

Establishing reliable high speed Internet access at agricultural universities in Africa: the Ubuntu-Net model

Executive Summary of Project

1. The concept

Inadequate access to Internet bandwidth prevents universities and technical training institutions from gaining access to existing high quality online content. Many universities and training institutions in developing countries can not afford the cost of Internet bandwidth. *Bandwidth is too little, too expensive and ineffectively managed for many developing country institutions.* To date several initiatives have proved the power of consortia in bringing down bandwidth costs and delivering affordable internet in developing countries. The UbuntuNet Alliance www.ubuntunet.net is a recent initiative to establish national inter-institutional collaborative platforms in the education and research community in Sub-Saharan Africa (SSA). UbuntuNet Alliance was established to capitalise on the emergence of optical fibre and other terrestrial infrastructure opportunities and thus become the Research and Education Network (REN) backbone of Africa. Country level initiatives called National Research and Education Networks (NRENs) in Southern and East Africa have drastically improved internet connectivity for the research and education community in the region through the 'bandwidth buying consortia' consortia and effective management of the available bandwidth opening access to high quality online content to the sector. This proposal is to further fund the building of this model in SSA and South Asia in order to provide high speed internet connectivity to researchers, faculty and students.

2. The rationale and evidence the project can be successful

The formation of bandwidth buying consortia which are effectively buying-clubs leverage on their large membership to negotiate better pricing structure with suppliers bringing down the unit cost per Megabyte. The recent availability of cheaper bandwidth via the optical fiber accessed through undersea cable implemented on Africa's coastal shores, compared to the expensive terrestrial infrastructure access, has spurred on the UbuntuNet initiative. Fiber optic brings down internet bandwidth costs by at least 80% compared to terrestrial infrastructure services. The **Eastern Africa Submarine Cable System** (EASSy) is an initiative to connect countries of Eastern and Southern Africa via a high bandwidth fiber optic cable system, completing the loop around the continent and connecting Africa to the rest of the world. It is considered a milestone in the development of information infrastructure in the region. EASSy is planned to run from Mtunzini in South Africa to Port Sudan in Sudan, with landing points in six countries, and connected to at least five landlocked countries – who will no longer have to rely on expensive satellite systems to carry voice and data services and is set for completion in 2008.

The NRENs are vehicles to facilitate inter-institutional collaboration and bandwidth procurement and act as bandwidth consortia to secure general internet access. The UbuntuNet Alliance, established in 2005, has been one of the successful ventures in Africa on the bandwidth arena. Tertiary education and research institutions throughout the rest of the world are connected to the Internet using fast low-cost fiber. Currently the Alliance comprises MAREN (Malawi), MoRENet (Mozambique), KENET (Kenya), RwEdNet (Rwanda), and TENET (South Africa). The Alliance is expected to expand during 2007-2008 as new NRENs are formed and become members. The activities of the UbuntuNet Alliance have so far been funded through several funders including the International Development Research Centre (IDRC), Canada, Open Society Institute (OSI) and OSI Southern Africa (OSISA), BMZ and SIDA. The funds have been invested in building the alliance, NRENs and technology infrastructure.

The connection of the rest of SSA countries institutions to the undersea submarine cable and commissioning of the project in each of the countries would change the Africa's education agriculture education and provide a window for development not only in the sector but across all fields and disciplines at tertiary level. Each participating institution would have to source its funding for the last-mile fiber connection to 'its door' and internal internet infrastructure based on national ICT policies (which most of SSA has now put in place) and the motivation for this investment would be very high given the potential benefits to each of the institutions.

3. The expected benefits of the project including comments on sustainability and scale.

Reliable and affordable internet access facilitates strengthening of faculty, delivery of online course material and general communication is set to improve. Access to up-to-date scholarly literature, research and collaboration with overseas communities of practice and institutions will help improve research and education in the region.

National governments set regulatory policy on the use and license fees for the use of the available bandwidth by institutions. The revenue is used for the maintenance of the cable network ensuring sustainability of the investment. Precedence set in Southern Africa shows the viability of the model and the nature of public-private sector support and collaboration on the project and potential long-term benefits to education and research on the investment. Key to the success of the model is the establishment of fair tariffs the enable investment recouping particularly on the inland connections to the undersea cable that governments or quasi government arms have to take lead on or at least coordinate timely to ensure maximum benefit on the infrastructure. High capacity on the undersea cable accommodating multitudes of connections linking

all the region's countries will provide for up scaling of the project as the demand of the service increases.

4. How this project will target the needs and be of specific benefit to women smallholders

Enrolments at institutions of higher education and research institutions for women are gradually increasing depending on selection and institutional enrolment policies and reliable internet connectivity will create more communication channels for communities of practice and gender sensitive networks available internationally that female students, faculty and research can then easily link with.

Strong faculty and research institutions would deliver output and support information chain to extension and small holder farmers who are the ultimate beneficiaries of the initiative.

5. The projected costs of the project

Estimate figures show expenditure of \$3 in the initial alliance building and terrestrial infrastructure implementation by UbuntuNet in the last three years and this estimate of \$1m per year can be projected into the future over a 10 year period to establish a stable base for the organization¹. Whilst estimates of over \$300m required for the completion of the remaining stages for EASSY and for the investment to connect 16 countries to the submarine cable over a five year period starting 2008, the cost estimate for the rest of SSA countries may need further investigation with project specialist to accurately budget for the project.

6. Measures of success

The establishment of NRENs in all the SSA countries and the building of inland links led by public-private collaborations to connect to the submarine cable would be a tangible milestone on the project whilst the rate of agriculture educational institution's connecting rate to the backbone in each of the countries will provide the project's worth over a short period. Online content access and use by the institutions would be measurable to indicate the benefits to the research and education community in the region.

7. Risks

Policy set by governments supporting the establishment of the NRENs and fair landing and pricing structure for the bandwidth use and access by institutions are crucial success factors for the project as well the willingness of governments to collaborate with private sector on the project. Hence the biggest risk on the project is if the governments fail to see the value of the initiative and do not set

¹ The activities of the UbuntuNet Alliance have so far been funded through several funders including the International Development Research Centre (IDRC), Canada, Open Society Institute (OSI) and OSI Southern Africa (OSISA). IDRC, BMZ and SIDA have committed \$1 million each for building the alliance technology infrastructure for next year.

appropriate regulatory policies that support and promote the use and maintenance of the submarine cable aimed at developing research and education in Africa and further benefiting the needy on the continent.