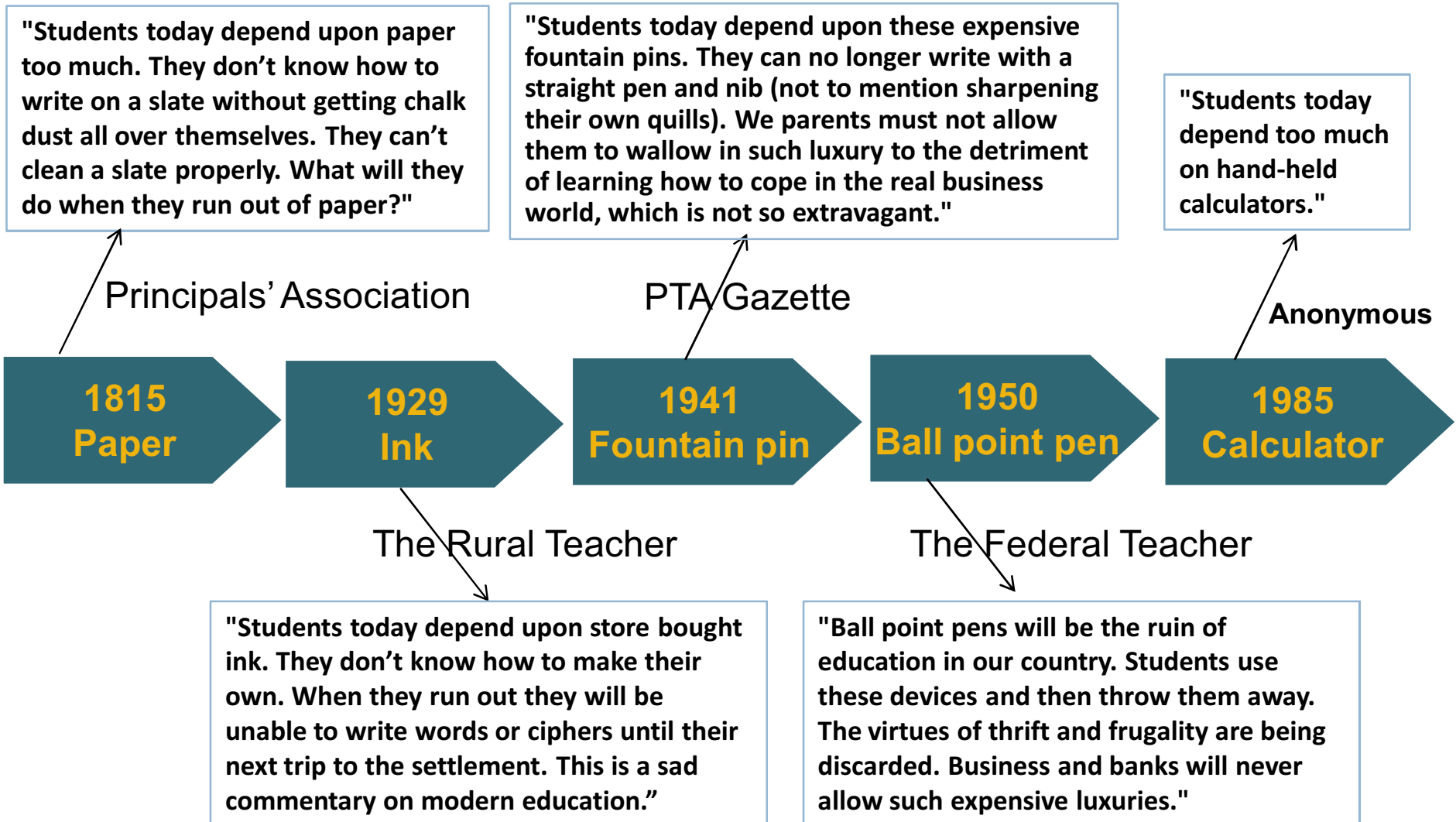




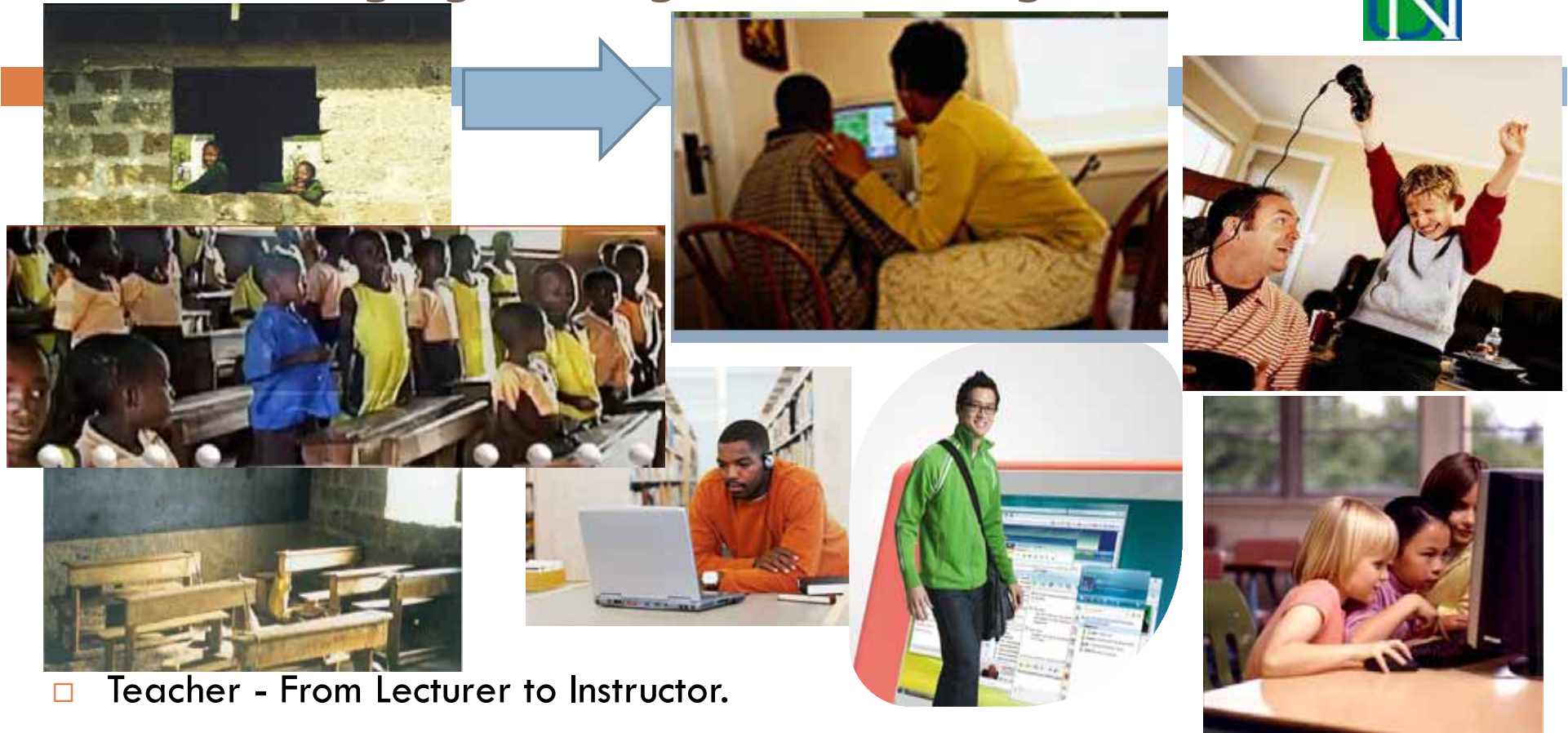
The Role of ICT in Tertiary Education - the case of the American University of Nigeria (AUN) in Yola

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FUNAAB, 4th April 2013.



The Changing Paradigms of learning?



- Teacher - From Lecturer to Instructor.
- Student - From Answering the Question to Questioning the Answer.
- Device - From Blackboard to Smart/intelligent e-board plus data, voice, video Books, Audiobooks, video podcast, video/tele conferencing, WebEx, TelePresence.
- The Computer is capable of Visualizations, Simulations, Modeling and Animation.

Source: Howe & Strauss, 2000, Microsoft ,Cisco & IBM



How is ICT enabling Pedagogy?

Overview of Pedagogy in the Traditional versus Information Society As adapted by Voogt (2003) from (Voogt & Odenthal, 1997; Wijnen et.al., 1999)

Aspect	Traditional pedagogy	Emerging pedagogy for the information society
Active learning	Activities prescribed by teacher	Activities determined by learners
	Whole class instruction	Small group
	Little variation activities	Many different activities
	Pace determined by the programme	Pace determined by learners
Collaborative	Individual	Working in teams
	Homogenous groups	Heterogeneous groups
	Every one for him/herself	Supporting each other
Creative	Reproductive learning	Productive learning
	Apply known solutions to problems	Find new solutions to problems
Integrative	No link between theory and practice	Integrating theory and practice
	Separate subjects	integration between subjects
	Discipline based	Thematic
	Individual teachers	Teams of teachers
Evaluative	Traditional pedagogy	Emerging pedagogy for the information society



Interesting 21st century Observations

In 2012

- Over 50% of World Population is under 30 years old
- 1 in 5 couples meet online
- Kindergartens are learning on I pads
- If Facebook were a country, it will be the 3rd largest in the world (955M)
- If Wikipedia were a book, it will be 2.25 million pages thick and take 123 years to read (51 pages per day)
- 57% of people talk online than they do in real life

TOP TEN COUNTRIES WITH THE HIGHEST POPULATION					
#	Country	2000 Population	2010 Population	2012 Population	2050 Expected Pop.
1	China	1,260,853,362	1,330,141,295	1,343,239,923	1,303,723,332
2	India	1,004,124,224	1,173,108,018	1,205,073,612	1,050,553,032
3	United States	282,338,631	310,232,863	313,847,465	439,010,253
4	Indonesia	213,829,469	242,968,342	248,645,008	313,020,847
5	Brazil	176,319,621	201,103,330	193,946,886	260,692,493
6	Pakistan	146,404,914	184,404,791	190,291,129	276,428,758
7	Bangladesh	130,406,594	156,118,464	161,083,804	233,587,279
8	Nigeria	123,178,818	152,217,341	170,123,740	264,262,405
9	Russia	146,709,971	139,390,205	142,517,670	109,187,353
10	Japan	126,729,223	126,804,433	127,368,088	93,673,826
TOP TEN Countries		3,618,894,827	4,016,489,082	4,096,137,325	4,950,140,178
Rest of the World		2,466,012,769	2,829,120,878	2,921,709,597	4,306,202,522
TOTAL World Population		6,084,907,596	6,845,609,960	7,017,846,922	9,256,342,700

Source: <http://www.youtube.com/watch?v=xJXOavGwAW8&feature=fvwrel>



Source - <http://tcukoehlercenter.wordpress.com/2012/03/13/site-2012-conference-goodies/>

Cell Phone and Internet Use - Global Trends



- Cell Phone Users:-
 - 1990 – 11m
 - 2000 – 740m (11%)
 - 2005 – 2.2bn (34%)
 - 2010 – 5.3bn (76%)

- Internet Users:-
 - 1990 – 3m
 - 2000 – 400m (6%)
 - 2005 – 1.0bn (16%)
 - 2010 – 2.0bn (29%)

Cell Phone and Internet Use - Trends in Africa



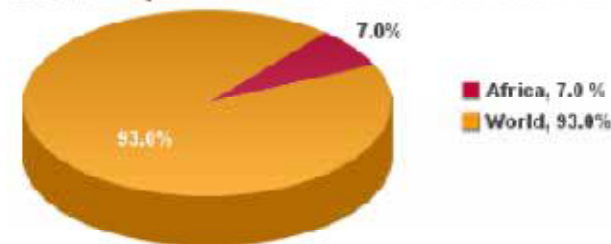
Cell Phone Users:-

- 1990 – 0
- 2000 – 15m (2%)
- 2005 – 138m (15%)
- 2010 – 525m (52%)

Internet Users:-

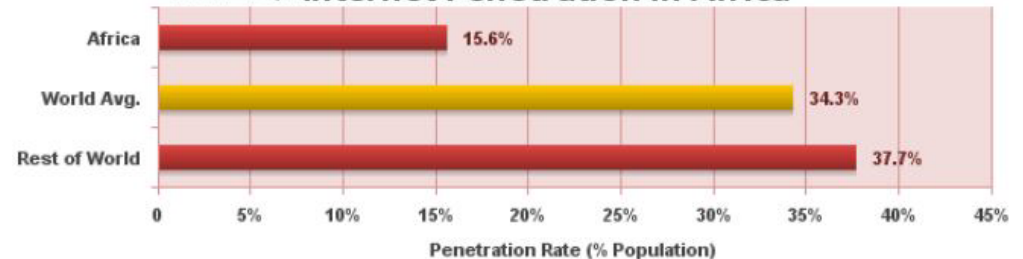
- 1990 – 0
- 2000 – 4.5m (0%)
- 2005 – 15m (1.7%)
- 2010 – 110m (11%)
- June 2012 – 167m (15%)

2012 - Q2 Internet Users in Africa



Source: Internet World Stats - www.internetworldstats.com
167,335,676 estimated Internet users in Africa for 2012Q2
Copyright © 2012, Miniwatts Marketing Group

2012 Q2 Internet Penetration in Africa



Source: Internet World Stats - www.internetworldstats.com/stats1.htm
167,335,676 estimated Internet users in Africa for June 30, 2012
Copyright © 2012, Miniwatts Marketing Group

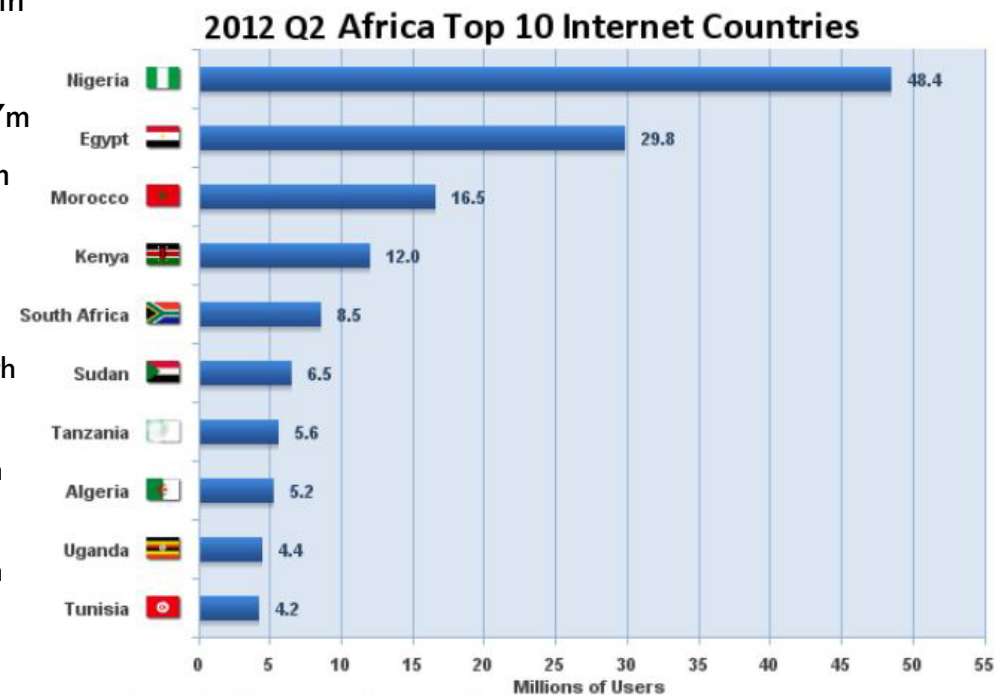


□ Mobile connections:-

Nigeria: Year	#of lines	Penetration	Growth
■ 2000	30,000	0%	
■ 2005	18.6m	13%	18.57m
■ 2010	85.0m	54%	66.4m

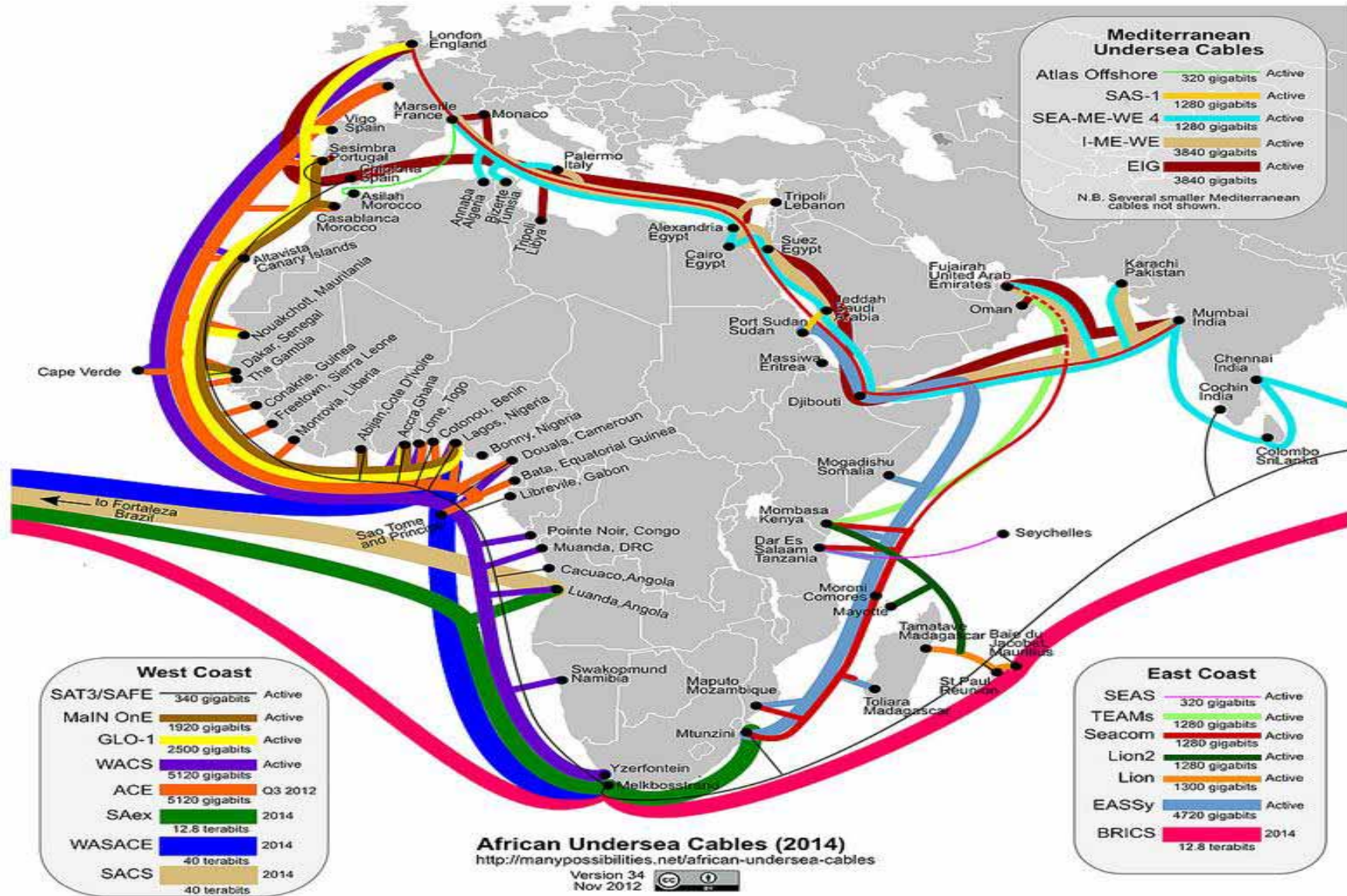
□ Internet connections:-

Nigeria: Year	#Users	% of Pop	Growth
■ 2000	80,000	0%	
■ 2005	5m	3.5%	4.92m
■ 2010	14.7m	9.5%	9.7m
■ 2011	45.0m	28.1%	30.3m
■ June 2012	48.4m	28.4%	3.4m



Source: Internet World Stats - www.internetworldstats.com/stats1.htm
 167,335,676 Internet Users in Africa estimated for June 30, 2012
 Copyright © 2012, Miniwatts Marketing Group

Fibre is accelerating ICT change





The Key Challenges of ICTs Integration in Tertiary Education in Africa:-

- Policy & Structure,
- Planning & Financing,
- Infrastructure,
- Access & Security,
- User-Support & Capacity building,
- Top-Management Buy-In,
- **Industry partnerships (Cisco, Microsoft, Google – Resourcery, Zinox, Computer Warehouse etc.)**
- Modify or redesign technology infrastructures to enable an inclusive, accessible, usable and fulfilling experience for every student, instructor and staff.

ICT provides Opportunities to Transform the learning experience with Industry Partnerships



teaching and learning

online and blended learning

lecture capture and flipped classroom

mobile learning

collaborative learning

professional development

safety and security

keeping children, staff and data safe online

creating safe learning environments

Cisco Connected Learning Solutions

administration and management

reduce cost through desktop virtualization

reduce server proliferation and costs

cut infrastructure and it operations expenses

transition to lower cost computing devices

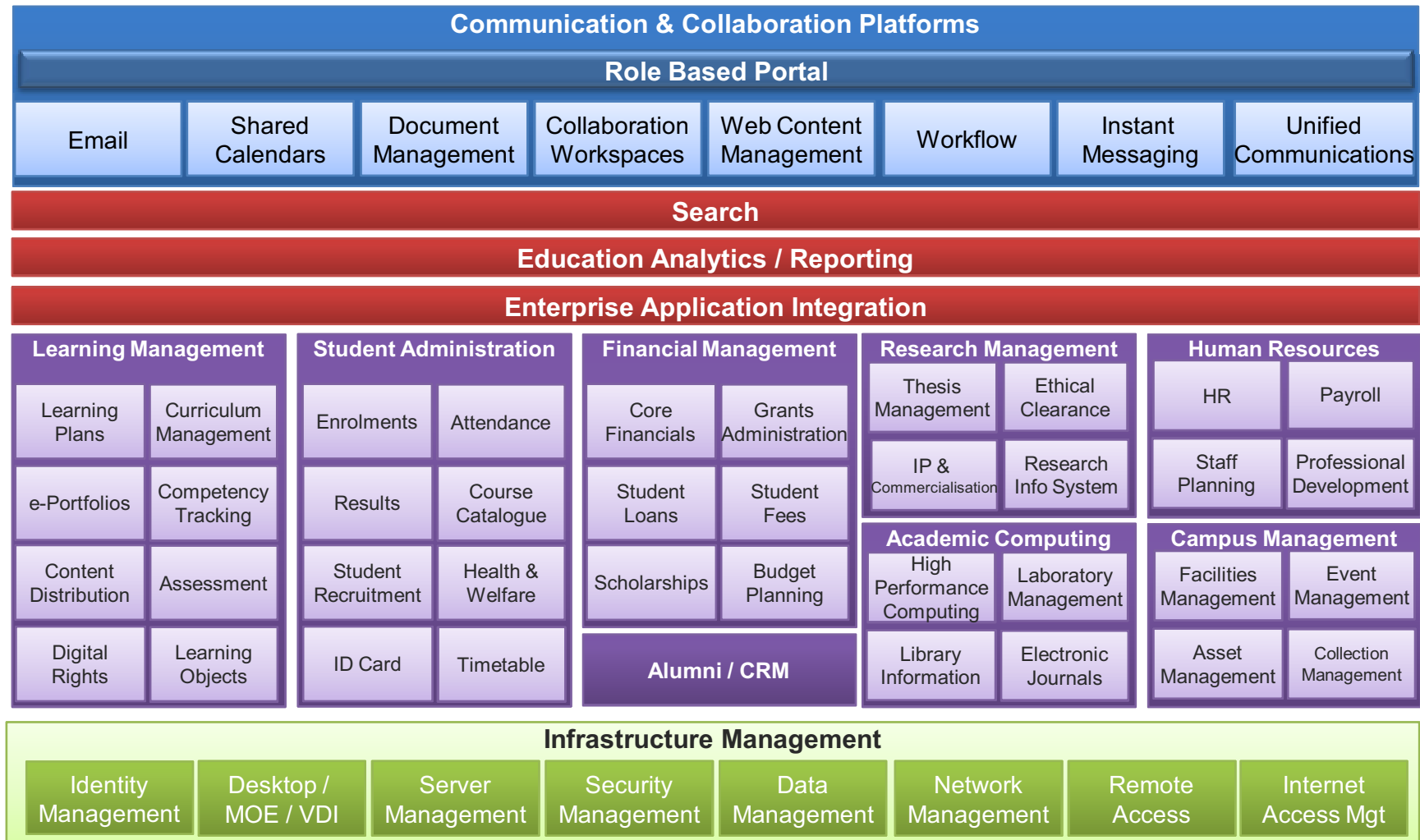
reduce energy expenditures

cut travel costs and time

Cisco Networking Academy?

Source: <http://www.cisco.com>

Solutions for the 21st Century Campus from Microsoft



Microsoft Academy?

Source: <http://www.microsoft.com>



Gmail



Calendar



Drive



Docs



Sheets



Slides



Sites



Vault



More

Google Apps for Education

Security Stay connected Study together Get stuff done Invisible IT Green

+ Everything is backed up

+ On your Android

+ Up and running quickly

+ You own and control your data

+ On your iPhone

+ Save time and money

+ Increased security and reliability

+ On your Blackberry

+ No more patches

+ Strong encryption and authentication

+ On your Windows Phone

+ New features, as soon as they're ready

+ Our team is constantly improving your security

+ On any phone with a browser

+ No hardware or client software

+ Your privacy is respected.

+ Study together in real time

+ Study together across distance

+ Familiar tools that millions already use

+ Reduce your costs, and your environmental footprint

+ Search and share

+ Free up your IT department

+ Get sustainable with carbon-neutral IT



Google+



Chrome



Translate



Google Apps Script



Custom Search



Maps



Voice



Blogger



Scholar



Books



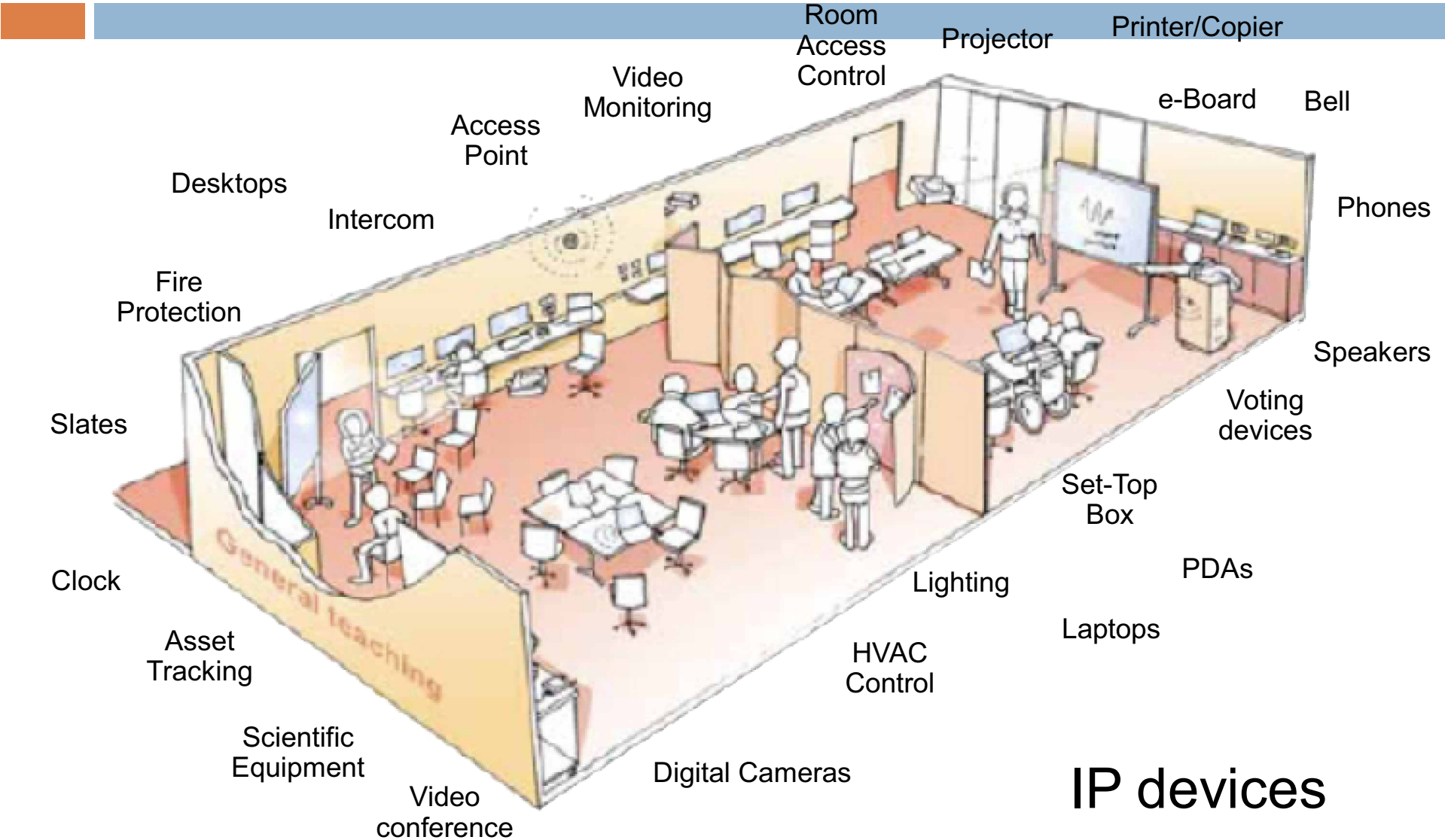
Code



Picasa Web Albums

Google Apps Supporting Programs (GASP) for bandwidth? Source: <http://www.google.com>

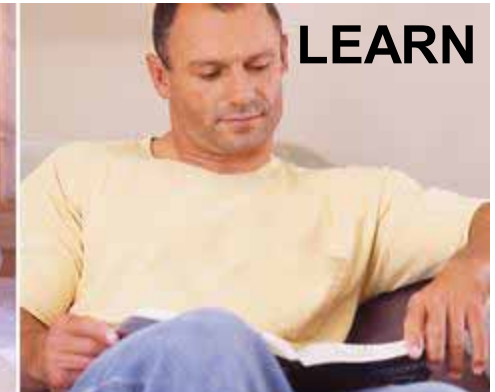
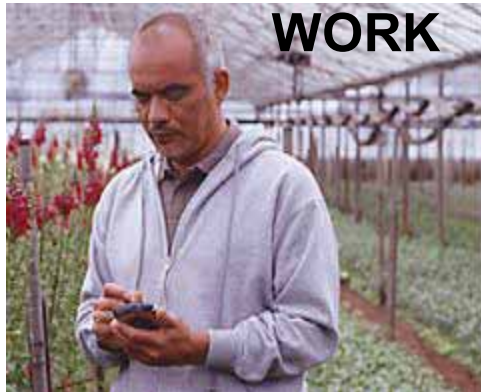
The Connected Classroom



IP devices

Source: <http://www.cisco.com>

“The Internet is changing the way we...



**“Education is the most powerful weapon
which you can use to change the world”**
Nelson Mandela

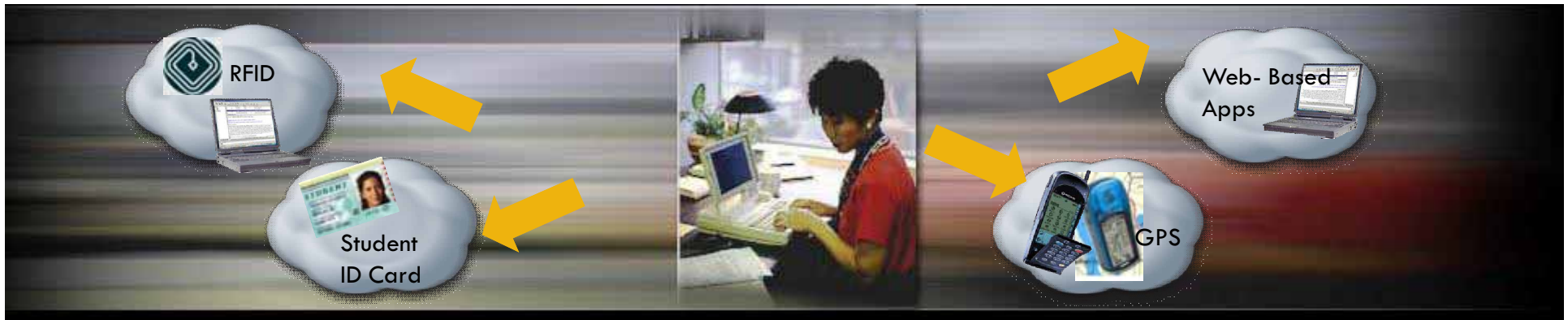
**“The Internet and Education
are the two great Equalizers”**
John Chambers (CEO – Cisco Systems)





The New Face of learning

Network-Based Applications



Student-Centered Learning Environment



Nigerian Universities

Infrastructure Considerations



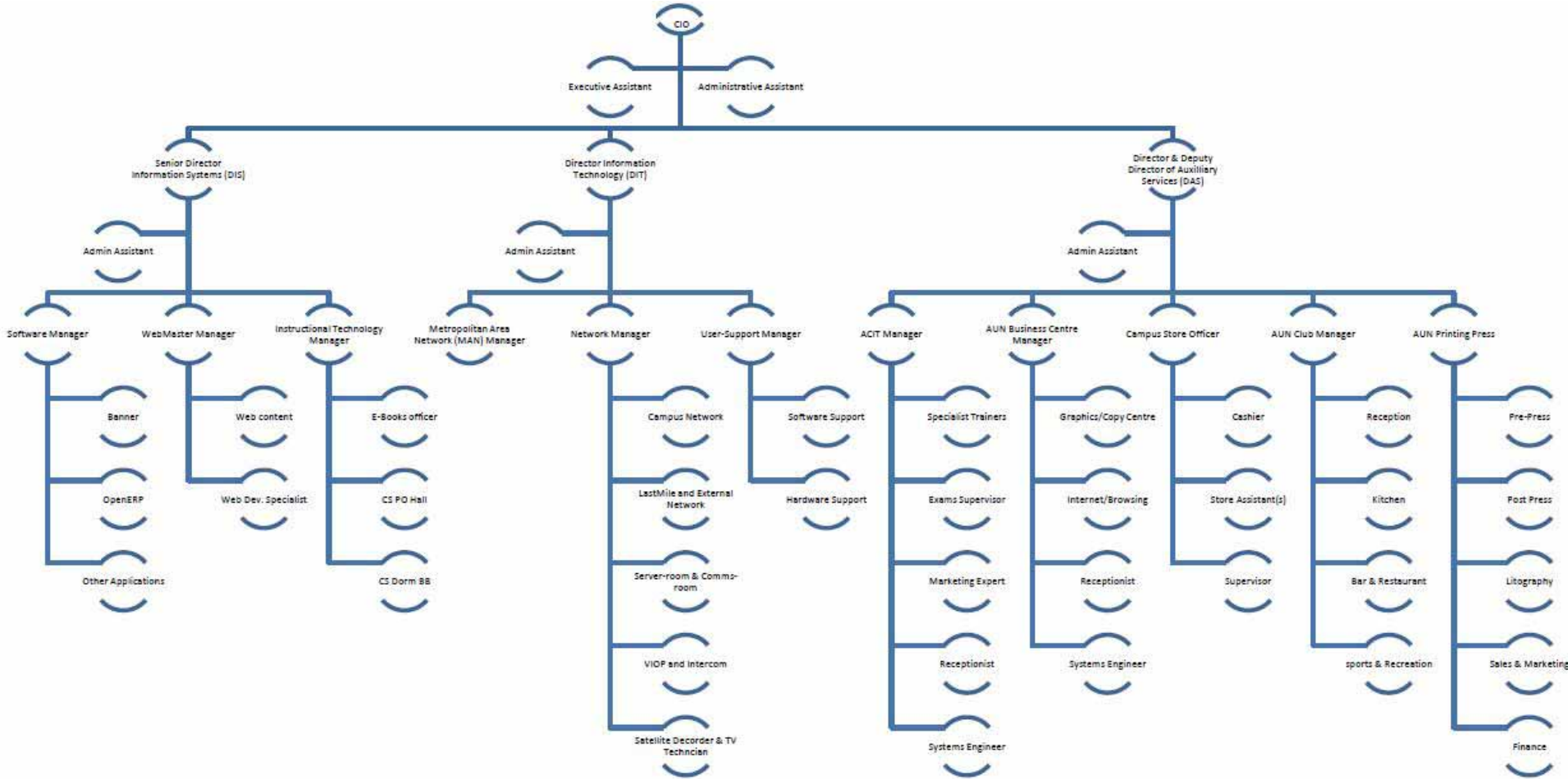
- 24/7 Electric Power
- Communication Systems (Data, Voice, Video)
- Hardware
- Datacenter
- Network (LAN and Wireless – Intranet and Internet)
- Support Services (hardware, OS, antivirus, backup and recovery etc.)
- Basic applications (email, calendar, apps and office tools)
- Security (CCTv ...)
- Continuous Capacity building and retooling.

ICT at AUN



- ❑ ICT at AUN is driven by the Office of Technology Support (OTS), led by the CIO, and has three functional Departments:- 1) Information Technology, 2) Information Systems and 3) Auxiliary Services.
- ❑ 24/7 Electric Power: Inverter and Backup power.
- ❑ Bandwidth 50Mbps at \$800K per year.
- ❑ Fiber LAN across all campuses.
- ❑ Unified and secured Wireless connection.
- ❑ AUN Datacenter (15 Servers plus Server Virtualization).
- ❑ 99.5% Reliable and available internet connection.
- ❑ Hardware (100 laptops & 100 Ipads each year for faculty/staff refresh).
- ❑ Campus wide antivirus server with 2500 users licenses.
- ❑ Communication Systems (Contact centre Express with over 250 VOIP phones).
- ❑ **Competent, international and experienced Staff.**
- ❑ African Centre for Innovation & Training (Certification and Exam Centre).

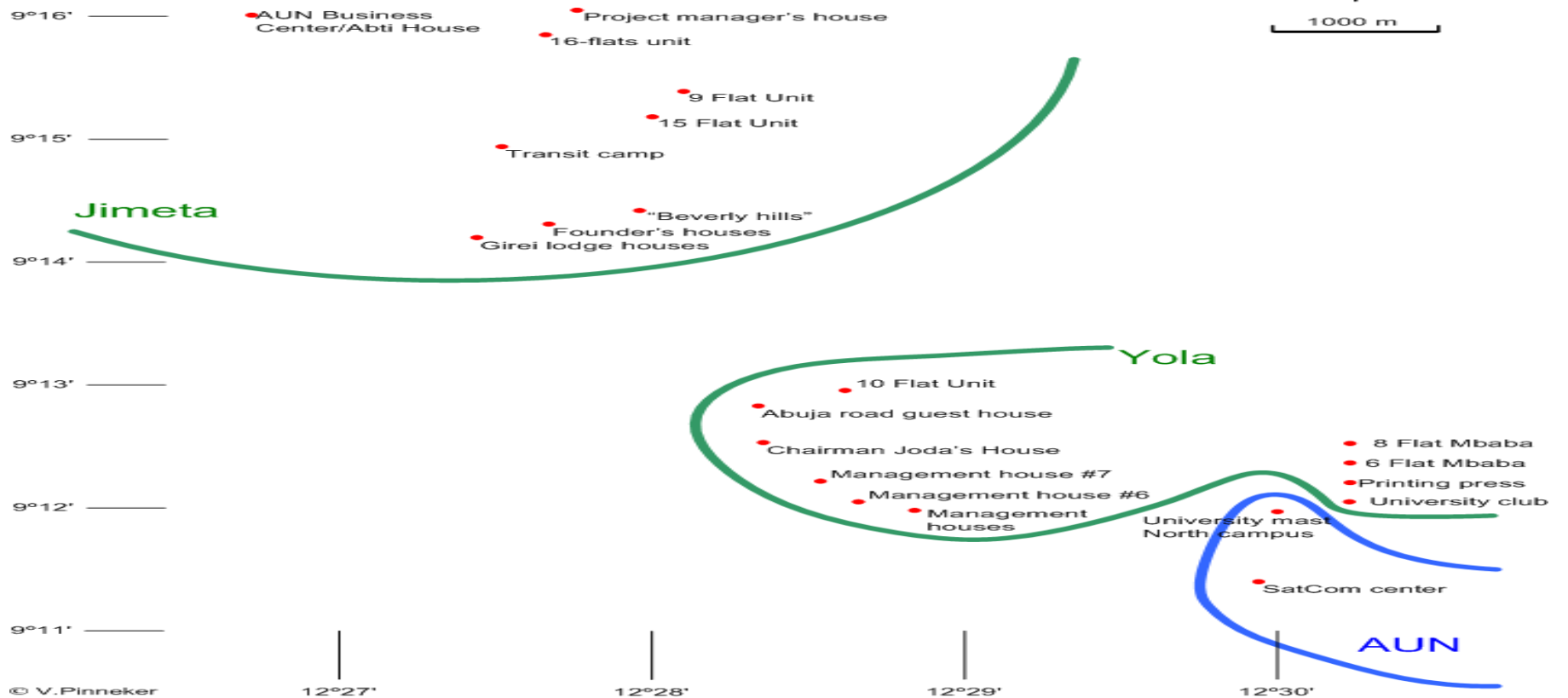
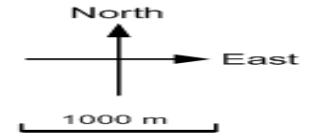
ICT at AUN :- Structure of the Office of Technology Support (OTS)



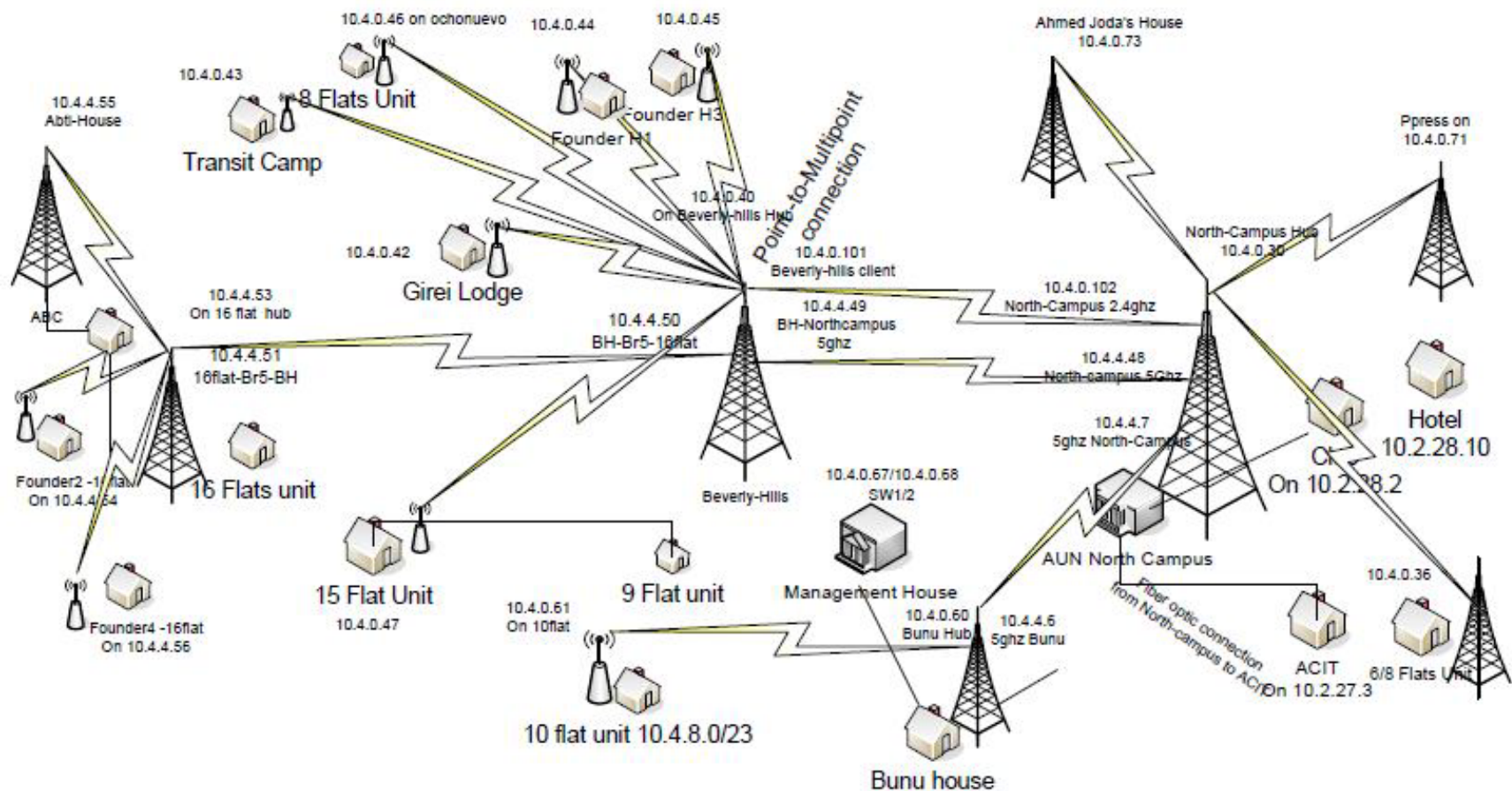
AUN Network Coverage: I



Metropolitan Area Network AUN
Physical map. 07.02.2012



AUN Network Coverage: II



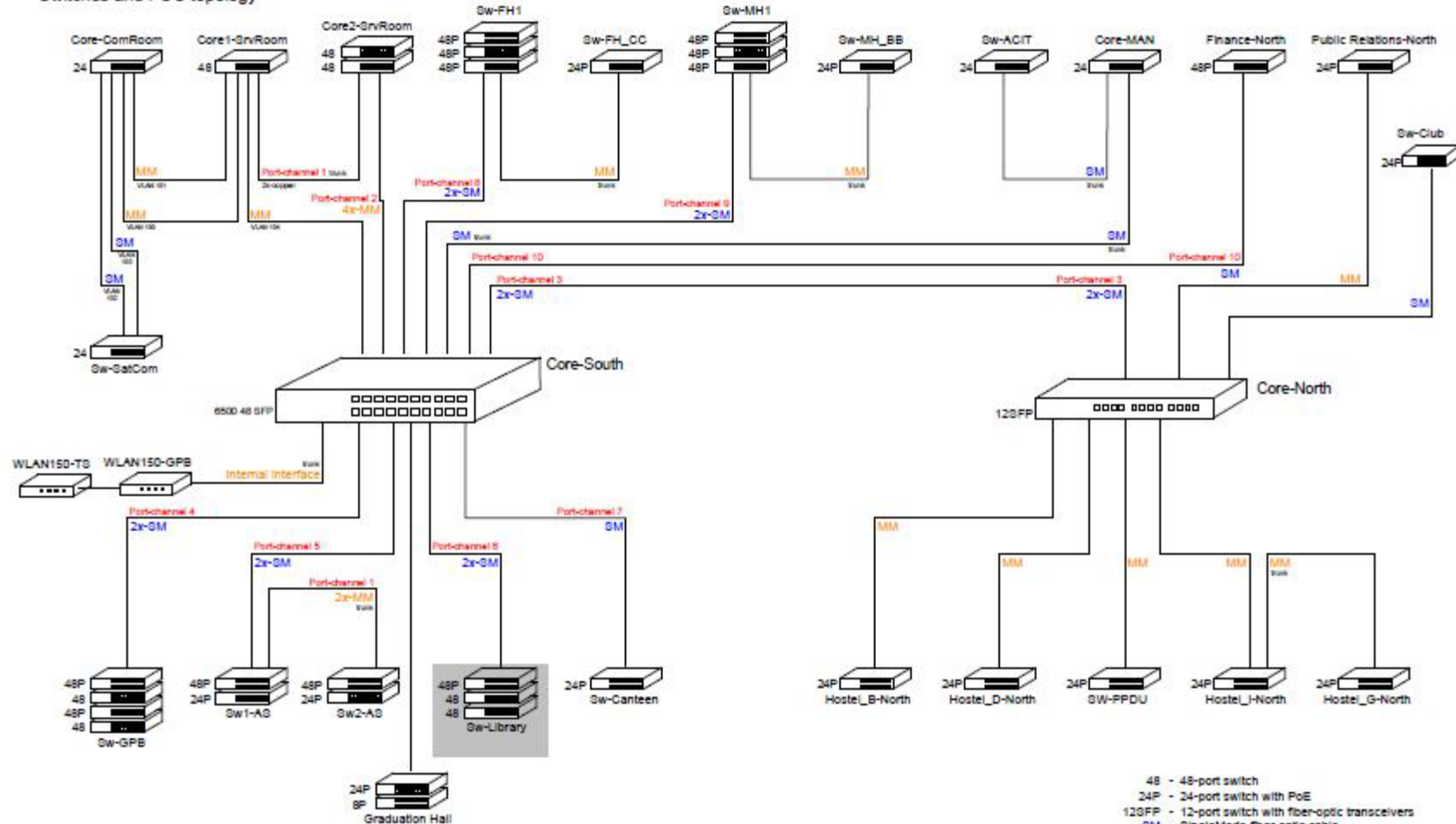
American University of Nigeria Metropolitan Area Network connection

AUN Network Coverage: III



Switches and FOC topology

Rev.7



- 48 - 48-port switch
- 24P - 24-port switch with PoE
- 128FP - 12-port switch with fiber-optic transceivers
- SM - SingleMode fiber-optic cable
- 2x-SM - SingleMode fiber-optic cable, 2 runs
- MM - MultiMode fiber-optic cable
- 2x-MM - MultiMode fiber-optic cable, 2 runs
- planned



Learning & Research at AUN

- ▣ Collaboration tools (Google Apps)
- ▣ Content Management Systems (Google+, Moodle, ...)
- ▣ Anti-Plagiarism tools (TurnItIn)
- ▣ **Mandatory information Literacy for Freshmen**
- ▣ YouTube for Education
- ▣ Udacity.com, Coursera.org, OCW, edx.org, ted.com and udemy.org, khanacademy.org
- ▣ Curriculum integration of professional certification training with corresponding academic courses.



The New Face of learning – AUN Library



Print material

400 journals **Cost: \$144,000 USD**

76 Newspaper + Magazines (Nigerian) **Cost: \$11,269 USD + Handling + Space**

E-Resources

9715 e-Journals **Cost: \$10,560 USD**

75000 + e-books subscription **Cost: \$6,038 USD**

At AUN, we use E-Library

- Physical items account for **0,01%** at 85-90% of budget.
- e-learning tools account for **99.99%** at just over 10% budget.



Available E-Library Resources at AUN

<http://library.aun.edu.ng/screens/subjectheadings.html>

<http://www.doaj.org/doaj?func=home&uiLanguage=en>



web.ebscohost.com/ehost/selectdb?sid=13b3b032-2067-4f53-9a9d-60826af51b17%40sessionmgr115&vid=1&hid=126

Choose Databases
Academic Search Complete Audiobook Collection (EBSCOhost) eBook Collection (EBSCOhost)
GreenFILE Library, Information Science & Technology Abstracts

OXFORD JOURNALS www.oxfordjournals.org

dl.acm.org/dl.cfm www.annualreviews.org/search/advanced

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elibrary.worldbank.org
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Working for a World Free of Poverty

www.aluka.org
Global Economic Monitor (GEM)

Building a digital library of scholarly resources from and about Africa
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Global Economic Monitor (GEM)

Welcome to DATAD www.aau.org/data/qufind.php

Database of African Thesis And Dissertations

www.bioone.org
BioOne RESEARCH EVOLVED

www.oed.com
OED Oxford English Dictionary
The definitive record of the English language

chronicle.com/section/Home/5 Log In
THE CHRONICLE
of Higher Education

www.sciencedirect.com
SciVerse ScienceDirect

www.ams.org/mathscinet/
AMS AMERICAN MATHEMATICAL SOCIETY
MathSciNet Mathematical Reviews on the Web

www.aginternetwork.org/en/
AGORA ACCESS TO GLOBAL ONLINE RESEARCH IN AGRICULTURE

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World dataBank
World Development Indicators(WDI)
& Global Development Finance(GDF)

www.who.int/hinari/en/
HINARI
Research in Health

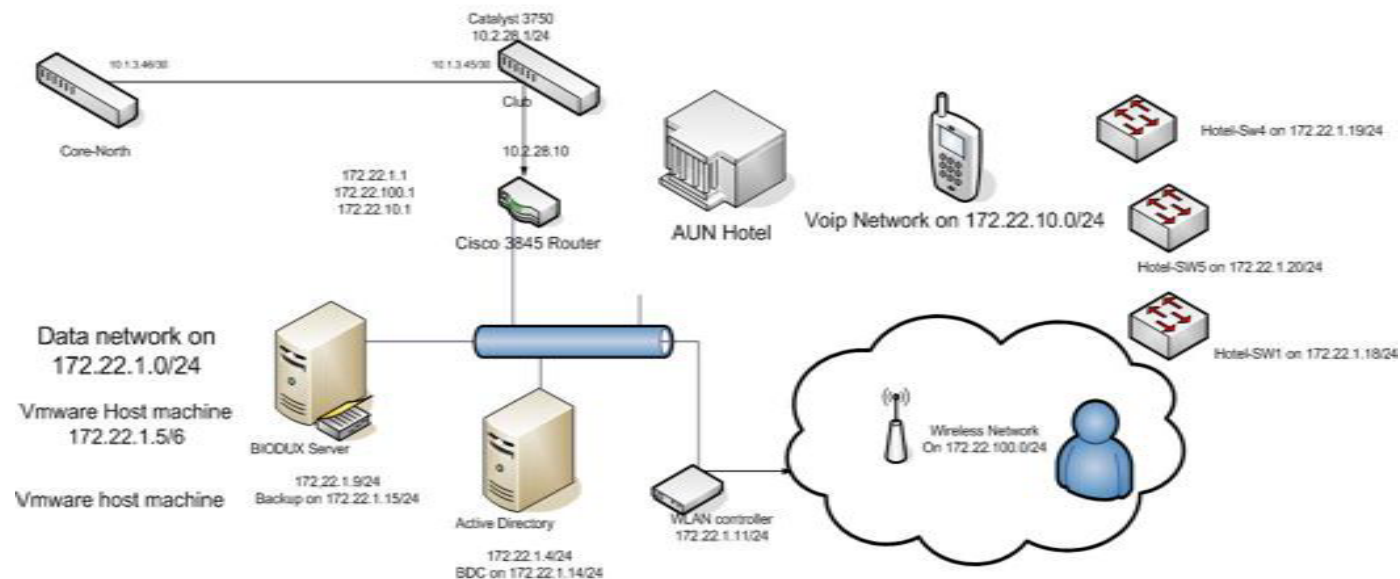
www.nigerianvirtuallibrary.com
National Virtual Library
National Universities Commission

University Network Extension I



- Extending AUN Network to AUN-Hotel providing Wireless services and Unified communication system

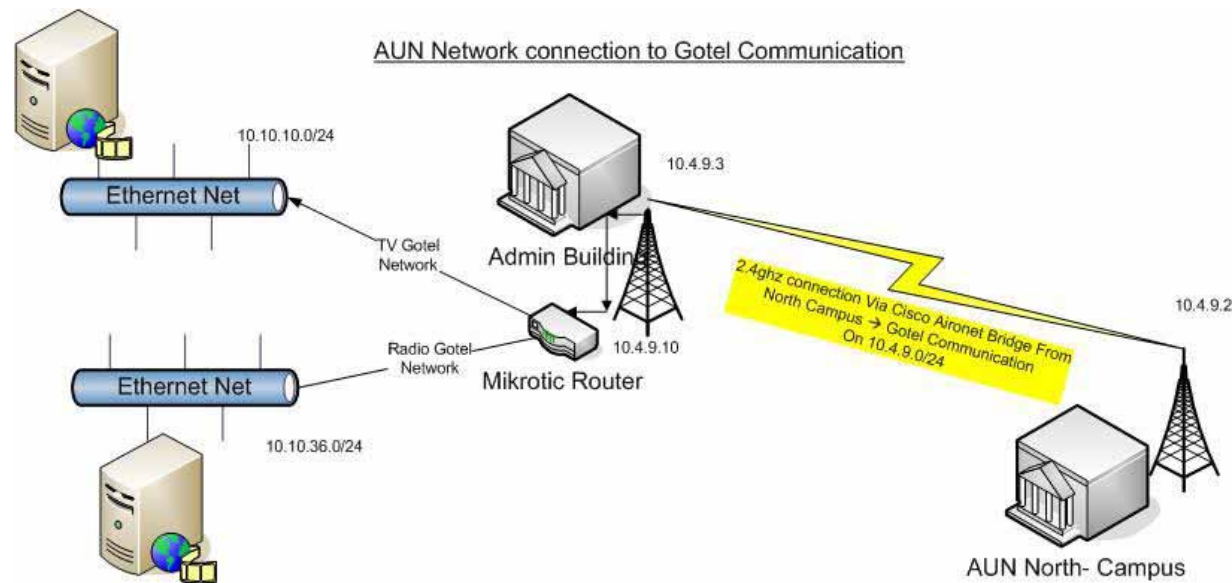
AUN-Hotel Network Topology



University Network Extension II



- Extending AUN Network to Gotel communication via a reliable Network Infrastructure



University Network Extension III



- Building of Federal College of Education
Yola Information Technology Infrastructure
to support their virtual library and
upgrading of their bandwidth from
1mbps/512kbps to 6mbps/6mbps

The American University of Nigeria (AUN)



Total Video Converter
<http://effectmatrix.com>



Q%⁰A