Rwanda - Information and Communication Technologies for Elections and Community Access

7/03-7/05

Status: Completed

Background

Many of Rwanda's rural areas and small towns lack affordable and reliable access to ICTs, including telephones, internet, fax, and computers. People, businesses and organizations in these areas are unable to compete effectively in the national or global economy. In addition, there is great potential for improving the democratic reform process using ICTs.

Map: Rwanda

Project Objectives

To address this issue, the dot-ORG/Rwanda project was tasked to establish 2-4 locally owned- and –operated Community Internet Centers (CICs) in small towns and/or rural areas of Rwanda.

dot-ORG was also tasked under this activity to use ICTs to help strengthen Rwanda's election process. This entailed strengthening the capacity and effectiveness of the National Electoral Commission (NEC) of Rwanda through ICTs and related training.

Implementation

Partners

The lead implementer for this project was the Academy for Educational Development (AED). Other implementing partners included dot-ORG subcontractors CODE Incorporated, Geekcorps, Winrock International and Satellife.

Activity 1: Community Internet Centers (CICs)

The first activity focused on creating Community Internet Centers (CICs) in four Rwandan communities. The centers, created in partnership with local entrepreneurs selected via a competitive tender, provide local residents with access to a variety of affordable ICT resources.

In March 2003, via a competitive tender process, dot-ORG selected two applications for establishing CICs, one in the town of Nyanza and the other in the town of Gitarama. In April 2003, these CICs were established. In October 2004, via a competitive selection process, dot-ORG established an "off-grid" in the town of Nyamata. In early 2005, a fourth CIC was established in the town of Nyagatare. The CICs are operated by private entrepreneurs, one of which (the Nyagatare CIC) is owned and operated by a woman.

Activity 2: Support to the National Electoral Commission

The second activity focused on helping the National Electoral Commission of Rwanda to enhance their use of ICT to manage the country's voter list. dot-ORG provided technical assistance, hardware, software, and staff training to support database development and management, assist the Commission to print high-quality voter registration cards, and improve communications between headquarters and the twelve provincial offices.

Photo: Christophe Bazivamo, Executive Secretary of Rwanda's Electoral Commission and Fiacre Mutabaruka, Chief of IT for the Commission.

The project also worked to pilot test the use of hand-held computers (PDAs) to improve the collection, validation and updating of voter data in remote areas.

Results, Impacts & Lessons

Sustainability of a Hybrid Model

The CICs operate as a "hybrid" model whereby they offer a range of fee-based services designed to bring in revenue but also provide social development outcomes. In this respect, the CICs have been offering a range of services and programs, including computer training, language training (in the case of the Nyanza CIC), Internet services, and secretarial services. The CICs have supplemented their revenues by selling beverages. The CICs also have utilized the pre-paid voucher system to bring in clients.

The CICs have been serving a range of clients, ranging from local business people, government officials, students, tourists, and NGO staff.

Anecdotal evidence suggests that the CICs have been making the following types of impacts:

- **Increasing productivity for businesses** (e.g. helping people save time by using email or the telephone to conduct business rather than having to go in person to Kigali or other places);

- **Building the computer literacy of students, local government officials** etc.;

- **Enhancing collaborations** between the private sector, government and the NGO community. For example, the Nyamata CIC operator is working with the NGO World Links to provide computer training for up to fifty teachers (initially in government-run schools supported by the USAID-funded World Links program).

Initial evidence strongly suggests that the CICs are on their way to long-term self-sustainability, that they have made a positive difference in the communities they serve, and that they have supported the Government of Rwanda's (GOR) goal (expressed in its *Vision 2020* plan) to extend high-quality ICTs out to rural areas. In this way, it is hoped that the GOR or other stakeholders might see the CIC model as a useful one in scaling up efforts to extend ICT access to other rural and underserved areas.

Affordable and Reliable Energy

- Initial Configuration

During the time the CICs were designed, Rwanda appeared to have a relatively reliable and affordable supply of energy, including in the towns where the CICs were located. As a result, the CICs were designed along a standard energy consumption configuration – e.g. use of CRT monitors, power backup units, no alternative energy solutions such as solar power. At the time, this configuration was consistent with other public access centers in Rwanda and, given project budgetary constraints, seen as a cost-effective configuration.

- Impact of Power Outages

However, starting in late 2003, Rwanda began to experience serious power outages nationwide, which began to affect the CICs in Nyanza and Gitarama. The CICs had to close frequently which caused a decrease in clients and revenue. The Gitarama CIC purchased a generator to deal with this problem but was now faced with high recurring costs and maintenance of that generator. The challenge was then to find a more effective alternative energy solution that would enable the CICs to operate profitably.

- Energy Solutions

Through support from the dot-ORG Leader Award, Winrock International was tasked with identifying a reliable backup solution and set of potential alternative energy technologies that the CICs could use. Winrock produced a comprehensive report showing different scenarios for CIC energy systems, including the use of a generator only, generator plus battery backup, etc.

Based on the report, dot-ORG/Rwanda implemented, through Winrock and its partner ESDA (based in Nairobi), an activity to provide the CICs with battery backup solutions. These batteries would be connected to the electricity grid and would be recharged while the grid is running. The batteries would then provide emergency power to the CICs when there is a power outage. In August 2004, the battery power backup system equipment was ordered and the system was installed at each CIC in September 2004.

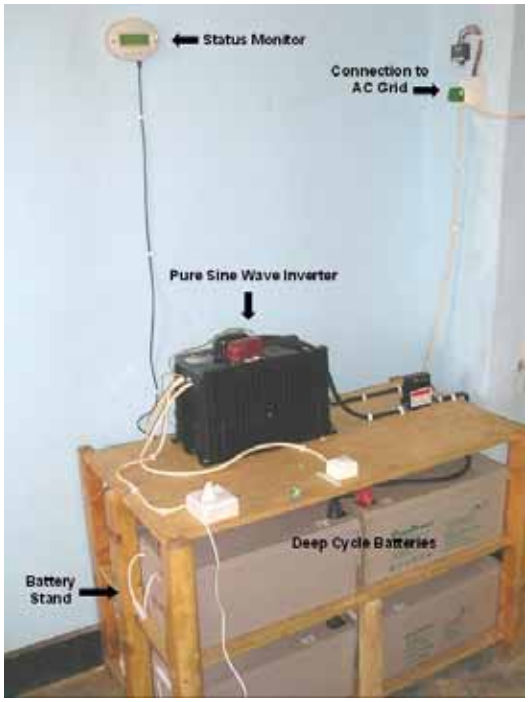

Photo: Battery Back-up Equipment

The backup systems have significantly improved the operations of the CICs, as the CIC final evaluation and Winrock's report on this activity shows.

- Ongoing Maintenance

However, one key issue involves the capacity of the CIC managers to maintain the battery systems effectively. For example, Winrock provided training and a user manual on how the battery systems should be used (e.g. not to drain the batteries below a certain level). It appears that at least one of the operators has not followed these suggestions fully, and the battery system may suffer as a result. Thus, some follow-up training and support might be necessary to ensure integrity of the battery systems.

- ICT Hardware Options

In addition to designing, procuring and implementing back-up power solutions for the

on-grid CICs, Winrock International was also tasked to recommend low-power ICT equipment for the third CIC, established in the town of Nyamata. The Nyamata CIC does not have a generator. However, although the grid power supply in Nyamata is inadequate, it is steady. The town gets uninterrupted power supply for at least eight hours each day (or night). This enables the CIC operator to fully charge the backup batteries. The center has low-power consumption computer equipment, including TFT flat screens (as opposed to CRT screens installed at the other two telecenters). All these factors, combined with the power management training the CIC operator received during a training workshop focused on small and medium enterprise (SME) management, has enabled the Nyamata operator to operate profitably from the beginning.

- Energy & ICT Lessons

In summary, and in retrospect, it is critical to design energy efficient systems right from the beginning, including the need to think about viable alternative energy systems (either as the main power source or as a backup) and to install energy efficient computer equipment. If global energy prices continue to rise, the reliance on alternative energy technologies and low-power computing systems may be ever more important.

The lessons learned from this dot-ORG/Rwanda activity have played an instrumental role in broader analyses about the intersection of ICTs and energy. For example, in collaboration with Winrock, the dot-ORG Leader Award has created an ICT/energy solutions toolkit for development practitioners and operators. The toolkit is based on a comprehensive study by Winrock of ICT/energy issues and solutions. It is designed to provide extensive resources on different types of energy solutions for ICT projects and a decision-making toolkit to help users figure out the costs/benefits of different ICT/energy solutions related to their specific context. This toolkit can be accessed at www.dot-com-alliance.org/Toolkit.htm

Connectivity

Until recently, Rwanda's telecom sector was dominated by the monopoly carrier RwandaTel. Costs for internet connectivity in the CIC sites were prohibitive and reliability and availability was limited. As proposed in the original project description, dot-ORG planned to cope with this issue by partnering with satellite operator ARTEL. In this design, the CICs would be equipped with VSAT. Artel was unable and/or unwilling to partner with dot-ORG for most of the project, and thus the first two CICs were forced to use RwandaTel for their broadband connectivity. Fortunately, it appears that for the two CIC clients at least RwandaTel's prices and services have improved, and thus the two CICs appear able to sustain the recurring costs. For the third and fourth CICs, Artel was able to offer VSAT service, and by all appearances, this service is working out well.

At least two issues may have significant effect on the connectivity environment:

- As with many other telecenters worldwide, the CICs may need to try and "share / resell bandwidth" to other clients, preferably via wireless technologies. Other telecenters are successfully using bandwidth sharing technologies to defray their costs, and thus are essentially acting like mini-Internet Service Providers (ISPs). Experience has shown that the technical ability to share bandwidth is present; the major hurdle appears to be regulatory/policy constraints and/or business management capacity of the operators and commitment by the parties to respect contract provisions.

- With the entrance of the firm Terracom, which is laying down fiber optic networks across the country, perhaps in time the CICs will be able to tap into these networks for a lower cost and with better service/bandwidth capacity.

Business Management Capacity

- Benefits of a Business Approach

It appears that most if not all of the CICs are operating in a sustainable manner and providing a positive impact on the communities they serve. As mentioned above, dot-ORG believes that an important reason for this was the use of a competitive tender process to ensure that well qualified and committed operators were chosen. All of these CIC operators have had prior experience with ICTs and public access centers, and this experience has of course proven helpful.

Photo: Business Services Training in Kigali, Rwanda

- Complementing Existing Capacities

However, like many telecenter operators (and others) these CIC operators expressed a demand for and interest in receiving training in such areas as business management. dot-ORG had already identified the need for and utility of such training for these operators and given the high expressed demand, implemented a business management training activity.

The project conducted a successful training workshop in September 2004 on how to manage small and medium enterprises (SMEs), focusing especially on the management of CICs. The workshop had twelve participants, who included the CICs operators and project staff. The training was conducted through the computer-based learning modules developed by the IFC's SME Toolkit and provided by international consultant James McKenna. The workshop took place at a computer lab at the Kigali Institute of Science, Technology and Management (KIST).

To optimize the training course, the consultant first conducted monitoring and evaluation activities at the three dot-ORG CICs in order to understand their business needs, constraints, services, clients, etc. Based on evaluations of the workshop, the participants found the training very useful, in such areas as marketing, financial management, etc. dot-ORG believes that this training tool is well adapted to the needs of telecenter operators and that a mix of face-to-face and distance learning can be highly effective in building management capacity.

- Ongoing M&E Activities

The dot-ORG project has also worked to build management capacity of the CIC operators through its ongoing monitoring and evaluation activities. In this regard, the field team worked closely with the first three CIC operators on how to monitor and report on the performance of their businesses, through such means as monthly income/expenditure statements. Through the SME-related training and ongoing support from dot-ORG, the CIC operators are also able to monitor their daily energy availability and to relate it to the daily income for the business.

CIC Association - Strength in Numbers

Based on lessons learned from telecenter projects elsewhere, dot-ORG/Rwanda proposed to create an association of CIC operators. Past experience has shown these associations can be helpful in encouraging the exchange of strategies and lessons learned, serving as an advocacy body for policy and regulatory issues (e.g. lobbying for more favorable Internet rates), and providing value-added fee-based services such as training, hosting conferences and exhibitions, etc. dot-ORG emphasized the importance of member dues and long-term self-sustainability strategies when establishing this association.

In February 2004, the association of CIC operators was created. The Association is called the Information and Communications Association of Rwanda (ICTAR) and its members now include other institutions and individuals interested in ICT development in Rwanda. The dot-ORG project helped set up an online discussion forum and a website for the association.

Database Update & Voter cards

The production of the personalized voter cards played an important role in helping the NEC manage its elections more effectively. The NEC had to undertake a significant internal effort to update its databases at the provincial and local level in order to provide the basis for the cards to be printed.

This process involved multiple delays in producing a final updated database, in part because the NEC was so occupied trying to manage several upcoming national elections and referenda. These delays in turn affected the production and shipping schedule of the voter cards.

In short, working with a government or government-related institution like the NEC in a developing country on a large-scale ICT activity requires a high degree of flexibility and adaptability.

Successful PDA Trial

The NEC was enthusiastic about the results of the PDA trial. The NEC's commitment to send its staff for further training on the PDAs at their own cost is also a reassuring sign of the Commission's intent to carry on and expand the activity.

Nonetheless, a relatively sophisticated ICT activity such as the PDAs may require some additional technical assistance in order to ensure the NEC successfully deploys the PDAs and makes them an integral part of the Commission's work. Other issues, such as access to power to keep the PDAs charged, are likely to emerge in rural areas.

Photo: A voter registration officer, field-testing the PDA in an open market in the Kigali area

Moreover, extensive and objective monitoring and evaluation is required to fully understand the costs and benefits of using such a system over more traditional paper-based methods.

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LINKS on the DOT-COM website

- Rwanda Activity Page
- Rwanda Project Final Report

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