

# KENET as the NREN of Kenya – *Discovering research champions*

**A presentation at first researchers' forum 2016**

**Safari Park Hotel, May 18, 2016**

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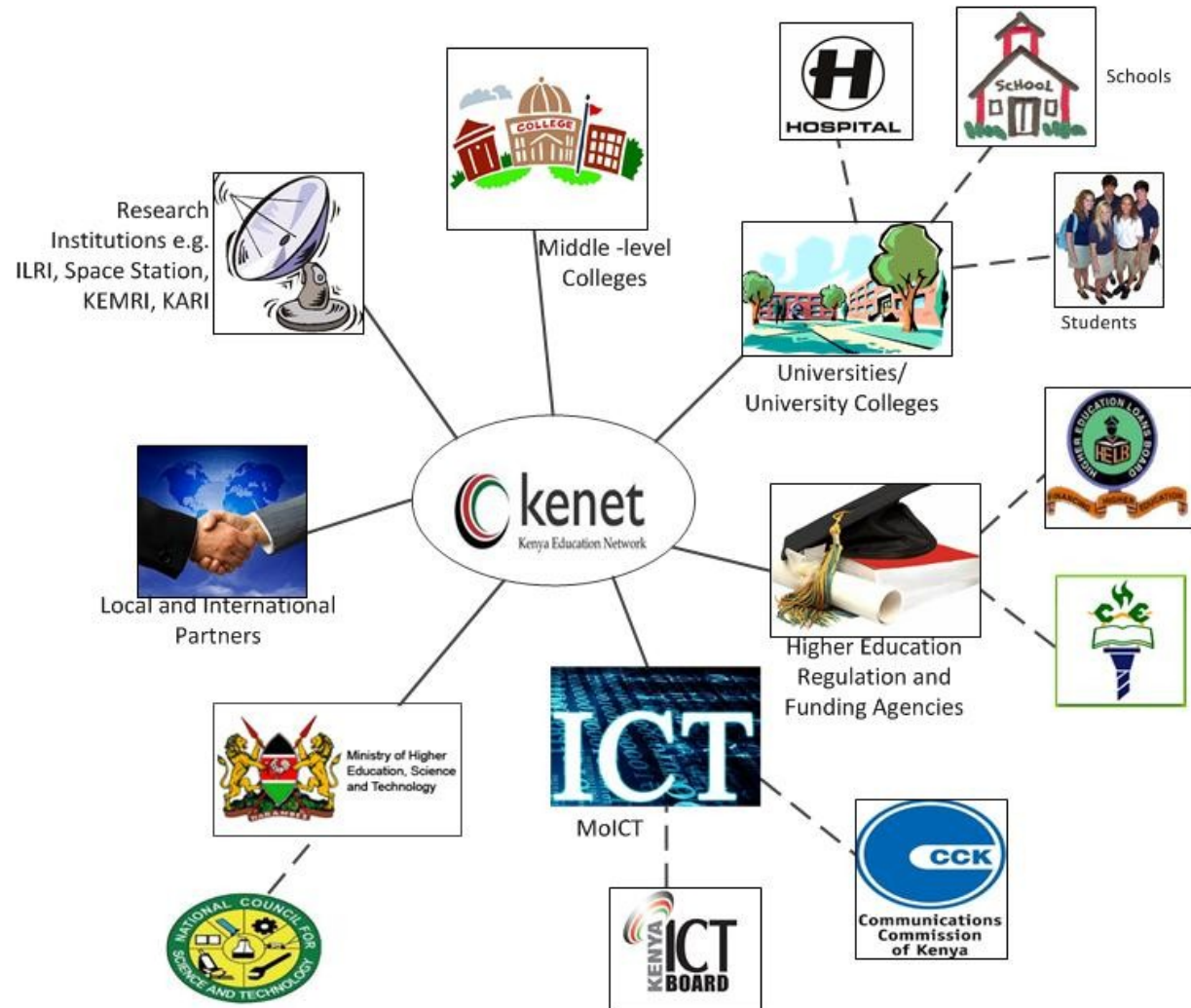
***Professor of Information Systems, USIU***

***Transforming research &  
education using ICT***

# Agenda

- Introductions and Objectives of the half-day research forum
- Kenya Education Network (KENET) as the National Research and Education Network of Kenya
  - Responsible for building operating the cyberinfrastructures or e-infrastructures for Kenyan academic community
- KENET as a catalyst for research transformation in Kenya
  - How do we do it?
- How do we discover research champions?
- Discussions, Questions & Answers session

# KENET supports the Kenyan Higher Education and Research Ecosystem



Transforming Education with ICT

# KENET is the National Research and Education Network ( NREN) of Kenya

- **Aggregates Demand for Connectivity, Internet bandwidth and Cloud Services of member institutions**
  - Increasing buyers power of the higher education sector and reducing costs
  - KENET operates expensive data centers for member institutions to provide community cloud services
- **Aggregates Internet traffic from Higher Education and research institutions**
  - KENET generates up to 3,500 Mb/s of Google traffic per day
  - Up to 6,000 Mb/s of traffic generated by connected campuses
  - Translates to support by Global content distributors like Google and Akamai
- **Develops High-end ICT talent** – technical + project management
  - Capacity building for KENET and member institutions
  - **KENET Critical-mass of high-end ICT and engineering talent for R & E community**
- **Builds and operates advanced research infrastructures** for the R &E **community of Kenya** in different areas
  - Africa Science Gateway and federated services (KENET CA, iDP, EDUROAM)
  - Special Interest Groups (SIGs) in Educational technology and Engineering Education constituted in FY 2014-2015
  - SIGs in Medicine, Agriculture and ICT shall be constituted in FY 2015-2016
- *KENET is a credible and trustworthy grantee – USAID, Rockefeller, Horizon 2020, Ford Foundation, NRF*

# KENET Governance

- **KENET is constituted as a not-for-profit TRUST with Seven Registered Trustees**
  - Seven Vice Chancellors + PS Education + DG CA, CEO, KEMRI as 10 Trustees
  - Governed by Board of Trustees, Assisted by Management Board - ILRI representative
  - Member institutions and academic community are the beneficiaries
- **KENET is a membership organization and only serves members** - it is NOT a business
- KENET licensed as a Alternative Network Facilities Network Operator since 2002
  - See <https://www.kenet.or.ke>
- **KENET is an implementation agent** of the Government of Kenya, Infrastructure donors (KTCIP, Google, Foundations etc) and Member institutions
  - Partnerships for research and infrastructure expansion
- **KENET is the National Research and Education Network of Kenya**
  - Largest NREN in Africa after TENET in South Africa in terms of Internet traffic
  - Exchanges traffic with other NRENs in the world at NO cost

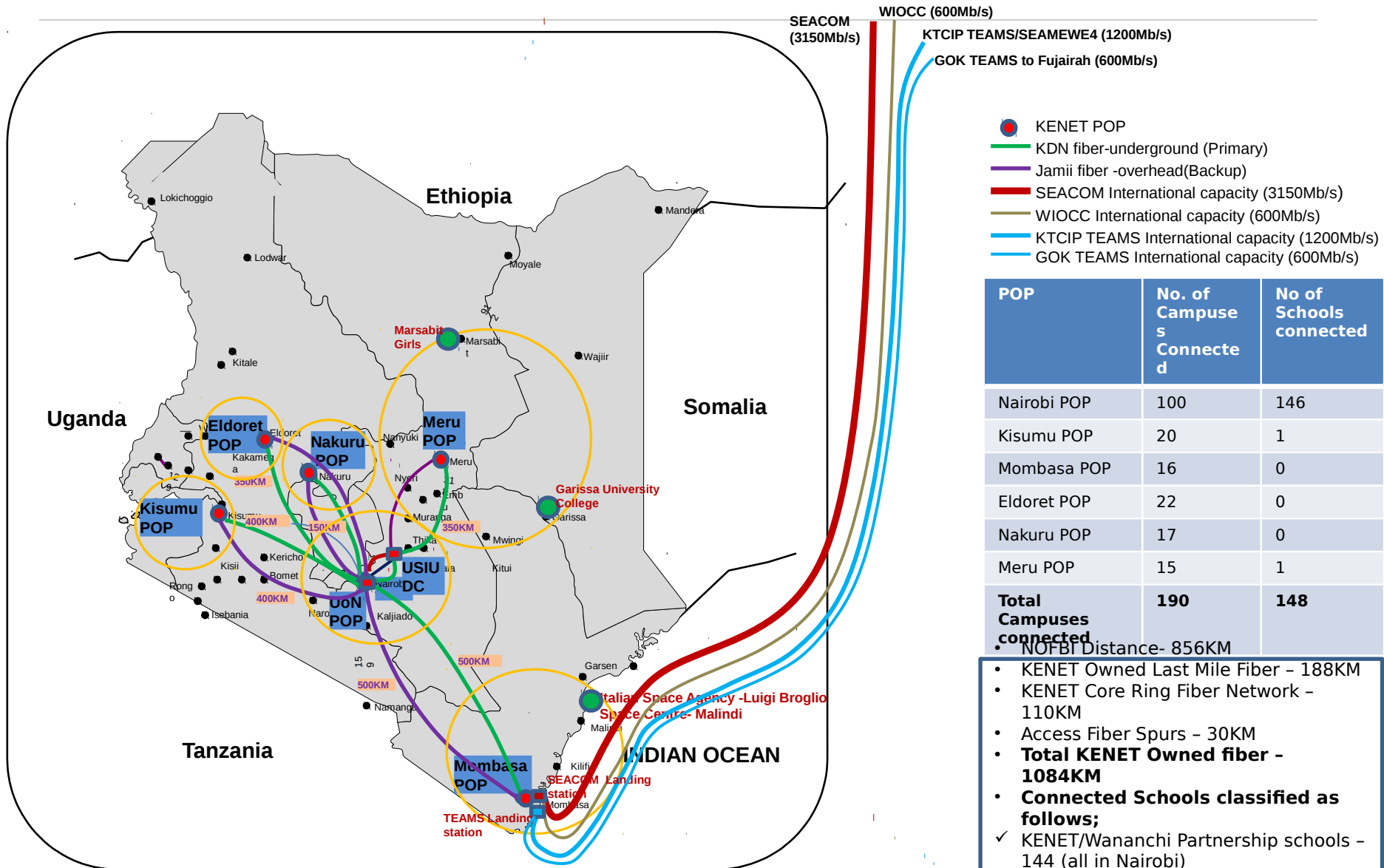
# KENET Mission and Core Values (see [www.kenet.or.ke](http://www.kenet.or.ke))

- KENET's mission is to be a **catalyst** for transformation of research and education in Kenya
  - Catalyst for improved quality of research and increased productivity
  - ***KENET discovers and support faculty and research champions through travel grants, mini-grants, and Special Interest Groups in STEM areas***
- Core values include:
  - **Diversity** (e.g., diversity of staff measured as university, county, gender, temperament etc)
  - **Innovations** - in services and promotion of research collaboration
  - **Open access - Open source software, open data, open e-infrastructures**
  - Partnerships and collaboration
  - Integrity and ethics
  - Sustainability

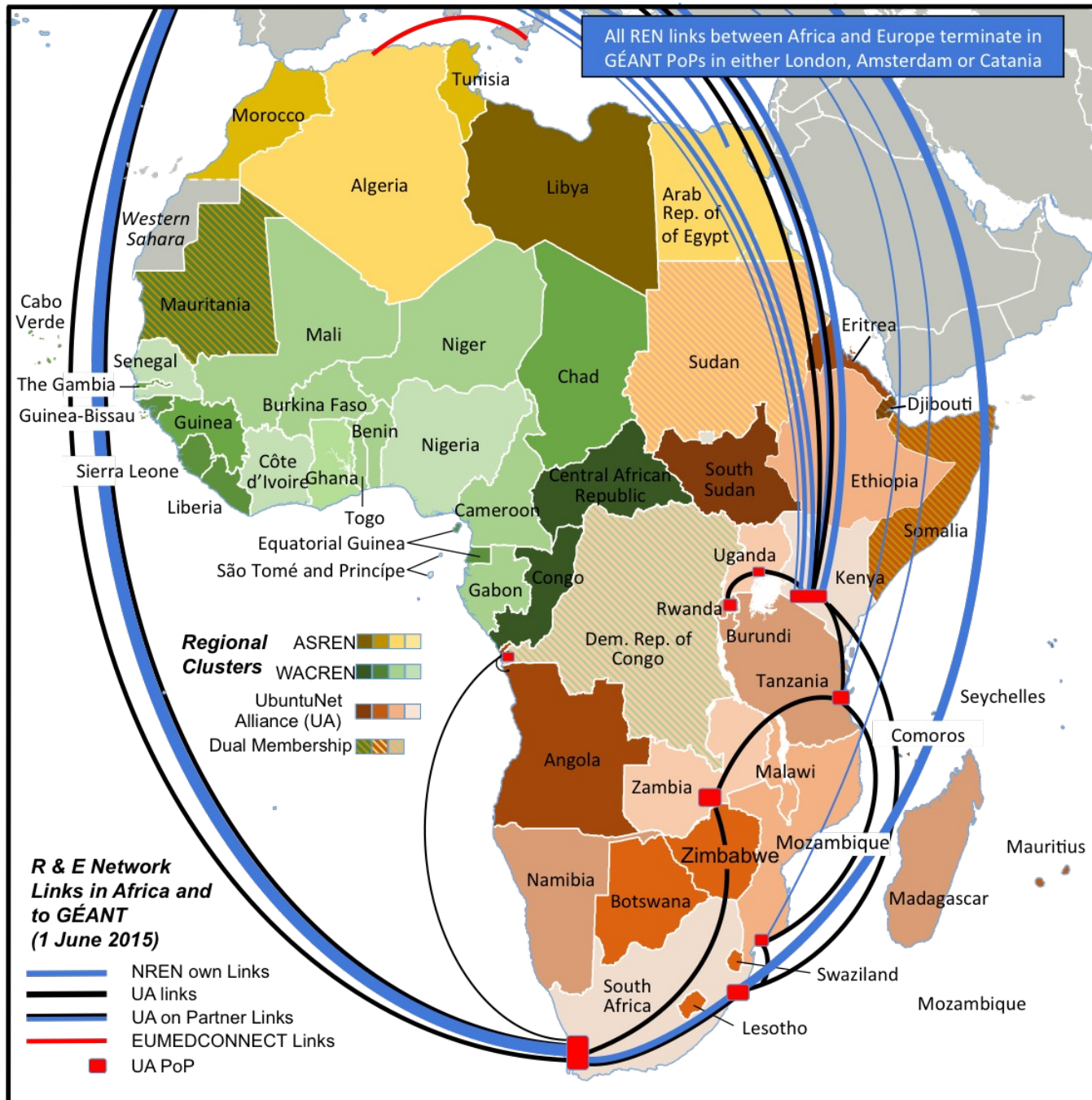
# KENET Mandate and Strategic Plan

- One of KENET's Mandate is to facilitate and promote research collaboration
  - KE University < > KE University collaboration
  - KE University < > KE research institutes collaboration
  - KE University < > Int'l University / research institutes
- Broadband Internet and Cloud Services facilitate collaboration
- Special Interest Groups in STEM areas promote collaboration among champion faculty/researchers in different universities
- Joint research projects / joint procurement of research tools / journals / databases

# KENET National Broadband Network Coverage







# How Shall We Measure research productivity or collaboration?

- **Conduct baseline surveys of STEM departments**
  - Journal publications, conference presentations, books etc
  - Baseline surveys also collect data on **post-graduate project reports, thesis, graduates**
- Collect data on participation in national, regional or international student design competitions and exhibitions in STEM areas
- Collect data on availability of digital repositories and availability of online journals
- **These data is used to measure research productivity of departments or universities or research institutions**
  - **Staging framework has been developed by researchers**

# How Shall We Measure research productivity or collaboration

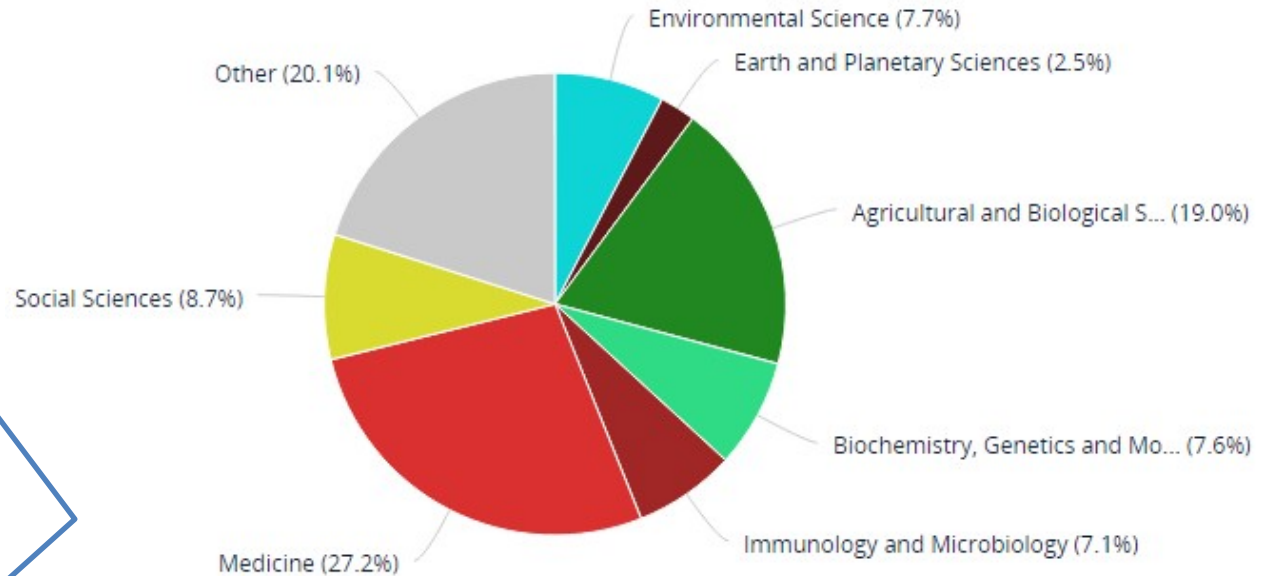
- **Use research analytic tools like Elsevier SciVal or Thomson Reuters Incites**
  - Works even when institutions have incomplete data about their faculty
  - Use World of Science or Scopus Databases
- Research Analytic tools are expensive for individual institutions
  - **Even KU or UoN!**
- KENET's mandate is to facilitate joint procurement if that will solve problem
  - Received proposals from both Thomson Reuters and Elsevier for joint procurement
- All the research analytics tools are cloud-based – all you need is high speed connectivity

# Research analytics tools – the external view

- KENET subscribed to Elsevier SciVal research analytic tool with effect from January 2016
  - Research Tool only for KENET staff and Special Interest Group members
- Research analytic tool shall be used to measure research productivity, collaboration and discover research champions
- **External view of research analytic tools does not depend on data collected by institutions!**
- KENET shall hire a part-time research associate in January 2016 for research productivity and collaboration analysis.

# Leading discipline in Kenya 2010-2015

Medicine is the leading discipline in Kenya based on publication counts; and has a Field-weighted Citation Impact of 103% more than world average. The citation impact of Engineering and Computer Science is 3% below world average



Discipline	Publications	Citations	Authors	FWCI
Medicine	5,148	51,062	5,387	2.03
Engineering	339	770	511	0.97
Computer Science	32	310	314	0.97

Source:

# What Services does KENET provide?

## → **Broadband Internet and connectivity services**

- Total International Internet bandwidth subscriptions from April 2016 - 8,200 Mb/s
  - >400 Mb/s for UoN, KU, JKUAT!
- **Special price for research institutes with 20 Mb/s and above subscription**
- KENET-owned Last mile fiber for 40+ main campuses of large members

## → **Shared Services - Web-hosting (FREE), Storage services, Infrastructure as a Service, collocation, Video/web conferencing, EDUROAM etc.**

- Tier 3 Data Centers at UoN and USIU; No downtime, stable power supply
- JKUAT and CUEA to be upgraded to data centers in FY 2015-2016.

## → **Specialized engineering and ICT advisory services and Capacity Building of ICT directors and Technical Staff**

- Forums and workshops.
- **Diagnostic, design and project management services of campus network infrastructures**

## → **E-infrastructure or cyberinfrastructure services**

- **Provided exclusively by KENET as the NREN of Kenya**

## **World Class Scientific Research with only broadband Internet**

- E-infrastructure allows a researcher at any connected campus to access advanced research infrastructures in other parts of the world!**
  - High performance computing, specialized scientific instruments, open research data**
  - No additional local scientific infrastructure investments**
  - But MoUs with owners of infrastructure or data required**
- Researchers have to be on the KENET network for authentication**
  - Free services only for NREN users**

# What Does a Researcher Need to Access Global E- Infrastructures

- A trusted entity to provide access to e-infrastructures
  - Digital certificates issued by trusted entity for users to access e-resources (secure access)
  - Digital certificates issued by trusted for servers hosting open data or instruments
  - Trusted Identity Provider (one sign on)
- **KENET is the only Trusted Entity for Kenya for access to Global e-infrastructures**
- KENET one of the few African NRENs that has setup both the Certification Authority and Identity Provider
  - Ongoing accreditation of KENET CA by EUGRIDPMA responsible for e-infrastructure access in Europe, Middle-East and Africa
  - Register at <http://ca.kenet.or.ke> and <http://idp.kenet.or.ke>
- **KENET facilitates issuance of Free or subsidized Wildcard CoMoDo certificates**
  - for domain names (for secure websites, e-mail and data repositories)
  - Annual license per CoMoDo digital certificate is \$400 per domain



# How Does KENET discover research champions?

- **Word of mouth** – ICT directors, MB members, Deans, Vice Chancellors.
- Research workshops or forums or conferences
- **Special Interest groups** – in engineering, computer science/information systems, educational technology?
- Baseline surveys of engineering, ICT and medical schools
- **Travel grant applications or mini-grant applications**
  - 18 travel grants of about \$1,500 in 2015/2016!
  - 4 mini-grants in 2014/2015; another 5 in 2016/2017
- **SciVal research intelligence tools** – are you in Scopus database? Do you have a research ID?

# Questions and Answers

- How do you want to serve you better?
- Do you need high-performance computing?
- Do you storage or servers for short periods?
- Are you part of a collaborative research team that can apply for NRF research grants in 2017?
- Are you supervising PhD students in STEM areas?
- Do you want to change research policies of Kenya?
- Do you want to collaborate with researchers in your area that are in other African countries?



*Transforming education  
through ICT*

# Thank You

**[www.kenet.or.ke](http://www.kenet.or.ke)**

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