

NIGERIAN UNIVERSITIES ICT SOLUTION PROJECT

**By Ahmed Isah Chafe
Usmanu Danfodiyo University, Sokoto**

OBJECTIVES OF THE PRESENTATION

1. Explain the NUC initiative to the Directors in order to obtain their support for the project.
2. Seek for input from the Directors towards enriching the proposal, most especially on:
 - Criteria for joining the network.
 - Human capacity development.
 - Financial plans, governance structure and business models leading to sustainability of the project.
 - Identification, accessing and sharing contents among members.

PREAMBLE

- ▶ Nigeria is acknowledged to have capacity for innovation (ranked 47th out of 133) and a good level of company spending on R & D (ranked 40th) – thanks to Mobile telecommunications companies – World Economic Forum report, 2009.
- ▶ Unfortunately, in Public expenditure on education as a % of GNI, Nigeria is placed 128th (WDI – 2009).

PREAMBLE

- ▶ 91st in Internet Access in Schools,
- ▶ 97th in Quality of Maths and Science Education,
- ▶ 115th in overall Quality of Scientific research institutions,
- ▶ 90th in Networked Readiness Index,
- ▶ 102nd in % of Internet users,
- ▶ 117th in Broadband internet subscribers. (ITU – WTI, 2008 -2009)

END RESULT?

PREAMBLE

- In the 2010 Webometrics ranking of top 8,000 Universities in the World, only 5 Nigerian Universities were listed among the first 100 in Africa.
- Tops in the country are:
 - University of Ilorin (55th – Africa, 5,846th - World),
 - OAU (61st – Africa, 6,265th – World),
 - UI (63rd – Africa, 6,396th – World),
 - UJ (74th – Africa, 7,000th, World) &
 - UniLag (79th – Africa, 7,246th – World)

**WE ARE NOT DELIVERING AND
THINGS MUST CHANGE**

PREAMBLE

- ▶ It is to be noted that many African countries are ranked ahead of Nigeria in all of these areas.
- ▶ Without basic research infrastructure, the evolution of a knowledge economy necessary for sustained development will be impossible.
- ▶ Higher Education institutions and research agencies should drive this process of generating knowledge for national development.

PREAMBLE

- ▶ Countries as diverse as the USA, South Africa, Australia, Belgium, The UK, Ghana and Kenya have realized this and are investing heavily in National Research and Education Networks (NRENs).
- ▶ Implementing a high capacity NREN must now be a foundational priority for teaching and research.

NREN INITIATIVES

- ▶ At a Workshop on Strategies for ICT Development and Access to More Affordable Bandwidth for Universities, Research and Higher Educational Institutions in Nigeria organized by the Association of Vice-Chancellors of Nigerian Universities (AVCNU) on 26th February, 2008, it was agreed that ICT is essential for
 - Supporting the development and sharing of online information and e-resources
 - Supporting collaborative research among Nigerian Universities, Research and Higher Educational Institutions (in addition to collaborative research with others)
 - Running joint online courses and sharing expertise
 - Sharing of experiences and best practices
 - Providing opportunities for Student and Staff exchange

NREN INITIATIVES

The Workshop therefore resolved to establish a National Research and Education Network (NREN) while noting that the required networking and access to online resources is impeded by:

- High Cost of Bandwidth
- Absence of interconnectivity between the universities leading HEIs to act individually and thus unable to benefit from the economy of scale
- Inadequate Technical Capacity
- Unstable power supply

NREN INITIATIVES

- ▶ The ICT Forum was mandated to take leadership to actualise the dream BUT no funding arrangements were made.
- ▶ This proposal presents another opportunity to establish the foundation for the realisation of the NREN dream and its attendant benefits.
- ▶ Nigeria is lagging behind other African countries in this respect.
- ▶ Over 100 NRENs exist in the world, 19 from Africa.
- ▶ African NREN initiatives include:

NREN INITIATIVES

- **UbuntuNet Alliance for Research and Education Networking** - the Alliance of NRENs of East and Southern Africa
- **Eb@le** – Democratic Republic of Congo (DRC) NREN
- **EthERNet** - Ethiopian NREN
- **KENET** - Kenyan NREN
- **MAREN** - Malawian NREN
- **MoRENet** - Mozambican NREN
- **RENU** - Ugandan NREN
- **RwEdNet** - Rwanda NREN
- **SomaliREN** - Somali NREN
- **SUIN** - Sudanese NREN
- **TENET/SANReN** - South African NREN
- **TERNET** - Tanzanian NREN
- **ZAMREN** - Zambian NREN
- **TUREN** - Tunisian NREN
- **MARWAN** - Moroccan NREN
- **EUN** - Egyptian NREN
- **ARN** - Algerian NREN
- **WACREN** - West and Central African Research and Education Network
- **GARNET** - Ghanaian NREN

- **NgREN? - For Nigeria ?**

THE PROPOSAL

- ❖ The proposal intends to create a broadband network by leasing capacity from existing backbone infrastructure owners and organizing the leased capacity to form a virtual private network, connecting all institutions together and supporting the deployment of teaching, learning and management tools and applications.
- ❖ The increasing capacity availability on the fibre optic networks - which support the transfer of high volumes of data - will be leveraged to create a NUBNet (Nigerian Universities Broadband Network) connection for effective management and centralized support.
- ❖ The Proposal is to be planned for the Research and Education community in Nigeria, but is to start with the Federal Universities. Other universities and institutions to join as and when they are ready.
- ❖ The Proposal has the following 5 components:

THE PROPOSAL

1. Provision of Broadband Connectivity

- ✓ A high-speed mesh network for Universities and eventually other research institutions.
- ✓ A high-speed internet access via marine cable

2. Capacity building

- ❖ Operators' workshop
- ❖ End-user buy-in
- ❖ Regulators workshops
- ❖ Government stakeholders' workshops
- ❖ User community training for staff and sensitization for students

3. Power plan for the network infrastructure

THE PROPOSAL

4. Provision of more and cheaper bandwidth.
5. Provision/ development of ICT applications:
 - Enterprise wide antispam & anti-virus solution
 - E- courseware
 - E-library
 - Video conferencing
 - Voice over Internet Protocol (VoIP)
 - Subscription to e-journals
 - Staff/student management & administration
 - etc

WHY THE INITIATIVE?

- ❖ Lack of adequate interconnectivity between universities and other institutions which prevents effective communication and resource-sharing.
- ❖ Lack of adequate internet bandwidth leading to poor access to internet-based learning resources.
- ❖ Human capacity constraints leading to service delivery problems.
- ❖ Dearth of modern learning & collaboration content and tools leading to low-quality teaching and research.
- ❖ Unstable power supply leading to increased network downtimes.

THE ENABLING ENVIRONMENT

- ▶ Presence of nationwide OFC backbone. Fibre represents a better commercial proposition when compared with satellite based systems which are expensive, susceptible to weather interference and have limitations in capacity.
 - More than 10,000km of OFC across the country (within reach of all Universities and other institutions)
- ▶ Arrival of marine cables
 - Sat-3 (NITEL- owned)
 - Glo-1 (640Gb/s lit November 2009)
 - MainOne (1.92Tb/s already lit)
 - WACS (3.84Tb/s to be lit Q2, 2011)
- ▶ Availability of quality capacity development opportunities within and outside Nigeria

BENEFITS OF THE PROJECT

- A high capacity connectivity that allows the institutions to communicate and collaborate effectively with each other (VoIP, Video Conferencing, remote experimentation etc) and with hosted central resources, without incurring any additional network costs;
- Adequate Internet bandwidth to access internet based resources for research and learning;
- Centralization of applications and resources (e-books, e-journals, open courseware etc) that are best hosted at a 'hub' location;
- Consolidated co-management of network;

BENEFITS OF THE PROJECT

- Increasing capacity and affordability of alternative power including Inverter, Solar and wind technologies.
- Economies of scale as pooled resources work out cheaper when costs are factored on a per institution basis; for example, current average cost of internet bandwidth per University is \$4.25/kbps/month via weather and electromagnetic energy-impacted VSAT. Envisaged cost in this project is \$1.50/kbps/month via faster and more reliable marine cable.
- Capacity building for various stakeholders;

JOURNEY SO FAR

- ▶ Development of draft proposal for funding by World Bank through STEP-B.
- ▶ Briefing of the Vice-Chancellors about the proposal.
- ▶ Presentations on available national and international fiber by the telecommunication companies.
- ▶ Engagement of consultants to:
 - Work with the NUC technical committee to review the technical quality of the project proposal and design network architecture to international standards.
 - Visit some project sites to ascertain equipment and logistic needs pertinent to project implementation.
 - Review project implementation arrangements and design a business model to ensure sustainability of outcomes

JOURNEY SO FAR

- Review project budget to ensure cost-effective implementation.
- Assist in the design of TORs, RFPs for the engagement of other project consultants and in the design of bidding framework for the engagement of contractors.
- ▶ Briefing meeting held with the consultants covering the following activities:
 - Meeting with the Executive Secretary of the NUC
 - Another round of presentations by the telecoms operators.

JOURNEY SO FAR

- Presentations by select ICT Directors from Federal Universities. The Universities that made presentations were:
 - University of Jos
 - University of Nigeria Nsukka.
 - University of Agriculture, Makurdi.
 - Obafemi Owolowo University.
- ▶ Visits were organized to University of Abuja and FUT Minna. However, only University of Abuja was visited. The visit to FUT Minna could not happen due to the death of President Yar'adua the previous night.
- ▶ Reviewed proposal expected from the consultants in August this year.

SUSTAINING THE PROJECT

- The Proposal funding is for an initial period of 3 years for key project components. Within this 3-year period, it is envisaged that a sustainability scheme will be put in place from the first year.
- The World Bank intervention is structured only to catalyze the project. It is expected that from year four onwards the project will be fully funded directly from headline budgetary appropriations and other sources.
- Some sustainability suggestions for the project include:

1. Funding Suggestions

- Push for legislative enactment to provide budgetary appropriations, similar to capital, staff development, library development, etc.
- Research grants from federal government.
- External donors (WB, Carnegie, McArthur, etc)
- Consider others (ETF, NCC, USPF, PTDF, etc)
- Institutional subscriptions (**Enforces ownership?**)
- Consultancy services at the hub to the institutions and general public.

SUSTAINING THE PROJECT

1. Funding

- Publications (Journals, news letters, etc)
- Partnerships/endowments
- ICT fees charges by institutions
- Partnerships (other institutions, private sector)
- Donations and gifts
- Annual institutional budgets
- Graduated bandwidth subsidy
- Organizing workshops/seminars/conferences

2. Technical Competence

- Build central capacity to engage in consulting for institutions and the general public in several ICT related areas including training, procurement advice, installation of services, etc.
- Collaboration with continental/global Research Networks (Ubuntunet, Kennet, Geant, Internet2, etc) to build capacity.
- Support for emergence of campus-wide Infrastructure. (A pre-requisite to join the network?)

SUSTAINING THE PROJECT

2. Technical Competence

- Adequate, continuous and focused ICT capacity building.
- Adequate helpdesk support for all users.
- Collaborate with global ICT players (e.g. Cisco) for centralised procurement, training and support.
- Encourage private sector to invest in capacity building efforts to minimize their costs of retraining university products.
- Competence to extend networks to new institutions.
- Hierarchical (clustered) networks for quicker knowledge transfer.

3. Managerial Efficiency

- Setting up ICT Directorates in the institutions.
(Pre-requisite?)
- Developing ICT Policies and Strategic Plans
(Pre-requisite?)
- Special career cadre/structure for ICT staff in institutions.

SUSTAINING THE PROJECT

4. Awareness/Buy-in

- Broad design (NgREN?), start small (Federal Universities) then scale up to other universities and institutions.
- Sensitization of stakeholders. (Institutional communities, RAs, National Assembly, FME, FMST, ETF, NCC, USPF, UNDP, UNICEF, Carnegie Mellon, WB, STEP-B, etc).
- Sensitization of the general community
- Promotion of project through websites, periodicals, press reports, news letters.
- Encourage formation of various user groups to promote networking. (DICTs Forum?)

5. Contents

- Building compelling and appealing contents that will add value to education e.g. e-journals, VoIP, video conferencing, access to databases, archives, DoS, antivirus, virtual libraries, interactive learning, off-site backups, etc. (Share contents and costs of contents)
- Building support for contents

6. Monitoring and Evaluation

- Design strong M & E program
- Allow for assessment of progress.
- Adjustment of project goals.
- Monitor project benefits.

NEXT STEPS

- Discuss the presentation and make inputs.
- Fill and submit the Survey Instruments.
- Help to promote the project in your institutions.

Thank you and God Bless