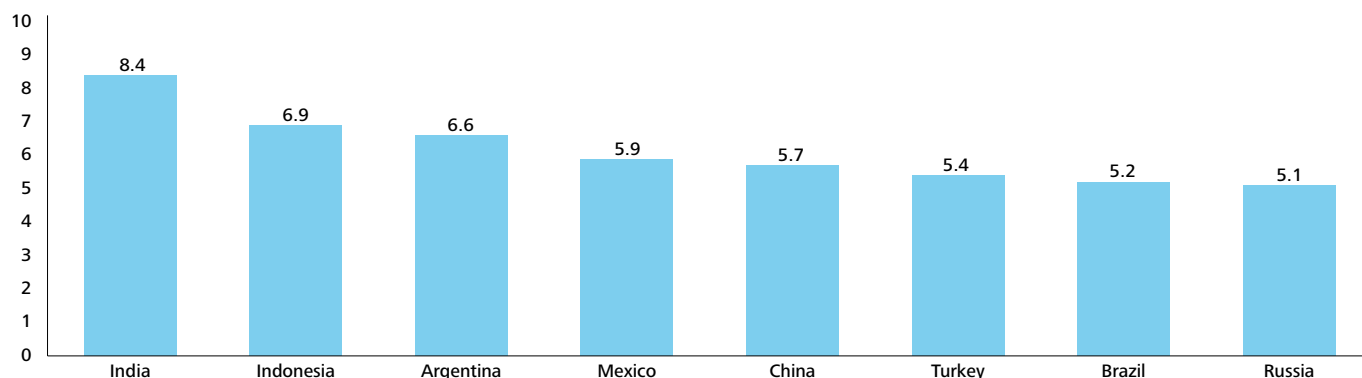
Source: Deloitte Global Mobile Consumer Survey, Developed markets, May-July 2013

Weighted base: Belgium 2000, Finland 1000, France 2000, Germany 2000, Japan 2000, Netherlands 2009, Portugal 607, Singapore 2000, South Korea 2011, Spain 2000, UK 4020, US 2000.

Note 1: Some respondents may own or have access to more than one of each device (e.g. 1.5 smartphones per respondent amongst those who own); some respondents are sharing devices.

Figure 2. Average number of portable devices owned per respondent, by country (developing markets).
Question: Which devices do you own or have access to? How many?

Average number of devices



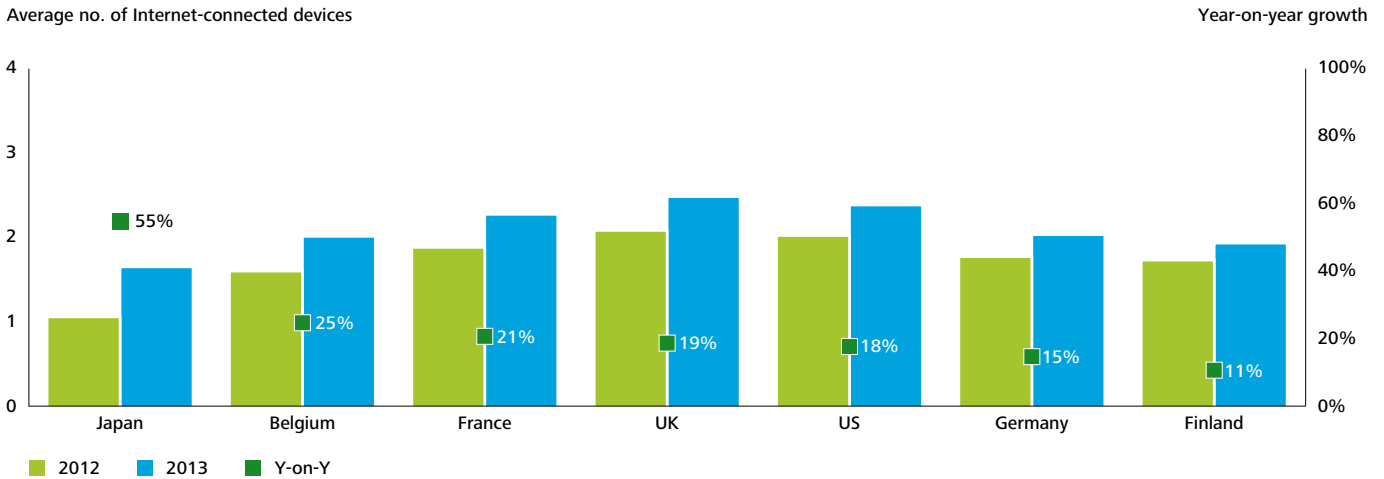
Source: Deloitte Global Mobile Consumer Survey, Developing markets, May-July 2013

Weighted base: Argentina 2000, Brazil 2000, China 2000, India 2000, Indonesia 2000, Mexico 2000, Russia 2000, Turkey 1000.

Note 1: Some respondents may own or have access to more than one of each device (e.g. 1.5 smartphones per respondent amongst those who own); some respondents are sharing devices.

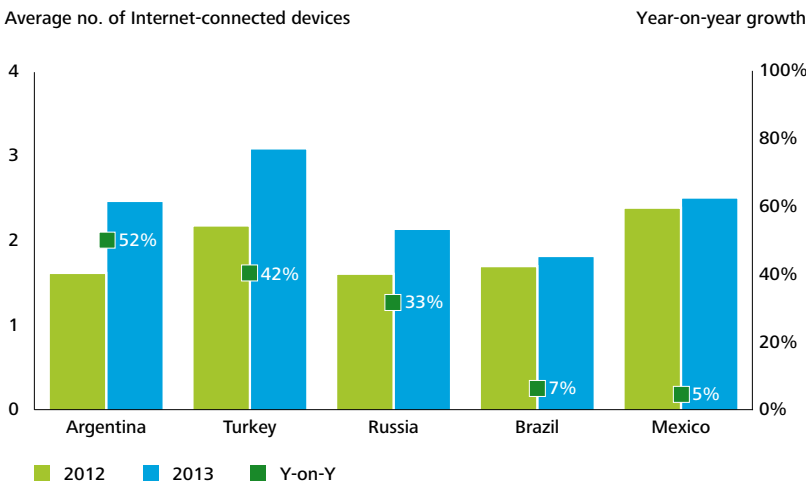
Note 2: The online research approach resulted in a higher concentration in developing markets of urban professionals with higher income than the national average.

Figure 3. Ownership of smartphones, tablets, laptops and netbooks (year-on-year comparison developed markets)



Source: Deloitte Global Mobile Consumer Survey, Developed markets, May-June 2012, May-July 2013
 Weighted base (2012/2013): Belgium (999/2000), Finland (1127/1000), France (2011/2000), Germany (2083/2000), Japan (2011/2000), UK (2060/4020),

Figure 4. Ownership of smartphones, tablets, laptops and netbooks (year-on-year comparison, developing markets)



Source: Deloitte Global Mobile Consumer Survey, Developing markets, May-June 2012, May-July 2013
 Weighted base (2012/2013): Argentina (2014/2000), Brazil (2032/2000), Mexico (2045/2000), Russia (2046/2000), Turkey (1012/1000).

With continued growth in the base of users and number of connected devices per user, traffic volumes are very likely to continue to expand rapidly, fueled by data-heavy services such as video, cloud storage and online games. Although Wi-Fi is likely to remain the dominant form of connectivity, measured both by minutes connected and bits sent and received, consumers are likely to use mobile at least some of the time to connect their devices. They are also more likely to upgrade to a larger data bundle. If that occurs, the challenge will be to manage service levels (speed, latency and reliability) on data networks and pressure on customer care departments.

Consumers prefer multi-functional devices over single-purpose equivalents

Consumers are buying more portable devices and setting aside single-purpose equivalents. With consumers across all regions ranking smartphones, laptops and tablets as their most likely next purchases (Figures 5 and 6), multi-purpose devices should continue to out-sell single function devices. Compact digital cameras, digital music players and feature phones still rank highly, but all three categories are in decline. While around one billion smartphones are expected to be sold during 2013, up from 750 million in 2012, digital camera sales are expected to fall from 150 million units in 2012 to 130 million in 2013³. Also, 2013 may be the year in which revenue from smartphones and tablets exceeds that from the remainder of the consumer electronics market⁴.

While sales of laptops are currently in decline, volume sales of smartphones and tablets are unlikely to diminish in the near future, even if penetration rates start to plateau⁵. Replacement cycles, advances in technology, declining prices and continuing (albeit modest) expansion in the user base should continue to drive sales, even in highly penetrated markets.

One trend likely to be prevalent among smartphone and tablet owners is multiple ownership of the same type of device. Across the countries surveyed, between 12 and 29 percent of smartphone users own or have access to more than one smartphone; similarly across tablet users, between eight and 29 percent own or have access to more than one tablet. A main driver for multi-smartphone and multi-tablet ownership is likely to be size. Of those that have a medium tablet, between 13 and 38 percent also own or have access to a large size tablet. Among large smartphone owners, between 43 and 76 percent also have access to a regular smartphone.

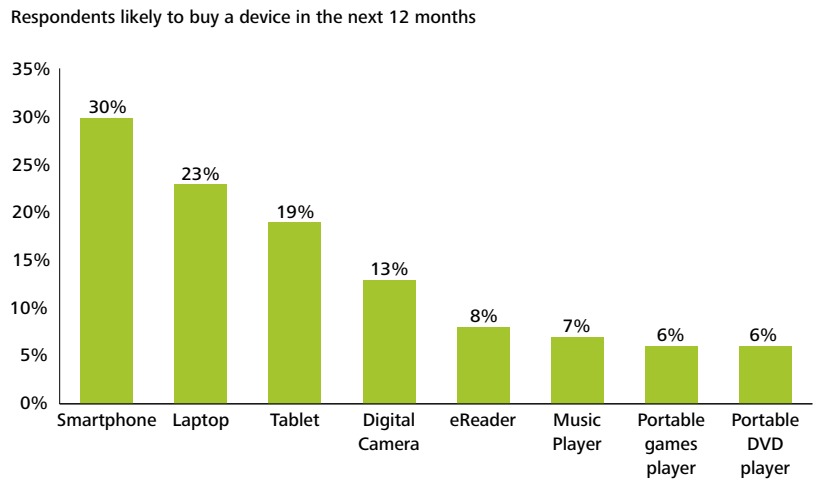
Tablet sales are likely to continue to grow, despite falling growth rates. However, mobile carriers should focus attention on connecting more customers. Although 20 percent of tablets are 3G/4G-enabled, less than half of those (ten percent) are ever connected via mobile SIM cards, and less than half of those remain connected in the longer term⁶.

Tablets are becoming smaller and more portable: the GMCS shows that almost half of tablets owned are medium-sized with screens smaller than nine inches⁷. Some 180 million tablets of all form factors are forecast to be sold by the end of 2013⁸. Increased portability represents a considerable opportunity for carriers, but only if they can better communicate the benefits of mobile connectivity.

Multi-functional devices are driving exponential growth in data usage

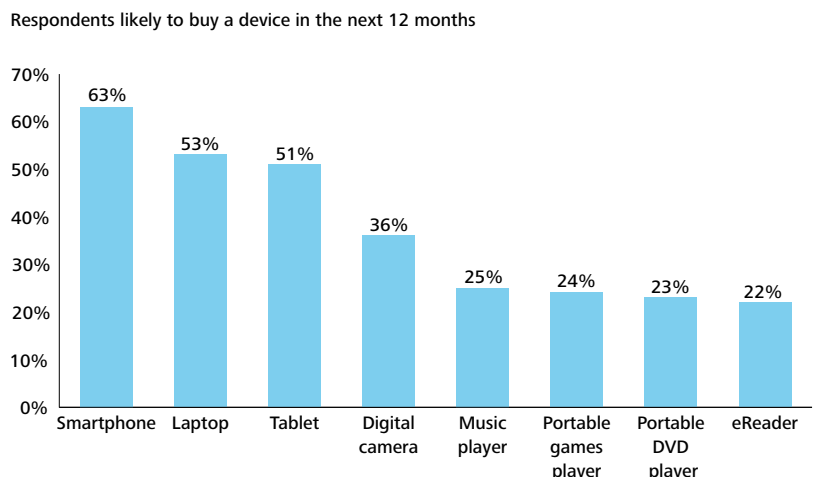
The use of multiple devices by individual consumers is contributing to a surge in data volumes, because most device usage is additive⁹. When tablets launched some analysts predicted they would undermine laptops and smartphones¹⁰. What has transpired has been increased usage of all connected devices. The GMCS shows that a minority of consumers say they use their smartphone less after purchasing a tablet¹¹. The impact of tablets on laptop usage is slightly heavier, with approximately 14 percent of respondents using their laptop less frequently since buying a tablet¹².

Figure 5. Portable devices consumers most want to purchase (developed markets).
Question: How likely are you to buy the following mobile devices in the next 12 months (Those that responded very likely and fairly likely)?



Source: Deloitte Global Mobile Consumer Survey, Developed markets, May-July 2013
Weighted base: Belgium 2000, Finland 1000, France 2000, Germany 2000, Japan 2000, Netherlands 2009, Portugal 607, Singapore 2000, South Korea 2011, Spain 2000, UK 4020, US 2000.
Note: Respondents that would like to buy a large smartphone in the next 12 months have been included in the overall smartphone number.

Figure 6. Portable devices consumers most want to purchase (developing markets).
Question: How likely are you to buy the following mobile devices in the next 12 months (Those that responded very likely and fairly likely)?



Source: Deloitte Global Mobile Consumer Survey, Developing markets, May-July 2013
Weighted base: Argentina 2000, Brazil 2000, China 2000, India 2000, Indonesia 2000, Mexico 2000, Russia 2000, Turkey 1000.
Note: Respondents that would like to buy a large smartphone in the next 12 months have been included in the overall smartphone number.

The more devices a consumer connects to the Internet, the higher the exposure to identity theft, fraud and malware. Identity management and security solutions are likely to represent a considerable opportunity for carriers.

In addition to higher numbers of portable devices, average data traffic per device is likely to increase. More photos and videos will be shared, more files stored online, applications will become richer and video streaming will become more ubiquitous. Every day, more than one billion YouTube videos are streamed on mobile devices¹³ and 400 million photos are shared on one Instant Messaging service¹⁴. Data traffic via mobile networks per smartphone monthly increased by over 30 percent between 2012 and 2013, while combined data traffic from smartphones, tablets and laptops doubled during 2012¹⁵. It is expected to almost double again in 2013, reaching 1.9 exabytes per month by the end of the year, compared with 1.1 exabytes per month at the end of 2012¹⁶. A further seven-fold increase in mobile data traffic is anticipated by 2018^{17,18}.

While Wi-Fi may remain the main connectivity source across portable devices, LTE is likely to augment traffic; the GMCS shows that with migration to LTE individuals are purchasing larger data bundles (see *LTE data surge raises the stakes for network-sharing*).

Connected devices create new opportunity for carriers

Consumers' rising preference for converged, connected devices implies a subtle but important shift in usage. When single-purpose, non-mobile devices (like digital cameras and MP3 music players) dominated, the personal computer was typically the hub for storage and synchronization – usually via a cable. Though the PC remains an important device, consumers are increasingly storing and synchronizing files in the cloud, so they can be accessed from any device. Analysts estimate that by the end of 2013, there will be some 600 million personal cloud storage subscriptions, and that number is expected to double by the end of 2017¹⁹. The shift from personal area network (PAN) to cloud area network (CAN) is likely to be increasingly important to mobile carriers, primarily due to increased usefulness of mobile devices, rather than moving files into the cloud, which occurs mainly over Wi-Fi.

Bottom line

The proliferation of devices is a net positive for carriers, and consumer migration toward converged devices will likely lead to increased data traffic. Carriers have the opportunity to encourage consumers to migrate some of that traffic to mobile networks with multi-SIM tariffs and larger data bundles.

Carriers may need to consider which networks are best placed from a technology and economic perspective to support each type of device and its corresponding usage. It may be that for some activities, such as streaming video, Wi-Fi is the most appropriate. Wi-Fi is integrated in more devices than LTE and is especially prevalent in larger devices such as tablets. More widespread use of Wi-Fi may give carriers the opportunity to manage the load on core mobile networks and gain greater visibility of traffic that may one day migrate there. The sooner the dynamics of that traffic are understood, the better decisions will likely be about network technology deployments²⁰.

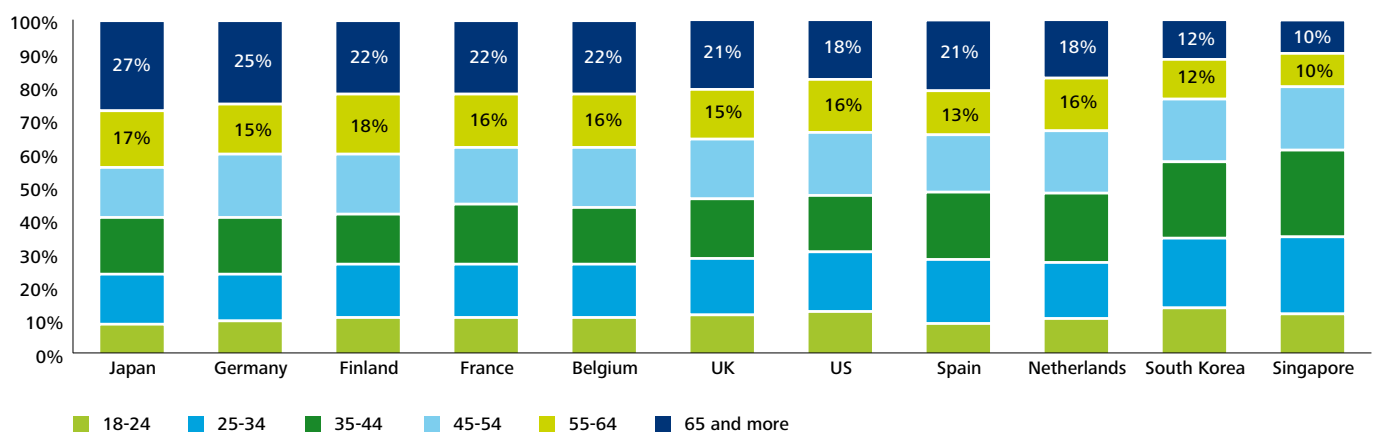
Tariff structures may wish to consider including overheads for data volumes and additional fees for value add customer support. Support is likely to be used more as consumers connect a broader suite of devices via mobile. It is also a key differentiator between carriers and Internet-based competitors.

Carriers may examine how they can position themselves as more than just broadband service providers. A limited number of carriers have achieved some success in the provision of cloud storage, security and other solutions²¹. Security is likely to be especially important. The more devices a consumer connects to the Internet, the higher the exposure to identity theft, fraud and malware. Identity management and security solutions are likely to represent a considerable opportunity for carriers²². In addition, solutions that unify the user experience across devices and types of connectivity may appeal to consumers.

Baby boomers become smartphone surfers

Across most of the developed world over a quarter of the population is more than 60 years old, with the average age rising steadily, and in some cases startlingly²³. Across developed countries in the Deloitte Global Mobile Consumer Survey (GMCS) over a third of the population aged 18+ is more than 55 years old (South Korea and Singapore excepted) (Figure 7). Globally, the over-60 age group is growing faster than the total population. By 2050 some 17 developed country populations are expected to have a median age of 50 or higher^{24,25}.

Figure 7. Age group distribution of respondents aged 18+ (developed markets)
Quotation: What is your age?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

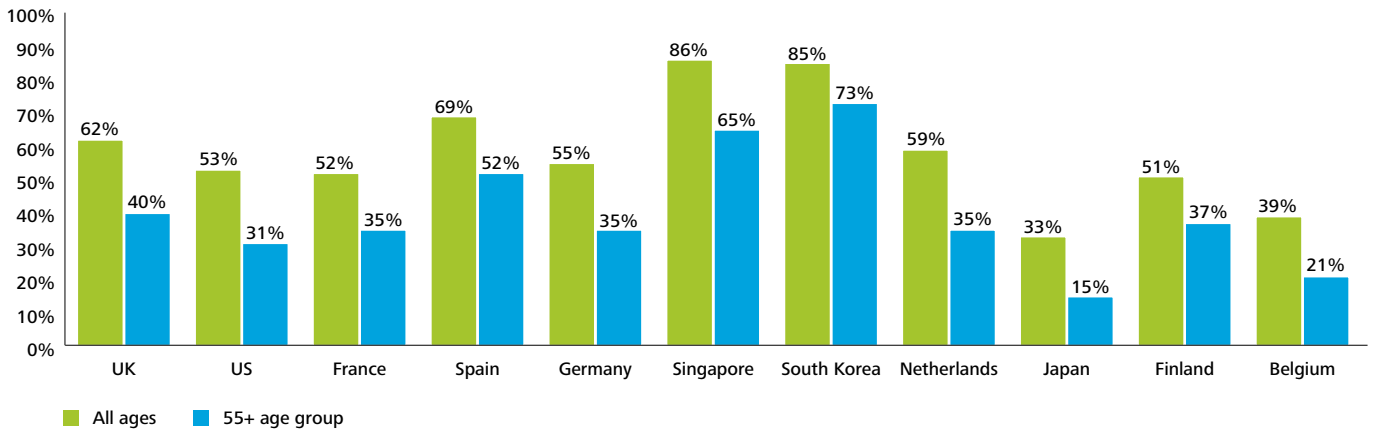
Weighted base: Respondents from all age groups Belgium 2000, Finland 1000, France 2000, Germany 2000, Japan 2000, Netherlands 2009, Singapore 2000, South Korea 2011, Spain 2000, UK 4020, US 2000

Historically, technology adoption among older consumers has been lower than average. But there are signs the age group is catching up; in some countries more than half access the Internet²⁶. In addition, penetration of tablets is only slightly below the average and adoption of smartphones is growing. With longer life expectancy,²⁷ older consumers are likely to continue working²⁸, accumulate an ever-greater share of global wealth²⁹ and be increasingly interested in technology. It is an opportune moment for mobile carriers to increase focus on this segment.

Smartphone adoption is growing fast among 55+ year olds

Smartphone penetration among the over-55s is considerably below the average in developed countries surveyed (Figure 8). That should come as little surprise; early adopters of technology are typically younger and more technology literate. But while smartphone penetration among consumers aged 18-34 is approaching saturation point (Figure 9), there is considerable room to grow in the 55+ age group. Consumers aged 55+ may buy their first smartphone because feature phones are not available, or (less than five percent) obtain a smartphone as a hand-me-down or gift (less than ten percent)^{30,31}, but the majority will make a conscious decision to buy a smartphone.

Figure 8. Smartphone penetration (comparison between all respondents and the over-55s in developed markets)
Question: Which of the following devices do you own or have access to (smartphones)?

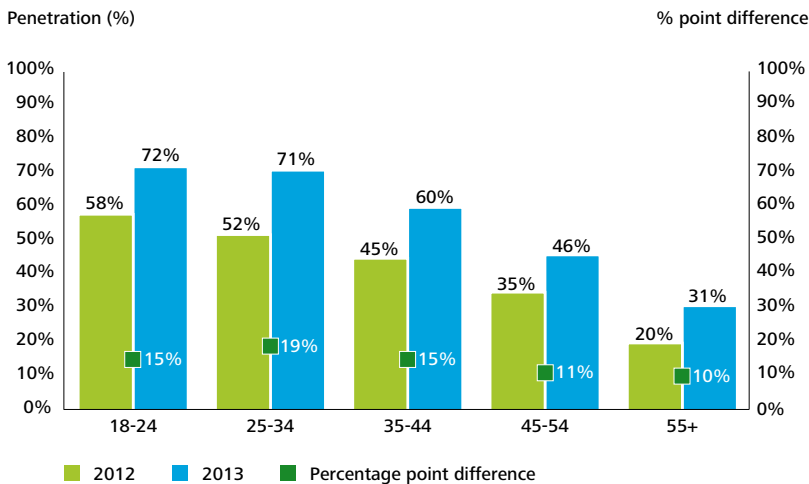


Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

Weighted base: All respondents (all ages/55+): Belgium (2000/742), Finland (1000/402), France (1000/754), Germany (2000/788), Japan (2000/890), Netherlands (2009/671), Singapore (2000/388), South Korea (2011/474), Spain (2000/685), UK (4020/1450), US (2000/677).

Note: Large smartphones have been included in this analysis.

Figure 9. Smartphone penetration growth by age group, year-on-year comparison (developed markets average)
Question: Which of the following devices do you own or have access to (smartphones)?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2012, May-July 2013

Weighted base: All respondents across developed markets (2012/2013): 12,313 21,638.

Note: The developed countries referenced in this analysis are those that participated in the study in both 2012 and 2013 (Belgium, France, Germany, Japan, UK, US).

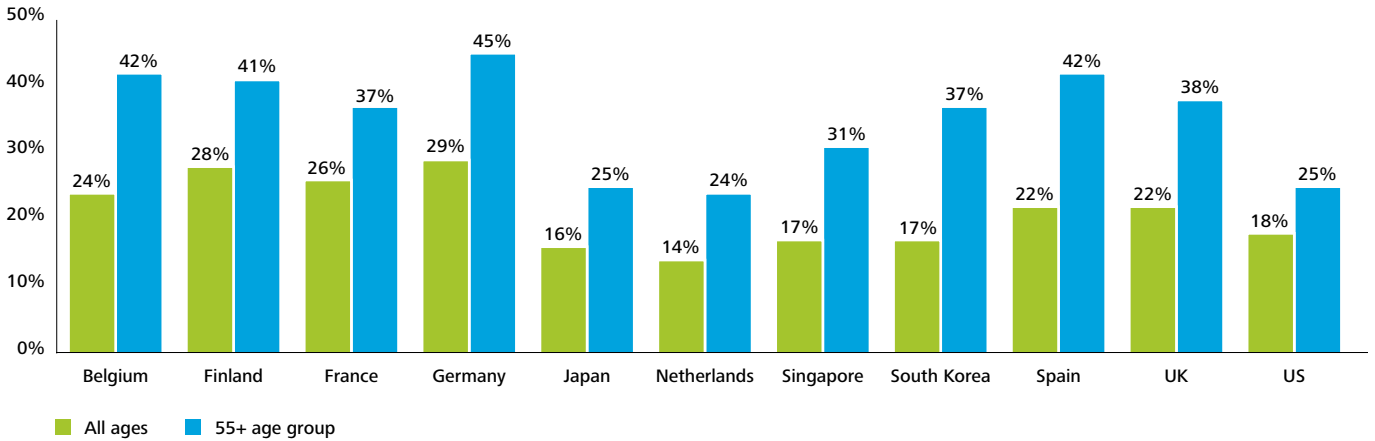
Device replacement behavior among over-55s will differ considerably to that of younger consumers. Older consumers tend to replace their devices less frequently. The average life of a smartphone among 18-24 year olds in UK is 14 months while for the over-55s group it is more than two years. These consumers also tend to adopt a 'wait and see' approach to purchasing; 53 percent of over-55s in UK like to buy devices that have a proven track record, while 42 percent of 18-24 year olds prefer the latest technology.

Baby boomers may not exploit the smartphone's full breadth of capabilities

As the base of smartphones continues to expand into older age groups, patterns of device usage are likely to stratify. Consumers buying their first smartphone in 2013 and beyond are unlikely to act like earlier adopters. For example, smartphone owners over the age of 55 may only occasionally connect to the Internet. The survey shows that between 24 and 45 percent of smartphone users in the 55+ age group do not use their device to connect to the Internet (Figure 10), a much higher-than-average number. One key inhibitor for Internet usage on smartphones may be difficulty in understanding data plans expressed in megabytes or gigabytes. Moreover, many consumers may be put off by articles in the press about bill shock³².

Figure 10. Smartphone owners that do not use their smartphone to connect to the Internet, (comparison between all respondents and the over-55s in developed markets)

Quotation: Which of the following devices do you use to connect to the Internet (smartphones)?



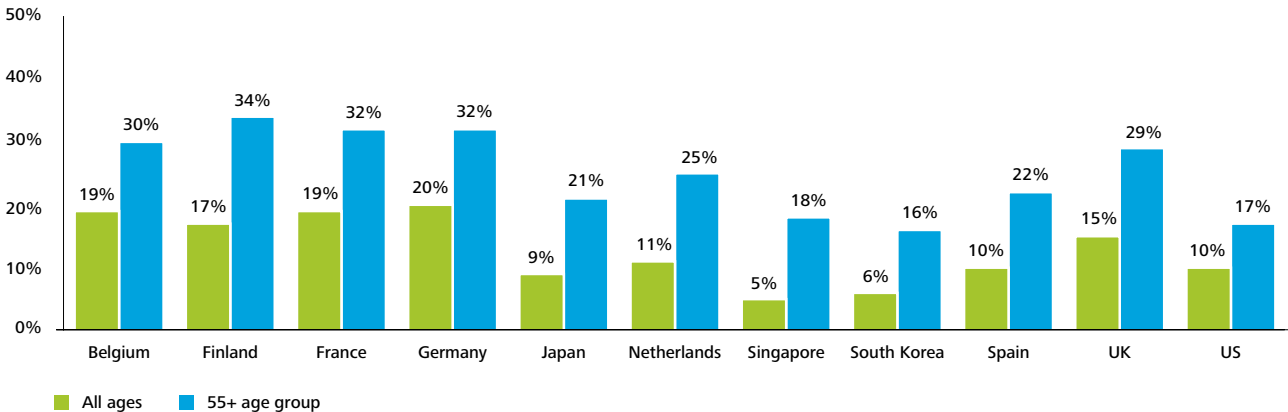
Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

Weighted base: All smartphone owners (all ages/55+): Belgium (775/159), Finland (515/151), France (1,048/265), Germany (1,107/275), Japan (655/136), Netherlands (1,193/237), Singapore (1,715/252), South Korea (1,709/345), Spain (1,370/355), UK (2,495/578), US (1,059/213).

It may be that some baby boomers download and try out apps or browse the Internet soon after they acquire their devices, but if the experience is poor they may not try it again. Some may delegate the app discovery and download process to friends or family. Survey results suggest that between 16 to 34 percent of respondents aged 55 or more in developed markets have never downloaded an app (Figure 11).

Figure 11. Respondents that have never downloaded an app (comparison between all respondents and the over 55s in developed markets)

Quotation: When did you last download an app on your smartphone?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

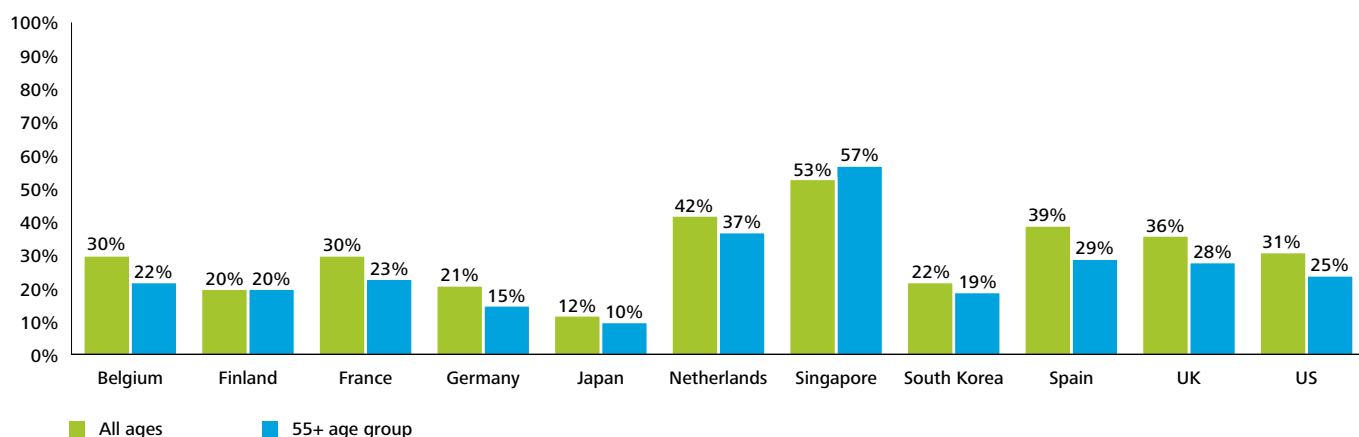
Weighted base: All smartphone owners (all ages/55+): Belgium (775/159), Finland (515/151), France (1,048/265), Germany (1,107/275), Japan (655/136), Netherlands (1,193/237), Singapore (1,715/252), South Korea (1,709/345), Spain (1,370/355), UK (2,495/578), US (1,059/213).

Over-55s typically don't buy games consoles or skateboards; perhaps smartphones and data services appeal to the same limited extent? Evidence from more closely related sectors suggests otherwise. Though over-55s lag the rest of the population in terms of PC access to the Internet, they are now catching up in many countries³³ and over-55s are the fastest growing demographic on social media sites³⁴.

Size matters for older consumers

While smartphone adoption for the over-55s is considerably lower than average, adoption of tablets is only slightly behind in most countries. This is true across most markets covered, and indeed in Singapore over-55s have adopted tablets more enthusiastically than younger consumers (Figure 12). It may be that the larger form factor of tablets is more appealing than the smaller screen on a smartphone.

Figure 12. Tablet penetration (comparison between all respondents and the over-55s in developed markets)
Question: Which of the following devices do you own or have access to (medium & large tablets)?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

Weighted base: All respondents (all ages/55+): Belgium (2000/742), Finland (1000/402), France (1000/754), Germany (2000/788), Japan (2000/890), Netherlands (2009/671), Singapore (2000/388), South Korea (2011/474), Spain (2000/685), UK (4020/1450), US (2000/677).

While smartphone adoption for the over-55s is considerably lower than average, adoption of tablets is only slightly behind in most countries. It may be that the larger form factor of tablets is more appealing than the smaller screen on a smartphone.

One other device that has been widely adopted by the 55+ demographic is the eReader, and penetration is higher than average³⁵. Reading books on a tablet is also most popular among the over-55s and research suggests that older consumers find reading easier on backlit electronic devices³⁶.

Educate and excite older consumers

Many mobile carriers have overlooked the importance of older demographics. Where mobile carriers have tried to engage, many have tended to focus on 'simplifying' mobile voice and text usage, with large button devices and carrier-supported messaging services. While there is doubtless a market for those, many older consumers are likely to appreciate a broad and diverse range of apps and services. Still, Internet searches for 'apps for older consumers' typically yield propositions relating to ill-health and infirmity; from blood pressure apps through digital magnifying glasses³⁷. There is even a seniors' smartphone that includes an app to automatically slow down the speech of an inbound caller so that it can be more easily understood³⁸.

A few mobile carriers are taking a more enlightened approach, focusing on cutting through app-store clutter and pre-loading smartphones and other devices with applications that bring content and communications to the fingertips³⁹. They also provide programs of education.

Handset manufacturers increasingly recognize the importance of the older demographic. One of the best-selling devices in smartphone history is embedded with an 'Easy mode', designed to aid the transition to a smartphone for first-time buyers⁴⁰.

Over-55s generally read more books⁴¹ and newspapers⁴², watch more television⁴³ and in some markets shop online more frequently⁴⁴. Smartphones and especially tablets can allow older consumers to do more of the same, and add functionality and ease of use, from catch-up television to video-calling and audio books.

Bottom line

Mobile carriers should approach older consumers with the same degree of creativity and dynamism that they apply to the youth market. The considerable success of eReaders and tablets in the over-55s demographic demonstrates that older consumers have no inherent fear of technology, but have preferences and tastes that mobile carriers have yet to fully reflect in their propositions. Mobile carriers should focus on bringing relevant apps and services to the 'surface' of smart devices so that they are obvious and accessible. Mobile carriers should consider identifying apps that are relevant to older consumers, and not just those that relate to health or similar.

Education will be key. Older consumers do not always have a high degree of fluency with icons, URLs and other digital-world paraphernalia. The more mobile carriers can help them navigate and control, the more likely they are to gain confidence and increase usage. Older consumers' heightened perception of risk in the digital world may make propositions relating to smartphone and tablet security, identity management and malware/virus protection especially appealing.

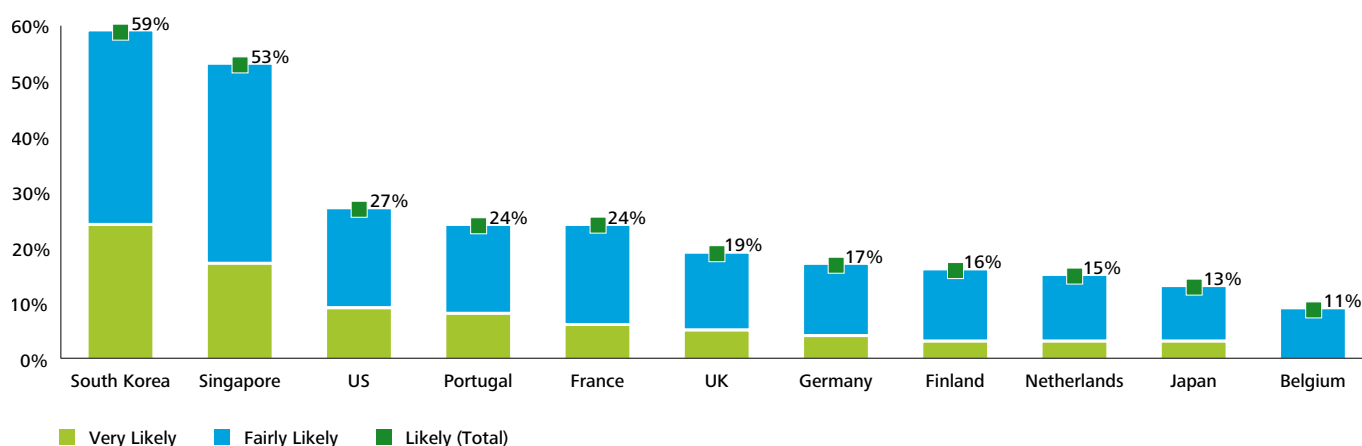
As wealth increasingly concentrates in older generations, mobile carriers should examine how they can drive revenues. Aside from offering more clarity on data consumption and encouraging greater usage, they may wish to examine family-related propositions; for example allowing older generations to gift airtime, data and perhaps even upgrade points to younger family members.

Though older consumers don't want to be constantly reminded of their mortality, mobile solutions can deliver significant value in the area of wellness. Mobile carriers should examine the growing range of products and product-related apps that pertain to health; few consumers expect the products to be subsidized and margins are likely to be attractive. Health and wellness monitoring device shipments are growing rapidly, though most sales are via online or specialist stores. Mobile carriers may consider selectively setting aside bespoke retail space as another means of growing revenues from older consumers.

LTE data surge raises the stakes for network-sharing

Following a slow start in most countries, prospects for LTE deployment and adoption look promising. At the end of October 2013 some 22 wireless carriers had launched LTE networks, with 18 service launches in the last two months and 38 more expected by year end^{45 46 47}. As much as 59 percent of respondents to the Deloitte Global Mobile Consumer Survey (GMCS) indicate a desire to upgrade to LTE in the next 12 months (Figures 13 and 14).

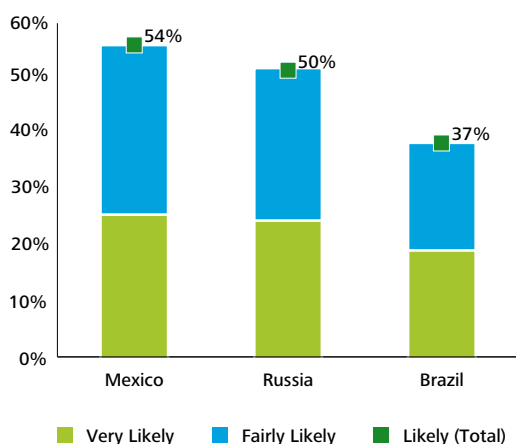
Figure 13. Respondents likely to subscribe to LTE in the next 12 months (developed countries where LTE is commercially available)
Question: How likely are you to subscribe to 4G/LTE in the next 12 months?



Source: Deloitte Global Mobile Consumer Survey, developed markets, May-July 2013

Weighted base: Respondents that do not currently subscribe to LTE: Belgium 1,799, Finland 866, France 1,749, Germany 1,780, Japan 1,474, Netherlands 1,816, Singapore 1,373, South Korea 1,281, UK 3,646, US 1,254.

Figure 14. Respondents likely to subscribe to LTE in the next 12 months (developing countries where LTE is commercially available)
Question: How likely are you to subscribe to 4G/LTE in the next 12 months?



Source: Deloitte Global Mobile Consumer Survey, Developing markets, May-July 2013

Weighted base: Respondents that do not currently subscribe to LTE: Brazil 1,613, Mexico 1,610, Russia 1,725.

Note: LTE had a very limited roll-out in India at the time when the research was conducted, therefore the Indian data has not been considered for this analysis.

Although LTE is more spectrally efficient than 3G, it carries a significant upfront cost for mobile carriers. Capital expenditure is estimated to be up to three times higher than for HSPA (High Speed Packet Access) in the first year of deployment⁴⁸. Additionally, LTE users consume larger-than-average quantities of data, putting a further strain on limited spectrum resources, and backhaul infrastructure. By the end of 2013, an estimated 150 million LTE subscribers, or three percent of the total global base, are expected to consume a fifth of mobile data volumes⁴⁹. By 2016 LTE is forecast to carry more data traffic than 3G globally⁵⁰. The imperative for carriers will be to build coverage and capacity as quickly and economically as possible. In order for the deployment and operation of dense LTE coverage to be sustainable, carriers may need to revisit options for network sharing.

Faster connectivity and larger bundles lead to higher data volumes

Early LTE subscribers have generally been content with the speeds received. Users in countries where LTE was launched earliest and where coverage is broadest perceive a considerable improvement in the speed of connectivity (Figure 15). Strong customer satisfaction should encourage others to take up LTE and this in turn should lead to rising data volumes. A study from September 2012 shows that in South Korea, LTE users consume almost 2.2GB of data per month, compared with less than 1GB for 3G users⁵¹. In Japan, LTE users consume 50 percent more data than 3G users, and in US users consume 1.3GB monthly on LTE, compared with 956MB on 3G⁵².

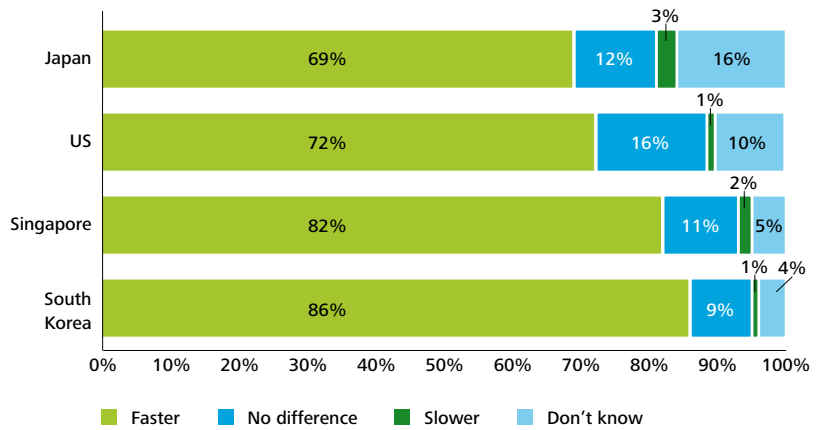
The larger data bundles typically sold to LTE subscribers are a major contributing factor to higher usage. In South Korea, for example, some 36 percent of 4G subscribers have a data allowance of 3GB or larger, compared with only nine percent for respondents using 3G. A similar trend is seen in the United States, Japan and Singapore⁵³.

As more wireless carriers launch LTE, competition will likely drive down prices, causing penetration and usage to grow further. Churn and subscriber upgrades will add to this effect, as will increased awareness. These trends bring the need for network sharing into sharper relief. Coping with traffic will likely require wireless carriers to build denser networks, with widespread use of small cells at street level. In some instances sharing may not be an option, as there are a limited number of locations where suitable backhaul connectivity is available.

Mobile broadband and the nomad

Growing LTE availability and coverage is likely to be accompanied by rising usage of complementary networks (principally Wi-Fi), and demand for all forms of connectivity is rising. Wi-Fi remains the primary means of connecting portable devices, including smartphones, across 16 of the 20 countries in the GMCS (Figures 16 and 17), and including markets where LTE has been available for more than a year.

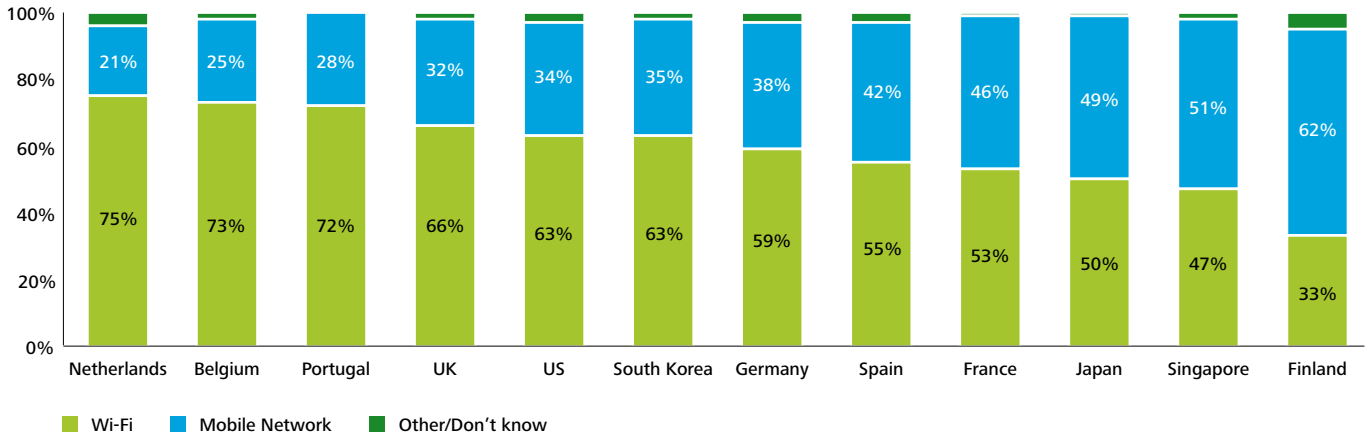
Figure 15. LTE speed perceptions of LTE subscribers
Question: How would you rate the 4G/LTE service you subscribe to compared to the speeds you were previously getting? (LTE users)



Source: Deloitte Global Mobile Consumer Survey All countries, May-July 2013
 Weighted base: Respondents who currently subscribe to an LTE network: South Korea 648, Japan 235, US 444, Singapore 542.

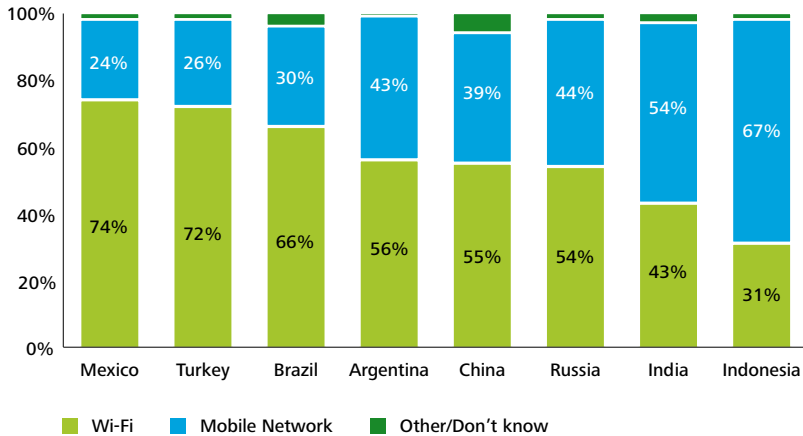
Growing LTE availability and coverage is likely to be accompanied by rising usage of complementary networks (principally Wi-Fi), and demand for all forms of connectivity is rising.

Figure 16. Connectivity used most often on smartphones (developed countries)
Question: Which of the following connectivity do you use most often on your smartphone?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013
 Weighted base: Respondents who use their smartphone to connect to the Internet: Belgium 576, Finland 325, France 724, Germany 723, Japan 516, Netherlands 975, Singapore 1,292, South Korea 1,297, Spain 1,006, UK 1,847, US 826.

Figure 17. Connectivity used most often on smartphones (developing countries)
Question: Which of the following connectivity do you use most often on your smartphone?



Source: Deloitte Global Mobile Consumer Survey, Developing countries, May-July 2013
 Weighted base: Respondents who use their smartphone to connect to the Internet: Argentina 654, Brazil 523, China 1,271, India 1,088, Indonesia 984, Mexico 790, Russia 617, Turkey 483.

In some cases, use of Wi-Fi is by default, and the majority of tablets, eReaders and portable PCs do not have integrated mobile connectivity. In other cases (especially where smartphones are concerned) consumers are making an active choice for Wi-Fi over mobile. Understanding why they do so, and how usage of Wi-Fi differs from mobile, is likely to be critical for the next phase of network planning and deployment. One reason may be the avoidance of bill-shock; in five of the 20 countries participating in the survey (UK, China, US, Turkey and Russia) "exceeding the mobile Internet allowance" was the number one reason for higher-than-expected phone bills among smartphone owners.

Coverage, capacity and backhaul connectivity

Increasingly nomadic usage patterns suggest that carriers will need to balance macro and micro cell deployment, with small format cells better able to service high-speed connectivity in dense urban areas and buildings⁵⁴. At the end of 2012, there were 5.93 million macro cells, complemented by over 6 million small (micro, pico, femto) cell⁵⁵. Carriers are expected to focus particular attention on smaller cells, with an additional 1.5 million forecast for deployment in 2014, reaching over 2 million by 2016⁵⁶. The more carriers rely on smaller cells, the more complex supporting backhaul networks will become.

There are three levels on which network sharing typically takes place:

- passive: masts, buildings, power generators and batteries, air conditioning and site security;
- active: antennae, switches, transceivers, and spectrum; and
- backhaul: fiber, copper and microwave backhaul connectivity.

The primary advantage of network sharing is financial. Wireless carriers can save up to 30 percent of cost per cell by joining forces to build mobile networks⁵⁷. In addition, sharing typically reduces network operational expenditure by around 15 percent, as a result of shared power and light, security and maintenance⁵⁸. It has been estimated that the European mobile industry could save between €20 billion (\$27 billion) and €40 billion (\$54 billion) per annum over the next five years simply by pooling network assets. That translates into annual savings of up to €2 billion (\$2.7 billion) for larger carriers⁵⁹.

Sharing can also deliver incremental coverage. A macro cell in a less densely populated area may be difficult for a single operator to justify, while a shared cell in the same location, benefitting from multiple operators' traffic, may be sustainable. Carriers that share are more likely to be able to deploy sustainable LTE coverage in rural areas, where mobile broadband penetration is presently low.

Bottom line

Wireless carriers need to consider a new strategic approach in which network sharing becomes an accepted norm. Given 2G network switch-off and decommissioning is not due to start in earnest for several years, carriers will soon be operating large 2G, 3G and 4G networks in parallel. The cost is likely to limit profitability unless sharing is adopted. LTE coverage can still be a differentiator; carriers do not need to share all their sites and infrastructure and can selectively deploy in areas where competitive advantage can be gained.

Network sharing could also lead to performance improvements across LTE networks. Above and beyond the perennial issue of spectrum availability,⁶⁰ a key challenge in the provision of high-speed mobile broadband, especially in the context of small cell architectures, is backhaul⁶¹. For LTE networks to perform optimally and deliver the highest data throughput to end users, they typically need to be connected to fibre for backhaul. The cost of deploying fibre is high and neither carriers nor backhaul service providers are keen to roll out fibre to less heavily trafficked cells. The more carriers share their networks, the more viable it becomes for fibre to be deployed, and the more likely that carriers will achieve a cost-per-bit level that improves LTE's profitability⁶².

In planning networks, operators should examine usage and traffic patterns beyond their own assets. A large proportion of data traffic is carried by ad-hoc Wi-Fi networks and that traffic is mostly invisible to mobile carriers. Understanding the shape and dynamics of total wireless/mobile data usage will likely be critical to the process of planning and deploying optimal coverage and capacity.

Wireless carriers need to understand whether consumers' preference for Wi-Fi is because it is perceived to be faster, or is related to lower prices and increased availability of hotspots. Moreover, carriers need to understand if Wi-Fi is being used because of concern over mobile data bundle overruns. A more detailed understanding of these issues will help carriers position and price LTE.

In many developing markets, the picture will likely be somewhat different. With little fixed infrastructure in place, carriers have historically relied more heavily on microwave systems for backhaul. Though fibre networks are being deployed, many are basic and of limited reach. Carriers, where permitted by their licenses, may have to build their own fibre backhaul networks, a scenario under which sharing will likely be especially desirable. On the plus side, in the absence of fixed infrastructure, mobile broadband will be the only broadband, meaning higher volumes and revenues are more likely.

Messaging: reasons to be cheerful

Early in 2013, a tipping point occurred. For the first time, the volume of messages carried by instant messaging (IM) platforms exceeded the number of text messages on mobile networks, perhaps marking the point at which the carrier community lost control of one of its core revenue streams⁶³.

An alternative view, however, is that the change is a milestone on the road toward a new carrier business model, focusing on networks and data. In this scenario the aim is to generate alternative income streams, for example by providing application programming interfaces (APIs) to third party developers.

Structured uniformity provides a platform for third party innovation

The mobile industry thrives on uniformity. It excels at delivering homogeneous networks with standard services. Generally today, any mobile phone subscriber can call and message any other subscriber, and can travel to almost any other country and make calls and send texts.

Historically, this uniformity was one of the mobile industry's key strengths, allowing the GSM (Global System for Mobile Communications) standard to propagate globally in a short period. However, more recently it has become a weakness. When it comes to innovating new services, the scale and complexity of the global mobile industry means that decision-making is often slow, with the standards underpinning the industry acting as a straightjacket. Though some mobile carriers have delivered innovative services in isolation, they have struggled as a group to cooperate in the development and deployment of new services, especially for data.

For third parties, particularly app developers, the situation has been different. Mobile carriers' uniform and powerful network infrastructure, when complemented by smartphones, tablets and the like, has provided the perfect platform for thousands of third party innovators. The 'over-the-top' (OTT) phenomenon has had a transformative impact on the industry, especially in the context of messaging.

Analysis of IM's impact has been one-sided

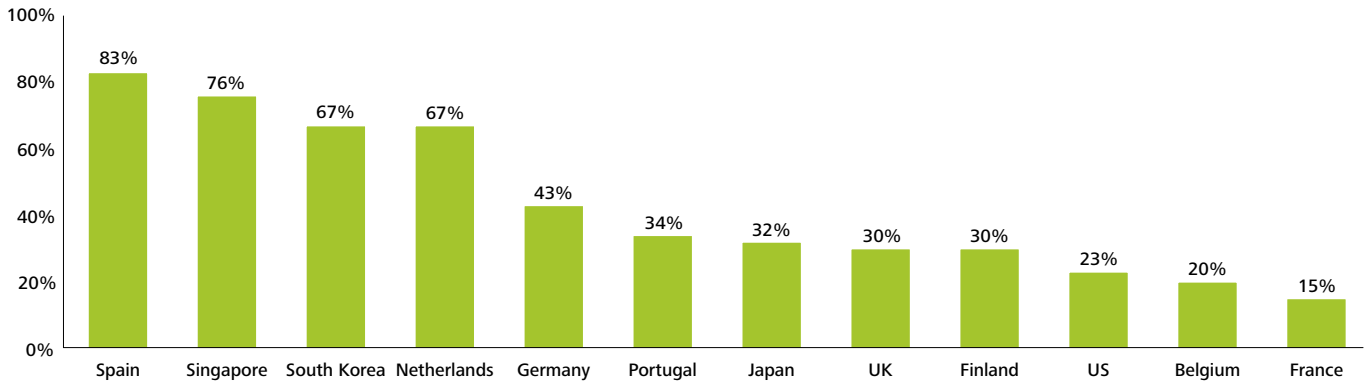
It is widely reported that OTT instant messaging has had a negative impact on mobile carriers' SMS (Short Message Service) revenues. It has been estimated that mobile carriers will lose \$32 billion of SMS revenues in 2013, or about a quarter of the total, because of IM⁶⁴. Though notionally true, this is only part of the story. The sum of \$32 billion is less than two percent of the wireless industry's annual income⁶⁵, and while its loss is painful, it is not catastrophic. SMS has been – and at an absolute level remains – a significant revenue contributor and an even greater margin contributor for the mobile industry. In 2013, SMS is expected to generate in excess of \$130 billion⁶⁶, at an estimated margin of more than 90 percent⁶⁷. Global SMS revenues are expected to continue growing until at least 2015, reaching a peak of \$159 billion⁶⁸. By any standards, text messaging's revenues and margins are exceptional (but also, on that basis, unlikely to be sustained).

Similarly, IM's universal popularity may have been overstated. Certainly, the GMCS confirms that the service has established itself as a popular complement to text messaging: in Spain, more than 80 percent of respondents use one or more IM services (Figures 18 and 19). However, in half the markets covered, penetration of IM has yet to reach 50 percent, and penetration in the US was flat between 2012 and 2013.

It has been estimated that mobile carriers will lose \$32 billion of SMS revenues in 2013, or about a quarter of the total, because of IM.

Figure 18. Smartphone owners using IM on a weekly basis (developed markets)

Question: In the last 7 days, in which, if any, of the following ways did you use your smartphone to communicate with others?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

Weighted base: Smartphone owners: Belgium (690), Finland (467), France (969), Germany (997), Japan (603), Netherlands (1,136), Singapore (1,632), South Korea (1,587), Spain (1,242), UK (2,382), US (999).

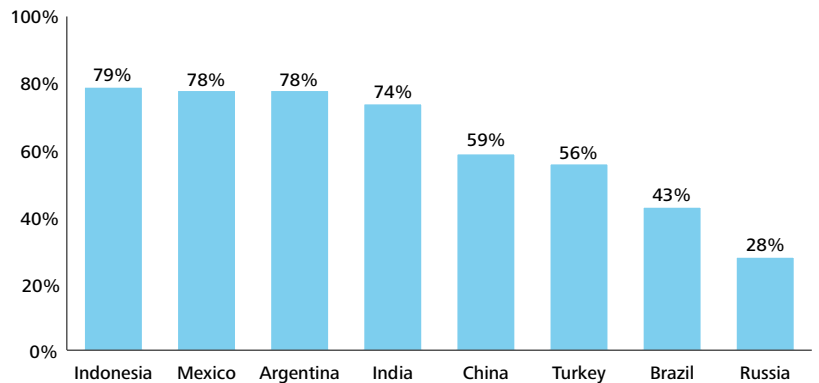
IM providers' large subscriber bases have prompted some to interpret the service as a runaway success, but the reality is more subtle. In developed markets, there is a strong inverse correlation between IM penetration and SMS usage. In markets where SMS has historically been little used, IM usage is high, and vice versa. In Spain, for example, a typical subscriber sends just seven SMSs per month but IM penetration and usage is high⁶⁹. Conversely in France, where IM penetration is just 15 percent, an average subscriber sends more than 250 texts per month⁷⁰. In other countries, there may not be a clear correlation between the two; for example, SMS volumes continue to grow in Germany, where IM penetration is 43 percent⁷¹. This suggests that SMS and IM will likely coexist, with the balance of penetration and usage varying by country.

In emerging markets, there is a less clear inverse correlation, most likely because smartphone penetration remains comparatively low.

There is also considerable variation in IM usage by demographic. Younger subscribers are much more likely to make extensive use of IM apps and services, while older consumers have yet to widely adopt (Figures 20 and 21).

Figure 19. Smartphone owners using IM on a weekly basis (developing markets)

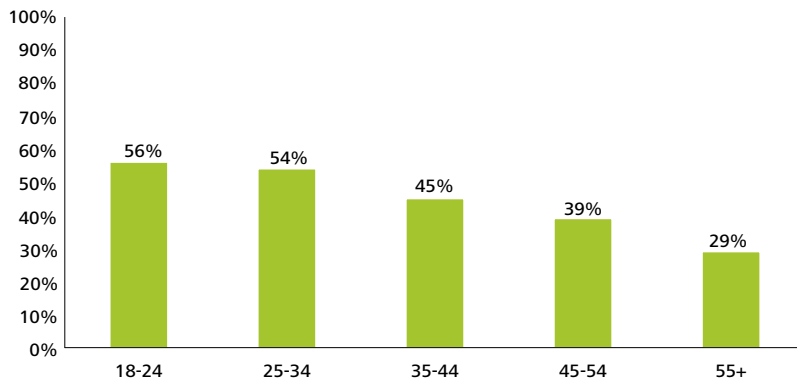
Question: In the last 7 days, in which, if any, of the following ways did you use your smartphone to communicate with others?



Source: Deloitte Global Mobile Consumer Survey, Developing countries, May-July 2013

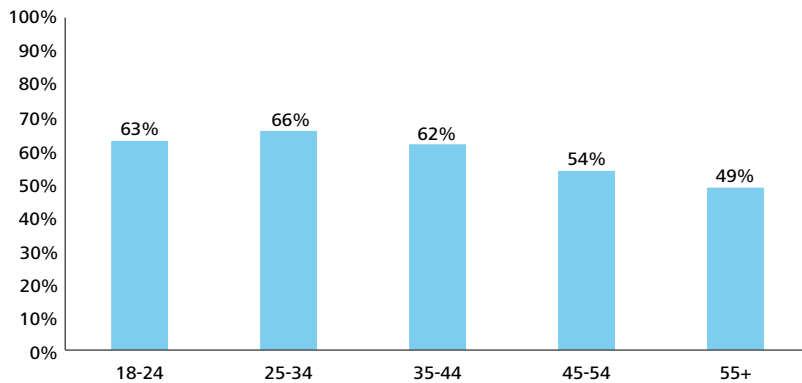
Weighted base: Smartphone owners: Indonesia (1,315), Mexico (865), Argentina (733), India (1,305), China (1,550), Turkey (605), Brazil (577), Russia (641).

Figure 20. Weekly IM service usage by age group (developed markets)
Question: In the last 7 days, in which, if any, of the following ways did you use your smartphone to communicate with others?



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013
 Weighted base: All respondents who use smartphones: Belgium (690), Finland (467), France (969), Germany (997), Japan (603), Netherlands (1,136), Singapore (1,632), South Korea (1,587), Spain (1,242), UK (2,382), US (999).

Figure 21. Weekly IM service usage by age group (developing markets)
Question: In the last 7 days, in which, if any, of the following ways did you use your smartphone to communicate with others?



Source: Deloitte Global Mobile Consumer Survey, Developing countries, May-July 2013
 Weighted base: All respondents who use smartphones: Argentina 733, Brazil 577, China 1,550, Indonesia 1315, India 1305, Mexico 865, Russia 641, Turkey 605.

SMS will resist the test of time

It is likely that SMS will continue to generate substantial revenues for years, though the \$15.3 million per hour that SMS is expected to earn in 2013 may be approaching the peak. As the only messaging service that works on the entire installed base of devices, including simple feature phones, and the only service that will work in the absence of data connectivity, there will remain many circumstances in which SMS is the only option.

Research suggests that by 2015, global SMS volumes will have increased to 8.3 trillion messages per annum, compared with 8.16 trillion in 2013⁷². Declining SMS revenues and margins may therefore have as much to do with carrier bundling of SMS as with IM usage. Mobile carriers must explore new means of monetizing all forms of messaging, as SMS is incorporated in a broader portfolio of solutions. Even when volume growth ceases, SMS will likely remain a highly attractive cash generator.

IM services may face more critical challenges. Though IM apps have sold rapidly, increasingly intense competition between IM providers is likely to undermine profitability. With providers relying on income from app purchases or one-off annual fees, average revenue per customer is low. Japanese messaging firm LINE earns approximately 90 cents per customer per month, on the basis of ad income and in-app purchases⁷³. WhatsApp generates around a dollar a year per subscriber⁷⁴. As more services have become available and competition between providers has risen, many providers have relied less on the viral spread of apps and more on expensive television advertising campaigns⁷⁵.

The positive impact of IM

The rising popularity of IM services and other OTT apps has likely been a material contributor to mobile carriers' success in the broadband and data market. In some markets that the popularity of IM services may be motivating consumers to upgrade to smartphones and data tariffs⁷⁶. All IM services require an Internet connection.

IM apps score high in terms of consumers' preference for data plans that allow unlimited access to services, instead of metered data plans. When asked about the type of services that they would like to have access to, IM ranked as number one in: Argentina, China, Germany, Mexico, Netherlands, Singapore, South Korea and Spain, number two in Japan and number three in Brazil, India, Indonesia and Turkey (Figure 22). Other types of services such as social networking, email and video have ranked higher than IM services in the other countries.

The popularity of IM services may be motivating consumers to upgrade to smartphones and data tariffs.

Figure 22. IM services preferred for service-based packaging

Question: Which, if any, of the following services/applications would you like to have unlimited access to for a fixed fee?

	Argentina	Brazil	China	Germany	India	Indonesia	Japan	Mexico	Netherlands	Singapore	South Korea	Spain
Rank of IM	#1	#3	#1	#1	#3	#3	#2	#1	#1	#1	#1	#1
Preferred IM app	WhatsApp	WhatsApp	QQ	WhatsApp	WhatsApp	BlackBerry Messenger	LINE	WhatsApp	WhatsApp	WhatsApp	Kakao Talk	WhatsApp
Percentage of people that would choose an IM app	69%	35%	72%	45%	49%	49%	36%	63%	73%	60%	59%	77%

Source: Deloitte Global Mobile Consumer Survey, All countries, May-July 2013

Weighted base: All smartphone users who would like unlimited access to services they prefer. The analysis refers to those countries where an IM service was ranked in top three preferred: Argentina 216, Brazil 120, China 326, Germany 132 India 344, Indonesia 412, Japan 61, Mexico 176, Netherlands 201, Singapore 401, South Korea 165, Spain 364.

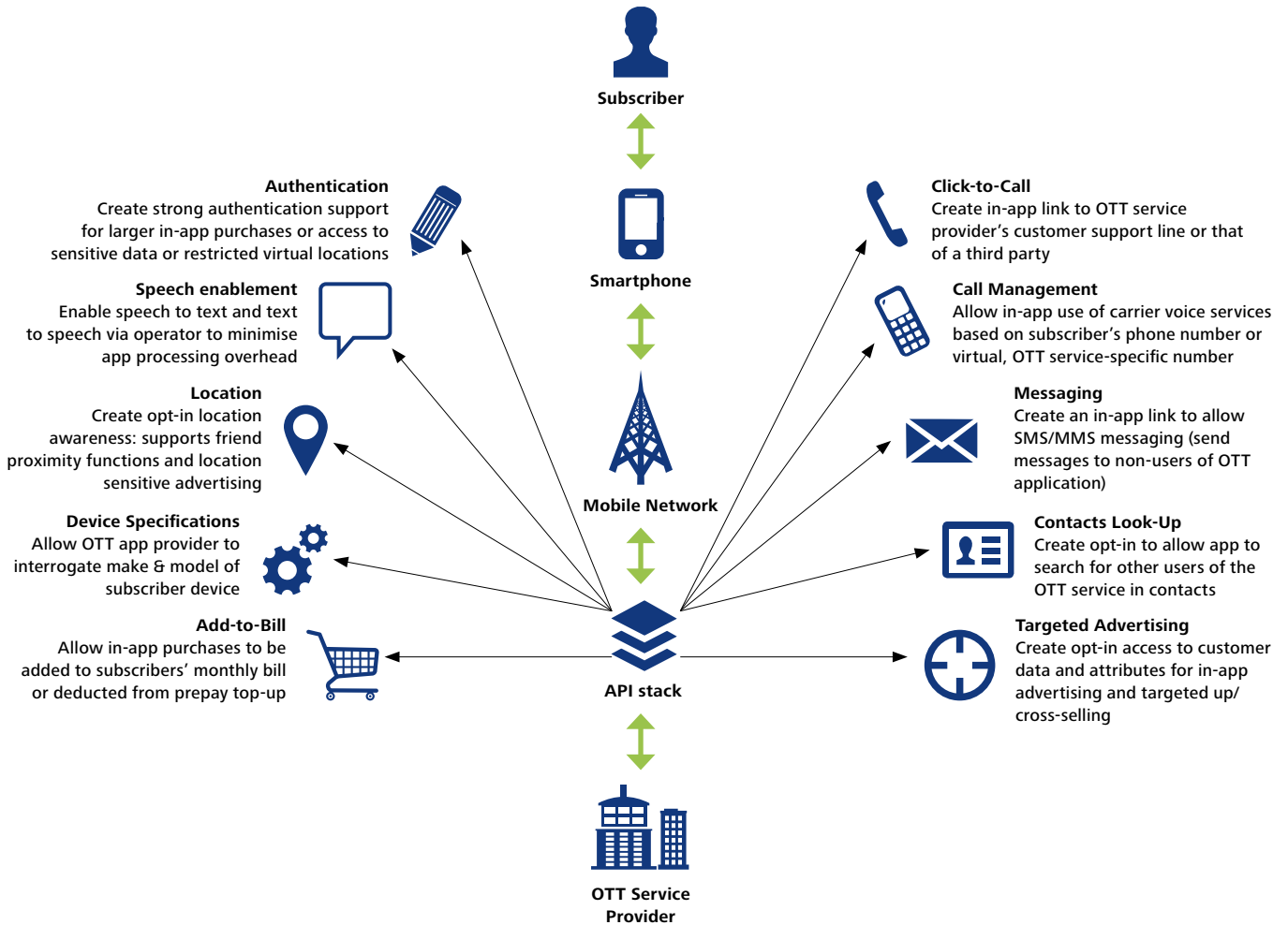
The list of activities that consumers undertake with their mobile devices is long and diverse⁷⁷, and OTT apps like IM are likely to have been a key driver of mobile data and smartphone uptake. Today, Internet access via a mobile browser represents less than 12 percent of total smartphone usage⁷⁸.

Bottom line

Mobile carriers must reassess their analysis of and relationship with OTT. Specifically, they should consider how to better monetize the growing popularity of IM, as part of a broad and growing suite of messaging solutions.

Some mobile carriers have begun exposing network and data assets to OTT players via APIs (Figure 23)⁷⁹. Carrier APIs allow third parties to integrate their applications and services more closely with the mobile device, SIM card and elements of the network. Functionality ranges from in-app advertising to 'add-to-bill' processing, which allows the value of in-app purchases such as emoticons, stickers and games to be added to monthly phone bills. Given that IM services tend to generate low consumer loyalty, mobile carriers can arguably help improve the dynamics of OTT IM, while at the same time positioning themselves to capture a share of IM revenues.

Figure 23. Examples of carrier APIs



Source: Deloitte research using various publicly available sources⁸⁰

Another approach may be to create tariffs that offer all-you-can-eat monthly IM. The survey suggests there is a significant minority of consumers in most markets who would prefer an 'all-you-can-app' tariff that would allow them unlimited use of IM and other OTT services. Mobile carriers should seek to understand total usage. A proportion of IM app use, including supplementary voice and video calling, takes place over Wi-Fi networks and is therefore invisible. Over time, IM applications are likely to become richer and more data-intensive. Mobile carriers should understand the trajectory of IM services and ensure that tariffs are set accordingly.

Still, mobile carriers must continue to focus time and resources on text messaging. Text will remain an important service for many, and for a significant proportion of customers text messaging may remain the only messaging service. Even fervent IM users may still be relatively heavy users of text messaging. Though SMS profitability is likely to decline over the longer term, mobile carriers should seek to mitigate that decline where possible. Per message charges may be diluted by more aggressive bundling, but since SMS will likely remain the only service that will tolerate a complete lack of data connectivity, it will nearly always be worth paying for. Additionally, mobile carriers should seek to better understand what areas of IM are most popular (group texting may be one) and explore how to replicate those functionalities on SMS.

Endnotes

1. The portable devices category includes: smartphones, phablets, mobile phones, large and medium tablets, ebooks, laptops, netbooks, MP3/MP4 players, portable gaming consoles, DVD players, smartwatches.
2. For the installed base of smartphones, see: Deloitte TMT Prediction 2013: Smartphones ship a billion but usage becomes simpler, Deloitte, January 2013. See: www.deloitte.com/predictions2013 ; For the installed base of tablets, see: Tablet "Hyper-Growth" Will Push Global Installed Base Past 905M By 2017, Up From 327M In 2013, TechCrunch, 6 August 2013. See: <http://techcrunch.com/2013/08/06/forrester-tablets/>; For the installed base of portable PCs, see: Global installed base of mobile PC from 2005 to 2015, Statista. See: <http://www.statista.com/statistics/203617/global-installed-base-of-mobile-pcs/>
3. See endnotes (i) and (ii). <http://online.wsj.com/news/articles/SB10001424127887324251504578580263719432252>
4. Source: Combined Smartphone and Tablet Factory Revenue to Exceed Entire Consumer Electronics Market This Year, HIS, 25 October 2013. See: <http://press.ihs.com/press-release/design-supply-chain-media/combined-smartphone-and-tablet-factory-revenue-exceed-entire>
5. Gartner Says Worldwide PC Shipments in the Third Quarter of 2013 Declined 8.6 Percent, Gartner, 9 October 2013. See: <http://www.gartner.com/newsroom/id/2604616>
6. Source: Why Bother With Wireless? Tablet Owners Stay Tethered, All Things D, 10 July 2013. See: <http://allthingsd.com/20130710/why-bother-with-wireless-tablet-owners-stay-tethered/>
7. The GMCS shows that among all the tablets owned, 47 percent have a screen smaller than nine inches.
8. Gartner Says Worldwide PC, Tablet and Mobile Phone Shipments to Grow 4.5 Percent in 2013 as Lower-Priced Devices Drive Growth, Gartner, 21 October 2013. See: <http://www.gartner.com/newsroom/id/2610015>
9. Source: Ericsson Mobility Report, Ericsson, June 2013. See: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>
10. Analysts: Tablet Cannibalization Could Be Overblown, Tablet PC review, 11 March 2011. See: <http://www.tabletpcreview.com/default.asp?newsID=2235&news=tablet+notebook+sales+cannibalization>
11. Only six per cent of respondents said that since acquiring their tablet they use their smartphone "a lot less frequently". Smartphones are used less frequently by 7 percent of consumers in developed markets and 5 percent in developing markets
12. On purchase of a tablet, impact on laptops is higher. Laptops are used less frequently by 16 percent in developed markets as compared to 10 percent in developing markets
13. Statistics: Viewership, Youtube. See: <http://www.youtube.com/yt/press/en-GB/statistics.html>
14. WhatsApp is leading the mobile messaging battle, but will it win the war?, The Next Web, 27 October 2013. See: <http://thenextweb.com/mobile/2013/10/27/whatsapp-is-leading-the-mobile-messaging-battle-but-will-it-win-the-war/>
15. Ericsson Mobility Report, Ericsson, June 2013. See: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>; Ericsson, Mobility Report, Ericsson, November 2013. See: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-november-2013.pdf>
16. Ericsson Mobility Report, Ericsson, November 2013. See: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-november-2013.pdf>
17. Ericsson Mobility Report, Ericsson, June 2013. See: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>
18. Over the same period, fixed data traffic – which includes WiFi – is expected to follow a similar trend, with monthly usage growing from around 35EB in 2013 to around 150EB in 2017. For more information, see: Ericsson Mobility Report, Ericsson, June 2013: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>
19. Over the same period, fixed data traffic – which includes WiFi – is expected to follow a similar trend, with monthly usage growing from around 35EB in 2013 to around 150EB in 2017. For more information, see: Ericsson Mobility Report, Ericsson, June 2013: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>
20. Subscriptions to Cloud Storage Services to Reach Half-Billion Level This Year , iSuppli, 6 September 2012. See: <http://www.isuppli.com/mobile-and-wireless-communications/news/pages/subscriptions-to-cloud-storage-services-to-reach-half-billion-level-this-year.aspx>
21. Subscriptions to Cloud Storage Services to Reach Half-Billion Level This Year , iSuppli, 6 September 2012. See: <http://www.fiercewireless.com/story/wi-fi-offloading-morphs-integration-carriers-strive-more-control/2013-05-22>
22. For example, KDDI's au ID and au Smart Pass have attracted approaching several million subscribers; au ID provides authenticated access to KDDI's Smart Value proposition, which includes 50GB of online storage. KDDI cites an increase in ARPU associated with au Smart Value users. For more information, see: KDDI Corporation, Financial Results of the Fiscal Year Ended March 2013, KDDI, 30 April 2013: http://www.kddi.com/english/corporate/ir/library/presentation/2013/pdf/kddi_130430_e_main.pdf
23. For an example, see: <http://www.au.kddi.com/english/content/>
24. Population Ageing and Development 2012, United Nations, Department of Economic and Social Affairs, Population Division. See: http://www.un.org/en/development/desa/population/publications/pdf/ageing/2012PopAgeingandDev_WallChart.pdf
25. World Population Ageing 1950-2050, United Nations, Department of Economic and Social Affairs, Population Division. See: <http://www.un.org/esa/population/publications/worldageing19502050/pdf/80chapterii.pdf>
26. Median age* of the population, The Economist, 6 March 2003. See: <http://www.economist.com/node/1622427>
27. Rise of the silver surfer: UK over 55's 'closing the digital divide', Digital Strategy Consulting, 03 June 2013: http://www.digitalstrategyconsulting.com/intelligence/2013/06/rise_of_the_silver_surfer_uk_over_55s_closing_the_digital_divide.php ; Internet adoption, Pew Internet, April 2012: <http://pewinternet.org/Reports/2012/Older-adults-and-internet-use/Main-Report/Internet-adoption.aspx>
28. The life expectancy in more than 30 countries is over 70 years. : HEALTHY LIFE EXPECTANCY, World Life Expectancy. See: <http://www.worldlifeexpectancy.com/healthy-life-expectancy-by-gender>
29. Why The Economy Needs Boomers To Work Past 70, Business Insider, 7 May 2013. See: <http://www.businessinsider.com/americans-retire-later-than-ever-david-mintz-tofutti-2013-5>
30. People over 50 hold 80 percent of US financial assets. : Global aging presents opportunity, StarTribune, 18 August 2013. See: <http://www.startribune.com/business/220007831.html>
31. Across the developed markets surveyed, between one percent and six percent of smartphones owned by consumers in the 55+ age group did not pay anything for their devices, they received them as hand-me-down
32. Across the developed markets surveyed, between one percent and 17 percent of smartphones owned by consumers in the 55+ age group did not pay anything for their devices, they received them as gift
33. Couple's £163,000 mobile phone bill shock, BBC, 22 May 2013. See: <http://www.bbc.co.uk/news/business-22624823>
34. Rise of the silver surfer: UK over 55's 'closing the digital divide', Digital Strategy Consulting, 03 June 2013. See: http://www.digitalstrategyconsulting.com/intelligence/2013/06/rise_of_the_silver_surfer_uk_over_55s_closing_the_digital_divide.php
35. The Infinite Dial 2013, Navigating Digital Platforms, Page 45, January/February 2013: http://www.edisonresearch.com/wp-content/uploads/2013/04/Edison_Research_Arbitron_Infinite_Dial_2013.pdf ; More elderly people using social media, but many don't know what they're doing, Daily News, 6 August 2013. See: <http://www.nydailynews.com/life-style/elderly-people-social-media-article-1.1418755>
36. Over-55s snap up ebook readers, PC Pro, 18 January 2013. See: <http://www.pcpro.co.uk/news/379399/over-55s-snap-up-ebook-readers>

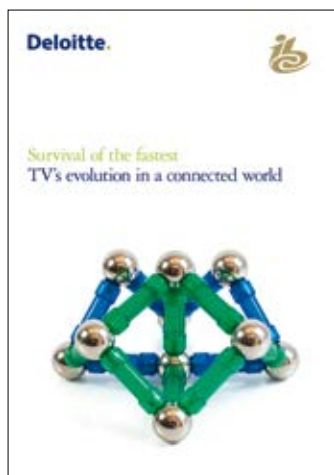
37. Bad news for the book: Older people find ebooks easier to read than the printed page, Daily Mail, 7 February 2013.
See: <http://www.dailymail.co.uk/news/article-2274819/Bad-news-book-Older-people-ebooks-easier-read-printed-page.html>
38. Your Magnifying Glass, Google Play Store, 7 October 2013. See: <http://play.google.com/store/apps/details?id=com.yuvalluzon.yourmagnifier&hl=en>
39. Smartphones struggle to connect with the elderly, CNBC, 22 September 2013. See: <http://www.cnbc.com/id/101045757>
40. Smartphones struggle to connect with the elderly, CNBC, 22 September 2013. See: <http://www.cnbc.com/id/101045757>
41. What is Easy Mode (Starter Mode), and how do I use it on my Samsung Galaxy S@ 4?, Samsung, 25 April 2013.
See: <http://www.samsung.com/us/support/howtoguide/N0000003/10091/120408>
42. Study Finds More Young People Are Reading, But Don't Embrace E-Books, 25 October 2013.
See: <http://bookriot.com/2012/10/25/study-finds-more-young-people-are-reading-but-dont-embrace-e-books/>
43. The State of the News Media, Pew Research.
See: <http://stateofthemediamedia.org/2013/newspapers-stabilizing-but-still-threatened/14-readership-falls-for-most-age-groups/>
44. Are Young People Watching Less TV? (Updated – Q2 2013 Data), Marketing Charts, 10 September 2013.
See: <http://www.marketingcharts.com/wp/television/are-young-people-watching-less-tv-24817/>
45. Over-55s more likely to shop online than under-25s, Internet Retailing, 3 February 2011.
See: <http://internetretailing.net/2011/02/older-internet-users-more-likely-to-shop-online/>
46. GSA confirms 222 LTE networks launched, will focus on APT700 at ITU Telecom World, GSA, 22 October 2013. See: http://www.gsacom.com/news/gsa_390.php
47. Global cellular market trends and insight Q3 2013, GSMA Intelligence, October 2013.
See: <https://gsmaintelligence.com/analysis/2013/10/global-cellular-market-trends-and-insight-q3-2013/403/>
48. GSA welcomes new LTE operators in the UK, raises worldwide total to 204, 29 August 2013. See: http://www.gsacom.com/news/gsa_386.php
49. LTE could be waste of mobile operator money says AIRCOM, GoMo News, 26 May 2013.
See: <http://www.gomonews.com/lte-could-be-waste-of-mobile-operator-money-says-aircom/>
50. ABI: LTE networks will carry more data traffic than 3G by 2016, RCRWireless, 25 September 2013.
See: <http://www.rcrwireless.com/article/20130925/networks/abi-lte-networks-will-carry-more-data-traffic-than-3g-by-2016/>
51. ABI: LTE networks will carry more data traffic than 3G by 2016, RCRWireless, 25 September 2013.
See: <http://www.rcrwireless.com/article/20130925/networks/abi-lte-networks-will-carry-more-data-traffic-than-3g-by-2016/>
52. LTE users consume more data than those on 3G, but it's big data plans that drive use more than speed, The Next Web, 3 January 2013.
See: <http://thenextweb.com/mobile/2013/01/03/lte-3g-data-comparison-mobidia/>
53. LTE users consume more data than those on 3G, but it's big data plans that drive use more than speed, The Next Web, 3 January 2013.
See: <http://thenextweb.com/mobile/2013/01/03/lte-3g-data-comparison-mobidia/>
54. A similar trend is visible among 4G subscribers in Japan, Singapore and US respondents, with 40, 39 and 57 percent have a data allowance of 3GB or larger, as compared to 18, 36 and 28 percent for respondents not using 3G.
55. Small cells, which include micro-, pico – and femto-cell variants, are typically used to provide targeted coverage in areas of high traffic, so as to divert traffic away from macro network infrastructure, and improve overall performance and customer experience. Small cell architectures typically make more efficient use of spectrum because they increase the number of times that spectrum can be re-used within a given area, due to their lower interference profile.
56. Small cells outnumber cellular base stations, Telecoms.com, 1 November 2012.
See: <http://www.telecoms.com/51947/small-cells-outnumber-cellular-base-stations/>
57. Dealing with Density – The Move to Small Cell Architectures, Ruckus Wireless, June 2013.
See: <http://theruckusroom.typepad.com/files/small-cell-wp-light-100111.pdf>
58. Wireless Infrastructure Sharing Saves Operators 30% In Capex And 15% In Opex, Analysys Mason, 6 May 2010.
See: <http://www.analysismason.com/About-Us/News/Insight/Wireless-infrastructure-sharing-saves-operators-capex-and-opex/#.Umk7xBZkXr0>
59. Big Euro telcos could save up to €2bn a year each from net sharing, Total Telecom, 27 November 2012. See: <http://www.totaltele.com/view.aspx?C=1&ID=478006>
60. Sharing Mobile Networks: Why Operators Must Take the Plunge, Booz & Company, 27 November 2012. See: http://www.booz.com/me/home/press_media/management_consulting_press_releases/article/51810298; also see <http://www.totaltele.com/view.aspx?C=1&ID=478006>
61. The availability of appropriate spectrum varies widely by country. For the most part, carriers in all countries experience some degree of spectrum constraint. Spectrum is essentially the most fundamental "raw material" of mobile carriers' operations: the more appropriate spectrum any given carrier has, the more coverage and capacity can be deployed. Carriers are constantly seeking new spectrum over which mobile services – especially broadband data connectivity – can be offered. As data traffic volume continues to grow, the need for more spectrum is expected to become increasingly acute. Governments and regulators are investigating different approaches to addressing such challenges – from authorizing the re-use of 2G and 3G spectrum for LTE (which makes much more efficient use of spectrum, therefore can carry more traffic volume per MHz of spectrum) through to making "white spaces" spectrum – spectrum that was historically allocated to media broadcasters, which is either no longer used (post migration from analog to digital television, for example) or is not used in its entirety (meaning that carriers could make localized use of spectrum in between the bands used by broadcasters).
62. Small cells mean big backhaul challenges, Light Reading, 25 September 2013. See: http://www.lightreading.com/author.asp?doc_id=705800
63. Meeting the Mobile Backhaul challenges, Transmode. See: <http://www.transmode.com/en/re/whitepapers>
64. Chat app messaging overtakes SMS texts, Informa says, BBC, 29 April 2013. See: <http://www.bbc.co.uk/news/business-22334338>
65. Ovum forecasts social messaging apps will cost operators \$32.6bn in 2013 growing to over \$86.0bn in 2020, Ovum, 29 April 2013.
See: http://ovum.com/press_releases/ovum-forecasts-social-messaging-apps-will-cost-operators-32-6bn-in-2013-growing-to-over-86-0bn-in-2020/
66. Total wireless industry revenues are expected to reach 1.5 trillion in 2013. : Global Wireless Telecommunications Mobile carriers Industry Market Research Report from IBISWorld Has Been Updated, PR Web, 18 September 2013. See: <http://www.prweb.com/releases/2013/9/prweb11121558.htm>
67. Christmas SMS volume growth shocks industry watchers, BGR, 31 December 2013. See: <http://bgr.com/tag/sms/>
68. Analysis: Texting profits at risk as users look elsewhere, Reuters, 5 January 2012.
See: <http://www.reuters.com/article/2012/01/05/us-wireless-texting-idUSTRE80328U20120105>
69. SMS revenues to hit \$159 billion by 2015, Mobile Entertainments, 30 September 2011.
See: <http://www.mobile-ent.biz/news/read/sms-revenues-to-hit-159-billion-by-2015/015723>
70. The average number of SMSs sent monthly per each subscription in Spain has been obtained by dividing the total number of subscribers and the total volumes of SMSs. Source: CMT Data: http://cmtdata.cmt.es/cmtdata/jsp/inf_trim.jsp?tipo=2
71. The average number of SMSs sent per day in the German market grew from 1,41 in 2012 to 1,47 per day in 2013. http://www.vatm.de/uploads/media/2013_TK-Marktstudie.pdf

72. 17 Incredible Facts about Mobile Messaging that you should know, Portio Research, 9 August 2013: <http://www.portioresearch.com/en/blog/2013/17-incredible-facts-about-mobile-messaging-that-you-should-know.aspx>; Global mobile statistics 2012 Part C: Mobile marketing, advertising and messaging, Mobi Thinking, June 2012: <http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/c#othermessaging> Global mobile statistics 2012 Part C: Mobile marketing, advertising and messaging, Mobi Thinking, June 2012. See: <http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/c#othermessaging>
73. Japanese messaging firm LINE brings in \$132 million in revenue for Q2 2013, The Next Web, 8 August 2013. See: <http://thenextweb.com/apps/2013/08/08/line-corp-brings-in-132m-of-revenue-in-q2-2013-as-its-messaging-app-contributes-76/>
74. On Google Play and Apple App Store, WhatsApp is free in the first year of installation and \$0.99/year. See: AppStore, 2013: <https://itunes.apple.com/gb/app/whatsapp-messenger/id310633997>; Google Play, 2013. See: https://play.google.com/store/apps/details?id=com.whatsapp&hl=en_GB
75. Messaging apps escalate their global war, BGR, 15 July 2013. See: <http://bgr.com/2013/07/15/messaging-app-analysis-whatsapp-line/>
76. Instant messaging driving smartphone uptake, New Strait Times, 8 September 2013. See: <http://www.nst.com.my/nation/general/instant-messaging-driving-smartphone-uptake-1.351394>
77. The Mobile Consumer, Nielsen, February 2013. See: http://www.nielseninsights.it/wp-content/uploads/2013/03/03.-global_mobile_report_02_25.pdf
78. Statistics on mobile usage and adoption to inform your mobile marketing strategy, Smart Insights, 10 June 2013. See: <http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>
79. An application programming interface (API) specifies how software components and databases interact with each other. In the online world, APIs are used by social networking companies, for example, to give third parties access to their login processes (federated login), and customer data/attributes. In the mobile world, operators are now exposing APIs that relate to location, messaging, customer support and customer attributes. In most instances, APIs are presented as a library that can include specifications for data structures and other variables.
80. The content of the diagram is based on existing knowledge, industry conversations and publicly available information such as: GSMA, OneAPI: <http://www.gsma.com/oneapi/>; AT&T Developer Program, APIs: <http://developer.att.com/developer/basicTemplate.jsp?passedItemId=12500043>

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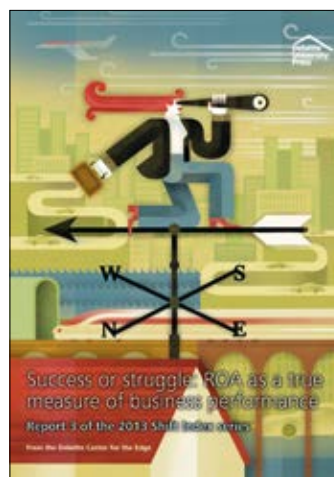
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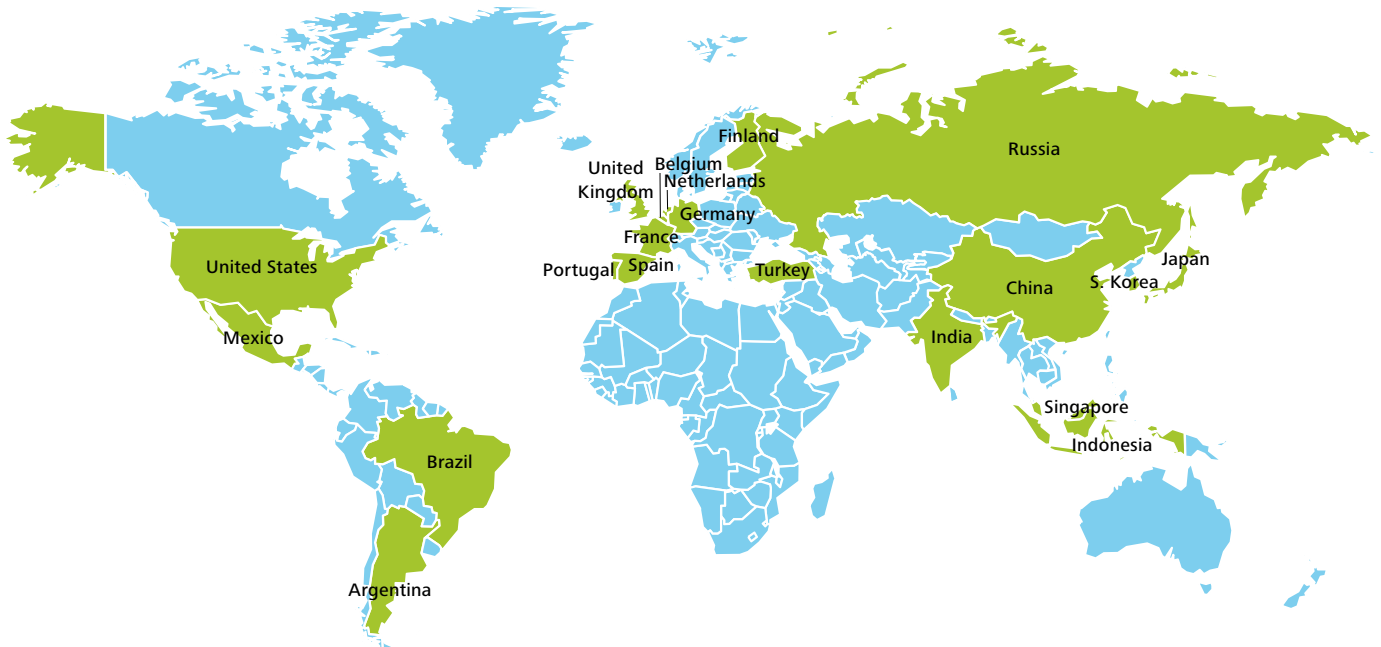


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