FACULTY OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

THIRD YEAR TRAINING REPORT

COMMUNITY WIRELESS RESOURCE CENTRE

Community wireless networks - Telecentre Assessment

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Acronyms

CPAR	Canadian Physicians for Aid and Relief
CWRC	Community Wireless Resource Centre
DDHS	Director District Health Services
DSTV	Digital Satellite Television
FM	Frequency Modulation
HEP	Hydro Electric Power
IDRC	International Development Research Center
ICT	Information and Communication Technology
LOS	Line Of Sight
Mbps	Mega bits per second
MTN	Mobile Telephone Network
NGO	Non-Governmental Organization
NUSAF	Northern Uganda Social Action Fund
UNDP	United Nations Development Program
UTL	Uganda Telecom Limited
VSAT	Very Small Aperture Terminals
Wi-Fi	Wireless Fidelity
WOUGNET	Women of Uganda Network

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ABSTRACT

This report gives the documentation of the findings of the community wireless networks surveys that were carried out in Nabweru sub-county and Lira district between the period of July and August, 2006 as the first phase in the process of implementing the Community Wireless Networks in selected areas within Uganda.

Chapter one covers the introduction that briefly highlights the purpose of the surveys and what the project is all about.

Chapter two covers a brief insight into wireless networks and the different technologies in common use.

Chapter three tackles the needs assessment study that was carried out in Mbale as a build up for a similar survey that was then carried out in the Telecentres assigned to each one of us.

Chapter four gives in detail the findings of the surveys that were carried out Nabweru. It is sub-divided into two sections, one for the telecentre survey and the other for the survey carried out at the partners.

Chapter five looks at the surveys carried out in Lira at Lira learning centre and the potential partners that were identified. It has the same structuring as chapter four.

The last chapter concludes the report giving recommendations and references. An appendix of the questionnaires used during the surveys and summaries of the telecentres and partners is also included.

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CHAPTER ONE

1.0 INTRODUCTION

This report covers the community wireless networks telecentre assessment surveys carried out during the industrial training period of July – August 2006 under CWRC to assess/ revise the technical requirements following the initial feasibility study that was carried out in 2004 by Kyle Johnston particularly for Nakaseke telecentre, Nabweru telecentre and Lira learning centre. It also covers the partner status survey to gauge the level of interest of the partners within the community, their willingness to pay for the services and possibly proposed amounts.

Community Wireless Network is a set of local area networks interconnected together by means of outdoor radio links. The network is implemented and managed by the community that shares a common communication infrastructure. [1]
Community wireless resource centre (CWRC) is being established at the faculty of Technology under the Department of Electrical Engineering in Makerere University with the following objectives:

- To implement and support the maintenance of community wireless networks, initially targeting the IDRC-funded telecentres
- Make connectivity more affordable at the IDRC sponsored telecentres by creating community wireless networks through sharing the existing bandwidth at the telecentre with neighboring institutions.
- To build capacity, among students at the Electrical Engineering department and the technical staff at the Telecentres, in the design, installation and maintenance of community wireless networks including *bandwidth management* and *efficient traffic provisionin*g.
- To undertake research to assess the technical feasibility and economic viability of the various business/partnership models of community wireless networks.
- To introduce a community networking curriculum at Makerere University under the courses *introduction to information and computing technology* and *wireless propagation.*
- To act as a source of knowledge on community wireless networks by dissemination of information through publications and presentation of the findings on the community wireless networks project.

As part of the implementation of this project, CWRC was expected to carry out surveys in six IDRC-funded telecentres in Uganda. An initial feasibility study was performed in 2004 by Kyle Johnston, an independent consultant from Canada. The study included a survey trip to six IDRC sponsored telecentres with the purpose of exploring the possibilities of sharing existing bandwidth at the telecentres with neighboring institutions though the establishment of community wireless networks. The first survey revealed that community wireless networks where suitable in many of the cases and a set of potential partners where immediately identified for most of the Telecentres. Also, the survey highlighted the direct lack of technical capacity at the grassroots level in the telecentres to maintain any kind of wireless network.

It is expected that CWRC will not only enhance the learning opportunity for Electrical and Engineering students within the department but also act as a technical backstop within Uganda and build the necessary capacity at the selected telecentres to maintain and expand such networks.

The relevance and usefulness of telecentres to the surrounding communities is greatly increased by the provision of Internet access. The setup of community wireless networks represents a solution via which the costs of Internet access can be shared among organizations within a given community. This is in line with the current ICT development priorities of the Ugandan Government of which a key priority is the provision of adequate and affordable bandwidth.

CHAPTER TWO

2.0 WIRELESS CONCEPTS

Wireless networking protocols [2]
The primary technology used for building low-cost wireless networks is currently the 802.11 family of protocols, also known as ***Wi-Fi***.
The 802.11 family of radio protocols (802.11a, 802.11b, and 802.11g) have enjoyed an incredible popularity in the United States and Europe. By implementing a common set of protocols, manufacturers world wide have built highly interoperable equipment. [2]
The three wireless standards currently implemented in most readily available gear are:

- **802.11b** This is probably the most popular wireless networking protocol in use today. It uses a modulation called ***Direct Sequence Spread Spectrum*** (***DSSS***) in a portion of the ISM band from 2.412 to 2.484GHz. It has a maximum rate of 11Mbps, with actual usable data speeds up to about 5Mbps.
- **802.11g** This uses the same ISM range as 802.11b, but uses a modulation scheme called ***Orthogonal Frequency Division Multiplexing*** (***OFDM***). It has a maximum data rate of 54Mbps (with usable throughput of up to 25Mbps), and can fall back to 11Mbps DSSS or slower for backwards compatibility with the hugely popular 802.11b.
- **802.11a** Also uses OFDM. It has a maximum data rate of 54 Mbps; with actual throughput of up to 27Mbps. 802.11a operates in the ISM band between 5.745 and 5.805GHz, and in a portion of the band between 5.170 and 5.320GHz. This makes it incompatible with 802.11b or 802.11g, and the higher frequency means shorter range compared to 802.11b/g at the same power.

Network Configurations
Wireless networks are naturally arranged in these three logical configurations:

- Point-to-point links
- Point-to-multipoint links
- Multipoint-to-multipoint clouds

The physical network layout used will depend on the nature of the problem to solve. While different parts of the network can take advantage of all three of these configurations, any individual link will fall into one of the above topologies.

Point-to-point links
Point-to-point links typically provide an Internet connection where such access is not otherwise available. One side of a point-to-point link will have an Internet connection, while the other uses the link to reach the Internet. With proper antennas and clear line of sight, reliable point-to-point links in excess of thirty kilometers are possible.

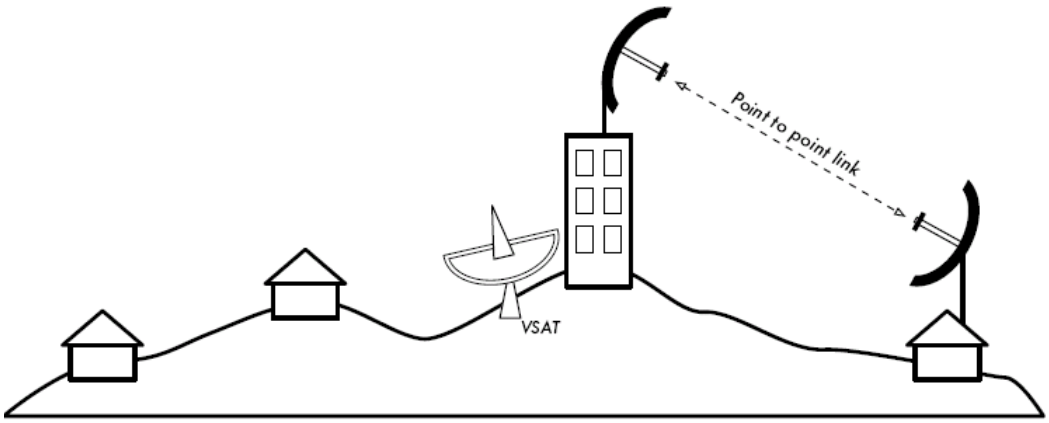

Figure 1: A point-to-point link

Point-to- Multipoint links

Whenever several nodes are talking to a central point of access, this is a point-to-multipoint application. A point-to-multipoint configuration allows many remote sites to share a central internet connection.

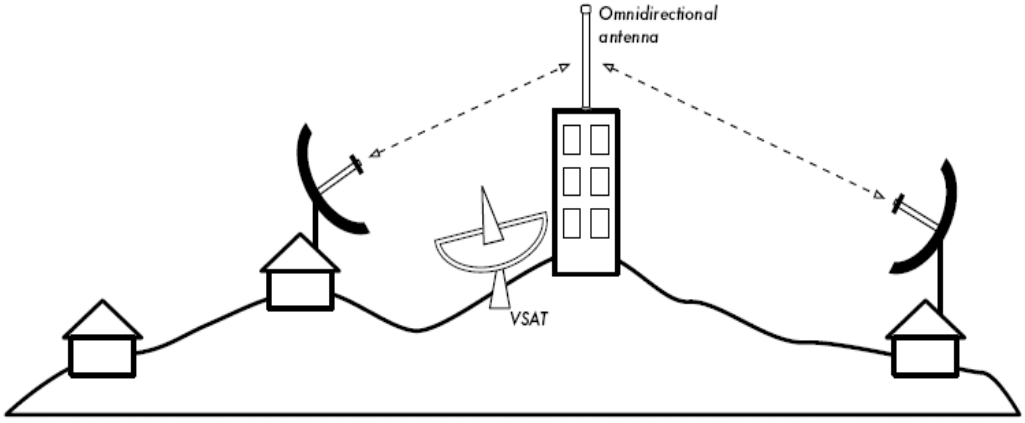

Figure 2: A point-to-multipoint configuration

Multipoint-to-Multipoint Clouds

This is sometimes referred to as an **Ad-hoc** or **Mesh** Network. In this type of configuration, there is no central authority. Every node on the network carries the traffic of every other as needed, and all nodes communicate with each other directly.
The benefit of this network layout is that even if none of the nodes are in range of a central access point, they can still communicate with each other. Good mesh network implementations are self-healing, in that they automatically detect routing problems and fix them as needed. Extending a mesh network is as simple as adding more nodes. If one of the nodes in the "cloud" happens to be an Internet gateway, then that connection can be shared among all of the clients. Two big disadvantages to this topology are increased complexity and lower performance. Security in such a network is also a concern, since every participant potentially carries the traffic of every other.

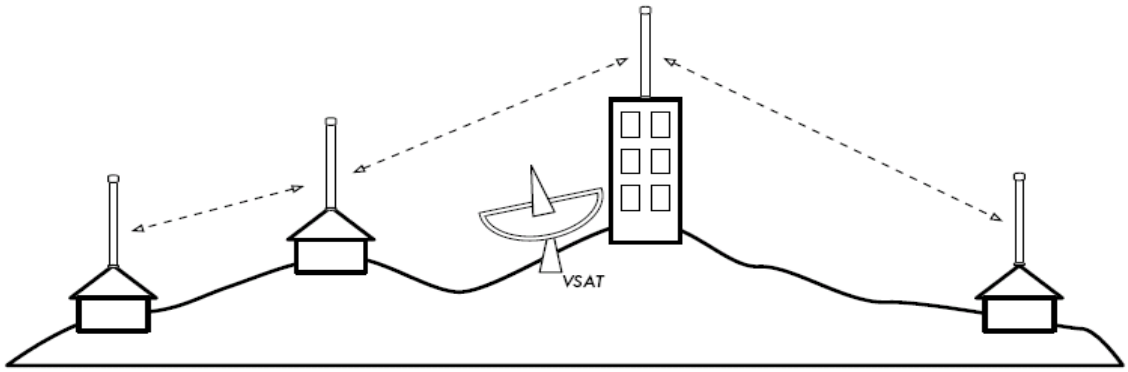

Figure 3: A multipoint-to-multipoint mesh.

Wireless network communication

To provide physical connectivity, wireless network devices must operate in the same part of the radio spectrum. This means that 802.11a radios will talk to 802.11a radios at around 5GHz, and 802.11b/g radios will talk to other 802.11b/g radios at around 2.4GHz. But an 802.11a device cannot interoperate with an 802.11b/g device, since they use completely different parts of the electromagnetic spectrum.

More specifically, wireless cards must agree on a common channel. When two wireless cards are configured to use the same protocol on the same radio channel, then they are ready to negotiate data link layer connectivity.
Each 802.11a/b/g device can operate in one of four possible modes:

1. ***Master mode*** (also called *AP* or *infrastructure mode*) is used to create a service that looks like a traditional access point. The wireless card creates a network with a specified name and channel, and offers network services on it. While in master mode, wireless cards manage all communications related to the network (authenticating wireless clients, handling channel contention, repeating packets, etc.) Wireless cards in master mode can only communicate with cards that are associated with it in managed node.
2. ***Managed mode*** is sometimes also referred to as *client* mode. Wireless cards in managed mode will join a network created by a master, and will automatically change their channel to match it. They then present any necessary credentials to the master, and if those credentials are accepted, they are said to be *associated* with the master. Managed mode cards do not communicate with each other directly, and will only communicate with an associated master.
3. ***Ad-hoc mode*** creates a multipoint-to-multipoint network where there is no single master node or AP. In ad-hoc mode, each wireless card communicates directly with its neighbors. Nodes must be in range of each other to communicate, and must agree on a network name and channel.
4. ***Monitor mode*** is used by some tools to passively listen to all radio traffic on a given channel. When in monitor mode, wireless cards transmit no data. This is useful for analyzing problems on a wireless link or observing spectrum usage in the local area. Monitor mode is not used for normal communications.

CHAPTER THREE

3.0 BACKGROUND

Two preliminary surveys were carried out in preparation for the Community wireless networks- telecentre assessment surveys that were carried out by CWRC.
In view of the above, we had an opportunity of working alongside qualified personnel who were carrying out a needs assessment survey in Mbale district organized by WOUGNET.[1] The study aimed at setting up community needs driven networks and was being carried out in four East African countries of Tanzania, Kenya, Rwanda and Uganda funded by UNDP. WOUGNET was doing the study in Uganda and the initial survey was carried out in Mbale, Nakaseke and Apac. Mbale was chosen for an in-depth study because it presented better qualities such as the success of cooperative unions. In view of this, the project is to act as a pilot for the implementation of similar networks in other districts in the country and thus foster the development process.

Nakaseke Multipurpose community telecentre was also visited. This was done after preparing a survey questionnaire that was then used to carry out the survey both at the telecentre and at the partners.[2] This exercise was also organized to help us gain a good insight into the experiences involved in carrying out surveys. A team of three people (Paul, Edwin and I) participated in this exercise as a preparation for the surveys to be done at our respective telecentres. The results presented were not adequate as such and thus the questionnaire had to be revised after the study to suite the requirements of the technical consultants. A more comprehensive survey was done by a colleague (Edwin) who was assigned to Nakaseke telecentre and the results are presented in his report.

3.1 PURPOSE OF THE MBALE STUDY

The study was aimed at answering the overall question: *Are community needs driven ICT networks, supported by open access approaches, effective models for ICT-enabled pro-poor development?*
This main question was sub-divided into four specific questions:

- To which development needs of poor communities can ICTs contribute?
- What is the value added of community needs driven models?
- What is the value added by networking (people and technologies) models?
- In what ways can open access approach contribute to sustainability?

In other words, the study was carried out to assess the possibility of setting up a community based and owned ICT program and the benefits that would accrue.

[1] WOUGNET is an NGO established in 2000 by several women organizations in Uganda to develop the use of ICTs among women as tools to share information and address challenges collectively. Its objective is to strengthen the use of ICT among women and women organizations, build capacities in ICT use and application, and expand activities to reach out to women in the rural areas.
[2] The table summarizing all the partners that were visited is included as an appendix

3.2 SURVEYS[3]

The approach that was adopted to first assess the general community needs and then quickly focus on those that could benefit if the community was ICT-enabled and the 'integrated approach' to this. The benefits can include, among others, delivery of education, health and public services.
The survey mainly targeted potential partners such as educational institutions, local government offices, community internet cafes, cooperative unions and NGOs. The main objective was to obtain their views on such an initiative since they would be the beneficiaries and owners.

3.2.1 Educational institutions:

In this category, the following educational centres were visited:

- Primary schools: Fairway Primary School. The school is located in the senior quarters about 3 km away from the town centre. The deputy headmistress was interviewed. The school is supported by Forum for African Women Educations (FAWE) which mainly supports education of the girl child in science subjects. The school is spacious and has sickbay, good hostels and DSTV but lacks enough books in its library and also suffers from heightened load shedding.

- Secondary schools: Wanale View Secondary School. The school is located about 1 km from Mbale town centre just on the outskirts. It is a mixed 'O' and 'A' Level school. The deputy headmaster was interviewed.

- Tertiary institutions: Institute of Management Science and Technology (IMSAT). This institution is located about 1 km from the town next to Mount Masaba High School. The principle was interviewed.

3.2.2 Cooperative Unions

The cooperative union that was visited is Bugisu Cooperative Union (BCU) which deals mostly in coffee. It is located about 2km from the town centre along the Mbale-Soroti road. The general manager was interviewed.

3.2.3 Local Government Offices

Bungokho sub county offices located about 5km from Mbale town on the Mbale-Tororo road, was visited. The vice chairman, deputy speaker and three councilors of the sub county were interviewed.

3.2.4 NGOs

The NGO that was visited is Uganda Women Concern Ministries (UWCM). It is located about 6 km from the town centre along the Mbale-Tororo road. It is a women's initiative that mainly helps needy children as well as help women set up projects to improve their welfare. The NGO has three computers of which one is connected to the internet. The Programs Coordinator and acting Executive Director was interviewed.

[3] Refer to the appendix for the questionnaire (A3).

3.2.5 Radio Station

The news editor, also acting Station Manager, of Open Gate 103.2 FM was interviewed. Open Gate FM is located in Mbale town near Bank of Uganda Mbale branch. It is a private entity that covers most parts of eastern Uganda and the western part of Kenya. It employs about 30 people of which 7 are female. It has been operational for 5 years.

3.2.6 Community Internet Café

Telekom Equator Limited internet café was visited. It was set up by government as part of its policy to provide internet services to the masses. The internet operator (administrator) was interviewed.

3.3 RESULTS OF THE SURVEYS

In general, the people interviewed at these places cited the following as the major ***community needs*:**

- Access to good education for all ages, well equipped health facilities, good transport infrastructure especially in the rural areas and good communication infrastructure to connect the rural and urban Mbale.
- Food security to counter the possibility of famine, good sanitation and access to clean water and extension of national grid to the rural areas for power accessibility.
- Creating employment especially among the youth, develop projects for poverty eradication among households and putting in place a public library to provide information for all sectors.

Among the above, education and health needs were emphasized as the priorities.
The people were asked to give what kind of ***information would enhance development*** in the area. The following were cited: agricultural information to improve agricultural production, information about health and sanitation and information on how to make income and savings so as to improve their livelihoods.

Generally, the people interviewed said that most people in the area meet their food requirements although they sell most of it due to poverty. This brings about food insecurity especially during periods of drought. However, most people are able to meet their housing needs (shelter) although building materials are rather expensive. On whether people meet their medical needs, the people interviewed remarked that most people were unable to meet their medical needs. That most people were unable to visit private clinics where the services are better and resorted to the government health centres where medical services are free although such centres are ill-equipped and lack enough qualified personnel.

Asked whether the ***current ICT services existing in the area were responding to community needs***, the people remarked that they were not focusing on the community needs. Most are private, profit-oriented and urban based and focused.
The people interviewed were asked the ***advantages of a cooperative model of service delivery*** as opposed to the business-oriented model. All remarked that it was a good thing that had the following advantages: - reduction in the cost of service delivery and increase

in area served, easy delivery and sharing of information, ease in lobbying and consequently contributing to general policy setting. In addition, there're job opportunities and sharing of expertise and generally only a few people are left out.

Asked about the ***challenges that a cooperative model is likely to face***, the following challenges were cited:

- There might be need for sensitization of the masses.
- Some people might be uncooperative.
- Mode of communication might pose a big problem since the area is multi-ethnical with so many languages.
- There might be stiff competition posed by private investors who are not willing to join the cooperative.
- Security of the facility might be at stake as "*Every man's business is no man's business"*.
- Personalization of the facility by some individuals.
- Illiteracy of some people might also pose a problem.
- Transparency. People might use the facility for personal gain.

Asked about ***the benefits of open access model***, the following were generated:

- Sharing of information is enhanced.
- More people access information at a cheaper price.
- There is room for competition which improves the quality of service delivery.
- It will provide employment in the area.

3.4 FOCUS GROUP DISCUSSION WORKSHOP

A focus group discussion workshop was held at Mount Masaba High School. The workshop brought together several district leaders and councilors, head teachers and other school leaders, leaders of NGOs, leaders of private business units (like radio stations and internet cafes) as well as other people in positions of responsibility. The workshop brought together all such members from the old Mbale community before it was divided into the districts of Mbale, Manafwa and Sironko.

The workshop was aimed at assessing further the possibility of setting up in the area a community needs driven ICT program which is also community based and owned. A thorough explanation of the necessity of the workshop was given to the participants as well as a brief background was of the project. A useful explanation of WOUGNET and its responsibilities as regards this project was given.

It was remarked that the research was aimed at finding out the ways how the project could be implemented so as to meet its intended purpose of having a greater development impact on the area unlike existing ICT services which have still failed to target and prioritize community needs. The already existing ICT services include, among others, FM radio stations, a television station, and mobile phone services, internet services especially in internet cafes, computer networks and ICT training institutions.

The questions that the participants discussed were divided into four sections or sets. The first set had questions that were aimed at assessing the major needs of the Mbale community and the priorities, the second set of questions aimed at assessing the benefits of a community needs driven ICT program and any challenges that may be involved, the third set aimed at assessing the benefits of using a cooperative approach to ICT service delivery and finally, the fourth aimed at assessing the benefits of having an open access approach to sharing ICT resources in terms of cost, sustainability, volume and capacity.

The participants were arranged in five groups of which two were same sex groups. The idea was to have women to largely discuss their needs as well as men. The first set of questions was given to each of the same sex groups while each of the remaining groups was given each of the remaining three sets of questions. Discussions were held in these groups and then each group presented their findings to the rest. The following is a thorough representation of the findings of the workshop.

Group 1 (Women)

Question 1:

What are the development needs of the whole Mbale community? Why? Prioritize.

Response:

The needs of the community were subdivided into several categories.

Social-cultural needs:

These needs included; quality education (formal and informal), good health services, cultural reforms, access to clean water and electricity, good transport and communication infrastructure and high security.

Economic needs:

The economic needs included; capital for development which encompasses, among others, the aspects of land ownership, low interest rates on loans as well as enough sureties to acquire loans. Besides, there is need for a good saving culture to help fight poverty related problems, access to good markets and market information, cheap technology for processing, storage and packaging of products and need to learn modern faming methods.

Political needs:

These included; a need for a more affirmative action, political accountability and transparency of the leaders, unity, peace and political tolerance especially in families where men force their women onto certain political sides against their wishes. In addition, there is the need for politicians to be approachable and accessible by the masses, gender and development sensitive policies and enough political security.

Question 2:

What type of information is considered to be very important for development?

Response:

The most important information necessary for development given included; information on education, marketing and health, information on modern and user friendly technologies and that on development opportunities including how to cooperate and network in order to tap unexploited resources.

Group 1 (Men)

Response to Question One above:

In this category, the development needs included; education in terms of better and well equipped schools and man power, good communication infrastructure for example access to good roads, provision of basic needs of life for example food, access to safe water and other health services, high security, access to information services and markets and lastly, better agricultural methods for example forming cooperatives.

Response to Question Two above:

Information of utmost importance included; Information about micro-finance institutions and good lending terms, information on health, education and markets. Besides, there is need to be up to date about the current communication systems as well as other gadgets.

Group 2

Question 1:

What are the benefits of a community needs driven ICT service?

Response:

The benefits of a community need driven ICT service include; reduction in cost of implementation and maintenance, increase in the durability of the facilities, fostering development of the area, flow of information is made easier and quicker. Besides, each person's individual needs are catered for in such a model and implementation of government policies is made easy and quicker for example AIDS programs, programs on agriculture, etc.

Question 2:

What are the challenges that might arise from using a community needs driven ICT service and how can they be addressed?

Response:

The challenges anticipated in this model of ICT delivery include; lack of adequate knowledge of the use of ICTs by the community members, difficulty in quality control for example people might use the internet to surf pornography, failure of the ICTs to satisfy all community needs and failure of the people to afford these services due to poverty. In addition, the progress of the ICT service might be retarded if it lacks enough government backing. Lack of infrastructure to implement the ICT services is also a big challenge together with resistance to change by some members of the community.

The challenges mentioned above can be addressed by close partnerships with between NGOs and communities, imparting skills and positive attitudes to community members as regards savings and credit so as to reduce poverty, encouraging adult and general education of ICTs in schools by integrating ICT in the school curriculum, involving political figures in the implementation of such an initiative, sensitizing the community members on the value and use of ICTs for development, improving community infrastructure to the necessary level for proper implementation of such services.

Group 3

Question 1:

a) What are the benefits of using a cooperative model in terms setting up infrastructure and utilizing this infrastructure in regards to the internet, community radio, ICT for education and telemedicine?

b) What challenges do you anticipate in using a cooperative model and how can they be addressed?

Response:

The benefits highlighted in using a cooperative model include; easy and greater access to information, cost-effectiveness, easier sustainability, information sharing is enhanced, lower cost of maintaining the facility, increased efficiency and ease in mobilizing funds and other resources and general reduction in poverty.

There are, however challenges anticipated and these include; Negligence as people develop an attitude of "to whom it may concern", failure of the facility to serve all people simultaneously, personalization of the facility, and difficulty in mobilizing people and resources. Besides, majority of the people are affected if the facility breaks down unlike in single ownership where the owner faces the costs alone and lack of competition may lead to inefficiency.

The challenges above could be addressed by creating semi-autonomous cooperative unions. This reduces the possibility of more people being affected as well as increasing competition among these cooperative unions. In addition, sensitizing people about the benefits of cooperative model for service delivery is necessary. Developing rules and operational guidelines for the use of the facility and forming strong management committees to manage the cooperative unions is also essential. Lastly, the government's involvement may be crucial at some point.

Group 4

Question:

What is your opinion about having an open access approach to sharing ICT resources in terms of cost, sustainability, volume, and capacity?

Response:

Cost:

The cost of maintenance is shared among people, expertise is availed for example if all radio stations hire one 'expert' technician, implementation costs are shared and therefore lowered, partners increase due to lower costs and competition is enhanced which increases quality and lower costs.

Sustainability:

It is easier to keep the facility operational because of pooling together of resources. In addition, there is community contribution in terms of labor, finance and so forth, local experts are available and this reduces costs and most of all community ownership ensures security of the facility.

Volume:

The users of the facility will increase and it would encourage local innovation due to the open nature.

Capacity:

The facility is used to the maximum and capacity is limited by the closed nature of current ICT delivery.

3.5 REMARKS

The study brought to light the various development needs of the people of Mbale district. The opinions of the various individuals representing the communities as pertains to the relevance of open access and community owned networks was sought and noted.

As noted in the survey, the people of Mbale have shown great willingness to embrace this model of ICT service delivery. The local government officials pledged to assist in whatever ways possible in the event of setting up such a project. With the above findings it is very evident that this kind of project is feasible and viable.

CHAPTER FOUR

NABWERU SURVEY

4.1 TELECENTRE STATUS SURVEY

Nabweru Telecentre:
A Telecentre status survey was carried out at Nabweru Community Multipurpose Telecentre on 24th July, 2006.[4] Nabweru Telecentre is located at Nabweru sub-county headquarters about 6km Northwest of Kampala (15 Minutes Drive by car). It was founded by IDRC in 1997.

A: Person interviewed:
Mr. Geoffrey Kikomeko, the assistant manager of the Telecentre who is responsible for running the day to day activities of the Telecentre.

B: Employees:
The Telecentre has three full time employees[5]

C: Infrastructure:
The Telecentre has been in operation for 7 years since May 1999. It is primarily run on Hydro-Electric Power. However this source of power is not very reliable nowadays as there is a lot of power outages after every one day (about 15 days a month). The telecentre has a generator used in such instances as an alternative, however, the cost of running the generator all this time is still too high.

D: General description of the premises:
The telecentre is located on a single storey office block with no access to a rooftop. However it has got room for securely storing equipment and has not recorded any instances of theft. It shares its premises with other organizations. These include the administration Police, LCIII Chairperson's Office, Tiger FM radio station and the health department. The people in this place access the telecentre premises purposely to make use of the services offered by the Telecentre. The nearest city/town to the Telecentre is Kampala city located 6km from Nabweru.

Weather in Nabweru has been described as being rainy with instances of thunderstorms during the months of August-September, and the hottest month is January. There is a radio mast just next to the building block housing the Telecentre and it is owned by the Telecentre radio station, a sister organization of the Telecentre.

[4] The address of the telecentre and the Questionnaire used to carry out the Telecentre survey is attached as an appendix
[5] The particulars of the employees are summarized in table 1 in the appendix

E: Telecentre services:
The Telecentre offers the following services:-

- Computer training with at least two clients a day.
- Library services with an average of one client a day.
- Printing with about 4 clients a day generating a daily income of about Ush6.000/= and related expenses totaling Ush.2000 per day
- Community radio.

Of the services mentioned above, computer training, printing and community radio are the most beneficial ones whereas Library services are the least beneficial. These services are mainly accessed by women, youth and students whose ages lie between 16-24 years. The telecentre keeps records and user logs but I did not have the opportunity of seeing them.

F: Internet:
The telecentre has not had the internet for the last three months because of the high costs of subscription that could not be met. It is however connected by Bushnet (Cisco Wireless) and the cost of connectivity is USD 250 per month. It has 5 networked computers and other kinds of equipment such as television sets, radio, projector, video decks, and video camera and serves a radius of approximately 3 kilometers.

G: Cooperative Model ownership:
The benefits put forward as a result of this mode of utilizing the internet infrastructure include; reduced cost for the service since all the charges involved including maintenance is met collectively and ICT services are decentralized to other institutions as well. However, the challenges anticipated include; failure of some partners to pay after incurring huge cost thus defaulting.
The assistant manager was asked to identify any potential partners within the area and the following were immediately identified;

- Nabweru women exhibition centre located on the same building block with the Telecentre.
- Nabweru Parents' school about 1km from the Telecentre. This was visited and data was collected.

Ideas were sought about how to raise money to facilitate sustaining the project and the following were given;

- Selling the idea of cooperative model to the other partners to join the initiative
- Encouraging people to use these resources and possibly putting in place subscription fees.

The Telecentre management reiterated the fact that it is very much willing and is in position to contribute towards the maintenance of the internet infrastructure as well as the allowances of the maintenance personnel. A proposed amount of Ush50.000/= was mentioned.

H: Local Environment:

The average population of the area is estimated to be 100.000 people. There are about 25 schools, 10 churches and approximately 75 health clinics in the area. Many large businesses do exist in the area within the radius of 10kms. Most of these are located within the city. However in the immediate surrounding, there are maize mills and other businesses. The people in the area generally practice farming for a living. Some of them are business men and women. It was also said that other communication services do exist in the area such as calling points belonging to all the mobile operators.

Figure 4: Nabweru Multipurpose Community Telecentre Connected by Bushnet

Figure 5: The radio Mast belonging to Tiger FM radio station, located behind the Telecentre block.

4.2 PARTNER STATUS SURVEY[6]

A partner status survey was carried out in Nabweru at schools (Crown High School and Nabweru Parents' School) , the Magistrate court offices, Tiger FM radio station and Nabweru sub-county offices all located most of which are located within the vicinity of the Telecentre. The result of the survey is documented below.

POTENTIAL PARTNER:
CROWN HIGH SCHOOL

A: Person interviewed:
Mr. Daniel Kyasanga, Headmaster of the school.
His contact number is 0772-643 159
E-mail address: kyasadaniel@yahoo.com

B: Employees:
The school has 22 teaching staff and about 11 non-teaching staff and has a total student population of 200 students.

C: Services and equipment:
The school has got a fixed phone line, eight (8) operational personal computer sets 5 of which are networked.
Asked about any other technical equipment in their possession, the headmaster said they currently had none.
The services of interest to school include;

- Computer training
- Internet/ Email
- Library services
- Photocopy
- Fax service

D: Activities and Clients:
The core business and activities of this institution is to provide education to students. The benefits of the internet put forward by the headmaster included;

- Helping liaise with partners
- Improve the learning environment
- Be up to date with the current affairs and also access to a great wealth of information.

The internet facility would be used primarily by the students (200 in number) and staff (about 30) of the school. These mainly speak English and Luganda.

E: Financial capacity:
A figure of USD40 or between (70.000 and 80.000 Uganda shillings.) was put forward as the estimated maximum financial contribution for internet access per month.

[6] The questionnaire used to carryout the partner status survey is attached as an appendix

F: Infrastructure:
The school has a two storied building block used as classrooms and administration offices. It is run primarily on Hydro Electric Power. It is located about 600 meters from the telecentre and located on a slope. As mentioned earlier, there is a problem of power outages in this area and this is done every other day. The school currently does not have an alternative source of power but the headmaster said that plans are underway to acquire either inverters or a generator by September 2006.

G: General description of premises:
The school has a double storey building block, has got access to a roof top and the headmaster says that equipment can be mounted on top. He however said the passage to the roof top was sealed off as they were thinking of adding another floor in the future. Currently the roof top can only be accessed using a ladder. He also said that the school has room to store equipment securely and had never lost any thing of value. The school does not share its premises with any other organization.

H: Local environment:
There exists a radio mast about 1 kilometer from the school and this belongs to Tiger FM radio station (located at the Telecentre). This mast is however not visible from within the school premises but is a possibility of having a line of sight from the roof top. As said earlier, the school is located on a slope with several trees and buildings obstructing it from the Telecentre. There are however calling points in the area belonging to the three mobile operators.

I: Cooperative model and ownership:
The benefits put forward of using this approach in utilizing the internet infrastructure include reduced costs and a wider access to the internet facilities by many people. However, challenges anticipated by the headmaster include failure by some partners to pay for the services, power problem and difficulty in mobilizing finances from the parents.

The headmaster proposed opening the internet facilities to the community when the school closes for holidays as means of raising money to sustain the project. He is also very willing to contribute towards the maintenance of the internet infrastructure as well as the salaries of the maintenance personnel. This would be achieved by including a gross figure for internet and maintenance in the school fees for every term. It is not known exactly how much would be needed so he could quote a figure. Lastly the headmaster was optimistic that this project would greatly enhance the students' performance and was therefore a necessity.

J: Technical description:
Crown high school is located about 1km from the telecentre and is at a lower altitude with no line of sight due to the presence of several trees and houses in the immediate surrounding. There aren't any masts visible in the area.

Figure 6: Crown High School

Figure 7: Landscape from the roof terrace in the direction of the Telecentre.

POTENTIAL PARTNER
Nabweru Parents' School

A: Person Interviewed:
Mr. Ronald Damulira, the Director of Nabweru Parents' School.
Contact Number: 0752 647033
E-mail: nabweruparentsschool@yahoo.co.uk

B: Employees:
The school has 12 teachers.

C: Services and Equipment:
The school does not have a fixed phone line and a computer set. Other technical equipment in their possession include; printer, cycle styling machine.
The services of interest to the school include;

- Email/ Internet
- Telephone
- Fax service

D: Activities and Clients:
The core business/ activity here is providing education. The director mentioned three main ways in which internet would improve their business, i.e.

- It would help market the school
- It would also help them get sponsors and donors
- The school is currently having a music choir and sees this as an opportunity to market its music.

The main users of the internet would be the staff and pupils. The school has got about 700 pupils who mainly speak English and Luganda.

E: Financial capacity:
USD 50 per month was given as the maximum financial contribution for internet access.

F Infrastructure:
The primary source of power used here is hydro electric power. Load shedding is done after every day, however the school has a generator as the alternative for HEP.

G: General description of premise:
The school does not have access to a roof top but has a place to store equipment securely and has never reported any cases of theft. The school does not share premises with any other organizations.

H: Cooperative model of ownership:
The main benefit of this model given by the director is increase in number of people making use of the internet. However the main challenge foreseen is the failure by some partners to pay for the services. In view of this the director expressed his willingness to contribute towards the maintenance of the infrastructure.

I: Technical description:
There is no line of sight from the Telecentre due to the presence of thick vegetation and several buildings. The school is located about 1 km from the Telecentre and at a lower altitude as with respect to the Telecentre. There are however some towers on a ridge about 2 Kilometers from the school that are clearly visible belonging to MTN and UTL.

Figure 8: Wall fence at Nabweru Parents' School

POTENTIAL PARTNER
Nabweru Sub-County offices

A: Person Interviewed:
Mr. Steven Mwasanje, the senior assistant secretary
Phone contact: 0772405498/ 0772591206

B: Employees:
The sub-county has a total of twenty two staff members, fifteen of whom are technical Staff, six of these are male and nine are female. There are seven support staff, two are male and five female.

C: Services and equipment:
The sub-county has no fixed phone line but plans are underway to acquire one. There are five computer sets that are not networked. There are plans to acquire other equipment such a fax and printer that are currently unavailable.

The sub-county offices are interested in having the following services;

- Email/ Internet
- Telephone
- Fax service

- Library service
- Photocopy

D: Activities and Clients:
The sub-county basically deals in delivering service to the community. Asked how the internet could improve service delivery, the secretary said that the internet would enable them to access donors and technical knowledge. The services offered by the sub-county offices targets the entire community who mainly speak Luganda and English languages.

E: Financial capacity:
An amount of USD 100 was mentioned as an estimate for the maximum financial contribution for internet access.

F: Infrastructure:
The equipment in the offices is primarily run by Hydro electricity. As power is very unpredictable, a generator is in place to be used whenever required.

G: General description of premises:
The sub-county office block has no access to a roof top but has a place where equipment can be stored securely. Besides, there hasn't been any incident of theft at the sub-county offices. They do not share their premises with other organizations.

H: Local environment:
Other than the radio mast located next to the telecentre, no other mast are visible in this area but the area is however covered by the three mobile operators (MTN, UTL and Celtel).

I: Cooperative model of ownership:
Benefits put forward included improving communication and enhancing sensitization among the communities. However the challenges anticipated were; development challenge and difficulty in building team work.

The Secretary stated that the purpose of the internet was to access important information that can help in service delivery. In so saying, he meant that the internet here would not be used for commercial purposes but rather for simplifying service delivery.
He also expressed his willingness to contribute towards the maintenance of the internet infrastructure as well as the allowance of the maintenance personnel. He proposed an amount of Ushs200.000/=

The Secretary also reiterated the fact that the telecentre is under the sub-county administration and it is them who do most of the funding for the daily running of the telecentre.

J: Technical description:
The sub-county office block is located just a few meters away from the telecentre on a slightly lower ground with a clear line of sight.

Figure 9: The view of the sub-county office block from the Telecentre

Figure 10: A view of the Telecentre from the sub-county office block

POTENTIAL PARTNER
Tiger FM radio station

A: Person interviewed:
Ssali Mahadai, in –charge of sports and marketing
Phone number: 0752666019
E-mail: ssalimahadi@yahoo.com

B: Employees:
The radio has 15 employees, 3 of whom are female.

C: Services and equipment:
The radio does have a fixed phone line, and 2 computers that are not networked. It also has several technical equipment including transmitters, radio consoles, amplifiers, fax machine.
Services of interest to the radio staff include;

- Computer training
- Internet/ E-mail
- Fax services and telephone
- Photocopy and printing

D: Activities and clients:
The core business dealing is providing radio broadcast services to the community. The internet was deemed to have several ways of improving the business of this radio station among which we have;

- Getting connection with various people through e-mails
- A means of getting news, music and feature stories

The main clients of this radio station are; Nabweru Telecentre, the entire community including people from Nansana, Kazo, Bwaise, Kawempe. The potential users of the internet facility at the radio station would be the 15 employees of the radio most of whom speak English and Luganda.

E: Financial Capacity:
The person interviewed suggested an amount of USD 20 per month as the maximum financial contribution for internet access.

F: Infrastructure:
The primary source of power used here is hydro electricity. Load shedding is done three to four days a week and the radio station has no alternative source of power.

G: General description of premises:
The radio station has no access to a roof top. It has a place where equipment can be stored securely and has never lost any equipment from its premises. It however shares this block with other organization which include; the telecentre, the LCIII chairperson offices, administration police, the health department.

H: Local environment:
The radio station has got a radio mast next to the building.

I: Cooperative model of ownership:
The main benefit put forward is the reduced cost of connectivity. However the main challenge foreseen is that some of the partners may not be able to meet their financial obligation timely and may consequently default. The person interviewed said that more money may be realized by writing e-mail to sponsors and probably by engaging in e-commerce. He also said that all the maintenance work at the radio and the telecentre is done by Ugabytes and so they would not have any problems with maintenance of the infrastructure.

J: Technical description:
The partner is located on the same building as the Telecentre. See picture below.

Figure 11: Tiger FM radio station with the radio mast in the background.

POTENTIAL PARTER
Nabweru Magistrate court
Directorate of Public Prosecution/ Judiciary

A: Person interviewed:
Mr. William Ssemakula, the clerk.
Phone Number: 0752930014

B: Employees:
There are a total of 15 employees at the court premises.

C: Services and equipment:
The magistrate court office has a fixed phone line and 1 computer set. The services of interest to the office of the Magistrate court include internet/ E-mail, computer training, fax service and library service.

D: Activities and clients:
The office of the magistrate court deals with administering justice and prosecuting criminals. The internet was considered necessary for easing the daily operation of the court and also in acquisition of important information. The people who make use of the magistrate court are members of the public of all ages and professions. About 15 people could benefit from the internet connection if it is put in place and more computers are acquired. Most of these people work at the court and speak English and Luganda.

E: Financial Capacity:
The person interviewed gave an estimate of USD20 as the maximum financial contribution for internet access and also said the court would be willing to contribute towards the maintenance of the internet infrastructure but the amount would be decided at a later stage as this is a government institution.

F: Infrastructure:
The work operation at the court is run primarily of hydro electric power and there is no alternative source of power. Load shedding is on average three times a week.

G: General description of premises:
The structure at the magistrate court does not have a flat roof. They however do have room to store equipment safely and have never reported any cases of theft. The building block is shared by the Directorate of Public prosecution.

H: Local environment:
The only other source of radio communication in the immediate surrounding is Tiger FM radio station located about 300 meters from the court premises.

I: Cooperative model of ownership:

The benefits foreseen in this kind of service delivery are given below;

- Reducing the cost of internet connectivity
- Bringing the internet service closer and thus reducing on the frequent travels that have to be made to go and utilize the internet facilities elsewhere.
- Promote cooperation amongst the different partners and thus leading to development.

The main problems that may arise as mentioned by the clerk include;

- Failure by some of the partners to pay for the service timely
- Power problem as the building does not have a standby generator.

The clerk could not see any way of using the internet to raise funds to sustain the project as this internet would be used primarily by the employees for non-commercial purpose. As already mentioned earlier, he said that the court would be willing to contribute to the maintenance of the internet infrastructure but the amount would have to be determined later.

J: Technical description:

There is a clear line of site between the partner and the Telecentre with few trees and buildings in the vicinity. The partner building is located about 300 meters from the Telecentre on a slightly lower level. This is shown in the pictures below;

Figure 12: The magistrate court building

CHAPTER FIVE

LIRA SURVEY

5.1 TELECENTRE STATUS SURVEY (CPAR UGANDA)

CPAR UGANDA – DR. PAUL HARGRAVE MEMORIAL CENTRE
A Telecentre status survey was carried out at CPAR Uganda also known as Dr. Paul Hargrave Memorial Centre (*the centre*) in Lira District on 3rd August, 2006.
CPAR Uganda (Lira Branch) is located in Lira district about 347 Km North of Kampala

A: Person interviewed:
Mr. Juma Okee, the IT officer of CPAR Uganda (Lira) responsible for management of the resource centre.

B: Employees:
The Telecentre employees 9 people, eight (8) of whom are male while one is female.[7]

C: Infrastructure:
The centre has been in operation for 3 years now. It is run primarily on Hydro Electric Power and has got an inverter and a battery bank used to run the equipment when there is power outage. Load shedding in Lira is done three times a week.

D: General description of the Premises:
The centre is located about 2 km from Lira town. It does not have access to a roof top. It however, has got a place to store equipment safely and has never experienced any cases of theft. It does not share premises with any other organization.
The rainy seasons in Lira are characterized by some instances of thunderstorms and the hottest season is November- January.
There are several communication masts and towers in the neighborhood many of them are located in Lira town. These belong to the radio stations such as Radio North, Rhino FM, and Radio Lira and also to the Mobile operators MTN, UTL and Celtel.
MTN is the ISP of CPAR Uganda Lira Branch.

E: Telecentre Services:
The services offered by the centre are hear given below;

- **Computer training** - has 15 clients per day and generates income per day of about 20,000Ushs. The related expenses per day total to about 10,000Ushs.
- **Internet/ E-mail** - attract an average of 24 clients per day and generates about 20,000Ushs per day with a related expense of about 6000Ushs per day.
- **Photocopy –** attracts 12 clients per day and generates an income of 10,000Ushs per day with a related expense of about 12,000Ushs per day.
- **Printing** – has an average of 2 clients per day and generates about 1000Ushs per day.

[7] The particulars of the employees are summarized in table 2 in the appendix

- **Book Binding** –has an average of 2 clients per day fetching about 2000Ushs per day.
- **Library service –** it was no easy to establish the number of people who use this service.
- **Fax service**

Of the services mentioned above, internet, Photocopying, Fax and printing are considered as the most beneficial ones whereas Library service is the least beneficial. The people would normally visit the centre are those from the immediate surrounding composed of NGOs, Local Government department and other members of the community. The centre does keep user logs

F: Internet:

The centre has 4 networked computers and they do have a broad band internet connection provided by Bushnet (ISP) using Cisco Wireless. The cost of internet subscription per month is USD200. The Telecentre has got other technical equipment in its possession and these include; network switches, and a fax machine. It serves a radius of about 5 kilometers.

G: Cooperative Model of Ownership:

The benefit mention of this model of ownership is that it would enable others to access the internet and share resources for sustainable development. However challenges anticipated include;

- Lack of appreciation in terms of payment for the service
- Refusal to adopt to change

Some Potential partners were identified by the IT officer and these include;

- Northern Uganda Social Action Fund Offices (NUSAF) which is located in the immediate surrounding of the centre.
- Resident District Commissioner (RDC) located on the same block with NUSAF
- Uganda Medical Store
- Lira District Offices
- Lira Central Primary School

He also suggested that some money could be raised by charging the people for using the facility. The centre management said that the contribution towards the maintenance of the internet infrastructure will depend on the availability of the funds as it says CPAR is a NGO which depends on donor funds.

H: Local Environment:

The average population of the area is about 200,000 people. There are several NGOs in the area which include; Medicines San Frontiers, Red Cross and also one primary school, Lira referral hospital. There are other several business ownerships in Lira Township. The main part of the population in Lira is basically involved in small scale business, farming and riding bicycles (Boda Boda). There are about 5 internet cafes in town and several calling points belonging to the three mobile operators.

Figure 13: CPAR Uganda Lira Branch (Dr. Paul Hargrave Memorial Centre)

Figure 14: Internet dishes at CPAR

5.2 PARTNER STATUS SURVEY

POTENTIAL PARTNER
Northern Uganda Social Action Fund (NUSAF)

A: Person interviewed:
Dr. Ongebo Joel, NDTO (Centre Head)
Phone Number 0772590886
E-mail jongebo@nusaf.go.ug

B: Employees:
NUSAF has 6 employees 2 of whom are female.

C: Services and equipment:
The partner has a fixed phone line and three networked computers.
Note: NUSAF is currently connected to the internet by cable from CPAR.
It has got fax machine, Laptops, photocopiers and a printer. The services of interest to NUSAF include; Computer training and Community radio

D: Activities and Clients:
NUSAF is involved in offering funding to disadvantaged communities in the district. The major importance of the internet to this organization is to create a faster contact with headquarters and also with the partners. The main clients of NUSAF today are a whole range of poor people in the District. The estimated number of people using the internet service is 10 most of whom speak English.

E: Financial Capacity:
NUSAF put a figure of USD60 per month as their estimated financial contribution toward internet access.

F: Infrastructure:
The work operation in this place is run by hydro Electric power with a generator being used as an alternative source of power during load shedding which is done every other day.

G: General Description of the premises:
NUSAF has no access to a roof top. It however has a place to store equipment safely and has never reported any kind of theft. They do share their block with, office of the Resident District Commissioner (RDC), the PRO, and office of the DISO. These however do not have access to the premises of NUSAF.

H: Cooperative Model of Ownership:
The main benefit anticipated here is reduced cost however the challenges foreseen in this model of ownership are;

- Other partners may fail to pay for the services
- Power shutdown at the Center could cut out internet connection

The partner is ready and willing to contribute towards the maintenance of the internet infrastructure.

I: Technical description:
The partner is located about 250 meters from the learning centre with a clear line of sight

Figure 15: NUSAF offices located on this Building Block

POTENTIAL PARTNER
Lira District Local Government, Office of the Director District health services

A: Person Interviewed:
Dr. Kusolo Peter M
District Director Health Services (DDHS)
Phone Number 0782726199
E-mail peterkusolo@yahoo.com

B: Services and equipment:
The partner has a fixed phone line (0392770464), and 9 computers that are not networked.

The services of interest are; Computer training, Internet / E-mail, Photocopy, Printing, Community radio, distant education and Library services.

C: Activities and Clients:
The office of the DDHS is responsible for health service management and delivery. The DDHS sees the internet as a way to gain rapid and wide access to information and also a faster way of disseminating information. The people targeted by DDHS are of all ages, gender and professions. The number of people expected to use the internet is about 100 and most of whom speak English and Lango.

D: Financial Capacity:
The DDHS proposed an amount of USD40 per month for internet access.

E: Infrastructure:
The primary source of power used to run the equipment at the offices is hydro electric power. Due to the load shedding done after every one day, the office has acquired a generator for use as an alternative source of power.

F: General Description of premises:
The partner does not have access to a rooftop but has a place to store equipment securely and the last time any equipment was stolen from the premises was in 2001. They do share the block with other organizations but these do not have access to their premises.

G: Local Environment:
There are several masts and towers in the surrounding area (a radius of about 2km). These include towers that belong to MTN, UTL and Celtel, and masts belonging to the radio stations (4) within Lira.

H: Cooperative Model of Ownership:
The benefits of using this kind of model include sharing of otherwise expensive services and lowering cost. The main challenge foreseen is the non-compliance of some stakeholders.
Asked about ways to raise money for sustaining the project, the Director said DDHS is a grunt institution and so it is hard to raise money, but may be facilities could be open for public use at a determined rate. On the other hand, the director said he was willing toward the maintenance of the internet infrastructure but the resources are limited, and all he can promise is to try his best to organize resources for that purpose.

I: Technical description:
The partner premises are located about 200 meters from the centre with a clear line of sight and on a slightly raised ground.

Figure 16: Office block of the Director District Health Services

CHAPTER SIX

6.0 CONCLUSION

The survey revealed that the people in the areas surveyed had a great interest in acquiring internet connection but were limited by the expenses particularly in monthly subscription. The project has therefore been welcomed by most of them and some are eagerly waiting for it to take effect. On a more particular note, the office of the District Director of Health Services in Lira had acquired internet connection but the cost per month of USD175 proved to be problematic and so they opted out. They therefore promised to support this initiative at all cost.

It was also noted that some partners that were identified in the 2004 survey did not have computers and thus were not willing to have such a connection at the moment but would be willing to join the network when they acquire computers in the near future. In particular, Lira Central Primary school and the office of the Resident District Commissioner in Lira did not have computers. Some partners complained about why it had to take so long for the project to be brought to life since 2004, and were reluctant to believe it would be otherwise this time.

The surveys were done after having exposure to similar kinds of data gathering during the course of the training and this helped a lot in way of approach and confidence building. However it should be noted that the survey was carried out without technical instruments such as a GPS tool, pair of binoculars and so forth. In view of this, some parameter mentioned in the report are simply estimates. These include distances, line of sight and altitudes.

6.1 RECOMMENDATIONS

From the findings of the surveys that were carried out, it is evident that the people in those areas are truly interested. It is thus important that the project be implemented as fast as possible. Other partners were thinking of getting their own internet connection and thus see this project as an opportunity to lower the “would be” high cost of connectivity. There is need to introduce a payment model by meeting with the partners and telling them the costs involved in this service delivery. There is a tendency of partners choosing to pay the least when given a set of choices, and this is exactly what happened. I do believe that when given a rough idea about the costs involved both in subscription and running costs, they might be able to reconsider their initial proposals accordingly.

6.2 REFERENCES

[1] Project Proposal "Implementation of Wireless Community Networks and a Community Wireless Resource Center in Uganda" By CWRC
Makerere University, Department of Electrical Engineering, Uganda

[2] Wireless networking in the developing world; http://wndw.net/ accessed in July 2006

APPENDIX A: SURVEY QUESTIONNAIRES

A.1: The Questionnaire used to conduct the Telecentre status survey

A.2: The Questionnaire used to conduct the partner status surveys.

A.3: Uganda pro-poor (access /networking model) country study

SECTION 1:

COMMUNITY NEEDS ASSESSMENT:

Let in the field investigator describe the environment the study community is located in (proximity to trading centre and how prominent the nearest trading centre is, homestead spread, average family size, social service delivery facilities, nature of typical homestead and how close the consumer mains line are).

Bio Data
Name……..
Sex……
Level of education……..

1. What do you consider to be the four greatest development needs for your community as a whole?
   ……
   …….....

2. Of the needs mentioned in 1 above, if your leaders were to tackle some of the development issues for the community as a whole, which two things would you like them to start with?
   .....
   .....

3. What type of information do you consider to be very important to help your community to develop?
   …….....
   .....

4. Are people in your community able to easily meet all their food needs each year? How do you do this?

   .....
   .....

5. Are people in your community able to easily meet all the medical needs of each member? How do you do this?
   ……
   ……

6. Do you know of any members in the community who have no proper shelter? How many?

……..……

SECTION 2

INFRASTRUCTURE:

The field investigator should give a brief description of the nature and state of the current infrastructure.

1. How long has the telecentre (ICT) been in operation?

   ……

2. What is the current operational state?

ITEM	**STATUS**
Staffing	
Assets	
Capitalization	
Monthly revenue	
Expenditure	

3. What services are provided? (Please tick)
   - Computer training
   - Email/Internet
   - Radio Station
   - Telemedicine
   - Telephone
   - Fax service
   - Library service
   - Photocopy
   - Printing
   - Distance education
   - Community radio
   - Other service (Please state)……

4. What services are addressing whole community needs?

……
……

5. What are these needs?

……
……

6. What business model is it based on? (Please tick)
   - Hybrid model
   - Private-Public Partnership (PPP)
   - Cooperative model

7. How many staff does it employ?

Sex	Elementary Technical Skills	Intermediate Technical Skills	Advanced Technical skills
Female			
Male			

8. Who is your Internet Service Provider (ISP)?
……..

9. What infrastructure is used to deliver the service? (Please tick)
- VSAT
- Copper
- Fiber Optic
- Wireless
- Other (specify)

10. What is the monthly cost of the services?
…….…….

11. How many customers (each month) does the telecentre serve at present?
..……

12. What is the radius of the area (in Km) that it serves?
……..……

13. What are the distances of the following from the ICT centre?

Item	Distance (in Km)
Furthest Health Unit	
Furthest School	
Furthest Extension service	
Main trading centre	
Division administration headquarter	

APPENDIX B: TABLES

B.1: Tables of telecentre and partner summaries

TELECENTRE SUMMARY

Telecentre	Address	Location	Description
Nabweru Multipurpose community telecentre	P.O. BOX 19005 Kasangati Tel. 041-567345 Mob 0772-952 532	6km Northwest of Kampala (15 Minutes Drive by car)	Founded by IDRC in 1999. Is connect by MTN Bushnet (Cisco Wireless) Cost of internet connection is USD 250 per month.
CPAR UGANDA – Dr. Paul Hargrave Memorial Centre	P.O. BOX 754 LIRA TEL. 047-320429 FAX 047-320430	347 Km North of Kampala	Has broadband internet connection by Bushnet at a cost of USD 200 per month.

PARTNER SUMMARY – NABWERU

Partner	Address	Financial Capacity for Internet connection	Distance from the telecentre (approx)	Comment
CROWN HIGH SCHOOL	P.O BOX 27815 Kampala Tel. 256-41-566796	USD 50	1 km	Located at lower altitude with no LOS
Nabweru Parents' School	P.O BOX 2082 Kampala Mobile Number: 0752 647033	USD 50	1 km	No Line of Sight.
Nabweru Sub-County offices	P.O. BOX 19005 Kasangati Mob 0772405498/ 0772591206	USD 100	50 meters	Clear LOS and within cable range
Tiger FM radio station	Nabweru Sub-county Tel. 041-567345	USD 20	Located on Same Block	Ethernet Cable can be run to this office

Nabweru Magistrates Court	Nabweru Sub-county	USD 20	300 meters	Clear LOS

PARTNER SUMMARY- LIRA

Partner	**Address**	**Financial capacity for internet access per Month**	**Distance from the telecentre**	**Comment**
Northern Uganda Social Action Fund (NUSAF)	P.O. Box 49 Lira Tel. 047320854 Fax 047320854	USD 60	250 meters	Clear LOS located on a slightly raised ground
Lira District Local Government, Office of the Director District health services	P.O.BOX 49 Lira Fax 03927704464	USD 40	200 meters	Clear LOS and located on a raised ground

PARTNER SUMMARY- NAKASEKE

Partner name and contact	**Person interviewed**	**Title**	**Contact**
Nakaseke Hospital P.O.BOX 1022 Nakaseke 041-650033/11/10	Dr. Mukunya J. Emmanuel	Medical superintendent	0772 6445972 mukunyal@yahoo.co.uk
Nakaseke international college P.O.BOX 10657 Kampala, P.O.BOX 1957 Nakaseke 0772400504, 0782563999	Mr. Murisho Moses	Head of ICT	0782624839 murmose@yahoo.com
Nakaseke sub-county headquarters P.O.BOX 1032 Nakaseke	Mr. John Bosco Kezaara	Chairperson Nakaseke sub-county	0772970369
Nakaseke SDA P.O.BOX 1003 Nakaseke 07724926659	Mrs Muyanja Jessica / Mr. Ssenbulya James	Deputy Headteacher / ICT master	0772918538 / 0782899495
Mazolidi College P.O.BOX 1089 Nakaseke	Fr. Patrick Watikha	Headmaster	0772583800
Christ the Rock S S P.O.BOX 1033 Nakaseke 0782087880	Mr. Ssekyanzi Tony	Headmaster	0782087880

Nakaseke Core PTC P.O.BOX 1050 Nakaseke 041650036	Mr. Simon Enyuta	Deputy Headmaster in charge of the outreach program	0772312659

B.2: Tables of employee particulars

Table 1 : Employees of Nabweru telecentre

Name	Age	Position	Language	Contacts
Jjuko Edward	38	Manager	English/Luganda	0772952532 edwardjjuko@hotmail.com
Kikoba Joseph	32	Volunteer	English/Luganda	
Kikomeko Geoffrey	32	Asst. Manager	English/Luganda	0712376844 mulamyakg@yahoo.com

Table 2 : Employees of CPAR Uganda – Lira branch

Name	Age	Position	Languages	Workload	Contact
Fred Owera	39	Program Manager	English & Luo	FT	fodom@cpar.ca
Richard Okumu	30	Finance Officer	English & Luo	FT	rokumu@cpar.ca
Eddi Odur	38	Watsan Officer	English & Luo	FT	eodur@cpar.ca
Morris Okello	40	Staff	English & Luo	FT	0774063297
Joseph Ocen	29	Guard	English & Luo	FT	0774094674
Paul Kenyi	32	Logistics Officer	English & Luo	FT	kenyipaul@yahoo.com
Pius Okite	36	Driver	English & Luo	FT	0772669408
Alex Ongora	31	Staff	English & Luo	FT	0772422634
Juma Okee	37	IT Officer	English & Luo	FT	jokee@cpar.ca