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FACULTY OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

Community Wireless Networks – Telecentre Assessment

1. Introduction

A Community Wireless Resource Centre (CWRC) is being established under the Department of Electrical Engineering with the general objective to provide or enhance sustainable Internet connectivity infrastructure, particularly in rural or underserved areas in Uganda, by means of wireless technology.

As its flagship project, a total of six community wireless networks, consisting of approximately 30 operational radio links, will be designed and implemented in three regions of Uganda. The concept of community wireless networks is based on the possibility for groups or communities to build self-owned and operated communications networks. The project will use equipment based on the IEEE 802.11 protocol for wireless networks, and operating in unlicensed frequency bands.

As a result of this project, it is expected that the Community Wireless Resource Centre will lead to the development of community wireless networks in rural areas. Consequently, connectivity in communities will be enhanced, and will be made available at a more affordable cost. The project will also enhance capacity of our engineering students and telecentre staff in the installation and maintenance of community of wireless networks, and increase awareness of and training on community wireless networks. Suitable business models for community wireless networks that enhance their sustainability will also be found.

This project arose out of the need to reduce the high cost of connectivity in IDRC-supported telecentres in Uganda, and to explore optimal connectivity models such as sharing the existing bandwidth with neighboring institutions via outdoor wireless networks. It was anticipated that by managing collectively the costs of connectivity at each telecentre, more institutions could get access to Internet without heavy initial investments in satellite hardware and subscriptions.

The aim of this initiative is to make connectivity more affordable for telecentres by implementing a communication infrastructure that is shared and managed by the community. Such concept is known as "Community Wireless Network". Hence, the projects would be in line with Uganda's rural communication development priority of "affordable communication services for all".

An initial feasibility study of community wireless networks 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. By doing so, the costs of VSAT connectivity at each telecentre could be managed collectively and more institutions could get access to Internet without heavy investments in VSAT hardware and subscriptions. 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.

The Community Wireless Resource Centre is being established with financial support from the International Development Research Centre (IDRC) and with technical support from IT + 46, a Swedish based company with more than ten years experience in Information Technology.

2. Preliminary Telecentre Assessment

As a follow-up to the 2004 survey, the CWRC is conducting a preliminary survey on the technical feasibility and economic viability of community wireless networks at the targeted telecentres. Over the period July – August 2006, students from the Department of Electrical Engineering will visit six telecentres to undertake the following tasks:

1. Conduct a telecentre survey, to assess/revise the technical requirements following the 2004 survey.
2. Conduct a partner survey to gauge the level of interest of partners within the community, their willingness for pay for service, and proposed amounts.

The telecentres to be visited are:

- *Nabweru Multipurpose Community Telecentre*
  Contact person: Edward Jjuuko
- *Buwama Multipurpose Community Telecentre*
  Contact person: Lydia Nanyanzi Nankabirwa
- *Nakaseke Multipurpose Community Telecentre*
  Contact person: Peter Balaba
- *Kigezi High School - School Based Telecentre (Kabale)*
  Contact person: Asapha Arinaitwe
- *Kachwekano Telecentre*
  Contact person: Tumwebaze Baryamujura Adrian/Imelda Kashaija
- *Lira Learning Center (CPAR)*
  Contact person: Jumar Okee

Telecentre managers are kindly expected to facilitate the student visits by arranging accommodation, informing of travel requirements to facilitate visits within the community, providing technical and organizational information that will enable assessment of the telecentres, and making at least one (1) staff member available to work with the students during the visit. The student visits will be as follows:

- Robinson Olyel Okwany, <rokwany@tech.mak.ac.ug>: Lira Learning Centre (CPAR) & Nabweru Multipurpose Community Telecentre
- Edwin Mugume, <wmugume@tech.mak.ac.ug>: Buwama & Nakaseke Multipurpose Community Telecentres
- Paul Kyoma Asiimwe, <kyomapaul@yahoo.com>: Kigezi High School SBT & Kachwekano Telecentre

3. Further Information

For further information, please contact Dr. Dorothy Okello, CWRC Project Director, at dorothy.okello@mail.mcgill.ca or by phone at (077) 2957550.

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