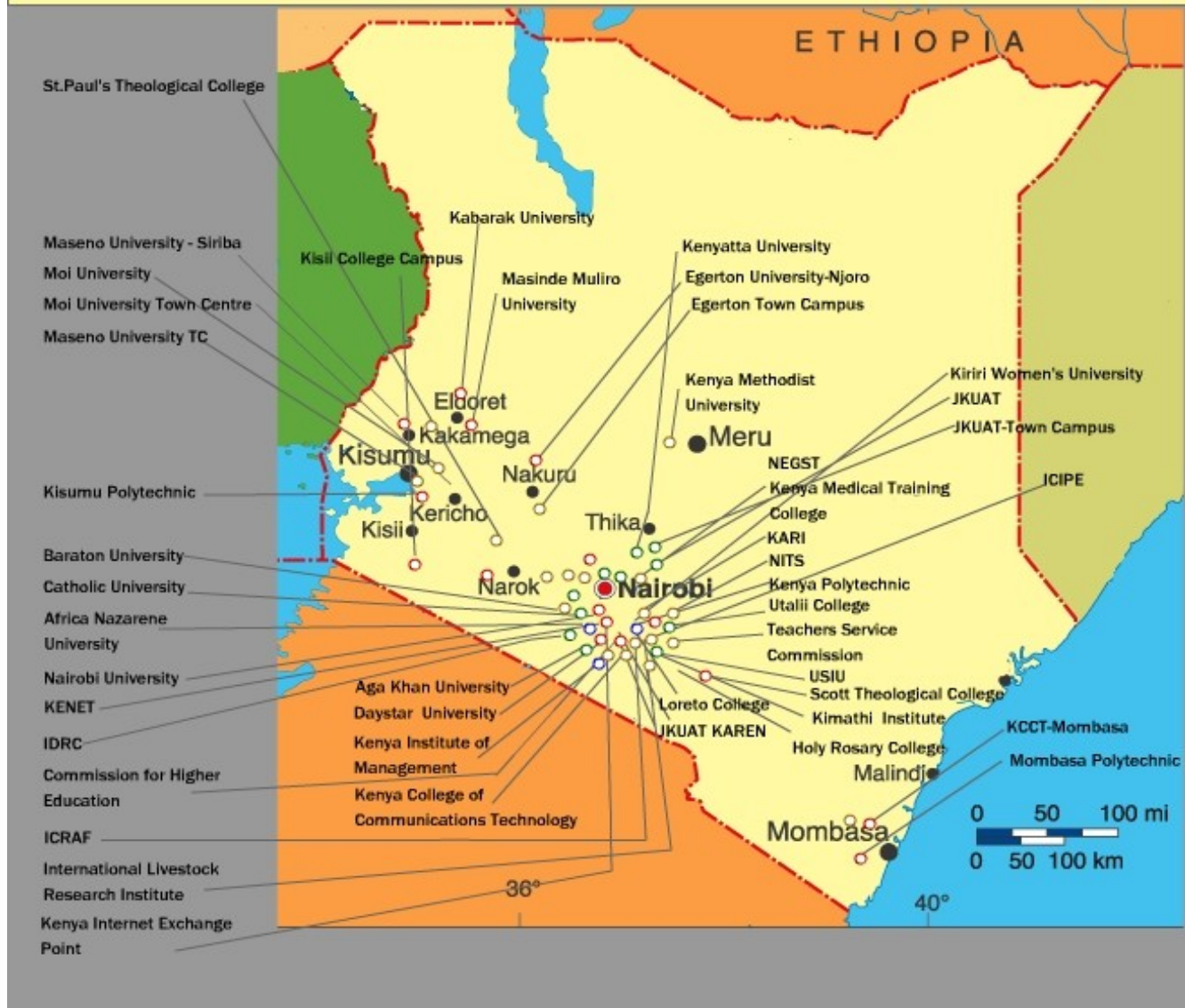


# KENYA EDUCATION NETWORK INSTITUTIONAL COVERAGE MAP



# **East African Universities Accession Project**

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Professor of Information Systems, USIU and  
Executive Director, KENET***

***Launch of TERNET on September 10, 2008***

# Agenda

- KENET as a consortium and Research and Education Network
  - What has been the value proposition of KENET in Kenya?
- Internet bandwidth vs. Campus ICT infrastructures in Kenya
  - \$19 million KENET bandwidth expansion grant after 8 years!
- East African Universities Accession Project 2008-2009
  - E-readiness survey of Kenyan Universities – 2006/07
  - E-readiness , roadmaps, and innovative e-learning projects

# Governance and Operations

- Kenya Education Network Trust (KENET)
  - Trustees - 5 VCs, MD of Telkom Kenya, DG of CCK, PS, Education
  - Management Board representing Trustee VCs and research institutions (ICT directors or senior ICT faculty)
  - Secretariat with a CEO “donated” by a member university (USIU)
- Licensed as Alternative Networks Operator by CCK
  - All license fees waived by the regulator since inception
  - International gateway license
- Provides Internet services in partnership with commercial operators

# Challenges of KENET as a University Consortium

- What has been the value proposition of KENET?
  - To VCs and ICT directors – Cheap Bandwidth?
  - Capacity development – some donor supported training in bandwidth management and optimization!
  - Research, advocacy, and ICT strategy formulation
- Communicating with VCs and ICT directors
  - E-readiness surveys series and strategic ICT indicators
  - Why are ICTs not yet transforming teaching and learning?
  - How do we convince VCs that their ICT budgets are inadequate?

# Financial challenges

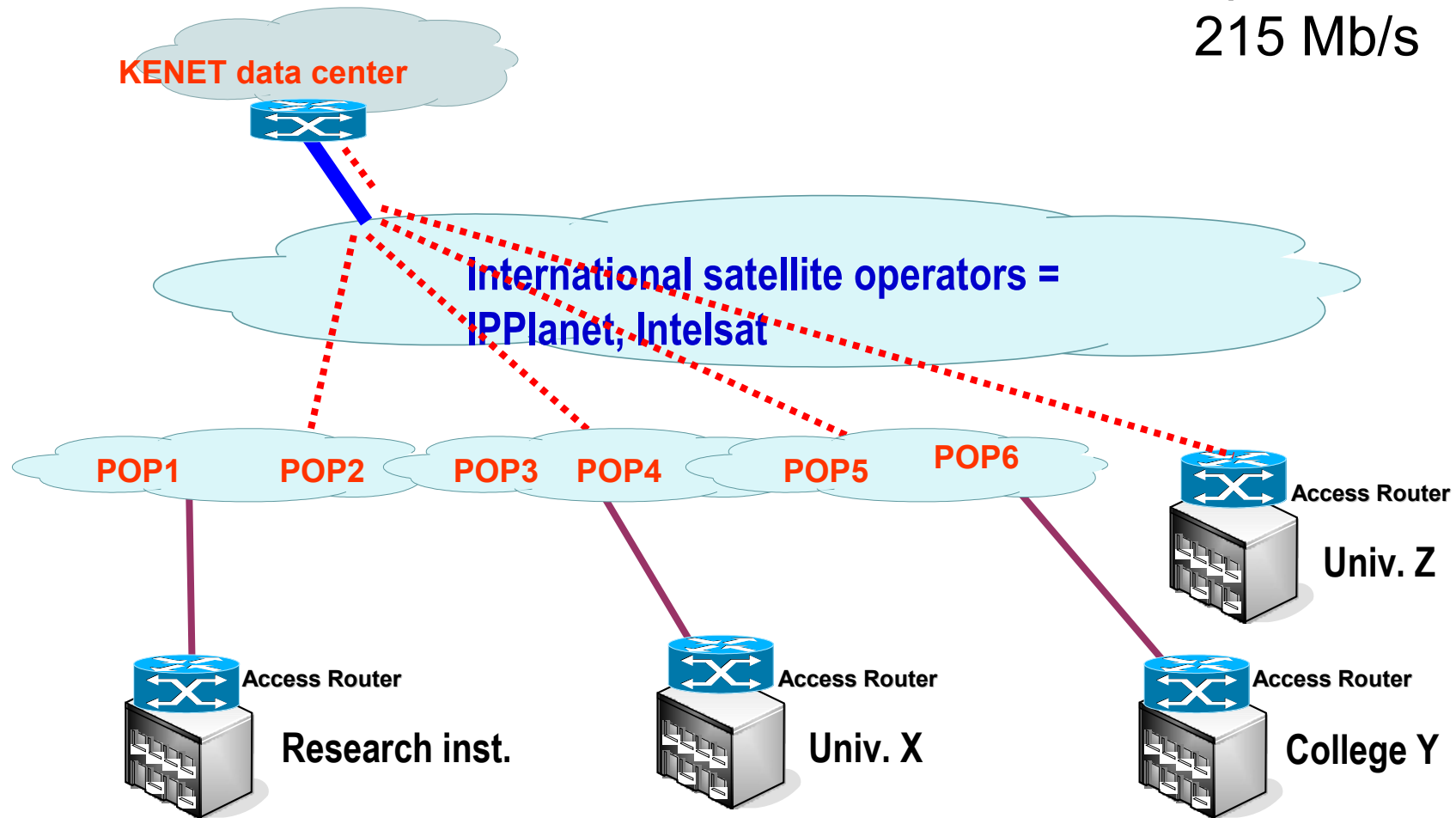
- CCK has funded the secretariat since inception
  - About 50% of salary bill
  - CEOs “donated” by Trustee institutions
- Founder institutions
  - Donated office space, POP rooms, Data center
  - Volunteer trustees and Management Board
- Donor funds (\$1 million USAID funds, PHEA)
- Membership fees and services
  - Strategic Plan aims to scale up to support salaries and operations

# KENET bandwidth expansion project

- \$19 million grant to Universities and Colleges
- KENET is the implementing agency
- Three components:
  - Purchase of 215 Mb/s of satellite bandwidth, leased lines for distribution network, expansion of 6 POPs - \$14 million (50% paid by institutions)
  - Network Operating Center / Data Center - \$ 2 million
  - Purchase of Undersea cable Indefeasible Rights of Usage (IRU) and access to national fiber

# KENET Phase 1 expansion network

55 institutions – purchase  
215 Mb/s



# Human Capacity of KENET

- CEO – “donated” by founder members (USIU now, UoN in the past)
- 4 young techies (2 network administrators and 2 assistant network engineers); Administrator – donor and member relationships; One full-time accountant
- 3 associate network engineers from member institutions (SU, UoN, KU); expanding network of researchers and techies
- Two or three technical Interns at any one time
- Need to hire CTO + two software developers to support instructional ; Internet Service provider or broker?

# Is Internet bandwidth a strategic issue?

- Yes for Kenyan Universities!
  - It is all our VCs care about, cheap bandwidth
  - But there is no evidence that ICT has transformed the way we educate students
- Technology is a lever!
  - Has the potential to transform teaching and learning
  - Seven Principles of Good Undergraduate Education
  - It is about interaction, collaboration, time to task,
- Technology improves the learning and innovation environment of universities (e.g., library)
- Who can unleash the power of technology in learning?

# Any Advice for TERNET?

- Start offering some tangible services to universities now
  - Bandwidth purchase agent? What is the priority service?
  - Advocacy is NOT a service but research is!
- Develop a detailed sustainability plan for TERNET (NREN) Now!
  - KENET has just contracted consultants to develop sustainability plan - lost many opportunities

# The EA Universities Accession Project

- It is a follow-up of the Kenyan universities e-readiness survey of 2006/2007
- Funded by Rockefeller Foundation to include 50 EA universities
  - \$600,000 grant over a period of two years
- Associate Researchers for each country
  - Magreth Mushi is our associate researcher in Tanzania

# Rankings vs. E-readiness

- This was NOT another Webometrics type ranking of institutions
  - See <http://www.webometrics.info>
- E-readiness survey was to be part of institutional and ICT strategy formulation
  - *Diagnostic study*
- Study was about developing strategic indicators for transforming higher education using ICT
  - Rankings in the future!

# E-readiness and Networked Readiness Index

- E-readiness is the degree to which a HE institution is prepared to participate in the networked world
  - for learning, teaching, research, and management
- Networked Readiness Index (NRI) is defined as a nation's or community's degree of preparation to participate in and benefit from ICT developments (<http://www.weforum.org>)
  - *World Economic Forum / INSEAD*

# E-readiness assessment methodology

- Developed 17 ICT indicators to measure readiness
  - Network access indicators (4 – Information infrastructure, Internet availability, Internet affordability, Network speed & quality)
  - **Networked learning indicators** (4 – Enhancing education with ICTs, Developing the ICT Workforce, ICT in Libraries, ICT research and innovations)
  - **Networked society indicators** (4 indicators – Locally relevant content, People and Organizations Online, ICTs in Everyday life, ICTs in Workplace)
  - Networked campus indicators (2 indicators - Electrical power & Security, E-campus)
  - **Institutional policy and strategy** (ICT strategy, ICT financing, ICT Human Capacity)
- Stage each indicator on a scale of 1-4 for each indicator (unprepared to ready)

# Highlights of Kenyan E-readiness results

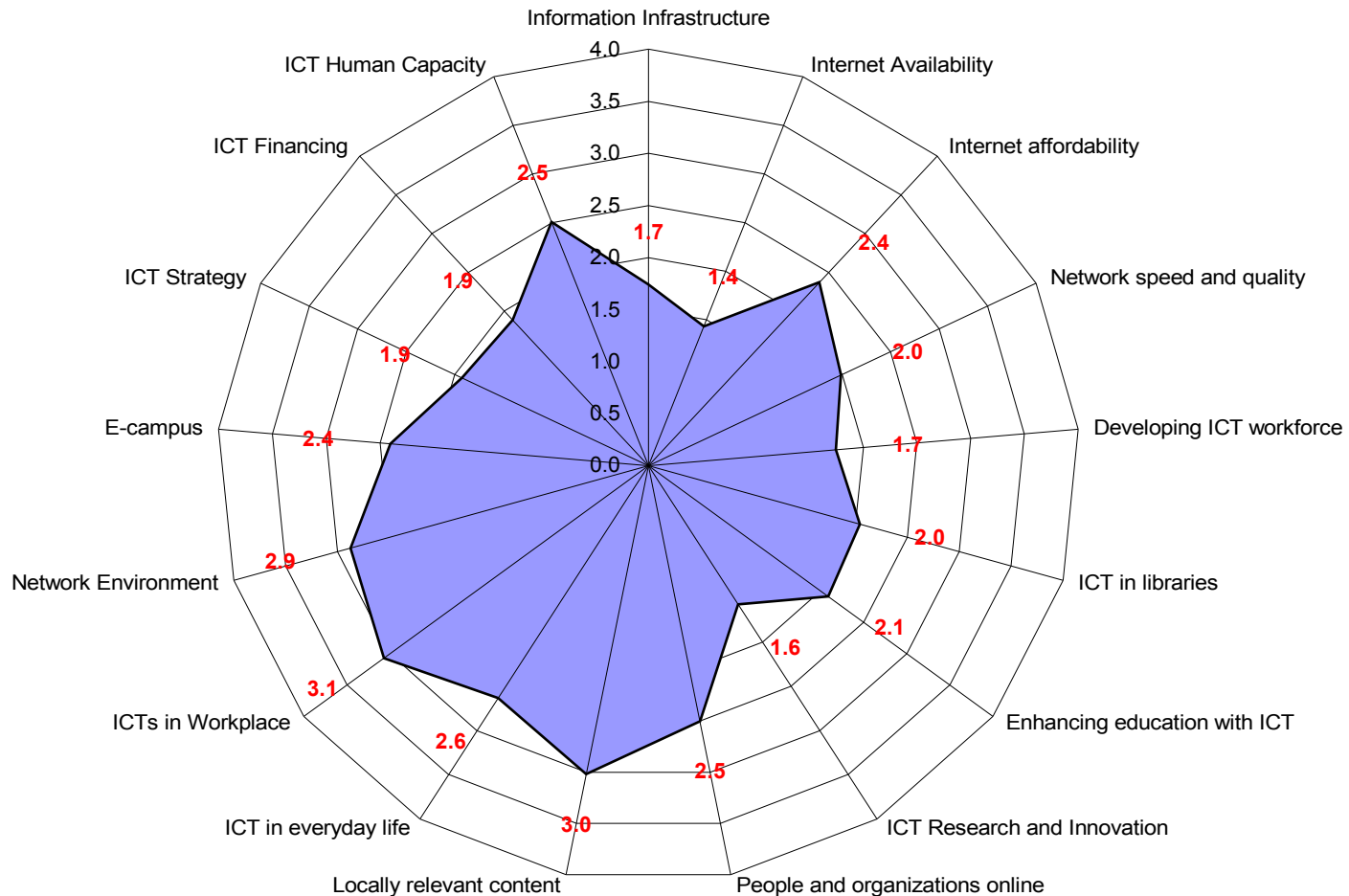
- The 25 KENET member institution had a total enrolment of 170,000 students
- University student enrollment was 130,648 students (2006)
  - 20,000 in private universities!
  - 110,000 in public universities
- 17,000 university faculty and staff members
- BUT only 30% students use Internet daily
  - 15% of medical students stated they NEVER use the Internet!

# Highlights of E-readiness results

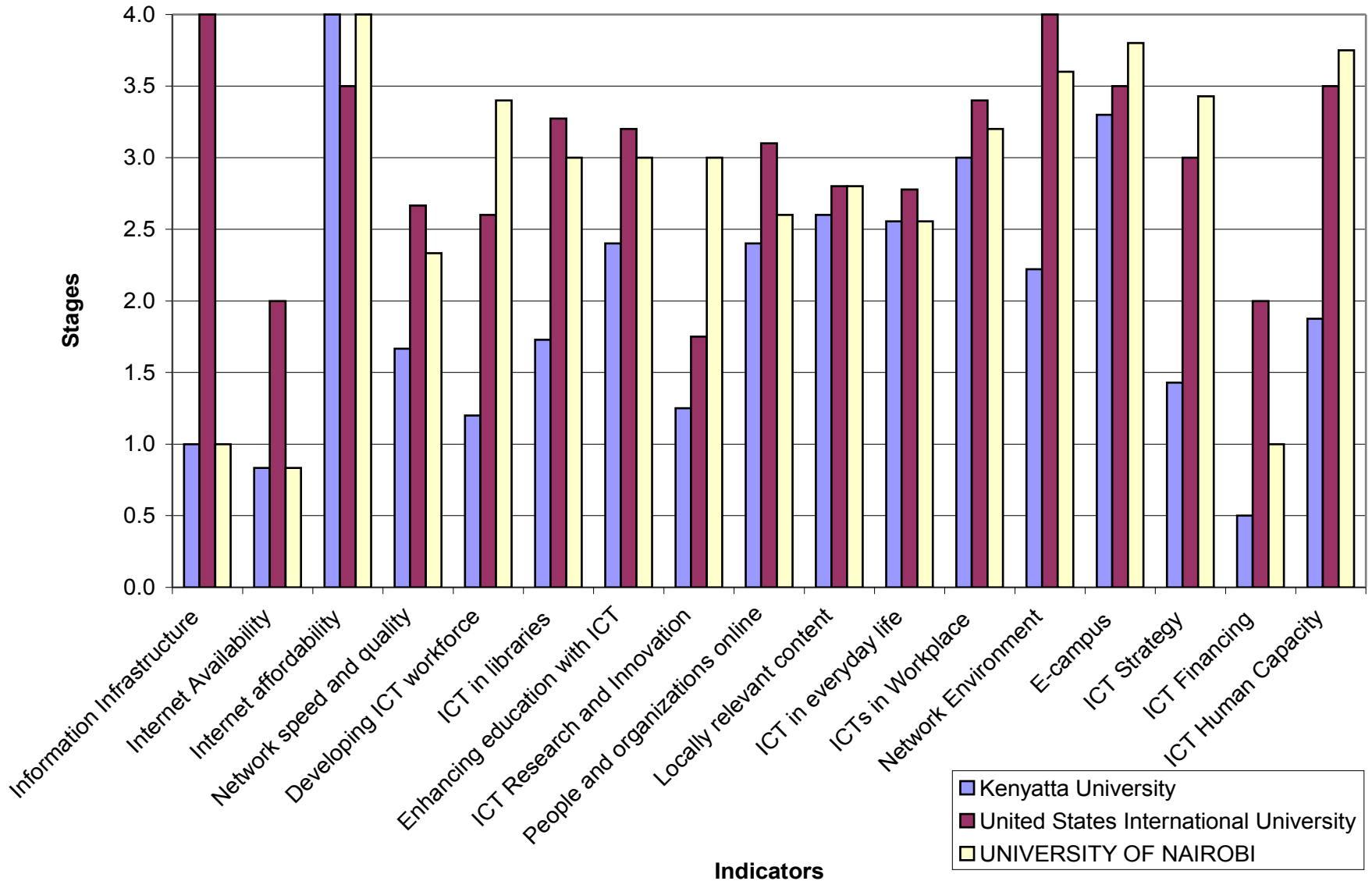
- 93% of students have foreign Web-based e-mail as primary address (Yahoo, Hotmail, Gmail)
  - Where is the content in EA?
  - Why is the most popular site [www.facebook.com](http://www.facebook.com)!
- 75% of students do not think campus e-mail is reliable
- 80% of students are frustrated by Internet speeds on campus
  - 75% think cyber cafés have better speeds
- Less than 5 PCs per 100 students
- Institutions allocating less than 1% on Internet bandwidth purchase

# Overall stages of 17 indicators

All KENET institutions



## USIU, UoN and KU stages



# Example Strategic ICT indicators

- Networked access
  - Internet bandwidth per 1,000 students
  - Networked PCs per 100 students
  - % of Internet bandwidth cost to total campus expenditure  
(measure of affordability of Internet)
- Networked learning
  - % of ICT staff with professional certification (preparedness of ICT workforce)
  - Availability of OPAC off-campus (degree of automation of library)
  - % of courses in which ICT is integrated in the curriculum (e-learning readiness)
  - % of students participating in international ICT-based exhibitions and competitions (measure of research & innovation)

- **Networked society**

% of students using Internet daily (extent of use of Internet)

% of students visiting 1-2 local websites (availability of locally relevant content)

% of students whose main access to computers is on campus (access and usage of ICT on- and off-campus)

% of faculty staying on-line for more than 1 hour per day (readiness and usage of ICTs at work)

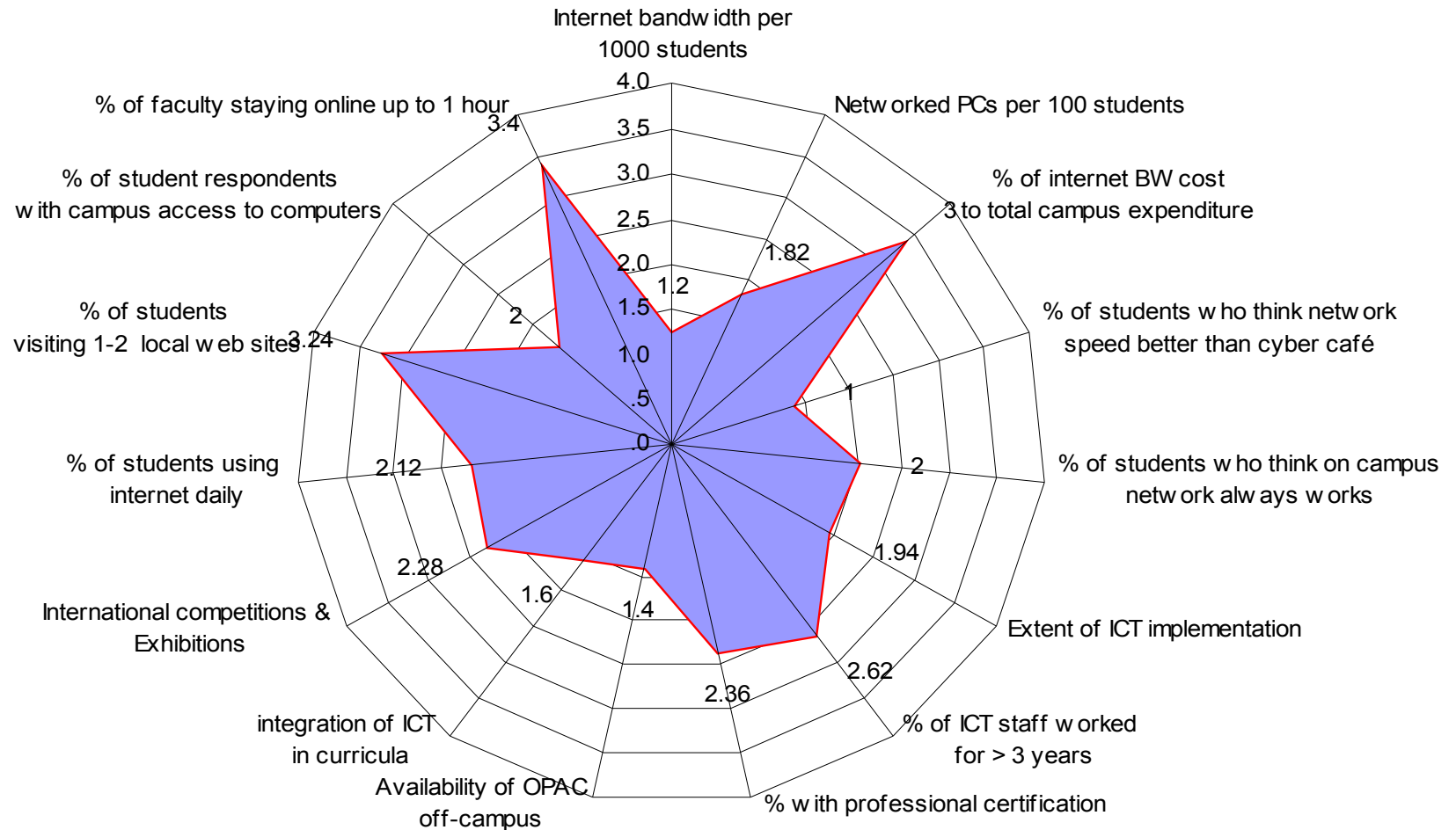
- **Institutional policy and strategy**

% of ICT budget to total institutional budget (measures strategic value of ICT)

% of ICT strategy implementation (measures M&E)

% of professional ICT staff who have worked for > 3 years (measures retention)

# Overall Staging for 15 Strategic Indicators



# What has been impact of study?

- University ICT directors have increased Internet bandwidth and ICT budgets
  - E.g., One public university has increased Internet budget from Kh 2 million (US\$29,000) to Ksh 15 m (US\$ 220,000)
  - 21 Institutions have committed to increase PC ratio to at least 1:10
- 55 institutions have joined KENET bulk Internet bandwidth purchase international bid
  - Will purchase 200 Mb/s up from 50 Mb/s
  - Bids opened on June 24, 2008
- All institutions now plan to provide institutional e-mail to ALL students
- E-learning is now part of the strategy of most of the universities
- All universities have either automated their processes (finance, students) or plan to automate in 2008

# EA Universities Accession Project

- E-readiness survey of 50 universities in East Africa
  - To be done through NRENs in each country
  - Call for Participation – excellent response!
  - Selection of universities completed and data collection starts in October 2008
- Developing Accession Roadmaps and ICT strategies for selected (10) universities
  - University leadership must be ready to work with research team on detailed ICT strategy
  - Detailed institutional ICT accession roadmap to be developed for two selected universities (based on e-readiness survey results).
- Funding for innovative e-learning content development and testing projects
  - 1 university in Tanzania will be selected for innovative use of ICT in teaching/learning

# E-readiness survey of Tanzanian Universities

- Data collection
  - Tanzanian research assistants selected by NREN associate researcher
    - Graduate students
    - Junior IT lecturers
  - Research assistant will collect the hard facts data from ICT directors, CFOs, and registrars
  - University students selected by Associate researchers will collect perception data
  - On-line data entry by students
- Data Analysis core research team (will include TERnet researcher)
- E-readiness report for East African Universities
- Dissemination of results to VCs and ICT directors in each of five countries
  - Results in aggregated form
  - University specific results will be available on-line and will be sent to respective ICT directors

# Accession Components

- Developing Accession Roadmaps and ICT strategies for selected (10) universities
  - University leadership must be ready to work with research team on detailed ICT strategy formulation or revision
  - 2 universities in Tanzania to be selected
- Funding for innovative ICT in Education projects
  - One university in Tanzania will be selected for innovative use of ICT in teaching/learning
- What is an innovative project?
  - Undergraduate physical chemistry content project by Prof. Thairu – involves 5 universities;
  - Data-Rich Blogging and Wikis in Science Labs
  - Marsabit ICT supported Distance Education for Girls - will use e-books loaded on cheap laptops!

# Ranking EA Universities?

- Focus is diagnostic study as part of ICT strategy formulation and change management
- Data collected could be used for ranking!
  - Webometrics ranking is not based on data in university campuses
- Research will develop a contextually relevant index that could be used for ranking!
- Advance ICT in University Education indicators study!

# Organizational Change

$$\Delta = \mathbf{D} \times \mathbf{V} \times \mathbf{P}$$

**D**issatisfaction with status  
quo

**V**ision for future

**P**ractical next steps

*(See Kotter's article on the Heart of Change)*

# E-readiness Index vs. Happiness Index of Universities!

$$H = A / E$$

**H**appiness

**A**chievements

**E**xpectations

# Thank You

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