Conceived and led by the International Development Research Centre (IDRC), Acacia is part of Canada’s contribution to the African Information Society Initiative (AISI), which was endorsed by African governments as an action framework to build Africa’s information and communication infrastructure.

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How Acacia is helping Africans harness the transformative potential of information and communication technologies
PREPARING THE GROUND

The Information Age. The Knowledge Economy. The Digital Revolution. People may disagree about the best term to describe the way information and communication technologies (ICTs) have transformed work and personal lives in developed countries, but no one disputes the extent and range of the impacts. ICTs have created millions of jobs, transformed how people and organizations use and share information, and permeated into virtually every aspect of our lives.

Acacia has a simple goal: to help Africans leverage the transformative potential of ICTs to achieve equitable, self-directed and sustainable social and economic development. Reaching this goal, however, is complex. Here’s what we and our many African partners have learned about what is needed to reach that goal.

Local innovation and transformation can only occur when national policies and regulations encourage and support them. Africa needs low-cost ICTs that have been developed and tested by African researchers and institutions. Projects that succeed and are self-sustaining are driven by community-defined needs and priorities. Good partnerships are as critical as good technology.

Here’s something else we’ve discovered: when all of these conditions are met, anything is possible.
ABOUT ACACIA

Acacia works with African partners to help countries in sub-Saharan Africa apply information and communication technologies (ICTs) to social and economic development. Acacia is an integrated program of research and demonstration projects that focus on appropriate applications and technologies, infrastructure, policy, and governance. Conceived and led by the International Development Research Centre (IDRC), Acacia is part of Canada’s contribution to the African Information Society Initiative (AISI), which was endorsed by African governments as an action framework to build Africa’s information and communication infrastructure.
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KENYA NATIONAL ICT POLICY DEVELOPMENT

This Acacia project is helping the Government of Kenya work with the private sector and a broad range of community-based organizations to develop, implement, and assess a national ICT policy. This policy will help create jobs, improve productivity, and increase access to education, health care, and government services, especially for disadvantaged individuals and communities.
Cultivating Expertise
Acacia works mostly with poor rural African communities, which are far less likely than urban communities to have access to ICTs. But rural areas are the heart of Africa—close to 70% of Africans live there—and rural communities often show impressive creativity and resolve in solving problems despite severely limited information and services.

Acacia helps rural communities build on their inherent strengths to develop community-based resources and skills that increase their opportunities and options. Africa’s information revolution will be different from that of developed countries in two critical ways.

First, it will be a wireless revolution. In developing countries, land-based telephone lines were built over long periods at enormous cost. Africa has few land lines and cannot afford to extend these significantly in the short term, so jumping directly to mobile and wireless broadband networks makes economic sense. Second, Africa’s information revolution will be driven not by household ICT use—buying computers is far beyond the means of most Africans—but by community facilities, such as telecentres, cybercafes, and community phone services, that offer low-cost access to telephone, computers, computer training, and a range of ICT-based services.

Through Acacia projects, African communities, institutions, and individuals are gaining expertise in developing and applying appropriate wireless technologies and in building sustainable community-based ICT facilities and services. They are shaping their own futures.
SHAPING THE FUTURE: DEVELOPING AN AFRICAN ICT POLICY RESEARCH NETWORK

This project is giving Africans information and tools essential to understanding how ICT policies and regulations can encourage—and sometimes hinder—the spread of ICTs for development in Africa.
With 14% of the world’s population, Africa has only 1.8% of the world’s Internet users.

From 2000 to 2005, Internet use grew 258% in Africa, compared to 159% in the rest of the world.

Most Africans do not have access to land line telephones; as a result, more than 70% of African telephone subscribers use mobile networks.
SUSTAINING GROWTH

The need for development in Africa could not be more pressing: 14% of the world’s people are African, yet the continent’s 54 countries have a total gross domestic product less than Belgium’s. ICTs have the potential to accelerate development in Africa. Giving remote and disadvantaged communities access to ICTs generates economic opportunities, reduces isolation, helps build stronger communities, and creates a means for individuals and communities to continue to learn and grow.

The dozens of small-scale Acacia projects across the continent are remarkably diverse, yet all share a common purpose: to find effective ways to help Africans contribute to and benefit from the global knowledge economy. Some Acacia projects research the potential for new low-cost technologies and approaches that can meet specific local needs in such areas as health, education, and job creation; these pilot projects often serve as models for addressing a broader range of challenges at a national or regional level. Some Acacia projects help African researchers and research networks use ICTs to share ideas and results. Other projects help African governments develop effective ICT policies in collaboration with the private sector and with community-based groups such as cooperatives, labour unions, academic, religious and charitable organizations, and professional associations and foundations. Finally, some Acacia projects help Africans generate content and resources tailored to the specific needs and preferences of Africans.

Africa needs to invest US$11 billion per year to reach its target of 10% of the population having telephone access by 2010.
ABOUT ACACIA:

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OFFERING HOPE TO UGANDAN YOUTH AND WOMEN WAR RETURNEES

This project used ICTs to help rebuild lives devastated by more than a decade of civil war in northern Uganda.
ABOUT ACACIA: Acacia works with African partners to help countries in sub-Saharan Africa apply information and communication technologies (ICTs) to social and economic development. Acacia an integrated program of research and demonstration projects that focus on appropriate applications and technologies, infrastructure, policy, and governance. Conceived and led by the International Development Research Centre (IDRC), Acacia is part of Canada’s contribution to the African Information Society Initiative (AISI), which was endorsed by African governments as an action framework to build Africa’s information and communication infrastructure.

PRIVATIZATION AND DEREGULATION OF THE TELECOMMUNICATIONS SECTOR has brought a large influx of foreign investment into many African countries. However, that investment has also dramatically increased the need for effective regulation to ensure that telecom growth in Africa serves all Africans.
About IDRC The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to help developing countries use science and technology to find practical, long-term solutions to the social, economic, and environmental problems they face. Support is directed toward developing an indigenous research capacity to sustain policies and technologies developing countries need to build healthier, more equitable, and more prosperous societies.
Welcome to Acacia and our newest Acacia InfoBook. Acacia has been IDRC’s flagship ICT for Development program in Africa for a decade. The progress we’ve made reflects the tremendous growth, increased capacity, and imagination that our African partners have brought to their work over the last ten years.

The African information economy has more than left the station. National governments, regional institutions, and close-to-the community civil society organizations no longer ask if ICTs for Development are important—they ask how they can best deploy ICTs in health, education, local government, and the economy. More progress is needed, but access to ICTs, and the skills to deploy them, has increased tremendously over the last decade. Now there is much greater interest in how these dynamic technologies can improve livelihoods, help build a new economic base, and strengthen a growing knowledge-based private sector.

The International Development Research Centre, though its Acacia program, is proud to have worked closely with our African partners through these changes. In the future, we increasingly want to link African ICT activists and applied researchers across regional, linguistic, and sector boundaries. Additionally, we want to leverage the knowledge our partners have gained over the last decade to build scalable and sustainable solutions to African needs and opportunities.

We are delighted that our worldwide programming provides a platform from which our African partners can join global networks and both contribute to and learn from colleagues facing similar challenges in other parts of the developing world. In releasing this Acacia InfoBook, we want to celebrate the successes of our African partners over the last decade. As the Director responsible for ICTs in Development at IDRC, I also want to express my appreciation to our dedicated, capable, and innovative staff throughout our African regional offices.

Rich Fuchs
Director, Information and Communications Technologies for Development
International Development Research Centre

Canada
For poor, disadvantaged African communities to become vibrant and thriving communities, they must have opportunities to learn, to consider alternatives, to share information and experiences. ICTs have the potential to create these opportunities and to do it in unexpected, even surprising, ways.

There are now more than 82 million mobile telephone users in Africa, making it the fastest-growing mobile market in the world—and yet many people predicted that mobile technology would be too expensive to be viable in Africa. Africans are using mobile phones for everything from advertising to delivering health services to getting better prices for agricultural products, to buying and selling credit. Indeed, these diverse uses demonstrate how ICTs can be very effective at channeling African imagination and innovation, rapidly changing how millions of people work and live. Mobile phones are just one of many ICTs with this “disruptive” potential—others include VSAT (Very Small Aperture Terminal) satellites, PDAs (Personal Digital Assistants), and wireless broadband (Wi-Fi and Wi-Max) technology. Acacia works with our many African partners to explore how best to exploit these and other ICTs to improve the lives of individuals and communities. Just as critically, Acacia projects are helping to foster and sustain the conditions that encourage local innovation and empowerment.”

Steve Song
Manager
ICT4D Africa Programs, Acacia
International Development Research Centre
Acacia Helping Africans harness the transformative potential of ICTs
Helping Africans develop national and regional ICT policies and regulations that encourage and support local innovation and transformation.

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) POLICY RESEARCH
Acacia Helping Africans harness the transformative potential of ICTs
SHAPING THE FUTURE: DEVELOPING AN AFRICAN ICT POLICY RESEARCH NETWORK

“Over the last couple of years, RIA has been increasing the research capacity of African institutions while contributing to the body of local knowledge required for formulating effective policies and regulations throughout Africa. There is still a long way to go before the vacuum that existed before we started RIA is filled, and we will take our work further in the next phase of the project.”

Alison Gillwald, Director, Research ICT Africa

THE PROJECT

This project has established an African ICT Policy Research Network in ten African countries coordinated from the LINK Centre, University of Witwatersrand, South Africa. The network will give African researchers, governments, regulators, telecommunications operators, multilateral institutions, development agencies, community organizations, and trade unions the information and analysis they need to develop and implement effective ICT for development policies.

THE DEVELOPMENT GOALS

Most ICT policy research comes from the developed world. Africa’s limited policy research mostly consists of one-off, disconnected projects, giving policy makers and regulators a weak information foundation for setting priorities and making decisions. By creating a focal point for African researchers and institutions focused on ICT policy, and by connecting Africans to international research institutions and networks, the Research ICT Africa (RIA) Network is supporting the development of policies to address African-specific circumstances and needs.
Shape the Future: Developing an African ICT Policy Research Network

The Context

Narrowing the digital divide between Africa and developed countries requires more than a commitment of financial and other resources: it also requires sound policies. But policies are only as good as the information they are based on. Often African policymakers lack even basic information and analysis on ICT use, needs and priorities. This project is creating a means of bringing African researchers and institutions together to develop a rigorous, relevant ICT policy research base for assessing issues and guiding decisions. The RIA network has been built through collaborative research relationships with other African institutions and through international partnerships. Network members collaboratively determine African ICT policy and regulatory research needs and priorities to develop an integrated research agenda. The network collaborates on ICT policy research projects with international networks and institutions, giving African researchers access to critical comparative research as well as an opportunity to share experiences, skills and knowledge with their peers in other regions. The network disseminates its findings through print and online publications, the World Dialogue on Regulation (WDR) Africa Experts Forum conferences, workshops, and an interactive, database-driven African ICT policy research website (www.researchictafrica.net). The network’s research program is the foundation for the LINK Centre Masters and PhD programs in African ICT policy and regulation, the first such programs on the continent.

The Impact

With less than 20% of the world’s population, developed countries have two-thirds of the world’s telephone lines; and they invest six times more per capita in ICT infrastructure than do developing countries. At the same time, African countries have some of the world’s highest ICT access costs. This project is giving Africans the information and tools needed to begin to systematically address these imbalances through informed policy making. The project is achieving this in a number of ways. The LINK Centre has expanded its already internationally recognized expertise as a resource for African policy makers and regulators. It has coordinated and focused policy research in Africa and with leading international networks. It has developed a website that allows researchers to share research materials and results and give and receive feedback. It has increased awareness of policy issues and options by disseminating research results through the website, publications, seminars, workshops, and conferences. It has brought African researchers into the international ICT policy research community, starting with participation in the World Dialogue on Regulation for Network Economies program. And by establishing and drawing on the first African ICT policy Masters and PhD programs, it has trained African researchers who will further expand the range and scope of the network’s expertise.

IDRC’s Project Partners

The LINK Centre

For more information, please contact:

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“In thinking through what ICTs can mean for women’s empowerment in Africa, we will turn to the women who can give us their perspectives in their own words, while being grounded in our contexts and understandings as African researchers.”

Ineke Buskens, GRACE Research Director

THE PROJECT
How do women in Africa use ICTs to improve their lives? What barriers prevent many African women from doing so, and how are they surmounting these barriers? GRACE is a two-year research project that is finding answers to questions like these while building a self-sustaining African gender and ICT research network.

THE DEVELOPMENT GOALS
By providing intensive training and ongoing mentoring and support to the fifteen research teams, this project will encourage the establishment of an African network of gender and ICT researchers that, over time, will expand to include many other individuals and organizations throughout Africa. In turn, this will build a more substantial body of research on how African women access and use ICTs, which will guide policies and help to reduce the obstacles women currently encounter.
**The Context**

“Gender” and “empowerment” are complex concepts that embrace a wide range of experiences for women in Africa. By including multiple regions, methodologies and subjects, GRACE will help to create a deeper understanding of the challenges and opportunities that ICTs present, especially to poor and rural women. Some of the topics that the fifteen projects will explore include: Is the Internet an empowering tool for women entrepreneurs in Cameroon? Can ICTs improve the livelihood of Egyptian women artisans? How have ICTs affected women’s career progression and networking in Kenya? Are ICTs a tool for empowerment for women in rural Mozambique? What impacts have ICTs had on women entrepreneurs in South Africa and Tanzania? Has online learning helped female university students in Zimbabwe? How do women in Africa use ICTs to network? GRACE’s research will be facilitated by a coordination team with extensive experience in qualitative research and training, adult education, and writing and editing. The Association for Progressive Communications (APC)—an international network of organizations focused on using ICTs for peace, human rights, and development—will co-lead the project. The fifteen research teams will be supported through research training and mentoring and will use innovative research instruments including qualitative analysis software, as well as a range of online collaborative tools such as discussion forums, a Web-based project management tool, online chat, Internet telephony, ‘story telling’ and experience-sharing tools such as blogs.

**The Impact**

The project’s research results will be presented as an overview publication in print and online formats, as policy briefs, as articles in peer-reviewed social sciences publications, and as “best practices” guides available through partner organizations and networks. By offering recommendations based on the actual experiences of African women in a range of contexts and circumstances, the results will bring a depth and focus to debates about appropriate methodologies for future research projects, and help shape effective policies for empowering women through ICTs. The project will also serve as a test-bed for evaluating and refining approaches and practices to enable network-driven research in Africa.

**IDRC’s Project Partner**

Association for Progressive Communications (APC)

**For more information, please contact:**

Chat Garcia Ramilo, GRACE Project Leader
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Ineke Buskens, GRACE Research Director
Email: researchforthefuture@telkomsa.net
This project has given the Kenyan government an opportunity to begin the process of self-positioning and serious reflection around the challenge of implementing an ICT driven society in Kenya.”

Dr. G. Odera-Outa, Ministry of Planning and National Development

The Project

An acute lack of infrastructure seriously limits opportunities for using ICTs for economic and social development in Kenya. In remote rural districts, for example, only one in a thousand households has a telephone line; and in 2002, bandwidth for the entire country was 20.5 Mbps uploading and 56.5 Mbps downloading. By comparison, subscribers to high-speed cable Internet service in Canada can access bandwidth of up to 1 Mps uploading and 6 Mbps downloading. The Government of Kenya recognizes the urgent need for a national ICT policy to guide rapid development of the country’s telecommunications and other ICT sectors. Drawing on IDRC’s extensive ICT policy experience in Africa, this two-year project has helped the government develop and implement a national ICT policy in partnership with the full range of government, private sector, and civil society ICT stakeholders.

The Development Goals

The Government of Kenya’s economic blueprint for 2003–2007 notes that the ICT sector “is important to the realization of the required improvement in productivity and empowerment of the citizenry.” A national ICT policy will enable and guide the growth of the country’s ICT sector and integrate the sector into Kenya’s development, helping to create jobs, improve


**Kenya National ICT Policy Development**

productivity, increase access to education, health care, and government services, especially for disadvantaged individuals and communities, and allow communities to make informed decisions about local resource use. The policy process will also create a network of African researchers focused on identifying the most effective ways to apply ICTs to key development issues by linking research results based on experimentation at the community level to national and regional ICT policy-making.

**The Context**

Despite its early lead in the past decade, Kenya’s ICT sector has lagged behind its East African neighbours, Tanzania and Uganda. A key reason for this has been an outmoded regulatory regime and a lack of focus and coordination in addressing ICT challenges and opportunities. The Government of Kenya is committed to removing barriers to ICT development. To guide and co-ordinate its efforts, the government needs a comprehensive policy driven by the input and commitment of all the groups and sectors who will be responsible for turning the policy into reality. This is a crucial point; twice in the recent past, attempts to develop a national ICT policy in Kenya have failed. Besides neglecting to include all public and private sector stakeholders, these earlier processes were not directly linked to other national development plans. Determined to avoid these and other pitfalls, the government asked IDRC to support a consultative, participatory and inclusive process for developing, implementing, and assessing the national ICT policy. In collaboration with the Government of Kenya and Kenyan researchers and organizations, the IDRC team is: identifying the social, technological and institutional structures required for successful ICT policy implementation; helping develop effective implementation strategies and detailed plans; raising ICT awareness through workshops and training for senior Government officials; developing indicators for measuring the progress and impact of the policy’s implementation; and documenting the lessons learned from Kenya’s policy process to help other African countries grappling with similar challenges.

**The Impact**

The stakes for Kenya are high—a third failed attempt at a national ICT policy could inhibit the country’s economic and social development for many years. By contrast, a successful policy will give Kenyans access to new opportunities in every aspect of their lives. This will be especially true for the 80% of Kenyans, many of them poor, who live in rural areas that today have extremely limited access to ICTs, or none at all. The project will also make a major contribution to the body of research on effective ICT policy formulation in Africa, helping to guide and hasten policy development and implementation across the continent.

**IDRC’s Project Partners**

Ministry of Planning and National Development, The Treasury, Kenya

E-Government Directorate, Office of the President, Cabinet Office, Kenya

Kenya Institute for Public Policy Research and Analysis (KIPPRA)

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Florence Etta, Project Coordinator

Kenya National ICT Policy Development

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"I am particularly impressed by this last issue of Chakula…very thought-provoking. The Kenyan debacle is of interest to me as a citizen of that country…and this synopsis is sharp and very useful in terms of a glimpse of where Kenya’s regulatory framework is headed if not checked by independent regulators and by civil society.”

Mercy Wambui, reader of the APC Africa ICT policy newsletter Chakula

**THE PROJECT**

This project is helping civil society organizations (CSOs)—which include community cooperatives and service organizations, labour unions, youth, and women’s organizations, academic, religious, and charitable organizations, non-governmental organizations (NGOs), and professional associations and foundations—play a greater role in shaping ICT policies in Africa. The project has three parallel components. In the first, the Association for Progressive Communications (APC)—an NGO that facilitates and coordinates civil society discussions about information society issues in the developing world—is monitoring and analyzing African ICT policy developments to give CSOs the insights they need to effectively participate in policy development. In the second, the Southern African non-governmental organization network (SANGONeT) is developing and delivering a series of seminars to increase CSO’s understanding of policy issues so they can participate effectively in policy formation. Finally, the South African law firm Lisa Thornton Inc. has led a project in which young lawyers from disadvantaged communities research and write a book recommending ways to make ICT laws in South Africa more equitable.
Increasing the Impact of Civil Society Organizations on ICT Policy Development

The Development Goals
To achieve the full potential of ICTs as a means of improving the social, economic, and cultural lives of individuals and communities, CSOs must work together to build an information society based on principles of transparency, participation, and social and economic justice. But ICT policy issues are complex, and most CSOs have extremely limited resources. By providing access to information, training and other resources, this project will empower Southern African CSOs to collaborate to ensure that social justice concerns are enshrined in national, regional and international ICT policies.

The Context
ICTs, especially the Internet, have hastened globalization—a process that often increases social and economic inequality among and within countries. Yet ICTs can also be powerful tools for giving the disadvantaged access to information and resources that foster their economic and social development. Africa faces considerable challenges in extending ICT access to the poor. Although the importance of increased investment in ICT infrastructure is acknowledged in many African national and regional plans, governments and the private sector typically define how and where ICTs will be used. Civil society is largely left out of these decisions partly because the agendas are set by those who control the ICT sector, partly because there are few opportunities for CSO participation, and partly because many CSOs do not have the knowledge and skills required to participate effectively in policy development. This project is creating information resources and tools that will help level the playing field so that CSOs can more effectively lobby for ICT policies that foster democracy and economic, social, and environmental justice. For example, the results of APC’s policy monitoring and analysis is available through a website containing country reports, research and position papers, and other relevant materials. APC is also coordinating the drafting of a policy framework for CSOs to help guide individual and group efforts. And the book on ICT laws, which will recommend how to improve areas of ICT law that are now unclear or inappropriate, will help influence the adoption and implementation of more equitable laws in South Africa and other African countries.

The Impact
Cumulatively, the three components of this project are raising awareness among CSOs of ICT policy issues, creating powerful information resources for CSOs, and empowering these organizations to participate in the development of ICT policies that ultimately build an information society based on social justice and human rights.

IDRC’s Project Partners
Association for Progressive Communications (APC)
Southern African Non-Governmental Organization Network (SANGONeT)
Lisa Thornton Inc.

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Open and Closed Skies: Satellite Access in Africa

“IDRC’s support for low-cost satellite services in Africa couldn’t have come at a better time—regulators across the continent were earnestly seeking information tools to help expand access to IP-based services. The IDRC report Open and Closed Skies: Satellite Access in Africa and the online atlas have proven invaluable, leading to the creation of regional regulatory guidelines and announcements by national administrations of plans to implement strategic liberalization and deregulation of their satellite sectors.”

David Hartshorn, Secretary General, Global VSAT Forum

The Project
This research project thoroughly assessed barriers and opportunities in African economic and social development for Very Small Aperture Terminal (VSAT) technology. The research surveyed VSAT regulatory frameworks, applications, costs, and technical issues across Africa, as well as assessing alternatives to VSAT and reviewing how VSAT technology has contributed to social and economic development in other developing regions.

The Development Goals
Many African public and private organizations—from banks, stock exchanges, and Internet Service Providers (ISPs) to schools, hospitals, and rural telecentres—already use VSAT technology to deliver business, educational, and health services. This project produced the information, analysis,
and strategies required to deploy VSAT technology much more widely to extend affordable Internet access—and therefore applications such as distance learning, telemedicine, and online government services—to even remote and isolated African communities.

The Context
The Internet offers immense potential for economic and social development in Africa, but today only about one in 150 Africans have Internet access. Major barriers to affordable, universal access include restrictive regulatory frameworks, antiquated infrastructure, high fixed infrastructure costs (especially in rural areas), and low levels of investment. VSAT satellite technology is a promising alternative to traditional fixed-line Internet access and telephone service. Indeed, all of Africa is covered by existing satellites, and VSAT can bring remote access to remote areas quickly at a much lower cost than competing technologies. But for VSAT’s full potential to be achieved in Africa, several conditions must be met. First, policies and regulations need to be liberalized to help, rather than hinder VSAT deployment (VSAT technology is prohibited in some African countries; in others, licensing fees are substantially higher than in developed countries). Second, VSAT must be widely deployed so that economies of scale can lower costs substantially. Third, African policy makers, regulators, service providers, NGOs, and others working to provide low-cost Internet access need a means of sharing information, strategies, and successes. This project—led by the Global VSAT Forum, a non-profit international association of VSAT companies in partnership with the UK’s CATIA (Catalyzing Access to ICTs in Africa) initiative—explored the many factors limiting VSAT deployment in Africa and proposed practical strategies and tactics for overcoming these. The project produced an online database of African VSAT regulatory and policy issues and a publicly available report outlining its findings and recommendations.

The Impact
The project has helped raise awareness, especially amongst policy makers and regulators, on how to create the conditions required for widespread use of VSAT technology by public, private, and civil society organizations in Africa. If the project’s finding are acted upon, policy changes will bring much improved access to Internet-based services to millions of Africans, especially in rural areas that have no prospect of obtaining access through fixed-line technologies. By developing practical strategies for VSAT deployment, the project has helped to increase the success of CATIA, which is training regulators and creating an online service that gives users easy access to licensing requirements in each African country as well as information on other ICT-for-development initiatives in Africa. The project is bringing new opportunities to African satellite operators and other businesses, and helping governments achieve much higher rates of rural Internet connectivity while increasing ICT investment and tax revenues.

IDRC’s Project Partners
Global VSAT Forum
Catalyzing Access to ICTs in Africa (CATIA)

For more information, please contact:
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Website: The project report is available at www.gvf.org/database/regulatoryDB/africaskiesindex.cfm
MEASURING THE DIGITAL GENDER GAP IN FRANCOPHONE AFRICA

“Women are marginalized within the Information Society in many ways. They are far less likely than men to play a role in decision-making about ICTs, to shape ICT content, to acquire ICT training, and to have access to ICT-based services. Projects like this are critical to increasing our understanding of how women are prevented from benefiting from the African Information Society and what steps can be taken to empower them.”

Marie Helene Mottin-Sylla
Coordinator of Gender Research and ICT, ENDA

THE PROJECT

For women in Africa, the digital divide is wider, and more difficult to cross, than it is for men. Women generally have less education and lower incomes than men, are more likely to be illiterate, and participate far less often in household, professional, and political decision-making. This disparity limits women’s options and opportunities for using ICTs to improve their economic and social circumstances. Giving women more and better access to ICTs requires policies and programs that specifically address the barriers that women face, but often the information required to overcome these barriers simply does not exist. This research project has helped change this by developing indicators to measure and monitor the extent of the digital gender gap in six countries of francophone West and Central Africa—Senegal, Mauritania, Mali, Burkina Faso, Cameroon, and Benin.
Measuring the Digital Gender Gap in Francophone Africa

The Development Goals

Without data to quantify the extent of the digital gender gap, identify underlying causes and pinpoint areas of particular concern, policy makers and governments are reluctant to make gender equity a development priority. Data on Africa’s ICT sector is sparse, and what little exists tends to focus on economic and institutional development, with no breakdowns by gender. Drawing on the expertise and experiences of a network of researchers in gender and ICTs in francophone West and Central Africa, this project developed a composite indicator of the gender digital divide based on four key components: women’s participation in decision-making and policy, the availability of gender-sensitive Internet content, women’s ICT skills levels, and women’s access to computers, the Internet and mobile phones.

The Context

This project addressed three fundamental questions. How wide is the gender digital divide in francophone West and Central Africa? What are the social and economic factors that prevent women from taking advantage of ICTs for development to the same degree as men? And what kinds of policies and programs are required to narrow the divide? Researchers from each of the six countries, coordinated by the Gender and ICT Network, gathered and analyzed data to generate eighteen indexes measuring a wide range of factors, from employment and advancement opportunities in the ICT sector, to participation in ICT education and research and development, in political and policy decision-making, and in ICTs-for-development advocacy organizations such as NGOs, labour unions, associations, and networks. Each researcher is affiliated with an organization working on gender and ICT issues in her own country and has expertise in statistical and qualitative research. All were selected because they were able to assemble a national team to identify existing sources of data and conduct surveys to collect new data, and because they had extensive contacts among decision-makers in the ICT sector. The team’s premise was that a useful indicator must meet several criteria: it must be accurate, adaptable to different social and cultural contexts, react quickly to changes, be easily understood, and be a useful guidepost for
setting priorities and taking action. After an initial workshop in Dakar, Senegal, at which the team reached consensus on which indicators could best measure the digital gender gap in all six countries, most of the team’s work was done “virtually” through email and an interactive website.

**The Impact**

The work of the research network will substantially increase awareness in francophone West and Central Africa of gender disparity issues in ICTs for development and how to address them. The network presented its results in a comprehensive research report in an easy to understand format using tables, graphs and illustrations. (It is available in French at http://www.famafrique.org.) The report quantifies and analyzes the extent and causes of the digital gender gap in the six countries and proposes a detailed strategy for reducing the gap. It has been distributed to national and regional policymakers and others who influence gender and ICT policies and programs. The network’s finding will also be presented at the World Summit on the Information Society (WSIS) in Tunis in November 2005 along with other components of an international effort to close the digital gender gap. Ultimately, the network’s indicators and analysis will help guide policies and programs that help women participate more fully in the information economy and information society. Although the project has been completed, the network has no intention of disbanding—in fact, it is now inviting other gender and ICT researchers from the region to join.

**IDRC’s Project Partners**

Environmental Development Action in the Third World (ENDA)
Gender and ICT Network

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ACACIA Helping Africans harness the transformative potential of ICTs
“The Commons-sense project asks a simple question: How can the Internet provide value for citizens by making the knowledge it contains open to all? Our aim is to explore how alternative publishing methods offer both economic and social benefits in Africa by telling stories of how local pioneers have used Creative Commons and open-access models to grow their markets and enhance their value. We want to pinpoint exactly what elements of the information commons model are critical to its success so that Africa can participate in the opportunities offered by the information society.”

Heather Ford, LINK Centre

The Project
How can alternatives to traditional copyright laws make it easier for Africans to produce and access innovative education and training materials? This is the main research question being investigated in a 12-month project led by the Commons-sense program at the University of the Witwatersrand Learning Information Networking and Knowledge (LINK) Centre in South Africa.
“Commons-sense”: Copyright, Education and Innovation in Africa

The Development Goals

Many people in developing countries and in the development community believe that existing copyright and intellectual property laws are a major barrier to using ICTs for social and economic development. They argue that these systems enforce unequal access to critical resources such as medicines, technology, education, and culture. This project will build on the work of other groups—including amongst others the Access to Learning Materials in Southern Africa (A2LM) Project, the Consumer Institute of South Africa, the Consumers International of Asia-Pacific, and the South Centre—that are analyzing how current laws impact the way educational materials are created and accessed in Africa and identifying practical ways that developing countries can bring quality education to the poor and disadvantaged through alternative copyright approaches.

The Context

Most copyright and intellectual property laws were developed by Western countries within a print-based, commercial model of information access. Many individuals and groups have argued that these traditional copyright laws are not appropriate for public educational and other online content because they restrict access to valuable information that is not intended for commercial purposes. In developing countries, these critics contend, applying traditional copyright laws to educational content means that the poor and disadvantaged cannot afford to access it, thereby deepening the division between the information “haves” and “have-nots” and seriously inhibiting the potential of ICTs for development. Many groups are using or proposing alternatives to the traditional copyright model. This project will explore several of these, such as Creative Commons, open access journals, digital libraries, online learning environments, open content, and translation projects. Commons-sense looks for solutions that balance the needs of creators and publishers of educational materials against the needs of users. The Creative Commons, for example, offers a flexible range of protections and freedoms for authors and artists, creating a voluntary “some rights reserved” copyright covering over seven million works to date. Commons-sense has three components. The first is a conceptual “map” of the information commons as it relates to Africa. The map—called The African Information Commons Encyclopedia—discusses issues and concepts and identifies organizations and individuals that are creating, publishing and distributing “open content” resources in Africa and around the world. It is available through an online “wiki” (software that lets users create and edit web pages using any web browser) so that people on the ground can adapt it to reflect their specific projects and issues. The second component was a pan-African conference held in May 2005 that gave open content pioneers an opportunity to share stories of successes and challenges. The third component is multimedia training materials, including case studies of African business models that rely on open access, and modules on developing a copyright policy and using Creative Commons in the developing world.
**The Impact**

This project will raise awareness of alternatives to traditional copyright laws in a number of ways. The project website will be interactive, allowing stakeholders to comment on each phase of the project. The LINK Centre—the leading ICT public policy, regulation, and management educational organization in Southern Africa—will distribute The African Information Commons Encyclopedia to educational practitioners, librarians, policy makers, curriculum developers, and administrators throughout Africa. LINK will inform the general public about the project through regular media releases that will also help African journalists better understand the challenges of copyright and intellectual property rights in education, giving them a basis for representing alternative views when reporting on intellectual property issues. Through the conference and the collaborative nature of the research, the project will connect the often isolated individuals and organizations working on copyright reform in Africa. Ultimately, the project will give African education and training organizations the information and tools they need to develop their own appropriate policies.

**IDRC’s Project Partners**

LINK Centre

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Helping Africans harness the transformative potential of ICTs
This research project will help Kenya develop and implement a successful strategy for bringing affordable ICT access to rural communities in every region of the country.

HELPING KENYA EXTEND ACCESS TO ICTS TO RURAL AREAS

“Kenya may be ranked high in the region in terms of number of people accessing ICTs, but in reality these services are available to relatively few. The Commission believes that universal access to ICT services is key to Kenya’s attainment of the Millennium Development Goals. This project is our launching pad for delivering access to affordable services in all parts of the country.”

Sammy Kinui, former Director General,
Communications Commission of Kenya

THE PROJECT

The Communications Commission of Kenya (CCK), the country’s independent regulator, is committed to bringing affordable ICT access to all Kenyans, especially the 80% who live in rural areas. To fund development of communications infrastructure in rural areas, Kenya will soon establish a Universal Access Fund (UAF) comprised of license fees paid by Kenyan telecommunications operators. To ensure that the UAF is used effectively, the CCK needs answers to fundamental questions, such as: What kind of Universal Access policy is required to guide and direct use of the fund? What is the best way to translate the general goals of the policy into specific actions? What are the needs and priorities of rural communities, and how do they differ from region to region? What is required to make delivery of ICT services to these regions economically viable? This research project will allow the CCK to answer these and many other pertinent questions.
Helping Kenya Extend Access to ICTs to Rural Areas

The Development Goals
As many African countries have learned from painful experience, attempting to improve rural access to ICTs without an appropriate policy and incentive framework is an uphill battle. This project—which replicates a successful IDRC-supported project in Uganda—addresses all aspects of extending ICTs to rural communities, including technical, economic, social, and political considerations. It will give Kenya and Kenyans a real opportunity to leverage ICTs to speed economic and social development in rural areas.

The Context
Kenya began to liberalize and privatize the telecommunications sector in the late-1990s, splitting up the state-owned monopoly Kenya Posts and Telecommunications Corporation into two state-owned entities—Telkom Kenya Limited (TELKOM) and the Postal Corporation of Kenya (POSTA)—and the independent CCK, and allowing competition in the mobile telephone market (mobile operators now have close to a million customers, three times the number of fixed lines operated by TELKOM). Now the government wants to license regional telecommunications companies to bring services to rural areas, with funding coming from the UAF. However, Kenya’s rural regions vary greatly: some are remote and sparsely populated, others are near the fringes of urban areas. This project will allow the CCK, with the help of a highly experienced Canadian consulting company partnered with a Kenyan research institution, to develop a Kenyan Universal Access policy and a UAF operational strategy that draws on the expertise and addresses the needs of all telecommunications sector and rural community stakeholders.

The Impact
Through workshops, international best-practice research, regional audits of telecommunications services and facilities, a baseline rural needs and demand study, regional market assessments, and extensive stakeholder consultations, this project is giving CCK solid data upon which a realistic UA policy and implementation plan can be based. It will also allow the CCK to establish a research unit that will increase the Commission’s ability to plan and implement policies, collect and analyze data, and leverage innovative practices and interventions. Ultimately, the project will help to stimulate investment in rural communications across Kenya.

IDRC’s Project Partners
Communications Commission of Kenya (CCK)
Intelecon Research and Consultancy Ltd.
Summit Strategies Ltd.
Kenya Central Bureau of Statistics

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Assessing the development potential of low-cost ICTs, many of which were developed by African researchers and institutions.
Acacia Helping Africans harness the transformative potential of ICTs
**Free State HIV Therapy Database (ART-HIV)**

“Treating HIV-positive South Africans with anti-retroviral therapy makes unprecedented demands on the public health service. In this project, we are determining if improved information systems can make health service delivery more effective while creating an information culture within the health service.”

*Dr. Chris Seebregts, Project Leader, Medical Research Council, Cape Town*

**The Project**

This project is developing an extensive and multi-purpose database system to collect and manage large volumes of time-based data in the wide-scale roll-out of anti-retroviral therapy (ART) for HIV-positive patients in the Free State province of South Africa. By combining complete, quality-controlled clinical and treatment records with a patient and facility information feedback system, the project will help ensure that ART therapy is administered as effectively as possible. HIV is proliferating in Africa, and the Free State province has South Africa’s fourth highest HIV infection rate. To measure progress of the ART roll-out, the project’s computerized system integrates information collected via handheld and online computers at clinics into a data warehouse capable of multiple management functions. The system makes it possible to monitor the anti-retroviral treatment program at a patient level as well as providing aggregated reports to the national government.
Free State HIV Therapy Database

The Development Goals
The project is extending an electronic communications system and powerful relational database that currently stores personal demographic and treatment profiles on 6,800 HIV-positive patients, many of whom qualify for ART. The information is also being supplemented with laboratory assays for drug resistance. Less than 1% of South Africans who qualify for ART have access to the treatment, but a data warehouse comprising patient and treatment profiles, epidemiological monitoring, and information on drug responses and availability could revolutionize the treatment and lead to more effective policies in South Africa and across the continent.

The Impact
The main project outcome—a dynamic data collection system for HIV and AIDS clinical research and evaluation—will have a positive impact on local AIDS clinics on a number of fronts, including: patient monitoring and clinician feedback; research in molecular epidemiology and biomedical informatics; analysis of the development of antiretroviral resistance; day-to-day clinic management information; and integration of ART intervention into a planned information feedback system. In a broader context, the project will help policy makers gain a comprehensive picture of treatment outcomes in a province with a program representative of large-scale public sector ART treatment in South Africa. This insight will be critical in making treatment programs as effective as possible. Ultimately, the project’s approach could also lead to the development of information systems to improve health care programs and policies addressing the complete range of public health challenges in developing countries.

The Context
HIV-positive patient profiles are not routinely collected in South Africa’s public health system. While large scale ART therapy is desperately needed in South Africa, it is complex. If not carefully regulated, it could result in treatment of limited clinical durability, or even produce a drug-resistant HIV strain. To avoid these problems, clinicians and managers need information systems that help patients understand the consequences of taking potentially interfering medicines or interrupting ART treatment. Without such systems, the once-in-a-lifetime opportunity to effectively combat HIV and AIDS in Africa may be squandered.

IDRC’s Project Partners
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University of Cape Town Lung Institute
Medical Research Council, South Africa
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Uganda Health Information Network (UHIN)

“UHIN has had very encouraging success by empowering health workers with appropriate technology that allows them to more effectively collect, share, and access health information. The potential for the UHIN model to improve the efficiency and effectiveness of Ugandan health care, especially in remote areas, is enormous.”

Dr. Nelson Sewankambo, Board Chair,
Uganda Chartered HealthNet,
Dean, Faculty of Medicine, Makerere University, Uganda

The Project

The Uganda Health Information Network (UHIN) is an innovative, low-bandwidth information network for health workers in Uganda. Using low-cost PDAs (Personal Digital Assistants) and a cellular telephony network, UHIN has cut costs and improved the quality and availability of health information. Its success demonstrates that PDAs can be used to establish an interactive infrastructure in regions serviced only by GSM (Global System for Mobile Communications) telephone networks. UHIN began as a pilot project involving a limited number of health care workers in Mbale and Rakai districts; this project will extend UHIN to a much larger number of health workers in the two districts. It will also test an inexpensive African alternative to the wireless server technology (Wideray Jack) used in the pilot project to connect PDA users into an interactive communications network.
Uganda Health Information Network

The Development Goals
Using technology to more effectively collect and share health information has helped many countries allocate resources more efficiently and, ultimately, give more people access to better quality health care, especially in rural and remote areas. But how can under-resourced countries build health information systems when existing communications services are expensive and of poor quality? This project will help to answer this critical question, as well as helping to determine if easy access to health information in developing countries improves the quality of care that health workers provide.

The Context
Like many other African countries, Uganda has inadequate health resources yet is faced with massive health challenges, especially the spread of HIV-AIDS and malaria. Technology has the potential to allow the Ministry of Health to collect critical health information more effectively and deliver this information along with health education and other resources to workers in the field. UHIN addresses a fundamental question: Is there an affordable, sustainable way to collect and deliver health information over Uganda’s low-bandwidth GSM network, the only pervasive telecommunications infrastructure in the country?

The Impact
To improve health care in under-resourced countries, technology needs to be easy to use and well suited to the needs and preferences of field workers. For UHIN, PDAs meet these criteria—they have become integrated into the daily work regimes of health workers. As well as improving the accuracy and accessibility of health information collected in the field, PDAs are much more cost-effective than paper-based collection methods. UHIN hopes to become a new benchmark for data collection in health systems in Africa, as well as inspiring innovative means for delivering continuing medical education to health workers in remote areas. It is also likely to have impacts beyond health care—network-connected PDAs have dramatic potential for improving data collection across a wide variety of research initiatives in Africa.

IDRC’s Project Partners
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Assessing the Use of PDAs for Household Surveys in Tanzania

“The Ifakara Health Research and Development Centre envisions creating a centre of excellence and innovation in health research and development for regions facing severe resource constraints. One of the cornerstones for this vision is finding ways to leverage inexpensive technology to gather high quality and timely health-related information. By using PDAs to improve efficiency and effectiveness in routine collection of health data, this project is helping us achieve this goal.”

Dr. Eleuther Alphonce Mwageni, Ifakara and Rufij DSS

The Project

How can developing countries ensure that scarce health care resources are used as effectively as possible? One answer is coming from the ground-breaking research of the Tanzanian Essential Health Intervention Programme (TEHIP), a pilot project in which ongoing demographic surveys have helped the government decentralize health planning to focus resources on the diseases that impose the highest burden on society, and for which cost-effective treatments are available. The World Health Organization has cited TEHIP as a powerful means for guiding effective health policy in Africa. However, TEHIP household surveys require time-consuming manual data processing procedures and entail high costs for printing survey forms.

This project is exploring an alternative to manual surveys—using low cost handheld PDAs (Personal Digital Assistants) to capture household and other data directly with electronic data entry forms and then to transmit this data wirelessly to a central database. Conducted for the
the tropical disease research centre, Ifakara, in Rufiji District—about 200 kilometers south of Tanzania’s capital, Dar es Salaam, over rough terrain—this project will compare PDA-based data collection with the manual process, assessing relative costs, data quality, technical viability, and acceptance by survey respondents and field data collectors.

The Development Goals
Debilitating diseases exact a heavy toll on individuals and communities in developing countries. By lowering costs and reducing resource requirements, PDA-based data collection could help make household surveys feasible for more national and regional governments. This in turn would lead to more effective health policies and programs.

The Context
Thanks to rapid technology advances and declining costs, in developed countries PDAs have become an increasingly efficient and valuable tool for health care professionals to capture, store, interpret, and retrieve patient information, and to manage pharmaceutical, financial, logistic, and epidemiological information. This project is assessing the potential of PDAs for cutting costs and improving data quality in major household health surveys in developing countries. The PDA-based approach is being tested against the existing manual data entry approach in the Rufiji Demographic Surveillance System (RDSS), a component of TEHIP initiated in 1998 to give Rufiji District health authorities and the national Ministry of Health the data they need for evidence-based resource allocation. With RDSS data, health care authorities can measure the economic and social impacts of diseases and the effectiveness of existing and new treatments. The RDSS team collects information from about 20,000 households in 31 villages. It began by collecting baseline demographic information including sex, date of birth, and relationship to household head. Since then, it has regularly collected data on births, deaths, pregnancies, marital status changes, migrations in and out of the district, illnesses, and causes of death. To ensure the project will get valid results, RDSS interviewers, using the existing paper-based method, will be paired with “shadow interviewers” who will collect the same data using PDAs. The two methods will then be compared across a wide range of criteria.

The Impact
If the project finds that using PDAs improves results and lowers costs for household survey data collection, this will have several important consequences. Lower costs would make the already highly successful approach pioneered by TEHIP even more compelling for governments in Africa and throughout the developing world. The approach could also be applied to many other household-based surveys in areas outside health care, such as education and economic development. To support these broader uses, the project will produce a detailed implementation guide that will be disseminated to all members of INDEPTH, an international network of demographic survey organizations in developing countries.

IDRC’s Project Partners
Tanzania Essential Health Intervention Programme (TEHIP)

For more information, please contact:
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This evaluation of successes and failures in an innovative pilot project in Cape Town, South Africa, has produced guidelines for delivering effective, low-cost programs that could improve cure rates by using cell phones to remind patients to take their medication.

Using Cell Phones to Improve Treatment of Cape Town Tuberculosis Patients: An Evaluation

“This project is an excellent example of how innovative applications of low-cost ICTs can help surmount barriers to effective delivery of healthcare services in developing countries.”

Teresa Peters, Executive Director, Bridges.org

The Project

Tuberculosis is a debilitating disease that causes about two million deaths annually, almost all in developing countries. Sub-Saharan Africa has been especially hard hit; nine of the 22 countries in the region accounted for 80% of global TB cases in 2002. This project evaluated a pilot project that uses GSM mobile phones to remind TB patients to take their medication. The evaluation focused on a clinic in Cape Town, South Africa, a city with one of the world’s highest TB rates. Standard TB treatment in developing countries is a six- or eight-month course of drugs given using the Directly Observed Therapy System (DOTS), which requires health workers to watch patients ingest the tablets. This method is expensive and places a heavy burden on health workers. Patients must either be observed at their workplaces or go to a clinic five days a week, and for many reasons large numbers of them do not take their medication. When this happens, they may become ill again and spread the disease to others. They must re-start therapy and are at risk of developing multidrug-resistant TB, which is far more difficult and expensive to treat than normal TB. This pilot project evaluation, conducted by the international NGO Bridges.org, was requested by the Cape Town City Health Department, which is looking for effective, lower-cost alternatives to DOTS for treatment of TB and other illnesses, especially HIV/AIDS. The
evaluation concluded that a cell phone-based compliance service has the potential to complement DOTS in Cape Town clinics and beyond, but that for roll-out of the system to be effective, a number of obstacles identified by the evaluation must first be overcome.

The Development Goals

A key target of the United Nation’s Millennium Development Goals is to halve 1990 TB prevalence and deaths rates in developing countries by 2015. By producing guidelines for using the low-cost cell phone-based method to remind patients to adhere to treatment for TB and other diseases, this project could substantially reduce costs while improving the success rate of treatment.

The Context

TB infection is especially prevalent in Cape Town for two reasons. First, the city has high rates of severe poverty and HIV-AIDS infection, both of which make people far more susceptible to TB. Second, the city’s climate combines with HIV-AIDS and poverty to create ideal conditions for spreading the disease; during the cold, wet winters, large numbers of poor people are forced to share small, poorly ventilated wooden shacks. The evaluation focused on a clinic in a disadvantaged Cape Town suburb. Although very few people there have private health care, most have access to cellular phones, especially for relatively inexpensive short message services (SMS) text messages. (In South Africa, there are 13.5 million cell phones compared with 2 million fixed-line phones.) The evaluation, which combined quantitative and qualitative data collection, included three groups: patients, clinic staff, and TB experts and managers at the City of Cape Town Health Directorate. The project team collected information from 221 patient records, background documents and reports, visits to the clinic, and interviews. As well as assessing the cell phone method’s TB treatment completion and cure rates compared to the clinic’s DOT rates, the evaluation looked at all aspects of the project’s planning and implementation to understand how successes could be replicated and failures avoided in future roll-outs.

The Impact

The evaluation addressed a complex range of inter-related factors, but its key finding is simple: the technology works well, but non-technology factors are essential to its success. The pilot project, which was funded and implemented by the Cape Town municipal government, has had several key problems. First, the project did not start with a needs assessment to shape planning and implementation and to get stakeholder buy-in (clinic staff, for example, feel that they are over-worked and so resist what they perceive as an additional burden). Second, there is no project “owner” at the clinic—no one takes responsibility for ensuring that staff make the project a priority and implement it effectively. Third, the project has no built-in mechanism for continually evaluating effectiveness and adapting processes as required to achieve optimal results. Finally, a lack of regular interaction between the Cape Town City Health Department, the company delivering the cell
phone service, and the clinic creates a “disconnect” that compounds the other problems. However, even with these shortcomings, the pilot project’s treatment completion and cure rates are comparable to the clinic’s DOTS rates—which suggests that a more effective implementation would achieve rates substantially higher than the DOTS rates. (An important reason for the limited success of DOTS with TB may be that many African TB patients have the disease as a consequence of having HIV-AIDS, and HIV-AIDS patients often face intense discrimination; so TB patients are extremely reluctant to have health workers visit them in their workplace because their employers will assume they also have HIV-AIDS. The cell phone-based method keeps communications between patients and health workers about medication regimes private.) Because of the potential of the cell phone-based method, Bridges.org recommended that the Cape Town pilot project be re-implemented based on the lessons learned in the evaluation. Cape Town City is now acting on this recommendation, and is also rolling out the cell-phone based method to other clinics in the city. Ultimately, Cape Town could serve as a model for the effective use of the cell phone-based method for TB and other diseases in South Africa and other developing regions in Africa and around the world.

**IDRC’s Project Partner**
Bridges.org

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Using Cell Phones to Improve Treatment of Cape Town Tuberculosis Patients: An Evaluation
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Helping Africans harness the transformative potential of ICTs
I am very proud of the ongoing Fez e-government project. The local community will have easier and enhanced access to relevant administrative information and will benefit from far less waiting time and higher quality for Bureau d’état civil (BEC) services—and the tasks of BEC employees will be streamlined and less repetitive.”

Aloui Titna, President of Agdal District, Fez

THE PROJECT

This project will allow Alakhawyn University in Ifrane, one of the top universities in Morocco, to pilot an e-government initiative in partnership with the local administration of the city of Fez in western Morocco. The initiative will allow local authorities to ICT-enable their offices, giving citizens fast, easy access to a wide range of government services through a fair and transparent process. If successful, the project will serve as a “road map” for rolling out local e-government across Morocco. The project will also address important research questions about the social impact and political implications of e-government. These questions include: Is e-government viable and beneficial in a country with a high rate of illiteracy? Which segments of Moroccan society are most likely to use e-government services? Which are least likely to use them, and why? What political, social and economic strategies can give the greatest number of people access to e-government? How can ICTs have an impact on strategies for designing and delivering government services?
Sustainable E-Government for the City of Fez, Morocco

The Development Goals

Good governance is widely recognized as a key factor for sustainable development. This project will explore how ICTs can help achieve good governance in developing countries by giving citizens universal access to faster, more transparent government services.

The Context

Like many other African countries, Morocco is moving towards decentralized government to improve efficiency and be more responsive to local needs. E-government is an essential part of this strategy, but to date almost all Moroccan government websites are largely informational—they describe a department’s roles and functions, but do not allow citizens to access services electronically. Most government services, such as getting a passport or acquiring the papers required to register to vote, still can only be accessed through government offices in the capital, Rabat, or in big cities like Casablanca. Morocco is a particularly good candidate for wide-scale roll-out of e-government services: by African standards, the country has high rates of telephone and Internet use and relatively high incomes, and the government is already using ICTs to improve program coordination, tax administration, auditing, public investment planning and monitoring, and spending management. (According to the World Bank, ICT use has cut in half the time the government needs to prepare the national budget.) By making simplified processes accessible through GSM phones (widely used in Morocco), Personal Digital Assistants (PDAs), and personal computers, the project will reduce or eliminate bureaucratic delays, give all citizens equal access to services, make administrative procedures more transparent and visible, and use government human resources more efficiently. As well as allowing users to access services and request documents (such as residency certificates, birth certificates, and marital status certificates), the project will also offer general information about Fez (tourism, economy, history, architecture, weather, etc.). To ensure all citizens can access the portal, the Fez Wilaya (local administration) will install free public digital kiosks. To determine which e-government services should be priorities, the Alakhawayn University project team will survey and interview local citizens. By partnering with Laval University to develop software for the portal, the Alakhawayn University team will be able to benefit from Canadian e-government expertise. Alakhawayn University will give technical training to the Fez Wilaya employees to ensure they can maintain the system beyond the two-year span of the project.

The Impact

The project team will document its findings in a detailed road map that will help guide the Government of Morocco in deploying local e-government throughout the country. The team will also share its research findings in articles for peer-reviewed journals and in papers presented at national, regional and international conferences.

IDRC’s Project Partners

Alakhawayn University
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“Recent figures show that African universities (outside of South Africa) pay approximately 100 times more for Internet service than institutions in North America and Europe. Bandwidth is a valuable institutional resource that must be managed, conserved, and shared as effectively as possible.”

Martin Belcher, Senior Program Manager (ICT Training)
International Network for the Availability of Scientific Publications

The Project
Bandwidth Optimization for African Universities (BOAU) aims for widespread improvement in how African research and education institutions manage their Internet bandwidth. Because African universities spend up to 100 times more for access compared to their counterparts in industrialized countries, these institutions have very restricted access to ICTs and online research resources. To begin to close this “digital divide,” the International Network for the Availability of Scientific Publications (INASP) is delivering a series of capacity-building workshops on bandwidth management, as well as developing and publishing freely available training resources on bandwidth management.
Bandwidth Optimization for African Universities

The Development Goals
The project’s chief objective is to help African universities better understand the bandwidth problem and implement strategies for more effective use of current Internet resources, thereby substantially increasing their ability to use the Internet as a research tool. Collaboration with training and Internet experts from a range of organizations helped create high-quality training materials that can be applied to local environments. The knowledge transfer that results could significantly improve bandwidth management and efficiency among several key groups: executive management, senior management, information intermediaries, and IT staff. The end result of this capacity-building will be more widespread use of faster, cheaper Internet access by researchers, and better information for university managers to negotiate effectively with bandwidth providers.

The Impact
Although more effective bandwidth use resulting from this project cannot be accurately gauged in the short term, tools that measure the optimization of bandwidth will be deployed in the evaluation phase. These tools will help determine whether trained staff are implementing what they have learned and how implementation can become more effective. Ultimately, BOAU will help improve African research and higher education by giving universities much better access to Internet research resources, and by enabling research collaboration and information sharing. BOAU training materials will be freely available to any interested university, research institution, or NGO.

The Context
In the developed world, most university students couldn’t imagine conducting a research project without using the Internet to supplement material from the university library. In Africa, most universities have extremely limited library resources, making the Internet even more critical to research, and to higher education generally. Yet the exorbitant cost of bandwidth severely limits the amount of bandwidth available to researchers. Worse still, abuse and inefficient use of bandwidth limit even further what is available to researchers. Although Internet access is critical for research and education, most African universities lack the expertise to cope with extremely bandwidth-intensive spam, viruses, Internet-based email, and online “chat” services.

IDRC’s Project Partners
International Network for the Availability of Scientific Publications (INASP)
Flemish Inter-university Council (VLIR)

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DrumNet: A Fair Deal for Kenyan Smallholder Farmers

“Pride Africa plans to grow the DrumNet network aggressively, linking smallholder farmers to banks, farm input suppliers, and agricultural buyers throughout Kenya, East Africa and eventually the entire continent. The goal is to enable financial, marketing, and information services that directly stimulate wealth creation and the economic integration of small-scale farmers, particularly women farmers, in Africa.”

Johathan Campagne, Executive Director, Pride Africa

The Project

Through the DrumNet pilot project, 500 smallholder farmers in the Kirinyaga District of central Kenya are getting market access and credit and price information that help them produce more crops and sell these at higher prices. Led by Pride Africa, a U.S.-based NGO, DrumNet serves farmers through branch offices that are stand-alone information centres equipped with a computer with Internet connection, a mobile phone, and a whiteboard for displaying market prices. Farmers without access to a mobile phone can consult the whiteboard at the branch offices.
ACACIA HELPING AFRICANS HARNESSES THE TRANSFORMATIVE POTENTIAL OF ICTs

DrumNet: A Fair Deal For Kenyan Smallholder Farmers

The Development Goals
Using low-cost technology, DrumNet is helping shift power in agriculture away from urban “middlemen” who invest nothing in rural communities. Similar programs in neighbouring Uganda and Zambia have shown that if farmers receive fair prices for their produce, they will use the proceeds to improve their livelihoods and increase their incomes. This will eventually help make East African agriculture more efficient and productive, raising incomes and increasing opportunities for farmers and for their communities.

The Context
Small-scale farmers account for 70% of total Kenyan agricultural production and 50% of marketed output, yet these farmers are among the country’s poorest citizens. Many of Kenya’s smallholder farmers, typically working plots of an acre or less, slip into a cycle of deepening poverty. The cycle starts when farmers can’t afford the supplies they need—such as seeds, fertilizers, and equipment—to grow optimal crops. To get what little they manage to grow to markets in towns and cities, they must rely on local brokers and resellers, who typically extract one-quarter of the wholesale value. With low prices for a meagre crop, the farmers cannot afford to invest in supplies to increase the productivity of their next crop. This cycle is aggravated by population growth, forcing the subdivision of farming land into smaller, less economically viable, plots. As a consequence of these and other factors, agriculture’s contribution to Kenya’s GDP has declined alarmingly in recent decades, dropping from 36.6% in 1964–1974 to 26.2% in 1990–95 (according to the National Development Plan 1997–2001). DrumNet aims to reverse declining productivity by eliminating intermediaries and giving farmers access to efficient business processes and economies of scale. DrumNet acts as a broker, charging a small fee to provide credit to farmers, and to link them to businesses that sell agricultural supplies or transport produce to market, to wholesale exporters, and to agricultural extension/training organizations. DrumNet kiosks are managed by an ‘info-broker’, usually from the community, who collects and shares information, helps form farmer groups, and arranges buy and sell deals.

The Impact
Before radio or telephone, Africans used drums to broadcast news within a community or from one village to another. The DrumNet project is also about communicating critical information, in this case empowering smallholder farmers to make better decisions. By combining low-cost technology with an on-the-ground presence in rural communities, DrumNet has the potential to significantly increase agricultural production and reduce poverty while helping to integrate rural communities into Kenya’s economy. The long-term goal of DrumNet is to scale the network first throughout Kenya and then across East Africa.

IDRC’s Project Partner
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Introducing new ICTs into the activities of farmers in rural areas is a vital element in helping them achieve their capacity for ingenuity. The greater the depth and range of agricultural information available to farmers, the greater the quantity and quality of their production.

Father Godfrey Nzamujo, Director, Songhai

**The Project**

Founded in Benin in 1985 by Father Godfrey Nzamujo, Songhai (named after the extensive 15th century Malian Empire in West Africa) is one of Africa’s most successful and well-respected sustainable agriculture institutions. Through its programs of training, production, and research and development, Songhai fosters creativity and innovation with the ultimate goal of establishing the conditions for a stable, prosperous African society. At its training centres in Porto Novo, Savalou, and Parakou, Benin, Songhai has trained thousands of young people in a wide range of sustainable agriculture techniques. These Songhai alumni went on to establish more than 250 farms in Benin and other West African countries, yet their impact was limited because they lacked a way to share information amongst themselves and with others. And Songhai information resources and training were only available to the relatively few able to come to its centres. This project used the Songhai Website to extend and connect the Songhai community in two ways: by offering training via distance learning multi-media courses, and by beginning to develop new capabilities such as Web mail, discussion forums, teleconferencing, and an electronic...
Creating a Sustainable Agriculture Network in West Africa

The Context

Millions of rural Africans have become trapped in a cycle of poverty-induced environmental damage that leads to steadily declining agricultural productivity and hence deeper poverty. As a result, Africa accounts for just 1.8% of world trade. Songhai is helping Africans find ways to make agriculture more productive and sustainable by focusing on improving crop production, fish farming, and livestock production. By fostering entrepreneurship and better management practices, Songhai aims to increase Africa’s role in the global economy while making African society and institutions more stable. ICTs play an increasingly important role in this work. In 1999, Songhai set up community telecentres in three Benin towns—Porto Novo, Savalou, and Parakou—that also have Songhai centres. The telecentres gave many people their first opportunity to use ICTs for accessing knowledge, sharing information, and acquiring skills. Their popularity—Songhai soon had to expand both bandwidth and services—made it evident that ICTs had the potential to expand Songhai influence across Benin and into neighbouring countries. This project focused on making the Songhai website a focal point and resource centre for an extended Songhai community. Its largest component was creating web-based distance learning courses on topics such as business management, crop production, livestock production, aquaculture, and marketing. Consultants worked with Songhai trainers—most of whom had little previous exposure to ITCs—to transfer computer, Internet and multimedia/video production.

The Development Goals

By making Songhai sustainable agriculture information resources and training available to anyone with access to a computer and by beginning to create a Songhai virtual community, this project has empowered more Africans to effectively harness the economic and social potential of the continent. This in turn helps Africans participate more fully and equally in the global economy.
skills, and then to test the distance learning modules with users. The modules were also adapted to CD-ROM format to make the courses available to those lacking Internet access. The second component of the project was developing web-based services such as web mail, discussion forums, teleconferencing and an electronic market to support a virtual Songhai community. These services are gradually being rolled out on the Songhai website.

THE IMPACT

This project has been critical in creating a culture of information and experience-sharing within the Songhai community—a culture that is essential to inspiring and supporting creativity and initiative. It allowed Songhai’s trainers and other staff to gain skills in developing multimedia content for distance education, and laid the foundation for deploying a range of collaborative tools on the Songhai website. It also introduced farmers and their communities to the tangible benefits of using ICTs for development.

IDRC’S PROJECT PARTNERS

Songhai

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“Not only does this technology strengthen the positions of farmers and fishermen when they negotiate crop prices with buyers, it saves them time and helps them make better business decisions. In fact, it has enabled new types of businesses in Senegal.”

Daniel Annerose, Chief Executive Officer, Manobi

THE PROJECT
This pilot project has increased the incomes of Senegalese small-scale farmers and fishermen by giving them reliable, up-to-date information on market prices using cell phones and Internet technology. With the service, producers can check prices and demand in various markets to determine where they will get the best offer.

THE DEVELOPMENT GOALS
As well as increasing the incomes of small-scale rural producers, this pilot project has demonstrated the technical and economic viability of using mobile phone applications in underserviced rural areas to create services that help communities achieve their development goals.

THE CONTEXT
About 70% of Senegal’s population lives in rural areas where most people make their living from farming and fishing. Like many developing countries, Senegal in recent decades has deregulated and liberalized its economy to adapt to the demands of globalization. In rural areas, this has brought the gradual disappearance of government mechanisms that managed production and prices. Small-scale farmers and fishermen have had great difficulty adapting to a purely
Using ICTs to Increase Incomes for Farmers and Fishermen in Senegal

market-driven economy, and rural incomes have dropped. One of the key challenges is that farmers and fishermen have no way of determining market prices before they sell their crop or catch to middlemen, many of whom take advantage of this ignorance and offer prices much lower than market prices. In the first phase of this pilot project, led by the private telecommunications firm Manobi, the fruit and vegetable farmers of Niayes—a west Senegal market gardening area—were able to increase their prices by over 50% using a mobile phone-based market price system. This success, coupled with interest from the Government of Senegal, encouraged Manobi and its partners to extend the system to fishing communities in the Senegalese capital, Dakar, and the nearby town of Kayar. As well as giving fishermen price information, this system increases their safety through up-to-date weather reports and the ability to log departure time and estimated time of return so that local fishing unions can be alerted if a fishing boat fails to return on time. For both systems, data collectors record prices in various markets and then upload these to a central database by dialing in via mobile phone to a wireless server. Farmers and fishermen use their mobile phones to check prices to determine where they will get the best offer for their crop or catch. Many of these producers are illiterate, so the system uses simple icons to represent fruits and vegetables and fish species. To access the service, producers must have a WAP-enabled cell phone (available locally for $90) and pay a low per-minute rate for wireless data transfers.

The Impact
By giving small-scale producers more negotiating power individually and collectively, the pilot project allowed them to get higher prices and to sell more of their crop or catch. (Without the system, for example, up to 30% of a fisherman’s catch spoils while he tries to find a buyer.) Just as critically, it demonstrated the potential for low-cost ICTs to help alleviate rural poverty by creating more efficient markets driven by reliable information and transparent processes. It also demonstrated that rural markets can be economically viable for telecommunications companies that offer innovative applications targeted to local development needs. Currently, Manobi and its government and private sector partners are developing a detailed plan for making the service available to farmers and fishermen across Senegal.

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“Linking farmers to key information and to service providers allows them to make better decisions that in turn lead to higher agricultural productivity and better livelihoods and long-term well-being for farming communities.”

Clare Kyasiimire, Project Manager

The African Highlands Initiative (AHI) is a consortium of East and Central African and international research organizations that partner with local communities, governments, and development agencies to improve crop yields and reverse environmental degradation in the intensively cultivated highlands of East and Central Africa. This is the second phase of the Acacia AHI project. In the first, three telecentres were established in Kabale district of Uganda. The second phase is leveraging the telecentres to achieve three key goals: design and test an ICT-based sustainable agriculture information system that helps rural communities manage and apply information on improving agricultural production, developing agricultural enterprises, and managing natural resources sustainably; use new and emerging ICTs to create and nurture partnerships between rural communities and government and policy organizations and NGOs; and monitor and document the results of the project to ensure lessons learned can be widely shared.

The Development Goals
This project is developing a system that gives rural farmers access to the information and resources they need to successfully introduce sustainable agricultural techniques into their communities.
Supporting Sustainable Agriculture in the East and Central African Highlands

The Context
The highlands of Eastern and Central Africa are the region’s principal source of staple foods, export crops, forest products, and jobs but the people and land face intense pressures. Steep slopes, degraded soils, unreliable rainfall, and invading pests and diseases combine with over-cultivation in a cycle of environmental damage that in turn leads to deforestation, soil erosion, water shortages, falling crop yields, and deepening poverty. The region is densely populated (100–200 people per square kilometre), and rapid population growth requires scarce land to be continually subdivided into small, fragmented farms (an average of 0.25–1.0 hectare for a family of six). This project is using AHI’s telecentre-based network to deliver information on an innovative, integrated natural resource management approach that involves local farmers and communities in identifying problems, setting priorities, allocating resources, and monitoring and evaluating results. Led by the African Highlands Initiative in collaboration with a research team—Win 26 Action Research Peer Learning Group from Makerere University—the project is helping AHI more effectively deliver information to communities on improving soil and water management, increasing livestock productivity, and increasing the diversity of crops, among other topics. The project is testing and comparing a range of information approaches and technologies, including drama, pamphlets, demonstrations, radio, mobile telephones, “simputers” (a low-cost portable alternative to personal computers developed in India), and Personal Digital Assistants (PDAs), with an emphasis on tailoring content and approaches to the differing needs of men, women, and youth. The project’s partnership building component is using the telecentre information system to link the full range of AHI partners and beneficiaries, including national and international research organizations and networks, civil society organizations, policy makers, local authorities, community organizations, and individual farmers.

The Impact
By helping farmers to understand the consequences of current practices and offering sustainable alternatives, the project is giving them a way to increase yields and increase cash crop options while maintaining the integrity of the natural systems they depend on. It is helping local communities and groups to develop expertise in effectively collecting, packaging, and distributing development information tailored to local needs and preferences. By using the AHI telecentres as focal points for sustainable agriculture and community development, the project demonstrates that telecentres can be trading centres, meeting points, classrooms, laboratories—in fact, they can be whatever a local community wants them to be. And by connecting local communities to institutions such as national agricultural research facilities, development agencies, and government planning and policy making departments, the project could help ensure that regional and national policies are aligned with local initiatives.

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Acacia Helping Africans harness the transformative potential of ICTs
Developing ICT applications, content and resources tailored to the specific needs and preferences of Africans.

RELEVANCE in an AFRICAN CONTEXT
Helping Africans harness the transformative potential of ICTs
African Virtual Open Initiatives and Resources (AVOIR)

“By bringing together the knowledge and skills scattered among many institutions, AVOIR is building capacity for creating world-class software in Africa. It is this synergy that is the strength of AVOIR; collaboration is the vehicle with which to build a growing pool of software engineering talent to contribute to development. We produce excellent software in the process of this capacity building, which is of course a useful output.”

Professor Derek Keats, Executive Director,
Information & Communication Services
University of the Western Cape, Bellville, South Africa

The Project
AVOIR is an ambitious effort to bring together software developers, educational specialists and others in Africa to build a knowledge network capable of designing, developing, and supporting Free and Open Source Software (FOSS) that can help address African development issues and create African business opportunities. AVOIR is initially focusing on software for education, but over time will develop expertise and best practices in FOSS development and deployment that will be applicable in many sectors. Nine African universities are currently participating in AVOIR.
African Virtual Open Initiatives and Resources (AVOIR)

The Development Goals
By creating a body of FOSS best practices and a community of FOSS developers, AVOIR will lead to the development of collaborative, Internet-based applications for education, health care and government services. These may in turn lead to business opportunities both for universities and African technology services companies. At the same time, a research project will quantify and analyze AVOIR’s growth and development to help others create similar self-sustaining networks of innovation in developing regions.

The Context
Proprietary software can be prohibitively expensive for African universities to buy and maintain, and most lack the internal resources to build their own custom applications. AVOIR harnesses a considerable pool of FOSS expertise both within Africa and beyond, enabling all participating institutions to contribute to projects that combine expertise and experience to produce African solutions developed by and for Africans. At the same time, AVOIR is an opportunity to explore the feasibility of creating self-sustaining knowledge networks for development, guided by three core principles. First, the networks should grow through their own processes (for example, by creating opportunities for student projects). Second, each participating institution should be fully capable of bringing other institutions into the network (for example, by providing training and support). Finally, the network should gradually become economically sustainable, although initially it will require research funding.

The Impact
The first impact of AVOIR is a second-generation FOSS online learning system that will give universities in Africa and other developing regions a powerful tool for harnessing the educational potential of the Internet. This is a comprehensive system built on a modular platform that makes it easy to add additional modules. AVOIR’s longer-term impact will be even more critical. It will expose African software developers to best practices and the latest software development techniques from commercial software engineering, helping them acquire leading edge skills and expertise. University students, including those in short-term training programmes, will get hands-on experience with industry standard practices, as well as learning from the source code created through AVOIR. Africa’s FOSS talent pool will grow and deepen, and will be able to play a larger role in leveraging ICTs for African development. And the research component of the project will help guide the development of similar networks of researchers and content creators focused on development challenges.

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Universite Cheikh Anta Diop de Dakar, Senegal
Jomo Kenyatta University of Agriculture and Technology, Kenya
University of Nairobi, Kenya
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This is a timely and exciting project that has the potential to speed the evolution and increase the impact of information technology in Africa.”

Don Osborn, Bisharat

The Project

Almost all software is developed in English and a few other Western languages. As a result, most Africans cannot access software in their mother tongue. Educated urban Africans have the option of using English, French, or Portuguese, the pan-African languages imposed by colonialism. In rural areas, where most Africans live, very few people speak European languages. This project aims ultimately to make ICTs more accessible and relevant to rural Africans through localization—the adaptation to local languages, cultures and preferences—of computer software and web content. This will in turn make technology a much more powerful tool for social and economic development.

The Development Goals

By speeding the localization of software and web content in African languages and Arabic, this project will lower the barriers to ICT adoption, especially in rural areas. The three-year project has three main components: an initial survey of the current state of localization in Africa, followed up two years later by a survey to measure progress; a capacity-building workshop in which African and other experts will exchange information and identify areas for collaboration; and a web-based database of localization resources for software developers and content authors. The project is led and managed respectively by two NGOs: Bisharat, an NGO supporting the use of African languages in software and web content through research, advocacy, and networking;
and, Kabissa.org, an NGO dedicated to helping African civil society organizations put ICTs to work for the benefit of the people they serve.

**The Context**

Successful development projects harness and supplement local skills and knowledge, rather than trying to replace them. Much of a peoples’ cultural and intellectual heritage, especially in rural areas, is contained within and expressed through the local language. Limiting people to the use of ICTs in a foreign language tends to exacerbate the “digital divide”, makes ICT adoption long, difficult, and expensive, and impoverishes local cultures. But localizing software and Internet content presents complex challenges in Africa. A major one is scope: there are an estimated 2,000 African languages. As a consequence of population movements and the imposition of arbitrary administrative boundaries during the colonial era, most countries have no majority language—in some countries, dozens or even hundreds of languages and dialects are spoken. In Arabic, a great deal of adapted software and content already exists, but very little has been localized to the needs and culture of rural Africans. The isolation of most African localization experts compounds these problems: they have no means of exchanging information or collaborating with colleagues.

**The Impact**

By capitalizing on increasing worldwide interest and expertise in localization, especially within the FOSS movement, the project is expected to increase the impact of ICTs on development in Africa. The initial survey of Africa’s current localization status will guide strategies and serve as a baseline for measuring progress in the follow-up survey. The workshop will give the African localization community an opportunity to build capacity through sharing information and establishing new networks and partnerships. And the resource website will be a focal point for increased information sharing and collaboration that will increase the impact and visibility of localization in Africa.

**IDRC’s Project Partners**

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Refurbished Computers in SchoolNet South Africa—A Comparative Study

“Setting up a successful school network is a very complex task and many projects in the past were not successful for reasons that were not solely to do with whether the computers were new or refurbished. This study provides guidelines for successfully steering through all the technical and organizational complexities of school networking projects in Africa.”

Janet Thomson, Acting CEO, SchoolNet South Africa

The Project

In secondary schools in developed countries, computers and Internet access are an integral part of how students learn. An Internet-enabled network in every school is a key goal of the South African government, which recognizes that ICTs are a powerful means of giving young people, especially in poor rural areas, access to information and opportunities. One of the ways that African countries have attempted to affordably bring computers and the Internet to secondary schools is to use refurbished computers, which are considerably less expensive than new ones. But some projects using refurbished computers have had serious difficulties, leading to a widespread perception that the used computers were the cause of the failure. This project compared two computers-for-schools programs in South Africa, one using only new computers and one using a mix of new and refurbished computers, in order to answer three key questions: Are refurbished computers suitable for schools? Were the project processes adequate? Is a more systematic approach required for such projects?
Refurbished Computers in SchoolNet South Africa—A Comparative Study

The Development Goals
The goal of the project was to identify and correct what went wrong with the two projects, in the process developing guidelines and practices to help groups and individual schools avoid problems in future projects. The guidelines went far beyond recommendations about optimal use of refurbished computers, providing guidelines on other key issues including assessing a school’s readiness for computers, selecting the network architecture and type of Internet access, testing to ensure network availability, creating an affordable and effective technical support model, and fundraising approaches.

The Context
In 2000, SchoolNet South Africa (SNSA) launched two computer-for-schools projects targeted to poor rural areas. The Telkom SuperCentres Project, funded by the Telkom Foundation, covered 100 schools and used only new computers, while the Thintana i-Learn Project, funded by the Thintana Foundation, covered 200 schools and used a mix of new and refurbished computers. The i-Learn Project in particular did not fulfill expectations; indeed, many schools were left with dysfunctional computer networks, incomplete educator training and much disappointment and disillusionment, blamed mostly on the use of refurbished computers. This research project, led by two computer engineering consultants, thoroughly assessed what went wrong with the projects through interviews with project participants, government officials, donor institutions, industry experts and others. The consultants concluded that refurbished computers per se were not the problem with i-Learn; rather, the problem was how these computers were selected, installed and supported. In fact, the combination of school unreadiness and inadequate planning and support were the root causes of virtually all problems that both the i-Learn and Telkom SuperCentres projects encountered. The project team developed guidelines and recommendations to help SNSA and other organizations in Africa and other developing regions bring computers networks to schools in a technically and financially sustainable way.

The Impact
SNSA and the 14 other organizations from throughout Africa that participated in the project now have increased capacity to implement, support and manage sustainable school networking programs using refurbished computers in even the most disadvantaged areas. Although developed within an African context, the research team’s guidelines will be useful for school networking programs in developing regions worldwide.

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Open Source versus Proprietary Software in an African Context

“Usually comparison reports are biased because they are funded by one of the interested parties. This report gives a good analysis of both the strengths and weaknesses of both software models without taking any particular side. It is a thorough, detailed and objective piece of research.”

Vicki Shaw, CEO and Trustee, Shuttleworth Foundation

The Project

Most Africans will never own a computer; their access to computers and other ICTs comes through work, school, or community resources such as libraries and telecentres. One of the key decisions that operators of these public access centres have to make is whether to use open source or proprietary software. On the surface, open source software, which requires no licensing fees and runs on older computers, looks like the obvious choice over proprietary software from companies such as Microsoft. This project examined the full costs and benefits of open source versus proprietary software, focusing on 121 public-access computer labs in Namibia, South Africa and Uganda. The final report (www.bridges.org/software_comparison/index.html) is the first comprehensive analysis of software choices for African public-access organizations. The research was led by bridges.org and supported by collaborating partners SchoolNet Africa, the International Development Research Centre (IDRC) and the Open Society Institute (OSI). An advisory group, comprising experts from both sides of the open source vs. proprietary debate, reviewed project documents (methodology, report drafts, etc.), providing feedback and additional resources.
Open Source versus Proprietary Software in an African Context

The Development Goals

By fully examining costs and benefits, this study will help managers in schools and telecentres make more informed software choices that take into account the strengths and weaknesses of using open source and proprietary software in an African context.

The Context

In developed countries, Microsoft Windows and Microsoft Office are the de facto standards for personal and business computing software, with close to 90% market share. But in the developing world, Microsoft products are typically viewed as too expensive for telecentres and other public ICT access centres. Besides, critics of proprietary software argue, Africans should be developing their own open source software solutions to reduce dependence on donor countries and to create economic opportunities for Africans. In fact, the issues of software costs and benefits are complex. For example, a key benefit of using ICTs for development is that they give the disadvantaged a means of acquiring valuable computer skills. But will people who know only open source software find there is no market for their skills, since almost all businesses use Microsoft products? Similarly, some studies have found that the initial price of software is less than 10% of the total cost of ownership, the other 90% coming from installation, support, maintenance, administration and downtime. Microsoft dedicates vast resources to software support; are there sufficient Africans resources to support and maintain open source software applications? If not, how can African countries develop these capabilities? This project investigated these critical questions, providing advice and guidelines for making informed choices.

The Impact

This study will help guide policies and practices across Africa and in other developing regions. It will serve as a catalyst for further sharing of information and experiences that will give computer lab owners and administrators a factual basis for determining the best software options for their specific needs and goals. Ultimately, it will help ensure that as many Africans as possible derive as much benefit as possible from access to ICTs.

IDRC’s Project Partners

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SchoolNet Africa
Open Society Institute
SchoolNet South Africa
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Offering Hope to Ugandan Youth and Women War Returnees

“The project achieved 90% of its goal by helping to make war-affected youths and women more economically productive and by helping to reintegrate them into their communities. It showed that ICTs and information are key to sustainable development.”

Jumar Okee, Learning Centre Coordinator

The Project

This project has given 100 young people and 100 women who were displaced or abducted during Uganda’s civil war a way to re-integrate into their communities through acquiring new skills and finding new ways of making a living. It focused on using ICTs to make existing economic activities more effective, to deliver skills training, to give participants access to trauma counseling, and to increase business and marketing opportunities. The project was based at the main community learning centre in Lira Town, with outreach to another community centre at Loro. Led by Canadian Physicians for Aid and Relief (CPAR), which has been working on integrated development and emergency relief in northern Uganda since 1992, the project was developed after field visits and extensive consultations with individuals and community groups in Lira and Apac districts.
Offering Hope to Ugandan Youth and Women War Returnees

The Development Goals
As well as helping 200 women and young people, this program increased understanding of how ICTs can help marginalized groups become full participants in the economic and social lives of their communities. Participants were exposed to information on starting a small-scale enterprise, improving agricultural practices, maintaining good health, protecting water quality, managing natural resources, and resolving conflicts. The project documented ways for communities to make the transformation from violent conflict to peace and sustainable development.

The Impact
As well as increasing economic opportunities for the war-return, this project has made communities in Lira district more aware of and sensitive to the rights and needs of the war-affected. For example, performing troupes of war-affected youth and women are now invited to present plays and songs at community functions. Indeed, the success of the project has led to other organizations working with war-affected groups in northern Uganda to adopt ICTs to make their reintegration services more effective. Ultimately, the project may serve as a model for effective intervention in other war-torn parts of the developing world.

The Context
By the end of the 1980s, a long and bitter civil war in Uganda had left economic, social and personal devastation in its wake. In the past fifteen years, the country has made considerable economic progress, consistently achieving annual GNP growth substantially above the African average. However, this growth has bypassed northern Uganda, the region where fighting was most concentrated during the civil war. As a result, there is little economic or social infrastructure, and the region’s difficulties are increased by its isolation from the main markets of Uganda and neighbouring countries. As a consequence, unemployment, malnutrition, poverty, and preventable diseases remain widespread, and in many areas have increased. By focusing on women and young people displaced or abducted during the war—of whom there are an estimated 75,000—this project helped to rebuild communities by empowering the most vulnerable of the vulnerable.

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Seneegal’s Popular Information Systems: Assessing their Impact on Local Governance and Development

“The Popular Information System (SIP) makes it possible for local authorities to adopt ICTs to improve their productivity and communications. The accessibility of SIPs also helps individuals, groups and communities take an active part in local development.”

Mamadou Gaye, Director of the Popular Information System

The Project

Popular Information Systems (SIPs, from the French Systèmes d’Informations Populaires) help Senegalese communities make informed decisions about local issues, while also offering young Senegalese an opportunity to acquire skills in information management and database and website development. Since the establishment of the first SIP in 1997, the network has expanded to include twelve cities and eight rural areas in Senegal. It draws on Internet content and resources from a broad range of partner organizations, including government departments and NGOs within Senegal and in other African countries. This research project set out to assess the current contribution and potential of SIPs to improve local governance and foster sustainable development throughout Senegal.
Senegal’s Popular Information Systems: Assessing their Impact on Local Government and Development

The Development Goals
Funded initially by the government of Holland, SIPs were launched in 1997 by Senegal’s Center of Resources for the Emergence of Social Participation (CRESP) in partnership with the United Nations Institute for Training and Research (UNITAR). SIPs are one of many initiatives through which the Government of Senegal is decentralizing decision-making to local communities in areas such as health care, education and resource management. Its success in giving communities access to tools and information, and in training more than 500 young people, raises two key questions. Should SIP access be extended to all Senegalese communities? If so, how should it be done to ensure maximum impact? This project hopes to get answers to these questions.

The Context
Decentralization has become a watchword of reform movements in sub-Saharan Africa over the past decade, with governments and donor agencies recognizing that sustainable development requires empowering communities to control local resources and make decisions about how to resolve issues. But to move beyond ideas and models that have been inherited or imposed, communities need information and tools that will help them understand their new responsibilities, quantify problems, achieve community consensus on key decisions, and measure progress. In communities across Senegal, SIPs give local officials and governments accurate, reliable and up-to-date information for making decisions, managing resources, and evaluating the effectiveness of programs and projects. SIPs also help local governments build partnerships with citizens, community organizations, NGOs, and the private sector. These successes have inspired the Senegalese government to consider establishing SIPs in ever community in the country. This project will assess the feasibility of a Senegal-wide roll-out by studying the 20 existing SIPs. It will determine the services that SIPs offer to individuals and communities; how these services are used by elected officials, citizens, government departments, NGOs, and others; the potential of SIPs services to combat poverty and increase economic opportunities; the likelihood that young people with SIPs technical training will find technology-related jobs; if men and women are affected by SIPs in the same ways and to the same degree; and the degree to which local governments have built partnerships, developed strategies, and introduced policies and initiatives using information and tools provided by SIPs.

The Impact
By identifying best practices and areas for improvement, this project has helped to increase the development impact of the 20 existing SIPs in Senegal, as well as laying the foundation for the potential roll-out of hundreds of other SIPs across the country. It has also contributed to the knowledge base of best practices for using ICTs for development in African communities.

IDRC’s Project Partners
Center of Resources for the Emergence of Social Participation (CRESP)

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The telecentres have been able to introduce new services such as free email, which has been very popular. They were also able to work with the local telecom operator to overcome a major technical problem, and now these rural poor communities can reliably access the Internet.”

Constantino Sotomane, Project Leader, Innovative Public Access Strategies: Enhancing ICT Services in Mozambique’s Telecentres

The Project

Mozambique has eight public access telecentres in rural areas, but high costs and other barriers have prevented widespread adoption of non-basic telecentre services. This project is assessing how telecentres are used in Mozambique, identifying which current and new services best meet local needs, finding ways of delivering these services affordably, and measuring how their wider adoption reduces poverty. It is also helping to increase the economic viability of Mozambique’s telecentres.
Innovative Public Access Strategies: Enhancing ICT Services in Mozambique’s Telecentres

The Development Goals

For ICTs to play a major role in reducing poverty and improving the lives of Mozambicans, they must be widely adopted. By reducing access costs and more closely aligning local needs to telecentre services, this project is giving ICTs a much greater role in economic and social development. Wider use of ICTs will help reduce illiteracy, improve public access to information, allow local people to acquire technology skills and training, and stimulate development in even the poorest communities.

The Context

Access to ICTs in Mozambique is extremely limited—the rate of Internet use, for example, is about 8 per 10,000, compared to about 4,400 per 10,000 in Canada. In Mozambique’s urban areas, though, commercial telephone centres and Internet cafes have become widespread—demand for services is high, operator costs are relatively low, and return on investment is rapid. In rural areas, where 70% of Mozambique’s 19 million citizens live\(^1\), circumstances are very different. Communities are poor, rates of illiteracy and unemployment are high, and ICT access costs are prohibitive. In this context, the need for technologies that can foster development is especially pressing.

The most popular services by far at rural telecentres are local and long-distance telephone calls and photocopying. The chief barrier to use of the Internet and email has been cost; often customers must pay for a long distance phone call to connect to the telecentres’ Internet Service Provider in the capital Maputo. Further barriers include slow and unreliable connections, low awareness of available services and their benefits, a lack of services tailored to specific local needs and a lack of Internet content relevant to local interests. This project is working with local communities and telecentre operators to find innovative, low-cost ways to overcome these barriers.

The Impact

By identifying telecentre services that best meet the needs of impoverished communities, and by finding affordable ways to deliver these services, the project will help to influence the evolution of telecentres in Africa and in other developing regions. At the local level, impoverished individuals and communities will gain easier access to information and opportunities. Telecentres will become more economically sustainable through offering highly targeted, affordable services. And all project participants will be exposed to the project consulting engineers’ knowledge and experience with ICTs for development in other countries.

IDRC’s Project Partners

Informatics Centre of Eduardo Mondlane University (CIUEM)
Mozambique Information and Communication Technology Institute (MICTI)
Community Multimedia Telecentre (CMC)

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Angonet: Increasing the Impact of Angola’s Community-Based Humanitarian Network

“With Angonet bringing the Internet to ISCED, I now have access to information and educational materials that help me get more out of my courses and my education. I believe that by allowing me to acquire more knowledge and skills, Angonet is helping me prepare for a better future in my province.”

André Domingos, Student, Institute of Social Sciences

The Project

After twenty-five years of war in Angola, communications infrastructure in the country barely exists. For the more than 340 non-governmental organizations (NGOs) and community-based organizations that are helping to rebuild a civil society in Angola, poor communications hampers efforts to efficiently distribute much-needed medical supplies, food, clothing, and other essential supplies. And without access to ICTs, Angola’s citizens—especially in rural areas—have no way to contribute to debates on critical topics such as land rights, the new constitution, poverty reduction, and urban reform. By improving and expanding ICT services and content into regional capitals where there is limited or no service, this project will make it possible to assess if ICTs can help Angola overcome post-war deficits in other infrastructure, such as transportation, to hasten peace-building, community development, and humanitarian assistance.
Angonet: Increasing the Impact of Angola’s Community-Based Humanitarian Network

The Development Goals
This project will lead to improved ICT services that will increase the capacities and impact of non-profit, civic, and community organizations working to rebuild Angola. Just as critically, it will stimulate and offer a forum for inclusive debates on critical civic and constitutional issues as Angola prepares for its first post-war elections.

The Context
In Angola—where telephone lines are poor quality and unreliable, and cellular services do not extend outside of the capital—email is essential for the logistics of planning and managing humanitarian and development projects. It is also very expensive. Satellite-supplied email service, for example, costs $250 per month per subscriber. This project will bring affordable email and other ICT services, such as access to the World Wide Web and text messaging, to two urban centres via Angonet, a non-profit Internet service provider (ISP) for the network of NGOs and other development and humanitarian organizations in Angola. The project—led by Development Workshop (DW), a non-profit group working to improve living conditions for the poor in less-developed communities—has had three phases. In the first, DW assessed the need for expanded ICT services within the development communities in Luanda and Huambo, and then recommended a VSAT connection to its site in Huambo connected by Wi-Fi connections to the humanitarian and development NGOs in the town. In phase two, DW is implementing these same upgrades to the community-based telecentres of Luanda and Huambo. Phase three will be a study of how improved ICT access and new services have affected development and humanitarian programs and the Angolans targeted by those programs. Phase four, not yet funded, will be a roll-out of similar technology and services to remote towns in six Angolan provinces.

The Impact
The impact of the project will go beyond increasing the effectiveness of development and humanitarian organizations in Angola. By enabling new and lower cost services specifically targeted to user needs, it will help make community telecentres more financially sustainable, which will in turn strengthen Angonet and the Angolan ICT sector. And ultimately, it will create a national forum through which Angolans can debate and discuss key issues through means such as email discussion groups, electronic conferences, and websites and news services focused on Angolan reconstruction.

IDRC’s Project Partners
Development Workshop
Angonet
United Nations Development Programme (UNDP)
Esso

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AfriAfya is helping individuals and communities use ICTs to apply relevant, timely and easy-to-understand information to address the many problems HIV-AIDS brings to sub-Saharan Africa. We believe that this approach can stimulate community dialogue both as a foundation and fundamental ingredient for social change.

Dr. Caroline Nyamai, AfriAfya (African Network for Health Knowledge Management and Communication)

**The Project**

With just 10% of the world’s population, sub-Saharan Africa accounts for nearly 70% of all global HIV infections and 90% of deaths from AIDS. The HIV-AIDS pandemic in this region is both an unprecedented health crisis and a daunting long-term development challenge. ICTs hold the potential to help Africans combat HIV-AIDS by improving treatment and prevention programs, by helping to change attitudes and practices, and by making it possible to share success and best practices. Led by AfriAfya (African Network for Health Knowledge Management and Communication) in partnership with the Kenyan CCBI (Community Capacity Building Initiative), this research project will assess the impact of projects using ICTs to address the health and development challenges of HIV-AIDS in Botswana, Kenya, South Africa, Tanzania, and Uganda. The first phase consisted of an overview of ICTs projects in the five countries; the second phase is a detailed assessment of innovative projects in the two countries that were identified in phase one as having the largest number and widest range of projects.
The Impact of ICTs in HIV-AIDS Programs in Eastern and Southern Africa

The Development Goals
Projects using ICTs to combat HIV-AIDS have been initiated throughout Africa, but many are small-scale and operate in relative isolation. By documenting the innovative ways that some communities have used ICTs to help counter the health, social, and economic impacts of HIV-AIDS, this project will build a knowledge base that will serve as a resource to policy makers in Africa and in other developing regions. The research will focus on projects that are using ICTs to support and gain insights into the groups most exposed and vulnerable to HIV infection, including workers in the transport industry (especially long-distance truck drivers), workers in the tourism, fishing and manufacturing industries, young people in-school and out, and especially women, who are more likely than men to become infected with HIV, to take care of sick relatives, to lose their jobs, and to face other types of discrimination and social stigma.

The Context
In southern and eastern Africa, rates of HIV-AIDS infection are among the highest in the world, many people have little or no access to health care, and the social and economic safety nets that in other regions help families cope with the impacts of the epidemic are wholly inadequate. As a result, the human impact of HIV-AIDS is staggering. Despite political commitment, increased funding, and progress in expanding access to HIV treatment, the pandemic continues to spread. HIV-AIDS is a health problem compounded by poverty, and combating it requires massive, sustained interventions. The effective use of ICTs will be an important component of success for key public initiatives such as national roll-outs of antiretroviral therapy in Botswana and South Africa. This project will help ensure ICTs are used effectively by answering three critical questions: Has government policy in each country hindered or supported the use of ICTs in HIV-AIDS programs? Have ICTs increased access to HIV-AIDS treatment and prevention programs? Have ICTs helped counter the effects of HIV-AIDS on communities?

The Impact
This project will help make HIV-AIDS programs more effective by identifying best practices and gaps in knowledge, recommending improvements to strategies and policies, and strengthening the networks of organizations involved in using ICTs to fight the impacts of HIV-AIDS. The findings will be available in a freely available report and through research papers published in peer-reviewed scientific journals. The database of projects using ICTs in the fight against HIV-AIDS in eastern and southern Africa will be publicly available on AfriAfya’s website.

IDRC’s Project Partners
African Network for Health Knowledge Management and Communication (AfriAfya)
Community Capacity Building Initiative (CCBI)

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Senegal has set ambitious goals for our national education and training program. This project will help us achieve these goals by identifying innovative ways to ensure that all our young people have a strong foundation for future success.”

Cheikh Au, Director, Institut national d’études et d’actions pour le développement de l’éducation

**The Project**

Senegal’s 2000/2010 national education and training program aims to achieve universal education to ensure that the Senegalese people have the knowledge and skills required to build an economically strong, socially cohesive and culturally flourishing nation. In support of the national program, this project will integrate ICTs into basic mathematics and reading/writing instruction in elementary schools. The project team will work with a small number of Senegalese teachers, students and other partners in the education system to develop and validate ICT-based learning and teaching approaches that can then be extended across Senegal’s education system.

**The Development Goals**

Because recent studies have found that competence levels in French, mathematics and science are low among Senegal’s elementary school students, achieving the ambitious goals of the national education and training program will require giving teachers the tools they need to significantly improve classroom instruction. The chief reasons for students’ poor performance are curricula based on European models—and hence less relevant to Senegal’s social, cultural and economic conditions—and a rote learning approach based on memorizing facts instead of
Using ICTs to Improve Elementary Education in Senegal

fostering students’ independence and creativity. By introducing innovative, interactive teaching approaches and content tailored to the specific needs of Senegal’s students and teachers, this project will help give a whole generation of students a solid educational foundation.

The Context
This project, led by Senegal’s Institut national d’études et d’actions pour le développement de l’éducation (Ineade), began with a survey that identified elementary teachers and schools in Senegal that were experimenting with ICTs in education. Based on input from these innovators and from many others in the education system, and drawing on extensive research conducted by Université du Québec à Montréal’s Centre interdisciplinaire de recherche sur l’apprentissage et le développement en éducation (Cirade), the project team then selected an elementary school in Dakar for a pilot project. Researchers are now working closely with teachers and students to apply new ICT-based content and teaching approaches that help students develop essential skills such as resolving complex problems, exercising critical judgment, and planning projects. As well as preparing for success in their working lives, the students are developing invaluable personal and social skills. The next step in the project is to gradually extend the new curricula and teaching approaches to all of Senegal’s elementary schools, in tandem with the government’s program for providing computers and Internet access to all elementary schools.

The Impact
The project will contribute to making Senegal’s educational system capable of responding to the country’s development needs. As well as improving the economic prospects of elementary school students, it will help enact Senegal’s national education and training program by equipping decision-makers with guidelines for integrating ICTs into curriculum at all levels of schooling. By allowing Ineade to acquire expertise in designing and evaluating multimedia teaching tools, it will contribute to ongoing curricula reform. It will expose Ineade and others in the Senegalese education system to leading edge research through collaboration with an internationally renowned Canadian research centre. And the wide range of tools, guidelines and other materials the project produces will help other countries in Africa and beyond successfully apply ICTs to educational reform.

IDRC’s Project Partners
Institut national d’études et d’actions pour le développement de l’éducation (Ineade)
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**Working with Acacia**

IDRC’s Acacia initiative works primarily with African partners—including governments, educational institutions, the private sector, and NGOs—to research ways to effectively apply information and communication technologies (ICTs) to social and economic development in Africa. We encourage African research institutions and researchers to contact our IDRC regional offices with ideas for ICT-focused research programs in Africa.

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