UbuntuNet-Connect 2008

Proceedings and Report of

the 1ˢᵗ UbuntuNet Alliance Annual Conference

11th November 2008

Crossroads Hotel, Lilongwe, Malawi

Proceedings Compiled by

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Report of the UbuntuNet-Connect Conference 2008 held at Crossroads Hotel, Lilongwe, Malawi, on 11th November 2008

1.0 INTRODUCTION

The decision to host by UbuntuNet to host the UbuntuNet-Connect Annual Conference is a sign of the coming of age of the Alliance . It is planned that this annual meeting will be the landmark research and education networking event on the African Continent. The venue will change from year to year as UbuntuNet Alliance member NRENs will be the hosts.

There were 5 sub themes on an exciting variety of topics as can be seen below.   Other events also included a Development Partners Forum. In addition a unique training course was held at Kamuzu College of Nursing on GRID computing. This was held in association with The event was co hosted with the 7th Wide Open Access Conference.

A special thanks go to MAREN for hosting the event and to IDRC for partial funding within the framework of the CORENA project

Fuller presentations can be found on the UbuntuNet Alliance website:

2.0 CONFERENCE PROGRAMME

UbuntuNet-Connect Conference 2008
Crossroads Hotel, Lilongwe, Malawi, 11th November 2008

Programme

Time	Activity	Presenter/Responsible Person
0730 – 0800	Registration	Mr Tiwonge Msulira Banda
0800 – 0815	Welcome remarks and self-introductions	Dr F F Tusubira
0815 – 0830	Conference Opening Remarks	Prof Z. Kadzamira, Chairman, UbuntuNet Alliance
0830 – 0950	**Sub-theme 1: Developing Effective National Research and Education Networks.** **Chairperson: Prof Dibungi Kalenda**	
0830 – 0850	NRENS: Organisation, infrastructure, and operations	Dr Duncan Martin, CEO, TENET
0850 – 0910	Discussion	
0910 – 0930	Supporting Content and Content Networks	Dr Nora Mulira, Director Directorate for ICT Support, Makerere University
0930 – 0950	Discussion	
0950 - 1200	**Sub-theme 2: National and International Fiber Opportunities (existing and emerging)** **Chairperson: Prof Mumuni Dakubu**	
0950 - 1015	Existing and planned fibre at the national level	Dr Lishan Adam
1015 - 1030	Discussion	
1030 - 1050	Group Photo and Health Break	
1050 - 1135	Panel on International Fibre	Seacom – Suveer Ramdhani EASSy – Chris Wood AfrISPA – William Stucke
1135 - 1200	Discussion	
1200 - 1300	**Sub-theme 3: Lessons from, and working with other Regional RENs** **Chairperson: Prof Patrick Mangheni**	
1200 - 1300	Experiences, Lessons, and opportunities through regional and international RENs	Internet 2 – Mr Dale Smith Dante/GÉANT – Mr Michael Nowlan IEEAF – Prof Don Riley

1300 – 1315	Discussion	
1315 – 1415	*Lunch Break*	
1415 – 1550	**Sub-theme 4: NREN Clinic** **Chairperson: Mrs Margaret Ngwira**	
	Responses to organizational, infrastructure and operational issues raised by participants	Dr Duncan Martin Mr Dale Smith Prof Björn Pehrson
1530 – 1550	*Health Break*	
1550 – 1720	**Sub-theme 5: FEAST** **Chairperson: Dr Carmen Mena-Abela**	
	Overview of FEAST Project and Objectives	Prof Björn Pehrson
	A Task for NRENs: Services and Application Support	Gerti Foest, DFN
	TERENA Compendium and data collection from Africa	John Dyer, TERENA
1720 – 1730	Summing up and Closing	Mr Albert Nsengiyumva, UbuntuNet Vice Chairman

3.0 CONFERENCE OPENING

The conference was facilitated by the Acting CEO of the Alliance Eng. Dr F.F. Tusubira. He started by welcoming all participants and thanking them for accepting the invitation to participate in the conference. He mentioned that the conference was an annual one and that this was the first. He also extended his appreciation to MAREN for hosting the conference.

The facilitator then led the participants into a session of self introductions. Finally he introduced the Chairperson of the Alliance, Professor Zimani David Kadzamira to give an opening address.

4.0 WELCOME ADDRESS
By Professor Zimani D. Kadzamira, Chairperson, UbuntuNet Alliance

Representatives of our Development Partners
Representatives of Content Networks,
Representatives of Member NRENs and NRENs in construction,
Members of the Board and Council of UbuntuNet Alliance,
Ladies and Gentlemen.

It is a great honour and privilege to welcome all the distinguished delegates to this Annual Conference that Malawi has been honoured to host. I am doing so on behalf of the Council Members and the Board of UbuntuNet Alliance; on behalf of the hosts, the Malawi Research and Education Network (MAREN); and on behalf of all the stakeholders in Malawi.

This is an important event that has brought together some 42 delegates including research and education networking pioneers, representatives of content networks, and development partners from across Africa and beyond..

My task this morning is to officially open this UbuntuNet Alliance – Connect 2008 conference. Before I do so let me share with you some thoughts on why this meeting is important and why the Alliance decided to occupy the driving seat.

We all know that African universities and research centres remain the home of high caliber professionals in spite of what is often described as the brain drain. These institutions can together claim to have the highest concentration of MA's and PhD's per square of whatever area measurement you may choose. And yet our contribution to intellectual output and national human development is far below what would have been expected of such expensive resources. From a global perspective African scholars and researchers do not appear to feature significantly at the intellectual property output level. As a result there is a huge intellectual property deficit on our continent as we continue to be consumers of intellectual output from other regions of the world.

There are, indeed, complex contributing factors behind this state of affairs. We in UbuntuNet believe a major cause is the current isolation of African researchers from the knowledge society that is driven by easy and cheap access to the global information infrastructure (GII). This pervasive isolation has been the product of at least two key aspects: infrastructure and cost.

Our access is still predominantly via VSATs, which are inherently expensive. This is compounded by policy and regulatory frameworks that have led to environments which are conducive – not to competition but to monopolies that shamelessly exploit consumers. During the meeting with our development partners yesterday it was observed that our colleagues in the wealthier parts of the world spend less than $20 per Megabit of bandwidth each month. In contrast, the poorly-resourced African universities typically spend $5,000 for the same capacity. Some of them even spend as much as $8,000.

It has been estimated that the universities in the ten NRENs that currently comprise UbuntuNet spend an aggregate of about 1.3 million dollars per month for less than 750 Megabits per second. This same amount of money can procure about 70 Gigabits, or one hundred times as much bandwidth in the richer countries.

This is precisely where UbuntuNet comes in. It is our aim to remove this inequity by seizing several opportunities, including 1) the increasing rollout of national optical fiber backbones; 2) the arrival of marine optical fiber on the East Coast of Africa projected for mid-2009; and 3) the goodwill of our development partners. We must fight this isolation of the African researcher. Victory will, without doubt, have a salutary effect on retention of brains, accessibility and the quality of higher education. Improved and affordable connectivity will increase the intellectual output of researchers on our continent and contribute more effectively to national development.

This is what motivated our theme for this year's conference: "Driving effective research and education networking in Africa". It is a theme that tries to capture what should follow after improvements in infrastructure and reductions in the costs of connectivity. Effective research and education networking is very much like the water that flows through the pipes, not the pipes themselves. Beyond the infrastructure layer there is a higher layer – the content layer – that creates value in what we do. The challenge is to link up with the content networks: the librarians; the researchers; the e-learning networks; the specialised research groups; etc., so that we are sure that what we build is responsive to their needs, and that they are aware of the opportunities. The first presentation and discussion today will focus on this critical layer through which increased intellectual property output will be evidenced and its impact on development evaluated.

There will also be sessions on national and international fibre opportunities. UbuntuNet will be responsible for the distribution mains, as happens in the reticulation of water supplies, but each country like each house, must be individually ready to draw from the mains and distribute to members of the family. Similarly, each country must consolidate responses from members to reach beyond national borders. In other words, the internal readiness of each NREN is critical to the success of UbuntuNet. That is why the programme includes a National Research & Education Network Clinic at which key issues that are barriers to NREN effectiveness will be discussed.

Fortunately, we do not have to re-invent the wheel as UbuntuNet Alliance or NRENs. We can learn from those who have gone ahead of us. In this respect we are especially grateful that DANTE, Internet 2, and the Internet Educational Equal Access Foundation have joined us, not just to share experiences and lessons, but also to provide us with opportunity for global presence through peering arrangements. We are part of the same family, albeit younger and ready to learn from past mistakes and successes to scale greater heights.

As shown graphically at another session yesterday, Africa is a huge and diverse continent whose boundary can contain North America, India, China and Europe. If we are proud of being the cradle of humanity we must embrace the challenge of moving into the new frontier involving strong continental alliances to achieve our dreams: no one can do it alone.

For instance, the Association of African Universities provides a solid policy umbrella under which we can work together. Through this Association UbuntuNet has reached out to West Africa, shared experience and offered support in their attempt to set up a regional network. When the two regional networks are eventually linked to each other and also to Northern Africa, our continental network will be in place. I would therefore like, at this point, to welcome and recognise the presence of Prof Mumuni Dakubu, representing the AAU, and Ms Sandra Aluoch, who is representing the Nigerian ICT Forum as well as the Bandwidth Consortium.

The next few hours will be pregnant with volumes of information and exciting exchanges. Absorb what you can but I implore you to take full advantage of networking with colleagues. After all, the lasting value of gatherings like this one is the network of friends we shall create, building, in the true African tradition, support groups that we can refer to whenever we are faced with a challenge. This will range from special interest groups of those who do what we do, experts who can assist when the need arises, to the staff of organisations that can give us financial support. Knowing people is very important; the ball is squarely on your side of the wide playing field.

Ladies and gentlemen, I sincerely hope that you will have fruitful discussions. When these are over re-schedule your departure, take time off to relax and explore what this "Warm Heart of Africa" can offer. It is now my pleasure and honour to declare UbuntuNet-Connect 2008 open.

5.0 SUB-THEME 1: DEVELOPING EFFECTIVE NATIONAL RESEARCH AND EDUCATION NETWORKS
Chairperson: Professor Dibungi Kalenda

Presentation 1: Developing Effective NRENs
By Dr Duncan Martin, Director, UbuntuNet Alliance

Dr Duncan Martin's role was to present on Developing Effective NRENs. He started his presentation by giving the general overview of global Research and Education Networking. In his overview, he cited the example of NRENs in Europe and the USA.

Then he delved into the prerequisites for NRENs to participate in global Research and Education Networking. Dr Martin emphasized the need for NRENs to get their network identities: Autonomous System Numbers from AfriNIC, and that all campuses networks of the NREN to get their own IP address spaces, stating that this was the only way the NRENs networks could participate in the global research and education networking.

Then he concluded his presentation by giving the general organisational structure of NRENs, stating the need for collaboration and planning for financial sustainability.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/DMartin-111108.pdf.

Questions and Comments:

Prof. Mumuni Dakubu wanted to find out where UbuntuNet connects to the Internet. In response, Dr Martin said that the UbuntuNet Hub in London had the following links: one to Datahop; another one to Telia Sonera, (the two for general Internet traffic); and another one to GEANT2 (for REN traffic). The Alliance pays for the general Internet connections, while the connection to GEANT is provided by DANTE at no charge.

Another question was also raised by Prof Dakubu on how the payment structure for participating NRENs would be like considering that NRENs have different demands. In response Dr Martin said that UbuntuNet would charge a flat membership fee to members and a percentage of international bandwidth cost. In this case, the Alliance would act as an agent of bandwidth to the NRENs.

Further to the discussion, the participants recommended that consideration have to be made on how Electronic Journals from commercial companies would be handled and made available bearing in mind that they will be originating from commercial sites, which are otherwise marked as commodity traffic.

Presentation 2: Content and Content Networks
By Dr Nora Mulira, DICTS, Makerere University, Uganda

Dr Mulira's presentation was meant to bring the issue of content networks on the table as NRENs emerge and develop. She titled her presentation Content is King. She underlined the fact that new content initiatives are evolving but African institutions are yet to participate meaningfully in (a) providing the kind of networks that facilitates dynamic content provision and also to collaborate with the content providers, and (b) to will bring about a measurable improvement in our education and research output.

Then she outlined the various levels of networking and examples of content networks already on the ground. Finally, she gave a list of guidelines for content networks and how to overcome some of the challenges that may be faced in the process.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/NMulira-111108.pdf

Questions and Comments:

Mr Khaled Fourati raised a question on what strategies on content networks had been put in place with different campuses. In response, Dr Mulira said that the first step was that RENU organized a workshop where all stakeholders gave their input to the process and an MOU was developed and each campus was asked to sign. However, RENU was still in its infancy stage and only five members were more active. The common challenge faced by all members was found to be Internet access.

Dr Duncan Martin commented on the notion that content is king: he highlighted that much as content is "king" it may as well be "the devil" and as such it may not be the job of the NREN to dictate what content has to run on the network, but the IT department of the campuses to police. Further, it was noted that the title "Content is King" was meant to emphasise that content networks are beyond infrastructure.

Mr Kondwani Wella wanted to find out what would be the proposed future models for relating NRENs and content, citing the example of MALICO, the Malawi Library and Information Consortium, where most of the roles that it plays appear suitable for MAREN as an NREN. In response Dr Mulira stressed that need for sharing roles properly and that the two would not need to kill the other, considering that there was much the library consortium would need to do that would be done by the NREN.

6.0 SUB-THEME 2: NATIONAL AND INTERNATIONAL FIBRE OPPORTUNITIES (EXISTING AND EMERGING)
Chairperson: Professor Mumuni Dakubu, AAU, Accra Ghana

Presentation 3: Existing and Planned Fibre at Regional and International Level
By Dr Lishan Adam

The presentation by Dr Lishan Adam focused on the status of fibre cables at both regional and international levels. He started by giving a brief on the investment that has been made on undersea fibre so far, citing all the existing and planned cables within and to Africa: EASSy, SEACOM, TEAMS and Africa West Coast Cable. He then

Dr Adam then looked at all the planned and existing fibre cable initiatives in specific countries. He gave the status of fibre in countries like Burundi, Ethiopia, Kenya, Uganda, Rwanda, Tanzania, South Africa, Malawi, Zambia, and a number of West African Countries.

He then concluded by making the following observations:
- Consolidation of regional and submarine cable projects
- Submarine cables are fuelling national investments - almost all countries will have a substantial amount of fiber by 2012
- Limited fiber backbone development activity in Central Africa and west Africa – a bit worrying
- Same level of enthusiasm by private sector in regional backbone does not exist…
- Backbone projects do not build on each other's experience and do not tend to harmonize
- Negotiation across borders is a key challenge – commercial and political
- Pricing will be an issue for a time being but not a major factor in the future…
- We need a consolidated picture of what is going on - initiatives to do that have not been successful

Full presentation is available at http://www.ubuntunet.net/sites/ubuntunet.net/files/LAdam-111108.pdf.

Questions and Comments:

A number of participants noted that in the maps presented by Dr Adam, some fibre initiatives were missing. Examples given were the Uhurunet, the Umojanet, fibre in Namibia, the Transkarahari and initiatives in Central Africa. In response, the facilitator informed the participants that it was sad that there were a number of gaps in data for countries and that this was one of the reasons the conference was organized. The participants were encouraged to assist in filling the data gaps so as to come up with a complete picture of what is on the fibre landscape.

7.0 PANEL ON INTERNATIONAL FIBRE
Panellists: William Stucke, Chris Wood, and Suveer Ramdhani

The panel on international fibre was aimed at bringing awareness on the progress of fibre cable initiatives and projects and also to note how much each of the cables was doing to cater for the needs of the research and education community. The panel included representatives from EASSy and SEACOM and also from AfrISPA (on Internet Exchange Points).

Presentation 4: Internet Exchange Points in Africa
By William Stucke, AfrISPA

Mr William Stucke presented the general role of Internet Exchange Points in Africa and the need to have them in all countries. He highlighted that local traffic exchanged over international links is slow, of poor quality and expensive and that Africa spends approximately US $400M a year on talking to Africa via the Internet.

He then gave an overview of IXP Projects that AfrISPA has embarked on and pointed out that so far 21 IXPs were operational in Africa. He ended his presentation by stating the need for NRENs to peer at the IXPs.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/WStucke-111108.pdf
Questions and Comments:

Dr Duncan Martin wanted to find out as to how AfrISPA would work together with UbuntuNet Alliance and NRENs. In Response Mr Stucke pointed out that it was strategic for the three would work together because by the end of the day there would be better quality and cheaper connections.

Andrew Alston raised a question on whether it would be the NREN to peer at the IXP or the institutions. In response, Mr Stucke said that the decision would be up to the IXP, the NREN and the institutions on what works best. He pointed out that there were reasons why an institution would want to directly peer at an IXP, and in this case the institution would want to be multi-homed.

The participants further observed that there was a case where some ISPs would look at the IXP as a means of generating income. A case of Botswana IXP was given where the ISPs did

not want the government to peer at the IXP because they wanted to charge the government for local traffic.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/WStucke-111108.pdf

Presentation 5: EASSy: Delivering High Speed International Connectivity for Africa
By Chris Wood, WIOCC

Mr Chris Wood, a representative for EASSy, presented an overview of the cable and its progress. He started his presentation by stating that the cable will have 2 fibre pairs with a capacity of 1.4Tbps and 10 landings. The cable will come into operation in second quarter of 2010. The cable would be run on open access, providing capacities between 2Mbps and 10Gbps. Flexible, short and long term 25 year indefeasible rights of use (IRUs) will also be available.

Then he described how the cable would be operated and the investment, including the provisions for the backhaul links in landlocked countries.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/CWood-111108.pdf

Presentation 6   SEACOM Brief Overview
By Suveer Ramdhani, SEACOM

In general, the SEACOM presentation was set to give an overview of what the cable will offer and the progress so far. Mr Suveer Ramdhani said that the cable will have 1.28Tb/s which will enable Africans to enjoy high demand services such as HDTV, IPTV, true broadband Internet and peer-to-peer networks. It will run about 17 000 km route linking South Africa to Mumbai in India and Marseille in France via Mozambique, Madagascar, Kenya, Tanzania and Ethiopia (undersea portion greater than 13,500 kms).

Mr Suveer stated that the project was fully funded and progress was as scheduled and that the cable would be ready for commercial services by June 2009. Then he gave the pricing of the cable.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/SRamdhani-111108.pdf

Questions and Comments on Cables:

Mr Kennedy Aseda raised a question on whether SEACOM would be able to offer customers or NRENs to access dark fibre. In response, Mr Ramdhani said that SEACOM had no plans for selling dark fibre however, they were planning to launch products that would meet people's demands.

Dr Gilford Hapanyengwi wanted to know what SEACOM was offering to landlocked countries. In response, Mr Ramdhani said that a number of terrestrial fibre links were there

and that his company was planning to develop solutions for the landlocked countries. On pricing for bandwidth on SEACOM, Mr Ramdhani said that it was too early for him to comment however, he was certain that market forces could control that.

Mr Andrew Alston raised a question on whether EASSy would be able to sell capacity to landlocked countries as on the coast. In response, Mr Wood said that EASSy would be able to sell the capacity to the landlocked countries and that any entity would be free to buy capacity from any EASSy member. He also stated that the landlocked countries were free to invest in EASSy.

Mr Albert Nsengiyumva asked the two cable owners, EASSy and SEACOM on how much they were talking to each other. In response, the participants noted that the two were not talking each other as they were competing.

8.0 SUB-THEME 3: LESSONS FROM, AND WORKING WITH OTHER REGIONAL RENS
Chairperson: Dr Patrick Mangheni

Presentation 7: Internet2: Experience, Lessons, & Opportunities
By Dale Smith, University of Oregon

Mr Dale Smith presented Internet2 as the regional network for the USA. He started the presentation by giving a description of the network, and then the organisational structure. He highlighted that unlike UbuntuNet Alliance, members of Internet2 are individual institutions (Universities) and that they connect to the network through Regional Connectors. The members and Regional Connectors get commodity Internet from commercial providers.

Finally he stated that currently UbuntuNet traffic was being routed to Internet2 through GÉANT2 at the London Hub. He expressed his wish for a direct link to African NRENs in future, stating that the US has the International Research Network Connection Program (which is not part of Internet2) under the National Science Foundation, which provides international links for Internet2 and may be worth engaging.

The full presentation is available at

http://www.ubuntunet.net/sites/ubuntunet.net/files/Dsmith-111108.pdf

Presentation 8: GÉANT2 and University Connectivity to NRENs
By Michael Nowlan, DANTE

Mr Michael Nowlan presented GÉANT2 as the regional network for Europe. Mr Nowlan started his presentation by giving a background on DANTE as the organisation that manages the network, GÉANT2. He stated that the organisation was established in 1993 by a subset of Europe's NRENs.

He then gave a brief of the network, GÉANT2 stating that it is a 7th generation of pan-European research network infrastructure, funded jointly by European NRENs and the European Commission. It has project partners from 30 of Europe's NRENs, DANTE and TERENA, connects 34 European countries and serves over 3500 research and education establishments across Europe. He also mentioned EUMEDCONNECT and that it inter-connects 7 Mediterranean countries in Europe, Middle East and North Africa.

Then he gave an outline of the role of research and education networking and finally concluded by giving the various models of funding which different NRENs have adopted.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/MNowlan-111108.pdf

Presentation 9: The Internet Education Equal Access Foundation
By Professor Don Riley, IEEAF

Professor Don Riley gave an oral presentation on the Internet Education Equal Access Foundation (IEEAF) and what it does. He stated that the IEEAF works with commercial entities and leverages on business opportunities to get what it wants, e.g. fibre capacity. The IEEAF also supports new collaborations and equity.

He urged NRENs not to only focus on the Internet, but also to work on creating an environment that supports research.

Questions and Comments:

Dr Jameson Mbale wanted to find out why it appeared that bandwidth on Internet2 was expensive as compared to the commodity one. In response Mr Smith said that bandwidth on Internet2 offers better performance for research and that the institutions purchase the bandwidth on large scale whether they use it or not.

Dr Duncan Martin commented that that UbuntuNet was keen to see Internet2 coming to Africa to peer with African networks. Mostly to see Internet2 bearing the cost of the links from London to any place in Africa. Further, Dr Tusubira observed that a similar arrangement with GEANT2 would be good.

Professor Dibungi Kalenda raised a question on whether private hospitals would be allowed to use applications such as telemedicine on the NREN platform. In response, Mr Nowlan gave the example of the UK NREN and stated that their case was different because most of the hospitals on the network were linked to universities and were used for teaching. Further, some participants observed that the scenario would vary from one NREN to another. On the other hand Gerti Foest commented that being a member of an NREN was different from connecting to the network. An example was given of DFN where university hospitals connect to the network but some private hospitals are just members of the NREN.

9.0 SUB-THEME 4: NREN CLINIC
Chairperson: Ms Margaret Ngwira

Panellists: Professor Bjorn Pehrson, Dale Smith and Dr Duncan Martin,

The Chairperson of the Session, Ms Margaret Ngwira introduced the session by stating that its purpose was to give NREN representatives an opportunity to ask questions and discuss challenges they face.

The participants then discussed a number of issues facing NREN development as follows:

ASNs and Public IP Addresses
Mr Dale Smith, a panellist started the session by repeating what was said by Duncan Martin in his presentation on Effective NRENs that it was very necessary that every NREN acquired an ASN from AfriNIC and public IP address space to announce routes. He also continued to say that the individual campuses also needed to have independent IP addresses, but that they may not need the ASNs.

The full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/Dsmith2-111108.pdf

Professor Bjorn Pehrson also informed the participants that apart from ASNs and IP address spaces, there were other prerequisites such as Acceptable Use Policies (AUP). Each participating NREN needed to have an AUP and publish it on its website.

Policy and Regulatory Environment
Professor Bjorn Pehrson pointed out that the policy and regulatory environment may vary from one country to another and as such may need to be studied. Infrastructure access conditions also need to be studied as they also vary.

Governance
The participants were informed that more especially at the early stages, of NREN development, it is important to involve all potential members from the very beginning to instil a sense of ownership among them. The participants also noted that it is not good practice to set committees of Representative Members to run day to day activities, but to leave that to the managers of the NREN to handle.

Depending of the governance model the government may or may not need to be there. However, if the government is contributing, it may definitely need to be part of the governance structures. However, the participants also appreciated the need for the government to be involved for policy support and political will.

Content
Some participants pointed out that the NREN needs to make sure that content is available on the network.

NREN Design by Research
The participants noted that there was vast opportunity in establishing an NREN from scratch by using students' Master research programmes.. The case of KTH students was used to elaborate, where the students have been involved designing networks as part of their MSc

thesis. The students design the network and/or do some of the studies around the issues in the NREN operational environment, on both the organisation and the network.

Competition
The participants were informed that as best practice the NREN needs not to be seen as a competitor with Internet Service Providers (ISPs) or other players. To achieve this, it is good to let all players know that the NREN is a non profit organisation and that it should never stray away from that.

Bandwidth
The participants recommended that the NREN need not to be a VSAT bandwidth consortium because its major role has to be on creating a platform that supports research.

10.0 SUB-THEME 5: FEAST – FEASIBILITY STUDY FOR AFRICAN-EUROPEAN RESEARCH AND EDUCATION NETWORK INTERCONNECTION
Chairperson: Dr Carmen Mena-Abela, DG-INFSO

Presentation 10: Overview of the FEAST Proposal and Objectives
By Professor Bjorn Pehrson

Professor Bjorn Pehrson presented an overview of the FEAST Project and its objectives. He started his presentation by stating that the purpose of the study was to examine the feasibility of building a regional Research and Education network in Sub Sahara Africa. The FEAST would be carried out by DANTE, KTH and TERENA. The objectives of the study are, to:
a) Examine how to work with African NRENs and other stakeholders to establish a sustainable and expandable regional research network infrastructure in Africa
b) Provide recommendations to EC on the deployment of such an infrastructure and their interconnection to GÉANT (AfricaConnect).
c) Study NREN capacity to connect end users to take advantage of the services provided.
d) Prepare for rapid establishment of expandable RREN(s) of immediate impact in the research and education sectors.

Questions and Comments:

Dr Carmen Mena-Abela highlighted that there was a big difference between the extensions of GÉANT to Latin America and Asia, and the one to Africa. The one for Africa would be under international development and that the approach was that the European Commission would do what Africa wants to be done. She also emphasized that it would be a regional network and not country to country connectivity.

Presentation 11: A Task for NRENs: Application Support and Services
By Gerti Foest. DFN, German

Gerti Foest started her presentation by stating the key priority task for NRENs as being to provide connectivity for the research and education community. She however observed that good connectivity alone is not enough, but that powerful networks and excellent national, regional and international connectivity form the basis for advanced communication and cooperation for research, education and societal benefit. NRENs and RRENs provide a framework to ensure the benefit of networks for researchers, educators and society.

Her argument was that the task for NRENs was to promote, coordinate and support compelling network applications on national, regional and international level; and to demonstrate the value of research and education networks. Then she gave a list of some of the applications and services that could be run on the NREN network.

Then she concluded by stating that parallel to building networks and providing worldwide connectivity, there was need to support the usage and development of compelling applications by providing supporting services.

The full presentation is available in
 http://www.ubuntunet.net/sites/ubuntunet.net/files/GFoest-111108.pdf

Questions and Comments:

A question was raised that some of the services that were presented for NRENs to offer were over wrapping with those offered by an institution's IT Department. In response, Gerti Foest said that the NREN would not replace what the campuses were doing but to provide a framework for the services and applications for the campuses and provide support.

Presentation 11: TERENA Compendium and Data Collection from African NRENs & NRENs in Construction
By John Dyer, TERENA, Netherlands

John Dyer gave an overview of TERENA, the TransEuropean Research and Education Networking Association. He stated that TERENA does not operate a network and that the European Network was operated by DANTE.

One of the activities of TERENA was to conduct a survey on NRENs and publish the TERENA Compendium. Then he went through some key highlight of the compendium such as NREN traffic growth, and growth of cross-border fibre dark fibre. Then he extended the invitation to African NRENs to participate in the exercise.

Then he linked the TERENA NREN Survey to the FEAST as already introduced by Professor Pehrson. He stated that the study would be based on the TERENA Compendium questionnaire. He finally urged all the NRENs to take part in the survey and complete all the questions.

Full presentation is available at
http://www.ubuntunet.net/sites/ubuntunet.net/files/JDyer-111108.pdf

Questions and Comments:

Dr Tusubira highlighted the fact that the FEAST Project was aimed at collecting data for African NRENs and not for TERENA. Further to this, Dr Carmen Mena-Abela pointed out that the European Community had been successful in extending the reach of GEANT to South America, Asia and the Mediterranean region.

Dr Duncan Martin highlighted that the FEAST Project was about bringing Europe to Africa and not Africa to Europe as is the case now.

11.0   SUMMING UP AND CLOSING
Mr Albert Nsengiyumva, Deputy Chair, UbuntuNet Alliance

In summing up the conference, Mr Albert Nsengiyumva, the Deputy Chairperson of the Alliance thanked all the participants for the fruitful and informative conference and deliberations. He observed that there were a number of developments/initiatives going on and that there was still need for more to be done and there were a number of things to achieve.

He finally expressed a word a gratitude to IDRC for funding the conference; the Development Partners for their presence and contributions; all NRENs for their coming; and the Secretariat for the good job well done in organising and handling logistics. He then asked all participating NRENs to bring success stories, lessons and innovations during the next UbuntuNet-Connect Conference.

LIST OF PARTICIPANTS

	First Name	Surname	Organization	Country
1.	Mercy	Maleko	NetTel@Africa	Tanzania
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5.	Dibungi	Kalenda, Prof	Eb@le	DRC
6.	Lishan	Adam, Dr		Ethiopia
7.	Gerti	Foest	DFN	German
8.	Michel	Nowlan	DANTE	Ireland
9.	Sandra Atieno	Aluoch	BWC, FORUM	Kenya
10.	Kennedy Odhiambo	Aseda	KENET	Kenya
11.	Tiwonge Msulira	Banda	UbuntuNet Alliance	Malawi
12.	Zimani David	Kadzamira, Prof	UbuntuNet Alliance	Malawi
13.	Margaret	Ngwira	UbuntuNet Alliance	Malawi
14.	Americo	Muchanga, Dr	Universidade Eduardo Mondlane	Mozambique
15.	Jameson	Mbale, Dr	University of Namibia	Namibia
16.	Wilfred	Kuria		Namibia
17.	John	Dyer	TERENA	Netherlands
18.	Albert	Nsengiyumva	UbuntuNet Alliance, RwEdNet	Rwanda
19.	Grace	Umutesi	RwEdNet	Rwanda
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21.	William	Stucke	AfrISPA	South Africa
22.	Andrea	Johnson	Carnegie Corporation of New York	USA
23.	Geoff	Daniell	SANReN	South Africa
24.	Andrew	Alston	TENET	South Africa
25.	Duncan	Martin, Dr	TENET	South Africa
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27.	Howida Elsheck	Shagli	SUIN	Sudan
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35.	Nora	Mulira, Dr	Makerere University	Uganda

36.	Patrick	Mangheni, Dr	RENU	Uganda
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40.	John	Schoneboom	PHEA	USA
41.	Don	Riley, Prof.	IEEAF	USA
42.	Bonny	Khunga	ZAMREN	Zambia
43.	Gilford	Hapanyengwi, Dr	University of Zimbabwe	Zimbabwe