



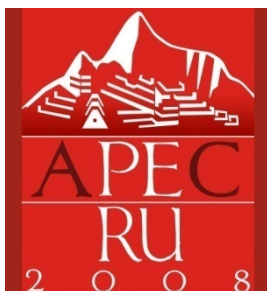
**Asia-Pacific  
Economic Cooperation**

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**2008/TEL38/LSG/IR/006**

## **Alerta: Electronic disease surveillance for rapid detection of potential outbreaks in rural settings**

Purpose: Consideration  
Submitted by: Peru



**Industry Roundtable  
Lima, Peru  
13 October 2008**



## Round Table Telecommunications and Information



### Alerta: Electronic disease surveillance for rapid detection of potential outbreaks in rural settings



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THE POWER OF THE INTERNET, THE REACH OF THE PHONE.

### Voxiva at a glance

- Provider of mobile-centric information solutions in the developing world.
- Voxiva solutions to collect, store, analyze, transact disseminate, and share information, with a large, distributed group of people.
- Solutions leverage existing IT mean, devices and infrastructure.



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## Voxiva's Framework: Multiples Channels



This framework leverages the existent information and communication technology networks. Real time information, analyzed and disseminated to make real evidence based decision making

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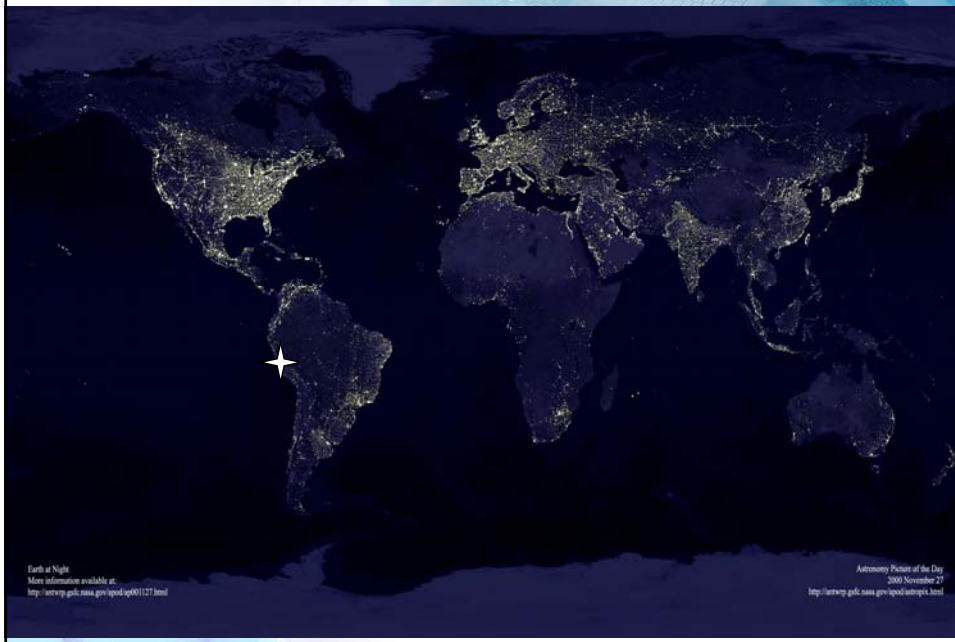
## Voxiva at a glance

- Focus on public health solutions and e-government.
- Flexible platform for rapid roll out and deployment of new solutions.
- HQ in USA. Development centers Lima and New Delhi. Operations in Latin and North America, Africa and Asia

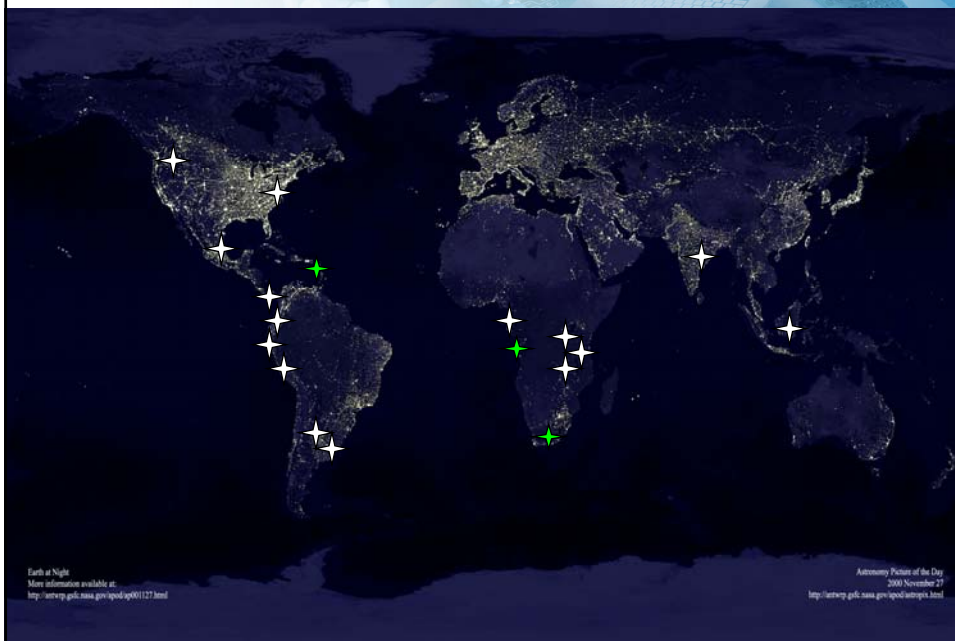
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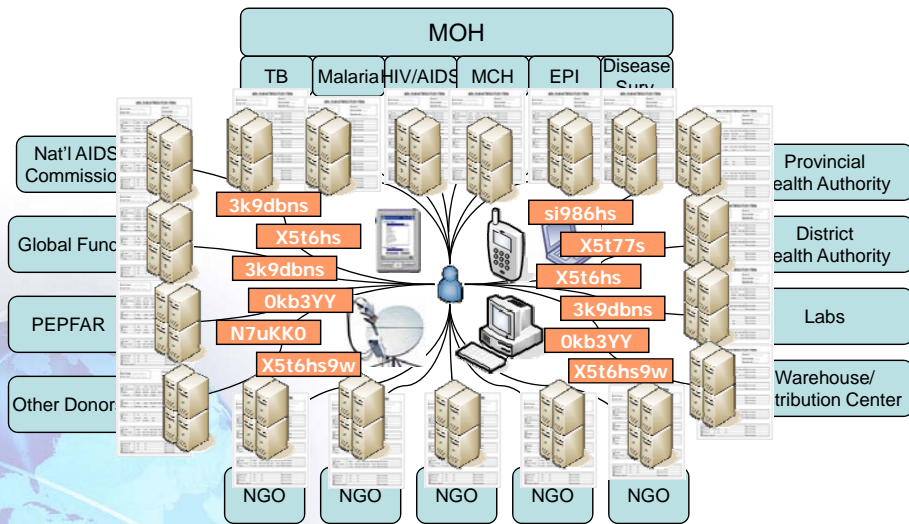
## Voxiva's Presence 2002



## Voxiva's Presence 2008



## HMIS Status Quo

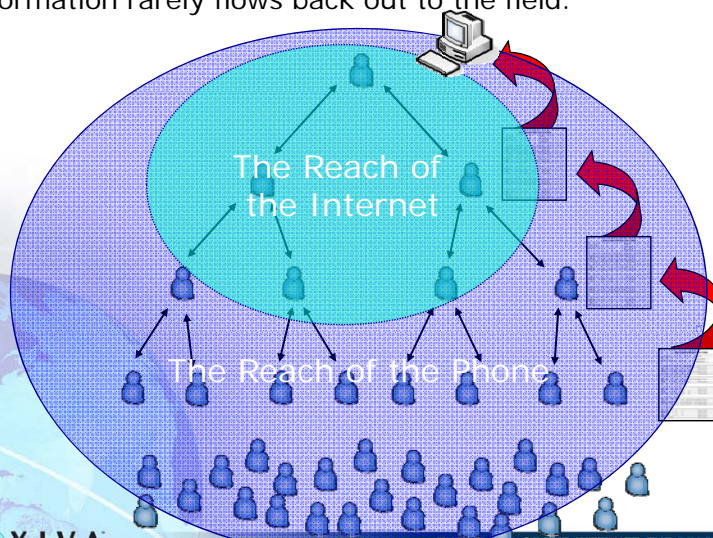


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## Typical Information Flows

- Generally step-by-step, slow, manual, and paper-based.
- Information rarely flows back out to the field.



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## Alerta an electronic disease surveillance system

- The problem
- The solution
- Main results
- Lessons learned

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## The problem

- There was not a real disease surveillance system at DISAMAR (Health Department of the Peruvian Navy)
- Task forces were deployed every time an outbreak arose, usually with delay
- September 2001. Outbreak of Malaria Falciparum
- Only 8% said they notify cases using Internet and 19% by phone\*
- Only 34% used to send weekly reports, the rest sends monthly or less frequent reports\*



\* Source: Alerta DISAMAR. BASELINE SURVEY RESULTS, 2002

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## The solution



- **Alerta DISAMAR is a technological solution that allows users to collect, store, disseminate and analyze data related to health conditions under surveillance.**
- **Cases can be reported through any type of telephone e.g. fixed, public phone, satellite phone, cellular phones or wireless or online via the Internet.**
- **The end user simply dials up a toll free phone number and enters his/her user ID and PIN code. The user then follows the prompts provided by the system menu and after choosing the type of report he/she wants to submit the system ask specific questions.**
- **As soon as the user hangs up, the system stores data in a database which is also retrievable by phone or Internet by authorized users.**

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## The solution



- **Pilot project (local innovation)**
- **Launched in October 2002.**
- **Technical and financial support of the Naval Medical Research Center Detachment (NMRCD),**

INDIVIDUAL REPORT		
ERUPTIVE BARTONELLOSIS	LEPTOSPIROSIS *	AIDS
SYSTEMIC BARTONELLOSIS	P. FALCIPARUM MALARIA	CONGENITAL SYPHILIS
BRUCELLA * *	P. VIVAX MALARIA	TETANUS
ANTHRAX	MENINGOCOCCIC MENINGITIS	NEONATAL TETANUS
CHAGAS DISEASE	TB MENINGITIS	EPIDEMIC TYPHUS
DENGUE FEVER	MATERNAL DEATH	WHOOPING COUGH
DHF	SNAKE BITES	PULMONARY TB*
DIPHTERIA	PLAGUE	HIV
YELLOW FEVER	ACUTE FLACCID PARALYSIS	
TYPHOID FEVER *	RABIES	
HEPATITIS A *	RUBELLA	
HEPATITIS B	CONGENITAL RUBELLA	
STD *	MEASLES	
CUTANEOUS LEISHMANIASIS	SARS	
MUCOCUTANEOUS LEISHMANIASIS		

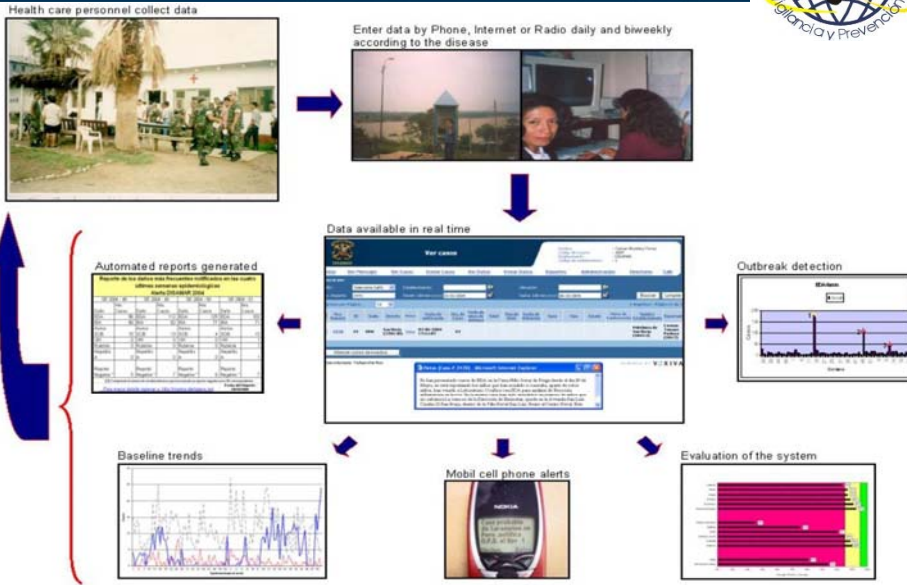
  

COLECTIVE REPORT
CHOLERA
ADD
ARI
PNEUMONIA
ASTHMA

<span style="display:inline-block; width:10px; height:10px; background-color:yellow; border:1px solid black;"></span> <b>Bi Weekly report</b>
<span style="display:inline-block; width:10px; height:10px; background-color:blue; border:1px solid black;"></span> <b>Weekly report</b>
<b>* Only mandatory for Alerta DISAMAR</b>

# The solution



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# How does it work?



Por teléfono: 0-800-44144

Website: <http://www.alerta.net/marinaperu>

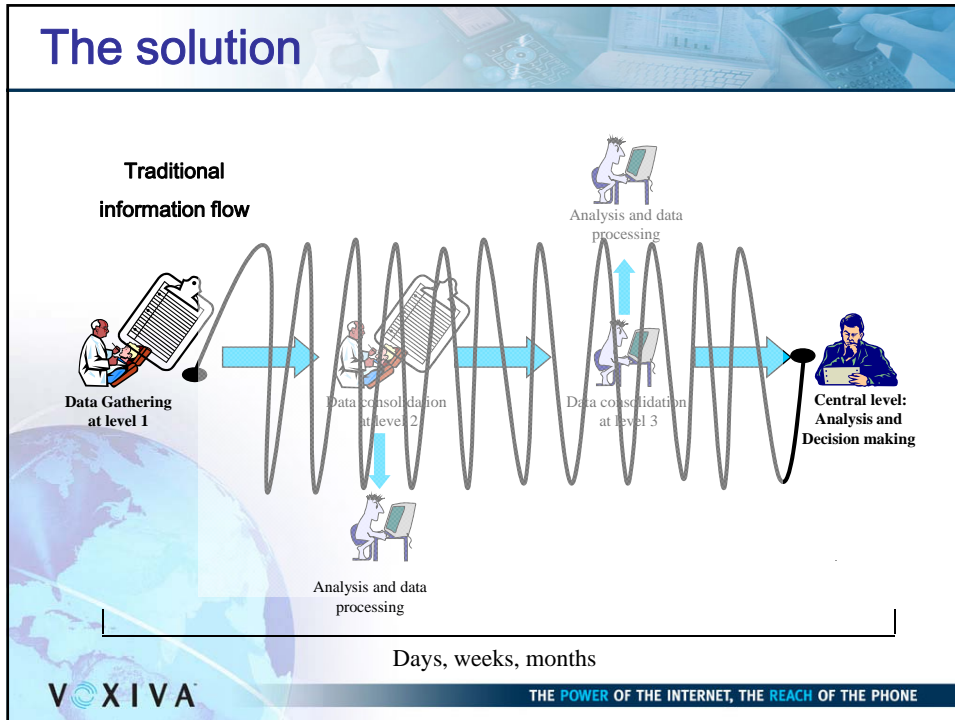


Automated reports, maps, charts, alerts: decision making with timely information

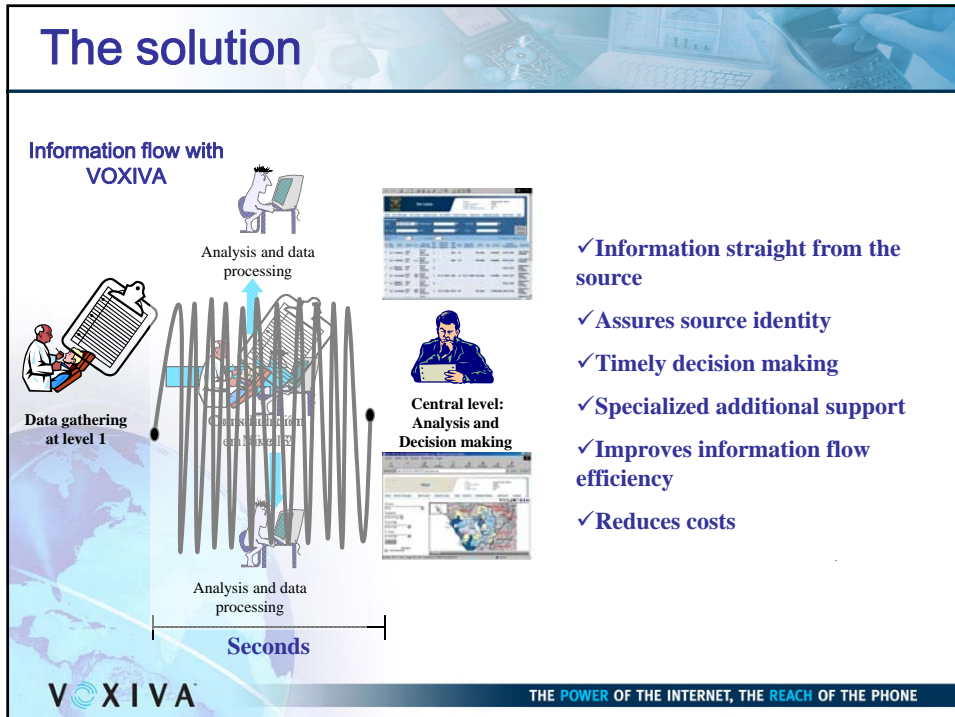
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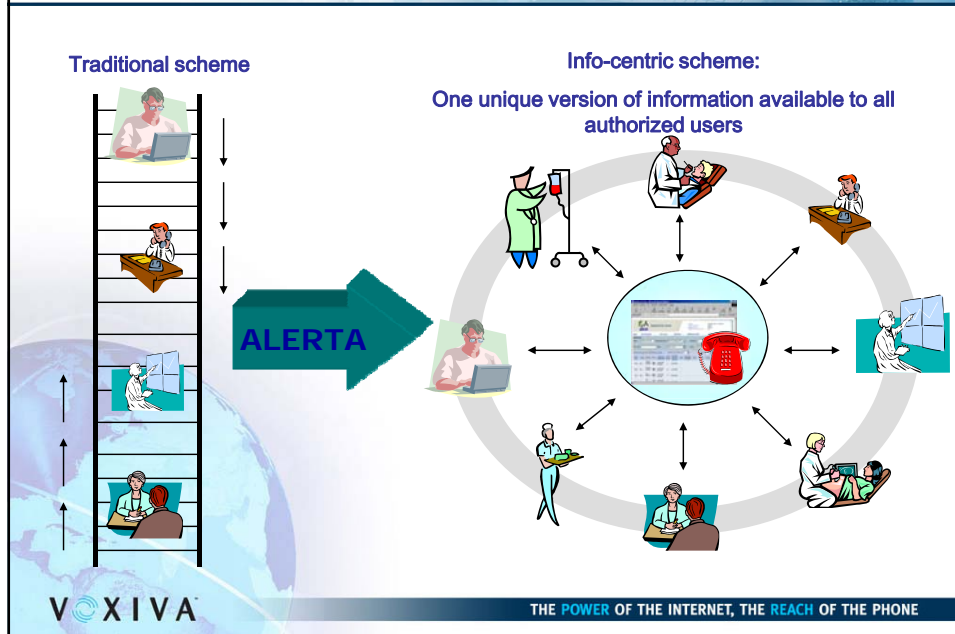
## The solution



## The solution



## The solution



## Main Results

- 97.5% of the Peruvian Navy population (128,000 sailors and family members)
- 66 health facilities (includes clinics, hospitals, border sites and ships)
- 18 sites report by radio, 26 by Internet and 22 by phone

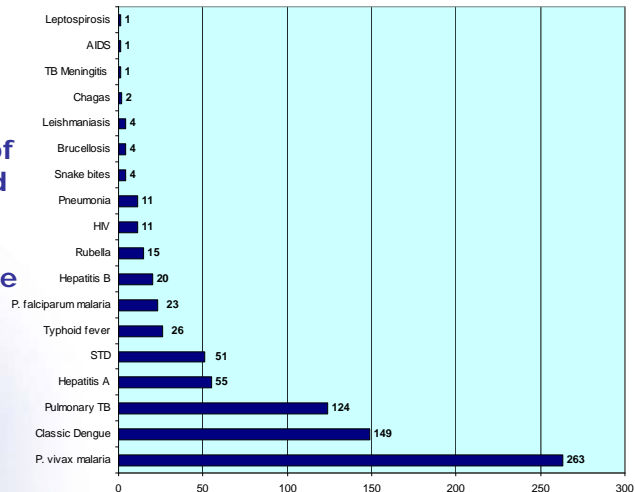
\*Source: Mundaca, C et al. Use of an electronic disease surveillance system in a remote, resource limited setting: Alerta DISAMAR in Peru Dec 2005

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## Main Results

Diarrhea and acute respiratory infection account for almost 90% of diseases reported. Malaria, classic dengue, TB and hepatitis A are the most reported among the less often reported.



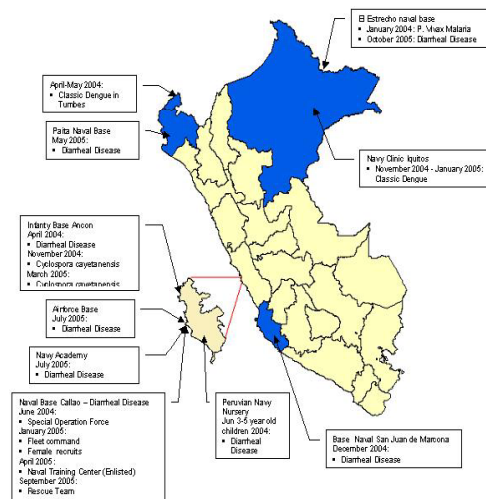
\* Source: Mundaca, C et al. Use of an electronic disease surveillance system in a remote, resource limited setting: Alerta DISAMAR in Peru Dec. 2005

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## Main Results

- Alerta DISAMAR detected 18 outbreaks: infectious diarrhoea (13), classic dengue (2), malaria (1), conjunctivitis (1), and scabies (1)
- 18,042 health events have been reported
- Most frequent diagnoses are: acute respiratory infections (45.3%) and diarrhoeal disease (44.9%).



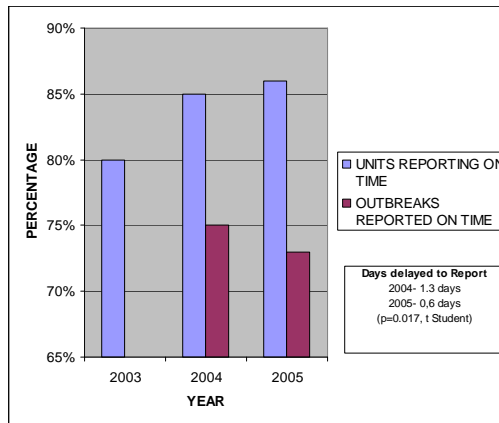
\* Source: Mundaca, C et al. Use of an electronic disease surveillance system in a remote, resource limited setting: Alerta DISAMAR in Peru Dec. 2005

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## Main Results

The reporting rate is 100%, with 90% reporting on time. This is an increase in on time reporting from 80% during 2003, 85% during 2004 and 86% in 2005. In terms of data quality on average 89% of sites now send complete reports. Error rates decreased from 0.26 in 2003 to 0.06 mistakes per report in 2005 ( $p < 0.001$ ).



\* Source: Mundaca, C et al. Use of an electronic disease surveillance system in a remote, resource limited setting: Alerta DISAMAR in Peru Dec. 2005

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## Main Results

Training is conducted in within a 2-day course, held once a year at a central location with on-site refresher training as needed, More than 600 people among front line users and other professional have been trained in disease

Number of workshops and number of participants per year, 2001 to 2005

	YEAR			
	2002	2003	2004	2005
Training Workshops	4	9	7	7
Participants	107	225*	155*	146

\* Estimated number

\* Source: Mundaca, C et al. Use of an electronic disease surveillance system in a remote, resource limited setting: Alerta DISAMAR in Peru Dec. 2005

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**Welcome to Alerta Disamar, a modern and innovative technology that permits to enter epidemiological information using the telephone or internet. The program allow to:**

- Using a telephone or internet to manage information about illnesses under surveillance and indicators of management,
- Receiving messages and information in real-time,
- Monitoring the efficiency of the health system performance and response efficiently the outbreaks,
- Transmitting information and alerts to the facilities of the system, even to the infirmary and facilities far away.





**Login**

User ID:

Password:

Remember my User ID


**Login**

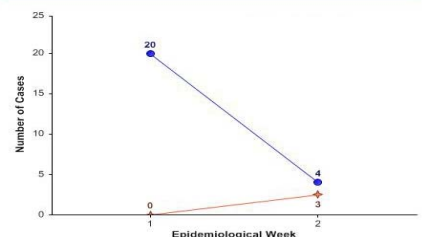
Dashboard
Automatic Reports
Reports
Messages
My Account
Administration

National
Administrator
Outbreaks X-bar
Outbreaks Movil Range
Outbreaks Current Year
Publications

**Potential Outbreaks. Last epidemiologic week. X bar**



Military Force	Facility	Disease	# Cases
Army	2 Brigada Infanteria Ayacucho	ARI	4
Army	31 Brigada de infanteria	Cutaneous Leishmaniasis	1
Army	31 Brigada de infanteria	EDA	4
Army	31 Brigada de infanteria	ARI	6
Navy	B.A.P. Aguirre	EDA	2
Navy	B.A.P. Aguirre	ARI	8
Navy	B.A.P. Carvajal	EDA	2
Navy	B.A.P. Carvajal	ARI	8



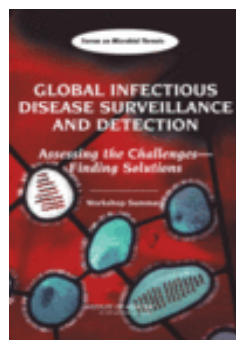
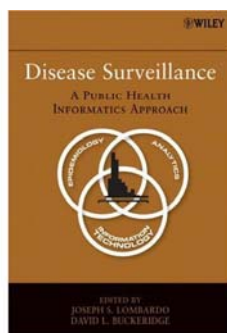
Epidemiological Week	Year 2008	Maximum Expected
1	20	0
2	4	4

## Publications sample



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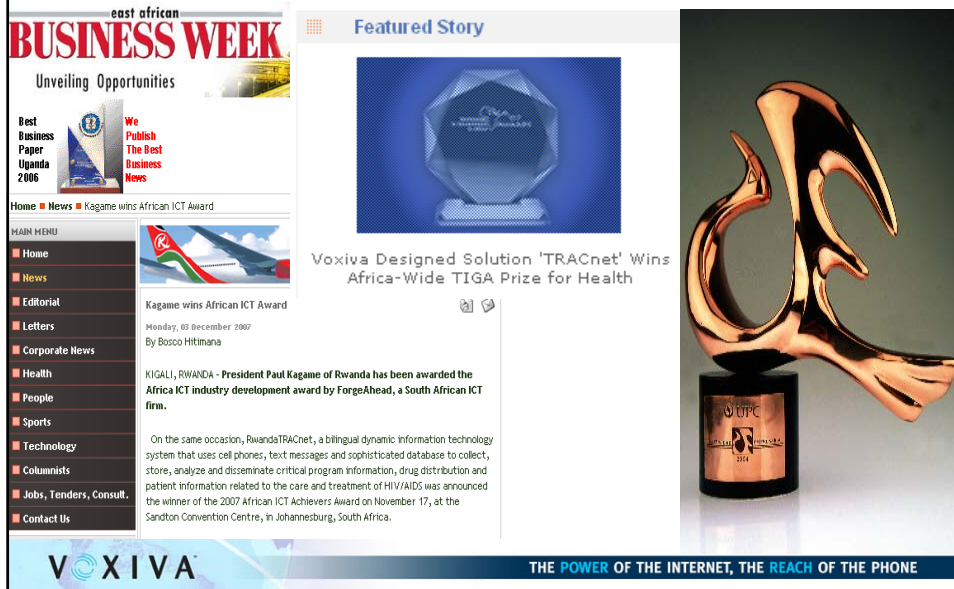
## Books 2007



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<http://www.iadb.org/bop/>

## Some prizes



The screenshot shows a news article on the East African Business Week website. The article is titled "Kagame wins African ICT Award" and is dated Monday, 03 December 2007, by Bozoo Hittimana. The main text states: "KIGALI, RWANDA - President Paul Kagame of Rwanda has been awarded the Africa ICT industry development award by ForgeAhead, a South African ICT firm." A sub-headline reads: "Voxiva Designed Solution 'TRACnet' Wins Africa-Wide TIGA Prize for Health". To the right of the text is a large image of a golden, abstract trophy. The website's navigation menu is visible on the left, and the Voxiva logo and tagline "THE POWER OF THE INTERNET, THE REACH OF THE PHONE" are at the bottom.

east african  
**BUSINESS WEEK**  
Unveiling Opportunities

Best Business Paper Uganda 2006


We Publish The Best Business News

Home ■ News ■ Kagame wins African ICT Award

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- Technology
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Featured Story




Voxiva Designed Solution 'TRACnet' Wins Africa-Wide TIGA Prize for Health

Kagame wins African ICT Award

Monday, 03 December 2007  
By Bozoo Hittimana

KIGALI, RWANDA - President Paul Kagame of Rwanda has been awarded the Africa ICT industry development award by ForgeAhead, a South African ICT firm.

On the same occasion, RwandaTRACnet, a bilingual dynamic information technology system that uses cell phones, text messages and sophisticated database to collect, store, analyze and disseminate critical program information, drug distribution and patient information related to the care and treatment of HIV/AIDS was announced the winner of the 2007 African ICT Achievers Award on November 17, at the Sandton Convention Centre, in Johannesburg, South Africa.



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## Lessons learned

- Innovative technology not only improves the ability of public health programs to monitor and evaluate public health programs but can help to capacity building.
- Alerta DI SAMAR contributed to the creation of a health surveillance system for the Peruvian Navy.
- Remote populations without access to sophisticated communication systems can be reached, and served by using inclusive technology. It is not necessary to have PCs everywhere to have a robust information system.

## Lessons learned

- By leveraging the standard telephone, mobile phones, PCs and the Internet, it is possible to deploy a health information system more quickly and cost-effectively.
- Leadership role among peer organizations improving the motivation of all professionals involved.
- Technology alone will fail. It is necessary to provide support with a comprehensive approach, including: technical support, change management, training, coaching and cultural sensitivity.
- Alerta is a system that provides good quality data with minimal recurring costs, being a fine example of sustainable technology transfer to improve public health in resource limited countries.

[1] Sanabria, C. Análisis costo-efectividad de dos sistemas de comunicación y reporte epidemiológico en el Perú. Revista de la Facultad de Ciencias Económicas de la Universidad Nacional de San Marcos. Año X.Nro 25. Marzo 2005.

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"Any sufficiently advanced technology is indistinguishable from magic." -- Arthur C. Clarke

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