

From the Department of
CORPORATE STRATEGY AND INTERNATIONAL BUSINESS

CASE STUDY SERIES

Introduction - Global Challenge

Infectious Diseases

Over the last two decades the spread of new diseases such as Acquired Immune Deficiency Syndrome (AIDS) and Severe Acute Respiratory Syndrome (SARS) have generated a renewed awareness of the threats posed by infectious diseases. Indeed, infectious diseases, such as cholera, meningococcal disease and measles, cause 63% of all childhood deaths and 48% of premature deaths, and at least 20 million people have acute cases of malaria.¹

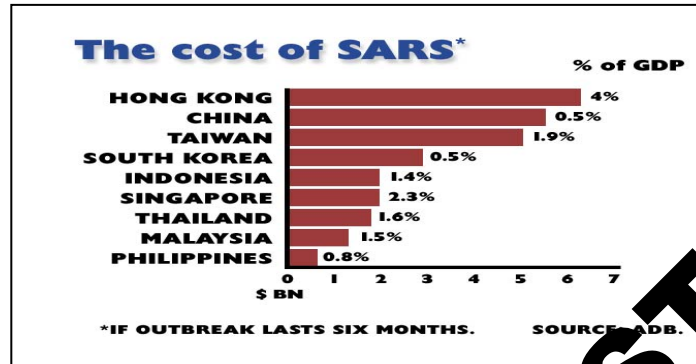
THE INNOVATION. . .

Voxiva technology platform is designed to solve two primary problems: to collect data in real time from large numbers of dispersed people and to enable communications and messaging services that affect immediate change. Voxiva designed a flexible solution that can be adopted by any end user, regardless of their level of technological sophistication or the type of communications device available to them at any given time such as the phone or Internet. This approach to application delivery enables Voxiva to address very large communities of users and to provide solutions that are portable to any network environment – from the most advanced to the least developed.

Continuing threats of emergent diseases, such as SARS, threaten state and regional economies. In a report issued by Asian Development Bank (ADB) estimated that the SARS outbreak will, in addition to the loss of life, cost Asia approximately \$7 billion in forecast economic output while the region as a whole could lose up to \$28 billion.² However, disease detection and communication can inhibit the spread of infectious diseases. According to the World Health Organization, reporting systems are the intelligence network that underpins disease control and prevention. Without this framework in place it is impossible to track where disease is occurring, measure progress in disease control targets, monitor anti-microbial drug resistance or provide an early warning system for outbreaks and the emergence of new diseases.¹

This report was written by Cynthia Casas and William LaJoie under the supervision of Professor C.K.Prahalad. The reports are intended to be catalysts for discussion and are not intended to constitute effective or ineffective strategies.

Copyright©, The University of Michigan Business School, 2003



Four key facts in the fight to minimize the spread of disease are:

1. Infectious diseases are a relevant threat to global health, both in human and economic terms.
2. Active surveillance is critical for early detection to maximize cost-effectiveness of scarce resources.
3. Early detection and subsequent, relevant actions reduce the probability of the spread of a communicable disease.
4. Ability to communicate between groups effected and authorities who can trigger the appropriate reaction is critical.

These four factors: A threat, the early detection, the urgent reaction and a basic communications infrastructure are the ingredients Voxiva Inc. looks for when tackling a challenge with their technological solution. Though Voxiva first designed their platform around an epidemiological application, these criteria have been applied to other types of cases found the world over, such as reporting crime, supplying blood to hospitals, patient monitoring and testing new vaccines. Though these solutions may seem obvious for people who never leave the home without a mobile phone, Voxiva targets chiefly rural areas where 70% of the world's poor live with limited access to telecommunications.³

So how does Voxiva bridge this communications gap? Why is it targeting a market that makes under a penny? Their value added is socially admirable, but is it profitable? In this case Voxiva challenges an implicit assumption held by many: Computers must proliferate in rural communities in order to connect the poor. In bypassing this assumption, Voxiva is rejecting previous notions of cost structure by providing a solution divorced from hardware. Instead it adds value by streamlining the flow of critical information through the existing telecommunications infrastructures. Their initial application, Alerta, incorporated marginalized communities that were only part of a healthcare system according to a zone map, but not in practice. Voxiva's Alerta changed this and brought these mainly remote and disaggregated groups into the national system years before their governments thought possible.

INTRODUCTION TO VOXIVA

Founders

Before co-founding Voxiva in March 2001, Paul Meyer founded IPKO, the first and largest Internet service provider in Kosovo. Started in the weeks after the 1999 war, IPKO was hailed by the U.N. Secretary General as “a model for future humanitarian emergencies,” and is today one of the largest businesses in Kosovo. He also has served as a Senior Fellow of the Markle Foundation, where he studied efforts to bridge the global digital divide.

As a Markle Fellow, Meyer traveled to 30 countries. He summarized his findings in three general points:

1. Most of the projects dedicated to bridging the digital divide were non-scalable.
2. Donors suffered from dot-com fever – there was significant investment going to projects or programs that improved connectivity, such as tele-centers and computers in schools, but there was also a lack of architectural forethought into how this technology and connectivity can be integrated into wider systems (such as health, education and government) to solve fundamental problems in the delivery of public services.
3. A narrow focus on the Internet as the solution even though there are prerequisites for the Internet adoptability such as hardware costs, training and literacy, was significant.

Above all, Meyer observed that people were ignoring the fact there are a lot more telephones in the world and deduced that telephones are a much more accessible, practical tool for most people relative to the Internet.

Dr. Pamela Johnson, Ph.D. in medical anthropology, is Co-Founder & Executive Vice President of Business Development at Voxiva and provides the marriage between government, technology and public health that serves to define the company. Previously, she was the coordinator for child survival at the U.S. Agency for International Development (USAID) overseeing public health programs in 50 countries. Dr. Johnson said, “To me the real potential of technology in the developing world is to try to make better use of scarce resources. Voxiva’s data collection and assimilation platform can be utilized in the U.S. market and internationally, in developed and developing countries, and in the public and private sectors.”

Remaining Vision

Voxiva leverages the convergence between the public and private sector creating a social venture with the goal of creating a better world by promoting public health in developing economies driven by profits, scalability and ROI for the investors.

Its first application, *Alerta Disease Surveillance*, is a solution that combines the Internet and the telephone to extend the benefits of software applications to people without access to the Internet. The healthcare sector is second only to the business sector as a major user and promoter of tools and methodologies to harvest knowledge through intensive use of information, communication technology (ICT).⁴ This is why the health sector is ideal to demonstrate the power behind Voxiva’s application.

The healthcare industry relies heavily upon the management of critical information, and technological solutions hold a great promise for providing support for challenging and complex interdependent managerial decisions and interventions that characterize health practice.

The initial funding for the Alerta Peru project was from two not-for-profit sources: the Dev (2002) (\$250,000) and the Markle Foundation³ (\$500,000). Meyer noted, “We were able to get started because we raised money from people who thought what we were doing was important to the world and also thought there was a business. Maybe more the former than the latter.”

Voxiva focuses its social mission on extending the benefits of information technology beyond the digital divide. As a social venture with credibility and a track record, Voxiva has been able to position itself not only as experts in public health, but also as a business interested in solving similar IT flow challenges that affect critical decision making; this challenge pervades many sectors. As a result, Voxiva attracts not only health professionals but a whole range of backgrounds. According to Myer, the ideal Voxiva employee is part McKinsey consultant, part Microsoft technician and part Peace Corps volunteer. The same applies to raising capital; the company’s credibility and dedication to its social mission attracts investors like Ben & Jerry’s and partners like Deloitte Associates.

Voxiva in Peru

The launch of Voxiva’s public health project in Peru was to facilitate reporting and communication with health professionals in areas without Internet access and to do so rapidly and with no investment in new hardware.

The Gates Foundation and the World Health Organization suggested Peru as a testing ground because it provided an environment in which Voxiva’s unique data collection system could be more or less isolated and tested. Peru also has a history of utilizing data to fight infectious diseases, a strong public health orientation and a demonstrable commitment to rural connectivity.

However, the missing link in Peru’s existing disease surveillance was effective communication between central decision makers in Lima and the front-line health workers in rural areas. The two key elements that made Peru a fertile testing ground were dispersed rural populations and Voxiva’s ability to identify and create two solid partnerships: Telefónica, Peru’s largest telephone company, and with a *superuser* at the operational level within the healthcare system who took ownership of the pilot.

Karen Lynne, Director of the Markle Foundation’s Global Digital Opportunity Project, said, “Markle’s interest was that this be done in a developing nation that showed some critical success factors, such as country leadership and an enabling environment, and Peru filled that bill--among other reasons because its new president was showing a strong interest in information technology and Peru had put considerable work into its healthcare administration.”

Finally, the importance of an active and involved user cannot be underestimated for the success of the pilot. Also known as a “superuser,” the role of Peru’s Department of Epidemiology (DOE) was to actively help design the system, participate in its rollout, integrate it with its own training programs and test it thoroughly to find the glitches and limitations. As Dr. Johnson emphasized, “The head of the DOE not only understood the role of information technology, but could see the power behind it. We worked with people who are really hungry for information so they can use it.”

PERU'S MINISTRY OF HEALTH

Problem Definition

The disease surveillance application of Alerta in Peru bridges barriers of distance and thus saving time. In the field of epidemiology, time is a critical factor as it pertains to outbreaks.

“Previously you couldn't transmit data and therefore couldn't administer it,” said Dr. Luis Botton, IT Director at the District Level within the Health System.

The objectives of the Alerta pilot in rural Peru were to:

1. Expand the network of health posts that report weekly to the ministry which are located in rural, hard-to-reach areas that cannot follow the ministry reporting timetable due to the inefficiencies of delivering reports via the current paper-based system.
2. Form a feedback loop that enabled the Ministry of Health to relay information from the district, state or national level to the health posts. Voxiva estimates only 2% of the health posts receive the Ministry of Health's “weekly bulletins” at least once a month.
3. Improve the quality of data in the database.
4. Reduce the amount of time medical staff spend in completing required paper documents. Dr. Botton, a director at the Peruvian Ministry of Health, estimates medical staff including doctors spend 40% of their time for data collection or data entry.

Used in non-urgent applications, Alerta has much more added value than saving time. Additional secondary benefits included improving the management of doctors in rural areas. Many doctors stationed in these areas are under-qualified from medical school. Peruvian medical schools tend to emphasize theory rather than practical training, and they may need additional supervision.

Moreover, the application also allows providers and users to interact using stored and forward techniques, and thus liberating providers and users from the need and constraint of synchronous encounters. The voice mail system used by the doctors in Chilca Mala demonstrates this ability to inform in a non-urgent way to a community of doctors. For example, when a meeting or workshop is planned, the coordinator can create a group list of voicemails and assign it a code thereby sending one voicemail to reach all at once rather than one by one.

In the Peruvian Navy, the Global Emerging Infectious System (GEIS) program coordinator, Dr. Tatyana Basel, claimed one of the principal values she sees in installing the Alerta technology is as a way of forming a baseline for the behavior of diseases in remote regions of Peru where they have military operations but no epidemiological data. She anticipates the database will serve as an adequate baseline after five years. For GEIS, the value added goes beyond the ability to respond to an outbreak alert, but also to collect and store disease records systematically in order to begin to understand and eventually predict epidemiological situation trends in remote areas of Peru.

Finally, the seed for a change in the bureaucratic culture could be planted. Jose Maria Argueta, VP of Latin America, noted, “Voxiva is a system that will provoke change and cause a reaction in the power structure by those who would be giving up power.” As such, the pilot must convince both the users of the system, such as doctors, nurses, and technicians, and the top officials within the Ministry of Health that the system is beneficial. Guillermo Delgado Aparicio, Country Manager Peru, suggested, “Gaining

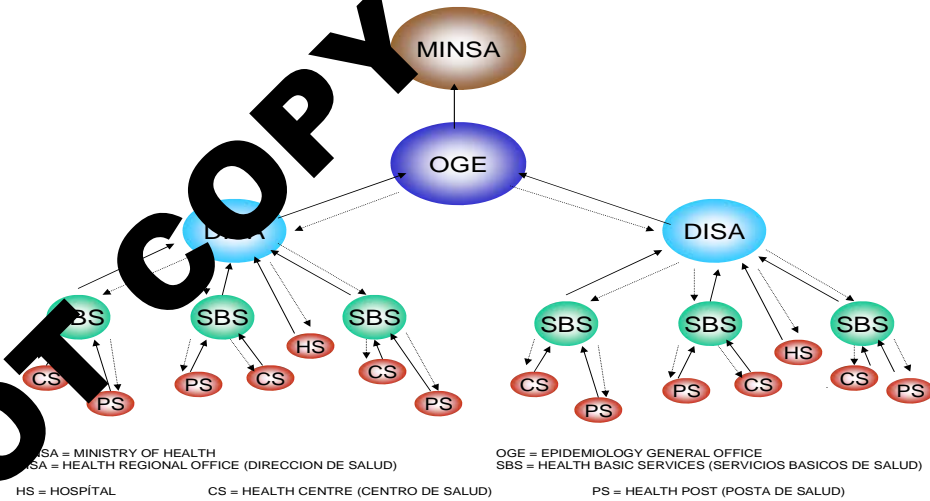
a critical mass to create change is less a percent change than a change in culture,” and cited the challenges including competing political interests and corporate interests.

Solution Generation

Voxiva’s primary challenge was to deconstruct a complex reporting information transmission system into the “lowest common denominator” necessary to achieve the defined goals. This included not only the reporting structure, but also developing a user friendly, audio interface. It essentially aimed to help organizations accustomed to lagged information to leverage real time information.

Voxiva piloted a system which connected approximately 204,000 individuals in two sparsely populated districts south of Lima to the national health surveillance system: Chilca-Mala with 15 residents per square kilometer and Cañete with 24 inhabitants per square kilometer. The system incorporated 76 health clinics, health centers and district centers (SBS) that are part of the four levels of the Ministry of Health. In total Peru has 135 health posts (operational), 53 district-level health centers, or SBSs, 34 state-level health centers, or DISAs, which play a vital role in disaster and outbreaks management, along with the Department of Epidemiology, or the OGE, and the Ministry of Health, or the MINSA, located in the capital, Lima.

INFORMATION FLOW IN EPIDEMIOLOGIC SURVEILLANCE



To improve communication Voxiva’s reports are available 24 hours a day, 365 days a year, in near-real-time, through text messaging to cell phones or e-mail.

Solution Application

The pilot ran from March 2002 through early September 2002. Preliminary results show that prior to Alerta’s installation, 28 health posts reported on a weekly basis while 22 reported on a monthly basis to the Chilca-Mala SBS. The MINSA required that health posts and centers report on a weekly basis, but due to

the cumbersome process of transporting the reports, many only reported monthly. After Alerta's deployment, 12 of the 22, which had previously reported on a monthly basis, began reporting on a weekly basis because of access to a telephone in their village. 26,264 cases were reported during the pilot, 4,167 calls. Two hundred and four users, including front line health workers and management, joined the program.

A survey conducted in August, as the pilot neared its end, revealed that 90% of the respondents who used the system believed the faster responses from supervisors were a primary benefit of the system, and 70% of the users cited the increased communication with their colleagues and supervisors as a primary benefit of the system. In addition, 50% believed reporting was easier, 40% believed more cases were reported and 40% believed they saved time over the previous paper-based system. The time used to make a call has fallen from three minutes and 32 seconds to two minutes and 21 seconds, where the time has seemingly stabilized. Anecdotally, there seemed to be easier adoption with younger medics as well as an increased interest in computers among all doctors.

There were several reasons for non-compliance. Because Alerta was a pilot, all health posts were required to utilize the previous paper-based surveillance system, some officials did not want to report twice. Reports were submitted inconsistently due to unfamiliarity with the system. Juan Rodriguez, director of the pilot program, said, "We expected the phone would be a familiar enough device where training would be minimal. Instead, we found that training is still required because of unfamiliarity with interactive voice response system (IVR) and voicemail. For instance, a training session was held in July 2002 in Chilca-Mala to provide additional training for voice mail use.

The primary market needs and lessons learned include:

1. The environment and available resources will dictate the type of communication device used. For instance, the need to collect data from widely distributed communities entails the ability to accept data from a variety of input devices such as a computer, cell phone or land line phone.
2. Decreasing the cycle time in the data input and aggregation process to provide a near-real-time assessment of the situation in the field will likely help prevent or decrease the duration of outbreaks. Responding quickly to events by incorporating near-real-time data assessment into resource allocation to address upstream policy making and public health decision making via suite of messaging and notification services will stem the rise of diseases.
3. The system increases the quality and quantity of data available to facilitate decision making.
4. The system must be cost-effective. The deployment of the Alerta system is inexpensive relative to other IT rollouts because it leverages the existing telecommunications infrastructure.
5. The technology must be intuitive to facilitate adoption and use. Because a technology is only as good as the people using it, continuous training is critical, not only to familiarize the technicians with the hardware, but also to alter the culture.
 - The technicians and doctors were receptive to the technology and like connecting with the authorities on a regular basis
 - The survey noted only 21% of respondents used voice mail two times or more during July and August 2002 compared with 64% who used the system "never" or "occasionally." This may be

attributable to several factors, including unfamiliarity with use or the technology, no cases that would prompt voicemail usage or that the telephone was in a public place the respondent thought was not conducive to sending a voicemail.

6. Collaboration among customers, partners and users drives problem solving.
7. Remote locations with no access to the phone use the radio to contact a health post with a phone to report to the closest health post or clinic with a telephone.
 - Healthcare workers in remote locations utilize the voicemail system to communicate with their relatives.
 - Group lists were created and used by directors or program coordinators to call for emergency meetings, workshops, courses, or staff meetings; something that was done before on a regular basis.
8. Industry-wide standard Best Practices must be adhered to including those associated with security, flexibility to inter-operate with other systems and versatility of input devices and exportability.

Alerta's benefits, based upon pilot, may be summarized as follows:

1. Allows for two-way communication among users of the disease surveillance system.
2. Facilitates and simplifies the coordination among the different management and operation levels that are concerned with the disease surveillance.
3. Provides a unique database for all users, to make a technical and specialized analysis in near-real-time or historical trend analysis.
4. Reduces errors in the database since the person who enters data is the same reporter. The system increases efficiency since it reduces the time dedicated to the input and verification of the data by automatic processes of collection, consolidation and distribution of information.
5. Permits exporting the data to DBF, Excel and others.
6. Conforms to use any database format within specialized or legacy software

APPLICATION IN DEVELOPED COUNTRIES: FROM PERU TO THE DEVELOPED WORLD

The improvements that drove creation and adoption within the developing world also exist in the developed world, as implied by Voxiva's adoption by the Federal Drug Administration and Department of Defense.

The common needs among the users in the developed world are:

1. To collect data from widely dispersed sources
2. To accept data from different types of input devices
3. To improve decision making by providing increased quality and quantity of relevant data
4. To be cost efficient
5. To be intuitive and easy to use
6. To be rapidly deployable

Finally, as the system evolved from developing to more developed economies, the principle of deconstructing complex systems to their lowest common denominator evolved. However, the primary innovations involved the ability to “deskill” or very narrowly define the variables for which the internet was responsible as well as accounting for the need to enter information rapidly because of their busy schedules. For instance, this allowed the person responsible for inputting the information to not need any specific expertise, such as medical training.

ALERTA PILOT SCORECARD		
GOALS	GRADE	COMMENT
Technically Appropriate and Feasible	B+	Many end users who work at either health posts or clinics in the Navy are not familiar with the use of IVR and voicemail, so on-going training is required. It has yet to integrate radio waves as a form of connectivity, which is needed in very remote military operations located outside of the flag.
Cost-Effective	A+	It had a clear and rapid benefit to the population because deployment was fast and compared to other IT applications very insignificant start up cost due to piggybacking on existing telecom infrastructure. Also the fact that it is an open system, makes integration with existing IT health system used by the Ministry of Health possible and relatively simple. Voxiva provides an “appropriate” IT solution in an environment where not only limited (but growing) telecom infrastructure, but it’s also appropriate for a resource strapped country like Peru.
Can Be Maintained With Local Skills And Resources	A-	While Telefonica is a committed party to the proliferation of rural phones, not all have the 800. Moreover, not all phones belong to Telefonica and therefore the 800 lines are not useable with other telecoms. There’s a question of how Voxiva can not only strengthen but leverage this critical partnership
Acceptable By Clients And Providers	A-	High score from all end users. More importantly it had of multilateral and private sector participation and alignment with national planning to strengthen disease prevention. Avid dedication in both quality and intensity of use.... E.g. the Navy had 100% reporting from participating naval bases. The only vulnerability is dependency on one/ current administration as champion; a set plan to deal with administration change and staff turnover.
Results Favorable Effects On Health		TBD?—At this point health impact is not being measured, for the goals of the project were not measured in health objective, but rather efficiency within the process and overall medical administration.

Rodrigues RJ (2000). Telemedicine and the transformation of healthcare practice in the information age. In: Speakers' Book of the International Telecommunication Union (ITU) Telecom Americas 2000; Telecom Development Symposium, Session TDS.2; Rio de Janeiro, April 10-15, 2000, p. 9, figure 6.

MAJOR IMPLICATIONS OF VOXIVA'S APPLICATION IN PERU, U.S., IRAQ

Scoring: From Peru to the U.S. to Iraq

Earlier in 2003, Voxiva deviated from its original market orientation to serve the sudden and unexpected demand from U.S. government agencies. By spring 2003, however, Voxiva again focused on serving the international market by winning a \$1.3M contract pertaining to the rebuilding of the Iraq healthcare system with channel partner, Abt Associates. The U.S. Agency for International Development (USAID) awarded Abt Associates Inc. an initial \$10 million contract to assist in stabilizing and strengthening the health system in post-conflict Iraq.

Abt Associates will oversee an extensive team of partners specializing in all aspects of health services, including emergency relief services and healthcare delivery; health systems assessment, process improvement and reengineering; procurement and logistics; health planning and economics; disease surveillance; and data collection and information systems. With operations in three different continents, Voxiva seems to have hit on a solution to a universal challenge: to effectively collect data from dispersed rural populations in the provision of public services. Thus far the business model that has served them most effectively seems to be as a subcontractor within large multi-year projects like the Iraq program described above and the FDA Blood Monitoring project. In both cases Abt is the lead contractor, which leaves Voxiva with a clear implementation role and less time spent on the politics and administration at a high level.

Voxiva's first task order from this contract is to design a platform and database architecture for a facilities-based, real-time Iraqi health information system to strengthen health service delivery and support project monitoring and evaluation, with rapid prototyping and deployment of a disease surveillance module in Basra.

The Cost of Doing Business in Developing Countries

Whether Voxiva is working as an Abt Associate or subcontractor, courting institutions like the World Health Organization in an attempt to get the official stamp of approval or selling retail to the end users in Peru, all three require time investment up front especially in the area of relationship building.

The pace of business within international development is much slower than that of Wall Street. The benchmarks are different and one significant indicator is the value of time. In the public sector it is seen as an abundant commodity whereas with corporations it translates into working capital and must be accounted for in every respect. This clash of cultures is one tension Voxiva faces on several levels. Time spent on relationship building in the Peru office may or may not result in a funded proposal or pilot now, but is crucial as a door opener for future possibilities.

In many ways Voxiva's original intent to target the developing countries' health markets has paid off in the U.S. where Voxiva seems to be a novelty due to its rare social mission as a start-up company with operations in Peru. In Peru on the other hand, companies after the development funds are a dime a dozen. Multinational bilateral development aid in South America is big business; for Peru their public debt is 37.51% of its GDP in 2001.⁷ Many businesses position themselves as having a social mission or simply convey to NGOs to gain more access to development funds. The idea of social responsibility for companies is an unfamiliar concept and as such misunderstood and distrusted. In the U.S., however, any regulations associated with public funds are regarded as inefficient and bureaucratic; moreover, NGOs from developing countries are suspected of being corrupt and not truly representing the interests of those they claim to be helping.

In short, Peru's development aid market is saturated; there are many groups all vying for a piece of the pie. Voxiva-Peru's challenge is to become a viable business seeking public-sector funds. However, ready and immediate funds are not for the taking in Peru as may be the case in other countries going through a crisis and where the entire world's eyes and resources are focused on fast relief: Iraq, Afghanistan, Sub-Saharan Africa, and wherever the latest devastating disaster has been. During normal times, for countries like Peru, development business is made through relationship building. Bonds must be forged, workshops must be attended and thought papers must be written and submitted to high-level summits to gain the recognition and respect of the international donor community as a vital and

committed contributor and not as a company preying on the limited donor flows within their country. This, of course takes great time and resources, something that Voxiva-U.S. is having a hard time relinquishing as it struggles to keep up with its burn rate.

With pressure to realize new contracts quickly, the Lima office is applying two show-up tactics: networking within the circles of friends, former colleagues, family, and secondly, public officials with healthy budgets. In Peru, this translates into pitching to the mayors of wealthy districts of Lima and their corresponding municipalities.

Alternatively, Voxiva Peru has a choice to cultivate inroads into the private sector, which has a greater ability to make faster decisions. This effort, however, is also filled with its own menu of complications. First, there is the risk that if they do find a market, as small as it may be, there will be competition within the IT market. Many large IT corporations who have deep pockets to court the donor community may be disposed to do so with the additional benefit of satisfying their role as a socially conscious business. Second, because Voxiva has no private ownership, a low profile their best position. In addition to the above, their positioning as an IT company within health has its complications especially with operations in the developing world. The biggest worry with investors is recuperating their investment in a sector so heavily reliant on public sector flows into and within Latin America. It is harder to see the who, when, and how payback will occur without the help of large international donors stepping in to fund the infrastructure of public services.

Conclusion

Two years after the successful launch of Voxiva and close to break even, Meyer still relentlessly challenges his employees to create innovative applications that deliver on two bottom lines: social and business. His track record and his story behind Voxiva is compelling to many investors. Trust, credibility and social zeal have helped him to raise another \$3 million second quarter of 2003. Meyer is focusing on pulling in the right people who are smart, driven with initiative to innovate new solutions applying the formula of success: the power of the internet, the reach of the phone.

"Saying no to opportunities is a huge challenge," admits Meyer. He constantly finds himself weighing the business opportunities versus the social benefits; short-term results over long-term impact; and fighting the inclination to grow all at once into different social sectors. Case in point, this fall the Peru team contracted with a cosmetics company, the Ebel Corporation, to deliver an online purchase order system for the sales team. Meyer says that doing this is one of the advantages of not being an NGO that is beholden to a mission-run board; this move well illustrates the ease and pace with which for profits can scale versus the limitations of not for profits. The second constant challenge is building a cohesive team with professionals with vastly different backgrounds, experiences and cultures. He relies on their dedication and their sense of unity of purpose.

His successful run so far as a social entrepreneur is paying off. Over the summer of 2003 Voxiva Peru launched their second application: Citizen's Alert in Lima, Peru. This time the social good was safety. The pilot was funded by the mayor of Miraflores, an upscale neighborhood of Lima with popular restaurants and shops that cater to tourists. When the elite of Lima caught wind of this public service, they also demanded it be applied in all their neighborhoods. The outcome favored all citizens of Lima since the four mayors consolidated their resources and scaled up the program to apply to greater Lima area, population 7 million. (The price structure is on a per user basis.) Following on the heels of this

launch were requests from their client base in the US--- proving again that challenges found in developing countries do not differ greatly from those in our backyard.

APPENDIX 1

Collaborative Networks

Voxiva positions itself as a specialized IT company that contributes a critical piece in a broader, comprehensive and integrated solution. Voxiva's early strategy is to build collaborative networks by carefully selecting channel partners who are major players in the niche market Voxiva aims to penetrate, which is the international development sector, particularly health. As a sub-contractor to these channel partners Voxiva slowly builds their brand with each large public sector, multiyear project in which they participate. As a small solutions provider they are piggybacking on their partners' expertise, name recognition and reputation to gain credibility with and access to new clients. In return, they are offering their channel partners a unique solution that can set them apart from their competition. Mary Grant stated, "We are taking a deliberate approach to choosing channel partners, and we're looking at people from the standpoint of do we have a common goal, as potential customers, do we have some complementary type services that can be bundled and sold?"

Telecom companies, health experts, governments, multilateral development agencies, private companies that specialize in economic development, non-government organizations, bi-lateral organizations all share a crowded space within this niche market. Voxiva's aim is to create an understanding across all its stakeholders of the service they bring and articulate to each one the benefit they receive from partnering with Voxiva. Sometimes Voxiva plays a main role in knitting together and aligning interests between various parties; other times it takes a back seat and lets another player lead.

Voxiva is building a collaborative network of channel partners, which fall under two categories: Sector or Implementation partners.

1. Sector Partners provide policy or vertical market capabilities to governmental and non-governmental agencies (RAND) and contribute sector expertise, credibility and thought innovation.
2. Implementation Partners provide specific technological, analytical or operational strengths (Abt Associates, Telefónica) and contribute project launch, project management and/or technological support (Care).

Sector Partner

The Rand Corporation, one of the world's preeminent policy think tanks, with expertise in national security, bio-terrorism, health etc., is a key sector partner for Voxiva because of their reputation as a thought leader and its client base. A few of Rand's major clients include the Federal Government (DoD), State Governments (California), Multilateral Organizations (WHO, UN), Foundations (The Ford Foundation), foreign governments (People's Republic of China – Ministry of Health) and Industry (IBM). Voxiva partnered with RAND to jointly develop the smallpox vaccination tracking application for the

DOD. Mary Grant added they shared the same values. “We have some direct relationships in the federal level, but some partners already have government vehicles or government contracts that we can attach onto. Typically we’re part of a solution, not the total solution.”

Another major source of credibility partners comes from the international donor community. The multi-lateral organizations, such as the World Bank and UN, play a large role in Public Health, and Voxiva’s goal is to build relationships with these large-scale aid organizations. The segment effects Voxiva’s business on several levels; whether as a client or an implementation partner, their name in a contract along with Voxiva’s gives the company a reference base and credibility with other potential regional and international clients and partners.

Implementation Partner

Abt Associates, a \$182 million data analysis and call center firm with a strong business with federal and state government contracts, partnered with Voxiva and RAI to implement the smallpox vaccination program for the DoD and the blood-monitoring program with the FDA. Judie Mopsik, Managing VP of Survey Research for Abt Associates, chose to partner with Voxiva because Voxiva offered “a more efficient way of collecting data and because Voxiva and Abt’s data mining and data analysis competencies are complementary. We also share common values in the way we approach the line of business we are in.”

Another example of an implementation partner is ESRI, the world’s leading Geographic Information Systems (GIS) company. Their digital mapping technology complements Voxiva’s data-collecting technology well since it provides a visual representation of the data and allows the end-user to quickly navigate and drill down into the data.

Another critical implantation partner is Telefónica, the dominant telecoms carrier in Latin America, for carrier network hosting and messaging services. Their relationship in the implantation of the Peru disease surveillance project is exemplary since both companies benefit mutually from the partnership. When Telefónica was privatized in Peru, they were mandated to expand phone services into rural communities throughout the country, and they have found that Voxiva is a model partner since it helps them accomplish their long-term goal of spreading telephony through rural Peru. The potential for a broad or nationwide roll out of Voxiva’s technology creates additional use and demand for their services in rural areas. Francisco Rubio Nieto, Chief of Operations and Internet Projects at Telefónica Peru, believes that Telefónica’s interest in Voxiva is twofold. First, Telefónica “encourages companies that encourage telephone, cell phone and Internet adoption and usage,” which will in turn increase Telefónica’s revenues. In addition, Nieto believes, “Government may be the main engine with electronic transacting and businesses will follow.”

APPENDIX 2: GROWTH STRATEGIES: GOING GLOBAL

Top-Down Approach

“Globally we’re really focused on U.S. federal and global health agencies, including World Bank, Global Fund/WHO, FDA, CDC, DoD and NIH,” said Paul Meyer, CEO.

To optimize efficiency and create barriers to entry, Voxiva is targeting multilateral agencies in an attempt to become the globally accepted standard for public health data collection and communication. In the ideal scenario, the multilateral organization would loan or grant aid funds earmarked for healthcare and mandate the recipient country to contract Voxiva's data collection technology.

Meyer explained, "The World Bank signs five-year loan agreements to the Ministry of Health and obviously has a lot of say about how that money is spent...and that's why we're working with WHO and others, to basically become part of the standard package, so that whether it's World Bank or USAID basically we are a kind of standard accepted solution and line item." This process maximizes efficiency because Voxiva's worldwide implementation would create significant barriers to entry after the system is in place.

Meyer describes product penetration into the development market via a three step approach: first, prove functionality with multilateral development funding, then get the local bi-lateral and other development agencies in-country to adopt the technology in their projects and then over time transition to local funding for those initial deployments and diversification into other sectors within that country's public sectors.

Efforts to wholesale their service at this high level are also a matter of practicality. It is much easier for Voxiva management to draw from an established network to make appointments with the World Bank and USAID in DC, the UNDP in New York or the WHO in Geneva, than it is to figure out how to deal with government procurement systems in 20 countries. Moreover, it is also less bureaucratic to get paid by a global institution without the need to worry about hedging against currency risk.

These institutions, however, are prohibited from direct endorsement of private companies, especially for the explicit creation of barriers against the competition (see Table I). Through grant mechanisms, like infoDev, or participating in contracts like the USAID-Iraq, Voxiva creates a name for itself within these large institutions. Currently Voxiva is leveraging its first mover advantage, contracting as many multilateral projects worldwide to create short- and medium-term barriers to entry.

DO NOT COPY OR DISTRIBUTE

Table I

**EXCERPTS FROM
WORLD BANK GROUP PARTNERSHIPS WITH THE PRIVATE SECTOR:
ASSESSMENT AND APPROVAL**

- Conflict of interest risks:
 - Entailing a conflict between the private partner's involvement in upstream policy advice or project/program design work and subsequent intention to be involved in linked downstream work, be it in the form of further consultant services or provision of goods and services. The partnership agreement should specify the upstream activities, or roles and responsibilities of the partners, making clear how the private partners will not have any inappropriate influence on the design of subsequent project activity in which they may have a commercial interest.
- Unfair advantage risks:
 - Conferring unfair advantage on a single company (e.g., co-hosting a conference and then allowing them to use the Bank's name in a manner that implies an endorsement of, or preference for, the company's products or services). This includes partnering with a company in activities that are directly linked to competitive market expansion of their products. Any eligible business should have the opportunity to propose partnerships, and each partnership should be open to a broad range of eligible private sector entities whenever appropriate.
 - Allowing special advantages, preferences or benefits to accrue to the private sector partner. These might include access to information, market advantage or procurement under projects financed by the World Bank Group.

Bottom Up Approach

The top-down approach broke down in practice with the Peru pilot due to the unamicable relations between the international development community and the current Ministry of Health. The present administration wanted to chart a different course than the previous Ministry of Health; and since the pilot was not initiated by the current minister it has received little support from the top levels of the administration. Since then Voxiva-Peru has been trying to change its image as a bank-funded project and is focusing on a pull-through strategy. They are spreading the word among the healthcare administrators at the municipal level that this technology is effective, affordable and saves money. The aim is to pull it through the bureaucracy by having the districts add it to their yearly budgets from the ministry for the following fiscal year. With enough requests the hope is to capture the attention of the Ministry of Health to convince them that a nationwide rollout (wholesale) would be more cost effective than a retail approach.

When Voxiva is not a subcontractor and sells directly to the client its strategy is to build the client's core IT platform one application at a time. As Meyer observed, "In this business, people buy applications because money is allocated to solve problems. Our strategy with all our key customers is to find the vertical applications where there's immediate pain and allocate money to solve that problem. Then we use that vertical to demonstrate the functionality of the platform and let them say, 'oh, we should be using this for this and this and this.'"

APPENDIX 3: BUSINESS MODEL

Peru: From Cost Center to Profit Center

Voxiva's office in Peru strives to fulfill three needs: (1) the research and development arm of Voxiva; (2) the back-office support to the U.S. headquarter office and (3) a business unit. The CEO mandated that the Peruvian office achieve breakeven by the end of fiscal year 2003. Lima supports several of the U.S.'s back-office activities within the following functions: product development, product packaging and network architecture and design. The cost accounting system is in flux, but in the meantime the Peru office carries a significant amount of the cost burden in face of increasing pressure to become a profit center. In addition, the cost accounting system is not activity based. Therefore, Lima resources applied to new business in the U.S., for example the Iraq contract, are not deducted from the U.S. center, but rather absorbed under R&D.

In the meantime, Voxiva-Peru is working to create new relationships with potential channel partners like Care (implantation partner) and Chemphas (sector partner) that are both major contractors for USAID projects. Moreover, they are working and developing applications of local ideas through partnership with local players. Health and security (Citizens Alerta), military inoculation (Alerta Epidemiology), organ transplants (Alerta Transplants), disaster (Alerta Disasters) and distance learning (Alerta Education) are a few examples of new applications the Lima office is developing. Each of these three public sectors—education, e-governance, and health—represent vertical markets anchored in the lessons learned from disease surveillance pilots in Peru.

Pricing Model

There are two principal pricing models Voxiva is using at the moment. Voxiva's list of services include selling the license, monthly user fees, installation of the product, deployment support, training workshops and post-installation testing operational support. Depending on the bid and whether there's an existing operation in the region, Voxiva fits their services to the client and channel partner needs and budget.

The first model is characterized by having an upfront price flat fee for the license of the product, which includes the installation and training; subsequent to this stage are hosting fees paid monthly. This model is commonly used when they are transacting through a channel partner and/or when Voxiva has no established hosting operations in the same region as the project, such as with the Iraq contract and a bid they have outstanding for a project in the Philippines. Another reason for this front-loaded pricing, particularly with the U.S. government contracts, is the cancel-ability of the contract by the government at any time. The benefits to this model are the certainty to recoup upfront costs and cash on hand, which is ideal for a growing company.

The alternative is a reasonable fee per user, per month, minimum 1,000-user model. Voxiva Peru has applied this model, leveraging their existing operations and unutilized capacity of their local server and network system.

In Iraq for example, Voxiva has contracted their services for \$1.3 million over two years; it is part of a \$10 million health reform program headed by Abt Associates, but financed by USAID. They have paid a percentage up front, and the rest will come over the years through a system of submitting task orders, which break down their contracts into deliverables; each task order is paid upon completion.

Voxiva is ultimately responsible for setting up servers locally and hiring local people to run them. Under the U.S. government contracts, the government will own the application, but not the platform.

Part of Voxiva's strategy for the short term is to identify new and strengthen relationships with existing channel partners, such as Abt Associates. Initially (through mid-2003), Voxiva intends to rely heavily on direct activities, with approximately 75-80% of all contracts (both domestic and international) being sold and delivered on such a basis. However, both referenced account and channel partner development initiatives are intended to bring about a significant switchover to the reverse resulting in 80% channel and 20% direct by mid-2004. This switchover is assumed to further adjust by mid-2005 and stabilize thereafter to 85% channel and 15% direct.

Endnotes

¹ WHO Report on Global Surveillance of Epidemic-prone Infectious Diseases, WHO/CDS/CSR/ISR/2000.1, <http://www.who.int/emc-documents/surveillance/docs/whocdscsr2001.pdf/Introduction.pdf>, May 2002. [Note: Cancers, cardiovascular and respiratory/digestive deaths also can be caused by infections and raise the percentage of deaths due to infectious diseases even more.]

² Economic Impact of SARS – From Asian Development Bank, May 2003, <http://www.abd.org/Documents/News/2003/nr2003065.pdf>.

³ WHO Report on Global Surveillance of Epidemic-prone Infectious Diseases, WHO/CDS/CSR/ISR/2000.1, <http://www.who.int/emc-documents/surveillance/docs/whocdscsr2001.pdf/Introduction.pdf>, May 2002.

⁴ The World Bank's Agriculture and Development Home Page, <http://Inweb18.worldbank.org/ESSD/ardext.nsf/11ByDocName/AgricultureRuralDevelopment>, October 2, 2003.

⁵ Development and international cooperation in the 21st century: The role of IT in the context of a knowledge-based global economy by UN's Economic and Social Council, E/2000/52, August 2000.

⁶ InfoDev was founded in September 1995, and is a global grant program managed by the World Bank to promote innovative projects in the use of Information and Communication Technologies (ICTs) for economic and social development, with a special emphasis on the needs of the poor in developing countries.

⁷ The Markle Foundation was established in 1977 "to promote the advancement and diffusion of knowledge...and the good of mankind." The overarching goal of the Markle health program is to accelerate the rate at which information technology enables consumers and the health system that supports them to improve health and healthcare.

⁸ Economist.com, <http://www.economist.com/countries/Peru/profile.cfm?folder=Profile-Economic%20Data>, September 23, 2002.