Contents

Connected Life

The impact of the Connected Life over the next five years

pwc

mEducation

Web-based course material should be decomposed into small pages that can be easily read on small mobile screens. When English vocabulary lessons were set up using the email and SMS functions of mobile phones, the students' response was overwhelmingly positive.

Thornton & Houser

mEducation

The students of the future will demand the learning support that is appropriate for their situation or context. Nothing more. Nothing less. And they want it at the moment the need arises. Not sooner. Not later. Mobiles will be a key technology to provide that learning support.

Dr Marcus Sprecht
Professor at the Open Universiteit Nederland

mHealth

I think the mobile platform is incredibly important for the work of NGOs and development in general. It allows us to expand the reach of the programmes we have and create efficiencies within them.

Erica Kochi
Unicef's New York-based Innovation Unit

mHealth

The aim is to give the patient a tool to more effectively manage their chronic condition, so this will minimise the number of times they visit their GP and the number of times they become quite ill. The direct benefit of this is reduced visits to healthcare practitioners, reduced costs and fewer expensive drugs.

Dr. Victor Higgs
MD, Applied Nanodetectors

Smart Cities

Smart meters will revolutionise our relationship with energy, bringing people closer to it and helping us think about it in a more intelligent way. This is vital to achieving a 100% renewable future.

Andy Blackett,
Head of Metering, Good Energy, UK

mAutomotive

We are pleased to see that the implementation of eCall is becoming a reality in Europe. The closure of this eCall tour by a consortium of industry partners is an important step towards the EU's objective to have eCall deployed in all cars in Europe as soon as possible.

Juhani Jääskeläinen
European Commission

mAutomotive

Connected containers and trucks equipped with M2M devices provide service providers and customers reliable and timely information such as the location, temperature, weight and humidity of shipping vessels to ensure asset integrity. When anything goes wrong, an alert message will be sent, which helps increase regulatory compliance and ensure the quality of the items especially for perishable goods.

Deutsche Telekom

Smart Cities

Just as we predicted that Google would want to colonise every part of African life, the company has now launched a prepaid debit card which is Near Field Communications (NFC) enabled used for purchase of bus fare in Nairobi.

TechMtaa.com

Mobile technology is redefining our lives and making it increasingly connected. From health and education to transportation and smarter cities, the proliferation of mobile communication and a connected life is now well established and here to stay.

In this report, we have attempted to give a snapshot of trends that are redefining our lives through mobile technology. The instances cited here only scratch the surface of the impact that mobile devices will have on society over the next five years. Our findings indicate an exciting future for both developed and developing markets.

For instance, in developed countries mobile interventions could help cut healthcare costs by 400 billion USD in 2017, help retain 1.8 million students in the education system, save one in nine lives lost in road accidents, and reduce CO_2 emissions by 27 million tonnes annually. Similarly in developing markets, mobile interventions could help save over a million lives in Sub-Saharan Africa, provide education access to 180 million students, save 25 million tonnes of food and encourage over 20 million commuters to start using public transport.

The GSMA and a number of stakeholders around the world provided valuable inputs to this report. A number of secondary data sources were consulted to prepare this snapshot. Our aim is to help generate a dialogue on this important topic and its exciting future. Policy makers within the government, civil society, corporations and individuals will no doubt, find areas that they would like to explore further.

In preparing this report, the immense benefits from Connected Life have inspired us and our team. We hope this report offers a similar glimpse to the reader.

Shashank Tripathi
India Leader, Strategy and Research

Mohammad Chowdhury
India Leader, Telecom

Chapter 1
The impact of the Connected Life

Over just a few decades, mobile communication has become one of the largest and most significant platforms, with six billion connections and transforming the way we communicate and access information, entertainment and the internet.

Now, a new wave of connectivity is on the horizon where everyone and everything around us that might benefit from a wireless connection will, in fact, have one. We are about to see connected cars, buildings, medical monitors, TVs, game consoles and a whole range of connected consumer electronics and household appliances. Many of these will be connected wirelessly and intelligently, communicating and interacting with each other, thereby creating the connected life.

Mobile networks play a pivotal role in the development of the connected life providing a scalable, standardised global platform to support the growing demand for intelligent, secure connectivity. New connected wireless devices are set to surpass the number of mobile handsets over the coming decade and create significant new business opportunities for mobile operators, vendors and industry partners. Machina research estimates that by 2017, there will be over 10 billion cellular connections.

Ericsson estimates that by 2017, 85 % of world's population will have 3G coverage, and that global data traffic will grow 12-fold by the end of 2018*. This future demand will only be satisfied by the continued roll-out of standardised mobile networks including the global GSM LTE Mobile Broadband standard. Without continued investment and growth in mobile networks and the deployment of multiple connected devices, the socio-economic benefits of the connected life will not be fulfilled.

"Beyond connectivity, mobile operators will play a crucial role in working together with a range of industry partners in health, automotive, education, smart cities and a range of vertical industries to accelerate the launch of valuable connected services," says Ana Tavares Lattibeaudiere, Head of Connected Living, GSMA. Mobile operators have the opportunity to generate value beyond basic connectivity through managed connectivity, stewardship services and platform innovation.

Source: Ericsson Mobility Report, November 2012

GSMA Connected Living programme

mHealth could save over 1 million lives in Sub-Saharan Africa over the next five years

Simple mobile interventions for treatment compliance, medical stock availability and healthcare worker adherence could potentially have a significant impact on saving lives in Sub-Saharan Africa.

Chapter 2

mHealth: Saving lives and money

HIV/AIDS, tuberculosis, malaria and pregnancy-related conditions account for 3 million deaths in Africa every year

In Sub-Saharan Africa, over 1.2 million new-borns and 265,000 mothers die every year. One in nine children die before the age of five and over 90% of the world's estimated 1.2 million malaria deaths occur here. Tuberculosis (TB) accounts for over 230,000 fatalities and close to two-thirds of the world's HIV infected are in this region. In South Africa, one in five adults is HIV-positive and in 2010, about 280,000 South Africans died of HIV/AIDS. In fact, it is estimated that over 40% of all deaths among South Africans are HIV/AIDS deaths and that over the next five years, 14 million more lives will be lost due to these diseases. The vast number of lives lost every year has driven the UN to declare that curbing these conditions would represent 3 of the 8 Millennium Development Goals set in 2000.

The increased adoption of mHealth solutions could help save lives across the entire healthcare delivery chain
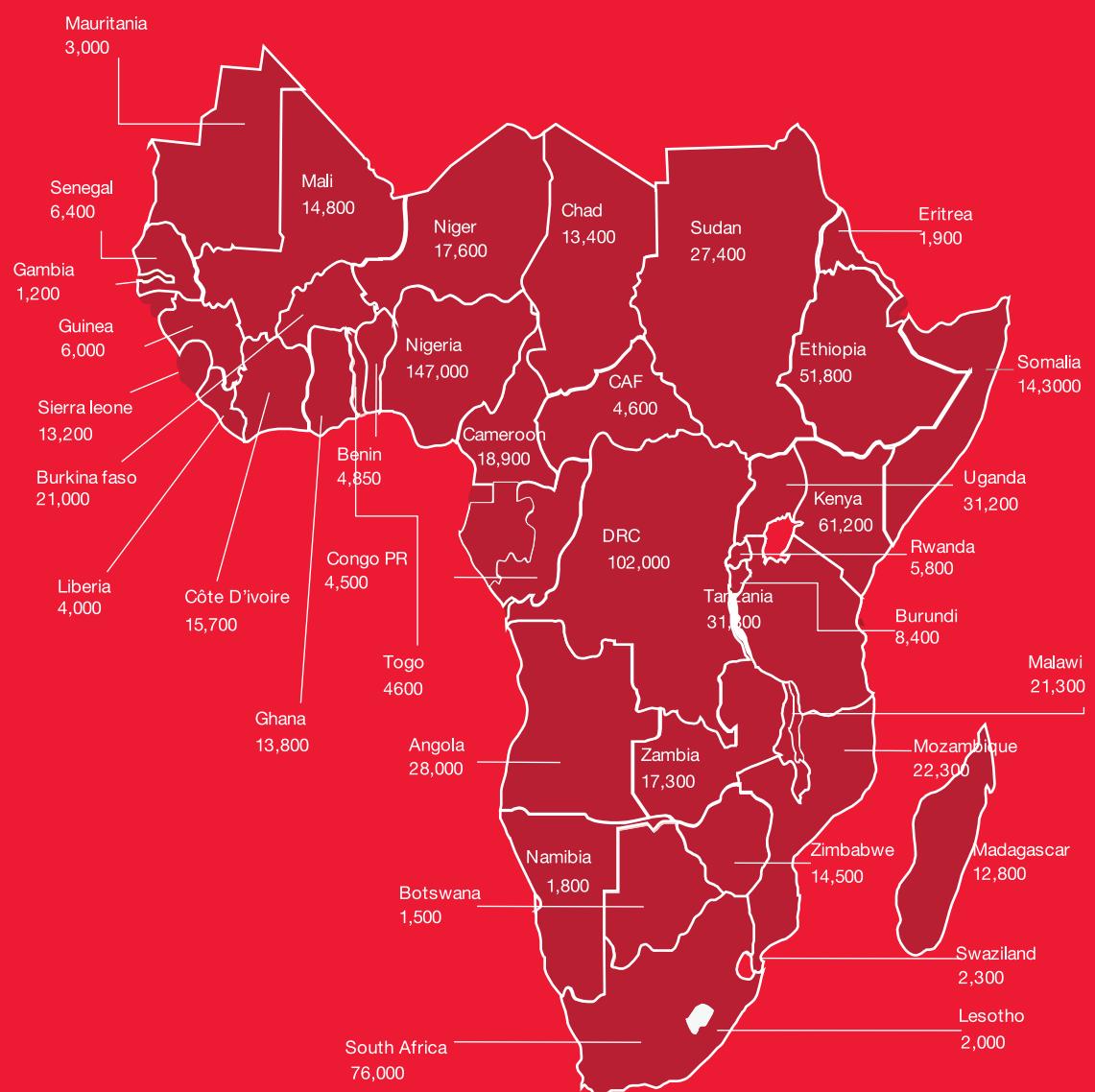
Many of these deadly conditions are relatively simple to treat, prevent or contain. SMS reminders to check for stock levels at the health centres have shown promising results in reducing stock-outs of key combination therapy medications for malaria, TB and HIV. For HIV patients, simple weekly text reminders have consistently shown higher adherence amongst the patients. TB is a largely curable disease but requires six months of diligent adherence to the medication regime. mHealth could help control TB mortalities by ensuring treatment compliance through simple SMS reminders. Delivering mobile-assisted awareness to pregnant mothers and traditional birth attendants could reduce perinatal and maternal mortality by 30%. Pilot programmes that track mobile-usage patterns have been very successful in predicting disease outbreaks and in increasing malaria reporting adherence from 22% to 93%. Healthcare workers' adherence to treatment guidelines and reporting procedures is another important area where mHealth is focussing on behavioural changes. To ensure successful mHealth interventions, mobile penetration needs to increase so that both the patients and the mHealth enablers are always connected.

Simple mobile interventions have shown tremendous potential in saving lives

- Mobile Alliance for Maternal Action (MAMA), ensures that health workers and pregnant workers share health information through free SMS and calls for information on antenatal care, delivery services and child care.

- SIMpill, a medication management system that detects non-compliance of medication regimes, uses SMS reminders. Results showed 94% compliance for a TB trial and 92% cure rate.

- TxtAlert in South Africa supports HIV patients and their healthcare workers on Anti Retroviral Therapy (ART) compliance. The success has been resounding with missed appointment rates declining from 27% to 4%.

- Since 2011, HP in collaboration with Positive Innovation for the Next Generation (PING), the Clinton Health Access Initiative (CHAI), and mobile network provider MASCOM have successfully rolled out a mobile-enabled program that reduced government response times to malaria outbreaks from four weeks to three minutes.

Where will the lives be saved over the next five years?

Mauritania
3,000

Senegal
6,400

Gambia
1,200

Guinea
6,000

Sierra leone
13,200

Burkina faso
21,000

Liberia
4,000

Côte D'ivoire
15,700

Ghana
13,800

Mali
14,800

Niger
17,600

Nigeria
147,000

Benin
4,850

Congo PR
4,500

Togo
4600

Chad
13,400

Sudan
27,400

Cameroon
18,900

CAF
4,600

DRC
102,000

Ethiopia
51,800

Eritrea
1,900

Somalia
14,3000

Uganda
31,200

Kenya
61,200

Rwanda
5,800

Tanzania
31,800

Burundi
8,400

Malawi
21,300

Mozambique
22,300

Angola
28,000

Zambia
17,300

Namibia
1,800

Botswana
1,500

Zimbabwe
14,500

Madagascar
12,800

Swaziland
2,300

Lesotho
2,000

South Africa
76,000

mHealth could help cut healthcare costs in OECD countries by over 400 billion USD in 2017

Providing healthcare services by consulting, monitoring, and providing access to patient records remotely through mobile technology will help curtail rising healthcare costs significantly.

OECD countries spend close to 6 trillion USD in healthcare costs every year

On an average, OECD countries spend over 3,200 USD per capita on healthcare, which amounts to 9.6% of the combined OECD GDP. Healthcare spending has consistently outpaced GDP growth rate in most of these nations and is expected to place considerable pressure on public expenditure as the government contributes in excess of 70% of total healthcare spend. Over 400,000 German senior citizens cannot afford retirement homes and one in every 12 appointments are missed in the US. A 2012 survey conducted by ComRes for the British Red Cross shows that personal care services for elderly Britons have been cut or frozen by two-thirds of local councils since their last local elections. The growing incidence of chronic lifestyle-related diseases are adding to this burden with the need for complex, ongoing and expensive treatment. Standard & Poor's has already issued a warning in 2012, stating that the rising cost of healthcare is likely to damage the creditworthiness of advanced G20 countries within the next decade.
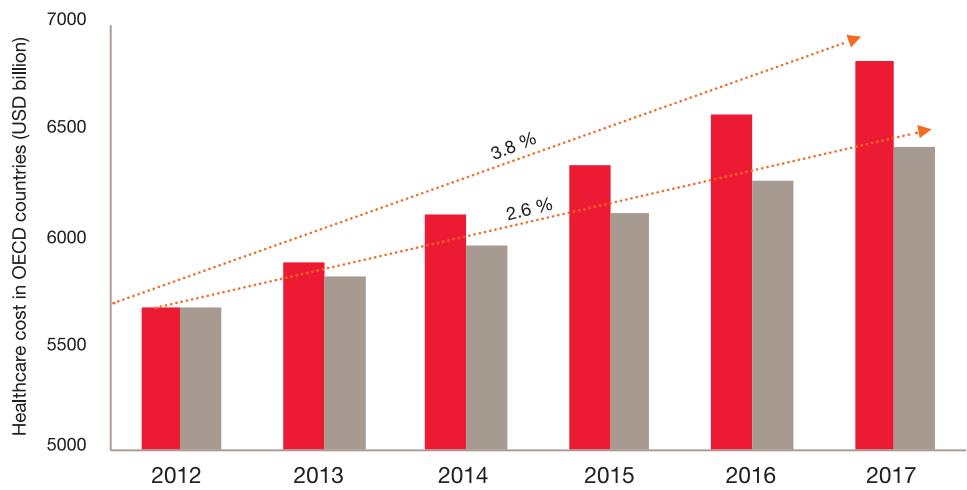
mHealth solutions could improve patient quality of life and reduce treatment costs

mHealth programmes are currently one of the most cost-effective ways of providing remote living assistance to aging and chronically ill patients. mHealth programmes provide faster response times, integrated record access and considerable ease of use to patients. Remote consultation and support is expected to address the growing chronic disease management issue by reducing the need for hospitalisation. Proactive mobile-based care for patients with sudden health incidents can reduce the number of primary and emergency visits by 10%. Mobile technology can also be used for home monitoring, thereby reducing the need for face-to-face consultations. This will not only help generate elderly care savings of up to 25% but will also improve patient quality of life. Healthcare providers can benefit via mobile access to electronic health records which can reduce the administrative burden of hospitals by 20 to 30%. Simple SMS reminders for scheduling appointments can help address the problem of missed appointments. In order to achieve cost savings of this magnitude, it is critical that healthcare institutions in OECD countries not only adopt but also scale up the usage of mHealth services.

mHealth interventions are already being deployed in pilots and have shown significant cost savings

- Integrated care has been piloted in Valencia, Spain to deliver routine healthcare. Initial findings suggest 24% differential in per capita patient cost management.

- The Connected Cardiac Care programme is a home telemonitoring programme for heart patients and has resulted in a 48% reduction in rehospitalisation over the five-year period.

- Findings from the Eddy VNA study indicate that home telehealth interventions drop hospitalisation by 55% and reduce emergency visits by 29%.

- mHealth related trials in Nordic countries have shown 50 to 60% reduction in hospital nights and rehospitalisation.

Bar chart: Healthcare cost in OECD countries (USD billion), years 2012–2017, with trend lines labelled 3.8 % and 2.6 %.

In developing regions, mEducation could provide 180 million children the opportunity to stay in school over the next five years

mEducation could provide access to educational resources, tools and materials anytime and anywhere by leveraging mobile devices to provide access to education.

Chapter 3

mEducation: Equipping people for a better future

Of the 610 million students enrolled in primary education, only 10% are expected to ever enroll in secondary education

Literacy levels in most developing countries remain extremely low with 98% of the world's illiterate or semiliterate population residing in these regions. Of the 1 billion students expected to enroll in primary education over the next five years, over 220 million students are expected to drop out during the primary stage and an additional 290 million primary graduates are expected to drop out before entering the secondary education system. Each year, only about 10 million students enter the secondary system against the nearly 100 million who enroll in primary.

### mEducation is being used to increase affordable access to education for students in developing markets

Access to education remains a critical problem for reasons ranging from insufficient school coverage and low household incomes to limitations in the quality of locally available material and teachers. The widespread penetration of mobile networks offers a powerful platform to improve access to relevant content. mEducation solutions already allow thousands of students in China, Bangladesh, South Korea and Indonesia to access course content through SMS and audio lessons. An mLearning student saves 86.7% of the cost spent by students taking the same training in a traditional classroom. Much of this is due to the elimination of the cost and inconvenience of travelling to attend courses. Inexpensive personal learning devices like the 35 USD tablet launched in India are further improving access to mEducation.

180 million potential dropouts would have access to education via mlearning and up to 20 million could be retained in the system

The projected increase in mobile data penetration could provide education access to almost 180 million dropouts over the next five years as most mobile service providers now offer mEducation services. We estimate that with increasing penetration and awareness, around 6–8% of these students could be retained in the education system and encouraged to join secondary education. This amounts to almost 9 million primary and 12 million secondary enrolments over the next five years in these regions.

Impact of mEducation every year		
610 million students are enrolled across primary education		
Only 470 million students remain	77%	+1-2%
140 million drop out	23%	8 million can be retained in the system at this point
67 million graduate from last grade of primary every year		
Only 10 million students are enrolling in 1st grade of secondary	15%	+5-6%
57 million drop out before enrolling in secondary	85%	4 million can be retained in the system at this point

Interventions for improving customisation: engagement, performance and convenience		
Mobile phones as access tool	SMS & audio lessons	Low-priced e-textbooks

mEducation has had significant success despite being a very new innovation in the market

Multiple pilot programmes and studies have been conducted across the developing markets to assess the impact of mEducation on access to education and student performance improvement:

- An mLearning service called MoMath, which was introduced in 2009, has delivered a 14% improvement in math grades in South Africa.
- Nokia has over 20 million subscribers and 1.5 million active users for its Mobiledu product in China.
- Project ABC in Niger has shown substantial gains in numeracy exam scores along with higher impact learning.
- The WorldReader project in Ghana has provided students across multiple grades with textbooks through mobiles.
- BYOT e-learning in Nigeria has seen a 30% improvement in students' academic performance with 7% reduction in drop-out rates.

mEducation could help retain 1.8 million students in the education system across developed nations by 2017

mEducation will enable educators to personalise education solutions for individual learners to improve student engagement.

## Over 30 million students are expected to drop out of school over the next five years

Developed countries are currently facing a considerable number of educational challenges. One in four Europeans under the age of 15 attains only the lowest level of proficiency in reading. Across most developed countries, 20% of students do not attain an upper secondary degree and nearly 50% of the school drop-outs are between Grade 3 to Grade 6. This results in a substantial employment disadvantage for these dropouts as they often lack the most basic job skills. For example, in the US, despite the economic crisis in 2011, there were over 1 million unfilled job vacancies due to the lack of skilled labour.
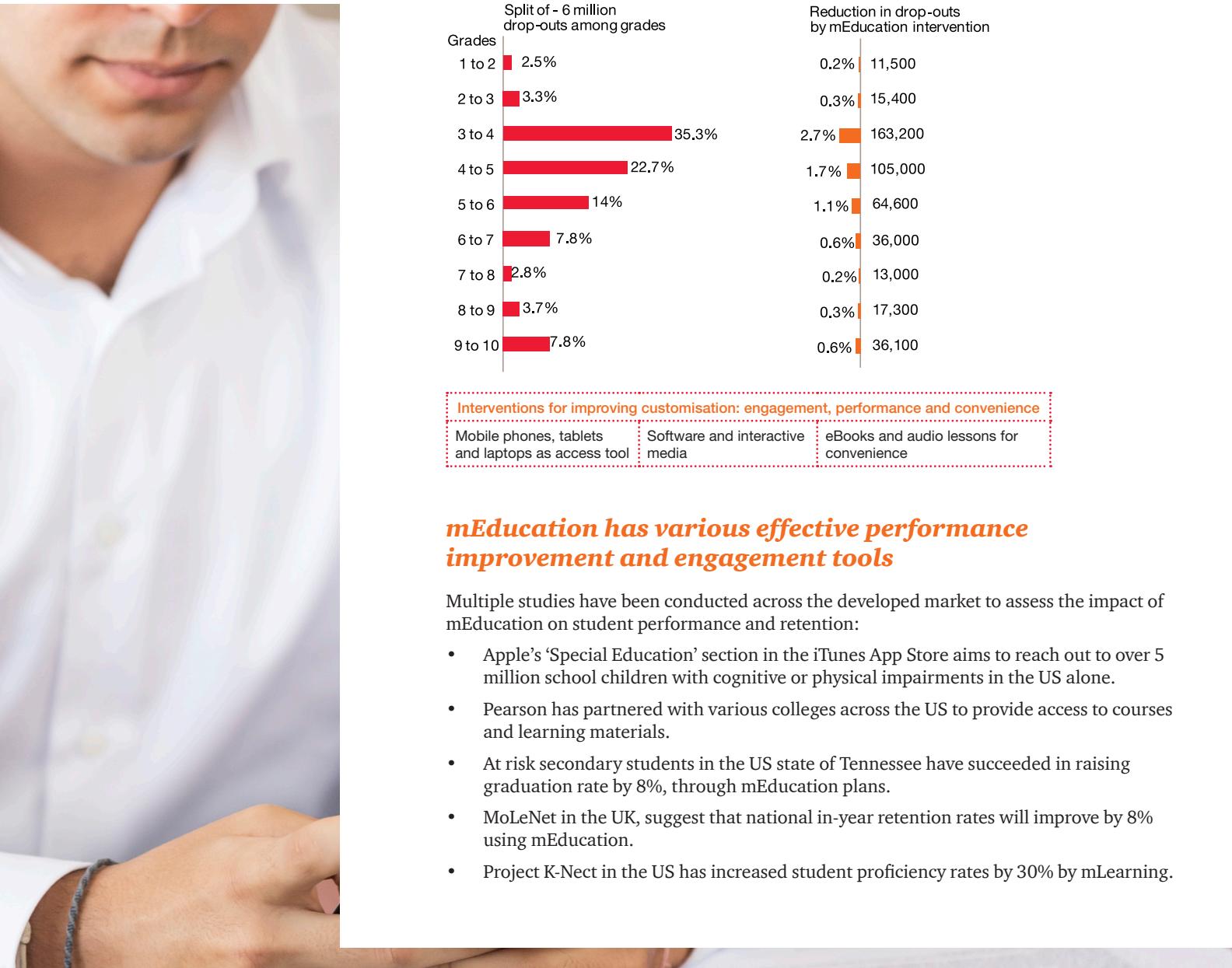
Large-scale rollouts of mobile learning through mEducation initiatives are already taking place in developed countries

There is a lot of work being done towards improving student engagement and customising education for each learner to improve retention. mEducation simplifies access to content and experts, and also overcomes the traditional constraints of time and location. Of the major mobile application (app), eBook and audiobook stores, at least 15–17% of titles are mobile learning apps and there are now major digitisation efforts taking place in the UK and US school systems. Korea and Denmark are moving to provide mobile education access to all students by 2015, and Turkey is committed to rolling out over 15 million tablets by 2016.

Over 1.8 million students (8% of dropouts) could be retained across Grades 1 to 10 over the next five years

Over 25 million potential dropouts will have access to mEducation thanks to the growing adoption of mobile data services in developed markets. Considering this ubiquitous access and the success of a number of mobile learning programmes, we anticipate that around 7–8% of these dropouts could be otherwise retained in the system and encouraged to graduate from secondary education. This would amount to around 1.8 million more skilled and 'job-ready' secondary graduates in developed nations over the next five years.

Split of - 6 million drop-outs among grades

Grades	
1 to 2	2.5%
2 to 3	3.3%
3 to 4	35.3%
4 to 5	22.7%
5 to 6	14%
6 to 7	7.8%
7 to 8	2.8%
8 to 9	3.7%
9 to 10	7.8%

Reduction in drop-outs by mEducation intervention

0.2%	11,500
0.3%	15,400
2.7%	163,200
1.7%	105,000
1.1%	64,600
0.6%	36,000
0.2%	13,000
0.3%	17,300
0.6%	36,100

Interventions for improving customisation: engagement, performance and convenience		
Mobile phones, tablets and laptops as access tool	Software and interactive media	eBooks and audio lessons for convenience

mEducation has various effective performance improvement and engagement tools

Multiple studies have been conducted across the developed market to assess the impact of mEducation on student performance and retention:

- Apple's 'Special Education' section in the iTunes App Store aims to reach out to over 5 million school children with cognitive or physical impairments in the US alone.

- Pearson has partnered with various colleges across the US to provide access to courses and learning materials.

- At risk secondary students in the US state of Tennessee have succeeded in raising graduation rate by 8%, through mEducation plans.

- MoLeNet in the UK, suggest that national in-year retention rates will improve by 8% using mEducation.

- Project K-Nect in the US has increased student proficiency rates by 30% by mLearning.

Fleet telematics could prevent food wastage during transport and hence feed a population the size of Kenya every year by 2017

Fleet telematics is the combination of mobile technology and informatics that enables monitoring and management of logistics services.

Chapter 4

mAutomotive: Making the roads safer and the world a little less hungry

Developing nations waste over 1.1 billion tonnes of food every year

In the developing world, over 18 million deaths occur every year due to malnourishment-related conditions. The primary reason for this food scarcity is not the lack of production in these regions, but the wastage of food. Over 40% of the nearly 2.7 billion tonnes of food produced in the developing world is wasted every year. Most of this wastage is the result of poor infrastructure and food management. Transport and storage-related wastage alone contributes to over 240 million tonnes in these regions. This is the equivalent of the amount of food that can feed nearly 400 million people every year.

mAutomotive services are already making an impact in improving fleet performance in developing markets
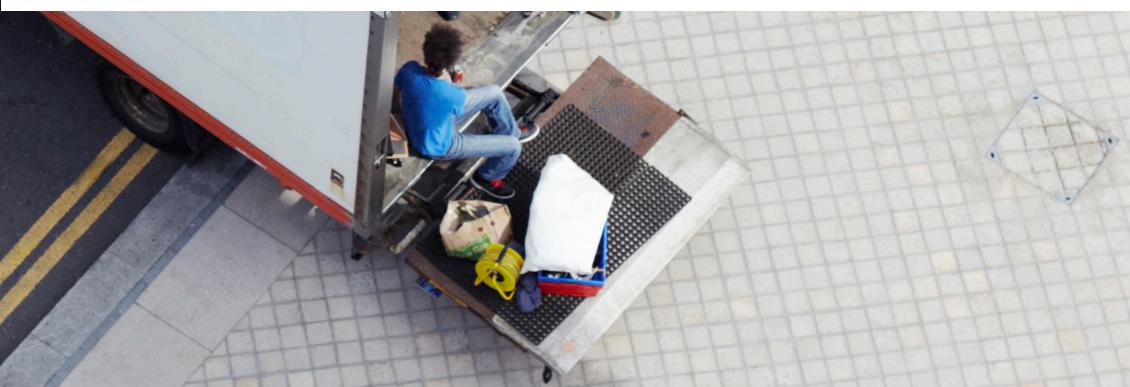
In markets such as Asia and Africa, fleet telematics is currently being employed in a variety of applications to improve fleet management and goods tracking, especially in food transport and cold transport supply chain. The development of fleet telematics is dependent on the growth of the breadth and depth of global mobile networks, as well as the implementation of complementary in-vehicle connected solutions.
Current mainstream applications include the following:

- Route and travel time optimisation
- Idling and stoppage time reduction
- Checking and managing storage temperature
- Monitoring vehicle attachments or vehicle doors
- Observing driver behaviour and performance

mAutomotive solutions could prevent enough wastage to feed over 40 million people a year

We estimate that as the potential benefits of fleet telematics gain traction amongst the fleet operators and owners, coupled with basic awareness programs, food wastage during transport and storage can be reduced by 10–15%, the equivalent of 25 million tonnes a year. This much food is sufficient to feed over 40 million people, a 2000-calorie diet, every year. A truck using vehicle telematics is expected to save the equivalent of 1 tonne of food a month through increased efficiencies and performance improvements that can be felt across the board.

Consumption	Retail and distribution	Handling and storage*	Production	Processing and packaging
12%	16%	22%	23%	23%

* 25 million tonnes of food could be saved every year which can feed:

- *the entire population of Kenya*
- *two-thirds of the UK*
- *all of Canada*

The key to the impact of fleet telematics lies in wide-ranging performance benefits

Acknowledging the benefits of fleet telematics, a wide range of companies from across the world offer fleet telematics and related services to logistics operators and owners. The developing markets' demand is now being actively serviced through low-price telematics solutions costing under 800 USD per vehicle. This service is proving to be very attractive to major food cooperatives in India, who are now requesting that fleet operators provide them with telematics-enabled tracking. Some well-documented performance related improvements are as listed below:

- Journey time reduction by 10–15%

- Maintenance cost reduction by 10–15%

- Fuel cost reduction by 10–15%

- Average reduction in billing cycles by 1–2 weeks

- Reduction in idling and stoppage time by 40–80%.

1 in 9 lives lost in road accidents could be saved by mobile-enabled in-car emergency call services

In-car emergency call services could broadcast life-saving information such as the location of the accident to the nearest emergency-service provider.

Over 85,000 people die every year from road accidents across OECD regions
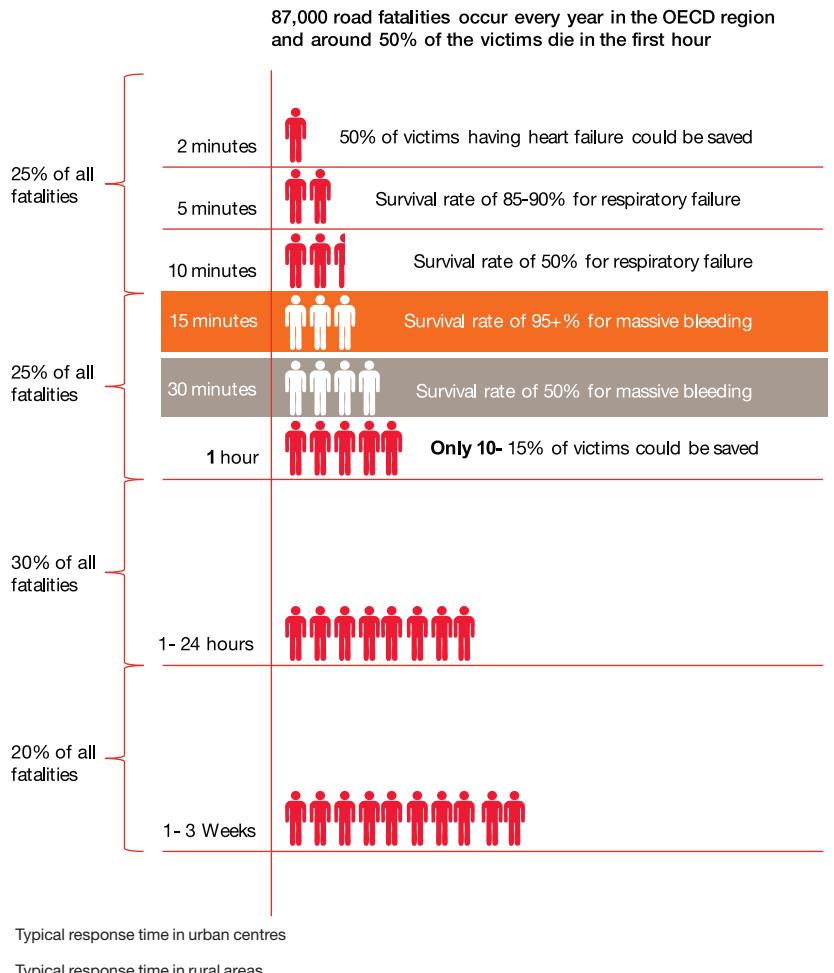
Deaths from road accidents feature as one of the top causes for fatalities in OECD countries. Road accident related deaths are primarily caused due to cardiac failure, respiratory failure or massive bleeding conditions. Half of these victims die within the first hour. In the moments following a major accident, every minute becomes critical to saving the victims' life and therefore the sooner that medically trained help arrives, the higher the chances are for survival. This becomes particularly important in the case of cardiac failures where every minute of delay reduces the chances of survival by around 10%.

mAutomotive services could reduce emergency response time by 50% in rural areas and 40% in urban centres

While emergency call services cannot reduce the number of road accidents, they help to dramatically reduce the time required to get trained help to an accident scene. Once activated after an accident, these applications establish a voice and/or data connection directly with the nearest emergency service provider and provide details of the accident, such as the time and location via the use of GPS or triangulation based on the nearest mobile towers. Most OECD-based studies indicate that emergency response times could be reduced by 40–50% through emergency call services as they eliminate the need for the victim or passers-by to actually make the call.

Over 35,000 lives could be saved over the next five years through emergency call services

With the EU mandating such services, current adoption patterns in other OECD regions and the growing industry awareness around the potential benefits of this simple intervention, cars with these embedded services will make up a significant portion of new car sales. Most major studies to date support the position that an estimated 10% of accident-related fatalities could be reduced through e-call services every year. This compelling evidence has prompted the European Commission to consider legislation that would make it mandatory for all new cars to be fitted with the emergency calling system by 2015. Even in North America, a similar service is now available from General Motors via their OnStar services.

87,000 road fatalities occur every year in the OECD region
and around 50% of the victims die in the first hour

25% of all fatalities	2 minutes	50% of victims having heart failure could be saved
	5 minutes	Survival rate of 85-90% for respiratory failure
	10 minutes	Survival rate of 50% for respiratory failure
25% of all fatalities	15 minutes	Survival rate of 95+% for massive bleeding
	30 minutes	Survival rate of 50% for massive bleeding
	1 hour	**Only 10-** 15% of victims could be saved
30% of all fatalities	1- 24 hours	
20% of all fatalities	1- 3 Weeks	

■ Typical response time in urban centres

■ Typical response time in rural areas

Multiple global studies agree that emergency call services could increase the number of lives saved by almost 10%

Multiple studies sponsored by governments as well as large corporations confirm the advantages of emergency call services in developed markets:

• According to the eSafety, and eMerge studies and TRACE studies there could be 5–12.5% reduction of fatalities due to road accidents through the use of such services.

• The STORM study shows that the emergency calling service could reduce response times from 21.2 minutes to 11.7 minutes in rural areas and from 13 minutes to 8 minutes in urban centres.

Smart commute interventions could give back commuters a whole a week's worth of time every year

Smart commute interventions such as mobile-based payments, live and dynamic transit scheduling, and commute-time updates would encourage a large number of people to use public transport.

Chapter 5
Smart Cities: Tomorrow's cities today

Typical commute times in the largest developing market cities are in excess of 90 minutes a day

The 15 largest emerging market cities are home to over 250 million people. In these cities, over 160 million spend an average of 90 minutes a day commuting to work and back. In 2011, IBM published the results of its annual global 'commuter pain' survey, which indicated that traffic is one of the largest challenges being faced by these cities. Of the 21 cities surveyed, the bottom eight were all from the developing world. An overwhelming majority of respondents (in excess of 60%) stated that traffic negatively impacted their stress levels, physical health and productivity. The total time that is typically spent commuting in these cities adds up to more than three years in one's lifetime.

Mobile-based commute interventions could increase adoption of public transport

Commute interventions using mobile technologies have the potential to improve the quality of public transport in these cities. Dynamic scheduling of buses based on commuter movement and density could drastically reduce the movement of empty buses clogging up traffic during peak hours. Mobile payments could eliminate queue-waiting times, and provision of real-time updates and schedules could encourage more commuters to use public transport. NFC technology could eliminate the need for special equipment to accept payments from a wide range of options such as phones or even smart cards.

Mobile interventions could encourage over 20 million people to adopt public transport over the next five years

Consensus studies indicate that in heavily congested areas, a 1% reduction in vehicles on the road typically reduces commute times by 2–3%. A well-networked transit infrastructure involving the ability to track commuters, provide them with up-to-date information to plan their commutes and eliminate friction generated through transaction delays could encourage 25–30% of commuters to opt for public transit. We estimate that such a large movement towards public transit could reduce commute times by as much as 30–35%. While mobile penetration in these cities have typically reached near saturation, the key to success lies in a concerted effort by the various stakeholders with local authorities being the primary enabler.

What is the value of the time saved commuting?	
Every year	**Over a lifetime**

	180 hours		
	Over a hundred football games		**Master any skill of your choice**
	A month's worth of work		**Three years of college**

Mobile technologies are expected to play an increasingly important role in public transport adoption and traffic management

- A 2012 study by MIT, Central South University in China, the University of California at Berkeley and the Austrian Institute of Technology using data from drivers' cell phones states that the strategic elimination of only 1% of drivers from select neighborhoods during rush hour would reduce travel times within a city by as much as 18%.

- Only last month, China has pledged to boost urban transport and is encouraging mobile payment systems to increase ridership in all its major cities.

- Indian railways has launched a ticket-booking app for mobile phones and has authorised the use of SMS as the ticket itself. There are several test projects to roll similar technology out for metro and bus services.

- Google has recently entered the Kenyan market with its NFC enabled 'beba' travel card that could be swiped against smartphones.

In major cities across the developed world, smart metering could reduce carbon emissions offset by over 1.2 billion trees

Smart meters record the consumption of electricity in regular intervals and use mobile networks to transmit that information at least daily for monitoring and billing purposes.

It would take the equivalent of 16 billion trees to offset the amount of carbon emissions from the top 50 OECD cities
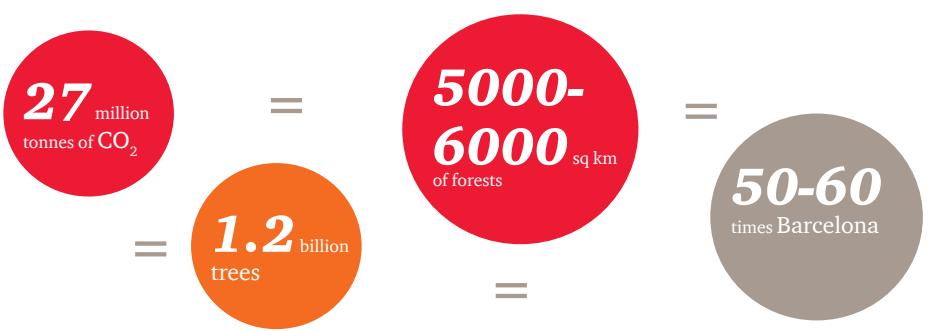
Cities are centres of commerce, trade and industry around the world, resulting in large population clusters. In fact over 80% of the population of the major OECD countries reside in urban centers and while cities may be considered the 'lands of opportunity', they are also the most taxing on the environment. Cities contribute to over 80% of direct and indirect carbon emissions, with households alone contributing to around 25%. Today, the 50 largest cities in the OECD region emit over 735 million tonnes of CO_2 every year.

Domestic smart meters have the potential to reduce the carbon footprint of households

Both people and the environment could benefit from smart meter technology. Unlike more conventional home energy monitors, smart meters gather data for remote reporting of energy, water or gas usage. They primarily differ from traditional meters in their ability to enable two-way communications between a meter and its service provider. Furthermore, the additional benefits of 'remote cut-off' and 'start-up' that could prevent idle-time energy wastage, especially during cold months and 'time of use' pricing, makes smart meters a good investment for people who do not consume much power during peak hours.

In developed markets, over 100 million smart meters will be installed in the next five years

Smart metering in the developed world is really beginning to take off. In the Australian state of Victoria, smart meters are being rolled to over 2.6 million electricity customers and in Canada, 7 million households already use smart meters. A similar increase could be seen in the US, where smart meter adoption has gone from 6% to over 30%, in only three years to a total of 27 million smart meters and an estimated additional 38 million will be installed by 2015. In Europe, the UK plans to have smart meters in all homes by 2020 and a further 11 more European countries aim to be 100% smart meter compliant by 2019. It is anticipated that by 2017, the adoption of smart meters in the top 50 OECD cities, will help reduce household energy consumption by 3.5% or the equivalent of 27 million tonnes of CO_2.

27 million
tonnes of CO_2

=

5000-6000 sq km
of forests

=

50-60
times Barcelona

=

1.2 billion
trees

=

Smart meters can relieve stress on the grid and reduce consumer electricity bills considerably

Smart meters are now considered to be very useful utilities for reducing energy consumption. Various studies have been conducted and they support the need for smart meters:

- The 2008 GridWise trial in the US concluded that smart meters could reduce utility bills by 5–15%.

- The Galvin Electricity Initiative, which has been monitoring smart meter-related cost savings across the US, indicates that dynamic pricing in some instances could be around 27–30% cheaper than retail pricing of energy.

- A pilot program in the US state of Oklahoma, was recently funded by the American Recovery and Reinvestment Act and a 15-year, 14.2 USD million energy savings performance contract.

Methodology

Initial shortlisting of region-specific interventions and their key areas of impact

This research report aims to capture the socioeconomic impact of a connected life for developed and developing markets. As part of our research, we looked at the four services of the 'Connected Living' program: mHealth, mEducation, mAutomotive and Smart Cities.

We shortlisted a series of potential region-specific interventions based on the following filters:

- Address key burning needs that affect us on a large scale
- Have a measurable impact by 2017
- Have some degree of adoption in the existing market

Based on our filtering criteria, we arrived at four interventions for developed markets and four more interventions for developing markets.

Capturing data and developing impact models

We created a master pool of data to capture the relevant data points by country (or the region wherever applicable) from standard global knowledge sources (e.g. WHO, UN and World Bank). We then identified a series of case studies, research outcomes, and pilot programs that have been able to arrive at quantifiable conclusions on the impact of each intervention.

Based on the impact evidence was organised to provide regional impact data sets and country clusters with similar impact levels based on current conditions and mobile penetration levels. These clusters and the impact of these interventions were consolidated to arrive at the first set of conclusions. These conclusions were then tested by altering the various impact metrics to arrive at optimistic and pessimistic scenarios. Another series of test conducted involved the introduction of error variables to determine the sensitivity of these models.

Arriving at projections

The models have been designed such that the impact of each intervention is estimated on existing projections of impact areas. For instance, in case of our mHealth – developed markets analysis, we used the OECD Health Indicator report as the basis for analysing our impact on projected spends . Based on this impact, we have arrived at our conclusion for each of the eight topics of research.

Approach					
Master data	**Need for mobile intervention**	**Region analysis**	**Impact evidence**	**Scenario analysis**	**Output**
Identifying relevant data points	Data analysis to establish reality	Clustering within developed and developing	Finalise case studies and impacts delivered	Parameters varied to identify various scenarios	Example:
Public sources of data like World Bank, UNESCO, OECD database etc. were used.	Places where possible mobile interventions can create a positive impact were identified.	Study specific regions in both developed and developing markets. Consolidate multiple regions if applicable.	Identify relevant case studies and pilot programs utilising mobile technologies for each relevant topic.	Develop impact parameters based on case studies and pilots. Develop the impact model and identify impact of outcomes.	One in nine lives lost in road accidents could be saved by mobile-enabled in-car emergency services.
Methodology to identify socioeconomic impact for each connected life service covered					

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