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I-LINX and TeleVital's telemedicine solution helps Tsunami victims in India

Washington D.C. 15 February 2005*In partnership with the Rescue Foundation, a Nagapattinam, India based medical NGO, St. Stephen's Hospital in New Delhi, I-LINX, and TeleVital have conducted a live demonstration project of a remote medical diagnostics solution via the Regional Broadband Global Area Network (R-BGAN) portable satellite modem. The event linked the New Delhi audience with the Society for International Development (SIDW) Health and Nutrition Workgroup in Washington, D.C. at the offices of the International Resources Group (IRG) on Tuesday, 15 February, 2005.*

The South Asia tsunami has gravely impacted every sector of society. The tsunami has not only devastated the physical infrastructure of countries, but it has also left emotional, physical and psychological wreckage. As the population struggles to deal with severe physical aliments, such as dysentery, diarrhea, and infections, they also have to contend with shock, panic, survivor guilt and depression. These aliments are rife and disproportionately impacting children and pregnant women. The need for rapid, accurate medical diagnostics is essential to bring comfort to victims and restore their health.

For example, in Nagapattinam, one of the worst affected districts in South India, the death toll alone stands close to 7000. The physical, emotional and psychological toll is immeasurable. I-LINX and TeleVital have teamed to offer a remote medical diagnostics solution via the R-BGAN portable satellite modem, connecting rural health care providers to speciality hospitals based in major cities, such as St. Stephen's Hospital in New Delhi, enabling real-time diagnostics even in areas with no established telecommunication infrastructure. This solution will provide health care organisations and NGOs with the tools needed to bring special medical attention anywhere in the world.

Solution providers and practitioners need to work hand-in-hand to design sustainable telemedicine solutions. There is a need to understand the constraints to telemedicine programmes in the field but by better understanding what types of applications would be useful, it is possible to deliver programmes more effectively and to develop appropriate price models for the development sector.

Lack of medical specialists in remote and rural areas leaves millions of people without access to basic medical care and specialized services. To serve the health needs of the disadvantaged there is a need for reliable and economical connectivity and application tools for medical professionals. The solutions provided by I-LINX and TeleVital link health care specialists in developed areas to underserved patients in remote and rural locations. The model uses Internet based technology to connect patients with medical specialists in real-time. The

primary "hurdle" to telemedicine, namely connectivity, is overcome through a low-cost portable satellite IP modem using the Regional Broadband Global Area Network (R-BGAN), that can be moved to different locations as easily as a laptop.

To deliver real-time, specialized medical assistance to the tsunami victims in remote areas in Nagapattinam in the State of Tamil Nadu in India, I-LINX and TeleVital are using the R-BGAN in combination with TeleVital's VitalWare software. The affected population amounts to 196.184 people with an overall of 5551 persons missing in India. Nagapattinam is one of the worst hit areas. In the State of Tamil Nadu there are 3324 people injured as of January 2005. There are 6065 human lives lost. The physical infrastructure has been destroyed: 59 percent of people in Nagapattinam live in thatched houses of which 39.941 have been totally destroyed. The tsunami has damaged the water distribution system and the distribution of clean water began on January 1, 2005.

The telemedicine solution pilot in the area has been set up for the next few weeks with local partners. In New Delhi, specialists from St. Stephen's Hospital, including Dr. Krishna Vaitheeswaran, MD, FRCS, Head, Department of Ophthalmology; Dr. Pankaj Kumar, MD, Senior Consultant; and Dr. Rani D. Bhatia, MD, Psychiatrist, are working together in the project. In Nagapattinam, the Rescue-Foundation, an Indian NGO is taking care of the urgent needs. The organisation has experience with cyclone victims in Orissa and earthquake victims in Gujarat. The NGO is distributing food and clothes to the tsunami victims and building shelters. They have set up a medical camp with 2 ambulances, 2 generators, 1 nurse, 1 doctor, volunteers for translation, basic medicines, dressing materials, an ECG, and a BP monitor. The Televital team in Nagapattinam will set up their infrastructure and application with the R-BGAN Inmarsat satellite modem for connectivity; a laptop and VitalWare software, a glucometer, digital ECG, and an X-ray scanner.

I-LINX is an international consulting firm specializing in the design of satellite and fixed wireless communication systems for government, development and other multi-national organisations. As a member of the MVS Group, an Inmarsat and IRIDIUM Distribution Partner, I-LINX is also a supplier of satellite communications equipment and service. The company's expertise includes portable connectivity, communication systems, ICT programme design, research and assessment, and business case development.

I-LINX is the lead implementing partner on an initiative to establish 50 e-learning centres in partnership with Inmarsat, the International Telecommunication Union (ITU), and participating governments in Africa, the Middle East, Asia and Latin America. The objective of this initiative is to provide Internet access to rural schools and to facilitate e-health through Inmarsat's Regional Broadband Global Area Network (R-BGAN).

I-LINX has also been selected to lead the Inmarsat Consortium for the NEPAD E-Schools Satlink Project, an ambitious endeavour to bring over 600.000 school and community health point sites in Africa on-line. In partnership with local governments, the consortium will set up 20 locations during the pilot phase, each outfitted with connectivity solutions designed by I-LINX on the basis of existing infrastructure, power sources, geographic specificity and content needs.

TeleVital is a provider of real-time browser-based telemedicine software. VitalWare Software enables medical specialists, health care providers and their patients to monitor vital signs and medical conditions remotely regardless of their location. The software is currently being used by hospitals, clinics, and medical schools to facilitate health care worldwide. Patients in rural areas are treated by transmitting vital info, EKG, X-ray, Ultrasound, MRI, and angiograms to specialists in urban hospitals. This is performed in real time or using store and forward mode and facilitated by audio and video conferencing through the Inmarsat R-BGAN satellite modem.

For instance, a rural hospital in India can be connected to a specialist in the United States over a distance of 1200 miles. EKGs and spirometry information are streaming in real time over a 100 Kps connection with only 21 Kps reserved for medical data streaming while the rest is used for Web conferencing. Another example involves the installation of software and a satellite modem in ambulances. In this case vital signs are monitored while the patient is being transported from the rural to the urban location. The specialist can relay all information to paramedics.

The India Space Research Organisation (ISRO) has selected TeleVital to provide total telemedicine and tele-education solutions to link rural hospitals with super speciality hospitals for the delivery of expert medical services throughout India. There is a potential for more than 250.000 sites. TeleVital can provide an integrated patient medical record and an integrated telehealth platform for the store and forward and real-time delivery of remote medical services over hybrid networks, including server software, hardware, medical devices, video conferencing hardware and software, customization, and training.

One of the TeleVital solutions is the VitalWare tool. Televital's open architecture software engine supports real-time streaming and remote viewing of raw and interpreted vital signs, images and x-rays simultaneously with audio and video communications. The patient data is centrally stored and retrieved from a secure data base server, available at any time. The Web browser allows transmission and receipt of medical data over hybrid IP networks including Internet, Intranet, Extranet, VPN, etc. The connections can be dial-up, cellular, satellite, cable, fiber optic, DSL. In the Nagapattinam case, the remoteness and lack of infrastructure have led the team to utilize the R-BGAN portable satellite modem as the ideal connectivity tool. As such, it is important to realize that remote locations receive medical services with very little IT support.

The satellite IP modem is able to transmit data with speeds up to 144 Kbps. It is the ideal tool for rapid deployment of humanitarian aid groups and offers connectivity for rural telecentres providing access to emergency phone lines, Internet and e-mail. It also provides connectivity for fly-away kits for relief agencies to track deliveries of food and medical supplies as well as micro-finance applications to connect remote ATMs and point-of-sale devices.

The satellite IP modem is lightweight and inexpensive and can be used as a portable tool or in fixed locations. The charges are per megabyte, providing an ideal compliment for the VitalWare software. The user can stay on-line constantly and only pays for the size of the files that are transmitted. The Televital software effectively transmits over the R-BGAN at around 100 kbps. With 2 R-BGANs, a real-time video-link is possible.

As it has been proven by the Nagapattinam-Washington D.C. live telemedicine demo, telemedicine is both "need" and "technology" driven. The telemedical needs vary vastly depending on the context requiring solutions that are both adaptable and affordable. The demo has shown that simplicity, reliability, scalability and flexibility of the solution are critical to its success.