

UbuntuNet-Connect 2009

Opening New Frontiers for Research and Education Networking in Africa



**Proceedings and Report of
the 2nd UbuntuNet Alliance Annual Conference
12th to 13th November 2009,
Hotel Africana , Kampala, Uganda**

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Table of Contents

Table of Contents.....	5
1. INTRODUCTION.....	7
2. CONFERENCE PROGRAMME	8
3. CONFERENCE OPENING.....	10
Welcome Remarks <i>By Prof. Noll.....</i>	10
Brief Remarks from Platinum Sponsors: <i>Ryan Sher (WIOCC) and JP de Leu (SEACOM).....</i>	10
Setting a stage: Building the Backbone one piece at a time <i>Dr FF Tusubira, CEO, UbuntuNet Alliance.....</i>	10
Keynote Address: Opening New Frontiers for Research and Education Networking in Africa <i>By Professor Zimani Kadzamira, Chairman, UbuntuNet Alliance</i>	11
Speech of the Guest of Honour and official opening Hon Aggrey Awori, Minister of ICT Sub-theme 1: Infrastructure, Network Deployment, and Operations.....	11
4. SUB-THEME 1: INFRASTRUCTURE, NETWORK DEPLOYMENT AND OPERATIONS CHAIR: DR IMAN ABUEL MAALY ABDELRAHMAN	12
Presentation 1: Keynote presentation: It's all about sharing... Co-operation and fair sharing <i>By Duncan Martin, CEO, TENET and Board Member UbuntuNet Alliance ...</i>	12
Presentation 2: Deploying RENU <i>By Joseph Kimali, RENU</i>	13
Presentation 3: Video Conferencing over Limited Links: the GLOBAL Project <i>By Margret Ngwira and Tiwonge Banda, UbuntuNet Alliance</i>	13
Presentation 4: Pitfalls and Challenges in Deploying National and Regional Networks: Experiences from Europe <i>By Cathrin Stöver, DANTE</i>	14
Presentation 5: Pitfalls and Challenges in Deploying National and Regional Networks: Experiences from the USA <i>By Don Riley, University of Maryland.....</i>	15
5. SUB-THEME 2: APPROACHES AND INITIATIVES FOR REGIONAL AND INTERNATIONAL CONNECTIVITY CHAIR: ALBERT NSENGIYUMVA	17
Presentation 6: African Internet eXchange System (AXIS) <i>By Eric Osiakwan, Executive Secretary, AfrISPA.....</i>	17
Presentation 7: AfricaConnect as an enabler for Research Collaboration & EU's Framework Programme for Research <i>By Carmen Mena-Abela, European Commission</i>	17
Presentation 8: From Networks and Services to Applications: From FEAST to ERINA4Africa <i>By Bjorn Pehrson, KTH</i>	18
Presentation 9: SEACOM Update <i>By JP de Leu, Senior VP, SEACOM.....</i>	18
Presentation 10: EASSy Update <i>By Ryan Sher, EASSy</i>	19
DAY 2.....	20
6. SUB-THEME 3: BRINGING CONTENT NETWORKS ON BOARD CHAIR: DR NORA MULIRA, DIRECTOR, DICTS	20
Presentation 11: A Task for NREs: Application Support and Services <i>By Gerti Foest, DFN-Verein</i>	20

Presentation 12: Challenges and solutions to sharing Library resources for Research and Education in Uganda with special Reference to Makerere University Library <i>By Maria Musoke, Librarian, Makerere University</i>	20
Presentation 13: Applications and Content Development in Agriculture <i>By Nodumo Dhlamini and Wellington Ochola, RUFORUM</i>	21
Presentation 14: Information Technology Applications and Content in Health Sciences <i>By Nelson Sewankambo, College of Health Sciences, Makerere University</i> ...	21
Presentation 15: Malawian Lighthouse Demonstrators, <i>By Bruce Zamaere, University of Malawi, College of Medicine</i>	22
7. SUBTHEME 4: POLICY REGULATION AND GOVERNMENT SUPPORT CHAIR: ABEL KATAHOIRE	24
Presentation 16: Overcoming Policy and Regulatory challenges to NREN Development <i>By Abi Jagun, Research ICT Africa</i>	24
Presentation 17: From Agent to Licensed NREN Operator <i>By Duncan Martin, TENET, South Africa</i>	24
Presentation 18: KENET – Kenya Education Network – KENET Presentation UbuntuNet Connect <i>By Meoli Kashorda and Kevin Chege, KENET</i>	25
Presentation 19: 4R impact Mode, 4R Impact Model: Envisages the Impact of Telecommunications Policy and Regulations on NRENs Including NRENs-in-Construction <i>By Jameson Mbale, Coordinator, NAMREN</i>	25
8. SUMMING UP <i>Dr Patrick Mangheni</i>	26
9. LIST OF PARTICIPANTS	27

1. INTRODUCTION

UbuntuNet-Connect is a series of annual conferences, organized by UbuntuNet Alliance. UbuntuNet-Connect 2009 was held at Hotel Africana in Kampala, Uganda from 12th to 13th November 2009, under the theme “Opening new frontiers for research and education networking”. The conference was officially opened by the Ugandan Minister of Information and Communication Technologies, Honourable Agrey Awori.

The conference was attended by presenters and delegates from Africa, Europe and the America bringing together connectivity providers, researchers, policy makers, academicians and a pool of expertise in research and education networking.

The two day conference was Delegates at the two day conference discussed the status of African research and education in terms of infrastructure; regional and international connectivity; and applications and content networks. The conference was split into three focused sessions each addressing a particular key area.

2. CONFERENCE PROGRAMME

UbuntuNet-Connect 2009 Hotel Africana, Kampala, Uganda, 12-13th November 2009

Time	Activity	Presenter/Responsible Person	Session Chair
0730 – 0815	Registration	Sylvia/Irene	Session Chair
0815 - 0950	Conference Opening		Steve Song
0815 – 0830	Introductions (by country)	Patrick Mangheni, CEO, RENU	
0830 – 0840	Welcome remarks from RENU	Stephen Noll, Chair, RENU	
0840 – 0850	Brief Remarks from Platinum Sponsors	JP de Leu, SEACOM; Ryan Sher, WIOCC	
0850 – 0905	Setting the Stage: Building the Backbone, one piece at a time	F F Tusubira, CEO, UbuntuNet Alliance	
0905 – 0925	Keynote Address: Opening New Frontiers for Research and Education Networking in Africa	Z.D. Kadzamira, Chairman, UbuntuNet Alliance	
0925 – 0950	Speech of the Guest of Honour and official opening	Hon Aggrey Awori, Minister of ICT	
0950 – 1030	<i>Group photograph and Health Break</i>		
1030 – 1245	Sub-theme 1: Infrastructure, Network Deployment, and Operations		Iman Maaly Abdelrahman, CEO SUIN
1030 – 1100	Keynote presentation: Creative approaches to network deployment and operations in resource limited environments	Duncan Martin, CEO, TENET	
1100 – 1115	Discussion		
1115 – 1130	Deploying RENU	Joe Kimali, Network Manager, RENU	
	Video Conferencing over Limited Links: the GLOBAL Project	Margaret Ngwira and Tiwonge Banda	
1130 – 1155	Pitfalls and challenges in deploying national and regional networks: experiences from Europe	Cathrin Stover, DANTE	
1155 – 1210	Discussion		
1210 – 1235	Pitfalls and challenges in deploying national and regional networks: experiences from the USA	Don Riley, University of Maryland	
1235 – 1245	Discussion		
1245 – 1345	<i>Lunch break</i>		
1345 – 1530	Sub-theme 2: Approaches and Initiatives for Regional and International Connectivity		Albert Nsengiyumva
1345 – 1405	African Internet eXchange System (AXIS)	Eric Osiakwan, AfrISPA	
1405 – 1425	Discussion		
1425 – 1440	AfricaConnect and EU Support	European Union Representative	
1440 – 1500	AfricaConnect Feasibility Study (FEAST)	Bjorn Pehrson, FEAST	
1500 – 1525	Discussion		
1525 - 1545	<i>Health Break</i>		

1545 – 1600	SEACOM Update	SEACOM Rep	
1600 – 1615	Discussion		
1615 – 1630	EASSy Update	WIOCC Rep	
1630 – 1645	Discussion		
1800 – 2100	<i>Cultural gala and cocktail</i>	<i>Sponsored event (to be confirmed)</i>	
DAY 2			
0815 – 1020	Sub-theme 3: Bringing Content Networks on Board		Nora Mulira
0815 – 0825	A Task for NRENS: Application Support and Services	Gerti Foest, DFN	
0825 – 0840	Discussion		
0840 – 0910	Challenges and solutions to sharing Library content	Maria Musoke, Librarian, Makerere University	
0910 – 0920	Discussion		
0920 – 0940	Applications and content in Agriculture	Adipala Ekwamu, RUFORUM	
0940 – 0950	Discussion		
0950 – 1010	Applications and content in Health Sciences	Nelson Sewankambo (Principal, College of Health Sciences, Makerere Univ)	
1010 – 1020	Discussion		
1020 – 1045	<i>Health Break</i>		
1045 – 1105	Malawi Lighthouse Demonstrators	Bruce Zamaere, MAREN	
1105 – 1115	Discussion		
1135 – 1145	Discussion		
1145 – 1245	<i>Sub-theme 5: Policy, regulation, and government support</i>		Patrick Masambu
1145 – 1205	Keynote presentation: Overcoming policy and regulatory challenges to NREN development	<i>Dr Abi Jagun, Research ICT Africa</i>	
1205 – 1215	Discussion		
1215 – 1245	6 minutes of fame: 5 NRENS that would have enlisted earlier will share their specific experience in overcoming policy and regulatory challenges, and securing government support		
1245	Summing up and closing	Dr Patrick Mangheni, CEO, RENU	

3. CONFERENCE OPENING

The opening session was chaired by Dr Iman Abuel Maaly Abdelrahman, CEO of SUIN and UbuntuNet Alliance Board Member. She started the session by welcoming all participants and then thanked IDRC, WIOC, Broadband, ISOC, AAU, UCC for funding the conference. She then introduced Professor Stephen Noll, Chairperson of RENU to give welcome remarks.

Welcome Remarks

By Prof. Noll

Professor Noll started his speech by welcoming all delegates to UbuntuNet-Connect 2009 and gave a special welcome to the Guest of Honour, Honourable Minister of ICT in Uganda, Mr Agrey Awori, thanking him and his Ministry for their support, and for being a source of inspiration. He stated that the theme of the conference, "Opening new frontiers for Research and Education Networking in Africa" was well thought of as the coming of undersea fibre optic cable along the East African Coast has opened new opportunities for further research in Africa even though there are still some challenges.

He continued to state that there is critical need for the success of the undersea cable and need to share facilities to secure economies of scale, mobilise members to be ready for faster and cheaper connectivity, harmonise policies to achieve interoperability, and create a regional network in Africa. He further said that the presence of the Minister at the Conference demonstrated the commitment of the Ugandan government.

He concluded by stating that on the part of RENU, the outcome of the conference is to help RENU to fulfil their mandate as a Research and Education Network in Uganda to take advantage of ICT and in all looking forward to working with the Ministry of ICT.

Brief Remarks from Platinum Sponsors:

Ryan Sher (WIOCC) and JP de Leu (SEACOM)

The two speakers gave short comments which agreed that the most important factor was to empower people to compete, and have a free and fair market.

Setting a stage: Building the Backbone one piece at a time

Dr FF Tusubira, CEO, UbuntuNet Alliance

In his remarks, Dr Tusubira said that it was a pleasure to have all countries present from the UbuntuNet Membership Region as well as friends from Europe and the USA. He said that the Alliance is not just about the infrastructure network but also the people network.

Dr Tusubira also welcomed SomaliREN as the 11th member of UbuntuNet and thanked Mr Tom Munyasya for all his efforts in making SomaliREN a reality. He that

if an NREN was possible in Somalia, then there wa no reason why NRENs would not be formed in other countries.

Finally, he welcomed all delegates to UbuntuNet-Connect 2009 event in Kampala.

**Keynote Address: Opening New Frontiers for Research and Education
Networking in Africa**

By Professor Zimani Kadzamira, Chairman, UbuntuNet Alliance

Professor Kadzamira opened his speech by thanking the Minister for his continued support to RENU as well as to UbuntuNet Alliance. The stated that the dream of UbuntuNet Alliance is that researchers will be empowered with sufficient bandwidth to be able to effectively participate in and contribute to the global research and education networking community. He noted that African researchers had been isolated for a long time and that as the Alliance, we want to see vibrant Research and Education Networking in Africa.

Then he went on to state the challenges that the Alliance has faced over the years and outlined how they were overcome, and in the process learning from them.

**Speech of the Guest of Honour and official opening Hon Aggrey Awori, Minister
of ICT Sub-theme 1: Infrastructure, Network Deployment, and Operations**

The Honourable Minister of ICT, Mr Aggrey Awori started his opening address by thanking UbuntuNet Alliance for their efforts in organizing the Conference. He said that the Conference was especially relevant to the ICT parliamentary committee as they would have found issues discussed very useful. He also welcomed SomaliREN to the UbuntuNet Community.

He continued his speech by stating that the Ministry of ICT has established a national backbone infrastructure team with the civil society and other stakeholders to provide strategies to the government. He said that the Ministry would work together with all stakeholders to promote best strategies.

4. SUB-THEME 1: INFRASTRUCTURE, NETWORK DEPLOYMENT AND OPERATIONS

CHAIR: DR IMAN ABUEL MAALY ABDELRAHMAN

Presentation 1: Keynote presentation: It's all about sharing... Co-operation and fair sharing

By Duncan Martin, CEO, TENET and Board Member UbuntuNet Alliance

As at September 2007, TETNET had 42 institutions, 25 universities (including 2 foreign), 5 research councils, 12 smaller support entities and 101 campuses being served with a total international bandwidth of 220 Mb/s. Telkom SA was the sole supplier and provided full Internet access service with dedicated bandwidth.

SEACOM offered TENET 10 Gb/s from London landing at Mtunzini Landing Station with an IRU for life of the cable at US\$20 million due upon commissioning with a 3% p.a. for operations and maintenance.

TENET raised the US\$20 million by getting commitments from institutions to pay the amount to SEACOM in 6 equal annual payments with a 14% p.a. financing charge. Twenty seven institutions were accepted by SEACOM and the Development Bank of Southern Africa as a guarantee of a loan to TENET of R154 million.

The financing model for the SEACOM offer was to work together to pay back while ensuring fair sharing and making settings per institution with no need to worry that they would not get what they paid for, also fair sharing in collaborative network projects. Lessons learnt are that: there is power in aggregation of recurring operational budgets; it is essential to ensure fair sharing; and that there is power in collaborating through your NREN. The heroes of the story are the 27 institutions that had the guts to make irrevocable commitments to TENET.

In fair sharing in network projects, the major principals are: geographic agnosticism - rules for sharing capacities and costs are independent of location; ensuring that every collaborator benefits - ensuring that the project makes it cheaper for everyone, no-one is expected to directly cross-subsidies another; and to avoid multi-party contracts - and to expect the NRENs to be the enabling middleman.

The message to IT Directors is that: a) exploit the aggregate power of recurring budgets through the NREN; b) seek out mutually beneficial ways of collaborating and sharing; c) follow principles of fair sharing which sustains trust and willingness to collaborate; and d) support and trust the NREN. An NREN must be more than just another ISP.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/duncanmartin-12112009.pdf>

Questions and Comments:

Professor Meoli Kashorda asked a question on how TENET managed to develop trust of the 27 institutions in to make commitments towards the purchase of capacity on SEACOM. In response, Dr Martin said that it was 27 out of 42 institutions that

made the commitments. He also stated that the trust came from the origin of TENET in that TENET was created out a crisis after UNINET was closed

Presentation 2: Deploying RENU

By Joseph Kimali, RENU

In his short oral presentation, Joe Kimali encouraged NRENs to make sure that their networks have identities. This would be achieved by making sure that the NREN has an own Autonomous System Number (ASN) and an own IP address space to allocate to institutions. He informed all delegates that RENU had applied for these two from AfriNIC.

Presentation 3: Video Conferencing over Limited Links: the GLOBAL Project

By Margret Ngwira and Tiwonge Banda, UbuntuNet Alliance

This presentation was about an EU FP7 project, GLOBAL – Global Linkage over Broadband Links - which is aiming at realization of virtual events through the GLOBAL Virtual Conference Centre via the Internet. The 30 month project started in May 2008 and is being implemented by a consortium of 7 organisations in Europe, Africa and South America and is led by ZSI of Austria.

GLOBAL allows and helps research projects to disseminate their results and training events to a wider audience located in multiple geographical locations through the organization of Virtual Conferences. Through the virtual conferences the participating users are able to exchange information on e-infrastructure development, identify partners for future collaboration and exchange and discuss synergies between their running initiatives.

The GLOBAL project is setting up an innovative Web 2.0 like Collaborative e-Infrastructure, called the Virtual Conference Centre (VCC), which will enable the regular realisation of virtual events. The purpose is to support the promotion of e-infrastructure topics in Europe and around the world. The VCC will provide advanced videoconferencing and collaboration tools and support to the participants. Each event will be recorded and stored on a repository together with documents and outcomes for future consultation.

The virtual conference centre will provide three main functions focused on usability: a virtual auditorium, for planning, coordination and management of the virtual events, an event repository to store the recordings and outcomes of the events and a virtual corridor which will support networking and partnership building amongst the participants.

The VCC is available online at <http://vcc.dit.upm.es>. It is easy to use in planning, creation, announcement, coordination, content management and realisation of virtual conferences with open and wide participation. The project is working at integrating Isabel into the VCC to form a functional video conferencing e-Infrastructure

To participate in Virtual Events one would need the following:

- a) a pc installed with Isabel (currently runs in Ubuntu),
- b) minimum of 512kb/s,
- c) a standard webcam, Microphone, Speakers,

Participation can also be achieved using a flash enabled web browser via a flash gateway; a SIP gateway with Skype, Ekiga, etc.

There are opportunities for NRENs and their member institutions to provide both audiences and speakers at high profile events, GLOBAL provides opportunities for NRENs to cut travel costs by remotely participating in events, reducing the carbon foot print – NREN going green. More opportunities also exist in enhancing intra- and inter-NREN collaboration. Isabel vide conferencing system can also be used for e-learning.

GLOBAL has successfully provided remote participation tens of events among which were to the TNC 2008 and 2009 in Brugge and Malaga respectively; and also fully distributed events like the EU Information Day in June 2009.

The presentation concluded by announcing the 5th BELIEF Symposium and CHPC National Meeting which would be held on, 7-9th December 2009 in Johannesburg and called for remote sites to participate.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/margaretandtiwonge-12112009.pdf>

Presentation 4: Pitfalls and Challenges in Deploying National and Regional Networks: Experiences from Europe

By Cathrin Stöver, DANTE

Cathrin Stover started her presentation by giving a brief historical background of DANTE stating that the organisation is not-for-profit in nature, was founded in 1993 and that a subset of European Union NRENs are shareholders. DANTE manages and coordinates GN3, TEIN3, EUMEDCONNECT and CAREN projects. The turnover for DANTE in 2008 was 49M Euro, and employees were 52 (including the new NOC function) from all around the world.

Then she presented GEANT, stating that it is the 7th Generation of Pan-European Research Network Infrastructure connecting 36 European countries through 32 NREN partners. GEANT serves over 3,500 research and education establishments across Europe with over 30 million users. Challenges faced are limited to working capital, slow payment from NRENs, bad debts and no sanctions.

Cathrin then continued with the DANTE timeline and described how the organisation grew amidst funding difficulties before the European commission started funding activities. She stated that EC funding was crucial for sustainability.

Then she presented the GEANT success story from 2000-2004 when DANTE implemented the GN1 project, which resulted in the GÉANT network. The GN2 project implemented in 2004-2009 brought the GÉANT2 network alongside other services including Joint Research Activities and Networking Activities. Finally the GN3 project (2009-2013) implements GÉANT3, a wider range of services, joint research activities and networking activities.

She concluded her presentation by describing the governance of DANTE, stating that there are three levels: policy, supervision and implementation and that number of

decisions reduces as you move towards implementation, while importance of decisions increase as you move towards the policy level.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/cathrinsteover12112009.pdf>

Questions and Comments:

Qn.3 How much of an impact has the stronger NRENs made to the smaller NRENs and how much has it influenced the situation.

Ans: Small NRENs have profited from the big ones. Technology is the same regardless of where you are.

Qn : What is the role of NREN CEOs in the governance of DANTE?

Ans: The CEOs are represented in the Policy Committee, which meets every 6 weeks. The Committee takes policy decisions on cost sharing on implementation

Qn: Is the 50% funding from the EC broken down to specific links or is it for DANTE to decide

Ans: DANTE does not decide anything on behalf of the NRENs

Qn: Are voting rights distributed evenly across the NRENs in Europe

Ans: The voting rights are not equally distributed, but spaced.

Comment: veto, if used wisely may be positive in this part of Africa in the initial stage because we do not have uniform understanding

Presentation 5: Pitfalls and Challenges in Deploying National and Regional Networks: Experiences from the USA

By Don Riley, University of Maryland

Professor Don Riley introduced his presentation by giving a brief background of himself stating that he was once VP/CIO of the University of Minnesota and University of Maryland; he was one of the 30+ founders of Internet2; he created the Mid-Atlantic Crossroads (MAX), which is the major Internet2 GigaPOP in Greater Washington DC area; and that he is one of founders of Internet Educational Equal Access Foundation (IEEAF).

Then he went on to describe the original Internet2 logical network and compared it to the current one that integrates with the National LambdaRail and incorporates the concept of regional connectors. Below is the map of the NRL infrastructure.

The backbone connectivity for Internet2 and NLR is based on "lit" Layer 1 10G wavelength services. The National Backbone connects to regional connectors and does not connect directly to members. There are multiple International connections, most most of which are collaborations that are not really operated by Internet2 or NLR.

In terms of network peering, the Internet2 and the NLR allows for IP traffic between members, peers, and International REN peers. Members or regional connectors need a commercial Internet provider (commodity ISP) and some using the backbone to aggregate ISP needs to get better pricing. There is also peering with various

commercial networks and providers at Internet exchanges - a program called Commodity Peering Service (CPS).

Professor Riley emphasised that bandwidth is not the only goal/issue and that performance and capabilities are key for supporting advanced collaboration in both research and education. Performance and capabilities are key for future technology/economic development opportunities.

Professor Riley then highlighted that Internet2 is more than the backbone network, but a network of human beings working together and collaborating on projects. He observed that the backbone network is actually more expensive than commercial Internet.

Professor Riley concluded his presentation by highlighting on the prospects of UbuntuNet Alliance connecting to Internet2 and NLR. He said that currently there are multiple physical links between GEANT and both Internet2 and NLR, and other NRENs around the world. So for UbuntuNet Alliance to connect to Internet2 and NLR, it needs to get to GEANT POP anywhere in Europe- London is preferred because the UbuntuNet router is located there. GEANT transits UbuntuNet routes and traffic to Internet2, NLR, CANARIE and other NRENs.

Finally, Professor Riley stated that the IEEAF is working with RENU for a 10Gbps connection back to Amsterdam.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/donriley-12112009.pdf>

Questions and Comments:

Qn: Do Universities have contracts with aggregators and not internet2?

Ans: Yes, Universities have contracts with Aggregators

Qn: In terms of funding, is it universities in the United States of America that have built the Internet2 backbone?

Ans: Initially we did not build anything. We made local Points of Presence (POPs) and universities had to connect to them.

Comment: Dr Duncan Martin commented that in this part of the region, NRENs spending are US\$1.4 million a month. If the NRENs could collaborate they could purchase more than enough bandwidth

5. SUB-THEME 2: APPROACHES AND INITIATIVES FOR REGIONAL AND INTERNATIONAL CONNECTIVITY CHAIR: ALBERT NSENGIYUMVA

Presentation 6: African Internet eXchange System (AXIS) By Eric Osiakwan, Executive Secretary, AfrISPA

Eric Osiakwan's presented the African Internet eXchange System (AXIS). His presentation took off by describing the African Internet Service Providers Association (AfrISPA). AfrISPA was incorporated in Mauritius in 2001 with a focus of building African Internet Infrastructure. He then gave the different scenarios of how in-country traffic flows without an Internet Exchange Point and how the same flows when there is an IXP. Eric noted that bandwidth costs are prohibitive in Africa stating that it is about 40 times more than what other continents pay – Africa is paying about US\$500 million a year.

He then presented the AXIS, stating that its vision is an African Internet Backbone. The strategy to achieve it would be to establish connectivity between African IXPs. In the process there would be an emergence of opportunities for Regional Carriers.

Eric concluded his presentation by stating a few steps that the AXIS project would follow and finally gave synergies that exist with NRENS.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/ericosiakwan-12112009.pdf>

Questions and Comments:

Qn: On the map, why are IXPs only in Central and South Africa, why not the North?

Ans: We are working hard to have IXPs in North Africa, Egypt and Morocco. Our approach is to have them established bottom up rather than top down. If there is an interest in a country we will go there.

Qn: There seems to be a lot of similarities between UbuntuNet Alliance and AfriSPA as both are all interested in cross-border links. Is AfriSPA interested in contracting with infrastructure providers for cross border links?

Ans: It is important at this conceptual stage to talk to each other. We should look at ways of working together. AfriSPA is there looking at emergence of regional carriers which will be purely commercial and these are the ones that will work the routing regionally.

Presentation 7: AfricaConnect as an enabler for Research Collaboration & EU's Framework Programme for Research

By Carmen Mena-Abela, European Commission

Carmen presented AfricaConnect and EU Framework Programme for Research. Her presentation was aimed at bringing awareness on the AfricaConnect project. She started her presentation by bringing the concept of e-Infrastructures on focus. She

then talked about the different levels of academic networks starting at campus level on to global level.

She then gave an overview of AfricaConnect, stating that it is an early deliverable of the AU-EU Partnership 8 (Research, Information Society & Space). The overall objective is to contribute to poverty reduction by harnessing the potential of information and communication technologies for sustainable development in the region. The project will have a budget of 15million Euro spread over 2010-2013 targeting African NRENs that are marked ready in the FEAST project.

She then concluded her presentation by giving an overview of the 7th Framework Programme (FP7 (2007-13), stating that the programme on Research and Technological Development was the EU's main instrument for funding research. She then encouraged African partners to participate in FP7 projects, giving UbuntuNet Alliance as an example.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/carmenmenaabela-12112009.pdf>

Presentation 8: From Networks and Services to Applications: From FEAST to ERINA4Africa

By Bjorn Pehrson, KTH

This presentation was intended to give the overview of the EU-commissioned Feasibility Study for African-European Research and Education Network Interconnection, FEAST. Bjorn Pehrson introduced his presentation by giving the mission of the FEAST project stating that it was to explore the feasibility of AfricaConnect and make recommendations to the EC. Then he gave a summary of the FEAST conclusions and recommendation that yes, AfricaConnect is feasible. He then went on to presenting ERINA4Africa e-infrastructure survey. He stated that the project was mapping Africa's e-infrastructure potential. The project was following up on FEAST applications mapping and it will include a cost-benefit analysis. He then invited e-Infrastructure projects to participate in the project. Finally he gave a few examples of projects in Malawi, Uganda and Tanzania.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/bjornpehrson-12112009.pdf>

Presentation 9: SEACOM Update

By JP de Leu, Senior VP, SEACOM

J.P de Leu gave a brief oral presentation about SEACOM. He started his presentation by giving a brief background of SEACOM. And then went on to stating the status of the cable. He stated that SEACOM is 76% African owned and that it was operating using open access principles. On AfricaConnect, he observed that there is need to explore the feasibility with SEACOM.

Full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/jpdeleu-12112009.pdf>

Presentation 10: EASSy Update

By Ryan Sher, EASSy

Like the SEACOM presentation, the EASSy presentation was meant to bring an update to the participants on the cable status. Ryan Sher introduced his presentation by giving market realities about fibre and connectivity in the African landscape. He stated that construction of the cable was underway and completion was planned for mid 2010. The cable has 2 fibre pairs with a capacity of 1.4Tbps.

The full presentation is at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/ryansher-12112009.pdf>

Questions and Comments:

Some participants wanted to know whether SACOM was planning to reach landlocked countries. In response JP de Leu said that SEACOM was interested in landlocked countries. He continued to say that SEACOM had purchased capacity from KDN to transit to Rwanda, DRC and Burundi, and a similar arrangement was being made with TDM in Mozambique to allow landlocked countries to pay as coastal ones.

For the NRENs in landlocked countries, Ryan Sher stated that EASSy views them as strategic partners. Responding to the same question, JP de Leu said that for SEACOM they would work with providers and seek ways of joint financing.

Another question was posed to the EASSy representative as to whether pricing information was available to customers. In response, Ryan Shan confirmed that the information was available and that the rates were a lot better than the market ones at present.

Another question raised was on whether EASSy would allow customers to access the landing stations on open access model. In response, Ryan Sher said that EASSy is open access and that WIOCC would sell to all licensed operators.

Another question was on whether there was special pricing from EASSy for NRENs. In response, Ryan stated that there was a non-commercial offer and encouraged the Alliance and NRENs to approach any consortium member on how they could connect.

DAY 2

6. SUB-THEME 3: BRINGING CONTENT NETWORKS ON BOARD CHAIR: DR NORA MULIRA, DIRECTOR, DICTS

Presentation 11: A Task for NRENs: Application Support and Services

By Gerti Foest, DFN-Verein

Gerti introduced her presentation by putting forward the priority task for NRENs as follows: *“providing connectivity for the research and education community.”* Her presentation was focused on alerting NRENs that apart from looking at the physical infrastructure, there was need to look at applications that would run on the network and services that the NREN would offer to the research and education community. She highlighted that NRENs and RRENs can provide a framework to ensure the benefit of networks for researchers, educators and society participants.

Then her presentation delved into possible application areas as follows: eLearning; Health care; Climate research; Grid computing; and many others. Then she talked of the need for NRENs to provide services for applications such as video conferencing, user authentication; and authorisation.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/gertifoest-13112009.pdf>

Questions and Comments:

Margaret Ngwira thanked Gerti Foest for the good presentation and commented that it would be better for NRENs to provide the platform for applications such as content networks. Then she asked as to what was the interface for the two. In response said that the content networks provide the content for the network, however there is no formalised structure.

Presentation 12: Challenges and solutions to sharing Library resources for Research and Education in Uganda with special Reference to Makerere University Library

By Maria Musoke, Librarian, Makerere University

The presentation gave case studies of Makerere University Library projects in resource sharing. A number of library projects were highlighted. She mentioned that library resources are shared through collaborations, consortia, union catalogues, institutional repositories/digitisation, open access movement, networks – social networks, peer support, Web 2.0, Document Delivery (DD), etc.

Then she went on to list the various services offered and electronic resources available through the Library. The content is electronic journals, e-books. While appreciating all the online resources the library also takes time to train staff and end users in managing the resources.

The presentation continued with the various challenges the University Library is facing and then a way forward.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/mariamusoke.pdf>

Questions and Comments:

A question was raised on how Makerere University Library solved any problems between ICT and Library staff. In response, Dr Musoke said that there were challenges, but the two were working hand in hand as a team. With time the two came to realise the strengths of each other.

Another question was on whether there was a uniform catalogue for Uganda. In response, Dr Musoke said that there was no uniform catalogue in Uganda.

Dr Iman Abdelrahman gave a comment saying that at University of Khartoum, there is no collaboration between ICT people and the library people.

Presentation 13: Applications and Content Development in Agriculture

By Nodumo Dhlamini and Wellington Ochola, RUFORUM

This presentation was given in two parts. The first was a background to RUFORUM covering its vision, genesis, purpose and current membership status. It also went on to the future , outlining the what RUFORUM wants to achieve and the strategic objectives. RUFORUM is carrying out regional training programmes at master and PhD level.

The second part centred on the different activities RUFORUM is carrying out and how they are integrating ICTs. RUFORUM carried out a study of Universities e-learning strategies and looked at several parameters. The data was compared with other data collected through other similar studies such as the ATICS (2006), SARUA (2007), KENET (2008). RUFORUM has been conducting ICT related training activities over the past few years such as on Web 2.0. The RUFORUM website has integrated more Web 2.0 features.

The full presentation is available at:
<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/nodumoandwellington-13112009.pdf>

Presentation 14: Information Technology Applications and Content in Health Sciences

By Nelson Sewankambo, College of Health Sciences, Makerere University

Nelson Sewankambo presented on IP applications in health sciences at Makerere University. This presentation was made to give practical applications in the field. His presentation outlined what the College of Health Sciences at Makerere University is doing in improving health education delivery to health practitioners.

The presentation noted that several opportunities exist in e-health applications and these are: need to support patient referral; electronic records management; tele-consultations; and Telemedicine applications. He also highlighted that in e-health applications, data security and privacy become very crucial.

The second section of the presentation was on content. Dr Sewankambo introduced this section by stating that once effective communication starts, people will start sharing content. He then observed that most of the health information is based on western data and then called for the need to capture traditional knowledge of herbal medicines as China has done).

Finally he concluded his presentation by listing the challenges that the College of Health Sciences is facing in the implementation of e-health applications.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/nelsonsewankambo-13112009%20.pdf>

Questions and Comments:

Some participants noted that there was need to find a way of training teachers in the use of electronic means of teaching. Other participants also pointed out the need for content to be driven by users.

Presentation 15: Malawian Lighthouse Demonstrators, By Bruce Zamaere, University of Malawi, College of Medicine

Bruce Zamaere presented e-health applications at the University of Malawi, College of Medicine. The applications were called lighthouse demonstrators in the FEAST project. In his presentation, Bruce Zamaere described 3 collaborative projects at the College of Medicine in e-learning; Magnetic Resonance Imaging (MRI); and another one on Malaria.

The e-learning project is aimed at improving health education in health practitioners. The project is a collaboration between three colleges with content from the University of Edinburgh. A doctor presented with a case will choose what steps to take using ICT to diagnose malaria etc. As there is only one neurologist in Malawi, a system with VSAT was installed because there are a lot of Bandwidth and computer intensive applications in Malawi which could immediately benefit.

An MRI unit was commissioned in Malawi in August 2008. This unit helps other researchers and physicians to assess malaria damage before a child has died. The unit is also assisting physicians in Malawi, and its neighbouring countries in Mozambique and Zambia to diagnose a wide range of illnesses that affect the general population. As there is only one radiologist in Malawi, a team of radiologists at MSU are on standby and DICOM images can be sent via VSAT uplink directly. This is secondary research but also other radiologists can assess the images and give one a second opinion.

The other project is a Malawi Liverpool Wellcome Trust malaria project. Researchers focusing on antigens known as surfins that the malaria parasite exhibits as it attacks the red blood cells. They are looking at more efficient ways of destroying the malaria parasite and could even contribute towards the discovery of a vaccine.

To do this work the researchers are relying heavily on bioinformatics tools to access huge data sets and utilise advanced applications both of which require high performance computing infrastructures. She also needs to collaborate with other

researchers, share data with others which requires high capacity bandwidth both of which are not available in Malawi.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/brucezamaele13112009.pdf>

7. SUBTHEME 4: POLICY REGULATION AND GOVERNMENT SUPPORT

CHAIR: ABEL KATAHOIRE

Presentation 16: Overcoming Policy and Regulatory challenges to NREN Development

By Abi Jagun, Research ICT Africa

Dr Abi Jagun gave a policy and regulation overview of challenges faced in NREN development. Her presentation was based on a study conducted by Research ICT Africa, which is a network of researchers conducting ICT policy and regulatory research in 20 African countries across the continent.

She started her presentation by giving a brief background of Research ICT Africa and then went on to describe the various factors influencing the development of Research and Education Networks. The factors are : physical infrastructure; pricing and demand; participation and coordination; and advocacy. Then she gave an impressive diagram of how the various factors interact.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/abijagun-13112009.pdf>

Questions and Comments:

A participant thanked the presenter for the presentation and more especially the diagram of how the different factors play. Further it was pointed out that it would be interesting to pilot it to see how it would work.

Dr Duncan Martin wanted to find out whether the regional association of regulators force for deregulation. In response, Abi Jagun said that the regional associations do not own infrastructure and that they were more advisory than regulatory in nature.

Presentation 17: From Agent to Licensed NREN Operator

By Duncan Martin, TENET, South Africa

Dr Duncan Martin's presentation was oral and it centered on TENET as a case study for NRENs moving from Agents to licensed operators for the research and education community. He highlighted that TENET fully licensed and has two licenses: Electronic Communication Licence, which allows TENET to run and operate a network; and a Services License, which allows TENET to provide services.

He stated that there are different models of governance structures, some managed by government while others managed by institutions themselves. On this he gave the example of the Chinese NREN being the largest in the world and that it is operated by the Ministry of Education.

He concluded his presentation by calling NRENs to move on to becoming operational getting the necessary licenses.

**Presentation 18: KENET – Kenya Education Network – KENET Presentation
UbuntuNet Connect**

By Meoli Kashorda and Kevin Chege, KENET

This presentation was given by Kevin Chege on behalf of Professor Meoli Kashorda. The presentation was a general KENET one outlining the progress and status of the network. It covered more lessons learnt as the NREN was moving from satellite bandwidth to the SEACOM and TEAMS fibre.

The presentation started with the KENET governance and management; then moved on to government support and sustainability, and concluding with the expansion project.

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/meoliandkevin-13112009.pdf>

Questions and Comments:

One participant wanted to know whether the members of the Board of directors of KENET were from member institutions. In response, Mr Chege said that the Directors are drawn from the member institutions but were not necessarily representatives.

Another participant wanted to know whether the new KENET business plan included salaries covered by the Communication Commission of Kenya (CCK). In response, Mr Chege said that CCK was no longer covering Salaries for KENET as was the case before. He further said that KENET was self sustaining.

One participant asked as to whether KENET was still maintaining the VSAT link. In response, Mr Chege said that the network was designed in 2007 and that was before the World Bank funding and the undersea fibre cable and that was why the VSAT was included in the procurement. He also said that at the moment of the presentation, KENET was talking to their upstream provider requesting them to keep the VSAT as backup for the fibre.

**Presentation 19: 4R impact Mode, 4R Impact Model: Envisages the Impact of
Telecommunications Policy and Regulations on NRENs Including NRENs-in-
Construction**

By Jameson Mbale, Coordinator, NAMREN

Jameson Mbale's presentations about a study that he had conducted on NRENs in the UbuntuNet Region. The study looked at both full NRENs and those in construction. He wanted to find out the different levels of relationships that NRENs have with regulators in their respective countries. His study looked at the following 4 questions:

- Why is it that many NRENs projects are still finding difficulties to pull-up and yet the Regulators are willing to help where need arises?

- NRENs staying too long on the NRENs-in-Construction Status! Are Regulators not able to help?
- Are Regulators aware or they are in total darkness of NRENs' developments?
- Are Regulators contacted and made involved?

He found out that about 60% of NRENs are benefiting from their regulators. In his study he observed that there are two cases of regulators: one where the regulator is informed about the NREN; and the other where the regulator is not made aware about the development of the NREN.

He concluded the presentation by outlining the different challenges NRENs are facing and finally encouraged the NRENs to establish and maintain regular relationships with their regulators

The full presentation is available at:

<http://www.ubuntunet.net/sites/ubuntunet.net/files/ubuntunet-connect2009/jamesonmbale-13112009.pdf>

Questions and Comments:

A question was raised on whether the 4R Impact Model had been tested. In response, Dr Mbale said that the model had not been tested. However he was quick to highlight that the model was based on experiences from NRENs.

8. SUMMING UP

Dr Patrick Mangheni

Dr. Mangheni summed up the conference by thanking all the delegates for their participation and dedicated attendance. He stated that there was great value in the opportunity to share experiences and learn from each other. He continued to say that by working one brick at a time, the network would build the regional network. Dr Mangheni applauded SomaliREN for the good example they displayed for starting the NREN amidst instability. He then urged NRENs delegates to work hard to meet all the requirements as identified by the FEAST project.

Finally, Dr Mangheni thanked the RENU team Ali, Sylvia and Irene for the good work and the excellent organisation of the conference.

9. LIST OF PARTICIPANTS

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Jean Pierre de Leu	SEACOM	Mauritius
Roland Van Hout	RWEDNET	Rwanda
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