IDRC CRDI

Acacia
2006-2010
Final Report

Acacia Program Initiative
ICT4D, IDRC
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1. Background

To what extent has the work of Acacia-funded research and researchers influenced the African Information Society?

Every five years, the Acacia Program Initiative (PI) goes through a review process. This current external review is for the Acacia III Prospectus 2006-2011. It is important to note that the Acacia III Prospectus legally runs until March 2011 and will be the last IDRC-supported Acacia Prospectus. Therefore, this report is being written a year ahead of the program's closure, meaning, of the 157 research activities approved to date for this Prospectus period, 52% of Acacia's projects are currently in progress. This report is prepared in accordance with the guidelines provided for such a review process. Based upon this context, this report will take stock of the program's approach, research findings, and development outcomes, and will also draw some strategic lessons that contribute to the IDRC and Acacia grant recipients' overall organizational advancement.

1.1 DESCRIPTION & EVOLUTION OF ACACIA III

In 2006, Acacia's mission became focussed on supporting research in three core research themes in the field of information and communication technologies (ICTs) for development, which would serve as a broad framework for the program. These themes are focused on improving economic development and opportunities (how ICTs broadly influence social and economic development in Africa); enhancing social service delivery (how ICTs help African governments be more effective in the delivery of citizens' services); and empowering citizens (how the use of ICTs can reinforce citizens' capabilities). These

Figure 1 The Acacia House

overarching themes were complimented by 10 subthemes (**Figure 1**), leaving a small portion of portfolio funding to address emerging themes.
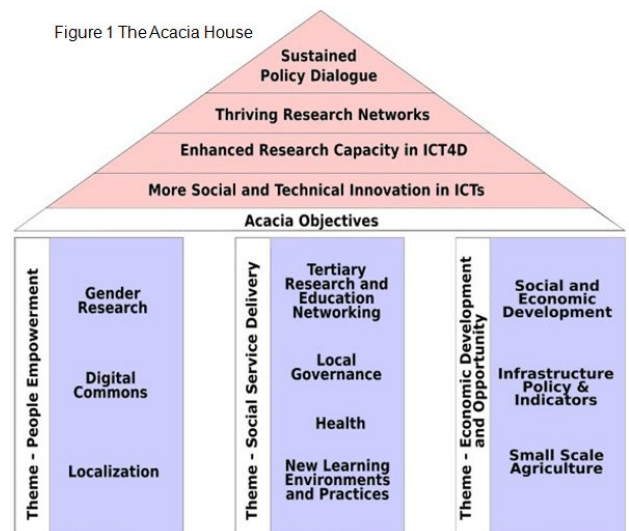
In order to achieve this mission, knowing the level of ICTs pervasiveness in Africa at the beginning of this current prospectus period, the team identified four cross-cutting objectives, which are sustained policy dialogue, thriving research networks, enhanced research capacity in Information and Communication

Technologies for Development (ICT4D), more social and technical innovation in ICTs (**Figure 1**).
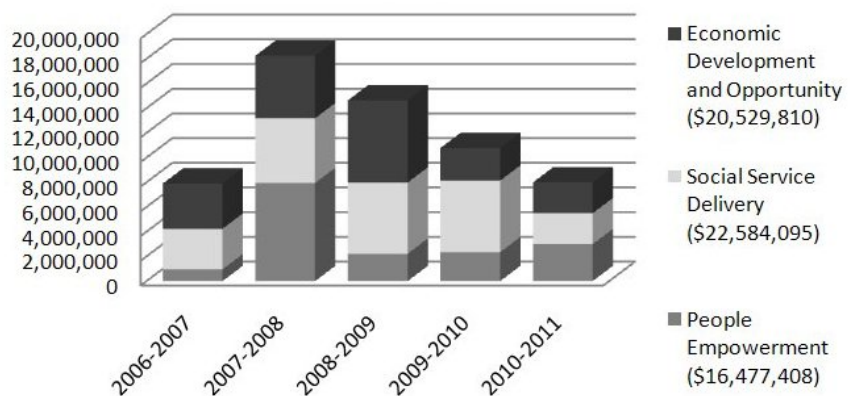
A key evolution in the program, which was made explicit through our network evaluation (Wilson-Grau & Vincent, 2010), was to understand how Acacia's funding of research contributed to the growth of the multidisciplinary field of knowledge in ICT4D. Acacia has worked with researchers in the Sciences and the Humanities: engineers, natural scientists, computer scientists, lawyers, policy researchers, political scientists, economists, physicians, geographers, sociologist, and anthropologists. To assess Acacia's performance in this area, the team added the objective - contributing to a formal body of knowledge in ICT4D.

Implicit in Acacia's approach at the beginning of the Prospectus period, was the encouragement of meaningful gender analysis. Again, during our evaluation period we realized the need to formalize this approach as an objective, against which outcomes will be reported in this report.

1.2 PROGRAM STRATEGY RATIONALE

Acacia's strategy to achieve its objectives and conduct research around the program's key themes was to catalyze research networks. This strategy also reflected the IDRC's core mission of building southern research capacity and conducting policy relevant research. Acacia adopted the network approach as it would enable the mentoring of researchers who showed an interest in the emerging field of ICT4D. Networking also provided a vehicle for comparing national policy environments around ICTs and resulted in some common strategies to stimulate policy dialogue. Policy-makers in Africa suffer from a lack of public-domain research. Thus, our approach was to ensure that policy was put into the public domain and actively communicated to policy makers as well shared among our networks. Therefore, networking was considered a workable approach to overcome the weak intra-African connectivity, where African researchers often had better connections to North

Figure 2 : Acacia Allocation ($63,768,969) by Research Theme

- Economic Development and Opportunity ($20,529,810)
- Social Service Delivery ($22,584,095)
- People Empowerment ($16,477,408)

American or European institutions than among African scholars (IDRC, 2006).

Acacia also decided to work with existing organizations to avoid creating parallel entities. As well, this method of linking researchers and research organizations could improve the expertise among many universities and research institutes across Africa. It was also considered a viable means to create larger projects, to reduce IDRC's transaction costs.

After almost four years of programming, close to 80% of the CAD$63.7 million of Acacia III support has gone to developing thematic research networks (**Figure 2**). The program has enjoyed two significant sources of external funding. The Connectivity Africa funding (CAD$7.34 million) from Canada's Fund for Africa was tapering down as the Acacia III Prospectus was beginning (**Figure 3**). Several of the projects with social and technical innovation approaches for Acacia III were seed funded from Connectivity Africa. The UK Department for International Development (DFID) funding (CAD $5.75 million), however, contributed to the entire duration of the Acacia III prospectus. This core grant is

Figure 3 : ICT4D Africa Program Allocation ($134,495,337)
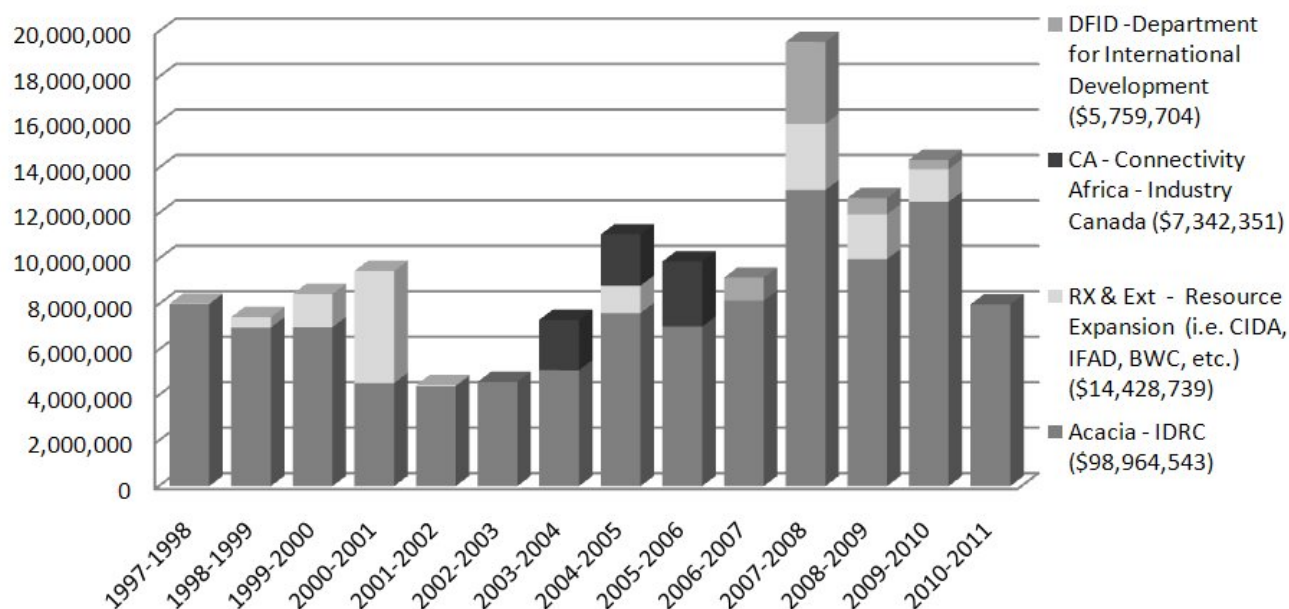
used to fund a component of most of Acacia's projects and resulted in the inclusion of two initiatives on traditional media, such as radio and its significant role in Africa. The DFID program will close in June 2011.

Structure of the report

The remainder of this report presents Acacia Program 2006-2010's main accomplishments and strategic lessons. Section 2 highlights findings from Acacia-funded projects. Section 3 describes the achieved outcomes. And, finally, Section 4 presents reflections on our accomplishments over the past four years and challenges to be addressed in the future.

Who – People Empowerment
•Tertiary Education •Gender Research • the Digital Commons •Localization
How – Social Service Delivery & Economic Development
•Local Governance •Health •New Learning Environments &Practices •Small Scale Agriculture
What – ICT Infrastructure & Economic Development
•Infrastructure and Policy & Indicators

Figure 4 Research questions and Acacia themes

2. RESEARCH FINDINGS

This section highlights research findings that demonstrate how ICTs can provide a means for development and change in Africa. We are presenting significant findings from research that has done the following:

- influenced policies and practices;
- investigated the applied use of ICTs for improvements to social service delivery and economic development; and
- Explained who benefits from ICT use.

This is a synthesis of findings from projects that have completed significant research phases and are found final technical reports, journal articles, books, book chapters, theses, essays, training manuals, policy briefs, and information pamphlets. We have organized the findings according to the following research questions. Thus, based upon the restructuring of Acacia's House, this section will first present findings from the following three areas: "what" is required to achieve an African information society; "how" these tools can be used to improve services in Africa; and "who" benefits from the information society (**Figure 4**). Our research findings confirmed the need for certain pre-existing conditions are required, namely relevant and affordable ICT infrastructure in order to create Africa's information society

2.1 INFRASTRUCTURE, POLICY INDICATORS & ECONOMIC OPPORTUNITIES

In the area of telecommunications infrastructure, the research supported by Acacia has found that the divide of mobile voice services is narrowing, meaning there is less of a divide regarding who has access to and who does not have access to services. However, Africa's divide, in terms of Internet access, is widening in comparison to other regions in the world.

Africa is the fastest growing mobile phone market in the world. To examine this phenomenon, Acacia-funded researchers completed a first-of-its-kind empirical analysis on this growth. The analysis reveals how demand for communication services is affected by access, cost, and socio-economic differences in Africa. The findings illustrate that the mobile use is concentrated in urban areas and in wealthier homes. Additionally, higher mobile penetration in countries with more liberalized markets, for instance, in Nigeria only 23% of the population did not have a mobile phone. In contrast, in Ethiopia 97% of the population does not have an active mobile phone or SIM card (Gillwald & Stork, 2008) .Two other studies found that there were not significant differences between men and women's access to mobile telephony. Among West African youth, in particular, there was little to no digital divide (Mottin-Sylla, 2005) . As well, poverty did not play a significant role in differential access between men and women (May & Mascarenhas, 2010). However studies focused on women's use of ICTs (Buskens & Webb, African Women and ICTs: Investigating Technology, Gender and Empowerment, 2009) demonstrated gendered differences in use of ICTs, which will be discussed in the empowerment section.

In terms of portion of household expenditure, African households spend between 7.1% and 16.7% on communications, which is significantly higher than the 2.5% spent in OECD countries (Gillwald & Stork, 2008). A study researching how the poor access and use ICTs in East Africa found that even families below the poverty line spend an average of 6% of expenses on ICTs (May & Mascarenhas, 2010). Household studies in 17 countries found untapped demand for communications, as the vast majority of respondents indicate they would make more calls if prices were reduced (Esselaar, Gillwald, & Stork, 2007).

More people own mobiles in Africa than have bank accounts, and prepaid airtime is beginning to be innovatively used by the unbanked, those individuals without bank accounts, to transfer remittances (Comninos, Esselaar, & Stork, 2008). For example, 7.4% to 53.9% of respondents in the 17 countries surveyed indicate they have transferred airtime to someone else's mobile phone, mainly as a

favour to a family member or friend (Esselaar, Gillwald, & Stork, 2007). This study recommends that such evolving systems of financial intermediation can serve the broader objectives of economic growth and development as well as create an environment that encourages innovation.

Another important issue that Acacia research recipients have focussed on it universal service, the policy instruments to ensure that underserviced population groups gain access to ICT services, normally via obligations placed on telecommunications service providers or cross subsidisation of services. These studies found that the opening of telecommunications markets, through effectively regulated competition, has done more to meet individuals' demand for access to telecommunications than any other universal service policy instruments (Esselaar, Gillwald, & Stork, 2007). In addition to regulated competition market-players were able to reduce costs by their own led initiatives such as the elimination of roaming charges among East African countries (Muriuki, 2009). This market behaviour provides practical evidence that competitive strategies can overcome dominant operators' monopoly pricing. Benchmarking studies have also helped demonstrate how high costs of mobile calls can be largely reduced through improved regulation of the rates charged by competitors for terminating calls on their networks (Stork, 2009).

Mobile telephone companies that entered the liberalising telecoms markets in half of the 17 countries surveyed viewed the autonomous regulators as being weak to very weak. These operators perceived regulators to be incapable of managing scarce resources or competition, which would result in lack of investments in the longer-term investment of less profitable national backbone infrastructure. In the 17 countries surveyed, only regulators in Nigeria and Ivory Coast scored positively for their pro-competitive regulatory environments (Esselaar, Gillwald, & Stork, 2007). (**Figure 5**).

As mentioned above, although Africa's divide of mobile voice services is narrowing, our networks' research indicates that the continent's divide, in terms of Internet access, is widening. The increased divide could be attributed to the dramatic change in the African countries' telecommunications environments. One of our funding partners' studies illustrates that less than 5% of African households use the Internet (Gillwald & Stork, 2008). With the exception of South Africa's 15% household access and improved access in Botswana as well as Namibia's education sector, over 50% of the other countries' households surveyed used cybercafés to gain access to the Internet. They attributed this lack of usage to poor bandwidth quality and high prices (Esselaar, Gillwald, & Stork, 2007).

Additionally, our studies indicate caution regarding the professed benefits mobile telephony appears to offer in regard to solving Africa's connectivity challenges. This caution stems from the fact that, in Africa, mobile telephone growth is driven by the lucrative markets, which are offering wealthier populations a variety of new mobile services but at the expense of investments in longer-term returns on bulk infrastructure. This is infrastructure that is required to increase the entire continent's capacity (not just the capacity of select groups) to participate in global communication networks, specifically the Internet (Esselaar, Gillwald, & Stork, 2007). This problem stems from years of underinvestment by state owned telecommunication companies and impacts African countries' national productivity and competitiveness. In addition, the lack of large scale access also negatively affects universities' abilities to diffuse innovation and improve productivity (Adam & Tusubira, 2008).
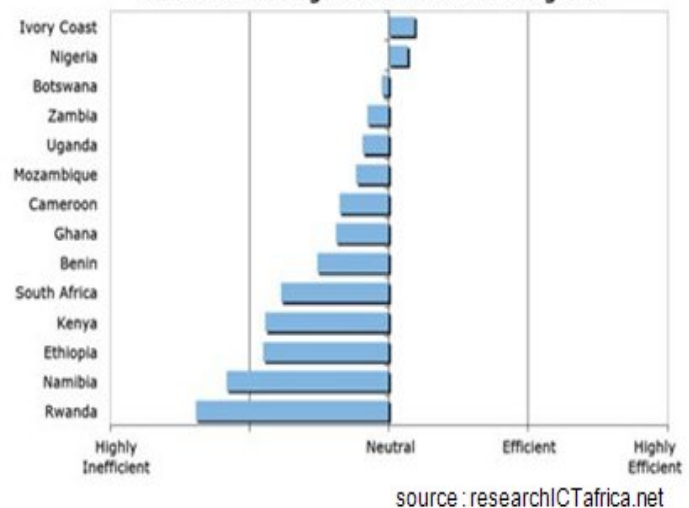
2.2 SOCIAL SERVICE DELIVERY & ECONOMIC DEVELOPMENT

Some action research findings, which focuses on how the existing infrastructure can be put to use illustrate that the innovative use of mobile technologies used in social services in remote rural settings to communicate information back to city or national databases can transform social service delivery in Africa. These findings focus specifically on social services delivery, such as health and education. In this

Figure 5 Telecommunication Regulatory
TRE Scores: Average scores across all categories

source: researchICTafrica.net

section, we also look at the findings that relate to economic development in the

For example, ICTs contribute to strengthening African health systems. In Uganda, the paperless collection of data, using Personal Digital Assistants (PDAs) — hand held computers — was more efficient than paper collection methods. The gathering of health information data could save the Ugandan Ministry of Health 24% when compared with the former methods of district reporting and data collection (Tumwesigye, 2006). Health care workers usually find collecting and transmitted administrative data the most mundane part of their jobs; yet, in this pilot study their efforts to send timely information via their handheld computers to the district headquarters was rewarded by receiving downloads of continuing medical education.

Using a clinical "data warehouse" to integrate and manage data, [research](#) in Free State Province of South Africa found that the integration of data from laboratories, other population statistics (e.g., vital registration), and public health (tuberculosis figures) was highly effective for improving the usefulness of the information and the accuracy of estimates and indicators. Laboratory data is probably the single most important type of information providing feedback to clinicians along with the patient history (Fairall, et al., 2008). This integrated system enabled the production of quarterly reports on the progress of the anti-retroviral therapy (ART) rollout; these reports provided a realistic estimate of number of patients receiving treatment (Seebregts, Fairall, Zwarenstein, Lewin, & Bateman, 2009). This estimate contrasts with reports from other provinces in South Africa that provided imperfect records based on numbers of pharmacy prescriptions but no details of follow-up or retention of clients in the program, nor of mortality. In contrast, the Free State monitoring and evaluation system provides detailed statistics of patients in different phases of treatment, follow-up data, and, through its links with the official death register, outcomes for those enrolled on the program as well as those awaiting evaluation for ART.

Using electronic patient records to monitor HIV/AIDS patients on anti-retroviral drugs, doctors were able, in the Free State Province of South Africa, to establish the drug's effectiveness. This study illustrated that patients on treatment had an 87% chance of survival compared with patients that were on a waiting list to get treatment (Fairall, et al., 2008). Linking patient data with the death register demonstrate extremely high death rates for patients enrolled in the program but awaiting initiation of treatment, and prompted the Free State to explore alternative delivery strategies to improve access, most notably using nurse-initiated anti-retroviral treatment in the Streamlining Tasks and Roles to Expand Treatment and Care for HIV program (Seebregts, Fairall, Zwarenstein, Lewin, & Bateman, 2009).

Population registration in Morocco's city of Fes changed the speed at which citizens could register and access their vital records (Kettanni, Moulin, Gurstein, & El Mahidi, 2008). The handy, touch-screen computer printing Arabic script records, which previously would have been handwritten sparked a complete overhaul of the way in which citizens were treated when registering or collecting these important documents (Kettani, Gurstein, & El Mahdi, 2009). However, [infrastructure, budgets, and skills need](#) to develop in tandem with legislative reforms to enable the implementation of electronic forms, records, budgets, and accounts. (Kattani & El Mahdi, 2007) (Lishou, 2009) (Kettani, 2009).

Computers integrated into the curriculum of resource-poor schools that serve a low socio-economic community, have resulted in positive academic performances. Specifically, data from a Senegal pilot project in an inner city school in Dakar shows that primary students' national exam success rates increased from a paltry 22% in 2000 to 83% in 2007 ((Rioux, 2009). A multinational study found that, in primary and secondary schools across Africa, most educators focused on teaching about computers rather than using them as tools for enhancing learning (Karsenti, Mbangwana, & Harper-Merrett, 2009). Most learners wish to actively appropriate ICTs; 75% of learners frequented urban cybercafés while educators hesitated to facilitate such processes, fearing a possible loss of control of their classroom (Karsenti, Mbangwana, & Harper-Merrett, 2009).

Provision of targeted agricultural information to farmers can enhance farming systems, livelihoods and food security. A randomized trial, which evaluated the impact of mobile phones linking farmers to extension support around adoption and marketing of export crops, found that early adopters of information improved their income by 32% (Ashraf, Gine, & Karlan, 2009). This improved income came from lowering their transaction costs, search, and screening costs; negotiation costs; and costs of monitoring and enforcing terms of agreement. (Ashraf, Gine, & Karlan, 2009). These same farmers, however, lost their gains when European health regulations on imported fresh produce changed and needed to reorganise following this market shock.

In this area as well as similar areas in Kenya, 99% of farmers were aware of mobile phones but only 18% owned them (Okello, Okello, & Ofwona-Adera, 2010). This significant finding lead to the recommendation that integrated loan support to small scale farmers for production and on-farm infrastructure should also include finances to purchase cell phones (Okello, Okello, & Ofwona-Adera, 2010). Integrating ICTs into extension services, after the reforms to Uganda's agricultural extension system, contributed to the farmer groups being better organized and able to access microcredit.

2.3 PEOPLE'S EMPOWERMENT

Cost and access remain constraints to individuals and organizations; the following section further investigates who benefits from ICTs in Africa. We have selected two groups of users – universities and women - in order to demonstrate how ICTs can be transformative in terms of empowerment. In order for Africa to match their peers', in other continents, demand for academic information, increased bandwidth and lower connectivity costs are imperative for the

continent's universities. Acacia has supported extensive research into these issues. The most recent and significant findings are reported here. West Africa's higher education institutes, surveyed in 2008, used 74 Mbps average of total inbound bandwidth -- slightly more than a Canadian household -- which is far from the ideal requirements of 1156 Mbps (or 15 times existing provision) for an entire campus (Hamilton, et al., 2008) (Figure 6). With nearly 2.2 million staff and students in this region, the average bandwidth would be 0.37 Kbps per head, mainly via satellite connection. At the average current price of $2,330 USD per Mbps per month, prices need to fall to $120 USD to meet their requirement in 2013 within the given West African universities budget (Hamilton, et al., 2008). Such substantial pricing differences encourage the National Research and Education Networks to collectively influence policy in favour of negotiated bandwidth costs with service providers or develop innovative business models which intervene within the bandwidth supply chain.

Figure 6 Bandwidth Usage in West Africa's HEIs

source: Hamilton, et Al. 2008

ICTs could be transformative in closing the information gap, but African universities have scarce learning materials and resources. A study of eight African countries - Egypt, Ghana, Kenya, Morocco, Mozambique, Senegal, South Africa and Uganda - to better understand the relationship between national copyright environments and access to knowledge found that most learning materials at the university level are internationally sourced and rarely subsidized by the government, many students resort to photocopying which is often beyond what is legally permissible. A country's stringent copyright climate could limit access to knowledge goods and, thus, hinder the emergence of local innovation as well as learning (Schonwetter T. , de Beer, Kawooya, & Prabhala, 2010).

Another way in which Acacia's networks examined the transformative nature of ICTs was through a gendered lens. It was found that the first-come, first-served policy for use of library computers at the University of Zimbabwe was not providing equitable access to female users as intended. What was perceived to be an equitable policy was in fact far from it. The findings demonstrated males tended to crowd out or intimidate females who were earlier in the queue. This

study demonstrates that there is no significant difference between men and women's access to ICTs, but that the crux of this issue is related to a woman's ability for self-determination (Buskens & Webb, 2009).

3. PROGRAM OUTCOMES

Although there are multiple modes of intervention that the IDRC advocates, such as small grants and awards programs, the Acacia program chose to support networks to overcome Africa's capacity building challenges. The rationale for using this approach was primarily to overcome the isolation of researchers in the context of Africa. This was the dominant mode of funding Acacia used, in which 80% of its support either funded networks or constellations of theme-related projects that resulted in networks (**Figure 7**). The following section will discuss the networking approach and how it is useful in implementing and diffusing methodologies; diversifying participation; and responding to local dynamics.

Acacia made the strategic decision to assume this more pro-active approach to developing its project portfolio, rather than a more distanced method, like a competitive grants process.
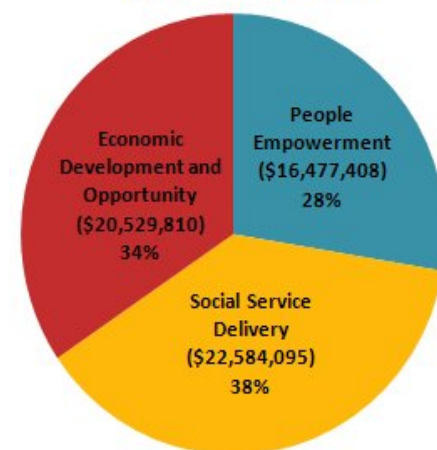

Figure 7 Acacia's Funding by Themes 2006-2010

During this Prospectus period, Acacia funded 13 networks, which spanned the African continent and recently expanded to the Middle East. As mentioned in the rationale of this report, African researchers and institutions' capacities to design and implement research projects across Africa were limited. Therefore, the networking of African researchers was a key strategy to overcome this isolation. Each network is anchored to one central thematic area of inquiry, but draws on a number of common social and technological innovations and practices. The approach has been described and discussed from the perspective of network leaders and the Program Officers responsible for their design and implementation (Wilson-Grau & Vincent, 2010).

The following section will illustrate how this approach to funding enabled the Acacia Program to attain various outcomes related to its cross-cutting objectives.

Opportunities & Challenges with Networks

It is important to highlight that these research networks (Adamo, 2005)were not static and displayed several dynamics. Networks of researchers expanded, some to include Francophone researchers (RIA), or membership beyond Sub-Saharan Africa to include North African membership or Middle Eastern membership

(GRACE).. One of the networks was closed down because of inactivity (Wireless Africa), representing some objectives that were not fully realised. Acacia program officers discussed concerns that might arise if the power remained in a single charismatic leader or if the leadership should be devolved. RIA, the largest and oldest Acacia research grantee, in an early phase devised a plan to create regional coordinators who took responsibility for sub-regional research coordination a strategy of "pushing intelligence and ownership out to the nodes" (Wilson-Grau & Vincent, 2010). The poverty research network devolved the network leadership from South Africa to a Tanzanian academic organisation, the GRACE this established African and Middle-East sub-leaders. This demonstrates collaboration and a shift from the hierarchical relationships within research networks.

The network approach never intended to create new organisations. On the contrary, it aimed to work with existing organisations and strengthen weak institutions (Evaluation Unit, 2007). Some of the networks that Acacia funded outgrew the organisations hosting them, inter alia the policy research network RIA left LINK Centre (Fourati, 2008), OASIS formed an NGO with the support of the Medical Research Council in South Africa (Sinha, 2009). In some networks, tensions arose between the research director and managing organizations if these were separated (Willard, 2008, p. 3).These networks are still thriving and often deal with these tensions. However, the first phase of the evaluation study uncovered two areas that would require more attention, notably network management capacity (for the network leader and the institution) and developing sustainability models for the future (Wilson-Grau & Vincent, 2010).

One exception however is worth mentioning. Ubuntunet Alliance (104584) is a registered legal entity that emerged from several iterations of research and research advocacy around the issue of the high cost and low internet bandwidth that constrained African universities. The Acacia program funded a range of different studies and activities and also facilitated some meetings with key donors. When other donors were comfortable subsidising the high cost of connectivity for universities, the Acacia program aimed to address the structural problems that resulted in these high costs and set about to find sustainable solutions. A range of research studies lead to five research recipients becoming founding members of Ubuntunet Alliance and acted opportunistically to create a legal entity so that they could interact at the global level. An outcome of their activities, including ongoing research grants from Acacia, is the European Union's-Africa strategy "Africa Connect" aimed at the establishment of intra-regional connectivity for the research and education community to the European backbone GÉANT. This demonstrates the sustainability of the networking

approach since the European Union will be investing €11.8 m and €3 million for partnering countries.

By contrast, the three programs in ICT4D (Acacia, PAN and CEA) also committed funds over several prospectus periods to the Global Knowledge Partnership (GKP), a multi-stakeholder global membership organization, which involves donors and organisations in the ICT4D and Knowledge for Development area. It had been in existence for 10 years when, in 2009, the Executive Committee, which the IDRC chaired for the last 2 years of its existence decided to devolve the organisation to a Malaysian entity in the past year owing to global partnerships' lack of sustainability. The GKP held several international events, including hosting the civil society events at the two World Summits on the Information Society, Geneva 2003 and Tunis 2005. The IDRC and Swiss Development Corporation played important roles in convening and knowledge management; however, as a global network its membership model became unsustainable.

3.1 FOSTERING ONGOING, ROBUST POLICY DIALOGUE

This section will elaborate on how the networking approach attained policy-ready research that impacted ICT and related policy blockages which were inhibiting socio-economic development. Below are a few of the selected significant examples of preparing the institutional and intellectual policy environments for change and effecting regime change.

Acacia research networks expanded policy capacities

Research can improve institutional frameworks that surround policy making by supporting innovative ideas and the ability to communicate them as well as talent to contribute to issue based research and analysis (Carden, 2005).

Acacia funded research created publicly recognized local expertise, as seen in South Africa. RIA provided technical advice to the Competitions Commission in South Africa in 2003. This happened when RIA was still hosted at LINK Centre. The ruling was that Telkom, the incumbent telecommunications provider, had engaged in anti-competitive practices and a fine was proposed as a percentage of profits, ZAR3.7billion ($530 million CAD). In 2008, Telkom took this decision for review to the High Court on the grounds of inter-alia bias of the technical advisors, In late 2009, an appeal exonerated the RIA director's advice to the Commission held and will now be referred back to the Tribunal for a final decision in the Supreme Court of Appeal.

A handful of Acacia's research networks have gained greater visibility at the level of global policy dialogues. In 2007 and 2008, the International Telecommunications Union (ITU) increasingly drew on RIA research (ITU, 2009) and formally collaborated on dissemination The reporting by African countries to the ITU has been patchy, leaving gaps in the coverage of Africa, or data that is two to three years out of date. On a continent primarily served by dynamic mobile services, three-year-old data does not provide the current evidence of policy outcomes to identify points of intervention.

The same is true for the Organisation for Economic Co-operation and Development (OECD), which, historically, has not been able to include demand-side data in their analysis of African ICT developments. As a result, their analysis was largely dependent on the dated ITU data referred to above, which only included data related to the supply of services. Now the OECD is able to extend their data sources to include independent public domain research conducted by RIA, instead of just multilateral agencies and governments. RIA research was extensively referenced in the OECD-African Development Bank-UNECA *Africa Economic Outlook* released in May 2008 which had the theme of ICTs and Innovation in Africa (OECD, 2009).

OASIS, which is using open standards and architectures to help countries achieve national implementation of health information systems, was selected as a vehicle to test the WHO's Health Metrics Network Framework 3 in several pilot countries.

The leaders of the network on access to knowledge related to copyright regimes were invited to speak at the World Intellectual Property Organization (WIPO) to present their research findings. The study was cited by the Electronic Frontier Foundation (EEF), one of the worlds most active and influential NGOs working in the domain of copyright law, as an important study providing empirical data on copyright related obstacles around access to knowledge in Africa. In its statement to the WIPO committee on Development and Intellectual Property in November 2009, EEF asked WIPO to fund similar studies in the developing world. The research demonstrated the impacts of international copyright conventions on African learning materials and demonstrated the lack of readiness for digital content, bringing evidence to the global intellectual property rights dialogue. Further coverage of this is found in IP Watch (Saez, 2010)

Broadened policy horizons

Research can improve the intellectual framework around policy making by introducing new ideas to the agenda and to policymakers. (Carden, 2005)

Some of Acacia's single country-focused research projects have also attained strong policy outcomes. Specifically, a study conducted in Kenya that examines this country's abilities to set up business process outsourcing zones for call centres, a large job generator. The Prime Minister of Kenya created a business process outsourcing working group (The Kenya Gazette, 18 December 2009) which would oversee the development of this employment sector (Odinga, 2009).

Micro-lenders were anticipating the use of mobile phones for managing their loan accounts, demonstrating a demand for real-time services through using mobile phones to transfer money and send reminders rather than old fashioned approach to keeping paper records. The central banks of Kenya and Tanzania, where the study was conducted, also recognised that the keeping of a management information system would enable better regulation of licensed micro-lender.

After the successful action research results emerged regarding improved population registration in the city of Fes, the Moroccan municipalities of Marrakech, Essaouira, Midelt, Casa, Taza, Jerada, Mekness, and Sefrou, in 2007-2008, launched electronic civil registration projects. In Morocco, the municipal governments of Fes and Larache voted in favour of budgets to implement an electronic civil registration system (Kattani & El Mahdi, 2007). As a consequence, they received further support from the respective municipal governments for ICTs in general, which saw them obtain an increased budget for ICTs to support the implementation of the registration system as well as the development of ICTs in the municipalities. No budget had previously been allocated for ICTs before the introduction of the civil registration system.

Affected policy regimes

While rare, research findings can modify the development of laws, regulations, programs, and structures (Carden, 2005). The RIA network researching telecommunications policies in 17 African countries was able to influence one country, which lead to comparison among two other countries, resulting in telecommunication regulation changes.

In 2009, Namibian and South African ICT regulators sought to reduce the costs associated with interconnection, which is the costs customers on one network pay when phoning customers on another network. The Namibia government commissioned RIA, on the basis of their indicator research to undertake a rate benchmarking study instead of 'best practice' methodology that required an expensive international consultancy to do "long range incremental pricing". Drawing on such studies that had been recently concluded in a number of African

and international jurisdictions, the research demonstrated that termination rates on mobile networks in Namibia were way above cost. This finding provided the regulators with the information and analysis to cut interconnection rates by almost 50% (The Namibian, 2009).

More policy directives emerged as this study was picked up by other African countries. In particular, the Parliamentary Portfolio Committee in South Africa, to whom RIA had provided induction training following their appointment in mid-2009, the South African media, and subsequently the Ministry of Communications in the absence of a decisive response from the South African regulator. The uptake of this research led to politically agreed cut in rates by the mobile operators but will be followed by a full cost-based assessment by the regulator later in 2010. In response to these developments in Southern Africa, the President in Kenya also called on the Kenyan regulator to reduce further the mobile termination rates in that country, despite their own recent cost-based reduction following consumer pressure on their regulator.

Price reductions regarding bandwidth costs were achieved when the Ubununet Alliance negotiated from the new east coast submarine infrastructure providers. These negotiations resulted in prices being 20-25% below commercial prices (Balancing Act's , 2009).

3.2 INCREASING RESEARCH CAPACITY IN ICT4D

Acacia's support has strengthened individuals, groups, and organisations to identify and analyze development challenges and to conduct, manage and communicate research that addresses these challenges. (Evaluation Unit, 2007)

In this section we will discuss three different ways in which Acacia's network approach to funding helped the programming initiative achieve its objective of increasing research capacity in ICT4D. This objective was achieved by "team IDRC's" support in helping Acacia's networks' build their organizational capacity; by the networks', themselves, abilities to diffuse methodologies and tools for research; as well as by supporting the capacity building of individual researchers.

Complete Capacity Building

Acacia used the IDRC's approach of *complete capacity building* (Evaluation Unit, 2007)*.* This approach involved giving attention to multiple functions related to the funding and capacity building of networks. The grants administration division, in particular, regional controllers in the three regional offices in Africa, provided

direct assistance to hosting organizations when dealing with the complexities of sub-granting relationships, which occurs when network members are located across several different countries and organizations. In conjunction with the Evaluation Unit, the team facilitated training in user-focused evaluation, such as Outcome Mapping. As well, in conjunction with the Partnership and Business Development Division, we are currently developing plans with our network grantees to diversify their resource mobilization.

The Acacia Program, as part of the larger ICT4D team, also recognized early on in this Prospectus period the importance of alternative intellectual property rights related to copyright, ensuring open access to research outputs as well as open source software as this would enhance the public good. This involved a level of advocacy both with partners as well as with the Centre. IDRC's Research Information Management Services (RIMS) and the Centre's legal counsel are collaborators and have progressively adapted requirements in grant conditions.

Diffusion of Research Methodologies, Know-How & Tools

Although there are many examples that illustrate how this approach achieved the objective of building research capacity, this section will only illustrate a few significant examples of how the network modality became a vehicle for diffusing innovative research methodologies, know-how, as well as the use of tools. (Evaluation Unit, 2007 (13, 14, 15 & 16))

Methodologies

The network researching copyright challenges for educational materials in eight African countries made its methodology publicly available. This method was cited by various actors to be innovative because it consolidated a review of the law in relation to copyright and access to educational materials. This network also made formal statement submissions to a WIPO committee. In 2009, researchers in Zimbabwe and Zambia, two countries not formally a part of the network, applied the research methodology, the methodology guide is being used in Kenya to compare its copyrights law with international agreements related to educational and learning materials. Similarly, countries participating in the RIA telecommunications policy network developed landmark sector studies done in country and the methodology for large household studies has been published. (Stork & Stork, 2008)

Diffusion of applying meaningful gender analysis is discussed in more detail in 3.5 of this report. However, GRACE leaders and researchers were invited to contribute their expertise and experience as acquired in and through the

research in various fora and towards various purposes. The promotion of gender research by its members contributed to a change in the ICT4D research discourse, specifically because of the interrogation of the potential of ICTs to empower women in Africa. Since the inception of the project in 2004, these gender and ICT researchers, many of whom had never authored published texts, nor invited to speak on their gender expertise, demonstrated substantial behaviour change which culminated in their contribution of chapters to the book African Women & ICTs (Buskens & Webb, 2009).

A multi-pronged capacity building approach has been taken in Acacia's support of eHealth research, and the Acacia program has extracted its own learning from this focus area. This includes a clear focus on continuing medical education for nurses in Uganda, which has run over 4 phases, several initiatives and phases of support for computer scientists developing and implementing open source software health applications in Mozambique, South Africa and Zimbabwe, as well training Rwandan students on specific ICT-related skills to implement an HIV/AIDS monitoring program announced as the official electronic medical records system in Rwanda (Tang & Fraser, 2009). The 10 students graduated in October 2009 and all of them have secured employment in Rwanda health.

Methodologies for policy influence

Acacia developed a "communication for influence" approach to working with recipients. This was done by strengthening recipients' capacities at inception, implementation and dissemination stages to

- Ensure a policy dialogue was planned and carried out
- Develop a strategy, often using Outcome Mapping as a tool
- Set their policy influence objectives
- Map their relationship with policy actors
- Plan their sphere of influence

In terms of building capacity, when needed, Acacia also provided training support as well as, fostered, facilitated and convened contacts between Acacia grantees and policy makers.

Know-How

A key element in the formation of the GRACE network has been the annual face-to-face workshops. These are intensive events at which all those who can attend are deeply engaged in their thinking processes, and in engaging each other's thinking processes. Furthermore, these intense periods of working together build rapport, trust and connection between each other and this forms the platform

from which communication continues on-line until the next opportunity to meet (see outcomes 74 & 76 of Wilson-Grau & Vincent, 2010). The OASIS network also supports regular intensive workshops to support the development and use of Open Medical Records System software (OpenMRS) (see outcomes 55 of Wilson-Grau & Vincent, 2010). The influence of African coders in this field has been growing and Acacia's support of these meetings has contributed to the human web working on development issues. The use of peer mentorship and distribution of work, ownership and responsibility worked very well for many networks.

Tools

As data gathering processes and practices improve and become more reliable, the methodologies are taken out of their original context to be used in research to address related issues in other Acacia networks. The network researching poverty and ICTs in East Africa gained valuable lessons from RIA's own usage of PDAs in household data collection. For instance, in 2008, the National Statistics Agency in Uganda was influenced by network researching the nexus of poverty and ICTs in East Africa's began to use PDAs to collect data and to incorporate an 'ICT and poverty' component in key national statistical surveys. This is significant when one considers the high African subscriber rates of mobile services and the enhanced efficiency of data collection and analysis for large household surveys.

Diversify Participation

Research networks now exist where there were previously intellectual or organizational silos, disparate uncoordinated efforts, and limited African scholars to provide resources and technical assistance. While South African organizations and one Canadian university continue to play important roles in either research leadership, grant administration for larger projects, and hosting networks, several networks were established during the Prospectus period that involved Western and Eastern African organizations hosting and leading African or sub-regional networks (Cyber Crime and Security in Africa; the Informal Sector in West Africa and ICTs; e-Local Governance, and researching poverty and ICTs in East Africa).

Focus on individual researchers

In recognition of the multidisciplinary nature of the ICT4D field and the weak institutional research capacity in Africa, Acacia projects have relied on academics and practitioners to conduct research, resulting in a new crop of researchers.

Acacia has contributed extensively to the increase in the number of African ICT4D researchers through the use of different models such as: peer-mentorship, competitive grants, South-South cross-fertilization, and training activities aimed at providing the generation of researchers with the knowledge and skills needed to conduct rigorous and relevant research (Evaluation Unit, 2007).

A similar approach of creating opportunities for young scholars has taken place in virtually all of the networks that Acacia has supported. These networks have engaged with and masters and PhD students in the research teams (**Figure 8**). Acacia has also created a Fellowship Program through an agreement with University of Nairobi to support students from Eastern and Southern Africa. See below a table of degrees supported by Acacia.

Figure 8: Summary of degrees supported through Acacia

Project	Type of Degrees		
	Masters	**PhD**	**Diploma**
RIA!	2	3	
ICT4D Grants	4	8	
e-FEZ / Fez Wireless	8	1	
Local Governance			12
LOGIN	1		
eARN	6		
OECD PhD Program		4	
Total	21	17	12

With over a dozen Acacia-supported networks spread across the continent, it is hard to quantify the exact number of new researchers that have gained expertise, or developed their capacity through their association with the networks and projects. Typically project implementation depends on the work of many people who gather and analyze data; plan, monitor and evaluate projects, especially when dealing with household level surveys. This element of research management represents another layer of research management capacity building.

There were, however, a few areas of relative weakness in the application of the principles: a) building research management capacity, b) building capacity to "manage the research" (Wilson-Grau & Vincent, 2010). The Acacia team response to these findings highlighted the tensions between creating networks for building the research capacity amongst peers and the assumption that the host organizations were capable of collaborative research management. Another tension was identified between a) building the research capacity of researchers or b) building the administrative or research director capacity. Thematic networks and program expertise would focus on the content whereas a broader IDRC team was required to address the administrative challenges. In many instances Acacia did provide the financial and administrative as well as legal assistance with subcontracts, but many Acacia team members as well as the host

organizations managing multi-country networks were new to the complexities of such multi-country projects. The team concluded that Acacia could have developed a toolkit to provide support for these multi-country African projects.

3.3 CONTRIBUTING TO A FORMAL BODY OF KNOWLEDGE IN ICT4D

Research grantees actively seek to publish in scholarly reviewed publications. In addition they place their research in the public domain and incorporate content into university curriculum.

This objective was added by the team during the network evaluation approach discussions and is separated from the objective of increasing research capacity because of the interest that Acacia has in building the multi-disciplinary field. The field Acacia contributed to is diverse and yet cuts across aspects of everyday realities in Africa, and its place in a globalised world.

The team concluded that it in addition to building research capacity and influencing policy one of the prime contributions of the networking approach was to see the researchers contributing to a body of knowledge. In the present prospectus, special attention has been given to scholarly publishing in French through capacity building in scientific writing and financial support to publish research results. All the on-going projects have a component on publications and some grantees, as it is the case with the network researching ICTs in education, have developed strategies and plans to support publication in peer-reviewed journals. These efforts are presently yielding positive results that show an increase in the number and quality of scholarly publishing in French. Four networks (RIA, GRACE, African Access to Copyright and CA2K and PanAf) conducted their communication bilingually, key outputs and country papers for Burkina Faso, Benin, Senegal, Cote d'Ivoire and Morocco are in French; research discussions in the GRACE network were bilingual and the book "African Women and ICTs" will appear in French.

Furthermore, Acacia program evaluation looked for behaviour changes that could be attributed to these outputs, such as citation, discourse and contribution to academic curricula. While not initially defined as such, the Acacia team decided that successfully publishing in a peer-reviewed publication was an onerous and formidable feat for any scholar (especially ones based in Africa) and not necessarily expected as a result of Acacia's financial support of a project. Acceptance by peers in the field is a substantial change and one that falls outside the immediate influence of the funding it provides to research networks.(See Outcome numbers 12, 35, 49, 71 & 84, Wilson Grau & Vincent, 2009)

Acacia found peer interaction amongst network grantees and over 100 peer reviewed and published journal articles and several peer reviewed conference papers from the Acacia grant recipients, and further citations to their research and use of methodologies that these recipients have pioneered.

Countries and other researchers are making use of the telecommunications regulatory evaluation methodology based on the series of Sector Performance Reviews and Household Survey Methodology developed by RIA. The network on Local Governance and ICTs research has developed frameworks and roadmaps that are being applied in different settings. The network researching the nexus of poverty and ICTs and the network researching the effect of ICTs linkages between African farmers and markets have also developed conceptual frameworks and a road map on governance is being applied in new studies in Egypt. The web-based Observatory of African country statistics on the use of ICTs in education has a high number of hits for information and demand from the World Bank in particular for the information.

The other measures used for contributing to a formal body of knowledge were the research approach and field of knowledge were incorporated into university curricula. It is possible now to find African Universities that have incorporated the ICT4D field in their programs and are granting degrees.For instance, in 2006, two organizations within the University of Nairobi -- the Institute for Development Studies and the School of Computing and Informatics -- entered into a collaboration agreement to carry out the joint supervision of doctoral students of ICT4D; a big step that turns the attention to the need to involve different departments in a multidisciplinary endeavour. The network doing research on alternative publishing in Africa was able to contribute to the field of ICT4D knowledge by creating new academic programmes in this area at Makerere University and the University of Cape Town. Additionally, RIA has provided courses on South African ICT Policy, Law & Regulation Programme to the Parliamentary Committee on Communications in October 2009, and created a one-week executive training course at the University of Cape Town's Graduate School of Business. The ripples of Acacia's work also have reached Canada, in January 2009, University of Ottawa Law Professor Jeremy de Beer launched a law course on Global IP Policy and Social Justice that draws in part from research by the network on African Copyright and Access to Knowledge (ACA2K).

3.4 STIMULATING SOCIAL & TECHNOLOGICAL INNOVATIONS IN ICTs

Harnessing Existing Capacities

One of the approaches to ensuring that a technology can be replicated for different contexts for the least cost, the Acacia Program stimulated the use of globally available innovations for local adaption or the growth of local technologies which have also been used globally. Through sharing different technological innovations and practices, Acacia networks have diffused and created innovations. Examples of African innovations that are now global references can be seen in a multiplicity of areas. Yet, the following section will only discuss a few significant examples in this outcomes area.

Many more African languages will now be accessible on computers and mobile phones through Acacia's network's work on localization. Localization is the process of adapting computers and mobile phones interfaces and digital languages into local languages (Osbom, 2010). This network has recently partnered with UNICODE, one of the world's most credible and unique standards organizations, to provide data for one hundred African languages.

In remote health facilities where internet is not available, mobile based devices can be viable solutions for facilities based information and patient data collection. In 2007, the Ugandan district health services of Rakai and Lyantonde developed PDA-based data collection instruments for the monitoring and evaluation of community hygiene and sanitation. Soon after, Mozambique followed suit. The project to monitor the antiretroviral roll-out in the Free State province of South Africa also used PDAs all reliant on proprietary software. The Acacia program proposed the re-engineering to develop an open source solution to lower the costs for new users and was drawn upon for the OpenROSA consortium and OASIS that was developed to strengthen health data collection using open source mobile devices. Uganda and Mozambique have incorporated a new information and data-collection system that effectively establishes a two-way communication and deployment of content and applications to remotely located health facilities. This modified practice enhances the soundness of data collection within the health system. It has also become the tool that is used for planning, monitoring, evaluating progress of the districts and national projects. Nurses, who used the PDAs in the six remote Ugandan districts, were surveyed and 97% of the respondents reported improved patient diagnoses with the use of the PDA content. The interactive questions loaded on the PDAs provided faster and more accurate diagnosis and better choice of drugs and choice of laboratory tests (Sewankambo, Mworozi, Rujumba, & Maganda, 2007) (Satellife and Uganda Chartered HealthNet, 2007). Some of the districts became the best performing in tuberculosis care.

Mozambique has converted the OASIS [node at the University Eduardo Mondlane](#) in Maputo into an e-Health Centre and inter alia are developing a death registry for the Ministry of Health using a mixture of software solutions. Several application programming interfaces have been developed by the students working in the OASIS node in South Africa, making interoperability possible for instance between aggregated district health information and the patient-level medical records. KwaZulu Natal students and OASIS members Daniel Futerman and Ryan Crichton code development has been incorporated into the globally available [version 1.6.0 software](#) release. Mozambique [implementers](#) have translated the software into Portuguese.

Several Acacia projects have strengthened computer software skills development and small ICT businesses, which have resulted in employment and entrepreneurial opportunities ([AVOIR](#); [MICTI;](#) [OpenMRS](#)).

Finally, the African Virtual Online Information Resources (AVOIR) network that developed African home-grown software in over 14 African countries, which was intended to supplement university administration and augment online course content, also attracted attention from USAID projects in Afghanistan and Philippines (Wilson-Grau & Vincent, 2010).

Lessons from Innovations

Important learning from an intervention aimed at creating a paperless information system took place in Mozambique where the [Health Information Network](#) project experienced [challenges](#). The project was stopped because of bottlenecks that were created in the health centers. Initially the Ministry expected all paper records to be replicated in the digital collection of the data. This resulted in an overload of work for the nurses who collected the data, as they duplicated data by collecting both paper and electronic records. Not only was this redundancy planning cumbersome, but the replication of paper forms electronically was not re-engineered to avoid replication -- one of the main efficiencies achieved with electronic data collection. The project was later redesigned and is currently being re-deployed for use in more rapid response epidemiological surveillance. Yet, despite these challenges, this particular instance has taught the Acacia team that it needs to ensure the necessary policy, business process and organizational changes are in place for effective implementation of electronic records systems.

Several projects, in which [wireless technologies](#) were used to lower the cost of last-mile connectivity to poorly served areas, demonstrated [outstanding technical](#) results and regulators' approval in three countries illustrated that telecom liberalization was indeed possible in allowing communities to own and manage

their own wireless networks. The sustainability of these projects, however, was only demonstrated in communities where the wireless service provider could generate a steady income. Community networks in poorer communities did not have the technical, human or financial resilience to be sustained without a regular income. A network project to develop the business models for such projects itself did not deliver workable solutions in the required implementation period and Acacia recently decided to end the project instead of extending it.

3.5- APPLYING MEANINGFUL GENDER ANALYSIS

Despite Acacia's investment in gender training and tools, and its emphasis on a gender and ICT research network, the transformative changes in behaviour during this prospectus period reflect modest gains. This included the development of relevant and adaptable resources for mainstreaming gender into development research programming which were only coming to full completion at the time of writing this report.

Acacia aimed at developing a Gender and ICTs *research framework*. This had a different purpose than the evaluation methodology Gender Evaluation Methodology, that had been developed with joint funding from Acacia and its sister programs in Asia and Latin America and the Evaluation Unit. The GRACE network was established at the end of the Acacia II phase and was starting to research the nexus of women, ICTs and empowerment in an effort to contribute to research theory. Moreover, the Acacia II external review highlighted how the program had lost its former emphasis on women and ICTs. Thus, Acacia III incorporated Acacia team and research partner gender trainings, the development of a gender and ICT research network, as well as a nearly completed gender integration framework tool. This evolved into an Acacia approach of recognising the need to support a spread of development research projects that:

- focus on gender justice, or
- integrate social and gender analysis, or
- develop ICT applications taking consideration of women users' needs.

After the team's gender training in 2008 the team adopted this approach. In order to implement the guidelines pragmatically at that juncture of the prospectus period, each program officer chose one project to ensure that the gender guidelines would be integrated.

Only a few projects had a gender justice or gender transformation approach. The Acacia approach has evolved to recognize that research projects and

approaches are formed by their research paradigms and that gender transformation is one such approach that requires an action oriented and research leadership dimension. The other major networks however did do research from a sex disaggregated point of view. Moreover, the research findings, as reflected above, have a gendered perspective regarding women and access to ICTs (research on education, policy, copyright, poverty and localisation) and some applications development was done with women users and or developers in mind (nurses in remote health centres – Uganda Health Information Network UHIN and MHIN). The gender outcomes reported (Wilson-Grau & Vincent, 2010) were related to gender inclusion and not gender transformation.

As reflected in one of the papers (Buskens, 2010). one feasible recommendation is the re-engineering of the network approach for more cross-collaboration of teams (ie. gender teams work with sector teams) through increased gender objectives (including within the budget), increased gender-related research questions, and more persistent mentoring on methods and analysis of gender findings. This was tried; the GRACE network was started alongside a meeting of the RIA network. No cross fertilization took place and it could be concluded that the research approaches were so dramatically different that the discourse and engagement process would take time to evolve. Later RIA participants in the grantees' network gender training reported deeper insight into their gender approach, but no significant publications have come from these research ideas yet.

4. LESSONS AND CONCLUSIONS

As this prospectus will be Acacia's last, we will use this section and the final report in general as a tool of reflection, asking ourselves the question to what extent the work of Acacia-funded research and researchers has influenced the African Information Society? Such an enquiry started prior to the writing of this report and was the topic of our all-partners (grantees and funding partners) gathering in Dakar in October 2009. Acacia's funding approach reflects the Corporate Strategy and Program Framework 2005-2010 in which the Centre emphasized the building of research capacity in the South as well as ensuring priority is given to research focused on development oriented policies and practices. In Acacia's context it was the network approach to funding that was most successful as in 2009 we evaluated the approach and found that most of the objectives were achieved. (**Figure 9**)

Figure 8: Acacia 1996-2000　　　Figure 9: Acacia Networks Activities in 2009

Acacia can claim to have made some contributions to the integration of African researchers and leading thinkers, whom, over the past half decade (and some of them grantees for 15 years), have played roles in both national and international policy changes as well as formed stronger linkages within the continent. Such linkages have brought more coherence to understanding the innovative contribution ICTs can make to Africa's current and future development. It is important to note that some of these networks, such as RIA, even span the global south through its relationship with sister networks. Additionally, in some cases, African researchers are also connecting with Northern researchers, in collaborative relationships that are led by Africans.

This report also comes in the penultimate year of the Acacia III program, leaving one more year of operation during which several of these lessons can result in some program actions for mitigation. However, although this is Acacia's final year of programming many of these learning may be applicable to the functioning of other programming initiatives within the Centre.

BEING THERE AND STAYING THERE

The following section outlines a few strategic lessons from the Acacia Program outcomes:

- **Mature networks of two to three consecutive phases of funding are most likely to demonstrate solid policy impacts.** Contrary to the tensions suggested in the (Patrizi & Patton, 2009) review of the Centre's strategy, policy relevance was strengthened by research rigour. The eagerness of Acacia's research grantees to influence the way in which African telecommunications and information markets work, or African countries

comply with copyright laws, lead them to build innovative methodologies and seek relevant and cost-effective policy solutions. These modes of doing research and finding solutions made their evidence more convincing and their message to national, regional and international policy makers and forums compelling. By contrast, there are several examples of projects where policy influence took longer than expected, or is still absent because of unknown or negative perceptions of the research intervention or the researchers encouraging grantees to develop national committees that would include

- **More emphasis needs to be paid to network management capacity and the legal-administrative challenges of running a multi-country network.** Despite the success of collaboration as well as the successful profiles Acacia grantees have built, vibrant networks outgrew their host institutions. This discovery is not a new learning for the Centre, but is necessary to highlight because Acacia's networks have yielded unprecedented research and capacity building outcomes. Tensions remain between building researchers and building organizations that manage research

- **Canada's bilingualism strategically positioned the Acacia program in Africa**. Regional offices in Dakar, Cairo, Nairobi and a satellite office in South Africa trongly contributed to building linkages across the geo-political and cultural divides. Though previously nascent, this Prospectus period witnessed the awakening of francophone intellectuals to the growing discourse on the information and knowledge society and started to contribute their voices to the discourse seeking more equitable benefits from ICTs in Africa. Specifically, Acacia's contribution in this Prospectus era has demonstrated the benefits of bilingualism in expanding Africa's formal body of knowledge.

- **The Acacia program team has had little turnover**. With several additions but very little turnover since the start of the Acacia program in 1996 this final prospectus report was compiled with the same team members that wrote the third Prospectus. A mature team, combined with maintaining a presence in a more developed country within a developing continent anchored the Acacia networks through long-standing relationships.

- **Maintaining a presence in South Africa has paid off.** Several South African universities, research institutes, NGOs, and researchers were initiators of research capacity building, which expanded the participation of several researchers and research organisations in the rest of Africa. Having said that, the efforts to increase the number of universities with expertise in

ICTs for development in Eastern, Western and Northern Africa taking the lead is yet another hallmark of the Acacia program's present prospectus era.

- **The way forward for research on ICTs for development.** Any future research program involving ICTs and technologies should not only investigate the social and technical benefits, but also the economic frameworks to measure growth. If Acacia were to have continued, this issue would have been a proposed thematic area. A next phase of research should focus on the political economy and the vested imperatives that constrain good policy making. This type of focus should include understanding the political and economic considerations that lead to governments not validating the experience of some projects by supporting the innovations, possibly even issues of corruption, transparency, conflict of interest in procurement, and clearly different public interest when collaborating in public-private partnerships.

BIBLIOGRAPHY

ACA2K. (2009, December 31). *ACA2K @ WIPO Geneva.* Retrieved March 15, 2010, from The African Copyright and Access to Knowledge Project: http://bit.ly/cQbpTv

Adam, L., & Tusubira, F. F. (2009). *Overview of Fibre Infrastructure Opportunities in the UbuntuNet Region.* Lilongwe: UbuntuNet.

Adam, L., & Tusubira, F. F. (2008). *Overview of Telecommunications Policy, Regulatory and Infrastructure Environment vis a vis REN Activities in the UbuntuNet Region.* Lilongwe: UbuntuNet.

Ashraf, N., Gine, X., & Karlan, D. (2009). Finding Missing Markets (and a Disturbing Epilogue): Evidence from an Export Crop Adoption and Marketing Intervention in Kenya. *Amer. J. Agri. Econ.* , 91(4): 973-990.

Balancing Act's . (2009, Octobre 9). *Balancing Act News Uupdate.* Retrieved Avril 01, 2010, from www.balancingact-africa.com: http://www.balancingact-africa.com/news/back/balancing-act_475.html#head

Batchelor, S., Hafkin, N., & Chéneau-Loquay, A. (2007). *Connectivity Africa External Review Report.* Ottawa: IDRC.

Braa, J., Kanter, A., Lesch, N, Chrichton, R., Joliffe, B., & Seebregts, C. (2010, forthcoming) *Comprehensive yet scaleable Health Information Systems for Low Resource Settings: A Collaborative Effort in Sierra Leone.* AMIA

Bridges.org. (2003). *Evaluation of the SATELLIFE PDA Project, 2002: Testing the use of handheld computers for healthcare in Ghana, Uganda and Kenya.* Boston: Satellife.

Buskens, I. (2010). *Towards Excellence in Development Research: Integrating Gender Awareness in theory, methodology and researcher attitude.* IDRC.

Buskens, I., & Webb, A. (2009). *African Women and ICTs: Investigating Technology, Gender and Empowerment.* Ottawa and London: IDRC and Zed Books.

Carden, F. (2005, Marcch). Capacities, Contexts, Conditions: The Influence of IDRC - Supported Research on Policy Processes. Ottawa, Ontario, Canada: IDRC.

Comninos, A., Esselaar, S., & Stork, C. (2008). *Towards evidence-based ICT policy and regulation, Vol 1 Paper 4: M-banking the unbanked.* Research ICT Africa.

Esselaar, S., Gillwald, A., & Stork, C. (2007). *Towards an African e-Index 2007: Telecommunications Sector Performance in 16 African countries: A supply side analysis of policy outcomes.* Johannesburg: Wits.

Fairall, L. R., Bachmann, M. O., Louwagie, G. M., van Vuuren, C., Chikobvu, P., Steyn, D., et al. (2008). Effectiveness of antiretroviral treatment in a South African program: cohort study. *Arch Intern Med* , 168: 86-93.

FEAST. (2010, February 8). *Feasibility study for the Africa Connect Initiative : Findings and Recommendations.* Retrieved March 19, 2010, from Feast Project: http://www.feast-project.org/documents/20100208-kth-final-feast-brochure.pdf

Fourati, K. (2008, Juillet 25). Project Approval Document - 105266 Rearch ICT Africa - Phase III. Ottawa, Ontario, Canada: IDRC.

Gillwald, A., & Stork, C. (2008). *Towards evidence based ICT policy and regulation, Vol 1, Paper 2: ICT access and usage in Africa (ICT adoption and diffusion).* Johannesburg: Research ICT Africa.

Gray, V. (2006). *The un-wired continent: Africa's mobile success story.* Retrieved March 17, 2010, from International Telecommunications Union: http://www.itu.int/ITU-D/ict/statistics/at_glance/Africa_EE2006_e.pdf

Hamilton, P., Dzidonou, C., Ibrahim, A., Kone, T., Lishou, C., Oumtanaga, S., et al. (2008). *AAU Connectivity Study: Addressing the Demand for Connectivity of Higher Education Institutions (HEIs) in the West and Central Africa Region.* Accra: Association of African Universities.

Hinze, G. (2009, November 16-20). *Statement of Electronic Frontier Foundation to WIPO Committee on Development and IP 4th Session.* Retrieved March 15, 2010, from Electronic Frontier Foundation: http://www.eff.org/files/filenode/dev_agenda/EFF-CDIP-STATEMENT-111609.pdf

IDRC. (2010, February 23). *105257 - Radio, Convergence and Development in Africa.* Retrieved March 15, 2010, from International Development Research Centre: https://intranet.idrc.ca/en/ev-139817-201-1-DO_TOPIC.html

IDRC. (2006). *Acacia Prospectus 2006-2011.* Ottawa: IDRC.

ITU, (2009) Information Society Statistical Profiles: Africa 2009
http://www.itu.int/ITU-D/ict/material/ISSP09-AFR_final-en.pdf

Karsenti, T., Mbangwana, M., & Harper-Merrett, T. (2009). *The PanAfrican research agenda on the pedagogical integration of Information and communication technologies, Phase 1 National Reports.* Montreal: www.observatoiretic.org.

Kettani, D., & El Mahdi, A. (2007). eGoverment for a Better Governance: The Case of eLarahce Project in Morocco. Morocco: Alakhawayn University in Ifrane.

Kettani, D. (2009). *Fez Wireless Metropolitan Area Network.* Ifrane (Morroco): Al Akhawayn University.

Kettani, D., Gurstein, M., & El Mahdi, A. (2009). Good governance and e-government: Applying a formal outcome analysis methodology in a developing world content. *Inderscience Enterprises Ltd* , 22-54.

Kettanni, D., Moulin, B., Gurstein, M., & El Mahidi, E. (2008). E-gouvernment and Local Good Goverance: A pilot Project in Fez, Morocco. *The Electronic Journal on Information Systems in Developing Countries* , 1-18.

Lishou, C. (2009). *Integration des TIC dans la gouvernance locale au Senegal.* Dakar (Sénégal): Université Cheikh Anta Diop de Dakar.

LOGIN. (2008). *Draft LOG-IN Africa e-Local Governance Roadmap.* Nairobi: LOGIN.

Masuki, K. F., Kamugisha, R., Mowo, J. G., Tukahirwa, J. M., & Tanui, J. K. (2008). *Improved Access to Information: 101697 - African Highlands Initiative.* Kampala: World Agroforestry Centre (ICRAF).

May, J., & Mascarenhas, O. (2010). *Poverty & Information and Communications Technology in Urban and Rural Eastern Africa (PICTURE-AFRICA): Synthesis Report.* Durban.

Mottin-Sylla, M.-H. (2005). *The Gender Digital Divide in Francophone Africa: A Harsh Reality.* Dakar: ENDA Third World .

NUANCE, (2010, March) Green Light for Feast from AfricaConnect, Ubuntunet Allaince newsletter Vol 2 Issue 11, http://www.ubuntunet.net/march2010

Odinga, R. (2009). Business Process Outsourcing - Information Technology Service - Working Group. *The Kenya Gazette* , 1.

https://irims.idrc.ca/irims/ViewDocument.asp?Key=ESAPRG+232-01-02-104488+UNC+255928 and

OECD. (2009). *African Economic Outlook.* London: OECD Publishing. http://www.oecd.org/document/61/0,3343,en_2649_15162846_42689915_1_1_1_1,00.html

Okello, J. J., Okello, R. M., & Ofwona-Adera, E. (2010). Awareness and the Use of Mobile Phones for Market Linkage by Smallholder Farmers in Kenya. In B. M. Maumbe, *E-Agriculture and E-Government for Global Policy Development: Implications and Future Directions* (pp. 1-18). Hershey PA: Information Science Reference.

Osbom, D. (2010). *African languages in a digital age: Challenges and opportunities for indigenous language computing.* Ottawa: HSRC Press.

Pehrson, B. (2009). *Feasibility Study on the Interconnection of Southern and Eastern African Research Networks to Geant.* Stockholm: Feast Project.

Ravat, E., Keats, D., & Scott, P. (2007). *African Virtual Open Initiatives and Resources Project: Annual Report for 2007.* Cape Town: UWC.

Research ICT Africa (RIA). (2009). *Namibian Interconnection Benchmarking Study: Final Report.* Windhoek: Namibia Communications Commission.

Rioux, M. (2009, Février 6). *Les TIC en éducation au Sénégal.* Retrieved 04 1, 2010, from InfoBourg: L'Agence de presse pédagogique: http://www.infobourg.com/sections/actualite/actualite.php?id=14023

Saez, C., (2010, January 20) Copyright Exceptions Needed To Ensure Balance In Africa, Panellists Say. Intellectual Property Watch, Blog Archive.

Satellife and Uganda Chartered HealthNet. (2007). *Uganda Health Information Network, Phase III: June 9, 2006 - June 8, 2007.* Boston: Satellife and Uganda Chartered HealthNet.

Schimidt, J., & Stork, C. (2008). *Towards evidence based ICT policy and regulation, Vol 1 Paper 3: eSkills .* Johannesburg: Research ICT Africa.

Schonwetter, T., de Beer, J., Kawooya, D., & Prabhala, A. (2010). Copyright and Education: Lessons on African Copyright and Access to Knowledge. *The African Journal on Information and Communication* , Issue 10: 37-52.

Schonwetter, T., de Beer, J., Kawooya, D., & Prabhala, A. (2010). Copyright and Education: Lessons on African Copyright and Access to Knowledge. *The African Journal on Information and Communication* , 37-52.

Seebregts, C., Fairall, L., Zwarenstein, M., Lewin, S., & Bateman, E. (2009). *Development and interpretation of a medical and bioinformatics database to support and evaluate the public sector anti-retroviral treatment program in the Free State Province, South Africa – an area with high burden of HIV-1 subtype C infection.* Tygerberg (Souht Africa): South African Medical Research Council & University of KwaZulu-Natal.

Sewankambo, N., Mworozi, E., Rujumba, J., & Maganda, A. (2007). *Uganda Health Information Network (UHIN-III) - The Impact of Health Information on Clinical Decision Making and Patient Care: Use of PDAs in Rural Uganda.* Kampala: Uganda Health Inforamtion Network.

Sinha, C. (2009, September 24). Project Approval Docuement 105708 - Open Architecture Standards and Information Systems (OASIS II) -Developing Capacity, Sharing Knowledge and Good Principles Across eHealth in Africa. Ottawa, Ontario, Canada: IDRC.

Stork, C. (2009). Interconnection Benchmarking in Namibia. *CPR South 2009.* Colombo: CPR South.

Tang, A., & Fraser, H. (2009). *Capacity Building in Open Medical Record System - Rwanda (Second Interim Report).* Kagali - Rwanda: Partners In Health.

The Kenya Gazette, (2009, December 18) Business Process Outsourcing/ Information Technology Services (BPO/ITS) Appointments. Gazette Notice 13089.

The Namibian. (2009, July 8). NCC slashes mobile charges. *The Namibian* , p. http://www.namibian.com.na/index.php?id=28&tx_ttnews[tt_news]=57181&no_cache=1.

Tumwesigye, N. M. (2006). *Cost Effectiveness of Personal Digital Assistants in Health Information System in Rakai and Lyantonde Districts, Uganda.* Kampala: Uganda Health Information Network.

UbuntuNet Alliance. (2009). *Overview of Fibre Infrastructure Opportunities.* Lilongwe: UbuntuNet Alliance.

Willard, T. (2008). *Positive Relationship Work: Organizational Case of Study of the Association for Progrssive Communication (APC).* Ottawa: International Institute for Sustainable Development.

Wilson-Grau, R., & Vincent, J. (2010). *Evaluation of ACACIA III: The Acacia Approach and Its Most Significant Outcomes 2006-2009.* Ottawa: IDRC.

LIST OF ACRONYMS

A2K	Access to Knowledge Project
ACA2K	African Copyright and Access to Knowledge Project
ANLoc	African Network for Localization
APC	Association for Progressive Communications
AVOIR	African Virtual Open Initiatives and Resources
BPO	Business Process Outsource
CAD	Canadian Dollars
CDIP	Committee on Development and Intellectual Property
CI	Consumers International
CIDA	Canadian International Development Agency
DANTE	Delivery of Advanced Network Technology to Europe
DFID	Department for International Development
DIRSI	Regional Dialogue on the Information Society Network
EAC	East African Community
eARN	Electronic Agriculture Research Network
EEF	Electronic Frontier Foundation
EMR	Electronic Medical Record
ENDA	Environment and Development in the Third World
EU	European Union
FEAST Education Network	Feasibility Study for African-European Research and Interconnection
FOSS	Free and Open Source Software
GRACE	Gender Research in Africa into ICTs for Empowerment
HEIs	Higher Education Institutes
HIV/AIDS	Human Immune Virus/Auto Immune Deficiency Syndrome
HMN	Health Metrics Network
ICASA	Independent Communications Authority of South Africa
ICT	Information and Communication Technology
ICTs	Information and Communication Technologies

ICT4D	Information and Communication Technologies for Development
IDRC	International Development Research Centre
IT	Information Technology
ITU	International Telecommunication Union
Kbps	Kilobits per second
LINK	Learning Information Networking Knowledge Centre
LIRNE	Learning Initiatives on Reforms for Network Economies
LOGIN	Local Governance and ICT Research Network
Mbps	Megabits per second
MHIN	Mozambique Health Information Network
NGO	Non Governmental Organization
NRENs	National Research and Education Networks
PAN	Pan Asia Networking
PANAf	Pan African
PDAs	Personal Digital Assistants
PICTURE Africa Systems in	Poverty and Information and Communication Technology Urban and Rural Eastern Africa
OASIS	Open Architecture Standards and Information Systems
OECD	Organisation for Economic Co-operation and Development
OpenMRS	Open Medical Record System
OSS	Open Source Software
RHEIN	Rwanda Health Education and Information Network
RIA	Research ICT Africa
TB	Tuberculosis
UA	Ubuntunet Alliance
UHIN	Uganda Health Information Network
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
UWC	University of Western Cape
WHO	World Health Organization
WIPO	World Intellectual Property Organization