Global Telecommunications Center

GSMA Mobile World Congress 2013 post-event report

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Forewords – GSMA and Ernst & Young

GSMA foreword

Dear colleague,

Thank you for making the 2013 GSMA Mobile World Congress a phenomenal success!

As evidenced by our third consecutive year of record-breaking attendance, Mobile World Congress continues to be *the place where industry leaders come to advance business*. This year 72,534 unique attendees participated in Mobile World Congress, including continued, unparalleled support among the C-suite of the world's leading companies. The seniority of attendees at MWC remained impressive with over 4,300 CEOs, a 20% increase from 2012, and 57% senior-level attendees.

During the event, leaders from mobile operators such as AT&T, Bharti Airtel, China Mobile, Deutsche Telekom, KT Corp., NTT DoCoMo, Ooredoo, Telecom Italia, Telefónica and Vodafone, and senior executives from consumer and technology brands such as Dropbox, Ericsson, Foursquare, General Motors, Nokia and Qualcomm, among others, gathered to address key developments in the mobile ecosystem and shared their goals of defining the new mobile horizon.

The 2013 Congress was strengthened by the move to Fira Gran Via and featured more than 1,700 exhibiting companies occupying more than 94,000 square meters of net exhibition and hospitality space, providing opportunities for attendees to meet, network and examine the latest industry trends. In addition, nearly 3,500 international media and industry analysts attended the event to report on the many significant industry announcements made at the Congress.

The GSMA continued to expand and diversify Mobile World Congress with the addition of several new programs. For instance, the first-ever NFC Experience provided attendees the opportunity to use NFC-enabled devices to enter the venue with the Virtual Badge, purchase refreshments through NFC-capable point of sale terminals and find venue and local information through smart poster tags. The event also offered attendees a wide range of focused programming and content, with 35 sessions as part of our App Planet, mPowered Brands, Forum Series and partner events.

As the Mobile World Capital, Barcelona was once again a wonderful host city for Mobile World Congress. We acknowledge and thank the city, Catalonia, Fira Gran Via and our Barcelona partners for being such warm and efficient hosts. We would also like to thank our numerous sponsors and partners for their continued support.

We look forward to welcoming you again to Barcelona at Fira Gran Via on 24–27 February for Mobile World Congress 2014.

Warm regards,

John Hoffman
CEO, GSMA Ltd.

Ernst & Young foreword

This year's Mobile World Congress (MWC) was an extremely uplifting experience. A great deal of pessimism has surrounded the mobile industry in recent years due to concerns over stalling growth, increasing competition and constraining regulation. At Ernst & Young, we believe that these fears are overplayed and that telecommunications plays a pivotal role in supporting socioeconomic growth. This year at Barcelona, the mobile industry gathered to embrace the transformative nature of mobile as a force for innovation across all industries.

Ernst & Young is proud to be part of MWC again and support the GSMA in preparing this summary document. The document captures the aspects of this year's event that are bringing mobile back to the forefront of investors' minds. We are starting to see the ecosystem tackle the significant issues related to pricing of data services, enabling innovation as mobile transforms everything from payments to health care. All of these innovations offer tremendous growth potential, not only to mobile operators but also to the wider ecosystem that has been built up around them.

The industry has reacted positively in forming new kinds of partnerships within the ecosystem to tackle challenges head on. New pricing structures have been proposed to support monetization of data services, and the industry is no longer afraid to tackle the issue of declining voice with more aggressive strategies in data and related next-generation services.

Of course, some challenges remain, and this will always be the case. The industry needs to focus on simplifying its message of value to an increasingly sophisticated customer group. The industry also has much to do around collaboration to ensure that new forms of competition do not erode the investment case. Financial concerns remain in an environment of increasing capital requirements and constrained market structures. However, MWC has once again demonstrated that the mobile industry has the resilience and the innovation to solve the key challenges facing our sector.

I would like to thank our team of analysts at Ernst & Young for the hard work done in preparing this document, and I sincerely hope you enjoy reading it.

Jonathan Dharmapalan
Global Telecommunications Leader
Ernst & Young

02 Conference highlights

1. Reshaping operator strategies

The 2013 Mobile World Congress (MWC) saw leading mobile operators articulate new strategies in a world where customer needs and new technologies are evolving faster than ever.

Delivering value in a data-centric landscape

The mobile industry finds itself at the heart of a digital revolution that is pervading all aspects of society. Migration to long-term evolution (LTE) networks networks is now well underway, and forecasts suggest that 275m LTE-capable devices will ship worldwide in 2013, triple the amount registered in 2012.[1] As end users take up more sophisticated devices, operator revenue mixes are trending toward data, which will, according to GSMA data, outstrip voice by 2018.

Meanwhile, mobile consumer behaviors are becoming increasingly heterogeneous. For example, end users in Asia are currently far more likely to engage in mobile shopping activities than users elsewhere. Meanwhile, industry research suggests that users in emerging markets are more receptive to mobile advertising than customers in other markets.

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1   "Global LTE Smartphone Shipments Will Reach 275 Million Units in 2013," *Strategy Analytics*, 19 December 2012

Figure 1. Regular usage of mobile shopping/retail apps by country

% smartphone app users

United States	53
China	44
South Korea	40
United Kingdom	28
Brazil	26
Australia	21
Russia	18
Italy	13
India	11
Turkey	4

Source: The Mobile Consumer report, Nielsen, 25 February 2013

Even different device form factors are spurring different ways of consuming services: tablet owners are more likely to visit website-based content than smartphone customers, creating new considerations for content owners in the process.

The prognosis for the mobile industry is a highly positive one, yet the message from operators is that their service propositions must adjust to new demand scenarios. LTE network launches are already seeing concomitant moves to overhaul tariffs and packages, with combinations of unlimited voice and messaging coupled with tiered data coming to the fore.

Shared data plans are also becoming a vital source of differentiation, while operators are adapting traditional device subsidy models as they seek more sustainable pricing strategies. International roaming in LTE is now also starting to gain ground. Fragmentation in the LTE environment has been driven by scarcity of spectrum in complementary frequency bands, yet vendors are now working on new forms of chipsets that include global roaming and carrier aggregation, in turn providing the building blocks for a globally consistent 4G experience for customers.

Rethinking roles in a disruptive ecosystem

As operators turn their attention to new market segments at a time when the boundaries are blurring between industry verticals, legacy roles should be revisited. Opportunities abound in areas where operators possess unique advantages but long-term credibility requires a shift in mindset.

Network capabilities remain very much at the core of operator competencies; however, the range of services that carriers can help enable is growing all the time. Scope exists to act as both service creators and service enablers, which in turn demands new types of interactions with partners and suppliers.

There is a growing acceptance that network owners will both compete and collaborate with actors in adjacent technology segments. The provision of application programming interfaces (APIs) to technology companies is a case in point, with long-term upside available to those operators bold enough to prize an environment where innovation is a shared responsibility. Meanwhile, tie-ups between operators and music streaming services show how bundled propositions are evolving through new forms of partnership.

Nevertheless, the potential for symbiotic relationships has yet to be harnessed fully; while much is made of the threat posed by internet companies in areas such as instant messaging and application stores, operators can leverage their legacy strengths to provide new services to disruptive agents. Third-party billing represents an area where operators can drive incremental revenues in a more interdependent industry ecosystem.

Considering new routes to investment and innovation

The evolution of network and device capabilities provides the springboard for mobile industry growth over the next decade, yet operator approaches to investment must evolve well beyond core equipment in the digital era. With routes to innovation lying in a range of service domains, from cloud computing to video content, a greater focus on supporting technology innovation is needed.

Operators are reconfiguring their venture capital approaches in a number of ways. Supporting technology start-ups at an earlier stage can act as a differentiator as new use cases mature, while application developers themselves can leverage operator infrastructure to take their ideas to proof-of-concept trials.

Holistic approaches that align venture capital strategies with innovation facilities represent an overhaul of traditional partnering approaches. More mature innovators can also benefit from extensive operator footprints as they seek to widen their own addressable markets.

Alongside this, organizational structures must adapt to changing service creation scenarios. Many leading players have created new business units, bringing together competencies in R&D and adjacent media and technology sectors in ways that can help skill sets to flourish across different geographies.

However, sentiments remain strong that core operator competencies still have an important role to play in supporting new innovation frameworks. Existing sales channels, robust infrastructure and high brand recognition can all be used to underpin innovation at the service level and continued customer centricity.

2. Mobile as a platform for innovation

Customer demands are changing faster than ever

Against a backdrop of ever shorter technology cycles, end-user needs are evolving at an ever quicker pace. Smartphones in use crossed the one billion mark in 2012 and will double by 2015. Such explosive take-up is also accompanied by new customer behaviors, such as the bring-your-own-device (BYOD) phenomenon for enterprise users.

The rise of the "prosumer" demonstrates how consumers themselves are driving change. Other features of a changing customer landscape include the aggregation of devices within the home and the growing importance of mobile connectivity in the shopping environment.

In this light, the concept of customer centricity is being revisited. For one, consumers are leveraging devices in a wider range of everyday contexts; on the other hand, mobile connectivity is also very much an agent of change in other industry verticals. Being able to pre-empt and respond to changing customer behaviors is now mission-critical, whether in terms of offering a greater array of network access options to consumers or providing new forms of network-driven intelligence to enterprise customers.

Moving to the internet of everything

One of the key themes emerging at MWC was the transformational role to be played by mobile technology over the next decade. By 2017, machine-to-machine (M2M) connections are expected to account for 12% of some 9.8b global mobile connections, with embedded connectivity taking hold across a number of industry verticals.[2]

Smart industry solutions underpinned by mobile connectivity bring a number of benefits, whether in terms of greater customer centricity, enhanced processes or greater operational efficiencies. Depending on the industry vertical concerned, some opportunities may be national in scope – in utilities, for example – while other types of enterprise customers, those in transport and logistics, will favor global capabilities.
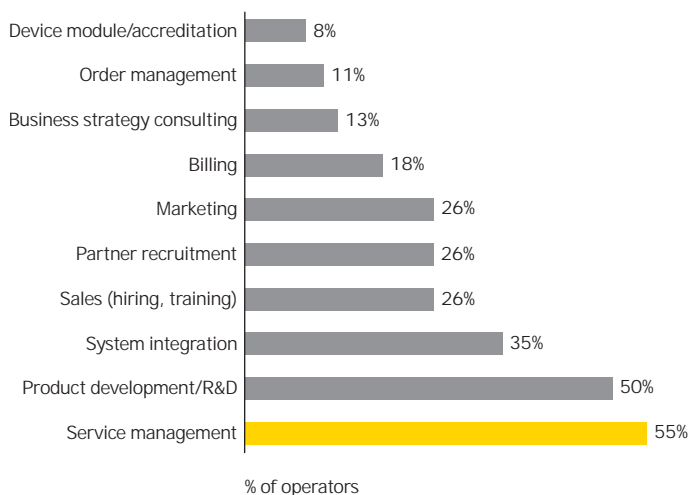
The sheer range of applications is growing all the time, from vehicle diagnostics solutions to asset tracking, for example. This places an ever-greater importance on partnerships as value chains adapt to very specific solution requirements. Meanwhile, regulatory factors will help to determine the pace of adoption; decisions to mandate smart metering, for example, have led to greater traction for M2M solutions in utilities, ahead of other industry sectors.

Operators also need to be mindful of the diverse nature of customer demands in an "internet of everything" environment. Collaboration with peers to provide scalable platforms is already a focus area for many operators, with global reach an important goal for M2M providers as customer demands evolve.

Looking ahead, a key challenge for operators is to isolate key verticals where they can add value. As part of this, M2M service providers should consider how far they wish to go beyond solutions that major on connectivity itself.

Acquisitions can help operators occupy additional roles in the M2M ecosystem, while partnering frameworks will need to adapt to cater for different forms of collaboration, including operational and go-to-market partners. Currently, operators' investment priorities are diffuse, yet the leading areas are service management and product development, showing how both guaranteeing performance levels and developing new applications are top of mind for many.

Figure 2. Operator M2M investment priorities

% of operators

- Device module/accreditation 8%
- Order management 11%
- Business strategy consulting 13%
- Billing 18%
- Marketing 26%
- Partner recruitment 26%
- Sales (hiring, training) 26%
- System integration 35%
- Product development/R&D 50%
- Service management 55%

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2 "The Mobile Economy 2013," GSMA, 25 February 2013

As M2M and smart industry solutions permeate all levels of society, stakeholders will need to consider the most effective business models. Smart cities are a case in point; different government departments and local councils may have contrasting views on mission-critical applications and deployment priorities, for example.

In this regard, operators and technology companies have a critical role to play in helping these new types of customer identify their current and future requirements, shaping new business models in the process.

Creating an enabling policy environment

The increasing availability of LTE services is cause for optimism in the industry, yet there is an increasing onus on regulators to establish policies suited to a new phase of growth. If the socio-economic benefits of mobile technology are to be realized, a supportive regulatory environment is essential.

Many operators believe that a legacy of heavy regulation, more suited to the sector when it was in an earlier growth phase and mobile devices were luxury items, risks stymieing innovation in years to come. Looking ahead, lower taxes could help unlock new network investments, in turn stimulating downstream economic multipliers. However, policies designed to promote competition are seen by many as excessive, with the potential to dampen appetite for infrastructure investments.

Looking beyond the sphere of legacy mobile services, regulatory issues are also top of mind as new use cases emerge and convergence between industries continues. Perceptions of imbalance between rules imposed on network operators and internet players remain pronounced, while there is a very real need for proportionate regulation to help unlock new service scenarios.

Proportionate rules that repurpose legacy regulation are vital. For example, policies enabling mPayments need to generate certainties across a range of domains, whether in terms of minimizing systemic risks, widening addressable markets, cementing consumer protection or encouraging new market entrants. Health care is another sector where mobile devices and applications are already producing far-reaching changes in terms of patient-centric care and associated cost efficiencies. Here, the challenge for policy makers is to embrace the innovative potential of the mobile channel while ensuring robust levels of patient protection in key areas.

3. Catalyzing convenience through mPayments

Unparalleled addressable markets

The mobile device continues to drive deep-rooted change in the global payments landscape, with a range of supply- and demand-side dynamics at work.

Mobile money services for the unbanked and under-banked are ramping up globally and offer a major opportunity to increase levels of financial inclusion in markets where legacy banking infrastructure is lacking. The unrivaled reach of mobile infrastructure means that money financial services have huge potential to transform lives and economies in emerging markets.

In 2012, the MMU Global Mobile Money Adoption Survey[3] counted 30m active mobile money customers, who undertook over 220m transactions totaling US$4.6b in transaction value during the month of June 2012.

As of April 2013, some 163 services for the unbanked had been deployed worldwide, with a further 107 planned. Of them, 56% are in sub-Saharan Africa. Mobile money services are already available in 34 of the 47 countries in this region, and in June 2012, there were twice as many mobile money users than Facebook users in sub-Saharan Africa.

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3   "Mobile Money for the Unbanked; State of the Industry: Results from the 2012 Global Mobile Money Adoption Survey," GSMA, http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/02/MMU_State_of_industry.pdf, 27 February 2013

Figure 3. Mobile money services for the unbanked – number of deployments per market
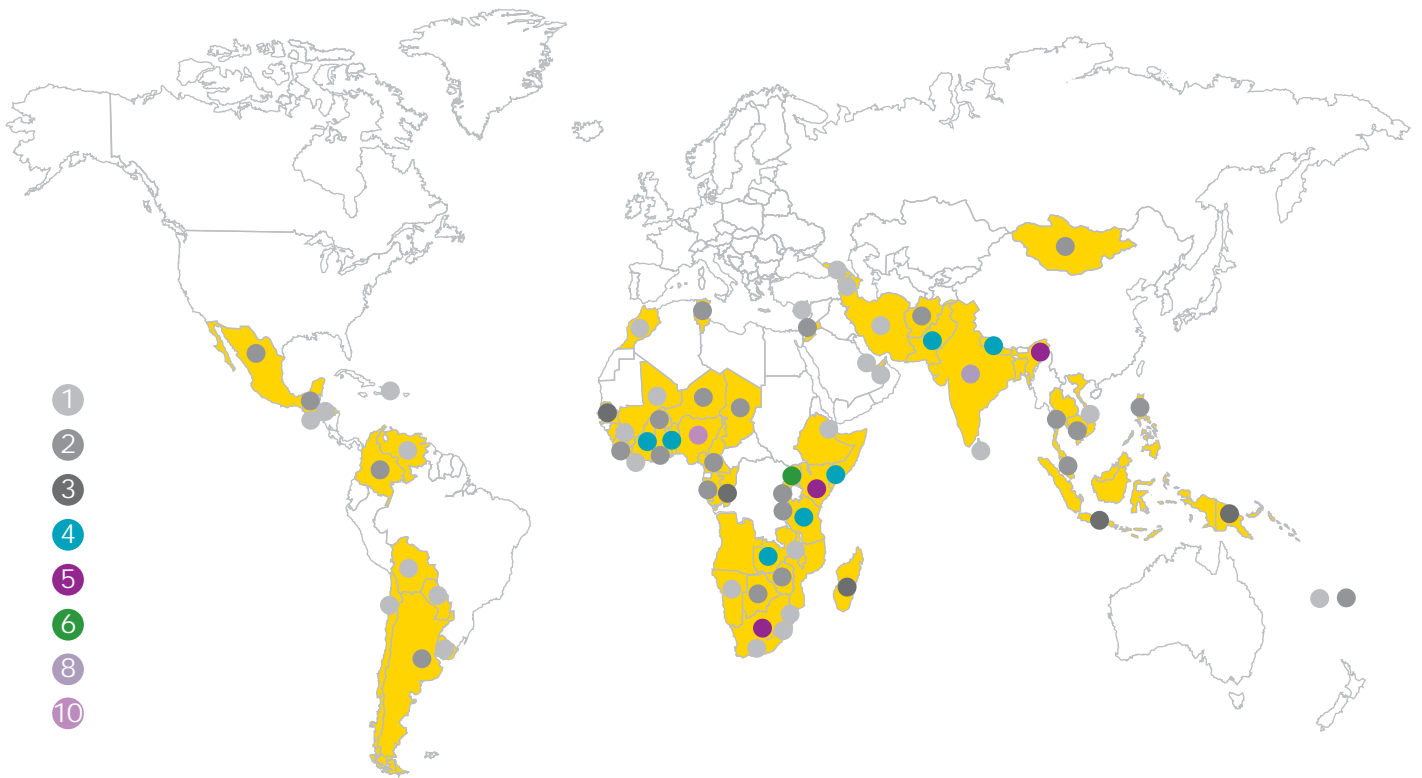
Source: "Mobile Money Tracker," GSMA, accessed 4 April 2013

Meanwhile, in developed markets, innovations at the device level are offering consumers and merchants alike new levels of convenience and enhanced functionalities in the retail point-of-sale (POS) environment. Technology hurdles, such as the lack of near field communication (NFC) devices, have been overcome – shipments of NFC devices are expected to total 270m in 2013.[4]

A range of players across different industries have launched mobile and digital wallet services, and the scope of mobile contactless solutions now stretches well beyond payments toward related scenarios in ticketing, information downloads and identity management.

Combining competencies in new ecosystems

Ensuring that the different entities involved in mobile payments collaborate effectively remains a vital enabler for scalable mobile platforms. Cooperation between operators is helping to create scalable, national payments platforms – witness the various operator-led NFC joint ventures in Europe and North America.

In addition, policy makers have a key role to play, whether in terms of bringing together actors from different industries, establishing key use cases such as transit payments for city-wide contactless payments trials or educating users on secure convenience of using mobile devices for POS transactions.

While much of the focus historically has been on aligning bank and operator interests – with customer ownership concerns cited as a barrier to joint service development – merchant acceptance of NFC payment solutions has often been overlooked. In this light, engaging more deeply with retailers will form an important part of ecosystem development going forward.

Use cases on the increase

The field of innovation in mobile payments continues to widen dramatically. Domestic remittance services have made early headway in markets where traditional banking infrastructure is absent. In markets where there is already high levels of financial inclusion, proximity payments via NFC, mCommerce payments and business-to-person payments are all gaining ground, for example.

In future, the challenge for industry players will be to isolate areas where they can add value, either through stand-alone propositions or through mutually beneficial partnerships. Isolating needs in underserved market segments is important.

Disruptive payments providers in developed markets have already begun offering smartphone-centric payment capabilities to the self-employed, who are attracted by greater convenience and lower transaction costs of the mobile channel, while often being more reliant on mobile technologies in their day-to-day working life. Given that small-to-medium enterprises (SMEs) account for around half of high-income countries' GDP, the wider socioeconomic benefits of transitioning to mPayments are clear.

Ernst & Young insight – New horizons in NFC

Near field communication (NFC) is coming of age as a technology that can serve a multitude of needs, from acting as a substitute for cash and credit cards at the POS to replacing traditional keys to rooms, offices and homes to providing mobile couponing. As such, NFC has an ever-wider role to play in mobile payments, marketing and identity solutions.

Supporting devices and infrastructure are now in place to help make the most of NFC's versatility. According to one forecast, 86% of POS terminals will be NFC-enabled in North America by 2017, while European penetration will stand at 78% (source: Berg Insight). Meanwhile, some 186 handsets available globally now have built-in NFC capability, with more than half of these featuring Single Wire Protocol (SWP) specification for connection between the SIM card and NFC chip.

Mobile operators have been keen to leverage NFC as part of national payment platform joint ventures, which is vital if NFC solutions are to be scalable and interoperable. Furthermore, operators in Japan and South Korea are already cooperating on cross-border services for NFC, expanding addressable markets for mobile contactless payments even further.

Operators remain in a strong position to lead the charge as NFC redefines a host of everyday activities. With trusted brands and strong distribution networks, they have the credibility to reassure end users, which is vital in view of the potentially sensitive nature of NFC-based data.

4   "Research Firm Forecasts Higher NFC Phone Shipments and Installed Base of Devices," NFC Times, 29 March 2013

4. Unlocking efficiencies in mHealth

Alleviating pressures on health care systems

Health care represents a key sector where mobile solutions can drive systemic efficiencies and improve outcomes for end users. Much of the potential upside derives from the lack of sustainability of current health care models – health care costs currently account for 8%–9% of GDP in many markets. In the United States, this burden is even higher, standing at almost 18%.[5]

Greater efficiencies are therefore vital – particularly when demographic changes are likely to exacerbate the current situation. By 2030, 23.5% of the European population will be over 65, and the majority of these will have at least one chronic disease.[6] At the same time, shortages of health care professionals are becoming more pronounced: according to one study, up to one billion people worldwide are now affected by a lack of trained professionals.[7]

Against this landscape, mobile health can drive improvements across a number of domains, from chronic disease management and improved clinical collaboration to the provision of health care information in remote areas lying outside traditional health care infrastructure.

Moving towards a patient-centric landscape

There are already promising signs that mHealth services are delivering real differences to end users. The richness of interactions available through mobile data infrastructure means that patients are very much at the heart of changing care systems. In 2012, 44m mHealth and medical apps were downloaded, and this number is projected to reach 142m by 2016. Comparing phone owners' behavior over time, we can see that demand for health care information via the handset is increasing.

Figure 4. US cell phone owners who use their phone to look up health or medical information

% of respondents
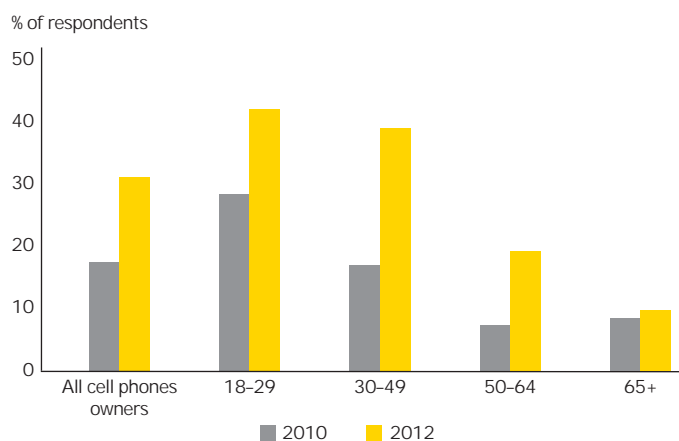
Source: "Mobile Health 2012," Pew Research Center, 8 November 2012

However, survey figures suggest that older users – precisely those who could benefit most from monitoring devices and applications – are the least likely to seek health-related information on their devices. In this light, customer education will have a pivotal role to play, both in formal care scenarios and as part of broader patient outreach programs. The importance of increased education is not limited to those receiving health care via new channels; it also encompasses community health workers, as is evident in courses now provided in countries like India.

Cooperating to provide scale and security

The range of use cases for mobile technology in health care continues to widen; however, this creates new challenges. Operators and technology providers need to cater for innovations that will be either incremental to existing systems or highly disruptive in nature.

5 "In Hopeful Sign, Health Spending is Flattening Out," *The New York Times*, 28 April 2012

6 "Most EU regions face older population profile in 2030," European Commission, January 2010

7 "One billion people are affected by global shortage of healthcare workers," British Medical Journal, http://www.bmj.com/content/342/bmj.d696, 1 February 2011

In this light, new service scenarios have to address various stakeholder concerns. Repurposing white-label devices into regulated medical devices will require coordination between multiple parties. Authorizing mobile payment options while meeting security and compliance requirements represent long-term considerations for mHealth providers – and one where they can learn from advances in mobile banking services.

Looking ahead, the challenge for mHealth providers will be to develop end-to-end solutions that leverage and are aligned with other emerging technologies such as cloud computing and big data. Partnerships will prove absolutely crucial in this context, and operators will need to consider how far their mHealth offerings can extend beyond connectivity and toward consulting and integration services.

Appropriate working processes will drive collaboration between different sectors, while standardization needs remain pressing. Many operators are taking a "wait and see" approach to mHealth opportunities at large – yet isolating new opportunities through targeted partnerships in specific markets can do much to shape the overall mHealth business case. Meanwhile, the creation of specialist eHealth and mHealth business divisions can help operators on a number of fronts, whether in terms of service development or partner management.

Ernst & Young insight – Operators in a strong position to drive mobile identity solutions

Operators score consistently well in surveys comparing consumer trust levels across industries, putting them in a strong position to serve customers' privacy and security needs. With their control of the SIM card and their billing relationships with end users, they are well placed to provide leadership in multifactor authentication, for example.

However, for operators to make the most of their legacy advantages, a holistic approach to mobile identify management is essential. Progress thus far has often been piecemeal but scalable; real-time solutions require long-term commitment if customer demands are to be met.

5. Cross-sector gains for the connected car

Vehicle manufacturers and insurers targeting telematics upside

The world of telematics is evolving rapidly, driven by a number of factors. Increasing urbanization is spurring an increase in transport usage, from 8b daily urban trips in 2010 to a projected 11.3b in 2025.[8] As passenger travel increases, mobile technology can help drivers optimize their journeys while also enabling more intelligent interaction between different modes of transport.

For their part, vehicle manufacturers see telematics as a route to aligning themselves better to changing consumer preferences. In-car infotainment is becoming a more important driver of vehicle purchasing decisions and may help change the mindset of young age groups, whose attitudes toward car ownership may differ markedly from older generations.

While the market for telematics and M2M solutions in the automotive sector is still nascent, a number of announcements from automakers during MWC regarding mobile connectivity and in-car infotainment reveal the mission-critical status of in-car technologies.

At the same time, telematics is also redefining car insurance through pay-as-you-go pricing. According to one forecast, Europe is set to lead the insurance telematics market, with more than 44m users of such services by 2017.[9] Looking ahead, usage-based insurance will become part of other safety and security-oriented solutions, such as tracking of stolen vehicles and sharing feedback on driver behaviors.

A range of connected car services is emerging

Already, a range of in-car technologies is available, from driver navigation and safety services through to embedded multimedia. Consumer preferences for connected car services vary according to age and affluence. In this light, segmenting customer needs is critical. Ernst & Young customer research suggests that driver
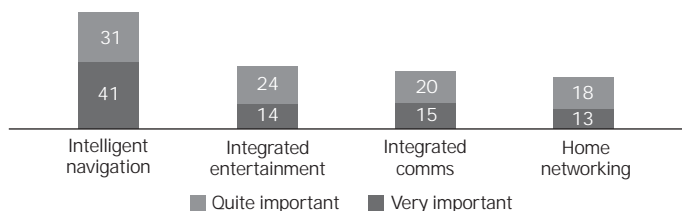
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8 *Changing lanes: the automotive C-suite's agenda for 2013–14*, Ernst & Young, 25 February 2013

9 "Europe to Lead Insurance Telematics Market, with More Than 44 Million Subscribers by 2017," ABI Research, 13 June 2012

navigation services lead the way in terms of demand for mobile-centric features, yet younger age groups may warm more to the availability of integrated entertainment, for example.

Figure 5. Connected car – German user preferences

Q. How important are the following requirements for the car of the future? (% of respondents)

Intelligent navigation	Integrated entertainment	Integrated comms	Home networking
31	24	20	18
41	14	15	13

■ Quite important ■ Very important

Source: "*The connected car: the car of the future*," Ernst & Young, March 2012; 2,000 respondents to a telephone survey

In addition, regulation will also act as a catalyst for new safety-oriented services. Emergency call initiatives in the EU and Russia, along with vehicle tracking initiatives in countries like Brazil, show the enabling role that can be played by policy makers.

Nevertheless, telematics and M2M solution providers will need to engage carefully with regulators – rules around driver distraction are still evolving. Due consideration needs to be given not only to how driver distraction regulation is evolving, but how such considerations relate to in-car applications that could, in time, aid road and driver safety.

Future-proofing automotive innovations

While industry support for telematics is growing – across the automotive, telecommunications, technology and insurance sectors – there are challenges that are unique to the connected car environment. Development life cycles for the different components of the connected car vary – from months in the app and smartphone operating system environment to substantially longer for new car platforms.

As such, service providers should aim for durable connectivity solutions wherever possible, while also taking care to boost levels of interoperability and allowing a range of use cases that will evolve during the long life cycle of the vehicle.

Integrating services in a way that provide a seamless and consistent customer experience will require deep levels of cooperation between industries. Remote provisioning, billing and roaming are all important long-term enablers, for example. At the application level, players from different industries can also provide joint APIs in order to foster a scalable application ecosystem.

Solutions that cater for emerging industry business models should also be considered. Car sharing is becoming increasingly popular – and telematics has an important role to play in this area, in terms of bookings, reservations and driver authentication on the one hand, and offering end users personalized infotainment services on the other.

6. Mobile marketing goes mainstream

Unique attributes for advertisers

Mobile's role as a marketing tool is delivering benefits on multiple fronts. Handsets are now pervasive, offering unparalleled customer reach in tandem with the ability to offer high levels of personalization. Meanwhile, the increasing penetration of NFC-enabled and video-capable smartphones is opening up new avenues for rich interactions and context-driven advertising.

The sheer intimacy of handset – 54% of US smartphone owners check their devices while lying in bed[10] – means that opportunities for engagement have never been higher. Location sensitivity is another area where the mobile channel offers untapped potential for advertisers, with smartphones acting as a bridge between the online and offline worlds.

Established consumer products companies are already seeing mobile account for above 10% of their advertising budgets, with spending growth set to outperform all other media categories in years to come.

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10 "Mobile Mindset Study," Lookout, September 2012

Figure 6. Mobile advertising forecast by region 2012–16

US$m

Legend: North America, Western Europe, Asia-Pacific, Rest of world
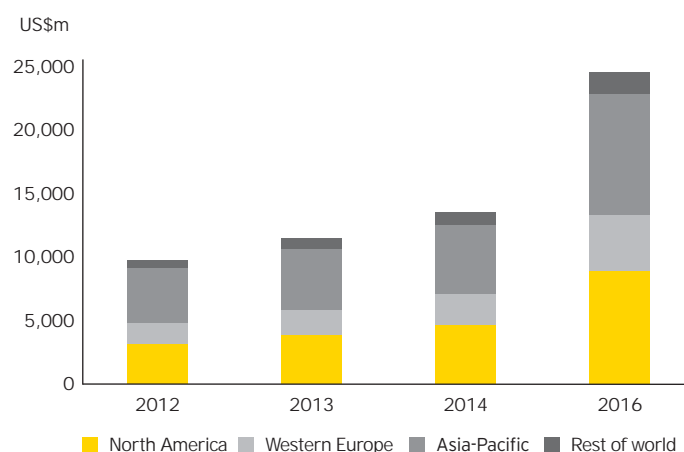
Source: "Gartner Says Worldwide Mobile Advertising Revenue to Reach $11.4 Billion in 2013," Gartner, 17 January 2013

Maximizing the role of mobile marketing

The intimacy of the mobile device means marketing propositions need to be carefully configured if they are to avoid acting as an unwelcome distraction. The customer experience has to be the first priority and, as such, concepts built around existing end-user habits and featuring reward-based systems are seen to work best. Social ad discovery, which drives end users to apps of mobile sites, is creating strong feedback loops for brands.

Consumer device behaviors are evolving faster than ever, which in turn means that marketers have to be both responsive and highly adaptable in their approaches.

Going forward, marketers and mobile industry players alike must recognize that a significant gap exists between the proportion of consumer time spent using mobile media and mobile's share of advertising revenues. The disparity between mobile CPMs – the cost of reaching a thousand consumers – and pricing for newspapers and broadcast TV means that scalable ad platforms have never been more important.

Moving beyond legacy online approaches

Legacy mobile advertising approaches such as display ads on the mobile web do not make the most of device capabilities in a location-based and touch-screen environment. New approaches involving sponsoring branded stories are already making headway, while high CPM rates for mobile video advertising reveal the important role to be played by more powerful devices in driving greater end-user engagement levels.

Breaking new ground with mobile ad formats will be crucial. Repurposing legacy web approaches will not suffice – recent research suggests almost half of app users are clicking on mobile ads by mistake. Performance metrics also need to be overhauled for the mobile environment to take into account a range of marketing outcomes, from increasing mobile site visits to driving in-store customer footfall.

Just as importantly, marketing via mobile can leverage advances elsewhere in the mobile industry. NFC payment capabilities can be harnessed as part of in-store loyalty schemes while larger screen sizes can drive greater engagement in their own right: one survey shows that 38% of tablet users have made a purchase after seeing advertising on their device.[11] As a result, marketers must consider the role of the mobile device as both a distinct and complementary marketing channel.

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11 "OPA study reveals attitudes of today's tablet user," Online Publishers Association, 18 June 2012

Ernst & Young insight – Seizing opportunities in big data

Big data represents a long-term opportunity for a number of industry players to make the most of greater customer intelligence, whether in the form of improved internal decision-making or externally as a source of new revenues via third parties.

New technologies are becoming available, enabling value to be extracted from vast volumes of data, which are being created at an increasing pace and through a widening array of formats, both structured and unstructured.

Although operators have an advantage in terms of existing customer touch-points and information assets such as location details, different types of data are held in a variety of fragmented legacy systems. Effective storage of data is becoming a priority, and cloud-based solutions from vendors may have a pivotal role to play in the future. As solutions mature, relationships in this space need to evolve from that of supplier and customer to one of proactive partnership.

Standardization can also act as a pivotal enabler: providing technical frameworks for data encryption, aggregation and anonymization will help create a robust ecosystem for big data solutions in years to come.

Beyond technology issues themselves, there are a number of wider challenges that will come into play as big data capabilities gain traction. The reuse of customer data requires unprecedented levels of trust. Effective codes of conduct and consumer dashboards represent some of the innovations that will be needed if privacy considerations are to be met head-on.

Regulation is another area where progress is needed if big data services are to thrive. There is a myriad of legacy regulations that govern data use across various industries. While policy makers recognize the need to update legacy stipulations regarding online data, creating global, cross-industry consensus will take time. Issues such as the cross-border transfer of data and limitations on repurposing of data are no less important than protecting end-user privacy.

Finally, organizations will need to evolve in new ways if big data innovations are to become commonplace. Most industry experts believe that there is likely to be a shortage of deep analytical talent until the university system catches up with market demand. Meanwhile, dedicated business intelligence units within existing organizations will play a big part in helping to incubate talent and grow new competencies.

7. Making the most of the mobile cloud

Cloud takes mobility to the next level

Opportunities in mobile cloud services represent a new phase of industry convergence. A number of entities – from mobile operators, enterprise IT vendors through to consumer application providers – are targeting growth in the cloud market. Cloud functionality allows mobile applications to be made available, at scale, to customers across a range of use cases. For their part, operators see cloud services as a leading disruptive trend.

Figure 7. Operator perspectives on industry disruption

Question: How disruptive will change in these areas be over the next five years?

% of respondents
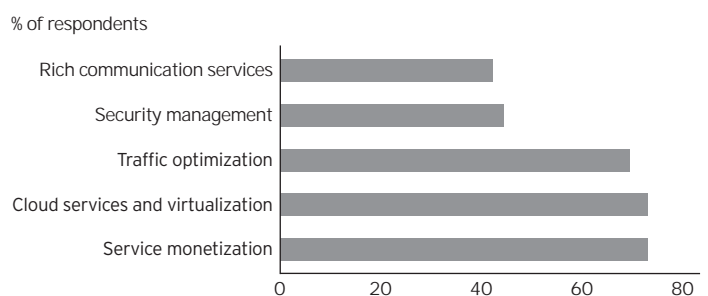
Source: "2nd annual operator survey," Radisys, 24 February 2013

Additional intersections between new services – involving social media and big data – suggest that mobile cloud services will continue to reshape customer needs and service provider business models for many years to come. Nevertheless, many enterprises remain underprepared for the changes heralded by the mobile cloud, presenting service providers with opportunities to acquire new customers and boost the loyalty of existing clients.

Isolating strengths in the cloud

Mobile operators must grapple with the roles to which they are best suited in the cloud environment. Opportunities will vary according to customer segment: in the consumer space, online advertising, e-commerce and online media are expected to predominate, while the market for software-as-a-service (SaaS) in the enterprise is growing strongly.

Operators should take steps to ensure that they add value through their network capabilities and customer insights, avoiding risks of commoditization in the process. Leading cloud application developers have already highlighted the need for greater interoperability between devices and platforms – operators are well-positioned to provide single customer interfaces with strong levels of security.

There is also scope for operators to benefit from cloud-enabled solutions from vendors. Cloud-based billing, for example, can provide carriers with advantages in customer acquisition, care and retention, aiding time-to-market. Looking ahead, cloud-based vendor offerings can also support operator implementations of M2M solutions by providing enterprises with end-to-end management capabilities.

Targeting enterprise pain points

Cloud services have made plenty of headway in the consumer space as end users aggregate devices and demand for content escalates inside and outside the home environment. Likewise, enterprises stand to benefit in a number of ways from cloud functionalities.

Taking advantage of APIs can help differentiate mobile cloud services, in turn enabling greater levels of personalization, more dynamic quality of service and greater levels of security. Deeper partnerships will help unlock these intelligent network capabilities: operators can cooperate with software companies to offer new context-aware cloud services for enterprise device provisioning and management, for example.

Tie-ups with cloud marketplace providers also represent a new avenue for operators, allowing their enterprise customers access to integrated platforms to acquire and manage third-party applications. These new forms of partnership reflect how cloud delivery business models are altering traditional mindsets around resale and third-party relationships.

These new value chains are vital, given that operators see cloud delivery in the enterprise segment as a way of adding value through application distribution. This stands in contrast to the consumer segment, where cloud capabilities may be more of a loyalty-boosting tool as operators strike deals with cloud application providers.

Ernst & Young insight – Bringing benefits to the bring-your-own-device (BYOD) environment

BYOD is one of the most disruptive trends taking place in the workplace. As employees look to leverage their consumer devices in new contexts, the potential for increased productivity and enterprise cost savings is unprecedented.

However, policy definitions and enforcements are lagging – with end-to-end solutions that cater for enterprise data as much as the devices that deliver them adding to compliance requirements. IT departments are mindful that the expenses associated with BYOD support do not outstrip gains related to device provisioning and increased productivity.

To ensure that both employers and employees benefit from the BYOD phenomenon, service providers need to adjust their approaches. Repurposing mobile device management (MDM) solutions will help balance the competing needs of security, cost and convenience, while new managed service options can provide context- and device-sensitive charging options that cater for increasing numbers of "prosumers."

8. Devices and apps evolving in new ways

Smartphones overtake feature phones

The smartphone revolution shows few signs of abating. According to the latest industry estimates, more smartphones are forecast to be shipped globally than feature phones this year. In 2013, vendors are expected to ship 918.6m smartphones, just over half of total mobile device shipments.[12] Meanwhile, LTE-capable devices continue to grow in availability, with 821 terminals available at March 2013 – and smartphones account for almost a third of these devices.[13]

Figure 8. Shipment forecast for smart connected devices

Annual shipments (b)
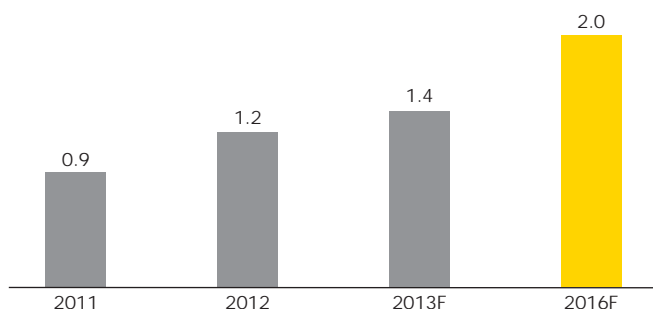
Source: "Quarterly mobile phone sales tracker," IDC, January 2013

At the same time, form factors are evolving, disrupting existing product categories. At this year's MWC, a number of vendors showcased so-called "phablets," which, with screen sizes at between five inches and eight inches, blur the traditional distinctions between smartphones and tablets.

In addition, an array of smart watches was also on display – devices that can link to smartphones and perform key functions such as photo sharing and music control. Such form factors represent more than the tides of fashion – new user interfaces could have high relevance in specific scenarios, from health monitoring to location-sensitive advertising. As form factors and device use cases expand, end users are now aggregating different types of terminal. By 2015, it is estimated that 25% of mobile subscribers will own a minimum of two devices.[14]

Optimizing market reach

As operators and vendors consider that the next billion new internet users will be mobile consumers in developing markets, device affordability is a leading sector concern. As a result, device manufacturers have been urged to provide US$10 price points for mobile broadband dongles and US$30 price points for smartphones to widen addressable markets.

Vendors are already responding to the challenge by developing feature phones at lower price points and adopting long-term strategies that more sharply delineate between the needs for affordable handsets and premium smart devices. Looking beyond lower price points themselves, manufacturers are considering other ways of making services more affordable and content more accessible – by supporting local content developers and using built-in web browsers that save on data consumption.

Spectrum fragmentation in the LTE environment has also created additional challenges for vendors. At present, refarmed spectrum in the 1800 MHz band accounts for 4 in 10 LTE connections. Although digital dividend spectrum and IMT-extension bands are also being used for mobile broadband, refarmed frequencies will continue to feature prominently in the LTE market. However, progress is being made in terms of unified chipsets that support carrier aggregation, paving the way for reduced fragmentation in the LTE device ecosystem.

Bringing change to the world of apps through HTML5

Greater choice is becoming apparent in mobile software, with a number of new operating systems (OS) announced during MWC. HTML5-based apps are set to grow in importance: developers, hardware manufacturers and operators are warming to greater diversity apparent in the smartphone ecosystem.

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12 "Smartphones Expected to Outship Feature Phones for First Time in 2013, According to IDC," IDC, 4 March 2013
13 "GSA confirms 821 LTE user devices announced, with smartphones leading the way," GSA, 27 March 2013

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14 "The State Of Broadband 2012: Achieving Digital Inclusion For All," ITU/UNESCO, November 2012

For developers, the use of web technologies allows them to address more customers than ever before, while the provision of payment APIs for the web in OS environments could allow operators to leverage their billing relationships with end users. In this sense, new dynamics between developers, handset manufacturers and operators can spur continued innovation in apps. New open-source OS could play a particularly strong role in emerging markets, where developers of local content services are lacking and where smartphone penetration is low compared with more developed regions.

Going forward, the apps ecosystem is set to evolve in new ways. Operators themselves are already seeking new ways of interacting with the developer community – through use of innovation funds and facilities, for example. This underlines the importance of mutually beneficial cooperation, where operators can nurture new technologies while developers can leverage operators' sales and distribution channels.

9. New network paradigms

The global LTE phenomenon

LTE network growth continues to be impressive – over 400 LTE networks are expected to be commercially available across 119 countries over the next five years, including 163 networks that have already launched. This makes 4G the fastest-developing mobile system technology in history. All told, 3G and 4G technologies will account for half of all global mobile connections in five years' time, representing a paradigm shift toward data-centric mobile services that will make significant contributions to national productivity growth.

However, the migration toward faster networks masks regional disparities – just 16% of developing world connections are via 3G or more advanced technologies. This presents a very real challenge to the industry, with initiatives in tower outsourcing and network sharing acting as cost-efficient routes to boosting coverage levels in emerging regions. Nevertheless, the pace of technology change in the mobile industry shows no signs of slowing – a number of operators are already testing LTE Advanced solutions.

Figure 9. Cumulative LTE network launches worldwide
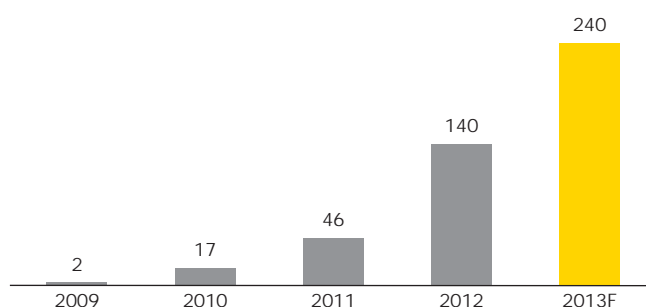
Source: Wireless Intelligence

Note: *Data is based on planned launches in 2013 announced by operators at the time of data collection (8 May 2013). There were 24 commercial launches in January to April 2013. There are a further 191 announced commitments with no launch dates specified.*

New vendor solutions are empowering operators by distributing network intelligence further from the mobile core. Base stations are now seen as repositories for local content, enabling operators to meet end-user needs more efficiently, particularly for popular video and discovery-oriented content.

The growing availability of mobile data technologies is also being partnered with innovations in voice technology – a number of operators are now trialing Voice-over-LTE (VoLTE) services. HD Voice is also becoming an important differentiator, with 61 networks now supporting wideband voice in 45 countries as of January 2013.

Burgeoning roles for Wi-Fi and small cells

Despite the quickening pace of technology migration in the mobile industry, network landscapes are becoming more diverse, with a range of access technologies and types of base stations now used to deliver connectivity to end users.

Wi-Fi is playing an ever more important role in the mobile data environment, from providing data offload opportunities for operators to acting as key platform for mobile data usage inside and outside the home. Much of the focus at this year's Mobile World Congress was on better integrating Wi-Fi to create a seamless end-user experience.

Already, operators are exploring the possibilities for policy-based network management in order to ease switching between different access networks. The fact remains that the majority of consumer Wi-Fi traffic is not currently carried over operator-managed hotspots, meaning higher levels of end-user awareness are required. At the same time, technical enablers relating to authentication and roaming require concerted industry action.

Small cells are also set to become a key feature of increasingly heterogeneous network environments, with operators recognizing their potential to enhance capacity and boost in-building coverage. The number of small cells deployed globally reached 10.8m by the end of 2012, while femtocells stand at 9.6m, outstripping macrocells.[15]

Despite a positive prognosis in terms of future deployments, operators should have the right tools and techniques to ensure efficient traffic location and backhauling. Closer collaboration between operators and their suppliers will help accelerate deployments; while industry focus is sharpest on 4G small cells, many operators still require robust solutions in a 3G environment.

The rise of SDN

The mobile industry's quest to respond to ever-increasing demand for data has seen software-defined networking (SDN) solutions gain prominence of late. By breaking the coupling of software function and hardware platform, SDN can allow for the virtualization of network functions and hence, far greater flexibility in how networks and deployed and scaled.

Vendors are unveiling SDN solutions to allow operators to manage and configure their networks more efficiently in the face of reduced margins; embracing SDN can help them achieve unprecedented levels of network flexibility, scalability and efficiency. In this way, SDN can help improve network control and reduce costs.

While SDN offers many advantages, the industry is still debating its precise benefits. Some vendors argue that SDN does not allow for the robustness and reliability that an integrated implementation offers. However, the increased bandwidth of network interfaces that is required as a result of rising demand for data lends itself to the enablement of SDN, since it also allows the delay between network elements to be reduced.

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15 "Small cell market status," Small Cell Forum, December 2012

GSMA Mobile World Congress 2013 post-event report

03 Conclusion
Mobile technology as a tool for transformation

MWC 2013 demonstrated that the mobile industry is evolving in new and exciting directions. From the growing role of M2M across different industry sectors to the range of form factors that now inform the device experience, it is clear that mobile technology is playing an ever-greater role in transforming societies across the globe.

Collaboration between different stakeholders – whether within the mobile industry or beyond it – is now central to new service propositions. The walled garden mindset of old is giving way to an environment where innovation is a shared process and where robust ecosystems can create long-term value.

A more complex industry environment is not without its challenges. Standardization and interoperability remain key concerns for the industry, while regulation must also adapt to keep pace with emerging customer demands and changing industry landscapes. That said, the prognosis for the mobile industry is highly positive, and industry players have much to look forward to as mobility extends its relevance as an agent of socioeconomic change.

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