Harnessing Rural ICT for Economic Development

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Harnessing Rural ICTs for Economic Development

“Intelligence and motivation are distributed equally around the world, access to opportunity is not...

Paraphrased from Former President Bill Clinton’s closing remarks on the need for tools for Poverty Alleviation
The Clinton Global Initiative September 2006
Inveneo at a Glance

• Our Mission
  • *To empower people and organizations in rural, under-served communities by providing access to affordable, functional and sustainable tools of Information and Communications Technologies (ICT)*

• Our Model
  • Non-for-profit social enterprise serving NGOs, local government projects, and private entities in remote and rural communities in the developing world
  • Integrate proven computing and networking technologies, power solutions and open source software to deliver affordable, functional and sustainable ICT solutions
  • Partner with in-country entrepreneurs for installation and local support

• Impact to Date
  • Founded in September 2004
  • First ICT solution launched in March 2006
  • Currently serving 16 organizations, 56 communities and over 53k people with life-changing ICTs

Over 2 billion people live in remote, rural areas where access to communications is either limited or non-existent*

* ITC-4D Study 2005
A new model for end-to-end solutions that address the full range of challenges facing organizations serving rural communities in the developing world.
Integrate Key Technologies

- **Functional Elements**
  - Computing
  - Networking - Wired/Wireless (WiFi)
  - Internet Access
  - Telephony (VoIP)
  - Open Source Software
  - Power

- **Design Goals for Overall Sustainability**
  - **Low-power.** Cost effective to power by solar, battery, partial grid, generator
  - **Durable.** Solid state; heat, moisture resistant
  - **Reach.** Extend and share reach of Internet/Telephony
  - **Usability.** Simple to use for new users up to mid-level office users
  - **Support.** Easy to maintain by novice administrators
  - **Affordability.** Low overall cost of ownership
Create Sustainable Solutions

**Out-of-the-Box**
End-to-End Communications System
Communications Station
Education Station

**Custom Solutions**
AMD PICs
Intel APCs
Microsoft Servers

Affordability + Functionality/Usability + Support/Service
= Overall Sustainability
Partner with Local ICT Experts

• The ICT Partner Program
  • Partner with existing local ICT entrepreneurs to deliver ICT Solutions for rural and remote communities
  • Recruit, train, certify and support for rural ICT solutions
  • Provide direct access to relevant technology solutions
  • Pilot in Uganda, expansion in 2007

• Objectives
  • Improve overall ICT sustainability for organizations
  • Improve affordability of installation and support (80 - 90% less than US based)
  • Maximize access to relevant ICTs
  • Drives significant revenues for local partners and local economies

Skilled local ICT professionals are the key rural ICT sustainability
Delivering Solutions

For NGOs, local government and private enterprises who use ICTs to build capacity and/or directly make the ICTs available, affordable and relevant to the communities

**Economic Development**
- Local Cooperatives
- Access to markets
- Business tools
- Communication with micro-lenders

**Education**
- Teachers’ materials and training
- Students’ access to technology and the world
- Community learning centers

**Relief**
- Logistics
- Financial management
- Refugee communication and reunification
- Counseling/support

**Agriculture**
- Access to market prices
- Research and education
- Build cooperatives
- Connect to value chain
Summary of Impact to Date*

- 19 projects
- 6 countries; Uganda, Rwanda, Ghana, Mali, Guinea Bissau, Phillipines
- 16 organizations
- 56 communities
- 53,000 people (950 average per community)

Client Focus Areas

- 42% Education
- 16% Agriculture
- 16% Econ Development
- 16% Relief
- 11% Entrepreneur/Cafe
- 5% E-government
- 5% Microfinance

Inveneo’s goal is to support 100s of clients in their efforts to empower over 4000 communities and 4M people with ICT access by 2009

* Projects completed or underway as of 10/06
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For ICTs to affect economic development most effectively in rural areas, they need to be made available, affordable and relevant.

- Availability and affordability
  - Addressing challenging infrastructure issues
  - Tackling difficult operational conditions

- Relevance
  - Providing real value to end users
  - Applications based
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Today’s technologies can be employed for effective use in rural areas

• **Key issues**
  - Unreliable power
  - Dusty, humid and/or hot environments
  - Connectivity to communications infrastructure

• **Newer ICT tools can operate where there is little access to dependable power**
  - Wide range of affordable low power devices becoming more available
    - Thin/low power computers
    - Low power/low cost peripherals
  - Power with locally available/affordable power - solar, generator, grid, etc. (12V systems)
  - Battery banks for constant level of operation

• **Overcoming challenging environment**
  - Use solid state equipment where possible - fanless/diskless
  - Using low-cost replaceable devices; optical mouse, standard or dust resistant keyboards
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Today’s “decentralized” technologies can be employed for effective use in rural areas, cont’d

- **Enabling rural connectivity**
  - Connectivity options are improving everyday
  - Be flexible, and adapt as options grow
  - Connectivity options
    - ISP/PSTN
    - Wireless - CDMA or other)
  - Satellite
  - Extend and share interconnect with low cost wireless (WiFi) up to 100k
  - Create true local broadband network with Wireless (WiFi) via point to point or mesh networks
Action Aid Village Empowerment Program - the ICT Reflect Circle
Rural Uganda
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Addressing challenging operational conditions for ICTs

• **System ownership is important**
  - Own, manage and operate
  - Develop relevant applications for communities needs
  - End user training

• **Administrator environment**
  - Easy to setup, administer and maintain for basic functionality

• **End-User environment**
  - Easy for novice users to improve adoption - set-up or facilitation
  - Multi-user design

• **Support**
  - Locally available for trouble shooting, advanced issues and questions
  - Applications development and expansion
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Availability and affordability is important, but relevance is key to faster adoption.

- **Localization**
  - Locally focused content
  - Functional needs
  - Language

- **Multiple methods of use based on needs**
  - Audio/Video content - specifically for non-literate education
  - Local content (to alleviate bandwidth issues)
  - Internet/Office Functions/Email
  - Telephony

- **Cultivate user generated content for information sharing**
  - Local wiki’s, message boards

- **Open Source Software for cost effective localization and development**
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Application Examples

- **Farmers**
  - Growing techniques
  - Access to market prices
  - Small office functions
  - Ability to coordinate to form cooperatives

- **Entrepreneurs**
  - Business training
  - Information about markets
  - Connectivity to buyers
  - Connectivity to micro-loan organizations
University Opportunities to Impact ICTs for Economic Development

• **ICT Education**
  - Applied courses on technologies and power solutions for rural areas
  - Access to current technologies for hands-on learning
  - Perhaps short courses/adult education?

• **Applications Development**
  - Encourage cross-discipline application development for economic development that make ICT relevant
  - Functional areas - agriculture, micro-enterprise, micro-lending
  - Local content and adaptation (localization)

• **Influencing Policy Setting/Regulations**
  - Supporting liberalized policy to unleash technology to play a stronger role in economic development
  - Deregulating low cost wireless technologies - i.e. WiFi
  - Lowering tariffs on computing equipment
Other Areas of Potential Opportunity for Universities

- **Partnering with organizations operating in rural areas for exchange if ideas/resource sharing**
  - NGOs
  - Agriculture extension centers
  - Micro-credit/banking organizations

- **Mentoring/application sharing with smaller organizations**
  - Growth regional universities and schools with ICT projects supported by private organizations
  - Educational content and mentoring is likely to be needed to aid in sustainability

- **Harnessing growing private sector interest in Africa**
  - Social responsibility programs
  - Market development - education programs research, applications development and pilots

- **Partnering with Universities with emerging focus on developing countries; technology, social entrepreneurship**
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“The local economy is benefiting...farmers are using the technology to call friends in larger cities and obtain market prices for produce before deciding whether the trek to town is worth it...The technology has brought services to people where they can access development information at anytime. In every possible way, it has made life easier".

Jane Nabwire, local IT officer for the Action Aid Project (quoted via email for the New York Times)