



expanding
horizons

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Jamaica harnesses the power of digital

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How mobile public services can transform lives

Published quarterly

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Expanding Horizons is a quarterly publication aimed at ICT decision-makers in the private and public sectors. It explores the socio-economic benefits that mobile technology offers as well as best practices from around the world in order to encourage affordable connectivity to ICT through mobile communications. It also shows how to create a favorable environment for market growth.

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editorial



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Governance on the go

The last decade has seen a rising trend among governments in the use of information and communications technology (ICT) to bring public services to citizens - enabling people across the globe to access public information more easily.

Conventional digital delivery of public services, or e-governance, remains beyond most people in many countries due to a lack of fixed infrastructure and access to the internet. However, with their vast reach and simplicity of use,

mobile devices can extend public services to billions more people. Consequently, there is a growing focus on m-governance across the world.

There are already many exciting examples of how mobile devices are being used by governments and other organizations to help people. Examples include school registration, notification of the readiness of permits for collection and finding out local weather conditions.

Explore inside how digital technology is helping students in remote communities of the Philippines to learn more. Also see how shared access to internet is creating local jobs and showing rural dwellers the value of online services.

In the following pages we look at all these issues and see how mobile technologies are making a real difference today. ■

Rauno Granath

Alex Lambeek

Public services can go mobile

Mobile communications has great capability to effectively deliver public services to society. Yet state agencies in many countries have been slow to identify the true potential. The tide is clearly turning though, with growing interest by governments in how the mobile can be exploited for the good of citizens.

Briefly stated:

- **Mobile technologies** are highly effective for delivering public services
- **Digital public services** bring real benefits to citizens, especially in the fields of health, education and employment opportunities
- **Early m-governance** deployments focus on delivering basic information, but the scope for more advanced services is almost unlimited

With about 90 percent coverage of the world's population, mobile technologies are already in place, unlike other initiatives such as low-cost laptops. Yet the research also found that few stakeholders appreciate the importance of mobile communications for delivering public services.

"In reality, there are few instances of mobile technologies being used to deliver public services. Typical examples include school registration, market prices for farmers and notifications to tell consumers about the readiness of certificates and permits for collection," says Mr. Kojo Boakye, Deputy Program Manager at the Commonwealth Telecommunications Organization (CTO).

Ms. Samia Melhem, Senior Operations Officer at The World Bank, agrees: "Public agencies, policy makers and donors like us are far behind the private sector in understanding how much the mobile platform, enabled with SMS and data communication capabilities, can transform public services. With good information at their fingertips, and relevant mobile services available in local languages, people can make better decisions, from what crop to plant, to whom to sell it for higher profit, to what roads not to take during a natural disaster, as well as benefiting from health and disease prevention advice."

Research shows that the top three types of service that consumers in emerging markets value most are news, education and health. All affect people's welfare. Job op-

portunities are another common service that should be easy to deliver via the mobile, particularly as many public service employment agencies already provide such information online. Services like this can literally transform people's lives. Recently, in more than ten countries, mobile phones have become a means for people to access financial services as operators provide "mobile banking" services to the unbanked.

Raising awareness of the possibilities

There has been much progress in making more capable mobile devices available to lower-income consumers. Today there is a range of affordable Nokia devices capable of both accessing the internet and having email capabilities, thus providing the tools to use m-governance services. The communications industry must now focus on promoting the potential of m-governance, which is the delivery of public services over mobile communications.

"Something that has been lacking is knowledge sharing amongst operators and with governments, which needs to be encouraged," believes Melhem. "Mobile operators have to unite somehow to get the message out."

Two initiatives aiming at this goal were launched in June 2008 by the World Wide Web Consortium (W3C). The W3C eGovernment activity and the Mobile Web for Social Development Interest Group focus on the



Many governments are beginning to realize the mobile's potential as an information and communications technology (ICT) platform," says Stephane Boyera.

Photo: iStockphoto

“Something that has been lacking is knowledge sharing amongst operators and with governments, which needs to be encouraged,” says Samia Melhem.



At your fingertips!

- **Explore more** about the Digital World Forum at: www.digitalworldforum.eu
- **The World Wide Web Consortium (W3C)** has two new initiatives that were launched in June. See more about W3C eGovernment at: www.w3.org/2007/eGov and more about the Mobile Web for Social Development Interest Group at: www.w3.org/2008/MW4D
- **Read more** about Towards Effective E-governance: The Delivery of Public Services Through Local E-content at: <http://www.nokiasiemensnetworks.com/egovernance>

use of open standards for e-governance implementation, and delivery of services on mobile phones in emerging markets.

Mr. Stephane Boyera of the W3C feels that interest from government is growing. “In 2006 we held a workshop in Bangalore about the mobile channel and there was little interest. Now, 18 months later, several big organizations are involved and many governments are beginning to realize the mobile’s potential as an information and communications technology (ICT) platform.”

Local knowledge is critical

Boyera continues: “The workshop’s key output is the need for coordinated action between operators and academia, regulators and practitioners to define the guidelines. Lots of projects are finding different issues and until now there has been no forum to exchange the experiences. Setting up such a forum is one of our main goals, and is also the rationale for our participation in Digital World Forum, an EU-funded project that favors a bottom-up inclusive approach.”

According to Boyera, governments and operators also need to work with local non-governmental organizations in the field who know which services will be adopted. He gives one example of how local knowledge can help: “Many in the mobile community believe that voice-based services have real potential. Yet in many places in Africa with a strong person-to-person story-telling culture, people do not appreciate talking to a machine. There is a real cultural barrier here.

“We have seen large and ambitious schemes failing, whereas small, local community initiatives have succeeded.”

Governments and operators must work together

The World Bank’s Melhem has a similar

personal view. She says that information services relevant to a local community and in the local language are vital. Such information is not available most of the time, except in paper-based directories that are often out of date, making them unreliable.

“There is also a major role for donors and development agencies in terms of raising awareness, as they usually have excellent access to government leadership, to high level officials in charge of ICT strategies,” says Melhem.

Pioneering markets show the way

While early e-governance and m-governance deployments in emerging markets are likely to focus on simple information-based services, the scope for highly sophisticated digital delivery of public services is almost unlimited. A few countries are showing the possibilities.

Dubai’s m-governance initiatives, for example, offers a wide range of SMS-based push and pull services. Pull services allow users to ask about government services by sending a keyword along with the query to a Dubai eGovernment short code. A response is immediately sent. Push services allow people to receive information from various government departments via SMS.

“Those governments that have been the fastest to develop internet-based services tend to be the ones that are first to move into m-governance,” believes Melhem.

One of the most advanced countries in e-governance is Estonia, which is also seeing a rapid rise in m-governance services. Mobile devices in Estonia are being used to pay more than 50 percent of parking fees, to report utility problems such as faulty street lamps, to make doctor’s appointments, to notify students of exam results, and more.

The foundation for this growth in m-governance is Estonia’s advanced e-governance infrastructure built up over the last decade. This is enabling complex e-governance services that require inputs from more than one information system.

A good example of the efficiency gains such services bring is an online system for new parents to apply for social security benefits. Previously, people needed to complete

seven different documents including birth registration, salary details, social security contributions, home address details and so on, and then travel to local government offices to present the relevant documentation. With e-governance, the applicant accesses the relevant social security web page using their ID card for authentication and fill in

their bank details for payment receipts. All other information is collected automatically by the system from five different databases and through 18 different data requests. It takes just a few minutes to do.

"The use of mobile systems for public services is growing but there are limitations," says Mr. Ivar Tallo, Manager of e-

Governance Program at the United Nations Institute for Training and Research (UNITAR) and one of the early architects of Estonia's e-governance success. "M-Governance is unlikely to replace e-governance, but it will add value. If lots of information needs inputting then it is easier to use devices other than mobiles due to the restrictions of the small screen and small keyboard.

"We thought that our experiences would be valid for other countries in our region, but to my surprise I am finding that people across the world are interested in our approach. I have been invited to speak in Africa, China and the Caribbean. Estonia has shown that it is possible for non-wealthy countries to do this.

"For example, in many respects Rwanda is similar to Estonia in that it has a small population and limited natural resources. Rwanda is becoming the Estonia of Africa. The Estonian example seems to be inspiring other nations," concludes Tallo. ■

Five lessons from Estonia

How has Estonia managed to create such an advanced e-governance system while most other countries have lagged behind?

Ivar Tallo identifies five key lessons:

- **Cooperation between** the private and public sectors. "The government became a smart purchaser and allowed the private sector to develop the technologies and then reap real business rewards from their investments."
- **Strong political will:** "Our plans were backed by real resources, not just the empty words of politicians."
- **An early open** framework for data exchange: "We started by joining three national registries together. As other agencies saw the benefits of digital

information exchange on the internet, they also joined."

- **Electronic ID system:** "In 2002 we introduced electronic IDs for everyone. Each has an authentication certificate and a digital signature, and in 2003 the government legislated an obligation from its part to accept electronically-signed documents."

- **Investment in ICT skills:** "In the 1990s we invested in a national program to connect all schools, train teachers and equip classrooms with computers. If we had spent the money on school roofs, a new generation would have been more comfortable, but would not have the essential digital skills."



Photo: iStockphoto

Zain races to connect Nigeria

With nearly 50 million subscribers, Nigeria is Africa's largest mobile market, adding about one million new users per month. We speak to Zain Nigeria's John Earley about the challenges of working in such a fast-growth market.



The sheer thirst for mobile communications in emerging markets is probably nowhere better illustrated than in Nigeria. Operators in this dynamic and diverse African nation find themselves racing to satisfy subscriber demand to make calls.

"Nigerian telecoms is the victim of fantastic growth. Every day I live and breathe

“Every day I live and breathe the need to build capacity,” says John Earley.

the need to build capacity,” says Mr. John Earley, Chief Technical Officer, at Zain Nigeria, which is the new name and brand for what was formerly called Celtel Nigeria.

“Our focus is to get as much capacity as possible into the right areas to improve the quality of network performance, which translates into improved customer experience. Often, retaining customers is simply about whether they can make a call or not.

“Many people are registered on several networks and carry two, three or even four handsets with different SIM cards - trying each, in turn, until they can make a call. There is a huge, underserved population with mobile devices but who cannot make a call.”

Zain is currently investing around one billion US dollars per year in its network, with most of the money going into building capacity, says Earley.

Briefly stated:

- **Nigeria is** seeing about one million new users per month (with a current subscriber base of nearly 50 million).
- **In the race** to satisfy subscriber demands, Zain Nigeria is placing emphasis on the quality of network performance.
- **Energy efficiency** to combat rising fuel prices is a further focus for the operator.
- **Zain Nigeria** has invested in the local community by launching an innovative Rural Acquisition Initiative (RAI) to help boost entrepreneurship.

Many of the energy-saving measures that Zain is implementing are available with the Nokia Siemens Networks energy-efficient Flexi BTS platform. Site-level energy consumption can be reduced by using shelterless BTSs that use natural air cooling instead of power-hungry air-conditioning.

Software features can be used, for example, to reduce BTS energy consumption during periods of low traffic. Such technologies can reduce site-level energy consumption by up to 70 percent, compared to solutions utilized just a few years ago.

Supporting local entrepreneurs

Targeting rural users is a further priority for Zain. "Our big drive for the next year will be to strive for 100 percent coverage by population. The Nokia Siemens Networks

are expected to be franchised by the end of 2008.

"Revenue-sharing with these local entrepreneurs is based on the call records from each site, so maintaining BTS availability is in their interests. With RAI, we have seen utilization rise by 200 percent on 25 sites, largely through better security to reduce vandalism.

"Community relations are a big part of our activities. We want to put something back into the local community," Earley concludes. ■

Community relations are a big part of our activities."

"If we double the capacity of a fully-loaded base station (BTS) within 24 hours, traffic grows to utilize all the extra capacity and more."

Beating rising fuel prices

The current year has brought a further challenge, one that all operators will recognize. As fuel prices have skyrocketed, so have the daily costs of running networks. According to Earley, recent diesel price hikes are costing Zain Nigeria about 100 million US dollars extra in OPEX.

"We use 350 liters of diesel per minute to run our network. Energy efficiency is critical to us, and we are implementing every conceivable technology to save energy. My target is to reduce operational costs by 40 percent."

Village Connection solution is an extremely cost-effective package that we are looking to trial and deploy. It holds great potential to connect thousands of Nigerian villages," says Earley.

Engaging with the local population is an important aspect of serving rural communities. In May 2008, Zain launched its innovative Rural Acquisition Initiative (RAI) to help boost entrepreneurship. The scheme franchises-out the basic maintenance and security of rural BTS sites to local "trade partners." About 500 rural sites



Photo: Corbis

Ms. Karlene Francis, Director General of Jamaica's Ministry of Energy, Mining and Telecommunications, discusses Jamaica's success in reaching full mobile penetration and creating public sector services that are available any-time, anywhere.

Turning Jamaica into a knowledge-based society

Jamaica is among the first middle income nations worldwide to achieve nearly 100 percent mobile penetration. The biggest growth driver has been the market liberalization process that began in 1999. Jamaica's mobile penetration is a significant achievement, given its average per capital income.

What have been the biggest mobile growth drivers in Jamaica?

In general, increased competition in the market has led to a decrease in the price of calls. There are currently three major mobile operators in our country. Also, the provision of pre-paid services has played an important role in the increased use of mobile phones. Jamaicans can send airtime to family and friends, making mobile services more affordable and accessible to lower-income people.

Finally, it is easier and more cost effective to deploy mobile networks than fixed networks across our mountainous island country.

How is the government of Jamaica taking advantage of ICTs to deliver public sector services?

E-Jamaica Tax Portal is the latest of the far-reaching reforms that have been taken to modernize public sector services. A key objective of this reform is to improve public services by making them more accessible through use of ICTs. These include electronic payment of taxes, fees and the conduct of other business with the government. Interestingly, since the implementation of an online tax pilot, we have seen an increase in the collection of taxes.

eLandjamaica is another online service

that allows anyone, anywhere in the world to have access to land titles, deposited plans, property sales data and related information. The online Jamaica Trade Point service, in turn, makes it considerably easier for the trading community to conduct transactions with ministries, government agencies and traders.

What kind of role do you see for PPPs to promote even greater adoption of ICTs?

Cooperation between the private sector and local universities would advance technology development and local knowledge. Local investments and developing local entrepreneurship and industries are also important areas for public-private partnerships (PPPs). The private sector can provide technical as-

“ The government of Jamaica encourages cooperation among operators and handset makers in providing localized services and applications.”

sistance and support in building technology centers for R&D. There is a real demand for the creation of local content that is relevant to Jamaicans. The government of Jamaica continues to encourage cooperation among operators and handset makers in providing more localized services and applications. ■

Find more about e-Jamaica initiatives at:
<http://www.e-jamaica.gov.jm>



Photo: Zuma press



From affordable
voice
to affordable **internet**

Bringing the advantages of the internet to isolated villages will take more than clever technology. Assisted access is a key evolutionary step that will help new users to appreciate the benefits of information services.



photo by Lehtikuva

Briefly stated:

- **Shared and assisted** internet access provides rural dwellers in emerging markets with the tools needed to access the internet.
- **Shared access** at the village level is an interim step and a viable short-term goal for operators who wish to increase their subscriber base.
- **Internet kiosks** provide jobs to local employees who help manage the service to village dwellers. Alternatively, local entrepreneurs can operate the service on a franchise basis.

As personal voice services become a reality in emerging markets, the focus of operators will shift towards providing internet access. While new technologies and innovative business models are bringing the cost of internet access within reach of more and more consumers, other challenges need to be addressed, particularly in rural areas.

Many rural dwellers have limited or no experience of information technologies. Nor do they have any concept of how they can benefit from using content and services offered on the internet. They need to be taken on a journey of discovery, to learn how to use services and explore the rewards for themselves. The most practical way to do this is through shared and assisted internet access.

“When consumers understand how they can increase their productivity and earn more money when using the internet, they will be willing to pay for their own IP connected device and personal internet access. We need to progressively build competence and motivation in consumers,” believes Mr. Frank Oehler, Head of Business Development at Nokia Siemens Networks. “It will take time for users to become familiar with new technologies. Information services will have to be intuitive to match the level of competence that can reasonably be expected from new users.”

Engaging with people by offering them shared access at the village level is an interim step and a viable short-term goal for operators.

Promotion by example

“Villagers tend to trust their community peers, so once someone in the village has enjoyed a particular benefit, word of mouth will spread rapidly. This basic form of viral marketing is of the utmost importance in helping people to identify the personal value and improved efficiency that information services can bring, and we need to support this,” says Oehler.

One solution being assessed by several operators is the Nokia Siemens Networks Village Connection, which provides personal voice and SMS services and Internet Kiosk for shared internet access. Village-based GSM Access Points can be operated by local employees, or run as a franchise by entrepreneurs. Internet Kiosk uses the existing Village Connection IP backhaul connection,

“We need to progressively build competence and motivation in consumers,” says Frank Oehler.

enabling an operator to provide internet access easily and cost-effectively with a sustainable business model.

An Internet Kiosk is easy to operate via a shared computer in the village, and the entrepreneur has a valuable role in tutoring villagers on how to use the internet to access relevant information services.

Tanzania’s leading operator Vodacom has elected to trial Village Connection to develop its mobile communications network. The main beneficiaries of the project will be the millions of villagers in Tanzania, who only have up to five euros to spend on telecommunication services per household per month.

“The low OPEX and operational simplicity that the solution presents provides us with the necessary arsenal to maintain our coverage and quality leadership,” comments Mr. Peter Correia, Vodacom’s Chief Operational Officer. ■

For more information, please visit: www.nokiasiemensnetworks.com/new-growthmarkets

VILLAGE CONNECTION INNOVATION GAINS RECOGNITION

Nokia Siemens Networks Village Connection picked up an Excellence in Innovation award in May 2008 from the Indian Telecom Equipment Manufacturers Association (TEMA).

More recently, Frost & Sullivan nominated Village Connection for its Excellence

in Technology award in the telecommunications market in Africa. The nomination cites Village Connection as being: “likely to become a market standard in the deployment of mobile voice and SMS and Internet services to rural communities in Africa.”

How advertising can build mobile revenues

Still in its infancy, the mobile is the fastest-growing advertising medium and is touted by many in the industry as a lucrative revenue source. We look at how emerging market operators may be affected and why they should be interested.



Briefly stated:

- **Mobile advertising** is a rising way for operators to develop their revenue base. Emerging market consumers are often predominantly the young, who are accustomed to advertisements.
- **Operator customer** relationships enable operators to leverage their subscriber knowledge to support advertising.

Most operators in emerging markets are primarily focused on meeting rapid subscriber growth by expanding network coverage and capacity. However, as markets mature and revenue growth declines, operators will broaden their business scope. Mobile advertising could well make a useful contribution to their revenues.

The potential for emerging markets looks promising. Advertising is generally accepted by people. Roadside billboards and small signs are commonplace and are used by major brands and small local enterprises. Emerging markets hold an advantage in their demographics too, with high proportions of younger people, who traditionally accept advertising and who are likely to be the major users of mobile communications.

Mobile will dominate online

Online advertising expenditure, as a percentage of total advertising spent, is rising, notes a report from management consulting firm Oliver Wyman in its white paper *Busting the Myths About Emerging Markets*. The report says that: "mobile advertising will be much more important in emerging markets, as the mobile phone is the first screen (and for many consumers the only screen)."

As well as offering a new way to reach consumers, the mobile has the advantage of focused messages. Highly targeted cam-

paigns and the ability to track results help to solve an issue highlighted by a Rex Briggs and Greg Stuart study in 2006 that concluded 37 percent of all advertising is "wasted."

Benefits for lower-income consumers

A good example of how advertising can benefit lower income users is an innovative SMS-based service that is generating about 20 million messages per day for South African operator Vodacom. "Please Call Me" is a free call-back service aimed at prepaid users. It allows a subscriber to send an advertising-funded SMS for free, requesting a call back. Similar services are being launched in other countries.

"This is a great service for a mixed economy, because you basically get to redistribute wealth. It enables people with very low income to initiate a call with a more affluent subscriber, for example, an employee asking their employer to call them, without incurring the cost of the call," says Mr. Rick Joubert, head of mobile advertising and social media at Vodacom, in a recent article published in *Mobiadnews.com*.

Interestingly, the service is also a good example of business transformation in which the operator sets up advertising as a separate business, backed by communications and media expertise, and which addresses a new type of behavior with an

innovative business model.

Despite such successes, the medium has yet to hit the mainstream. "The mobile advertising market needs two things in order to be successful," says Mr. Martin Scott, Senior Analyst at Analysys Mason. "Investment from key players (such as operators, handset manufacturers, advertisers and brand owners); and an emphasis on maintaining a high-quality, unobtrusive mobile advertising experience for the consumer."

Early preparation is vital

Although emerging markets are dominated by prepaid subscribers, it is important to gather as much customer data as possible. Creating consumer profiles proves the reach to media agencies to convince them that the mobile channel is attractive for a campaign. In Vietnam, all prepaid subscribers must register their name, date of birth, address and identity card with their mobile operator, or risk their service being cut off.

While in Vietnam this data gathering is obligatory and driven by the regulator for purposes other than advertising, it does reveal a positive side effect that can be maximized. Elsewhere, operators could ask for prepaid customer details and track usage

to learn about their behavior. In Russia, for example, users who provide profiling data to Gigaphone are rewarded with advertiser-funded services such as free call minutes, text messages or data bundles. This is all vital data for advertisers.

Despite the rewards, consumers remain sensitive to mobile advertising. There is a limit to consumer tolerance and insight is required to avoid overstepping the mark. Mobile devices are highly personal; the threshold for intrusion is lower than with other advertising media. Early mistakes

users of communications technology. Adding value is a guiding principle behind one of the highest profile mobile advertising successes - Blyk in Europe. Blyk targets 16- to 24-year-olds and is funded by advertising. It links young people with brands they like and gives them free SMSs and minutes every month without a contract.

A similar service was launched recently in the Philippines by SMART Communications. Called U-mobile, the invitation-only service offers virtually free mobile services funded by advertising for 15-34 year olds.

Several other services are creating interest, with India being one of the more active markets. Examples here include Ginger, which rewards users with payments for accepting advertisements; SMS 2.0 ad-funded messaging from Bharti; and a location-based advertising service launched by BSNL.

For an industry the size of global communications, such examples are rare though. "The industry has reached an impasse - many players are unwilling to invest in mobile advertising until others have done so. The future of mobile advertising, therefore, is in the hands of pioneering brands and advertisers that are willing to experiment," says Scott. ■

The future of mobile advertising is in the hands of pioneering brands and advertisers that are willing to experiment," says Martin Scott.

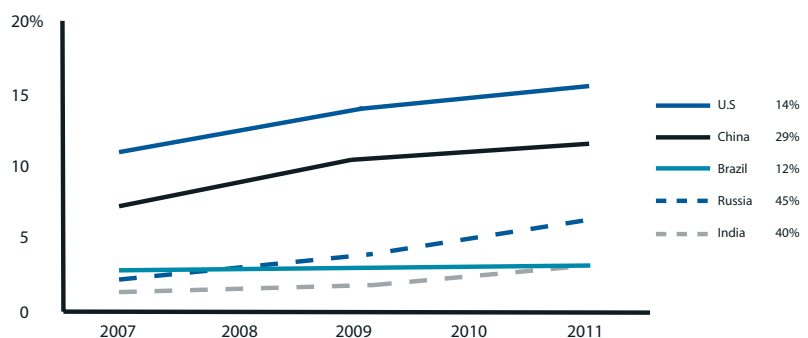
could hurt the adoption of mobile as a new advertising medium, either through a consumer backlash or by restrictive legislation.

Advertising must create consumer value

Making services useful to consumers is vital and helps to create motivation among new



Growth in Online Advertising



"We anticipate a 45 percent CAGR (compound annual growth rate) in online advertising in Russia from 2007 to 2011, a 40 percent CAGR in India in that same time frame, 29 percent in China, and 12 percent in Brazil."

Source Oliver Wyman/PWC: Busting the Myths About Emerging Markets, a white paper issued by management consulting firm Oliver Wyman available at www.oliverwyman.com.



Open Studio Outreach

Nokia engaged shanty town residents in three countries through a design competition meant to get residents to articulate their needs and aspirations about the role of mobile technology in their daily lives.

The Open Studio was part of a broader study that explored the impact of mobile connectivity within the context of global urbanization.

The three communities chosen were Dharavi (Mumbai, India), Favela Jacarezinho (Rio de Janeiro, Brazil) and Camp Buduburam (Accra, Ghana) - communities that share common characteristics, including their limited infrastructure and lack of official recognition or land rights.

The process of Nokia Open Studio in each location took about one month and attracted over 200 entries in total. Participants were interviewed following their submissions in order to better understand the motivations for the designs and how their designs would apply to their daily life.

The submissions highlighted that innovation in the context of these communities is not about the newness of technology but relevance to the individual's needs, usage contexts and adaptability.

Inspired designs reflected what the entrant felt important on a personal level. Pen-shaped phones created in Dharavi represented the need for literacy, while foot shaped phones in Buduburam symbolized progress and development. Functional improvements to mobile phones were proposed as solutions to local issues, such as the need for solar charging, as community residents suffer from electricity shortage, and an emergency alarm in case of an outbreak of violence. In Buduburam, one entrant proposed a world phone showing what is happening around

the world, highlighting the desire to feel connected and be aware of outside world while his life was in reality contained in the refugee settlement with limited mobility.

Entrants ranged in age from 18-64, with the majority below 30. The gender balance was heavily skewed towards males (12 percent females in Buduburam, 21 percent in Dharavi and 41 percent in Jacarezinho), which reflects of the role of women in these societies.

Generating ideas that could be used directly in Nokia's new products was not the main aim of the Open Studio. Rather, it presented a new way to engage residents in order to better understand the local culture, complementing other ethnographic research methods. ■

M-learning delivers

Students in the Philippines explore the power of mobile learning through an interactive multimedia program called “text2teach” that brings enhanced teaching methods to the classrooms of some of the world’s most remote schools.



Teachers use mobile phones to access a library of educational videos. The programs are then downloaded to a digital video recorder connected to a classroom television. Teachers can play the video, introduce activities and lead discussions.

All totaled, 3,297 students took part in

a study in the provinces of Maguindanao, Cotabato and South Cotabato that tested the project’s effectiveness in improving the teaching of English, math and science in grades five and six (13-14 year olds). Randomly selected students were tested against control subjects with no access to

the mobile learning materials to see the impact of the test elements on academic performance.

In Cotabato and South Cotabato, the studies showed dramatic learning gains for pupils receiving m-learning and modest gains for control students; while in Maguindanao, learning gains were lower than the other two provinces - but for control groups, almost zero learning gains were experienced. The learning gains in Maguindanao appear higher at grade six, suggesting that longer exposure to text2teach may have a positive cumulative effect.

As well as generating more positive attitudes towards science and technology, the program increased teachers’ competence in using technology as part of their teaching.

The program now runs in more than 200 schools, enabling 120,000 students to improve their learning opportunities. Text2teach is the result of a collaboration that includes Nokia, the Ayala Corporation, the Philippine Department of Education, Pearson, the International Youth Foundation (IYF), and the United Nations Development Programme (UNDP). ■





powered BY THE SUN

How can people recharge their mobile phone batteries in places that lack electricity? Solar energy provides one solution.

Nokia recently cooperated with lamp and light system maker OSRAM and Solarworld AG in launching a unique project in a small fishing village near Lake Victoria, Kenya for recharging batteries that is not dependent on a permanent power supply.

At a specially constructed solar station (OSRAM Energy Hub), local people in the town of Mbita can recharge batteries for energy-saving lamps, luminaires and other electrical appliances, such as mobile phones, at low cost and without damaging the environment.

The OSRAM Energy Hub's use of sunlight at the primary energy source makes the project easily replicable in other parts of the

world. The market potential is huge, as 1.6 billion people throughout the world live without electricity.

Three further energy hubs in Kenya and Uganda are about to open. The pilot energy hubs have water treatment systems with integrated UV lamps of OSRAM at their disposal. ■

3 billion
gsm milestone



Photo: Matton

According to the GSM Association, the total connections to GSM mobile communications networks have now passed the three billion mark globally. The world's biggest GSM markets today are China (509 million), which is growing at a rate of more than seven million new connections a

month; India (193 million), growing at six million per month and Russia (178 million) and Brazil (93 million). Emerging markets are responsible for 85 percent of new connections. This GSM milestone coincides with the expanded use of mobile broadband services offering high speed internet and

rich media access in more than 73 countries today, says the GSM Association. ■

Source: GSMA press release, dated April 16, 2008 available at www.gsmworld.com

Bringing corporate innovation to the environment

Nokia and Nokia Siemens Networks take on the challenge of lowering their carbon footprint.

The Climate Savers program is a collaboration between WWF, the global conservation organization, and some of the world's leading companies, including Nokia, Nokia Siemens Networks, IBM, Novo Nordisk, Nike and Johnson & Johnson. The partnerships, established with companies coming from diverse global business sectors, generate innovative solutions and strategies to battle climate change. WWF supports the companies in setting appropriate environmental targets and observes compliance with them.

The companies under Climate Savers believe that it is possible to combine environmental responsibility and business advantage. The actions needed to reduce carbon dioxide emissions are entirely compatible

with the aim of improving shareholder and stakeholder value.

"There are serious business reasons for having a low-carbon strategy, and companies must act now to sustain their businesses even in the near future," says Mr. Oliver Rapf, Head of WWF's Climate Business Engagement Unit.

A Climate Savers agreement involves negotiations between WWF, the company concerned and independent technical experts. The agreement must be demonstrably more ambitious than previously planned or communicated, placing the company at the forefront of emission reductions in its business sector. Outside experts monitor and verify compliance with the agreement.

In its agreement with WWF's Climate Sav-

ers, Nokia Siemens Networks has committed to improve the energy efficiency of its base station products so that the equivalent total annual carbon dioxide footprint will decrease by 28 percent by 2012, compared to 2007 best product performance. In specific terms, improving energy efficiency to a level of 300W for typical WCDMA BTS sites and 650W for typical GSM BTS sites.

Nokia is targeting a series of energy savings, including halving the average no-load power consumption of its mobile phone chargers from 2006 levels. Both companies are committed to decrease energy consumption of their buildings by 6 percent by 2012 and to increase the use of renewable energy to cover 50 percent of the overall electricity needs by the end of 2010. ■

The WWF Climate Savers program currently comprises 16 major international companies who are committed to reducing their total emissions by at least 14 million tons of carbon dioxide per year by 2010. For more information go to:

<http://www.panda.org/climatesavers>

Photo: Getty Images



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