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GSM DEVELOPMENT FUND

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Development Fund

A First Year of Progress

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"It is evident that the GSMA Development Fund is making a visible difference to people's lives throughout the world, extending the reach of communications."

Amir A. Dossal
Executive Director
UNFIP

Forewords

Mobile communications are a proven agent of social, economic and environmental development. In many parts of the world they are the most reliable, if not the only, form of tele-communications available. To individuals and communities, mobile phones provide innumerable personal, business and safety benefits.

The GSM Association (GSMA) Development Fund is at the forefront of work to ensure that this powerful communications tool is driven forward on a global basis. The Development Fund is well placed to highlight and accelerate the work already being carried out by operators to bridge the digital divide.

The concept of 'Shared Access' is one example of the Development Fund's successful initiatives aimed at providing mobile communications to all, whilst fostering a business practice that is both socially responsible and profitable for all stakeholders. The rapid scale up of the GSMA backed pilots, from a standing start a year ago to 11 pilots in 7 countries today, shows that operators who do not yet have a Shared Access solution can take services to market quickly and cheaply.

The work of the Development Fund also goes beyond shared access initiatives, to bring to bear the benefits of applications on mobile phones. We now have a disease surveillance programme underway, starting with two pilot projects that will demonstrate how mobile technologies can be used to help health authorities and governments track the spread of diseases, such as HIV/AIDS and Avian Flu.

In addition, new initiatives in progress include the support of conservation efforts, the powering of base stations using alternative energy sources, and the provision of industry-based training and skills development for the unemployed in developing countries.

The success of the Development Fund to date is a result of the support and contribution of a wide range of individuals and organisations. I would personally like to thank everyone involved for their hard work and commitment. I am confident that the next twelve months will build on all the achievements thus far as we continue to roll out a wide range of initiatives that help bridge the digital divide.

Frank Esser
Chairman
Development Fund Board

The GSMA represents the interests of over 700 mobile operators across 214 countries and territories worldwide. Spearheading technical, commercial and public policy initiatives, the GSMA works to enhance the value of mobile services globally. With over 2 billion global customers and 80% of the world's population covered by mobile networks, the GSM story is one of unprecedented growth.

Yet we are acutely aware that there currently exists between 1–1.5 billion people without affordable access to mobile services. We therefore established the GSMA Development Fund, the purpose of which is to catalyse the uptake of initiatives that use GSM technology for social and economic development. The Development Fund supports projects that connect people in the developing world who previously had no access to mobile communications.

I am delighted and highly encouraged by the progress the Development Fund has made in its first year of operation. We have identified and delivered pilot projects that are bringing social and economic development to local communities. All projects have been delivered with commercial rigour and discipline, without the need for support aid.

The Development Fund is in a unique position to support as well as drive efforts that bridge the digital divide, on account of its ability to engage with mobile network operators in the emerging markets and share learnings globally. We have also built relationships with international, well-established funding organisations for the purpose of future funding and sharing of experiences. We believe that government policy and regulation play a crucial role in alleviating the digital divide, hence we have engaged governments in our projects where possible.

In the last twelve months the GSMA and its partners have made huge strides in demonstrating the social and economic potential at the 'bottom of the pyramid,' and the inherent opportunities available for all members of the mobile value chain.

Rob Conway
CEO
GSM Association

I am delighted to learn of the great progress the GSMA Development Fund has made in its first year of operation, as it pioneers new models for using mobile phone technology to promote development and accelerate achievement of the Millennium Development Goals (MDGs).

With the phenomenal growth of mobile phone connections in emerging markets, such technology can be an important tool in improving social and economic conditions. I am pleased to see that the mobile phone industry is coming together to help make this happen.

The Development Fund is to be commended for its efforts to help bridge the digital divide, adopting a Shared Access business model that will bring the benefits of mobile communications to those areas previously out of reach of such technology.

The United Nations Secretary-General remains very committed to finding creative ways to bring information and communication technology to the poor, and earlier this year launched the Global Alliance for ICT and Development with the primary aim to ensure ICT be effectively integrated into development activities. I am pleased to see the Development Fund's mission is in line with this stated objective.

We at the United Nations Fund for International Partnerships (UNFIP) are encouraged to hear that the Development Fund's trial schemes are already proving popular, commercially viable and therefore economically sustainable. It is evident that the Development Fund is making a visible difference to people's lives throughout the world, extending the reach of communications. Shared access initiatives are creating employment and fostering entrepreneurial spirit, providing people with the opportunity to become entrepreneurs for the price of a mobile phone. Access to affordable mobile services is making a tangible economic and social difference to individuals and their communities.

Looking ahead, it is apparent that the growth of the mobile phone industry will be in developing economies, and that there is great untapped potential among the millions of people who have never made a phone call before. This represents an opportunity that will reflect positively on the economies of nations, the effectiveness of business and the lives of individuals.

I wish the Development Fund continued success and look forward to learning of further future success stories enabled by the initiative.

Amir A. Dossal
Executive Director
UNFIP

Introduction

The most widely used and successful communications technology in history, GSM has become a major engine of development. Tapping the huge economies of scale generated by a global customer base of more than two billion people, the GSM community is bringing affordable telecommunications to almost 1.5 million new users every day. By giving communities which lack fixed-line networks easy access to information about the wider world, the rapid spread of mobile phones is yielding many social, economic and environmental benefits.

Fig.1 Motorola C113a

Established in October 2005, the GSMA Development Fund was built on the success of the GSMA's Emerging Market Handset (EMH) programme, an initiative that successfully fostered the launch of ultra-low cost, sub US$30 handsets from Motorola (Fig.1). The Development Fund aims to build on the social, economic and environmental benefits already generated from the success of mobile technology, by identifying and rolling out projects in regions that previously had little or no access to telecommunications.

The objectives of the Development Fund are to:

- Increase the number of effective and replicable development initiatives using mobile technology in emerging markets
- Implement these initiatives in a scalable and sustainable fashion, bringing socio-economic benefits to individuals and communities
- Increase awareness amongst governments and the development community of how GSM voice and data networks (GPRS, EDGE or 3GSM/HSDPA) act as an agent of development and can be used to bridge the digital divide.

Our Approach

The GSMA Development Fund's methodology is based on six core principles:

To seed/catalyse programmes
We focus on practical field implementations that generate tangible results. We believe that connectivity means productivity, and that once this concept has been demonstrated, market forces will come into play and turn projects into new businesses.

To impact at scale and sustainably
We only work on projects that have the potential to be economically self-sustainable, and are not propped up by aid.

To work with operators in target markets
We leverage our unique position as the trade association for over 690 global operators to bring innovative ICT solutions to new markets, sharing learnings and world best practice.

To partner with other funding organisations
We build relationships with international, well-established funding organisations for the purpose of future funding and sharing of experiences.

To leverage government relationships
We believe that government policy and regulation play a crucial role in alleviating the digital divide, hence we engage governments in our projects where possible.

To apply commercial rigour and discipline to delivery, going beyond the established concept of Corporate Social Responsibility
We fund and directly manage project implementation in the field through our own staff and our strategic partner Accenture Development Partnerships.

"The Development Fund does not simply fund projects but actually controls their implementation in each country. We will continue partnering with industry leaders, governments and the development community to increase this work and demonstrate the cross market nature of the approach."

Ben Soppitt (left)
Development Fund Director
GSMA

"By leveraging the Emerging Market Handset initiative, the Development Fund is changing people's lives for the better by driving economic and social progress. In its first year, the Fund has increased the awareness and understanding of the powerful role that mobile communications can play in the development of economies and improvements in the quality of life. Together, Motorola, the GSMA and the Development Fund have the potential to make positive changes for hundreds of millions of people."

Ron Garriques
President
Motorola Mobile Devices

Governance

A Development Fund Board has been set up to oversee the projects, chaired by Frank Esser, CEO and Chairman of French mobile operator SFR.

1 Frank Esser
Chairman and CEO
SFR, France

2 Alex Shalaby
EVP
Orascom, Egypt

3 Jeremy Sewell
Chief Financial Officer
GSMA

4 Ben Soppitt
Development Fund Director
GSMA

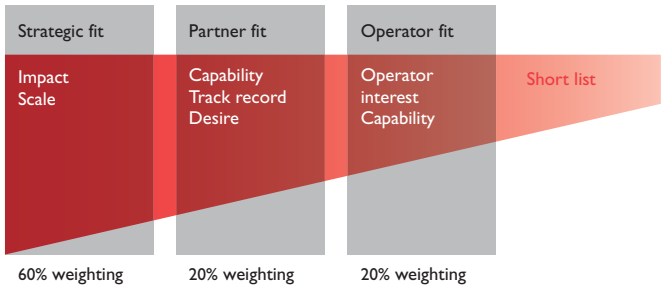
5 Erik Aas
CEO
GrameenPhone,
Bangladesh

6 Myla Villanueva
Head of Technology and
Development
Smart, Phillipines

7 Sandip Das
Deputy MD
Hutchison Essar Limited,
India

8 Tom Phillips
Chief Government
and Regulatory
Affairs Officer
GSMA

Project evaluation criteria



Approved Categories
- Affordable Access
- Economic Development
- Education
- Environment
- Health
- Safety and Security

"In its first year, the GSMA Development Fund, partnering with Accenture Development Partnerships, has tangibly demonstrated the potential impact which mobile technology can have in addressing international development challenges. Sustainable business models have been proven through numerous successful pilot projects which improve the lives of people in developing countries while at the same time addressing the needs of GSM operators and local entrepreneurs.

Initiatives to extend shared voice and data communication to the unconnected continue to be replicated with scale, and are a step toward bridging the digital divide. The GSMA Development Fund and Accenture Development Partnerships continue to explore innovative applications of GSM technology and service – using GSM technology to enable rapid and responsive disease surveillance has the potential to save countless lives, and pursuing the use of biofuels to power remote base stations would further expand GSM coverage and benefits of the GSMA Development Fund initiatives.

Accenture and Accenture Development Partnerships look forward to continuing to partner with the GSMA Development Fund to replicate and scale existing projects and to explore other innovative ways in which GSM technology and services can have a positive impact on development challenges."

Vernon Ellis
International Chairman
Accenture

Operating Model

The GSMA role is to ensure the delivery of best practice, help develop profitable and socially responsible business models and connect operators with vendors of leading edge technology.

The GSMA has engaged Accenture Development Partnerships as its strategic partner for the projects. Accenture Development Partnerships is a not-for-profit group within Accenture that makes high-quality advisory and consulting services available to donors, Non-Governmental Organisations (NGOs) and Small and Medium-sized Enterprise (SME) specialists working in developing economies. Accenture Development Partnerships provides the expertise of consultants who are based full-time in the region for the duration of each project.

Funding

The Development Fund is funded through industry contributions both in cash and in kind.

Evaluation Criteria

Potential projects are investigated and assessed against a framework before they are submitted to the Board for funding approval. As shown in the diagram above, there are six approved categories for the Development Fund: Affordable Access, Economic Development, Education, Environment, Health, and Safety and Security.

The Development Fund has assisted projects in 7 countries to date, and is commencing projects in a further 2 countries in Q4 2006, which fall into 4 areas: Shared Access to Voice, Shared Access to Data, Health Surveillance and Alternative Energy.

1 **Algeria** Shared Voice with Djezzy Pilot live and operator committed to commercial rollout.

2 **Kenya** Shared Voice and Data with Safaricom now live, including a solution for wheelchair bound entrepreneurs.

3 **Rwanda** Health Surveillance pilot (HIV/AIDS) now live with Voxiva.

4 **South Africa** Shared Data with MTN SA live.

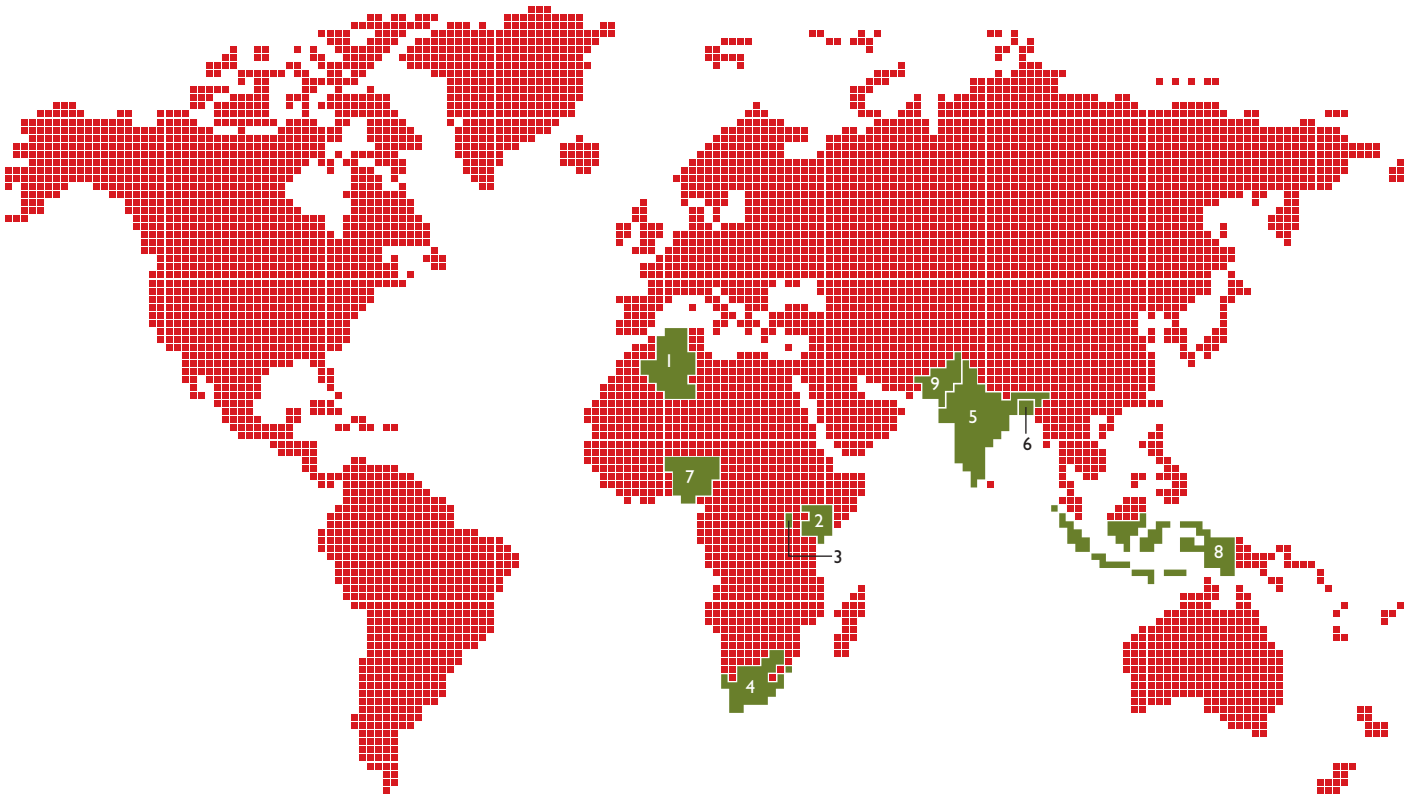
5 **India** Shared Voice pilot with Airtel live. Idea pilot due to launch Q3 2006. Data pilot in development.

6 **Bangladesh** Shared Data pilot with GrameenPhone live, and operator committed to commercial rollout.

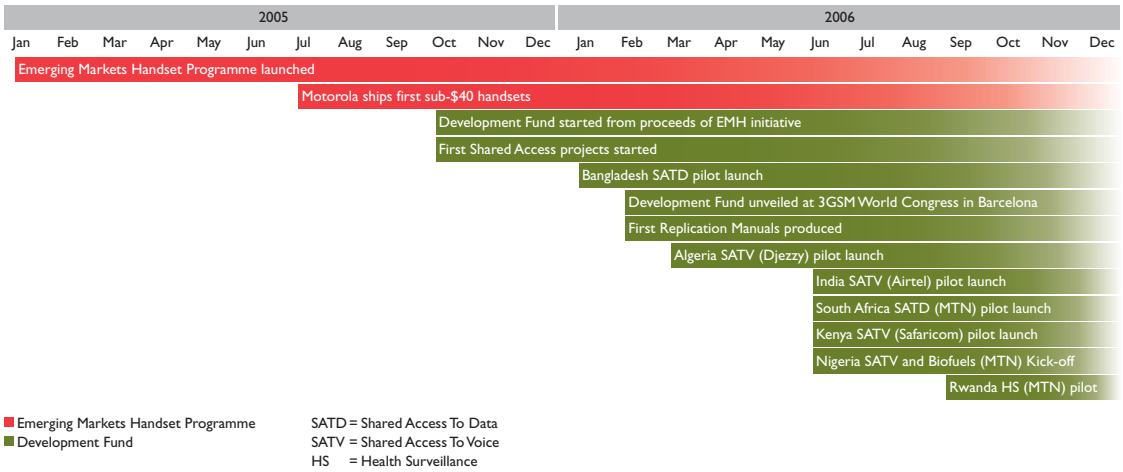
7 **Nigeria** Shared Voice with MTN Foundation, and Biofuels Programme with Ericsson & MTN.

8 **Indonesia** Health Surveillance pilot (Avian Flu) with Voxiva to go live in Q3 2006.

9 **Pakistan** Shared Voice rollout with Telenor Pakistan in development.



Milestones



Projects To Date

Among the first projects supported by the Development Fund have been 'Shared Access To Voice' pilots in Algeria, India, Kenya and Nigeria (see image left). These projects typically involve entrepreneurs using a handset as a mobile payphone and offering the service for a small fee. Initial results have demonstrated that the concept is successful, viable and workable. Now, these pilots are evolving into wider-scale rollouts.

The Development Fund is seeding 'Shared Access To Data' pilots in several countries, such as South Africa, Kenya and Bangladesh. These pilots use enhanced GSM networks to bring Internet access to computers stationed in fixed booths run by entrepreneurs, who charge a fee to local people wishing to use such services. In addition, the education community is reaping the benefits of Shared Access to Data, with this model being rolled out across schools.

The Development Fund goes beyond shared access initiatives, and is setting up pilot projects that will demonstrate how applications loaded onto mobile phones can be used for environmental, health and other purposes. For example, we are currently working with Voxiva to develop and launch an application that will track the spread of diseases, such as Avian Flu and HIV/AIDS.

Milestones

From its inception in October 2005, the Development Fund has experienced a number of key milestones, and its reach and influence is expanding rapidly. As the Development Fund evolves, it will continue to partner with operators, governments, NGOs and international development agencies to use mobile as an enabler of social and economic development.

The table above highlights the significant interest already shown from operators in developing their shared access offerings.

The Development Fund is working to increase the role GSM technologies and the industry plays in bridging the digital divide, serving as a catalyst and channel to the mobile industry's huge capacity as an agent of social, economic and environmental development on a global scale.

Headline Figures for the Development Fund

- 8 Shared Access to Voice pilot sites established in 8 weeks in Algeria with Orascom
- 16 Community Information Centres live in Bangladesh with GrameenPhone
- 8 Data Centres live in South African townships with MTN@ccess
- First HSDPA launch for the Development Fund with MTN South Africa
- 100 Shared Access to Voice pilot sites launched in Kenya with Safaricom
- 100,000 shared voice SIMs purchased by operator partner for mass rollout in Africa
- Approximately 460 Community Information Centre rollout planned in Asia following successful pilot
- 10,000 phone Shared Access to Voice project planned to commence in Q3 2006 in Sub-Saharan Africa

Shared Access To Voice

Initiatives such as the GSMA's Emerging Market Handset Programme have helped to reduce the cost of the cheapest mobile phones from around US$50 to under US$30 over the last twelve months – but even this is out of reach of at least 1–1.5 billion of the world's population. For this vast population, shared access to mobile telephony services is an important method through which they can afford access.

Fig.2 Airtel 'Business in a Box'

There have been several individual examples of operators previously targeting this market, such as Grameen Village Phone in Bangladesh and container-based phone shops in South Africa. There are also numerous examples of informal sector initiatives (often an individual with a standard phone and a sandwich board). Additionally, several vendors, such as Psitek and SharedPhone, have brought specific hardware and software products to market which enable shared phone access. However, efforts to date have been largely ad hoc and not driven by the operators themselves. This has limited global impact at scale, and does not maximise the benefits of access to communications.

Without a systematic approach, the vast potential of the market at the bottom of the pyramid will not be realised and the digital divide will remain firmly in place. The GSMA believes that the time is right for a systematic, 'productised' approach to shared access and, in response to this, has created the Development Fund; with specifically designed terminals and service propositions for shared access in the home, the office and the public access payphone.

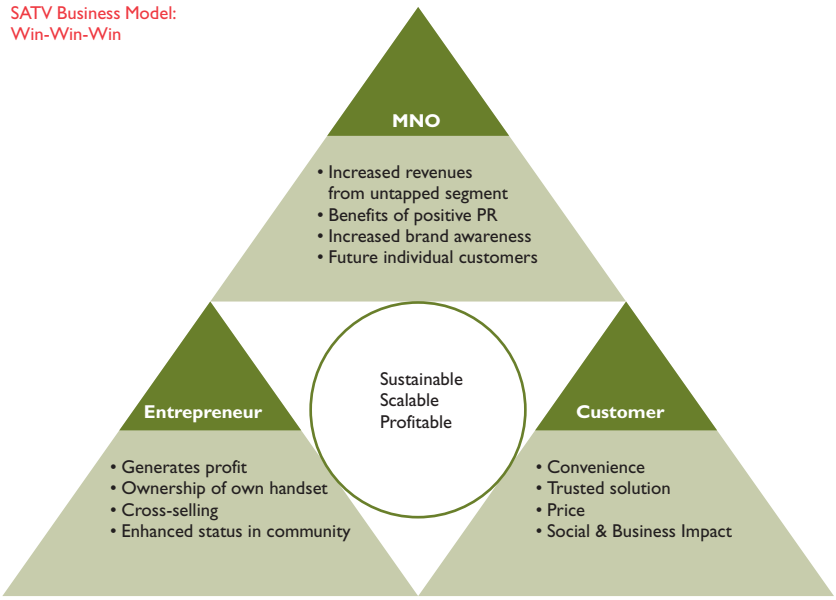
Business Model

'Shared Access to Voice' is a term used by the Development Fund to refer to the sharing of a GSM telecommunications device, as opposed to individual ownership. In the majority of cases this takes the form of a supervised public payphone.

In the last 12 months Shared Access to Voice pilot projects have been launched in Algeria, India and Kenya, and work is underway in Nigeria and South Africa. In each case, the Fund has worked with a mobile operator to equip local entrepreneurs, typically using software loaded onto the SIM that turns the handset into a mobile payphone. Software in the phone stores current operator tariffs, monitors usage and calculates an airtime charge for each call. This model extends the accessibility of communications, whilst creating jobs for the entrepreneurs who own the phones.

The entrepreneur model involves the entrepreneur purchasing a 'Business in a Box' (Fig.2) that contains everything required to start a Shared Access business: mobile telecommunications device, shared phone functionality (hardware or software), recharging solution (solar/windup), marketing collateral (operator branded), directional antenna (if applicable) and user guides and training material (information for the entrepreneur to run their business). In most cases, the box can be distributed via the existing distribution channel of the operator and, benefiting from the weight of operator marketing, can be rolled out quickly and at an unprecedented scale.

SATV Business Model:
Win-Win-Win



The diagram on the left demonstrates how this model is attractive to all stakeholders:

Financial analysis conducted in the pilot countries predicts a payback period for the entrepreneur of approximately 6 months, in cases where the entrepreneur has paid in full for the Business in a Box. From the operators' perspective, operations are expected to be immediately profitable (assuming that there is no subsidy, as is the case with the majority of the pilots). Some operators may choose to subsidise calls from shared phones for a limited period in order to catalyse uptake.

Shared voice services can provide customers with valuable information that boosts their personal and economic welfare. For example, a telephone call could save people from making long journeys to contact relatives, search for employment or find out which market is offering the best prices for their crops.

Each shared voice handset in the pilot projects is being used by an average of 30 customers. In fact, the pilots are demonstrating that there is an unmet demand for telecommunications services among even the poorest people in a society. They are prepared to pay a small fee to make a telephone call if it gives them access to valuable information that would otherwise have taken considerable time and effort to obtain.

Fig.3 Solio

Fig.4 Freecharge 12V

Fig.5 Sunbag LCI

Fig.6 Adondo

Fig.7 Jembi

Fig.8 Brightstar FX1900XG

Technical Overview

A selection of technologies has been developed for the Shared Access to Voice market. The GSMA believes that, in most markets, a full suite of shared access solutions can be deployed in a complementary manner. A container-based solution may be applicable in a high traffic area, and a low cost handset Business in a Box based solution may be applicable in low traffic areas such as the rural market. This portfolio approach will maximise service coverage and hence job creation.

Better Energy Systems designs and manufactures Solio (Fig.3), the universal 'hybrid' charger. Solio works by absorbing power from the sun, storing this energy within Solio's own internal battery. A fully charged Solio will completely charge an average mobile phone at least once. When charging a mobile phone directly from the sun, 60 minutes of sunlight will provide approximately 10 minutes of talk time and four hours of standby time. The Development Fund is using Solio in the disease surveillance pilots, and plans to use it in future Shared Access to Voice projects for areas off the electricity grid. Better Energy Systems also contributes to the Development Fund.

Freeplay, a supplier of wind-up mobile phone charger accessories, provides equipment that enables the user to make and receive calls at any time, even with a flat battery. The FreeCharge 12V (Fig.4) interfaces to the handset through a cigarette lighter socket. The charging protocols are matched to the individual handsets by plugging in a cigarette lighter charger specific to each phone. The FreeCharge will adapt its output to match the requirements of the recipient device via the cigarette charger.

Off-Grid Systems Ltd. has introduced a low-cost and extremely robust solar mobile phone charger for emerging markets in response to the GSMA's EMH initiative: the Sunbag LC1 (Fig.5). It has been verified on the Motorola C11X series handsets, among others. The solar cells are guaranteed to function for 18 years and are specifically designed to charge mobile handsets. It does not use additional charge controllers or batteries. The Sunbag LC1 is made of flexible panels, delivering 1.5W at max 6V. It is approx. 8 x 6 inch (21cm x 15cm) wide and 0.39 inch (1mm) high and weighs less than 100 grams. The Sunbag LC1 has been deployed in Uganda with MTN Uganda.

Psitek designs and develops telecommunications solutions for the global market. Psitek's two most popular products are the Adondo and Jembi GSM supervised payphones.

The Adondo GSM Supervised Payphone (Fig.6) is a Business in a Box that can be set up in semi-formal environments like market stalls and containers for retailing voice, fax or Internet calls, and can also be used for value added services such as the sale of pre-paid vouchers. It comprises a master operating unit, a remote display unit, power cables, an external GSM antenna, mounting brackets and comprehensive user manuals.

The Jembi GSM Supervised Payphone (Fig.7) is a mobile business tool that can be used for the resale of voice calls and SMS, and can also be used for value added services such as the sale of pre-paid vouchers. The Jembi is suitable for informal settings such as kerb sides, street corners and for mobile operations utilising bicycles or taxis. The product includes a large LCD screen, internal battery offering more than seven hours talk time, and easy business expansion via ClickArt technology.

SharedPhone is a new technology that allows any user to operate their GSM phone booth as a private line and a mobile payphone. The SharedPhone user enters the amount of money that has been received from the customer into the application; the call is then cut when the set limit has been reached. The calculation includes the SharedPhone user's (adjustable) profit margin. This allows the user to sell calls and make money wherever he/she goes. The SIM-based application runs on the low-cost (US$30) Motorola C113a handset, in addition to the Motorola/**Brightstar** FX1900XG (Fig.8) desk phone. For instance, Indian mobile operator IDEA has ordered 500 SharedPhone licences for its pilot project in Maharastra, along with the corresponding 500 Motorola handset units.

"My role involved working with Djezzy to find ways of providing affordable and accessible telephony in poor rural areas whilst also creating employment. The role was fascinating. I believe Accenture Development Partnerships and the GSMA are at the heart of current global efforts to find ways of turning development theory into sustainable business practice."

Josh Perry
Accenture Development Partnerships

Case Study: Hauts Plateaux, Algeria

In March 2006 the Development Fund launched a Shared Access to Voice pilot project with Algerian mobile operator Djezzy (Orascom). Based in the rural Hauts Plateaux region of Algeria, the aim of the pilot was to provide public telephone points in areas with little or no access to fixed-line communications, and where no public telephony was currently available.

Targeted users were rural fixed and nomadic shepherd communities with little disposable income. Conventional business models and distribution channels had previously proven inadequate in penetrating this market.

Djezzy and the Development Fund partnered with local organisations that held strong links with communities in the area. These included Alsolar, a commercial supplier of solar power in the region, and HCDS (Haute Commission de Development de la Steppe), a government department responsible for regional development.

Eight pilot sites were established in just eight weeks. Psitek's Adondo units were made available to local communities, placed in small villages and at the network of livestock and irrigation water points throughout the area. Djezzy made their Business in a Box available to site managers ('entrepreneurs') at subsidised rates to remove the need to involve microfinancing, and to ensure that financial means were no barrier to becoming a site manager. Pilot results indicated that even relatively isolated rural sites could generate the volumes of call traffic to ensure a return on investment in under two years.

Djezzy's Business in a Box provided the site manager with an Adondo, a Yagi antenna (if required), marketing and promotional materials, and service and installation. In return, Djezzy requested a refundable deposit of around US$100 from the site manager to ensure the safekeeping of their equipment.

The pilot ran for three months and was a great success, providing additional revenue streams for the operator and its partners, whilst the communities who lived within the catchment area of a site benefited from the provision of affordable access to communication where previously it had been necessary to travel to a public payphone in another village to make a call. This could have involved a round trip of up to 100km. At the same time, a new business opportunity was provided at the site.

Usage of the service exceeded expectations. A target of 30 minutes average daily use per site was initially set, with typical averages of 36 minutes recorded. Djezzy is now committed to scaling up the project on a commercial basis, aiming to install 250 sites by the end of 2006.

"The successful pilot phase showed encouraging figures that exceeded expectations and demonstrated people's thirst to communicate, as what was expected to be a luxury service rapidly became a necessity. We realised after only a few weeks of the first installations that the need is real, with usage and ARPU increasing day after day, reaching an average weekly increase of approximately 103% for the first three weeks. Our analysis showed that implementing this solution in such areas leads users to save up to 80% on the cost of a tele-communications phone call, once transportation costs are taken into account. We are proud of having been able to find a new way to serve the Algerian population and we are now aiming to roll out and adapt this solution on a continual basis to serve our clients, whilst staying profitable for all parties."

Roslane Bencharif
Strategic Planning and Business Development Acting Manager
Djezzy

"Communication is a resource, getting people to communicate faster is helping to improve the lives of our people."

Dr. Moody Awori
VP, Kenya and
Chairman, APDK

Case Study: Simu ya Jamii, Kenya

In August 2006, a Shared Access to Voice pilot project – 'Simu ya Jamii' – was launched in Kenya with Safaricom. 100 units were set up for operation around Nairobi, run by entrepreneurs who had previously worked with Safaricom as informal payphone operators.

Each entrepreneur was provided with Psitek's Jembi GSM Payphone, marketing material, and financial support from Safaricom to brand their kiosk with the distinctive Safaricom green colour.

Future plans include the implementation of a project, in partnership with a Non Government Organisation (NGO) called the Association for Physical Disability Kenya (APDK), which involves creating a Simu ya Jamii offering for the wheelchair bound.

The World Health Organisation (WHO) estimates there are as many as 1.3 million people in Kenya with physical disabilities. According to the International Labour Organisation (ILO), up to 80% of people with disabilities in the developing world are unemployed.

By combining Safaricom's new Simu ya Jamii offering (phone, tariff and marketing materials) with a business tricycle (manufactured by APDK), an all-in-one Business in a Box for the physically disabled can be created. The wheelchair pilot will have 50 youth participants.

Though this project has a strong sense of social responsibility, it is crucial to stress that it also makes good business sense. The capital expenditure to establish a wheelchair community phone is lower than for a traditional Simu ya Jamii phone, since a wheelchair costs less than a roadside cabin.

Dr. Moody Awori, the Vice President of Kenya and APDK's Chairman, first took an interest in APDK in 1958 during the country's fight for independence, when the organisation was focused on fighting polio. Since then, Kenyan health provision has come a long way and polio is now eradicated, thanks to both the government and APDK efforts. Recently, the Kenyan government passed a Bill to ensure that people with disabilities get the help they need, including funding from the national budget to provide expert support. APDK, together with Safaricom and the Development Fund, have now gone one step further, with the wheelchair Shared Access To Voice initiative providing a practical way for the disabled to earn a living and become financially self-sufficient, whilst also bringing benefits to their communities. As Dr. Moody Awori points out, "Communication is a resource, getting people to communicate faster is helping to improve the lives of our people."

"The disability component of our Simu ya Jamii programme highlights the innovative ways in which Safaricom achieves our core mission of serving our customers responsibly. We are providing an income-generating activity for those with limited job opportunities. But also, this programme makes good business sense. Tricycle units have a great advantage over stationary kiosks, thereby expanding the reach of our mobile service to customers for whom short travel may not be efficient."

Michael Joseph
CEO
Safaricom

"By far, this is the most challenging and rewarding experience of my career. The concept of sustainable, shared communications grew on me as I travelled around Kenya, interviewing the likes of leading scientists, Samburu warriors, working mothers in city slums, orphaned boys, and disabled youths. Each spoke about how mobile technology helped them connect to sick relatives, improve commerce, support their children, protect their livestock, and even track elephants. For them, mobile phones didn't just facilitate communications; they presented the opportunity for greater social and economic equality."

Trang Pham (far left, below)
Accenture Development Partnerships

"Working alongside both the GSMA Development Fund and the MTN Foundation will enable the sharing of a wealth of experience and ideas, further refining shared access models and bringing greater benefits to a greater number of people worldwide."

Mohsen A. Khalil
Director
World Bank Group

Future Projects

The Development Fund is to pilot a variety of Shared Access to Voice solutions within the rural areas of Nigeria, aiming to bring shared access to mobile telephony to 2,000 poor rural individuals over the next twelve months.

"The World Bank and IFC are delighted to be working together with the GSMA Development Fund and MTN Foundation in Nigeria on the 'Community Phone Project'. This builds on the good work already completed by MTN Foundation, known as the 'Rural Telephone Project', which has enabled more than 300 women to date to earn a living as public telephone operators, and leverages the knowledge gained by the IFC in supporting similar initiatives in Uganda and Bangladesh. Working alongside both the GSMA Development Fund and the MTN Foundation will enable the sharing of a wealth of experience and ideas, further refining shared access models and bringing greater benefits to a greater number of people worldwide. I look forward to ongoing collaboration between the IFC and the GSMA Development Fund in other countries in the future."

Mohsen A. Khalil
Director
World Bank Group

The Development Fund is working in partnership with South African mobile operator Vodacom for the launch of Shared Access to Voice pilot projects. Vodacom has purchased 100,000 SharedPhone SIM cards for a mass rollout across the country.

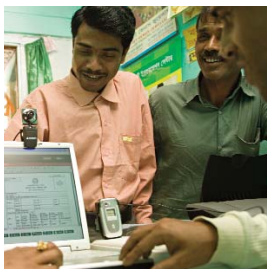
In addition, Shared Access to Voice pilot projects in Albania, Pakistan and Uganda are in the pipeline.

Key Conclusions from Shared Voice Pilots Conducted to Date

- Shared Access is sustainable and scalable: When a 'productised' approach is adopted, it is quick, cheap and easy to scale-up from pilot to a national rollout
- Shared Access creates jobs: Supervised payphones directly create jobs for payphone operators and indirectly create jobs for local communities
- Shared Access extends the reach of communications: There are on average 30 users for every shared phone
- Shared Access is not a 'one size fits all' proposition: Options range from professional 'container shop' facilities, offering large numbers of handsets and services, to individual entrepreneurs operating single, low-tech handsets
- Operators should adopt a range of shared access solutions: The maximum impact in terms of market penetration and job creation only occurs when a 'diversified portfolio' approach is adopted within a market
- Operators should lead: Shared Access succeeds when operators own projects. An operator who understands the market need is best positioned to develop a successful solution, and can then initiate government or NGO partnerships on its own terms.

Shared Access To Data

Affordable access to simple voice and text services is only part of the solution to bridging the digital divide. Until all members of society have equal access to an affordable suite of IT and communications services like Internet and email, the digital divide will persist. Equal access is the goal of the GSMA Development Fund and its partners in the Shared Access to Data initiative.



Business Model

Outside of major cities and tourist centres, the most common implementation of an Internet shop or access point in developing countries is the Non Governmental Organisation (NGO) supported model. Funding is supplied from charitable sources to buy computers and a fixed-line or satellite connection to bring data services to poor or remote people. These initiatives often have a positive impact on the local area that they reach but are limited in their scope by the extent of the capital supplied and the duration for which it is available.

The GSMA believes that the future of data access for poorer consumers must be shared, affordable, scalable and sustainable, and alternative business models must be considered to meet these requirements. The provision of a GSM communications line costs about one tenth of a fixed line. The only way to make a service truly flexible and lasting is to use the GSM data network and involve either the private or public sectors, or, better still, a partnership of both.

In the past twelve months the Development Fund, together with pioneering GSM operators in Africa and Asia, have initiated a number of successful projects that seek to understand how high speed GSM data networks (GPRS, EDGE or 3GSM/HSDPA) can be used to bridge the digital divide. To date, we have rolled out Shared Access to Data pilots with local operators in Bangladesh, Kenya and South Africa, and are currently developing a pilot in India. The focus of these pilots is on innovative solutions that provide not only a channel to the Internet but a suite of relevant services in a cost efficient, sustainable and scalable manner.

These pilots use enhanced GSM networks to bring Internet access to computers stationed in Internet cafes, Community Information Centres (CICs) and schools in remote or poor locations. The GSM-connected Internet terminals are run by entrepreneurs, who charge a fee to local people accessing the services and are therefore able to sustain a livelihood. Experience to date has shown that there is not one combination of technical components, content and business model that meets all needs. In fact, within any given country a portfolio of different solutions should be used to provide widespread, affordable and applicable access to mobile data services.

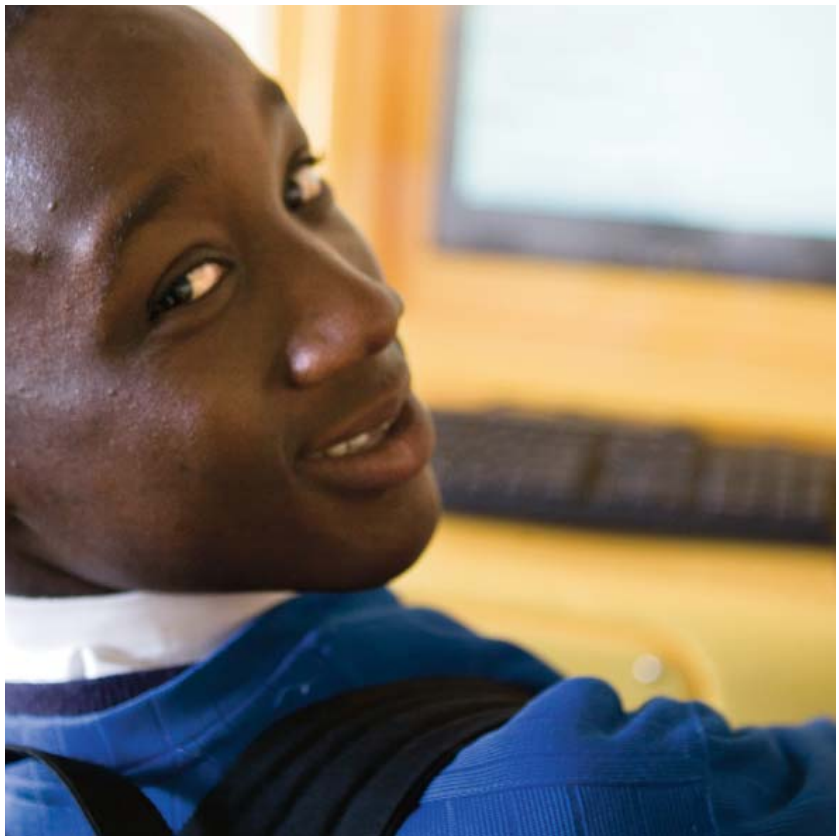


Fig.9 Nivo

Technical Overview

Conceptually, the set up of a GSM connected Internet centre is elegantly simple – all that is required is a PC and GSM modem, for example a data card or standard data-enabled (GPRS/EDGE) mobile handset. However, to put in place the building blocks for a solution that can be significantly scaled-up, it is essential to select the most appropriate hardware and software.

A solution that is significantly scalable, for example on a national scale, must be simple, cheap and easy to support. Therefore special low-cost technology options are always explored and tested during the pilots, with a view to driving down the 'total cost of ownership' of the whole programme.

For example, in the case of multi-terminal sites, the Development Fund has used a low-cost computing solution developed by Ndiyo, a not-for-profit organisation based in Cambridge, UK. Ndiyo changes the economics of PC ownership so that IT can be provided to millions who would not otherwise be able to afford it. Ndiyo uses a key advantage of the Linux operating system – the fact that it supports multiple simultaneous users on a single machine at no cost – and combines it with purpose-built ultra-thin-client devices called Nivos (Fig.9), which allow multiple keyboards, screens and mice to be connected to a standard PC over an Ethernet or USB network and deliver very high performance. A single PC can therefore provide several independent workstations, with the reliability and maintainability of Open Source software, at a substantially lower cost than the traditional one-PC-per-user model.

The Development Fund has also partnered with Novell, using its Desktop Multiplier solution. The Desktop Multiplier is a software add-on for Novell's SUSE Linux Enterprise Desktop that allows up to ten independent user sessions to run at the same time on a single computer. Each user has his or her own monitor, keyboard and mouse. The monitors plug into inexpensive dual-head video cards (two monitors per card); the USB devices plug into a USB hub. With the Desktop Multiplier, school districts, universities and colleges, governments and businesses can migrate ten users to each SUSE Linux Enterprise Desktop computer. This results in significant savings on hardware, software, maintenance, backups, electricity and environmental waste.

"We want to use our nationwide EDGE/GPRS network to bring the benefits of the Internet to people around Bangladesh, particularly in the rural areas, and thus help bridge the digital divide."

Erik Aas
CEO
GrameenPhone

Case Study: CIC, Bangladesh

GrameenPhone Ltd., the largest telecommunications service provider in Bangladesh with over 9 million subscribers as of August 2006, is already a world leader in shared access to telephony, thanks to its Village Phone programme that has been rolled out by over 240,000 Village Phone operators in 50,000 villages across Bangladesh.

In 2005, GrameenPhone invested US$300 million in network upgrades, increasing the population coverage from 55% to 95%. The EDGE service was launched in September that year, and now more than 80% of the network is EDGE enabled. The remainder has GPRS connectivity. The Development Fund stipulates that, at a minimum, EDGE technology must be live and available for a Shared Access to Data project to flourish.

Not wanting to rest on its internationally acclaimed Village Phone laurels, Erik Aas, CEO of GrameenPhone, declared: "We want to use our nationwide EDGE/GPRS network to bring the benefits of the Internet to people around Bangladesh, particularly in the rural areas, and thus help bridge the digital divide."

As there is no fibre optic cable or fixed-line network in the rural areas of the country, the only way of reaching those remote areas is through the cellular network. "In order to ensure that this initiative is financially sustainable we have developed a business model that is profitable for all stakeholders, including the individual entrepreneur, content providers, delivery partners and the network provider," stated Aas.

In early 2006, GrameenPhone and the Development Fund jointly launched a Shared Access to Data pilot project, taking the original GrameenPhone Village Phone concept and replacing voice with data services relevant to the needs of rural people. The pilot used a Mobile Network Operator/ Entrepreneur business model with the support of a microfinance institution and a local distributor. In light of the country's existing negligible Internet penetration rate (approximately 0.2%), there is a huge untapped potential market for Shared Access to Data services.

A variety of different technical concepts were piloted in 16 Community Information Centres (CICs) across Bangladesh in order to compare cost, performance and supportability of different solutions. Each CIC contained between one and eight computer terminals connected to the Internet with EDGE modems. Like the earlier project, the CICs were designed to be commercially viable and therefore sustainable, with the intention to provide a Business in a Box to a local entrepreneur who funded the purchase with a low-cost loan from Grameen Bank.

Today, the 16 live CICs are in a post-pilot phase and are being closely monitored. Each CIC generates average revenue of approximately BDT 12,000–14,000 per month (US$170–200). 60% of this is derived from Internet-based services such as browsing, email, video-conferencing and messaging, and the rest from other services such as scanning and desktop publishing. An average of 10 to 12 people visit each CIC everyday, of which 70% are from the youth demographic.

The Bangladesh Shared Access to Data pilot has been a huge success, and GrameenPhone is now looking into rolling out CICs all over Bangladesh, aiming for approximately 460 locations by the end of 2006. This will include a CIC in each of the sub-districts of the country.

"The initial results from the pilot phase are indeed very encouraging and we plan to further spread the CICs around the country within this year and include medical information and other useful content with it," the GrameenPhone CEO observed.

Typical CIC Hardware Equipment

- Networked PC
- Printer
- Scanner
- Webcam
- EDGE modem
- Mobile phone
- Digital camera

"The introduction of CICs using EDGE technology has broken the barriers to information, which was until now unserved or under served in the country. It has ignited hopes in the minds of rural people – a hope for a bright future."

Sultanur AHM Reza
Project Manager
GrameenPhone

Fizaz Ahmed (top left) is the entrepreneur of a Community Information Centre (CIC) in Kapalia Bazar, Jessore, one of 16 sites in Bangladesh designed to provide Internet access to previously unconnected regions. Communications provided by GrameenPhone and the GSMA Development Fund are key to its success.

"I ran my own small photocopying and printing business when I was selected by Grameen Bank and Grameen Telecom to manage a new Community Information Centre (CIC) in my home village of Kapalia Bazar, Jessore. It was a challenge I accepted without any hesitation.

In my role as the CIC's 'entrepreneur', my first responsibility was to purchase equipment and make the local community aware of the services available. I distributed leaflets throughout the village and even used a microphone to attract attention.

Two desktop PCs were set up within the CIC, providing Internet connectivity via an EDGE-enabled mobile phone. The desktops run Windows software and are connected to a printer and scanner. Headphones and a Webcam are also available.

The CIC has been a huge success. Local villagers are today benefiting from Internet browsing and are proud to have access in such a remote area. I enjoy educating the community on the huge amount of information available from the service. I have helped the villagers open email accounts and improve their computer literacy, and I provide regular training on the use and benefits of Internet connectivity.

The services have really improved the lives of the villagers, who previously would have had to travel around 35 kilometres just to use the Internet. Now it is available in their own community. Students can download their examination results. For a small fee of 25–35 taka (US$0.36–$0.5), villagers can buy printouts of documents that used to take days or weeks to arrive by post, for example licence and passport forms. They can keep in touch with relatives abroad by email. Many of the farmers are able to enquire about agricultural issues and receive swift, informative replies from the relevant authority. And for just 5 taka (US$0.07), a farmer can obtain a listing of prices for any agricultural commodity sold at nearby markets. Villagers are even able to access health tips to keep themselves fit!

I work long hours to keep the CIC open but it's worth the effort. From 7am until 11pm, the CIC remains busy all day long. Teachers, doctors, students, housewives, farmers – all sections of the community use the services.

There's no doubt that GSM technology is making a real difference to the Kapalia Bazar community. There is no fixed-line network and the only method of connection is through mobile networks. Without the CIC, villagers would have been unable to enjoy the benefits such progressive change has brought to their life."

Case Study: Jibon-Tari, Bangladesh

Dr Ikhtiar Ahmed Shawon has been administrator of 'Jibon-Tari' (Life Boat) floating hospital in Bangladesh since 1999. Communications provided by GrameenPhone and the GSMA Development Fund are key to its success.

"I graduated back in 1996 in Russia and have been involved with Impact Foundation Bangladesh since 1999 as the Administrator of 'Jibon-Tari' floating hospital. There are four doctors (including me), four nurses and three paramedics. Altogether there are 38 staff who stay on board. In addition, we have a large number of volunteer surgeons from Dhaka and overseas.

The start of a day on the boat hospital is much the same as other hospitals. We hold an outpatient department every day except Friday – patients register from 8.30am, and from 9am till 2pm the doctors screen them for surgery.

Impact is an NGO working in the field of disability. Most of the cases we deal with are diseases of the eye and ear and orthopaedic problems. We also do some plastic surgery. Most of the eye patients have cataracts that result in blindness unless treated. We also get a lot of young patients with a congenital anomaly called 'Club Foot' for which we do corrective surgery. In total we perform over 2,400 operations a year, 2,000 of which are for cataracts. In addition we run a health education programme from the boat.

GSM technology is making a real difference to the way we work. The ability to communicate internationally allows us to link up with any specialised institute outside Bangladesh to help us solve particularly complicated cases. We can hold video conferences with specialists in Dhaka or with overseas doctors who can provide us with important information regarding treatments, in real time. Before this was simply not possible and it has helped us improve the quality of the treatment we can offer here. Previously we would have had to use fax in order to get recommendations from our international colleagues, which added an extra day or two to the whole process as someone had to travel 22km to the nearest town to use the fax machines or to pick up a fax that had been sent to us.

With video conferencing over the mobile phone we not only get the information we need immediately, we can also show the specialists the condition itself if necessary. Reports and test results can be sent back to us via email too which means we can treat people more quickly.

We often have international doctors who come from the US and the UK to work for one or two weeks on the boat. With our new connectivity we can coordinate their trips more easily and maintain those relationships after their stay. The technology also allows us to continue to get useful advice from them when they have gone home.

As well as making medical treatment more efficient, connectivity enables the boat to operate much more effectively. We can coordinate our efforts more easily and make sure we are in the right place at the right time to offer consultations and treatment.

To set this up, all we needed was an EDGE-enabled modem that costs around US$200 – not much in the grand scheme of things. To put it in perspective, the cost of our eye surgery is BDT 4,000 (about US$57) – if we can save just this much every week, that's an additional eye saved in a village. All in all, GSM technology has made a huge difference to the people who work on the Life Boat and our thousands of patients."

"It was amazing to see how big an impact such a relatively simple concept could have. In reality, people were crying out for these centres. They felt a real need to be connected to the world, a phrase we heard time and again."

David Seaton
Accenture Development Partnerships

Accenture Development Partnerships Insight

Mark Cripsey (above left), Accenture Development Partnerships, helped initiate the Bangladesh pilot project that launched in early 2006. "It was a very positive experience. Giving people access to basic voice and data services is a building block for social and economic development. People in the villages realised the benefits it could bring to the local community. People are naturally very entrepreneurial. As soon as we arrived they had practical suggestions as to how they could use the services, and the willingness to pay was higher than expected."

David Seaton (below left), Accenture Development Partnerships, managed the delivery of all 16 CIC sites. "It was amazing to see how big an impact such a relatively simple concept could have. In reality, people were crying out for these centres. They felt a real need to be connected to the world, a phrase we heard time and again. Bangladesh has a huge migrant population, and connectivity was the key, among other things, to reuniting families. Everyone was aware of the potential of mobile communications, they just hadn't had the opportunity to embrace it in the way that other countries had. The implementation of this project was the first step on the road to rectifying this."

"School children in particular are benefiting from having such a powerful research tool for their projects."

Zoli Mtimkulu
Local 'entrepreneur'
Attridgeville

Case Study: MTN@ccess, South Africa

MTN South Africa, the region's second largest mobile operator, has successfully piloted a Shared Access to Data project in 8 sites around Johannesburg. The project includes one of the world's first Shared Access initiatives involving HSDPA (High Speed Downlink Packet Access) technology.

The MTN project, known as MTN@ccess, builds on the operator's Community Payphone Program, where entrepreneurs provide a local community with Shared Access To Voice services using the country's GSM network. MTN provides the GSM payphones and the entrepreneur provides housing and security for the equipment. It is through this entrepreneurial network that MTN and the Development Fund piloted the provision of data services.

The first two sites went live in March 2006, located in the Attridgeville township of West Pretoria. A further 5 sites were then launched around Gauteng, all providing Internet and email services via EDGE technology to areas previously lacking access to data services. Each site houses between two and three terminals.

Zoli Mtimkulu (top left), 39, opened his mobile phone shop in Attridgeville in 2002. The shop has been offering Internet services since the arrival of three PCs in April 2006. "The computers are used mainly for Internet browsing and email. Popular Web content includes music, horoscopes, cars, webmail, Google searches, job searches, astrology and sport, particularly football. Many people in the township have had a poor education and therefore need help using the computers. I am often asked to help local residents write their CVs, download music and print documents. Around eight people a day use the computers. Pretoria was the closest place before now that offered computer facilities, but it is between 15 and 20 kilometres away. School children in particular are benefiting from having such a powerful research tool for their projects."

In a major milestone for MTN and the Development Fund, MTN is also using the cutting edge 3G technology HSDPA to provide high-speed connections (similar to that offered by fixed broadband networks) from a local entrepreneur's payphone shop in the Alexandra township near central Johannesburg – one of the first 'Internet cafes' in the world to deploy HSDPA.

The HSDPA site was officially launched on 21st June 2006, with the opening attended by MTN South Africa's Managing Director, Maanda Manyatshe, and the GSM Association's CEO, Rob Conway.

"Today, we have forged a bridge to enable the unconnected to participate in the connected, online world. With guidance and training from the MTN@ccess team, the extent to which the portal can be put to use for communities such as Alexandra is endless. As its name suggests, the MTN@ccess enterprise creates access for all, and we are extremely excited about the possibilities this new initiative holds."

Maanda Manyatshe
Managing Director
MTN, South Africa
(speaking at the launch of the HSDPA site)

"MTN's commitment to the programme is a firm one. Our company is making significant investments in the development of community enterprise development initiatives like this one. The MTN@ccess portal development and community-based Internet café-style enterprise creates convenient access to information and opportunities such as educational and training resources, job creation, employment and life skills, and a gateway to useful and relevant websites, to empower community members."

Ashraff Paruk
Head of Strategy and Product Innovation
MTN, South Africa

This pilot site highlights the importance of rolling out HSDPA in the developing world. Where fixed-line networks are limited, HSDPA is the key to bringing the vast resources available on the Internet within the reach of ordinary people. Currently, there is a severe lack of Internet penetration in Africa, with only 2.7% of the population connected to Internet services (compared to a world average of 17%), so mobile operators are well positioned to provide the 'Internet dial tone' for emerging markets.

Of course, network speed isn't the only factor that will make these services a success. Ease-of-use is also vital. MTN has created a special home page providing easy access to the most popular services, such as job information, e-government, telemedicine, entertainment, news, and school/university results.

Looking ahead, the Shared Access to Data pilots could be a precursor to a much wider rollout of shared Internet access services across South Africa using HSDPA and EDGE technology.

Future Projects

The GSMA Development Fund is assessing the potential of piloting Shared Access to Mobile Data projects in India, Tajikistan and Uzbekistan.

Key Conclusions from Shared Access to Data Pilots Conducted to Date

- GSM data networks solve the 'last mile' problem quickly, reliably and economically, with bandwidth sufficient for a large variety of valuable data services
- There is significant demand for data services from 'bottom of the pyramid' consumers, even in rural areas, and they are prepared to pay for access to data due to the high costs associated with alternative methods of obtaining such information (for example, lengthy and expensive travel)
- It is important to offer e-services as well as simple Internet access. Our research has shown the most popular services include job information, e-government, telemedicine, entertainment, news and school/university results
- Governments and network operators should not treat this as charity. If the initiative is set up correctly, the project will grow organically without financial assistance from external donors, delivering a positive social and economic impact at scale
- A win-win structure has been established for all parties: the MNO, the microfinance supplier, the entrepreneur, and, most importantly, the individuals who benefit from the services.

Schools Connect Programme

As part of its Shared Access to Data initiative, the Development Fund is also bringing the benefits of mobile communications to the education sector. The Development Fund's first pilot project in this area involves providing Internet connectivity to eight Kenyan secondary schools in partnership with Safaricom Ltd. and Computers for Schools Kenya.

Background

Kenya has limited data connectivity. With under 300,000 landlines, and little likelihood of significant expansion in the short to medium term, fixed-line ADSL or dialup technology cannot come close to meeting the country's data needs. Although this has allowed room for satellite connectivity solution VSAT to gain some market share, its associated costs mean that is too expensive for significant mass-market implementation.

Mobile operator Safaricom's national network is 100% data enabled, using either GPRS or EDGE technology. While GPRS still predominates, EDGE is now rolled out at 300 cell sites and Safaricom are committed to transferring their entire network over to EDGE. In light of this, Safaricom's wireless data offering has real potential to become a mass-market technology for data provision.

Within Kenya's schools, a number of existing projects have been trialled or piloted involving the provision of data via ADSL, dialup or VSAT. However, to date the existing solutions tested have proved either too expensive or too geographically limited to be implemented nationwide. In light of this, an opportunity exists to provide data to schools using Safaricom's mobile data enabled network.

Objectives

The GSMA's Development Fund aims to make available a cost effective, reliable data solution to Kenya's secondary schools, providing connectivity speeds that will enable Internet browsing and email access. A commercial business model will be used that is sustainable for all stakeholders in the long term.

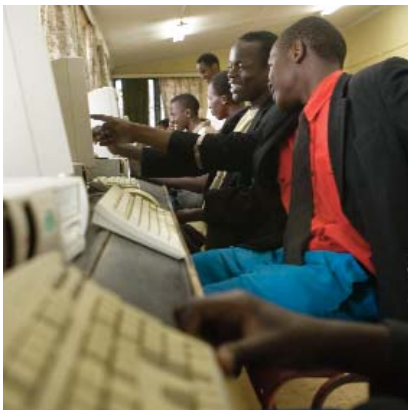
The project will realise the full potential of existing computer facilities in schools, enabling access to email and the Internet as a teaching resource, while at the same time reducing the cost of accessing such data.

Project Overview

The Development Fund is working with NGO Computers For Schools Kenya (CFSK) and Safaricom to provide Internet connectivity to eight schools in Nairobi and another major locale.

Each school will have twenty workstations connected to the Internet using GSM-based EDGE technology. The first school is now live and all eight schools are expected to be connected by Q4 2006. The most popular uses for the pilot project are likely to be ICT studies (Information and Communications Technology), and Internet browsing (research and content) for non-ICT classes such as science and history.

Safaricom has an existing relationship with CFSK, an NGO that provides computer terminals and IT training and support to schools throughout Kenya. The Safaricom Foundation is contributing financially to the installation of computers.



The project will be at least revenue neutral, if not profitable, for Safaricom, with revenue generated from the schools paying for data access. The schools will fund these fees by operating a 'cybercafé'-like service or through an alternative source of funding.

All three project partners, as well as the Government of Kenya, will be closely monitoring the commercial and technical success of the pilot project to assess the potential of rolling out the solution to all schools nationwide.

"Internet connectivity is the key to providing quality education and empowering communities in an increasingly globalised and information-driven world. GPRS and EDGE technologies are a valuable and viable option for achieving this, especially in rural and marginalised communities for whom traditional access technologies are not an option due to their resource challenges. Safaricom's initiative in this area is a great service to the nation, with profound implications for our development and competitiveness. Many thanks to them for this."

Tom Musili
Executive Director
Computers for Schools Kenya

"Working with the GSMA Development Fund to implement the Schools Connect Project is particularly exciting for Safaricom. This fulfills our Corporate Social Responsibility goals and targets an entirely new market. By offering high quality data services to large, public institutions in a cost-effective and sustainable manner, Safaricom is able to contribute to economic growth, improved quality of life for our employees in their local communities, and society at large."

Michael Joseph
CEO
Safaricom

About CFSK

Computers For Schools Kenya is a non-profit organisation dedicated to the development of e-competent young Kenyans through the provision of computers and auxiliary services to public secondary schools and related learning institutions and community access centres. CFSK was registered in October 2002 and began its operations in January 2003.

The organisation is steered by a Board of Directors drawn from a cross section of leaders of major Kenyan institutions in the public and private sectors. The operations of CFSK is run by a staff management team and a group of local and international volunteers. CFSK is based at the Starehe Boys Centre in Nairobi where it houses its Technical Support Centre. CFSK also runs training facilities at the Kenya Science Teachers College, Kenya Technical Training College, Kiambu Institute of Science and Technology, GTI-Mombasa, Ogada Secondary School, and Kenya Methodist University.

About Safaricom

With over 3 million users, Safaricom Ltd ('Safaricom') is Kenya's leading mobile operator. Committed to keeping pace with the global mobile communications industry, Safaricom focuses on delivering top quality customer service and building strategic associations with business partners, nonprofits, and governments. In line with its core value of Corporate Social Responsibility, Safaricom invests significantly in sustainable, community-based programmes like the Simu ya Jamii programme that offers affordable communications through shared access rather than a 'one person, one device' model.

Disease Surveillance Programme

The work of the GSMA Development Fund goes beyond shared access initiatives, to also bring to bear the benefits of applications on mobiles. We now have a disease surveillance programme underway, starting with two pilot projects that will demonstrate how mobile technologies can be used to help health authorities and governments track the spread of diseases, such as HIV/AIDS and Avian Flu.

Background

Existing disease surveillance systems suffer from a lack of up-to-date and consistent quality information provided from the field. Reports of new outbreaks or shortages of medicine often have to be sent overground by messengers or by lengthy travel to the nearest working fixed-line phone or fax. The delays and incomplete information limit the ability of the international health community to recognise and respond to the emergence of a new pandemic, and can break the supply chain of life-saving drugs to needy areas.

Project Overview

The Development Fund has joined forces with the World Health Organisation (WHO) and Voxiva, a leading healthcare software provider, to integrate mobile phone software into Voxiva's disease surveillance systems, enabling health workers in the field to capture patient data, thereby aiding governments in their efforts to take fast action and supply appropriate medicine.

The first pilot will go live in Q3 2006 in Rwanda with an HIV/AIDS surveillance tool. This will be followed shortly afterwards by an Avian Flu tracking pilot in Indonesia.

Written in Java, enabling it to run on a wide range of mobile phones and PDAs, the new software application will enable health workers to input information about the spread of a disease into their phone or PDA, which then transfers the data via a GPRS connection into a central database. If GPRS isn't available, the software can use an SMS data channel to transmit the information. The health workers will also be able to use the software to order medicine, send alerts, download treatment guidelines, training materials and other appropriate information.

The handset software will be faster, more efficient and more reliable than the current methods used by health workers to file reports and order medicine. For example, in Rwanda, health workers filing reports on HIV/AIDS cases typically have to make lengthy voice calls to interactive voice systems. The pilot programmes will provide real-time data to centrally located health officials allowing rapid intervention and providing an accurate picture of the scale and severity of disease outbreak.

The two pilots will create a unique case study for the role of mobile technology in global health surveillance, and a reusable asset with new technology capable of being replicated in similar systems. The projects in Indonesia and Rwanda are designed to be easily scaled up and replicated elsewhere in the world. Interest in using the technology has already been received from numerous parties around the world.

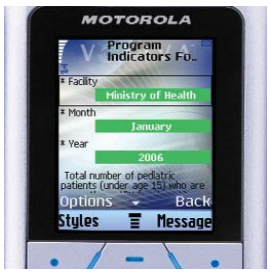


Fig.10

"Working with the GSMA Development Fund, Voxiva has developed and implemented mobile phone-based data collection systems to help developing countries tackle pressing health challenges such as HIV/AIDS and Avian Flu. These systems offer health workers in the field the ability to report real-time data on suspected disease outbreaks, patients on treatment, drug supplies, etc. Unlike traditional paper-based systems, where it takes weeks or months for information to filter up, these systems allow for health authorities to view and analyse data immediately and coordinate their response in real time. Our successful deployments in Latin America, Africa and Asia clearly show how the mobile phone infrastructure that GSMA members have built can be leveraged to address some of the critical health challenges facing countries. We are now working with the GSMA and operators to replicate these solutions for governments across the developing world."

Paul Meyer
Chairman and President
Voxiva Inc.

About Voxiva

Founded in March 2001, Voxiva is a global provider of practical information solutions to strengthen health care systems, enhance safety and improve government service delivery. Voxiva solutions leverage the world's 2.5 billion mobile phones as well as fixed-line phones, PCs, PDAs and other technologies to cast a much broader reach than Internet-only solutions.

The solutions are used to monitor and manage infectious disease; support major health delivery programmes such as HIV/AIDS, malaria and maternal health; enhance patient monitoring and care; strengthen management, monitoring and evaluation of health and development programmes; and promote citizen safety and services.

Voxiva's solutions (Fig.10) allow users in the field to submit real-time data reports to the system via web, phone, text messaging or PDA. Data can be mapped and analysed in real-time by managers using Voxiva's web interface. Supervisors can use communication tools to send automated alerts and broadcast messages back out to the field, supporting two-way information flow. Voxiva systems can also be used to store and share key documents and information.

Alternative Energy Programme

The GSMA Development Fund has commenced two projects – a Biofuels Programme, and a Solar and Wind Power Programme – that address operator barriers to entry in their efforts to bridge the digital divide.

The GSMA Development Fund, Ericsson and pan-Africa mobile operator MTN Group have teamed up to establish a biofuels pilot in Nigeria, a project that is set to position the mobile industry at the forefront of global efforts to industrialise the commercial use of biofuels. The pilot not only aims to demonstrate the potential of biofuels to replace diesel as a source of power for mobile base stations located beyond the reach of the electricity grid, but will also highlight how, through the use of locally grown crops, the use of biofuels creates employment in rural areas, while reducing the need for road and infrastructure development, transportation and related security, and providing a cleaner and greener solution.

There are numerous widely reported challenges with the use of traditional diesel generators that need to be understood when investigating alternatives:

- Diesel prices are high and rising – operators in parts of Africa report that diesel is accountable for more than two-thirds of their total operating costs
- Many emerging markets do not have their own oil reserves and even those that do often do not refine oil locally, hence diesel becomes a significant import cost
- Diesel powered base stations require good road access to transport the diesel
- Diesel generators and diesel stores require good security to protect stocks
- Diesel is a non-renewable fossil fuel, which, when burned, causes environmental damage.

The Development Fund is therefore testing new approaches to fuelling and managing mobile network base stations in remote areas that are not connected to an electricity grid.

Biofuels, a promising alternative to fossil fuels, are now a realistic option for operators planning the rollout of base stations into remote areas. The cost of the biofuel processing technology has come down significantly over the past few years (for example, see the Ageratec processor pictured above left). Extracting oil from crops such as jatropha, for instance, is a relatively straightforward process, and the biodiesel can be used in most modern generators. Furthermore, biofuels do not require infrastructure such as roads to be built and security concerns are significantly reduced through the use of locally grown crops.

The GSMA is committed to finding environmentally friendly solutions to tackle digital divide issues, and biofuels are proven to have lower carbon dioxide emissions (the gas responsible for the greenhouse effect) than petrodiesel because they recycle carbon from the earth's atmosphere, and not from the earth's crust.

"MTN regards the Biofuels Programme to be of great importance. We are working with our partners the GSMA and Ericsson to develop a self-sustainable, cost effective, and environmentally friendly solution to extending mobile coverage into remote and rural parts of Nigeria, and potentially the rest of Africa where MTN is operating. I am also personally excited that the Biofuels Programme could potentially create employment for tens of thousands of agricultural workers, whose labour will bring communications to their villages for the first time, placing the mobile industry at the forefront of social development."

Karel Pienaar
Chief Technology & Information Officer
MTN Group

The GSMA Development Fund believes that biofuels offer the potential to:

- Adopt a new and more reliable alternative to mains electricity which extends the potential reach of base station technologies
- Reduce carbon monoxide and carbon dioxide emissions in comparison with petrodiesel by recycling carbon from the atmosphere, and not from the earth's crust
- Switch to a fuel with stable pricing patterns and lower associated costs (eg raw materials, transportation and infrastructure costs)
- Enable local rural communities to benefit from sustainable livelihoods, resulting from the farming of the biofuels crops in the area immediately surrounding the base station.

It is imperative that biofuels crops are not grown instead of crops for food in some of the poorest regions of the world.

Ericsson and the GSMA Development Fund are committed to driving down the cost and environmental impact of base station technologies, and to increasing the capacity of the industry to drive social and economic development. Our joint vision is for the global promotion of renewable and clean energy as a means of powering base stations, with biofuels becoming a standard rural base station power solution for mobile network operators. To this end, the GSMA Development Fund and Ericsson are currently working with MTN Nigeria on a Feasibility Assessment, to establish whether or not it is possible to use biofuels as a means of providing power supply to mobile networks in areas where mains power is not available, whilst at the same time creating thousands of new jobs through local production and processing of the biofuel crops, and reducing the environmental impact. Assuming the Assessment is favourable, the Biofuels Programme will work to catalyse the uptake of this promising alternative to mains electricity. The project has already received significant interest from operators throughout Africa and Asia.

The Solar and Wind Power Programme

The GSMA Development Fund has recently started a Solar and Wind Programme, to address barriers to entry to remote locations experienced by operators, thereby further connecting the unconnected. Nearly two billion people worldwide have no electricity supply, mostly in rural areas, while others suffer frequent outrages. In contrast, the sun supplies 15,000 times more energy than is currently used worldwide, and wind has the potential to generate over 40 times the current global electricity use. Like the Biofuels Programme, solar and wind power also offer an environmentally friendly power solution for the powering of base stations, with the further benefits of being independent, free from load shedding and billing.

Solar and wind power are now established technologies, used globally to provide power to communities and businesses, often supported by government initiatives. For example, Grameen Shakti, a project of Grameen Bank, has been providing solar energy to over 5,000 people in remote coastal areas and off-shore locations for the past four years. To date, however, solar equipment has been specialist and costly but this is changing as technology develops and economies of scale bring about significant cost reductions.

Wind power has also seen huge global growth in recent years, and wind power generation more than quadrupled between 1999 and 2005. Most modern wind power is generated in the form of electricity by converting the rotation of turbine blades into electrical current by means of an electrical generator. Wind energy is abundant, renewable, widely distributed, clean, and mitigates the greenhouse effect if it is used to replace fossil fuel-derived electricity.

Initiatives In Progress

The GSMA Development Fund has identified a number of initiatives that are currently being evaluated with the potential for future deployment. Such initiatives would use the Development Fund's resources to bring social, economic and environmental benefits to regions and communities, adopting the same objectives as the initial Shared Access projects. The new projects include the support of conservation efforts, mobile money transfer applications and the provision of industry-based training and skills development for the unemployed in developing countries.

Education & Skills Development

The Development Fund recognises the need to support the training of mobile industry employees in the developing world and emerging markets, especially in regions where the demand for mobile communications is growing faster than the skills and resources available for network deployment. The Development Fund is aiming to develop and endorse new and existing courses for the training of the mobile industry workforce in these regions. The Development Fund is also evaluating the potential of providing a similar programme for the area of mobile regulation in the developing world.

Conservation

The Development Fund is examining ways of using GSM technology to support the conservation of wildlife and the environment. One example is the use of Global Positioning System (GPS) technology over a GSM network to track various wildlife, such as elephants. Typically, local communities benefit economically as well as socially though successful conservation programmes, improving local livelihoods. All projects approved by the Development Fund must demonstrate expected tangible benefits to the economic development of local communities.

Mobile Money Transfers

The Development Fund is working with governments, operators and private donor organisations committed to expanding access to financial services for the poor in developing countries. This work will complement initial industry success in this space, particularly in the Philippines where the use of mobile for micro-payments has addressed a major service gap critical to social and economic development.

Strategic Partner Categories

	Suppliers	Operators	Government and Development Community
Strategic	• Partner for multiple years • Support multiple projects • Make significant donation of cash and "in-kind" e.g. handsets, on an ongoing basis	• Partner for multiple years • Support multiple projects • Make significant donation of cash and "in-kind" e.g. discounted call rates, project manger and office space, on an ongoing basis	• Partner for multiple years • Support multiple projects • Make significant donation of cash and "in-kind" e.g. expert resource to support projects, on an ongoing basis
	Motorola	MTN, Telenor/GrameenPhone	World Bank (IFC), CGAP, DFID
Implementation	• Support single project • Make donation of cash or in-kind	• Support single project • Make donation of cash or in-kind	• Support single project • Make donation of cash or in-kind
	Better Energy Systems, Ericsson, Freeplay, Ndiyo, Novell, Off-Grid Systems, Psitek, SharedPhone, Voxiva	Airtel, Hutchison Essar, Idea Orascom, Safaricom, Vodacom	Computers for Schools, APDK, SEBA

* "Government and Development Community" includes NGOs, charities, Foundations, Governments and international organisations

Dawn Hartley
Development Fund Manager

Strategic Partnership Programme

A Strategic Partnership Programme has been developed that will recognise and reward the differing levels of partner commitments and enable the Development Fund to grow and realise its full potential.

The programme defines two types of partner: Strategic Partner and Implementation Partner. Strategic partners are organisations and individuals who give monetary donations or donations in kind (for example; expertise, equipment, facilities, reduced call rates) on an ongoing basis and are committed to multiple years of partnership with the Development Fund. Implementation partners are organisations and individuals who give one-time monetary donations or donations in kind to the Development Fund for specific projects.

Partners may be vendors, operators, NGOs, charities, governments or other. A balanced portfolio of partner and category types will enable the Development Fund to fulfil future objectives.

Partner benefits include use of the GSMA's Development Fund 'Partner Logo', a special recognition on the Development Fund's website, invitation to an Annual Partner Meeting, and receipt of a quarterly Partner Update.

Partner With Us

While the reach and influence of the Development Fund is expanding, we are open to further partnerships that can harness the vast potential of mobile communications to bring about social and economic progress. We would be delighted to hear from mobile operators, governments and institutions, NGOs and charities, and development academics interested in learning more about our initiatives with the view to potential partnership. Please contact Dawn Hartley, Development Fund Manager, at the address below:

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GSMA Public Policy Overview – Bridging the Digital Divide

The GSM Association (GSMA) believes that the promotion of open, competitive market conditions is fundamental to extending the benefits of mobile communications to all, from the most developed Western markets to the remotest areas of developing countries. Mobile has a critical role to play in improving health, education and social mobility, as well as being perhaps the most important facilitator of a country's rapid economic development.

To ensure that the benefits of mobile communications are available to everyone who needs them, the GSMA has developed an integrated programme aimed at better identifying the value of mobile communications.

As part of its wider 'Bridging the Digital Divide' initiative, the GSMA is working to tackle the cost barriers to mobile ownership and fully quantify the economic and social benefits related to mobile.

The barriers to ownership currently prevent over two billion people connecting to mobile networks, which already provide coverage of 80% of the world's population. By looking at the 'Total Cost of Ownership', and taking an holistic view of the mobile communications environment, the GSMA has been able to critically examine how regulation and taxation affect the take-up of mobile phones. It has also worked with equipment suppliers to deliver a lower cost handset to consumers, which is part of the ongoing Emerging Market Handset programme.

It is also important that all key policy makers in positions of authority within the world's developing market governments have a clear understanding of the social and economic benefits of mobile. By gaining a full appreciation of the way in which mobile contributes to many diverse areas of an economy, governments can make best use of this flexible technology.

Tom Phillips
Chief Government &
Regulatory Affairs Officer
GSM Association

The GSM Association (GSMA) is the global trade association representing more than 700 GSM mobile phone operators across 214 countries of the world. In addition, more than 190 manufacturers and suppliers support the Association's initiatives as key partners.

The primary goals of the GSMA are to ensure mobile phones and wireless services work globally and are easily accessible, enhancing their value to individual customers and national economies, while creating new business opportunities for operators and their suppliers. The Association's members serve over 2 billion customers – 80% of the world's mobile phone users.

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