



TELEVITAL
ENHANCING THE QUALITY OF LIFE

TELEMEDICINE:

The Collaboration and Coordination of Healthcare Services Over a Distance

Applied Information Technology Forum on HIV/AIDS and Healthcare Delivery

**Hosted by:
The Corporate Council on Africa (CCA)**

Wednesday, March 9, 2005

**Panel 3: Health Information Networks, Information Dissemination and Innovative Technology:
Opportunities for Scale-up**

TELEVITAL IS A LEADING PROVIDER OF REAL-TIME BROWSER-BASED TELEMEDICINE SOFTWARE

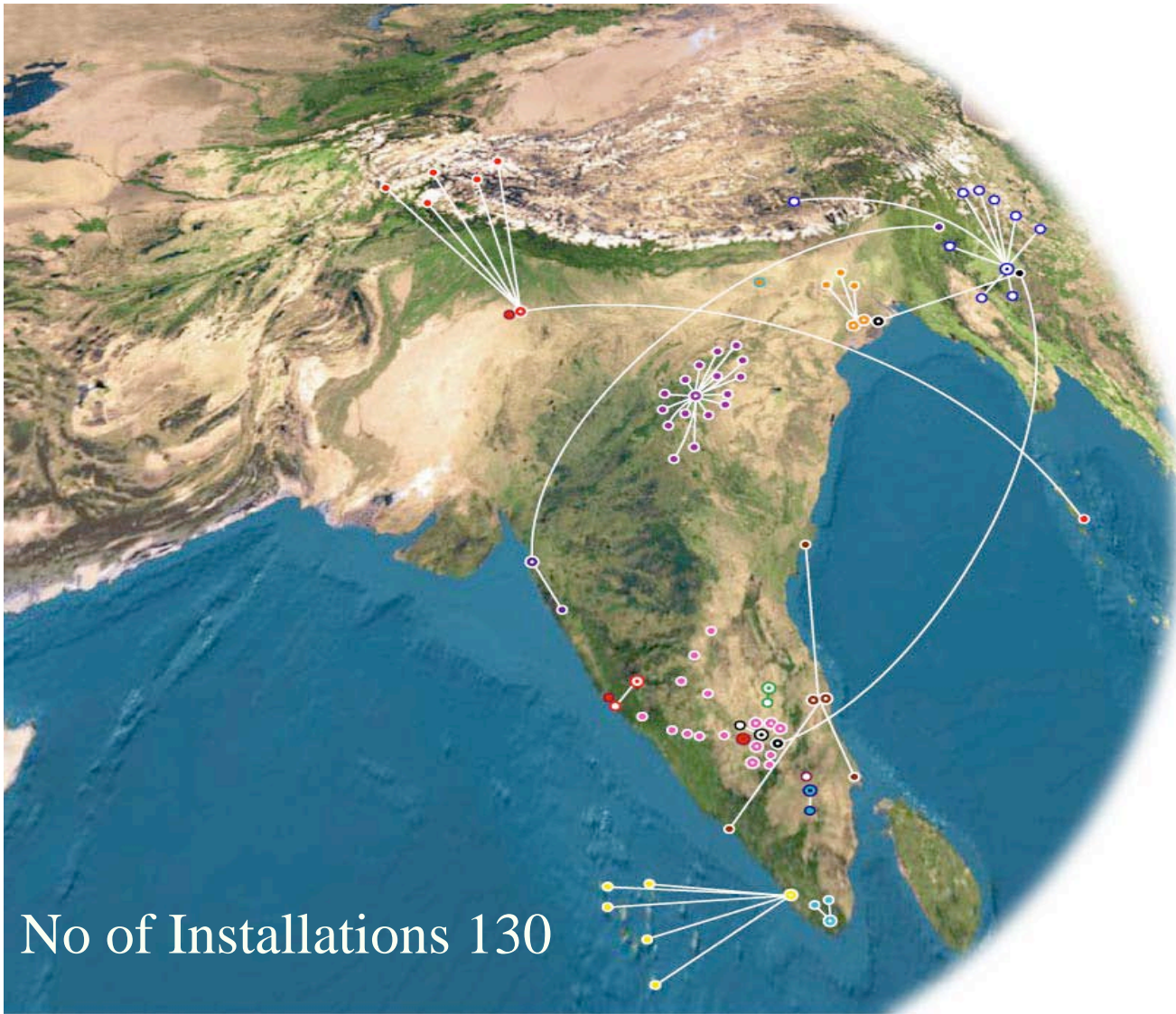
- ❑ VitalWare Software **enables** medical specialists, healthcare providers and their patients to monitor vital signs and medical conditions remotely regardless of their location.
- ❑ **Currently being used by hospitals, clinics, and medical schools to facilitate healthcare worldwide.**
- ❑ Treating Patients in rural areas:
 - Transmit vital info, EKG, X-ray, Ultra Sound, MRI, Angiograms to specialists in urban hospitals
 - Real time or Store and Forward Mode
 - Facilitated by Audio and Video Conferencing
 - Connectivity via Satellite Modem (IMARSAT RBGAN)

INNOVATIVE ICT SOLUTIONS FOR DEVELOPMENT

- ❑ 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 organizations.

- ❑ 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.
 - Portable Connectivity
 - Iridium
 - Inmarsat
 - Thuraya
 - Communication Systems
 - VSATs
 - Wireless Broadband (802.16/WiMax)
 - Wireless LAN (802.11/WiFi)
 - ICT Program Design
 - Telecenters
 - Training
 - Sustainability Strategies
 - Applications
 - Research and Assessment
 - Business Case Development





No of Installations 130



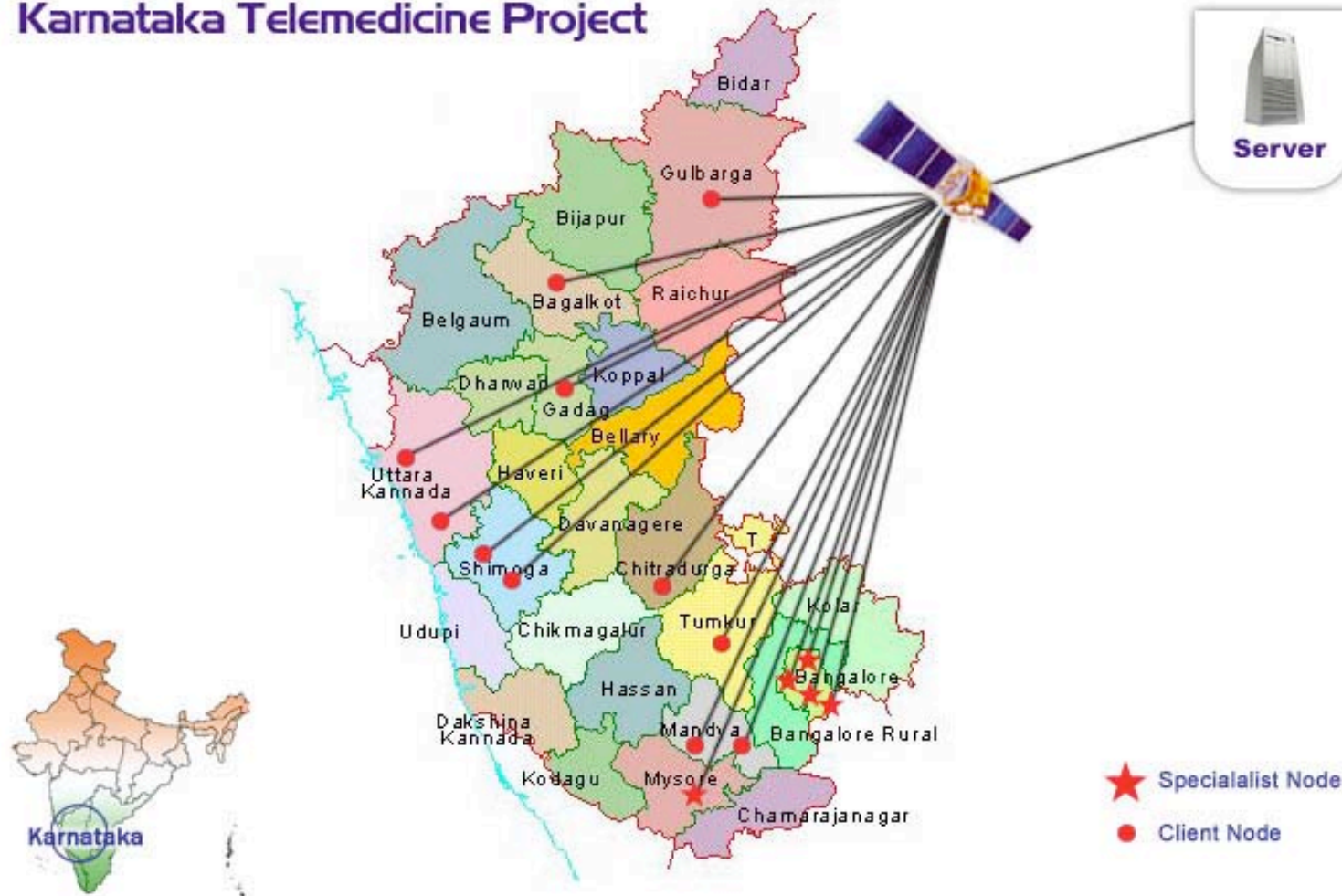
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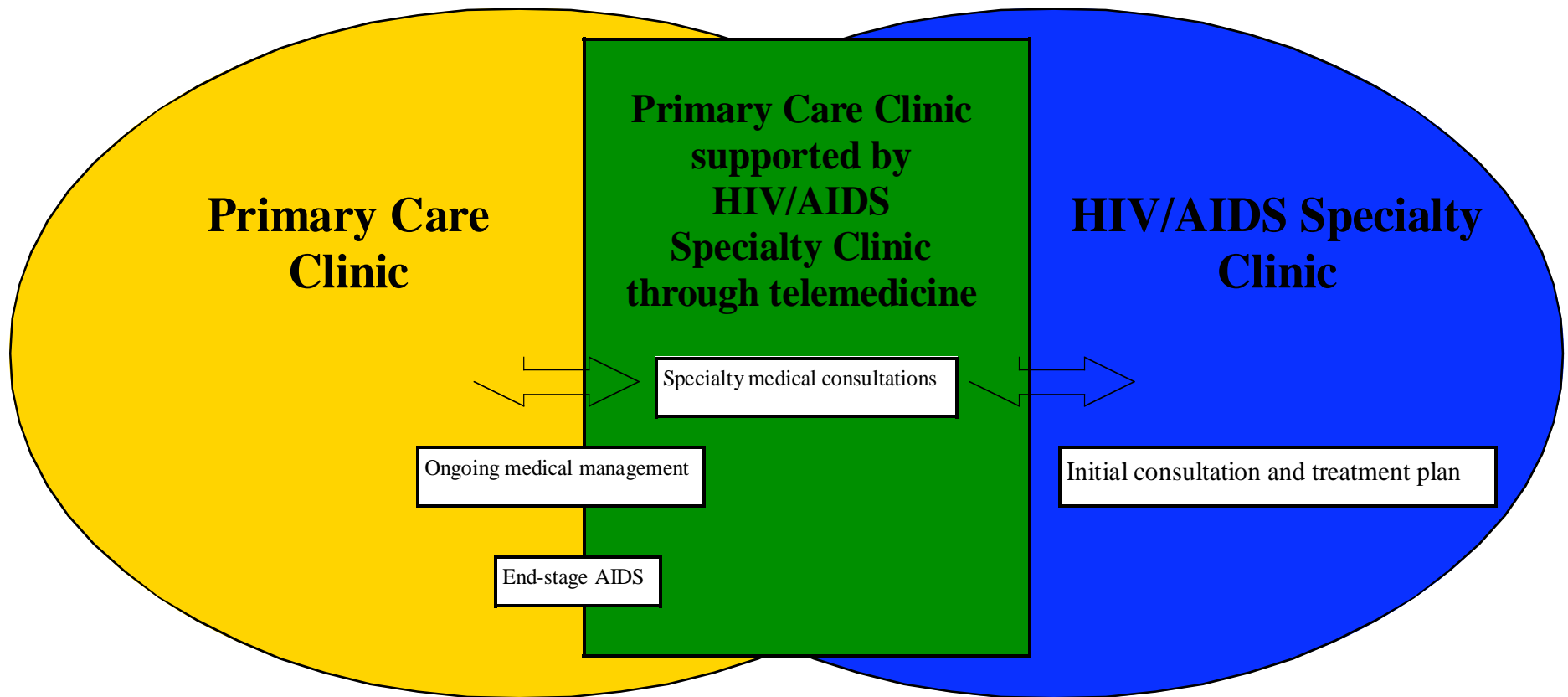
- ● Jammu & Kashmir (1+6)
 - ● Trivandrum - Pathanamthitta (1+2)
 - ● Kochi - Lakshadweep Islands (1+5)
 - ● Chattisgarh Telemedicine Project (1+16)
 - ● West Bengal (2+3)
 - ● Poldicherry (2+3)
 - ● Regional Institute of Medical Science
- Narayana Hrudayalaya
- Asia Heart Foundation (2+1)
 - ● North East (1+9)
 - ● Tata Memorial Hospital - Barooah
- BKL Hospital, Chiplun (1+2)
 - ● Karnataka Telemedicine Project (5+11)
 - ● KLE Belgum - Goa (1+1)
 - ● Infoline - BIO Bangalore (1+1)
 - ● Kuppam (1+1)
 - ● Yercaud - Narayana Hrudayalaya(1+1)
 - ● Gaya - Narayana Hrudayalaya (1+1)
 - ● Manipal Bangalore - Goa - Delhi (1+1)
 - ● Salem - Trichy (1+1)
- Specialist Node ● Remote Node

TAKING INDIA PROJECT TO SCALE

Karnataka Telemedicine Project



HIV/AIDS COLLABORATIVE CARE TELEMEDICINE MODEL



The model in place encourages PCPs to be the primary source of care with the periodic assistance of the HIV/AIDS specialist

Evaluation of HIV/AIDS Treatment in
Rural California Communities
Thomas S. Nesbitt, M.D., M.P.H.
Javeed Siddiqui, M.D., M.P.H.
Stacey Cole
Neil Flynn, M.D., M.P.H.

MONITORING HIV/AIDS WITH VITALWARE

- ❑ HIV/AIDS medications can cause significant side-effects

- Lipodystrophy, Nausea, Vomiting, Anemia, GI upset, Rash, Blood Pressure Issues

- ❑ Additional Effects of HIV/AIDS

- Psychiatric, Dermatologic, GI, Pulmonary, Hematologic, Endocrine, Rheumatologic,



- ❑ Patient being seen for HIV through telemedicine frequently have multiple co-morbid illnesses in addition to HIV
(cancer, kidney failure, thyroid issues)

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CONSULTATIVE MODEL

- ❑ Significant illness for which treatment makes a difference
- ❑ Beyond normal primary care provider's expertise
- ❑ Care by a "specialist" leads to better outcomes
- ❑ Exam and treatment do not require significant hands on care or complex procedures
- ❑ Can be followed by objective ancillary tests such as lab and/or imaging

**Evaluation of HIV/AIDS Treatment in
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- TeleVital Partnership

Developing The i-Community:

- An e Health Facility in Every Village

hp

TeleVital

Government

Registered medical practitioners

Family Practitioners

NGO's

PES



Education



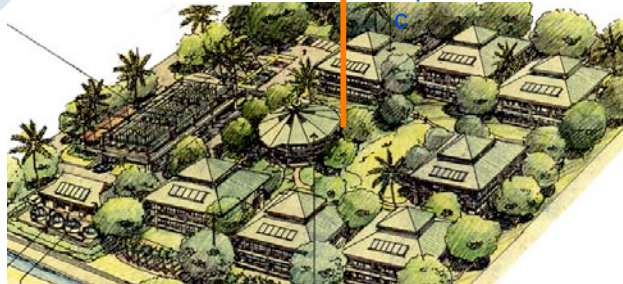
Ophthalmi



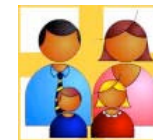
PES Medical College Kuppam



Screenin
g



Cardiac



Family
Planning



Dental



Gudipall
y



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AIDS/HIV Monitoring and Education eHealth Kiosks

KIOSK Capabilities:



128K ISDN



128K



Guam Telehealth Kiosk Network



128K ISDN or DSL



568 DSL

Received Messages
 Doctor> got ekg
 Patient> thank god
 Doctor> everything coming through
 Patient> hr antr secondary to bp out
 Doctor> y
 Patient> bowie
 Patient> attempting video
 Doctor> ok

Send Messages

Remote User Local Preview

Video window size: x=100 y=100 w=300 h=240

Time: 00:04:07

HR	81
SpO2	97
CO2	25
RR	12
Tak=BP	111/83

Start | Internet Explorer | Untitled - InDesign | http://www.tele vital.com... | medTAC - TeleVital - Tele... | TeleVital Video Confer... | 11/11 AM

Remote Anesthesia Monitoring



EKG, Blood Pressure, Pulse, Oximetry, ETCO2, Respiration Rate, Audio & Video, and text messaging over a 64K INMARSAT connection

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ACHIEVING SCALE...

- ❑ I-LINX asked to assist TeleVital to bring India model to scale
- ❑ From Government pilot to broader telemedicine effort
- ❑ Shared Connectivity Strategies / Aggregating costs
- ❑ NGO sector entry – multi-stakeholder approach
- ❑ Reaching underserved rural locations
- ❑ Analysis of constraints to telemedicine (power, training, ICTs, language)
- ❑ Supplemental Applications and Tools for delivery and M&E
- ❑ Develop appropriate price models for the development sector

HOW DO WE DELIVER REAL-TIME, SPECIALIZED MEDICAL ASSISTANCE TO VICTIMS OF THE TSUNAMI IN REMOTE AREAS?

CASE STUDY: Nagapattinam, State of Tamil Nadu in India

- ❑ Population - 1.54 million
- ❑ Overall 5,551 Missing in India
- ❑ Nagapattinam is one of the worst hit areas
- ❑ In the State of Tamil Nadu there are 3, 324 injured as of January.
- ❑ Deaths Toll – close to 7000
- ❑ Physical Infrastructure destroyed - 59% of people in Nagapattinam live in thatched house, which are mostly destroyed
- ❑ Tsunami has damaged the water distribution system -
Distribution of clean water began on January 1, 2005
- ❑ Health Problems
 - Depression
 - Typhoid
 - Diarrhea
 - Injuries & wounds
 - Skin infections
 - Eye infections
 - Gynecological complications
 - Hypertension and BP
 - Psychology problems in women and children
 - Trauma care
 - Urology



CASE STUDY: NAGAPATTINAM TSUNAMI RELIEF STORY



MOBILE CLINIC



RBGAN satellite modem taken with team and set up at each location to transmit live data sent from laptops

- Minivan enabled local NGO to travel to multiple locations with diagnostic devices
- Immobile patients not required to travel distances to receive diagnosis



IMMEDIATE SERVICE TO RURAL AREAS

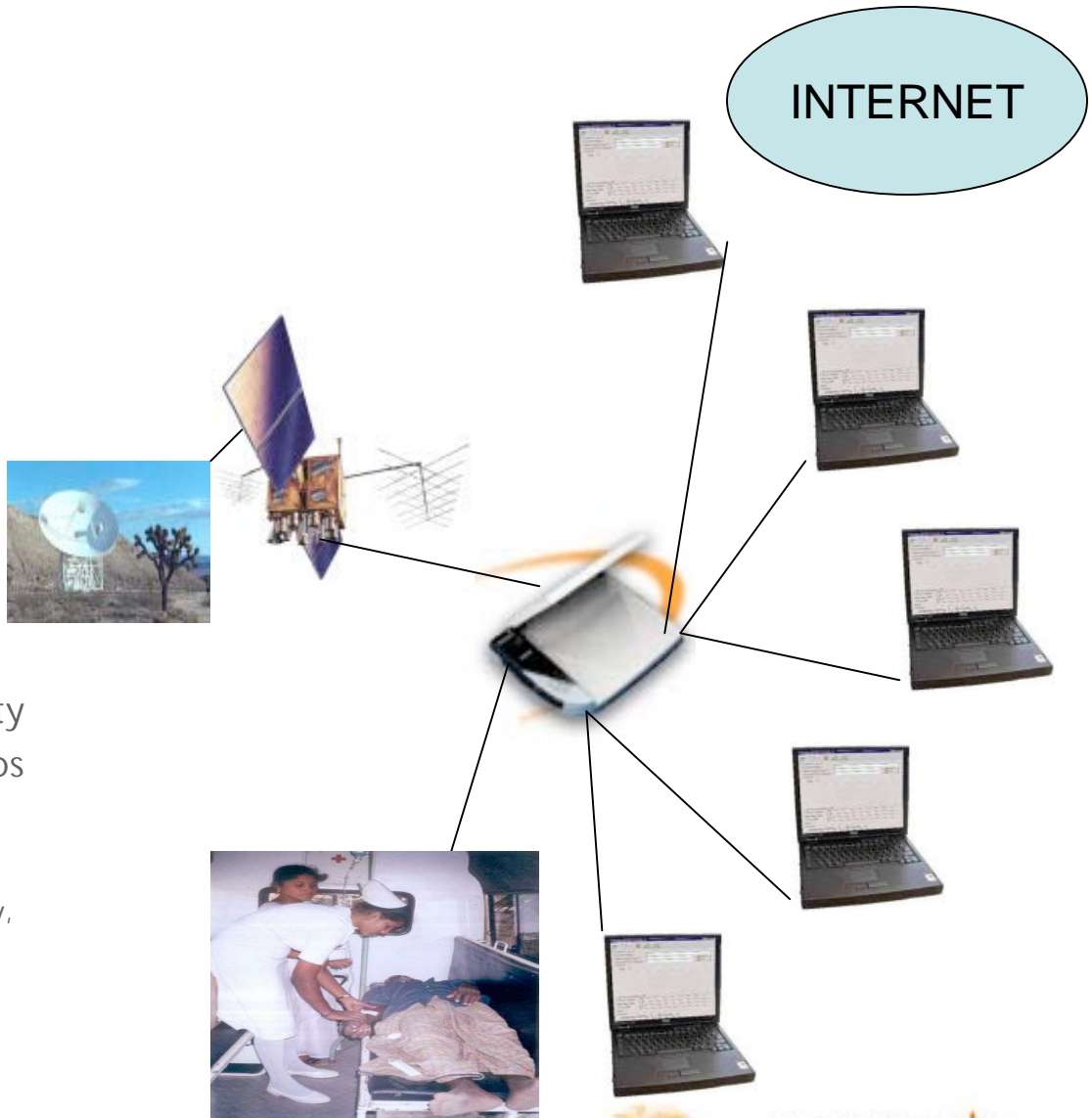
Key factor : Connectivity as hurdle to telemedicine

Tool: Inmarsat RBGAN portable satellite modem with Vitalware software

What were the Needs?

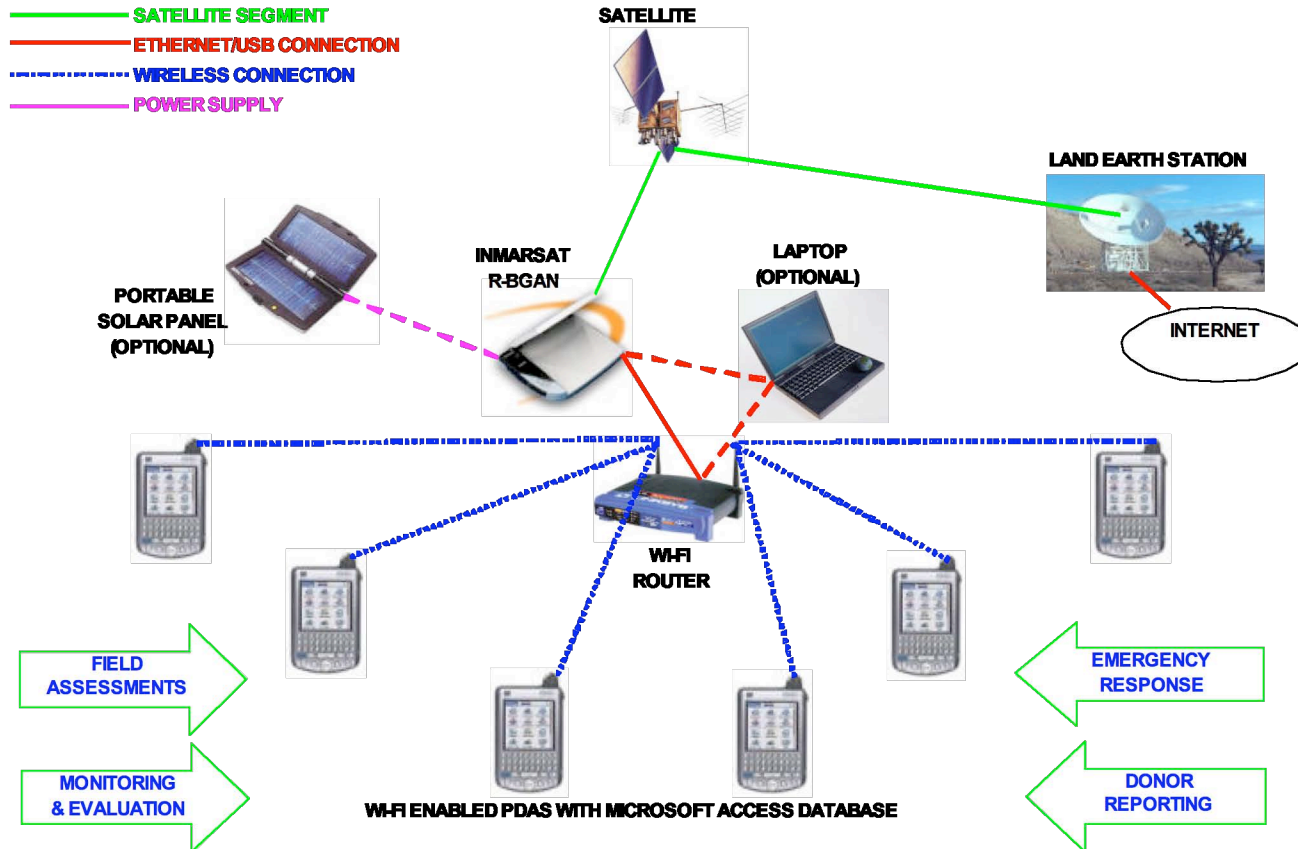
Reliable connectivity

- ❑ Portability
- ❑ Ease of Deployment – 15 minutes from box to diagnosis
- ❑ Cost – Multiple locations can use same source of connectivity
- ❑ Speed of connection – 144 kbps capable of sending all vital data and video if necessary
- ❑ Access to specialists in Psychology, Women & Child care, Trauma care, Cardiology, Urology, Orthopedics



INCREASING REACH THROUGH MOBILITY: PDA/R-BGAN ASSESSMENT TOOL

- ❑ R-BGAN + WiFi Router + Wireless PDA
- ❑ Portable data collection solution
- ❑ Applications to support field assessments, monitoring & evaluation, emergency response, and donor reporting



VITAL STATS: APPLICATION EXTENDS REACH OF NETWORK

- ❑ Sample screenshots for PDA assessment application
- ❑ Customized for NGO program need
- ❑ Increasing scale through individual users

iLinx
MetaSlash, Inc.
The Software Development Specialists

All ** Marked fields are compulsory.

Personal Information

First Name: * Last Name: *
Gender: * Male Female Date of Birth: * / /
Age: * Height: * ft in
Languages: * Photograph: *
Birthmarks:

Rescue Information

Previous Address: Relatives:
Location when Rescued: * Found With:
Visible Wounds: Date of Rescue: * / /
Temporary Housing: *

Medical Information

Required Treatment: Required Medicine:
Known Health Conditions: Preliminary Treatment:

iLinx
MetaSlash, Inc.
The Software Development Specialists

Personal Information

Name:	Bahra Edrees
Gender:	female
Date of Birth:	04/Jun/1996
Age:	8
Height:	3' 8"
Languages:	Afghan, English
Birthmarks:	Circle on left arm



Rescue Information

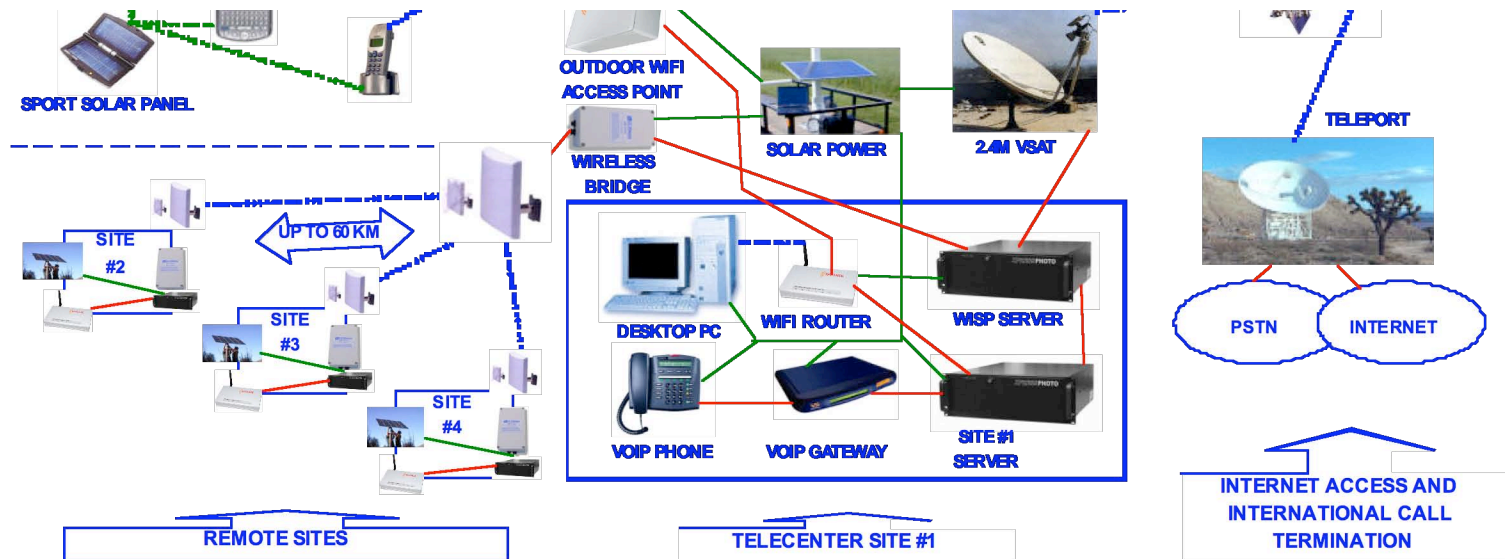
Previous Address:	District 9, Shash Darak, Street B-Nashanas Street, Kabul, Afghanistan	Relatives:	Sadaf, Parviz, Poonia
Location when Rescued:	Herat	Found With:	Assad Edrees
Visible Wounds:	Laceration - right hand	Date of Rescue:	15/Jan/2005
Temporary Housing:	UNICEF Zonal Sub-Office, Walayat Roat, Herat City, Afghanistan		

Medical Information

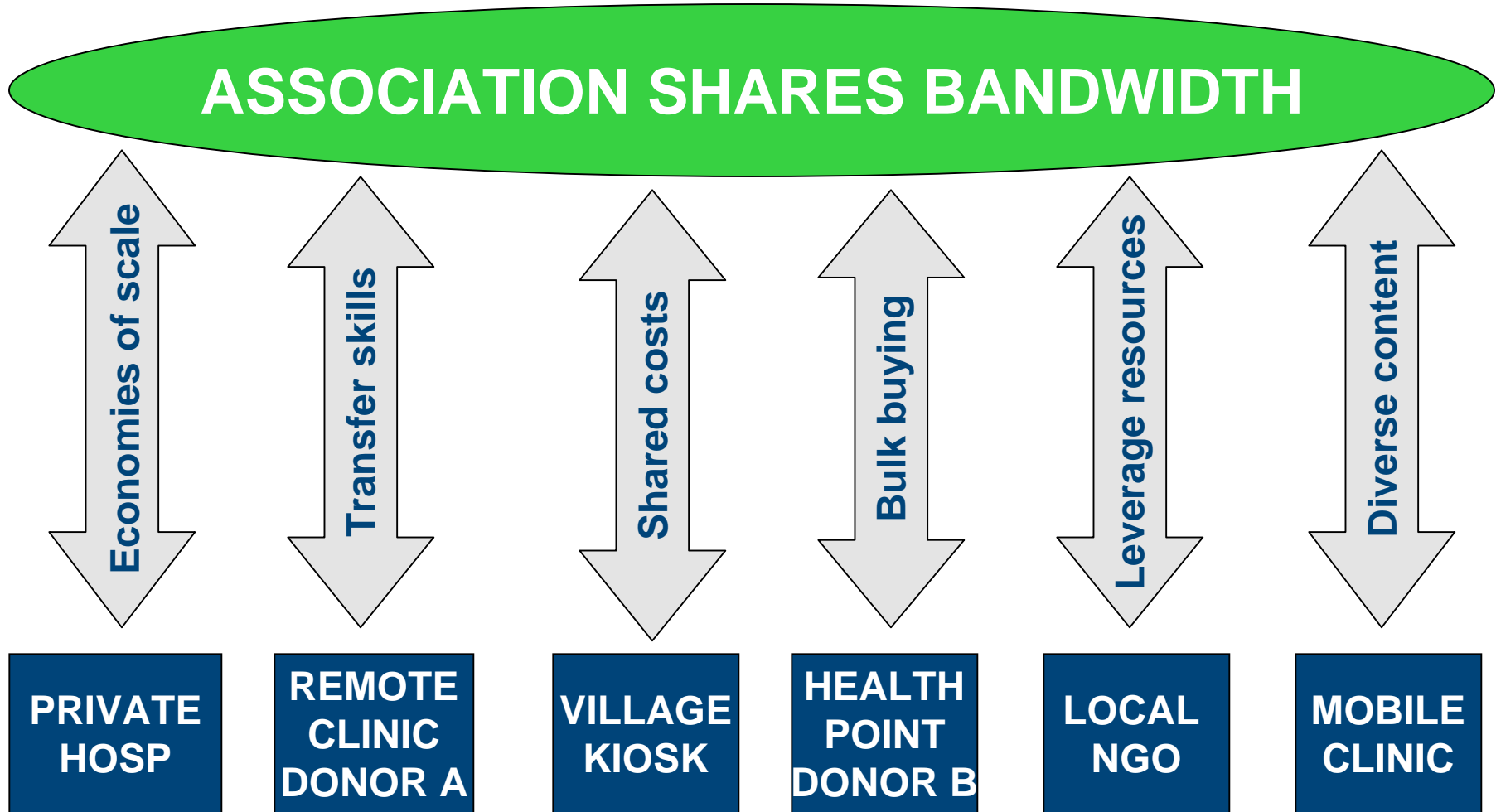
Required Treatment:	Malnourished. Needs food.	Required Medicine:	None.
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SCALABILITY: WIRELESS COMMUNITY NETWORKING

- ❑ VSAT + WiMax + WiFi
- ❑ Last mile access for rural telephony
- ❑ Share VSAT resource among nearby sites
- ❑ Virtual telecom operator in remote location



COLLABORATION STRATEGY



NEPAD E-Schools SatLink Project

- ❑ I-LINX leads the Inmarsat Consortium for the NEPAD E-Schools Satlink Project

Program will:

- ❑ bring over 600,000 school sites in Africa online.
- ❑ 20-site pilot in progress- each outfitted with connectivity solutions designed by I-LINX
- ❑ Partners: Inmarsat, I-LINX, Televital, AED, Discovery, Intel, CISCO, Microsoft, Mindset

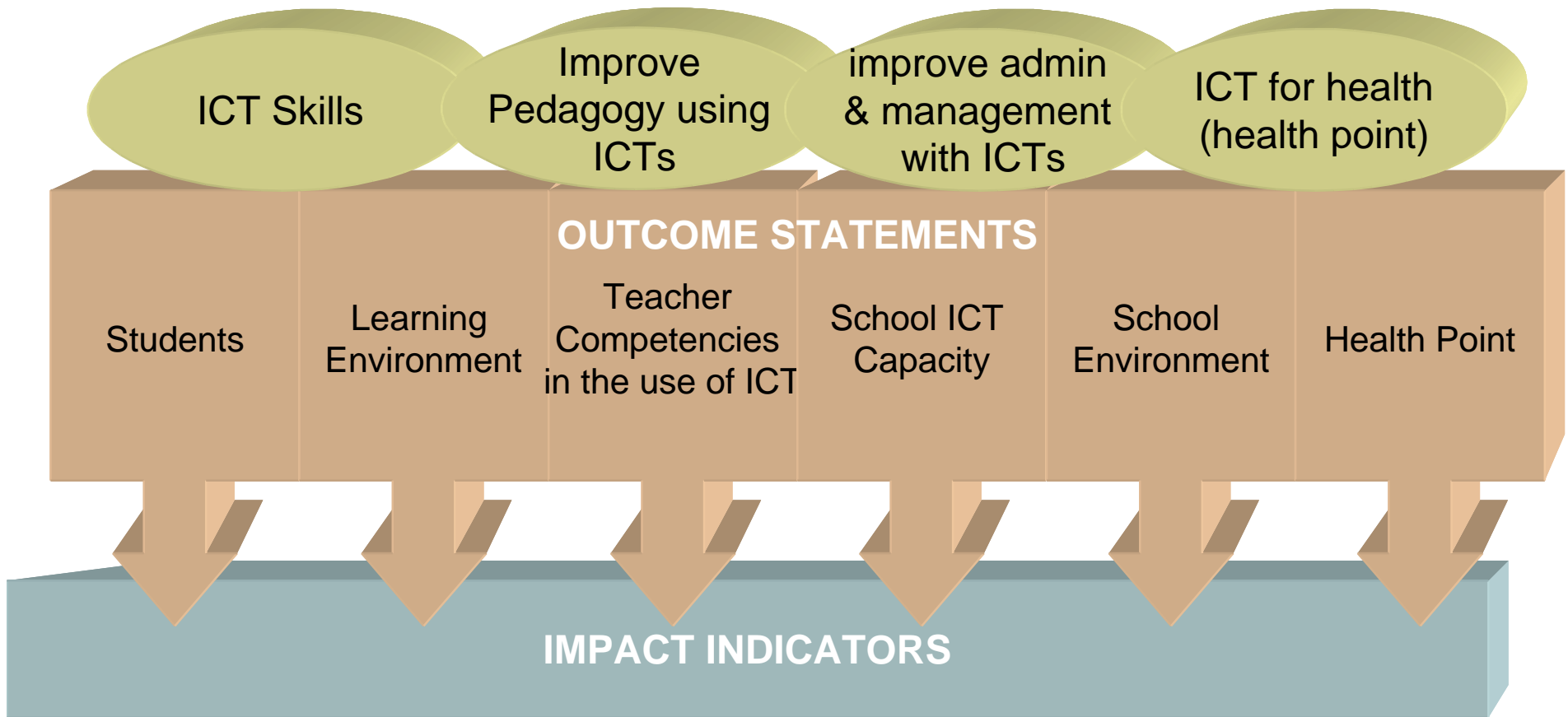
TARGET COUNTRIES: Gabon, Mali, Senegal, Burkina Faso, Cameroon, Rwanda, and Uganda

A HEALTH UNITS AT EACH SCHOOL WILL:

- Provide access to health information to students and teachers via structured health programs
- Promote healthy living and awareness of health issues to students and teachers
- Improve health care delivery to students especially in rural areas, using ICTs

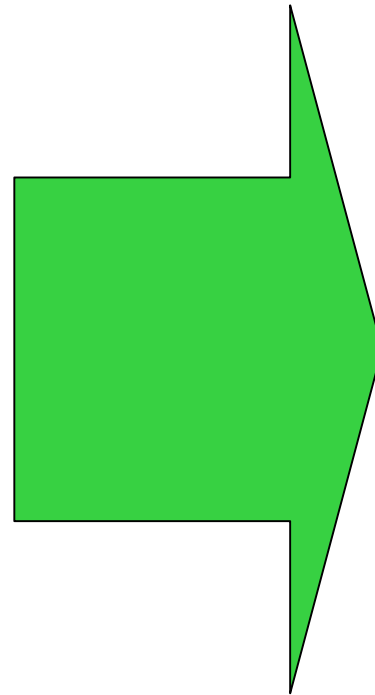


I-LINX LEADS INMARSAT CONSORTIUM FOR NEPAD



LESSONS LEARNED

Short-term Survival
Government Approval
Donor Driven
NGO Ownership
Redundant Efforts
Public Funds
Cost Prohibitive
Urban



Sustainability Strategies
Government Commitment
Community Driven
Local Ownership
Project Coordination
Multi-Stakeholder
Economies of Scale
Rural

Conclusions: TELEMEDICINE AND HIV/AIDS

- ❑ Improved modes of HIV/AIDS telemedicine delivery needed
- ❑ Despite this, few telemedicine programs addressing HIV/AIDS
- ❑ HIV/AIDS is increasing in rural areas / rural connectivity issue
- ❑ Early results from a Tele-HIV/AIDS clinic show promising results
- ❑ Further research is needed in tele-HIV/AIDS care
- ❑ Mobile Medical Vans and Kiosks may enhance scaling-up