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DEVELOPING TELECOMS

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Connected Citizens

MANAGING CRISIS

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Contents

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Foreword: Connected Citizens - Managing Crisis

By Alec Barton, Founder & Editor-in-Chief, Developing Telecoms

Alec Barton - Developing Telecoms

This special report looks at developments in the field of humanitarian response following natural and man-made disasters such as earthquakes, tsunamis, health emergencies and wars.

As connectivity extends to the remotest parts of the world an unprecedented and transformational development of ICT knowledge and skills is taking place. This transformation is leading to a reappraisal of the ways in which crisis situations are managed and to the concept of 'disaster relief'.

Connected citizens become proactive partners in crisis management and recovery, finding ICT based solutions to problems, guiding and channelling emergency relief efforts and leading rebuilding activities.

Participants in a panel discussion on these topics at Mobile World Congress 2015 highlighted a number of key challenges and priorities. These include the importance of maintaining network uptime, the need for operators to overcome technical and operational barriers and to share resources during times of crisis and the value of drawing on local knowledge and using techniques such as crowd sourcing and the cloud to find and deliver effective solutions to speed up crisis response and reduce recovery times.

Mobile network operators (MNOs) have a pivotal role to play in these developments. Without the basic connectivity that is now seen as a 'right' in even the remotest areas, the effects of natural disasters and man-made crises are magnified and citizens feel isolated and neglected. MNOs can no longer afford to let their customers feel like this.

Recognising this, the GSMA responded by launching the first 'Humanitarian Connectivity Charter' in March 2015. Receiving high level endorsement and support, including from UN Secretary General Ban Ki Moon, the charter aims to create a more coordinated and predictable response to disasters.

The 'Humanitarian Connectivity Charter' seeks to build consensus, to disseminate best practice on strategies to support 'Connected Citizens', and to encourage MNOs to commit to a common set of principals and adopt initiatives focused on humanitarian connectivity.

Kyla Reid, Head of the GSMA's disaster response programme, talks in more detail about the background and vision of the 'Humanitarian Connectivity Charter' in our opening article. The report also includes top level contributions from two of the charter's founding signatories, Ooredoo and Roshan, providing valuable insights into the ways MNOs respond to crises.

Other contributors include experts from government, non-government and commercial organisations working in the field. These explore ways in which ICT technologies are now being used to improve response, examine how ICT is empowering citizens affected by crises and outline some of the connectivity principals which can improve crisis management and response.

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As a community-focused company, we are guided by our vision of enriching people's lives and our belief that we can stimulate human growth by leveraging communications to help people achieve their full potential.

Inmarsat

As the industry leader and pioneer of mobile satellite communications, Inmarsat has been powering global connectivity for more than three decades.
We offer an unrivalled portfolio of global satcom solutions and value-added services to keep you connected at all times – whether travelling on land, at sea or in the air. No matter where your business takes you, you can rely on Inmarsat for all your mission-critical communications.

Ericsson

We are a world leader in the rapidly changing environment of communications technology – providing equipment, software and services to enable transformation through mobility.

Some 40 percent of global mobile traffic runs through networks we have supplied. More than 1 billion subscribers around the world rely every day on networks that we manage. With more than 37,000 granted patents, we have one of the industry's strongest intellectual property rights portfolios.

Our leadership in technology and services has been a driving force behind the expansion and improvement of connectivity worldwide. We believe that through mobility, our society can be transformed for the better. New innovations and forms of expression are finding a greater audience, industries and hierarchies are being revolutionized, and we are seeing a fundamental change in the way we communicate, socialize and make decisions together.

These exciting changes represent the realization of our vision: a Networked Society, where every person and every industry is empowered to reach their full potential.

The Humanitarian Connectivity Charter

By Kyla Reid

Kyla Reid - GSMA

Humanitarian emergencies resulting from natural disasters and conflict present a challenge too great for a single sector to solve. Communication and connectivity are increasingly recognised as being a basic human need and as important as traditional forms of humanitarian assistance such as food, water and shelter.

The life changing and lifesaving potential of mobile connectivity and the access to information and communication it enables, has positioned mobile as a critical tool in disaster preparedness and response. From the Haiti earthquake of 2010 to Typhoon Haiyan in the Philippines in 2013 and the recent April 2015 earthquake in Nepal, there has been a growing expectation and demand of Mobile Network Operators (MNOs) and the services they provide before, during and after crisis, from both subscribers and the humanitarian community. This has meant that the mobile industry, humanitarian organisations, vendors and government agencies must work together more collaboratively both before, during and after disaster to discuss shared challenges and opportunities.

The GSMA's Disaster Response Programme, has worked in numerous disaster-affected countries with these different stakeholders to identify best practice and areas for development. This series of consultations has culminated in the creation of a set of principles called the Humanitarian Connectivity Charter which aims to focus the efforts of the mobile industry and improve coordination and predictability of response. Launched in March 2015 at Mobile World Congress in Barcelona, the Charter builds a framework for a more coordinated and predictable response to disasters, strengthening preparedness and collaboration within the industry. Through the Charter, MNOs will ensure that they are undertaking measures to prepare their own operations, support subscribers and equip responders to face the growing challenge presented by humanitarian emergencies around the world.

To deliver on the principles of the Charter, a set of best practices has been identified by the GSMA's Disaster Response Programme, ranging from the prior agreement of standardised information sharing, through to activities directly increasing access to communication such as the provision of generator powered mobile charging centres when commercial power fails. Some of these activities, such as agreements around the approval of common humanitarian short-codes, are dependent upon supportive and enabling regulatory environments and require close collaboration with governments and national authorities, and the humanitarian sector. Many MNOs will go above and beyond these activities, implementing initiatives dealing with specific challenges faced in their markets or implementing country appropriate variations.

For example following the Nepalese earthquake MNOs provided subsidised or free access to mobile services for those impacted, as well as for humanitarian responders. Operators around the world also responded to the disaster, with Ooredoo Group sending critical backup equipment to the country and many MNOs activating SMS based fundraising platforms.

In Iraq, in response to the ongoing humanitarian crisis, MNOs have collaborated and provided a single short code in partnership with the United Nations. This 'hotline' now feeds to a dedicated call centre, where calls are managed by trained staff who are able to share verified humanitarian information.

During a water shortage crisis in the Maldives at the end of 2014, caused by a fire in the capitals water treatment plant, Ooredoo Maldives was one of the first organisations to respond. The MNO adapted its existing location-based logistics service to provide coordination assistance to those transporting fresh water supplies, and made the data available to developers who created an app for local people to monitor the delivery times. Access to this information reduced uncertainty and panic and increased the effectiveness of the national response.

Experiencing over 20 typhoons a year, MNOs in the Philippines have had to become effective in disaster preparedness and response. Sharing MNO restoration updates and details of emergency activities has allowed both affected populations and responding humanitarian organisations to build a clear picture of where they can access emergency services, leading to more effective recovery and response.

It is hoped that the collective work of the Humanitarian Connectivity Charter signatories will result in better prepared and more resilient networks, enabling increased effective coordination with government and humanitarian response agencies, and above all more dependable and far reaching access to communication and information for communities prior to, during and following disaster and humanitarian crisis.

http://www.gsma.com/mobilefordevelopment/programmes/disaster-response/humanitarian-connectivity-charter

Author Biography

Kyla Reid

As Head of the Disaster Response Programme, Kyla is responsible for leading the mobile industry in improving resilience and engaging in coordination initiatives that most effectively support citizens and humanitarian organisations on the ground following a crisis. The Disaster Response Programme aims to improve preparedness, integration and cooperation between mobile operators, governments, the humanitarian response community and disaster-affected populations.

Kyla joined GSMA in September 2010 as a member of the Mobile Health team in the Mobile for Development. Before joining the GSMA, Kyla worked as Lead Researcher and writer for the humanitarian website InsideDisaster.com and at the Crisis States Research Centre at the London School of Economics and Political Science. Kyla has conducted field research across East Africa and has worked for a variety of NGOs and policy institutes focused on complex emergencies, HIV/AIDS and socio-economic development.

Kyla holds a MSc. in Development Management from the London School of Economics and earned a BAH in Development Studies from Dalhousie University in Canada.

Forging Connections to Coordinate Relief Efforts

By Dr. Nasser Marafih

Dr. Nasser Marafih - Ooredoo

The GSMA's new Humanitarian Connectivity Charter is aimed at connecting citizens in times of emergency to facilitate communications and recovery efforts. International operator group Ooredoo is one of the founding signatories of the Charter, which comes as no surprise given the firm's strong track record in communication coordination and disaster response efforts.

As part of our Connected Citizens report, Developing Telecoms spoke to Ooredoo Group CEO Dr. Nasser Marafih about the group's practices for its operation-wide relief efforts, inspired by his own passion for humanitarian initiatives.

Can you describe the experience Ooredoo has gained in managing crises both directly and through its subsidiary operators around the world.

We have a proven track record of providing emergency aid across our global footprint. Our approach to supporting affected people in crises can broadly be divided into two fields; firstly providing technology and connectivity and secondly supporting this with humanitarian aid.

In Iraq, where there are currently over 3 million internally displaced persons ("IDPs"), Asiacell, part of Ooredoo Group, distributed 10,000 free SIM cards equipped with a free SMS notification service offering vital information for IDPs and refugees. We also established a call centre in Sulaimanyah, aiming to connect people with the dedicated organisations

and programmes that provide support, as well as donating handsets to refugee camp representatives to enable families to contact each other across war zones.

Ooredoo has also provided strong support in Indonesia through its operating company, Indosat. In 2010, Ooredoo provided support for people in Yogyakarta followed the eruption of the Mount Merapi volcano that forced the evacuation of 350,000 people. This approach expanded to include the construction of 100 homes, a water supply and a children's playground for displaced people, which was completed in 2012

Since 2012, Indosat has deployed its mobile clinics and in some instances free mobile access to help people in Indonesia forced from their homes by heavy flooding. Ooredoo Myanmar is currently deploying similar efforts to help people displaced by floods in that country.

Can you share any recent examples of ways in which 'Connected Citizens' in collaboration with Ooredoo have contributed to better crisis management?

Access to mobile network services can be a lifeline for those affected by crisis. Interestingly, when Iraqi refugees were asked about their urgent needs in a recent poll, mobile charging stations were the main form of help they requested after food and water. As a result, aid agencies rushed to include solar-powered mobile chargers in emergency relief packages.

In Nepal in May of this year, Ooredoo connected citizens in the aftermath of a devastating earthquake struck the country. Using VSAT technology our group member Indosat was able to establish an emergency internet connection, helping connect survivors and emergency aid services alike. Access to mobile communications played a key part in Nepal's response to the crisis and with the help of mobile technology, families were reconnected with their loved ones and aid efforts were able to be directed to those most in need.

Ooredoo Maldives' M2M and communications technology also recently helped in the aftermath of a severe water crisis in Malé. To help alleviate the crisis, Ooredoo Maldives created a Water Crisis Helpline to provide information about the crisis to concerned or affected citizens. The team also deployed M2M technology to locate water trucks distributing bottled water across the island, combining this with communications technology to share the location with citizens. This helped people to access water while also mitigating the risk of rising tensions and public unrest in response to a sporadic and unpredictable delivery service.

What are the most important lessons has Ooredoo learned from its experiences in crisis management?

Preparedness pays off! Part of our ability to respond so effectively in the Maldives was because eight months prior to the crisis, our Business Continuity Management team had proactively created a framework plan for action.

Additionally, a rapid response and ability to react to the situation as it unfolds is crucial to delivering an effective service and meaningful support. Minimising down-time is critical.

We see huge value in mobile operators being included in national emergency committee meetings and see considerable scope for greater collaboration between governments and network operators in the planning and preparedness phases.

Through this first-hand experience we are gaining a better understanding of the potential our networks have to play a supportive role both during and in the aftermath of a crisis. Enabling affected communities, governments and aid workers to access the internet, make a phone call or send a text is a vital part of crisis management and the humanitarian response which follows.

Why did Ooredoo become a founding signatory of the GSMA Humanitarian Connectivity Charter?

Ooredoo operates in markets that are at high risk of humanitarian crises. We believe that our industry has a clear and vital role to play in advance of and during humanitarian disasters but our obligation goes beyond this. We care for these communities that we operate in and strongly feel that we have a responsibility to support in any way possible when they are affected by crisis.

The Humanitarian Connectivity Charter provides an avenue to strengthen preparedness and collaboration within the industry, ensuring that mobile operators undertake measures to prepare their own operations, support subscribers and equip responders to face the growing challenges presented by humanitarian emergencies around the world.

What contribution will an industry based charter make to improving crisis management?

Disasters and crises, by their nature, can be highly unpredictable. Planning to be prepared for the unexpected is therefore an on-going but necessary challenge. Over the last decade, 1.8 billion people have been affected by disasters around the world and the challenges posed by these crises are too large for any single entity to address individually.

The Charter provides a vehicle for driving collaboration and partnership both within the industry and with external partners. In this context, ensuring preparedness and resiliency is critical from both a sustainability and business perspective. Through the Charter, mobile network operators (MNOs) will commit to a common set of principles and work towards the adoption of initiatives focused on humanitarian connectivity. The aim of this initiative is to create a more coordinated and predictable response to disasters.

All the research shows that maintaining connectivity and minimising downtime are the most important contributors to lessening the impact of crises. From your experience what are the most effective ways to guarantee network resilience?

We believe that back-up networks and diversity in telecommunications equipment, as well as employing crisis simulation tests to evaluate network tolerance and ideal response strategies in the face of a crisis are essential in protecting network resilience and ensuring reliable coverage is delivered when it is needed the most.

Working with local partners to deploy emergency solutions is another effective way to guarantee network resilience as it leverages the expertise and infrastructure of both parties to benefit the affected citizens. Partnering with Ericsson, Asiacell launched Refugees United in late 2014 in Iraq to reconnect separated families with a free family-finding service, amidst a depreciating security situation.

The Humanitarian Connectivity Charter will further enhance the cooperation between companies in an effort to meet the immediate needs of citizens affected by disasters in the future.

Taking the time to train people on how they are expected to respond during a crisis should not be underestimated. Within Ooredoo Group, business continuity plans are constantly updated to ensure they are flexible and current and we are always working to improve the way theoretical crisis management plans translate into real life situations to ensure we can respond in the quickest and most appropriate way.

What do you believe the most important issues are for the future to reduce the impact of crises?

Preparedness and collaboration; preparing networks for an 'always ready' mode in case of crises alongside building and expanding partnerships not only within our industry but also with relevant government and aid-relief partners. This will help us to share knowledge and resources and develop the right tools to respond to sudden and unexpected crises.

Mobile networks and the connectivity they provide can be a lifeline for those affected by natural disasters and other humanitarian emergencies. It is our responsibility to help maintain the integrity of these services.

Author Biography

Dr. Nasser Marafih

Dr. Nasser Marafih is the Chief Executive Officer of the Ooredoo Group since 2006. He also served as Ooredoo Qatar CEO from 2002 until 2011.

Born in Doha, Qatar, Dr. Marafih holds a Bachelor of Science in Electrical Engineering, a Master of Science and a Ph.D in Communication Engineering, all from George Washington University, USA. Dr. Nasser started his career at Ooredoo in 1992 as expert advisor from the University of Qatar and was involved in the introduction of the first GSM service in the Middle East in February 1994. He joined Ooredoo Qatar in February 1994 as a Director for Strategic Planning & Development and led a number of strategic projects including the introduction of the Internet service in Qatar in 1996 and the privatization of Ooredoo Qatar from a government owned company to a publicly listed company in 1999.

In his role as CEO, Dr. Nasser has spearheaded Ooredoo's global growth in recent years to expand to 15 operations in Middle East, North Africa and South East Asia, including Ooredoo's acquisition of Wataniya Telecom, Ooredoo's strategic partnership with ST Telemedia in Singapore, as well as the company's purchase of a controlling stake in Indosat of Indonesia.

Dr. Marafih is the President Commissioner of Indosat and he also serves in as a board member in a number of other Ooredoo Group companies including Ooredoo in Myanmar and Asiacell in Iraq.

In addition, Dr. Marafih serves as Chairman of the Board of the GSMA Mobile for Development Foundation and as a member of the Board of GSMA. He also serves as a commissioner to the ITU Broadband Commission for Sustainable Development and he is a member of the World Bank Group Advisory Council for Gender and Development.

Dr Nasser ranked #41 among the 100 powerful Arab leaders in 2015 and he has appeared in the ranking since the launch of the list in 2013.


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inmarsat.com/enterprise/aid-and-ngo

Connecting Communities in Action

By Nada El Marji

Nada El Marji - Inmarsat

Nada El Marji, Director, Aid & Development, Inmarsat, discusses recent examples of Inmarsat-enabled initiatives, and the benefits the communities concerned have reaped from satellite connectivity.

In 2011, the UN's Special Rapporteur delivered a report stating that access to internet connectivity is an 'enabler' of other human rights, facilitating economic, social and political development. This is something that Inmarsat has long held to be true, and is a fundamental reason why our overarching mission is 'powering global connectivity'.

Inmarsat's global, highly reliable mobile satellite communications network offers the coverage and bandwidth necessary to bring internet connectivity to places that other connectivity methods simply cannot reach, or can bolster connectivity in areas where cellular or terrestrial broadband coverage is degraded, congested or damaged following a disaster.

In recent years, we have partnered with organisations around the world, using our portfolio of mobile satellite voice and data services to enable transformational and developmental projects that greatly benefit remote communities. The projects have taken place in a wide variety of locations around the world, enabling improvements in healthcare, sanitation, education, economic development, to name but a few.

Empowering eHealth

Last year, Inmarsat worked with SOS Children's Villages Benin and Safe Triage Ltd, providing connectivity through our BGAN Link service to bring remote monitoring of chronic health conditions to men, women and children living in rural Benin. Communities in this region are often hundreds of miles from the nearest hospital, and so often it is too difficult to make the long journey for preventative care. The scheme used a remote health monitoring system to gather medical data, sharing it with clinicians located in urban hospitals and allowing real-time diagnosis of chronic conditions like diabetes, hypertension and hypoglaecemia.

Once diagnosed, the health workers located in the village could assess the severity of the condition, and refer only those in need of urgent care to hospitals. By catching these conditions early, and not waiting for more serious symptoms to develop, treatment becomes easier and safer.

SOS Children's Villages Benin established rural clinics to assess the health of community members through two schemes; their Family Strengthening Programme and their Family–based Care Programme. In the first three months of the trial, the clinics were visited by over 850 men, women and children. Of those 850, some 358 were consultations for members of the community that would have previously been unable to access any form of diagnostic medical care.

The Family Strengthening programme and the Family-Based Care Programme identified more than 70 individuals with serious conditions that required immediate treatment. Without this programme, the 70 people would, most likely, have remained unaware of a potentially life-threatening medical issue.

Stimulating development

Last year we were pleased to support Ampion with their Venture Bus project; a 3-month long programme made up of 7-day bus tours into key African countries. These tours connected a global team of volunteers, from tech experts to business development experts, with talented young African entrepreneurs and app developers. The goal of the project was to create, in 7 days, pitches and development plans for start-up tech ventures, all designed to benefit the local community.

We provided our BGAN service, which delivers highly reliable voice and data connectivity on the move, so that the app developers and entrepreneurs could carry out audience and technical research to build their pitches. At the conclusion of each 7-day tour, the bus teams presented their ideas and business plans, with the winner receiving ongoing mentoring and support to transform the idea into a functioning business, completely owned by the young African entrepreneur.

The challenge given to each of the Venture bus teams was to develop a tech venture to solve a community issue, with broad themes like health, energy and finance. Successful winners of these challenges have gone one to create apps that improve community wellbeing in numerous ways; from sharing information with affected communities to help halt the spread of Ebola, to an app that helps students to access remote learning materials. And as these businesses are locally owned and operated, their success helps to stimulate the local economy too.

Early warning protects vulnerable communities

Inmarsat's BGAN service was used in 2012 by the Earth Observatory Singapore (EOS) to conduct research on earthquakes, tsunamis and climate change to tackle the devastating effects these events have in Southeast Asia. This research was designed to collect, process, analyse and archive data on tectonic plate movements in the region, to improve forecasting mechanisms and improve early warning to communities most in danger from these natural disasters.

The system works by linking a series of 50 GPS-enabled sensor stations across Sumatra Island via our BGAN service, allowing real-time gathering of sensor information and enabling faster analysis and interpretations of data. That's why, when abnormalities were detected in the initial data captured after the April 11 2012 Aceh earthquake, EOS raised a warning to scientists in Indonesia's Mindanao island regarding the potential of an earthquake in their area. As more data was analysed, it became apparent that the warning was no longer necessary, but with this system, EOS can now minimise the impact of a disaster by having real-time access to critical data and respond immediately.

Sharing the message

As well as our connectivity solutions helping communities grow and develop, our global voice and data services are uniquely placed to enable organisers of community initiatives to share their story with the world.

On World Water Day, March 22, 2015, Inmarsat, alongside our partners AST and Cobham SATCOM, supported Planet Water Foundation, providing the connectivity to live stream their Project 24 activity to the world, and to share their story through engaging photos and videos on social media.

Project 24 took place on World Water Day, and involved the construction of 24 water towers, placed in 24 rural Cambodian villages, supplying more than 24,000 villagers with safe, clean water, all in 24 hours. Planet Water Foundation wanted to share the tower construction in real time, and as cellular coverage in Northern Cambodia is sporadic, Inmarsat's BGAN streaming service was an ideal choice for stable, quality live-streaming footage. Planet Water Foundation also used BGAN's IP broadband connectivity for their social media outreach.

This kind of exposure is invaluable for community-based projects, highlighting the valuable work they're undertaking and the impact on the population, potentially attracting further funding.

As these examples demonstrate, Inmarsat's primary goal is to bridge the gap between urban and rural communities, so that no matter where someone lives, you can have the access to services and support that broadband connectivity affords, leading to genuine social, economic and political development.

For more information about the projects that Inmarsat have supported:

http://www.planet-water.org/

http://www.ampion.org/#!what-we-do/c1z85

http://www.inmarsat.com/wp-content/uploads/2015/06/Case-Study-eHealth-SOS-Benin.pdf

http://www.inmarsat.com/wp-content/uploads/2013/10/Inmarsat_Distaster_Risk_Reduction.pdf

Author Biography

Nada El Marji

Director Aid and Development, Inmarsat Enterprise

As Director of Aid & Development, Nada El Marji is responsible for setting the strategic direction of Inmarsat's Enterprise business unit in the aid, healthcare and education sectors.

As part of her work with NGO and aid organisations, Nada is particularly concerned with bringing innovative communications solutions to agencies dealing with disaster response. She is also focused on extending quality healthcare and education services to underserved communities through satellite broadband connectivity, which enables remote hospitals, clinics and schools to access eHealth and eLearning applications.

Nada first worked for Inmarsat from 1997-2004, in regional business development (MENA). She rejoined the company in 2012, spearheading sector development for healthcare and education, and taking on her current role in 2013.

With McGraw-Hill Educational Services in Dubai, Nada was responsible for market development of new programmes and services. Also in Dubai, she managed the sales and marketing team at Universal Knowledge Solutions, the Middle East's leading provider of learning solutions. Throughout her career, she has enjoyed the chance to support projects that have extended communications to remote communities in different parts of the world.

Nada holds an MBA in marketing from Leicester University. She represents Inmarsat at the Emergency Telecommunications Cluster (ETC) - a global network of organizations that work together to provide common communications services in humanitarian emergencies.

Mobile Technology in Emergencies: Principles and Practice

By Christopher Fabien

Christopher Fabien – UNICEF

Mobile technology provides a set of tools for preparing for, responding to, and building back after emergencies that can help save lives. In order for these tools to be truly effective, they should follow a set of pragmatic principles, such as design with the end-user, build with local tools and people, build for sustainability and use open data, open standards and open source.

When UNICEF's Innovation Unit was working in Liberia during the height of the Ebola crisis in 2014, we saw firsthand how useful it was to follow a practical and principled approach to building systems that enabled real-time data collection, access to information, and youth engagement using mobile technology. We also saw many examples of projects with good intent, and good publicity, that didn't gain the traction they might have hoped for.

A consistent thread that ran through projects, and seems to be a decisive factor in whether or not they succeed, was the ability of project teams (whether from international organizations, non-profits, or global corporate/private sector) to work well with mobile network operators (MNOs). During the Ebola response, Erica Kochi - who co-leads UNICEF's Innovation Unit with me - and I wrote a series of articles and blog posts (including this one in TechCrunch: http://techcrunch.com/2014/10/29/tech-ebola/) discussing the role of technology firms (in general) in the response. In this article, I would like to focus on three specific lessons that we learned about working with mobile network operators – and hope to open up a larger discussion about taking these lessons to a global stage.

Here are the three practical applications of UNICEF's Innovation Principles (www.unicefstories.org/principles) that we found vital to our work in Liberia (and in other collaborations with the mobile industry) before, during and after the emergency response:

1) Work with existing regulatory structures
2) Build sustainable systems
3) Build entirely open-source

What is UNICEF's Innovation Unit?

UNICEF is an international organization (part of the United Nations) that works for the rights and safety of children and women – particularly those who are most marginalized in their societies, and most at risk in the world. UNICEF is almost 70 years old, with 12,000 staff members, and a presence in more than 190 countries.

In addition to its work with governments to help build more responsive systems for health, education, protection, and other areas key to a child's development and wellbeing, UNICEF also works in emergencies. In 2014, the organization was active in 294 humanitarian situations of various size and scale in 98 countries. (http://www.unicef.org/emergencies/files/HAS_Study_2014_final.pdf)

Within the structure and activities of UNICEF, the organization's Innovation Unit acts as an incubator and accelerator of new technologies and solutions. The team focuses on startup investments through its Innovation Fund, on mid-stage support and partnerships with technology leaders through its San Francisco node, and on scaling up approaches that show results through its Global Innovation Center.

UNICEF's Innovation Unit has used mobile technology (particularly systems built off SMS and working with the lowest-end consumer handsets) to create a birth reporting system called RapidSMS in Nigeria that has reported on more than 18 million births (http://rapidsmsnigeria.org/br); a youth engagement and advocacy platform called U-Report with more than 1 million active users in 15 countries (http://www.ureport.in); and platforms like RapidPro which are helping governments develop applications to understand the situation of teachers (EduTrac), health workers (mTrac), or other vital links to communities through rapid, actionable data (https://community.rapidpro.io/).

The Innovation Unit is made up of designers, engineers, technologists, and experts in identifying and scaling portfolios of solutions that create options for the organization – mobile technologies fall under multiple portfolios depending on whether they are infrastructure-, consumer-, or government-focused.

What innovations did UNICEF use in Liberia during the Ebola Crisis?

In October 2014, the Ebola outbreak in Liberia proved that there was a vital need for UNICEF and other players to have better information about the epidemic, as well as for citizens to have actionable and real information about how to keep safe. In a country of more than four million people, with fewer than 700 kilometers of paved road, information is a lifesaving – and difficult to move – commodity.

Erica Kochi once said: "no amount of technology alone fixes a broken national healthcare system" – and that is as true in emergencies as it is in ongoing, generally broken environments. However, a small amount of technology can act as a catalyst to help humans make changes that they might not be able to otherwise.

In Liberia, working with the Ministry of Health and other local and international partners, UNICEF was able to build two systems to aid and accelerate the response efforts: mHero and U-Report.

mHero, developed in collaboration with IntraHealth and USAID, with partial funding provided by Google, is a system which links into the government's existing databases of health workers and allows the Ministry to ask questions, identify who is still alive and working, and ensure that

necessary supplies and training are provided. (http://www.unicefstories.org/2015/06/26/mhero-connecting-and-empowering-health-workers-through-mobile-phones-in-liberia/)

U-Report Liberia (https://liberia.ureport.in) is a free, open-source text-message-based social network developed on UNICEF's global, open-source RapidPro technology that allows young people to send and receive information – and creates a web-based aggregation of the results of conversations. (http://www.unicefstories.org/2015/03/10/u-report-liberia-launches-in-westpoint-keep-chillin-at-8737/)

These systems allowed UNICEF and partners to better target their work. Having the ability to understand what people need in minutes, rather than in months, allows for more effective messaging that is responsive to rumor and questions that may be circulating in the public discourse ("bathing in salt water does not cure Ebola"). It also allows members of an emergency response to ask directed questions of populations ("In your district, are schools re-opening?" http://www.unicefstories.org/2015/05/14/making-schools-safer-in-sierra-leone-during-the-ebola-outbreak/).

None of this work would have been possible without collaborations with mobile network operators.

How can MNOs be partners in the emergency response?

1) Work with existing regulatory structures

Emergencies are, by nature, chaotic. Hundreds of players, many without a great deal of prior experience inside a given country or context, are trying to get information, set up networks of personnel, and build supply chains that can reach across or even between countries.

Emergency responders (particularly the international relief crowd) carry their own historical baggage of previous disaster work, complementarities (or complexities), and an army of acronyms and byzantine protocols for contracting, collaborating, and communicating.

One of the most confusing things that a mobile network operator goes through in an emergency – in addition to fear for their staff and their customers – is being approached by multiple different parties, all using different language, asking for variations of the same thing.

"We need free SMSes."

"We want access to your CDR data."

"We want to put this hardware up on your towers."

These are well-intentioned requests – but not always well communicated. And since MNOs may not know the intricacies of an emergency response, it is difficult for a MNO to prioritize various meetings about possibilities, much less the technical work involved in taking action.

In addition to the lack of clarity of requests (and requestors), an emergency is a constantly shifting tapestry of experts being deployed, and then returning to their normal duty stations after a week, a month, or a year has passed. Each new face means a new relationship needs to be built, handover notes need to be read, and communications often fall through the cracks.

It is vital to work through existing regulatory and contractual structures in order to allow MNOs to have clear direction from the government on which requests will have the most impact, as well as to create continuity and structure that can withstand personnel movements and an evolving situation.

Our work in Liberia was vastly facilitated by having a clear line to the Liberian Telecommunications Authority (LTA), as well as to the Ministry of Health (to provide the LTA with technical requests.) The LTA was able to be the broker of conversations between UNICEF and the MNOs – including being present in meetings – which both gave an additional layer of authority to the requests for collaboration and

services and also provided a set of contact points in the government who could maintain an overview of the process from beginning to end.

There was a high level of interest from MNOs in collaborating with UNICEF – Ebola is a terrifying and clear public health risk – but having the technical credibility of the Telecommunications Authority made work happen more quickly and more effectively.

There is a common complaint that having to work through governments and regulatory authorities takes time, and is not as easy for a smaller, less connected player than UNICEF. These facts do not worry me too much.

It is often slower to work with others than to act alone – but in a public emergency, acting alone can often draw resources away from much needed systemic collaborations. It is mostly easier to work with a big entity if one is already in another big entity, but it is also mostly the big players who are able to make national-level improvements. To mitigate both of these two realities, it is possible for a smaller, less established organization to build up trust and networks before an emergency. Having the existing connections in place can allow smaller local partners to move quickly and with the MNOs and government.

2) Build sustainable systems

Emergencies are a chance to move new ideas forward. We saw this in Liberia, with the introduction of U-Report and mHero. We also saw it in discussions with network operators in Nepal after the 2015 earthquakes. This willingness to experiment is due to a combination of factors – but it also should be tempered by a strong adherence to principles.

In Liberia (and elsewhere in West Africa), many of the network engineers had left the country at the outset of the Ebola epidemic. This often left MNOs with a limited ability to create technical enhancements. It sometimes even limited their ability to do basic traffic shaping and network diagnostics.

The psychological and financial toll of an emergency makes it very difficult for responders to ask for specific technical 'builds' or engineering time from MNOs. It also means that there is a greater than normal temptation to offshore development of technologies. In general, taking data and technology outside of the emergency context may seem expedient, but is not the best approach to take.

Taking technology work out of the country, particularly in a time when an economy is at its most fragile, sets a bad precedent for longer term work, but also prevents the localized, co-created solutions that we find so key in creating services that users actually like. U-Report in Liberia was built with its users, over a course of months, and tested first in Monrovia, and then further outside of the city. It works particularly because it was built locally – and apps and services that were built in San Francisco, at the same time, consistently have not received the same level of uptake (http://www.unicefstories.org/2014/10/29/wat-bother-u-d-most-abt-ebola-the-design-of-u-report-liberia/).

Taking data (particularly data containing individual user information) out of the country is also a risk – both because it may violate data privacy or sovereignty laws, and also because it may be useful as a one-time exercise, but it is highly unlikely that MNOs will provide a longer-term delivery of user data. Without creating a path for continuity and sustainability, systems set up in an emergency waste a great deal of effort. Without setting up a platform that can be used after the emergency – to prevent further outbreaks, to strengthen national systems, and to create real-time information flows – all the time and knowledge put into building a system is lost.

An emergency is a time to act quickly, but it can also be a time to develop a new cadre of local problem-solvers. In Liberia (and in Nepal) we were able to work with various open-source communities and identify champions of innovation that could work with UNICEF (and mobile network operators) during and after the emergency.

3) Build entirely open-source

It is very tempting to take an off-the-shelf, proprietary solution and deploy it immediately in an emergency. It is also incredibly dangerous.

One of UNICEF's fundamental principles in developing new mobile technology has been to ensure that it is entirely in the public domain. This approach, while controversial at first, has proven effective in both our ongoing work, as well as our innovations in emergencies.

Being open-source ensures that MNOs and governments know what they are getting in terms of technology. They can examine the entire technical "stack" of software (or hardware). They can have it tested by their own security experts and they can adapt or add to it as needed.

It also means that UNICEF is creating solutions that aren't linked to a specific MNO or controlled by a specific private sector company. The technology behind U-Report or mHero for instance can be used across operators, and across countries. At a "group" level, MNOs often have proprietary management and control software for their networks, billing, and other quality-of-service functions. Keeping our systems open, and documenting them (and their APIs) thoroughly allows for easier integration and technical enhancements.

Finally, being open-source gives the MNOs and government equal "ownership" of the source-code. They can use it for other purposes after the emergency response. They can work with local technologists to extend it. They can improve on it. Proprietary technologies do not give this level of ownership or adaptability.

Conclusion

Working with mobile network operators is a key emerging strategy for humanitarian work. There are a great number of opportunities that true collaboration can provide.

While structuring these collaborations in a way that respects the existing working mechanisms of both MNOs and emergency actors can seem daunting, there are methods and protocols that are emerging which can add velocity and impact to technological innovations.

UNICEF has seen that adherence to a clear set of principles (www.unicefstories.org/principles) helps it and partners work together more smoothly. These principles include: prioritizing local government as a key partner in the emergency response, ensuring that systems and software is developed and maintained by local talent, and creating open-source public goods that can be quickly adapted as the emergency develops and extended into reconstruction and rebuilding efforts after it has subsided.

Author Biography

Christopher Fabian

Senior Advisor on Innovation to the Executive Director at UNICEF and Co-founder and Co-lead of UNICEF Innovation

Christopher Fabian co-created and has co-lead UNICEF's Innovation Unit in New York since 2007.

Working with UNICEF's 135 country offices, the Innovation Unit's research and development priorities focus on near-term challenges in the world's most difficult operating environments. The Unit also crafts strategic options for innovation on a three-to-five year horizon. The Unit's accomplishments have garnered global recognition, notably: Top 50 Innovations of 2011 from Time Magazine, and, in 2012, gold and silver IDSA awards, and a Redhat prize for being one of the three top open source projects.

Christopher believes that technology is not the end-product of innovation, but a principal driver of new ways of thinking about development problems. The Unit's commitment to open-source engagements, determination to learn from failure, and realization that local talent must be front-and-center in creating successful local solutions has positioned UNICEF as a global leader in innovation for development.

Christopher is most proud of his work identifying, mentoring and promoting local leaders, designers and innovators around the world. Convinced that global, authentic, and humble engagement among academia, the private sector and civil society can, together, leverage technology-driven innovation for development, he has co-created and taught the "Design for UNICEF" course at New York University with Clay Shirky. Christopher has taught and lectured at Columbia University, Harvard University and IIT Delhi.

Prior to joining UNICEF in 2006, Christopher taught in Lebanon and launched start-ups in East Africa and Egypt. He holds degrees in Philosophy from American University in Cairo, and in Media Studies from the New School in New York. In 2013, he was recognized as one of TIME Magazine's 100 most influential people.

Humanitarian and Disaster Response - A Vendor Perspective

By Elaine Weidman-Grunewald

Elaine Weidman-Grunewald - Ericsson

Mobile networks and the connectivity they provide can be a lifeline for those affected by natural disasters and other humanitarian emergencies. The number of these crises and their impact is growing. Between 2004 and 2014, an estimated 1.8 billion people were affected by natural and complex disasters. Mobile networks facilitate both access to information and coordinate assistance with Government, NGOs and the international humanitarian community before, during and after disasters. In recognition of their crucial role, mobile network operator (MNO) members of the GSMA have defined and committed to a set of shared principles in the spirit of supporting and enhancing humanitarian connectivity.

The Humanitarian Connectivity Charter outlines shared principles of commitment and a series of aspirational collaborative actions to demonstrate the support of the mobile industry to communities and other stakeholders in disaster situations.

Ericsson are one of the many heavyweight industry players committed to supporting the Humanitarian Connectivity Charter. Developing Telecoms spoke to Ericsson's VP of Sustainability Elaine Weidman-Grunewald to discuss the vendor's extensive background in the field of disaster relief.

How has Ericsson been involved in the GSMA Humanitarian Connectivity Charter and how do you anticipate the company's role in the Charter developing in the future?

Ericsson has been involved in humanitarian and disaster response for 15 years. We have provided vital connectivity support to more than 40 disasters in over 30 countries. We have longstanding relationships with UN organizations leading disaster response like OCHA and World Food Programme, so we were a natural partner to consult with when it came to the connectivity charter. We are not an operator as such, therefore we are not a signatory, but we were one of the primary contributors to the development of the charter.

We have also been involved in the business consultations that OCHA has been running for humanitarian response more broadly. For example, we hosted a Business Consultation for OCHA in Sweden in April 2015. The consultation was attended by 42 representatives from the private sector, the international humanitarian community (including UN, NGOs and academia) and the governments of Finland, Norway and Sweden. The consultation was part of a series of thematic, regional and national business consultations led by OCHA's Private Sector Section leading up to the World Humanitarian Summit in Istanbul, in May 2016.

This consultation was a bit broader than the connectivity charter, but still important and indicative of the future direction of humanitarian response.

What contribution do you believe an industry based charter will make to improving crisis management?

Industry-wide collaboration will provide better consistency and hopefully result in more immediate responses to people in need. Establishing guidelines and routines will enable more efficient and effective response that will help to better leverage the capabilities of mobile in disaster. It is also an opportunity for the owners of critical infrastructure to play a significant part in ensuring the re-establishment of vital connectivity during and post-disaster.

What are the most important ICT contributors to lessening the impact of crises?

The most important contributors would be proven technology and competent, trained people. People need to be trained both in the technology to be deployed, but also in handling disasters as such. With our program Ericsson Response, we put a lot of focus on competence development and capacity building, together with our partners. No one is deployed into an emergency situation without the proper training, routines etc.

To what extent do network design, technology and architecture have an impact on connectivity resilience and what network structures work best for different crisis situations in your experience?

While every disaster is different, from the cause to the effects, resilient infrastructure is of utmost importance. Network operators need to build redundant networks in terms of power and backhaul, as well as efficient logistics and supply chains for spare equipment.

As an example of what is needed in the first days of a disaster and initial emergency response, the equipment we send must be portable, scalable and quick to deploy. We need to carry our equipment as checked luggage and establish basic connectivity within the first 24 hours.

Apart from the technology and architecture, what are the most important steps mobile operators and service providers should take to prepare for emergencies?

Taking proactive and precautionary measures in advance of a disaster can dramatically improve the situation when disaster strikes. For example, having routines for setting up emergency toll-free lines and business contingency

plans for when networks go down is key. That is where Ericsson Response focuses – while commercial networks are being re-established, we get in there with temporary humanitarian solutions for all the first responders and aid organizations so that they can quickly have communication capabilities until the networks are back on line. Being part of the GSMA charter will allow operators to partner and work with the humanitarian community to support the re-establishment of connectivity in affected areas.

How can 'Connected Citizens' best utilise emerging technologies such as the Cloud and Internet of Things (IoT) to contribute towards improved crisis management?

It's already happening, where citizens can use basic SMS, WiFi, and social media to provide vital information and feedback loops about their precise situation and needs in a disaster.

What are the most important lessons has Ericsson learned from its experiences in crisis management?

One of the most important lessons is never to try new things in the middle of an emergency. Technology needs to be tried and tested. Also, make sure any staff are properly trained and integrated with the ones in charge of the relief effort. Don't just send people into a disaster "to help" if they are not part of the team on the ground.

What would be the benefit of the principles of the GSMA Humanitarian Connectivity Charter becoming defined standards and binding targets for operators, service providers and even their suppliers? Do you think this is necessary or desirable?

Local operators and service providers are critical partners when it comes to ensuring vital connectivity is provided during and after an emergency. If they are involved in the steps from preparedness to recovery, the process becomes more reliable, efficient and in the end can save more lives. If operators provide critical infrastructure then there is some obligation to both the customers and citizens to ensure that connectivity services are restored as quickly as possible.

What do you believe the most important issues are for the future to reduce the impact of crises?

The new Emergency Telecom Cluster (ETC) strategy 2020 is about also providing connectivity for affected communities. We have been an instrumental partner in helping to shape that. In the near future the challenge (and opportunity) will be to get some pilot projects established. The face of humanitarian aid is rapidly changing. More and more organizations are relying on technology and reliable connectivity for efficient and secure methods to deliver humanitarian programs.

Author Biography

Elaine Weidman-Grunewald

Elaine Weidman-Grunewald is Vice President of Sustainability and Corporate Responsibility (CR) for the Ericsson Group worldwide. She has worked for Ericsson in the US and Sweden for over 17 years.

During this time she has held various positions in the company ranging from Environmental Product Management to Sales and Marketing. Since 2005 her work has focused exclusively on driving Ericsson's sustainability and CR initiatives, and today she is part of the Ericsson Global Leadership Team reporting to the CEO. She is also the head of Ericsson Response, the company's humanitarian and disaster response program.

Ms. Weidman-Grunewald's focus is on the role that Information and Communication Technology (ICT) can play in addressing global challenges in areas such as poverty, development, girls' education, humanitarian response, peace building, and climate change. From a Corporate Responsibility perspective she ensures adequate company policies and proactive programs are in place to minimize and mitigate risks in areas like health and safety, environment and human rights.

As the Ericsson spokesperson for Sustainability and CR, she is a frequent speaker at conferences, and regularly interacts with media, customers, policy makers and the investment community. She is furthermore responsible for a number of public private partnerships which explore the use of Technology for Good, i.e. the use Ericsson's core technology to solve some of the world's most compelling sustainable development challenges.

Ms. Weidman-Grunewald is on the Board of Millennium Promise and is a member of the Broadband Commission for Digital Development and the UN Sustainable Development Solutions Network. She

works actively with advocacy and policy development and is responsible for the company's engagement in the World Economic Forum. She was on the Board of the Global e-Sustainability Initiative (GeSI.org) until end of 2014.

Ms. Weidman-Grunewald holds a double Master's degree from Boston University's Center for Energy and Environmental Studies, in International Relations with a focus on Latin American social and economic development issues, and Resource and Environmental Management.

Technology doesn't change the world. People do.

We believe in people. We believe that they can achieve whatever they set their minds to. And by empowering our communities with life-enhancing mobile services, we want every one of our 114 million customers* across the Middle East, North Africa and Southeast Asia to reach their full potential. Our vision is to enrich people's lives and stimulate human growth in everything we do.

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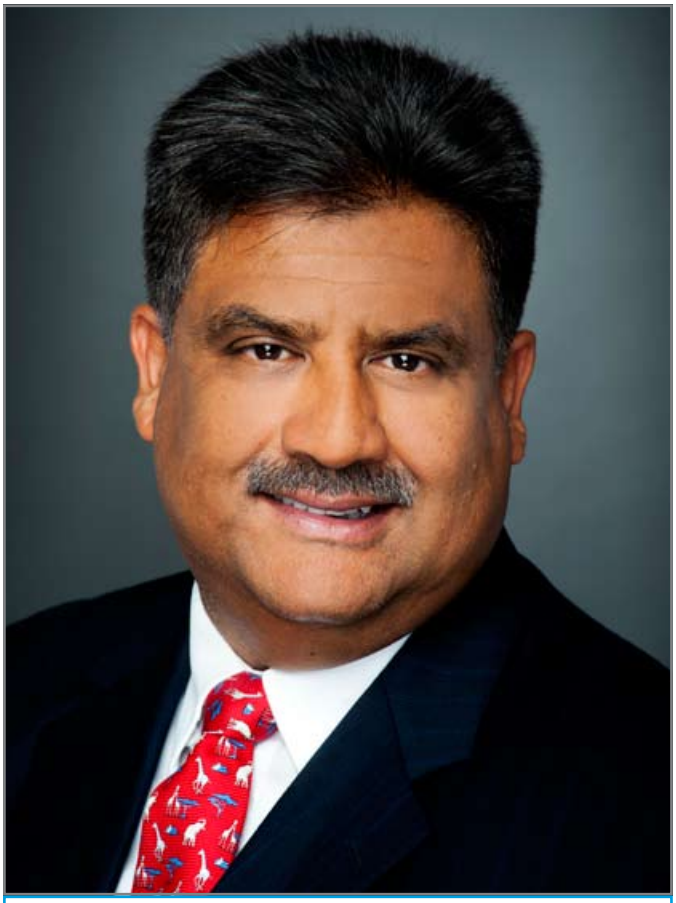
Harnessing the Power of Telecommunications to Address Humanitarian Challenges

By Karim Khoja



Karim Khoja - Roshan

Despite improvements in Afghanistan in the last 12 years, the country still suffers from a lack of infrastructure, security issues, chronic poverty and a multitude of other humanitarian challenges. You could say that every day there is a humanitarian crisis in Afghanistan. But the rise of the telecom industry - which was practically nonexistent more than a decade ago - has brought unprecedented connectivity, providing an essential role for telecom companies to leverage their networks to help the country.

When we launched Roshan nearly 12 years ago, Afghanistan was a country disconnected and isolated with almost no electricity, and people had to walk hundreds of kilometers to make a simple phone call - sometimes crossing the border into neighboring countries. Communities across Afghanistan were also disconnected from each other. Afghanistan is a mountainous country, known for its rugged terrain and thousands of small villages which are spread hundreds of kilometers apart from each other. This harsh geography and poor infrastructure had effectively made it impossible for many Afghans to connect and communicate with each other or to connect with government offices, medical professionals or other essential service providers.

With support from the Aga Khan Fund for Economic Development (AKFED), which is part of the Aga Khan Development Network (AKDN), Roshan has invested more than $600 million to build its network infrastructure in Afghanistan. Today Roshan has more than 6.7 million active subscribers across 287 districts and towns in all 34 provinces. In a decade, one-third of Afghans have learned to read and write and experienced the freedom of using a phone for the first time. The communications revolution taking place in the country has connected Afghans like never before in their history, a remarkable fact which many thought would be impossible merely a decade ago.

At Roshan, we understood the power of this connectivity from the very beginning. We have been constantly innovating and looking for ways to harness our network to help save lives and support communities beyond merely connecting them through phones. This is because Roshan is not only a telecommunications provider but also a social enterprise, deeply committed to the development of Afghanistan since its inception in 2003.

We were the first company to introduce mobile money in Afghanistan through M-Paisa, enabling Afghans to not only send and receive money but also to pay their bills and transfer money from any part of the country at the touch of a button. But more importantly, M-Paisa can be used to deliver funds and support communities in disaster-affected areas.

By signing agreements with international agencies such as the World Health Organization (WHO), UNICEF and others, M-Paisa has enabled distribution of funds to aid workers and volunteers in inaccessible areas transparently and efficiently.

In countries like Afghanistan, where man-made disasters, violent attacks and natural disasters are almost a daily fact of life, the ability of governments to respond to such situations depends on how they can connect and communicate with affected communities. The telecom companies play an essential role in connecting and coordinating with government agencies to reach these communities quickly.

But perhaps the greatest impact expanded mobile service has had in Afghanistan is on healthcare. Thanks to massive support and investment from the international community since 2001, healthcare indicators have improved in Afghanistan where average life expectancy has increased from 42 to 62 years. Roshan has leveraged its network to further support improvements in healthcare in Afghanistan. Using our robust broadband network, we have linked three hospitals in some of the most remote areas of Afghanistan via Telemedicine technology to the French Medical Institute for Children (FMIC) in Kabul and through it, to one of the most modern and best equipped medical facilities in the region: the Aga Khan University Hospital in Karachi, Pakistan.

Telemedicine has enabled a widow in the central highlands of Bamiyan province, or a child with a brain tumor in the towering mountains of Pamir in Badakhshan province, to gain access to some of the highly qualified international doctors in the region without travelling hundreds of miles or bearing enormous costs for treatment. This highlights the key role technology and the telecommunications industry can play in improving healthcare access in a country like Afghanistan.

Roshan has always been about more than just building a mobile network. Our goal is to make a difference in the lives of the people of Afghanistan and that's what we're focused on every day. While the growth of the telecom industry has been a catalyst for change in so many developing markets, we can do more in our response to humanitarian crises. The more effective our response becomes, the better we can be at rebuilding communities, and the quicker those affected can rebuild their own lives.

Author Biography

Karim Khoja

Karim Khoja, Chief Executive Officer of Roshan, has over 25 years of experience in the telecommunications industry, including starting and managing extremely successful GSM companies in Pakistan, Poland, Croatia, Tajikistan and Afghanistan.

Under his leadership, Roshan has grown to be Afghanistan's market leader, with more than six and a half million customers. Mr. Khoja started his GSM career as CEO for Mobilink in Pakistan, and then launched Era GSM in Poland. He then went on to spin out the mobile company, T Mobile, from the incumbent Croatia Telecom.

Over the course of the last eleven years, Mr. Khoja has dedicated his time to the Aga Khan Fund for Economic Development (AKFED) to bring competition and best practices to the telecommunication industry in Afghanistan and Tajikistan. He has focused not only on financial results, but also on how technology can be used to change lives.

Mr. Khoja serves on the Board of several international companies. Recently AKFED has also expanded its operations in Africa where Mr. Khoja serves on the Board of SMART Telecom. He is the Chairman of the Afghan Investment Climate facility (Harakat), a £30m fund to encourage private enterprise, an advisor to the GSMA Development Fund and an Associate Board Member of the Legatum Center at MIT.

The Use of Mobiles in Disasters

By Steven Rynecki

Steven Rynecki - USAID

Recent natural and manmade disasters have taught us that resilient communications are vital to saving lives. Available and emerging technologies are evolving to meet the needs of governments, first responders and citizens in better informing all of us about risks and ways to reduce our vulnerability to them. The 2011 Tohoku (Fukushima) disaster brutally demonstrated how unreliable and over-taxed mobile and terrestrial phone networks can be during and immediately after a disaster. And yet there are examples of innovative alternatives that emerged to teach us about communications resilience.

The example of local, untrained, taxi drivers coordinating relief efforts, in isolated areas and situations, over traditional radio frequencies illustrates available alternatives to mobile communications when networks go down. Defining who the key players are in preparing for and recovering from disasters is of primary importance. Mobile operators, government agencies and civil society are finding ways to work together in honing mobile approaches to disaster risk reduction and to incorporate key players into the mobile communications process.

The 2010 Haiti Earthquake offers another example where mobile networks went down temporarily and radio again played the crucial intermittent role in coordinating response efforts to the crisis. In other words, disaster response using mobiles can be unpredictable and problematic. The focus in the communications realm, until now, has been on facilitating communications between relief agencies in the short term, usually using two-way radios, Very High Frequency radios and satellite phones. This tends to exclude those directly impacted by disasters. Inclusion is vital and has long-term benefits, but is expensive to deploy and complicated to coordinate.

Mobiles can be invaluable in disaster preparedness and recovery efforts. The ubiquity of mobile ownership and network access means mobile phones are becoming the default method of communication and can make positive contributions before, during and after the disaster strikes. The multiplicity of available applications - voice, SMS and broadband - and citizen familiarity with them increases the range of opportunities. Smartphone games, for example, are helping to prepare school children for catastrophic floods in Thailand and mobile operators are helping to deliver shortcode-enabled emergency texts in many developing countries. The United Nations has been hard at work in putting together a framework for technology-led disaster communications. The United States Agency for International Development (USAID), has been incorporating mobile technology into disaster response efforts since the 1990s. We are currently defining who the key change agents are at the government policy level and how we can better engage partners in developing a comprehensive approach to reducing risk using mobile and other technologies.

There currently are no standard approaches to emergency preparedness and recovery efforts, since there is already a widely accepted set of standards on both disaster risk reduction and relief activities. Some are high-level bilateral and multilateral instruments, some are industry norms and some are sectorial or country level standards. The recent Nepal disaster presented the growing issue of differing data standards followed by relief organizations. Differing levels of mobile access and literacy have also made it difficult to coordinate efforts using mobile technology alone. Such an approach is counterproductive if we want to remain flexible and adapt to local conditions.

USAID supported the establishment of the nationwide call center in Liberia to track infections, report deaths, seek safe burial services and request information on safe practices using basic mobile phone technology. In Mali, for example, USAID co-created a hotline that solicits feedback from citizens participating in a range of peace building activities in partnership with a local mobile operator. Hotline users receive a free call back from operators speaking a range of local languages; data from the calls is then used to refine and inform activities in difficult-to-reach areas. This approach was well planned, locally driven and informed. In partnership with the Government of Kenya, USAID is experimenting with mobile communication platforms that support rapid-response capabilities in Kenya's increasingly volatile political and security environment where flash messages are sent informing citizens during and after a crisis. This platform also solicits input or feedback on our program activities through short-text surveys and polls and further enables us to gather valuable inputs that inform future activities.

The deadly earthquake in Nepal is another reminder of what is possible when leveraging available technology during and after a crisis. While voice services were overwhelmed, the internet was still up and running. Both Facebook and Google enabled services to allow citizens and travelers to post information about their situation or to try to find missing family and friends. Improving network resilience by getting operators, service providers, governments and aid agencies to agree to particular physical infrastructure and data protocols and targets for service maintenance and restoration should be needs-based and equitable, and not based only on access to social media. This problem surfaced in the Tohoku disaster where mobile and PC-based communications were not in the hands of elderly citizens.

Working with the United Nations' Office for the Coordination of Humanitarian Affairs (OCHA), USAID and other partners are convening to help prioritize the use of information and communications technology in times of crisis. A series of planning sessions has been in the works for some time to help ensure humanitarian information can be freely and ethically shared, and that concerned agencies and communities can better communicate and coordinate. OCHA, UNICEF and the World Food Program, in particular, have had labs testing and piloting mobile technologies for some time. USAID works with Makerere University in Uganda and the INSTEDD labs in Cambodia and Vietnam. USAID, through its ASEAN Connectivity through Trade and Investment program, is also working for increased digital inclusion to reach "last-kilometer" communities with voice and data networks. We are also studying resilient communication networks using promising new technologies like TV White Space. Recovery efforts in Typhoon Haiyan-affected areas in the rural Philippines demonstrate some promising results in re-establishing internet access shortly after a disaster. These gains wouldn't be realized without support from local governments and communities.

There is a definite appeal to resilient communications infrastructure that can be rapidly deployable through temporary nodes ranging from large scale tactical data systems to femtocells, the latter of which can create local mesh networks and can be operated off grid in austere environments. While not a major factor in the restoration of critical communications for recovery or relief after the Typhoon Haiyan disaster, TV White Space is still worth investigating as an emergency backup network. During and after Haiyan, Twitter was the single greatest social media driven mobile application used for response and recovery efforts. Tweets over SMS were widely distributed without data connectivity. This is a promising development that should be studied in greater detail.

There are mobile applications currently being developed that can be used by local governments, non-governmental organizations and mobile operators to help prepare citizens and emergency response teams for almost any crisis. There are a range of protocols and principles for disaster risk reduction and relief operations which guide the content of any application. A standardized approach could undermine the innovation and flexibility we seek from this medium for improving how we message the value of preparedness. Those of us from the humanitarian profession work in close partnership with non-profit and for-profit mobile application developers and operators in securing mobile emergency products and services to adequately prepare our citizens for disasters. USAID and the U.S. Department of State sponsor regular hackathons which bring together

public and private sector expertise to address community level risks through the use of mobile apps and innovative uses of science and technology. These actors also help to push voice and data networks to the last kilometer. Mobile preparedness for vulnerable communities means access to mobile networks and solutions – hopefully saving more lives in the event of future disasters. And while mobile network coverage has grown exponentially over the past decade, high-speed connections for rich data are still lacking. Disaster risk reduction and emergency response applications that are inherently flexible and have an offline capability will help ensure more resilient communications.

Immediately after the crisis phase, the inevitable clean-up and recovery efforts begin. Mobiles can play an important role in alleviating uncertainty and stress associated with these efforts. Building resilient communities means building resilient telecommunications networks. Recovery is heavily focused on coordinating people and resources. A growing area of exploration is microinsurance policies that are bundled into a citizen's SIM card. Insurance can also help relieve stress and increase a person's resilience to a disaster, and can be more effectively distributed through mobile networks. In response to Super Typhoon Maysak in the Pacific, USAID's partner, the International Organization for Migration (IOM), is piloting an innovative digital geospatial assessment tool for municipal and household-level damage measurements used in evaluating community needs, verifying property ownership and the disaster assistance needed per community, per household.

IOM is using a tablet-driven technology that links beneficiaries to a database of relief supplies. The system can work online (3G) and offline and is reducing the time usually needed in coordinating relief and reconstruction efforts. This emerging example of how mobile technology can assist disaster recovery services is still evolving. And anytime a new technology like this is introduced, we make an effort to train relevant staff and volunteers in the use of new devices and applications. At the very least, public and private leaders should help enable citizens to access reliable networks, provide emergency alerts and instructions during a crisis or disaster and ensure expedient and efficient recovery efforts. Being sensitive to the challenges of citizen access to information is important in moving forward, regardless of technology.

We should also be aware that not all are able to access 3G wireless broadband services with expensive smartphones. Most citizens we work with have basic, feature phones and are unable to access mobile applications. In many instances, it is still radio that reaches those most affected. The use of interactive voice recognition and low-tech user menus (USSD) is another available technology in the hands of most rural citizens. So our efforts need to be agile, simple and affordable. We should not shy away from the development of "smart" disaster readiness and recovery applications, however, since mobile broadband services are expected to increase their reach and the expense for smartphones continues to decline with the advent of cheaper handsets. Economies of scale are making the cost vs. benefit of developing and using mobiles more advantageous than ever. No, mobile technology is not a silver bullet by any means. In Nepal, for example, it still takes several days to reach affected areas via pack mules. The evolution of more resilient communications isn't inevitable, as it still requires a concerted effort of public and private partners in harnessing innovative approaches to saving lives during and after disaster strikes.

Author Biography

Steven Rynecki

Steve Rynecki is a senior international development and program management specialist with nearly two decades of economic growth experience in both the public and private sectors. Early in his career, Steve was a privatization communications specialist for USAID projects in the former Soviet Union. Over the past decade, Steve's been leveraging advances in technology to solve complex development challenges worldwide. Steve engages trade groups, government ministries and program beneficiaries to understand where technology can support USAID development objectives. He's one of the Agency's leading mobile innovations experts recognized for leadership in digital finance and ICT workforce programs.

How Satellite Communications Enables Community Development

By Greg Ewert

Greg Ewert - Inmarsat

Greg Ewert, President, Enterprise, Inmarsat discusses the role satellite communications play in disaster detection and prevention, immediate crisis response, post-disaster reconstruction and sustainable development, both now and in the future.

How do satellite communications currently support communities in times of crisis?

Satellite communications, like any other communications services, is an enabler. It provides a platform for solutions that can greatly impact the wellbeing of a community; from information gathering and dissemination in immediate response to a crisis, to accessing health and education resources that communities would otherwise be unable to enjoy. This diverse set of requirements; fulfilling both humanitarian and developmental needs, requires a broad portfolio of services to address them effectively. As well as the need of a range of services for different use cases, what makes satellite communications unique is the potential to serve parts of the world that other technologies can't reach, whether because of damaged or degraded terrestrial telecoms infrastructure, or because that infrastructure simply doesn't exist.

Often, the role satellite communications has played in crisis situations has been the immediate support of agencies engaged in first response. These agencies have long considered our services an essential part of their 'kit', allowing quick and easy deployment of communications; establishing a coordination centre powered by satellite communications to orchestrate the disaster response of multiple field teams, and usually from multiple agencies.

The connectivity resulting from these coordination centres enables first responder teams to use GIS mapping overlays to enable better situational awareness, to collate and share data about the affected area for more efficient aid response, and provide access to telecoms services for the local population to reconnect with their family and loved ones. This is important work, and Inmarsat is proud of the part we have played, and continue to play, in helping aid and humanitarian agencies serve communities affected by disaster, such as their amazing work in communities affected by the recent earthquakes in Nepal.

Inmarsat has long been a trusted supplier of communications for aid and humanitarian agencies worldwide. Our network is global, so we're able to support affected communities no matter where they're located, even if the local infrastructure has been impacted by a disaster. We're reliable and able to offer 99.9% availability across our satellite and ground networks, so agencies know they can depend on our technologies.

Satellite communications also has a large role to play in longer-term developmental initiatives, either in populations affected by a disaster, or in developing countries that need support for their more vulnerable communities.

It is a truism that, in developing economies, the people that most need support are often those who live in areas with the poorest infrastructure, without easy access to education centres, clinics or hospitals. eHealth, eMoney and eLearning solutions can be an effective way to enable community development, and give people remote access to services that would otherwise be unavailable. However, the terrestrial infrastructure necessary to provide these services are frequently missing, so the benefits of any initiatives are lost to these unconnected communities. However, satellite services, such as Inmarsat's BGAN Link, are able to offer a reliable and affordable connectivity solution that is perfect for the communications needs of longer-term initiatives. And because our network is global, we can enable developmental programmes no matter where they're located

Our portfolio of services are quick to deploy, and easy to operate, seamlessly integrating with organisations' existing IT setups, so we're ideally placed to offer connectivity for a range of projects, from immediate crisis response and support during reconstruction, to longer-term developmental initiatives.

How has the role of satellite connectivity in crisis changed?

In recent years, the role of communications technologies in crisis has diversified. Traditionally, humanitarian agencies would look to us to provide voice communications for their field teams in times of disaster. Now, as well as continuing to provide those voice communications, we're seeing a move to embrace data connectivity, both for the data access to more effectively and efficiently manage the situation on the ground, and to offer affected populations access to social networks to connect with their loved ones, or to access health and education resources.

More and more, we're seeing that access to connectivity, and the wealth of information and resources that implies, can bring genuine and positive changes to communities. For me, connectivity allows the erosion of distance, bridging the gap between communities to ensure that everyone has access to economic, health, social and learning opportunities, whether they live in the biggest urban metropolis, or the smallest rural village. Satellite communications, with its global reach and lower vulnerability to disruption than terrestrial infrastructure, is a key component in the provision of longer-term developmental projects for communities.

How has Inmarsat responded to these changes?

Inmarsat has responded to the increasing demand for data connectivity, both in the aid and humanitarian sector, and elsewhere, by increasing the range of the services we provide. We have services to meet multiple needs and multiple markets, whether that's reliable voice communications from the IsatPhone 2, voice and broadband connectivity for cellphones and tablets through our IsatHub service, machine to machine (M2M) communications services, real-time streaming data or our range of 3G IP broadband connectivity services for fixed or mobile use.

Also, as part of our development of the next generation of the global mobile satellite technology and applications, Inmarsat is opening up its platforms to developers to encourage new ideas that will change the way satellite communications are implemented on land, at sea and in the air. By collaborating with developers to bring new and innovative services and technologies to market, we're able to offer communities more than just connectivity; we can enable true end-to-end solutions for aid and humanitarian agencies, as well as the communities themselves.

Our Certified Application Partner (CAP) programme is an example of how collaboration can enable these end-to-end solutions. This programme provides a framework for working with innovative third-party solutions providers, as, after rigorous suitability and testing, we certify their solutions as 'Inmarsat-ready' meaning that not only do we know that they work well across our network, but that we are also confident that they'll provide genuine benefits to our customers.

Some of the applications we've certified are of particular interest to the aid and humanitarian sector; from AnsuR ASIGN, a situational awareness tool, which supports first responders in sharing video and images quickly and efficiently from the field, to data compression and optimisation tools to allow communities to make the most of their connectivity services.

What does the future look like for the role of satellite communications in connecting communities?

Looking to the future, I see the growth in personal smart connectivity, especially the rapid take up in the developing world, as part of an ever-growing demand for richer, self-serve data experiences. Communities will be looking more and more for always-on, broadband-style connectivity, so they can access video content, video calling, VoIP services, dedicated eHealth, eLearning and eCommerce apps, whenever and wherever they need. New technologies will demand ever more bandwidth, as solutions such as real-time telepresence for remote classroom teaching become more and more common.

Inmarsat's new global Ka-band satellite service, Global Xpress, is designed with this future in mind. Capable of delivering fast broadband across the world, Global Xpress is more than able to handle these bandwidth-hungry applications, whilst still offering the coverage, reliability and availability that Inmarsat's services are known for worldwide.

I also see a transformation in the way satellite services are accessed. Rather than the terminal hardware being separate from the solution that its enabling, future solutions will have the terminal components built into them, offering a truly end-to-end solution in one device. As our open network strategy evolves, Inmarsat are working towards meeting that need, offering developers not only access to our network APNs, but also the physical components of our hardware, so they can build innovative, integrated and customised solutions to meet the changing and growing needs of communities and businesses worldwide, all powered by our global satellite services.

Author Biography

Greg Ewert

President, Inmarsat Enterprise

President of Inmarsat Enterprise Greg Ewert is responsible for the overall global business strategy and direction of the business unit.

Greg has over 25 years of senior executive leadership experience across a wide range of technologies in the telecommunications field. Prior to joining Inmarsat in 2013, he held leadership positions in global satellite and telecommunications companies including nine years at Iridium Communications, where he ultimately served as Executive Vice President for Global Distribution and Strategy. Previously he had SVP roles with Comsat International and BCE Corporation (Bell Canada).

Greg started his career at Sprint Communications, advancing from Sales Associate to Vice President and General Manager of the Americas and President of its Canadian business unit. During his 10 years at the company he was also sequestered to GlobalOne, the international joint venture of Sprint, France Telecom (Orange) and Deutsche Telekom, where he served as Vice President and General Manager of its western hemisphere business unit.

Greg holds a Bachelor of Science degree in finance from Canisius College, Buffalo, New York.

TECHNOLOGY FOR GOOD

ICT transforming humanitarian response

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ERICSSON

Partnerships for Humanitarian Relief

By Brent Carbno

Brent Carbno - Ericsson

Ericsson Response was founded in April 2000 when Ericsson employees wanted to contribute their experience and skills in disaster relief situations. Since then, hundreds of employees from all over the world have volunteered, been trained and deployed to support over 40 humanitarian relief efforts in more than 30 countries.

Every year since 2000, Ericsson Response has supported humanitarian efforts around the world, from extreme floods in Algeria, post war situation in Afghanistan and Iraq, earthquakes in Pakistan and Haiti to the Tsunami in Indonesia and Sri Lanka to humanitarian relief efforts in South Sudan and most recently the Ebola outbreak in West Africa and earthquake in Nepal.

The connectivity provided to humanitarian workers during the Ericsson Response missions allows them to do their job efficiently and effectively. Without this connectivity aid workers might not be able to permanently stay in an area and would need to travel or incur very high costs to communicate with fellow responders and home offices. Most workers cannot do their jobs without internet connectivity.

Today, Ericsson Response has formal partnership agreements with several UN agencies including OCHA (Office for the Coordination of Humanitarian Affairs), WFP (World Food Programme) and UNICEF. Ericsson Response is also a member and standby partner to the Emergency Telecommunications Cluster (ETC). Ericsson provides both equipment and technical expertise to the ETC data and voice communication solutions to support the overall humanitarian effort in terms of efficiency, reliability and cost.

In the case if the ETC, WFP leads and supports the field operations, including the management and security of our volunteers while on mission. Ericsson Response provides equipment and expert staff to support connectivity during emergency operations.

An example is how Ericsson Response responded to support in the Philippines within 1 day of the official request. The specific WIDER (Wireless Internet in Disaster and Emergency Response) connectivity solution was developed in close collaboration with WFP to fill a very specific gap in services. Ericsson carrier-grade WiFi is used for reliable distribution to the humanitarian aid workers, and at the same time managing users to ensure the best quality of service over the very limited bandwidth available in such complex environments

Throughout the years, Ericsson Response has been a constant, reliable and present partner. Its Volunteers have made their skills and personal time available to address some of the biggest humanitarian challenges. Be that through the support in developing new solutions or through direct intervention in disasters and war zones. Volunteers traveled to some of the most difficult places on earth, lived in camps and improvised facilities, prepared and then worked with people they had never met before, and responded within hours of a disaster.

For Ericsson Response it is key to have active collaboration and consistent volunteer deployments with our partners. This all leads to increased employee satisfaction through engagement in the program. Employees are proud to work for Ericsson, which in turn also helps with employee retention and recruitment.

The capacity made available through the program, its direct life and cost-saving benefits, have been essential, especially in times where humanitarian organizations simply could not face global challenges alone. Ericsson Response is amongst the few ETC partners who truly understand the value of preparedness. In return partners treat Ericsson Response volunteers like their own staff on mission and the results are a true team effort that is unique in the humanitarian context. And with the current number of ongoing emergencies globally all organizations are being pushed to their limits requiring closer collaboration and planning in order to fulfill the ETC mandates.

Ericsson was founded on the belief that communication is a basic human need and should be available for all. By contributing to emergency response we can help alleviate human suffering during disasters by contributing our company's key assets – technology and the expertise of our employees. The company is able to use its experience and expertise to make an impact – to use technology for good.

For more information about Ericsson Response please visit http://www.ericsson.com/thecompany/sustainability-corporateresponsibility/communication-for-all/ericsson-response

To see Ericsson Emergency Response in action during the Nepal earthquake visit

https://www.youtube.com/watch?v=qj7SAtYKi6k&list=PL3DDD369426CF84BA&index=1

Author Biography

Brent Carbno

Brent Carbno has more than 14 years of experience in the telecommunications technology field, and over 11 years of experience working in humanitarian emergencies.

In his current role as Program Director for Ericsson Response, Brent is globally responsible for all of the operational aspects of the program, including managing the volunteers and humanitarian partnerships. Brent started with Ericsson in 2001 as a telecommunications engineer, and eventually moved into leadership and project management positions within Ericsson. In 2005, Brent joined the Ericsson Response program as a volunteer and went on his first mission to Pakistan that same year.

In 2011, Brent joined Ericsson Response full-time as a Program Manager, and became Program Director in 2012. Since then, he has been responsible for leading the Ericsson Response program and supporting the emergency response efforts of our humanitarian partners.

Connecting Citizens in Crisis Situations: Getting the Balance Right

By Dr. Nasser Marafih

Dr. Nasser Marafih - Ooredoo

Above and beyond the responsibility to maintain a well-functioning communications network, Mobile Network Operators (MNOs) play a vital role in assisting communities in advance of and during humanitarian and natural disasters. Mobile networks operators are both vulnerable to disasters and integral to their effective response, meaning they walk the line between an impacted business, a guardian of critical infrastructure and an enabler of meaningful response in a crisis situation.

Mobile connectivity transforming the humanitarian response

Mobile devices are often one of the first items people reach for when disaster strikes; not only as they provide a vital channel to connect with loved ones but a way to obtain essential information and become involved in relief efforts. Therefore, the most crucial way mobile operators can provide humanitarian assistance is by facilitating mobile connectivity.

Amidst stark deterioration in the security situation in Iraq, Asiacell, part of Ooredoo Group, launched the Smile for Peace initiative in September 2014 to support refugees and internally displaced persons (IDPs) settled in Iraq.

During a crisis, the lack of information, in particular the lack of reliable information, contributes to already high levels of concern and confusion among citizens. To encourage the proliferation of accurate information to displaced families, Asiacell distributed 10,000 free SIM cards loaded with a free SMS notification services to refugee camps. The notification service alerted beneficiaries to vital information from government and aid agencies such as health, food and clothing distribution campaigns as well as primary, secondary and university education. In addition, the company provided 600 smartphone handsets and SIMs to refugee camp representatives, each equipped with 1000 free calling minutes, further enabling connectivity between displaced families.

However, Asiacell went one step further in their humanitarian response and leveraged their existing technological capacity to set up a free, dedicated missing persons call centre to keep people informed in the conflict zone, facilitating instructions from the UN, NGOs and local government agencies. This call centre was run in cooperation with the Iraqi non-government organization Civil Development Organization (CDO) and worked from a designated section of Asiacell's existing customer support system. The response to this initiative from refugees and internally displaced people was overwhelming, with over 13,000 refugee enquiries generated since the call centre launched last year.

Collaboration between companies can further transform humanitarian support, seen through the partnership formed between Asiacell and Ericsson to launch Refugees United, an initiative to reconnect separated families in Iraq. Together, Asiacell and Ericsson created 'ShortCode380' offering subscribers a free family-finding service via a toll free number, USSD short code and SMS short code, all of which was advertised via bulk SMS campaigns targeting refugee dense areas.

Aside from transforming the humanitarian response through mobile connectivity, Asiacell donated US$300,000 in humanitarian aid to provide shoes, clothing, food, cookware, milk and diapers to displaced families in refugee camps around the country. It also established two water treatment stations to provide clean drinking water for Anbar camps in Baghdad city, demonstrating the various ways mobile operators can respond at different stages of a humanitarian crisis.

In the event of a humanitarian emergency, access to information can be a lifeline; it can connect people with

loved ones; allow people to receive notifications about food, water and medical distribution; give people the ability to track the spread of the disaster; and provide the channel to seek legal, financial or medical assistance. If mobile operators leverage their existing infrastructure, they have the ability to transform from an impacted business to the centre of the solution.

Improving network resilience during natural disasters

Natural disasters present an additional level of complexity for MNOs with the heightened probability of damage to the physical network towers. First and foremost therefore, the role of mobile operators in crisis situations is the continuation of their core business; maintaining the integrity of their mobile networks.

On 4 December 2014, a fire broke out at the Maldives Water and Sewerage Company Generator Unit on the island capital Malé, cutting off drinking water to over 150,000 people. Government agencies acted rapidly to distribute bottled drinking water but it quickly became apparent there was a critical water shortage and a State of Emergency was declared by the Government of the Maldives.
While the fire had minimal impact on the mobile network aside from congestion, Ooredoo Maldives' business continuity management (BCM) team saw the opportunity to play a role outside its traditional responsibility as a communication provider. An integral element in the response to this disaster was using an existing relationship to form an unofficial partnership with the Maldives National Defence Force (MNDF) – Ooredoo Maldives' biggest corporate customer – to more effectively respond to the disaster.

Using its existing mobile network and technological infrastructure, Ooredoo Maldives worked with the MNDF to help citizens in Malé locate fresh drinking water. Using its real-time, GPS tracking system – Ooredoo Locate – which was originally designed to help companies and governments to track their operating vehicles, Ooredoo Maldives was able to pinpoint the location of water trucks following the water shortage crisis. This enabled citizens to access maps detailing drop-off points and expected delivery timetables for fresh drinking water through SMS, Interactive Voice Response (IVR) and Ooredoo's social media channels. To further reduce the potential of rising tension and unrest caused by people queuing for hours for unpredictable water supplies, the Ooredoo Locate system was installed in each water truck cabin allowing members of the public to freely share the location of water trucks in real-time via a live map, providing up-to-date and accurate information of critical supply of water to a population in need.

Another method Ooredoo has used to connect citizens during the water shortage was to repurpose an existing short code to create a Water Crisis Helpline. The short code re-routed callers to the Maldives Water & Sewerage Company where agents were able to provide accurate information about the crisis. To ensure Ooredoo Maldives is sufficiently prepared for another incident, it intends to keep the 4567 short code on standby as an emergency hotline. Short codes were also used to provide a channel for Ooredoo customers and employees to easily make financial donations to disaster relief charities.

Leaning on the strength of its internal culture, Ooredoo used short codes to initiate an internal volunteering recruitment drive, mobilising the necessary human resources from its employee group to more effectively distribute water supplies in Malé. To support the response financially, Ooredoo Group donated US$75,000 to the Male Water Crisis Management Fund and became one the first major international corporations to respond to the crisis.

In addition to its technology, Ooredoo's pre-existing relationship with the MNDF, the government and NGOs in the country enabled the swift coordination of a response to

the water shortage in Malé, based on the mutual trust and understanding built through a business relationship.

Ooredoo Group has a long history of providing emergency aid via mobile, such as its Gaza SMS donation campaign. Originally a month-long drive by Wataniya Palestine, the programme enabled customers across Palestine to donate directly to relief efforts by pledging funds via text message, through their mobile accounts. These rapid donations helped get real-time assistance to families across the Gaza Strip. Other neighbouring markets, such as Qatar and Kuwait, organised similar drives to raise funds for Gaza.

Supporting customers' communication needs

Ooredoo recognises the important of communicating freely during a crisis. In Indonesia Indosat, part of Ooredoo Group, was the first mobile operator to offer free access to mobile services to the approximately 100,000 people affected by the floods in Indonesia in late 2014. Providing free data, SMS and voice services was integral to maintaining communication during the crisis but equally important to the recovery effort.

Ooredoo and Indosat provided immediate assistance to flood-affected citizens by working with local partners including local newspaper Tribun Manado, to offer food, clean water and dry clothes. They also mobilized their mobile health clinics to offer free medical services and distribute food.

More recently, Indosat deployed a portable VSAT hardware to establish an emergency internet connection, available to all citizens, NGOs and media in the areas of Nepal affected by the earthquake disaster in May 2015. This free service allowed authorities to report conditions on the ground while simultaneously connecting people with their families during the disaster.

Additionally, Ooredoo Maldives offered free calls to Nepal for all of its customers over a three-day period and customers in Oman and Qatar received reduced call rates to Nepal to help expatriates in those countries establish connections with their families at home.

By providing free voice, SMS and internet services, repurposing existing technology and infrastructure such as short codes, call centres and location services, MNOs can ensure the timely flow of vital information from government and humanitarian agencies and between citizens to reduce uncertainty and mobilise response efforts during a natural disaster.

MNOs' responses to crisis situations

MNOs play an important role in managing crises, both humanitarian and natural, beyond providing communication services. By leveraging their skills, knowledge and people, and weaving themselves deeper in to the fabric of society, MNOs become an integral player in disaster response. By collaborating with government organisations, aid agencies, other operators and companies to benefit the community in which they operate. The GSMA's initiative to launch the first Humanitarian Connectivity Charter in March 2015, of which Ooredoo is a founding signatory, encourages mobile operators to commit to a common set of principles, working together to create a more coordinated and predictable response to disasters.

By adopting the principles of the charter and collaborating more with peers and external partners, Ooredoo hopes to continue to contribute to the social and economic development of the communities in which it operates and ultimately enrich people's lives, at a time when it is most desperately required.

Author Biography

Dr. Nasser Marafih

Dr. Nasser Marafih is the Chief Executive Officer of the Ooredoo Group since 2006. He also served as Ooredoo Qatar CEO from 2002 until 2011.

Born in Doha, Qatar, Dr. Marafih holds a Bachelor of Science in Electrical Engineering, a Master of Science and a Ph.D in Communication Engineering, all from George Washington University, USA. Dr. Nasser started his career at Ooredoo in 1992 as expert advisor from the University of Qatar and was involved in the introduction of the first GSM service in the Middle East in February 1994. He joined Ooredoo Qatar in February 1994 as a Director for Strategic Planning & Development and led a number of strategic projects including the introduction of the Internet service in Qatar in 1996 and the privatization of Ooredoo Qatar from a government owned company to a publicly listed company in 1999.

In his role as CEO, Dr. Nasser has spearheaded Ooredoo's global growth in recent years to expand to 15 operations in Middle East, North Africa and South East Asia, including Ooredoo's acquisition of Wataniya Telecom, Ooredoo's strategic partnership with ST Telemedia in Singapore, as well as the company's purchase of a controlling stake in Indosat of Indonesia.

Dr. Marafih is the President Commissioner of Indosat and he also serves in as a board member in a number of other Ooredoo Group companies including Ooredoo in Myanmar and Asiacell in Iraq.

In addition, Dr. Marafih serves as Chairman of the Board of the GSMA Mobile for Development Foundation and as a member of the Board of GSMA. He also serves as a commissioner to the ITU Broadband Commission for Sustainable Development and he is a member of the World Bank Group Advisory Council for Gender and Development.

Dr Nasser ranked #41 among the 100 powerful Arab leaders in 2015 and he has appeared in the ranking since the launch of the list in 2013.

Challenges For Emerging Markets MNOs

By Chris Fabian

Christopher Fabien – UNICEF

In this discussion with Alec Barton, Founder and Editor-in-Chief of Developing Telecoms, Chris Fabian of UNICEF talks about some of the key challenges facing MNOs in emerging markets. Chris is a strong advocate of open source and the Q & A starts with an exploration of this before moving on to virtualisation, IoT and Cloud.

Open source is a challenging topic for service providers – their business models involve differentiation, and operators worry that their services will be commoditised with open source solutions. How can this approach be reconciled with operators?

It's an interesting space for discussion – our experience as a team in the private sector has led us to be strongly supportive of open source. We firmly believe that this isn't just about principles – open source business models are actually stronger than proprietary models given the rapid pace at which technology changes. Mobile network operators really need to see this – large businesses, including major device manufacturers, are going out of business partially because of their reluctance to be open about research and design. In 2015, your intellectual property – i.e. the technology itself – is much less valuable than your community of users. The start-ups of Silicon Valley are seeing this – mobile network operators need to understand it too. Anybody can rip off anyone else's technology in weeks or even days – the user base is what protects from churn. It's important to build up a sense that you can change and remain competitive – it's more about faith than the specific technology, because that can be ripped off so quickly.

Companies will argue that offering a service that isn't unique will mean that they can't stand out – therefore they might struggle to accept this argument.

They can easily not accept it – but they will become irrelevant over the next few years. If MNOs aren't faced with existential fear on every front right now, they're doing something wrong. It's a time of rapid change in the software space. Most of the QoS backhaul systems that they run are on hyper-proprietary complex software that requires a huge amount of money and specific people to change. If I was running a business that had such a huge dependency on an external vendor for the base system control elements, I would take a deep look at that. Modern tech companies are building themselves on open source stacks, which means they can be flexible and agile. It doesn't make them more or less competitive – it gives them more options on who you can get to work with you and how quickly you can develop new solutions and bring them to market. There should be a deep fear of being stuck in a ten-year-old set of technology protocols in an industry where there is a constant need to change.

With the advent of NFV/SDN, operators are looking at maintaining their uniqueness through proprietary software rather than physical hardware – does this trend hold any water with you?

MNOs are making business decisions at that level about where to be proprietary or not. Virtualisation can fragment markets from the inside – look at what Skype did globally – and if I were the CEO of an MNO, my worry regarding investment in a proprietary stack would be that if I put your chips on the wrong roulette colour, I'd be in big trouble. We've seen how easy it is to lose a market – particularly in places such as East Africa, where the VAS layer is so important. If users get a hint of something that's better than their current service, they'll flee without a second thought, so being agile is incredibly important for MNOs.

My contention about open source is more on the service layer than on the back-end control technology layer. Developing new user-facing services provides the most compelling reasons for being open source – you can tap into that rich local environment of software developers and VAS providers. From this angle, it's easy to make an argument for open source solutions that can tie into proprietary back-ends, but the lean development time means that you can try something in multiple different markets at the same time and see what works. Then, you can pick the best of those open solutions and develop a community around it that sustains it.

To what extent does UNICEF play an active role in the development of software or hardware systems including open source for MNOs?

We have an innovation fund which acts like an early stage angel fund – we make investments in research and emerging technologies in three major portfolios: products for under 18's, real-time products for governments, and infrastructure. Within infrastructure, we've identified the need to look at closed-loop systems for communities and open source hardware protocols for engaging; this could allow redundancy after an emergency or connect networks that might not otherwise be connected, as well as the ability to look at pop-up networks in places where people might have a SIM card, but it's not the correct type for the hardware on the back-end.

Does strategic technology investment run counter to UNICEF's emerging market focus?

Since its inception 68 years ago, UNICEF has changed every decade, and our team is trying to help with the current evolution. We're trying to link this work into potential future markets for UNICEF, and one good example of this is around data. Traditional data-gathering methods are becoming obsolete, and we feel that it's better to develop this market and shape it from its inception – if we wait for a solution or protocol to emerge 'when it's ready', this could be detrimental for the people we're trying to help, i.e. the most marginalised communities in the world. Making small, strategic investments allows us to shape a market that allows us to make the connections that we need to serve the bottom quintile of people in the world, but it also helps us to shape the market with private sector partners who are also interested in developing this bottom 20% because it's their future market. We're doing a lot of work with the chip designer ARM to look at collaborative research for bottom quintile users – we want to bring them out of poverty, and they're also the people that ARM can develop as a strong user base over the next five years.

Is there a role for cloud and IoT in the Connected Citizens crisis management situation?

We've been working to create accessible content that can be served on the whole gamut of platforms such as Internet.org, and this has pushed us to make our content available in small 'pieces', in multiple languages, to various types of users. It's been interesting for us – the most important thing isn't just getting the conversation out there, it's creating conversational loops. You can give people in Eastern Uganda access to Wikipedia, but access doesn't matter unless it provides opportunity.

In terms of cloud, discussions with national governments have been interesting over the last few years. It really hindered our work 4 years ago when we were trying to set up cloud-based instances of services like U-Report (which now has 1.5 million users across 14 countries). Initially, governments were extremely reluctant to store national data in the cloud – however, this attitude has changed dramatically in the past 2 years, which has moved things along. It's essentially an inevitability, regardless of the rational security concerns that a government would have.

Author Biography

Christopher Fabian

Senior Advisor on Innovation to the Executive Director at UNICEF and Co-founder and Co-lead of UNICEF Innovation

Christopher Fabian co-created and has co-lead UNICEF's Innovation Unit in New York since 2007.

Working with UNICEF's 135 country offices, the Innovation Unit's research and development priorities focus on near-term challenges in the world's most difficult operating environments. The Unit also crafts strategic options for innovation on a three-to-five year horizon. The Unit's accomplishments have garnered global recognition, notably: Top 50 Innovations of 2011 from Time Magazine, and, in 2012, gold and silver IDSA awards, and a Redhat prize for being one of the three top open source projects.

Christopher believes that technology is not the end-product of innovation, but a principal driver of new ways of thinking about development problems. The Unit's commitment to open-source engagements, determination to learn from failure, and realization that local talent must be front-and-center in creating successful local solutions has positioned UNICEF as a global leader in innovation for development.

Christopher is most proud of his work identifying, mentoring and promoting local leaders, designers and innovators around the world. Convinced that global, authentic, and humble engagement among academia, the private sector and civil society can, together, leverage technology-driven innovation for development, he has co-created and taught the "Design for UNICEF" course at New York University with Clay Shirky. Christopher has taught and lectured at Columbia University, Harvard University and IIT Delhi.

Prior to joining UNICEF in 2006, Christopher taught in Lebanon and launched start-ups in East Africa and Egypt. He holds degrees in Philosophy from American University in Cairo, and in Media Studies from the New School in New York. In 2013, he was recognized as one of TIME Magazine's 100 most influential people.

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Our next Special Report

Small Cells in Emerging Markets

This report will look at the rapidly growing market for small cells as their prominence in the backhaul space increases. With network densification an increasing priority, operators are exploring innovative ways of deploying these solutions.

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