

Internet Number Resources and African Academia

Research and education networking in Africa

11th AfrINIC Public Policy Meeting

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Agenda

- About the AAU
- Some key data on Africa
- African research and higher education
- Why is REN crucial for Africa?
- Telecommunications infrastructure
- RENs in Africa
- RENs and IP resources



About the AAU

- Established in November 1967 in Rabat, Morocco. Based in Accra, Ghana
- 200+ member institutions in all African sub-regions
- General Conference once every 4 years, with election of the Board – Last GC: Abuja, May 09
- Conference of Rectors, VCs and Presidents once every 2 years
- Several programmes and services (QA, Mobility, Leadership and Management, HIV/AIDS, DATAD, Gender, R&E Netwg,...)



AAU and R&E Networking (1)

- 11th General Conference in February 2005 in Cape Town, SA: four-year Core Programme approved
- Prominent among other foci: support for the development of ICT for HE in Africa
- Strong mandate to the Secretariat to assume focal point role for ICT initiatives for African higher education institutions
- Focus on R&E Networking for collaboration and improvement of access to information and knowledge



AAU and R&E Networking (2)

- The REN Unit
 - With support of IDRC and PHE in Africa: set up of a REN Unit within the AAU Secretariat
 - Activities also funded by ACBF
 - Activities:
 - Establishment of strategic partnerships
 - Participation in relevant events
 - Organisation of workshops (awareness raising, policy dialogue and capacity building); LEDEV
 - Development of policy guides
 - Clearinghouse on R&E networking and ICT policy
 - Support to REN establishment processes in Africa



Some key data on Africa

- Population: > 1,000M (14% of world Pop.)
- Telephone penetration: 3.8% (mobile: 27.5%)
 - Sub-Saharan Africa: 1.6% (18.3%)
 - World average: 19% (49%)
- 67M Internet users (6.8% penetration)
 - World average: 22%; North America: 73%
- 2% of IPv4 address space
- 0.2% of world's total Internet capacity (2004)



African research and higher ed. (1)

Research

- Most research carried out in higher education institutions
- Almost entirely financed by government
- Lack of resources (infrastructure, equipment, financial and other incentives)
- Little university-industry linkage
- Isolation of researchers/research teams



African research and higher ed. (2)

Higher education

- Tertiary gross enrolment rate: 5%
 - World average: 24%; North America + Europe: 70%
- 900+ higher education institutions
- Majority are public: growth now mainly from private initiatives
- Some of the many challenges:
 - Massification
 - Poor infrastructure
 - Aging faculty
 - Brain drain



Why is REN crucial for Africa? (1)

- Bandwidth most expensive in the world (average of US\$3-4,000 per Mbps/month!)
 - Main reasons: lack of competition, costly technologies, regulatory environments)
 - Need to build bargain power (good example: PHEA-supported bandwidth consortium)
 - Need to sensitize policy and decision makers, as well as the actors in the private sector (infrastructure owners, ISPs, etc.)
- African scientists and researchers are isolated - generally no critical mass for successful research activities
 - Need to network and collaborate (at national, regional, continental and international levels)



Why is REN crucial for Africa? (2)

- Brain drain
 - Need to reduce brain drain as result of frustration (lack of intellectual reward due to isolation)
- Brain gain
 - Tap potential of diaspora for its contribution to African development from where it is – see COREVIP 2007 report
- Massification
 - Blended distance learning as part of the solution
- Scarce resources
 - Need to share (not only information, knowledge, pedagogical resources, etc. but also human resources)
- Regional/continental integration
 - HEIs must spear-head and facilitate this process

BUT...



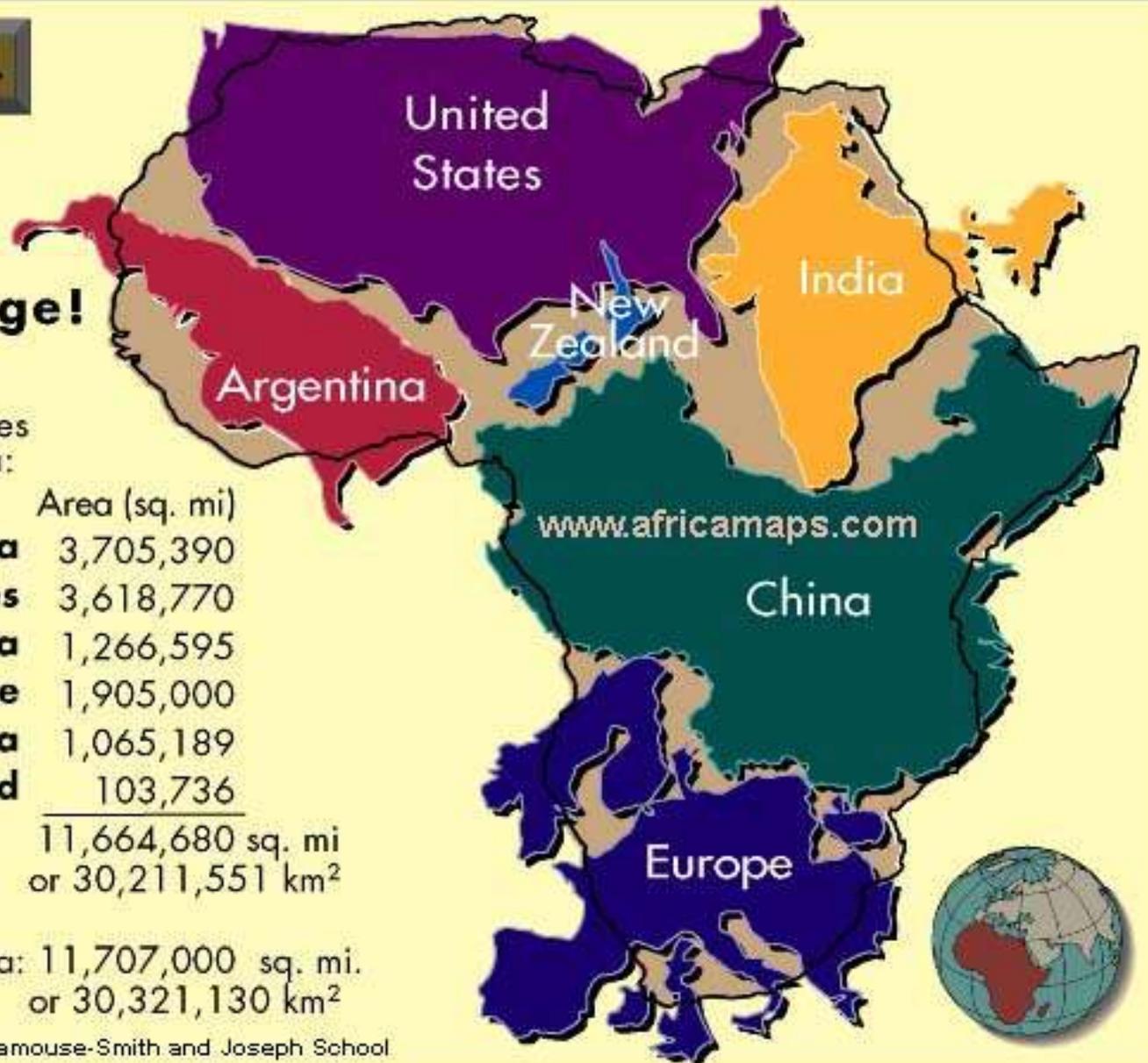
To the next map...

Africa is Huge!

The following countries could fit within Africa:

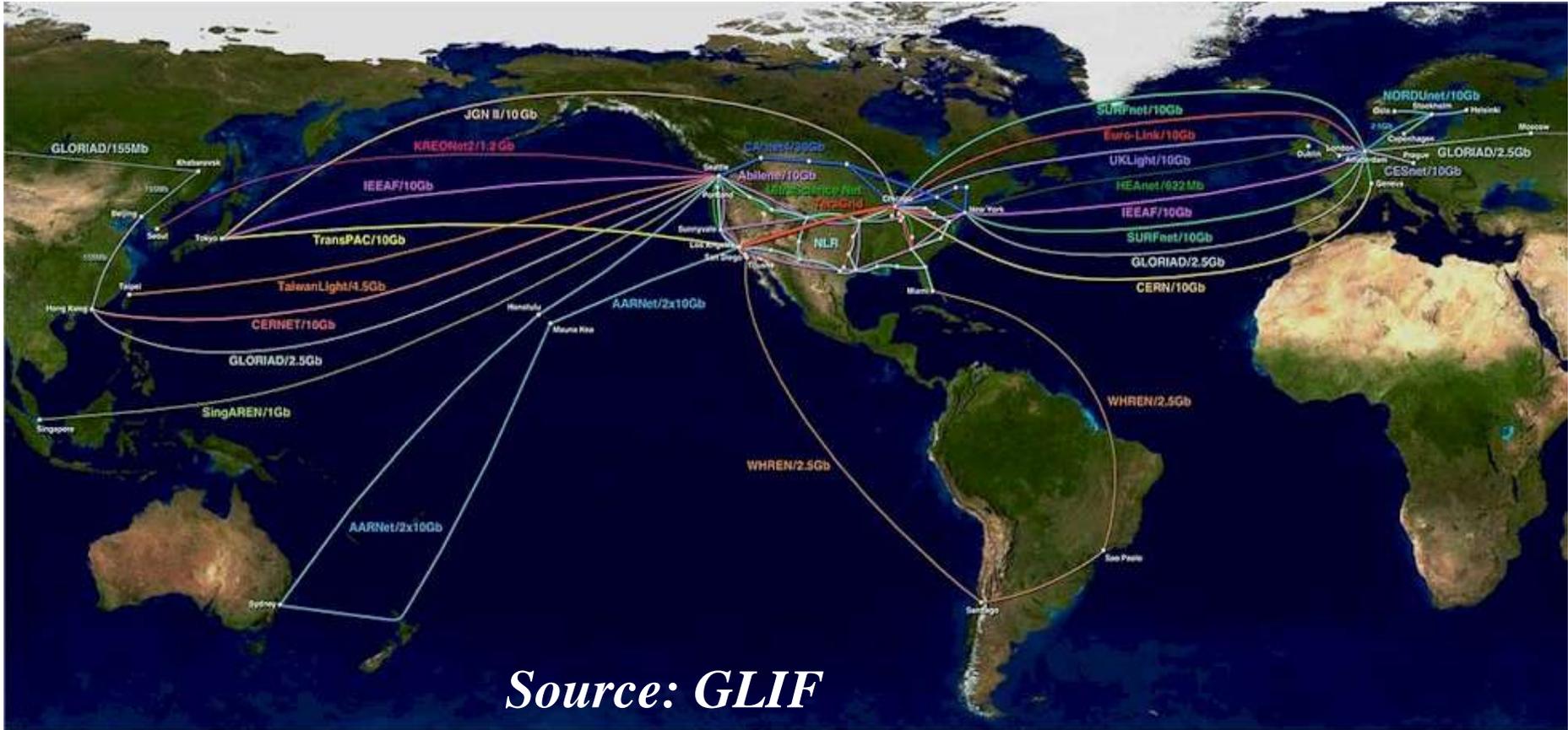
	Area (sq. mi)
China	3,705,390
United States	3,618,770
India	1,266,595
Europe	1,905,000
Argentina	1,065,189
New Zealand	103,736
	<hr/>
	11,664,680 sq. mi or 30,211,551 km ²

Africa's area: 11,707,000 sq. mi.
or 30,321,130 km²





AND...

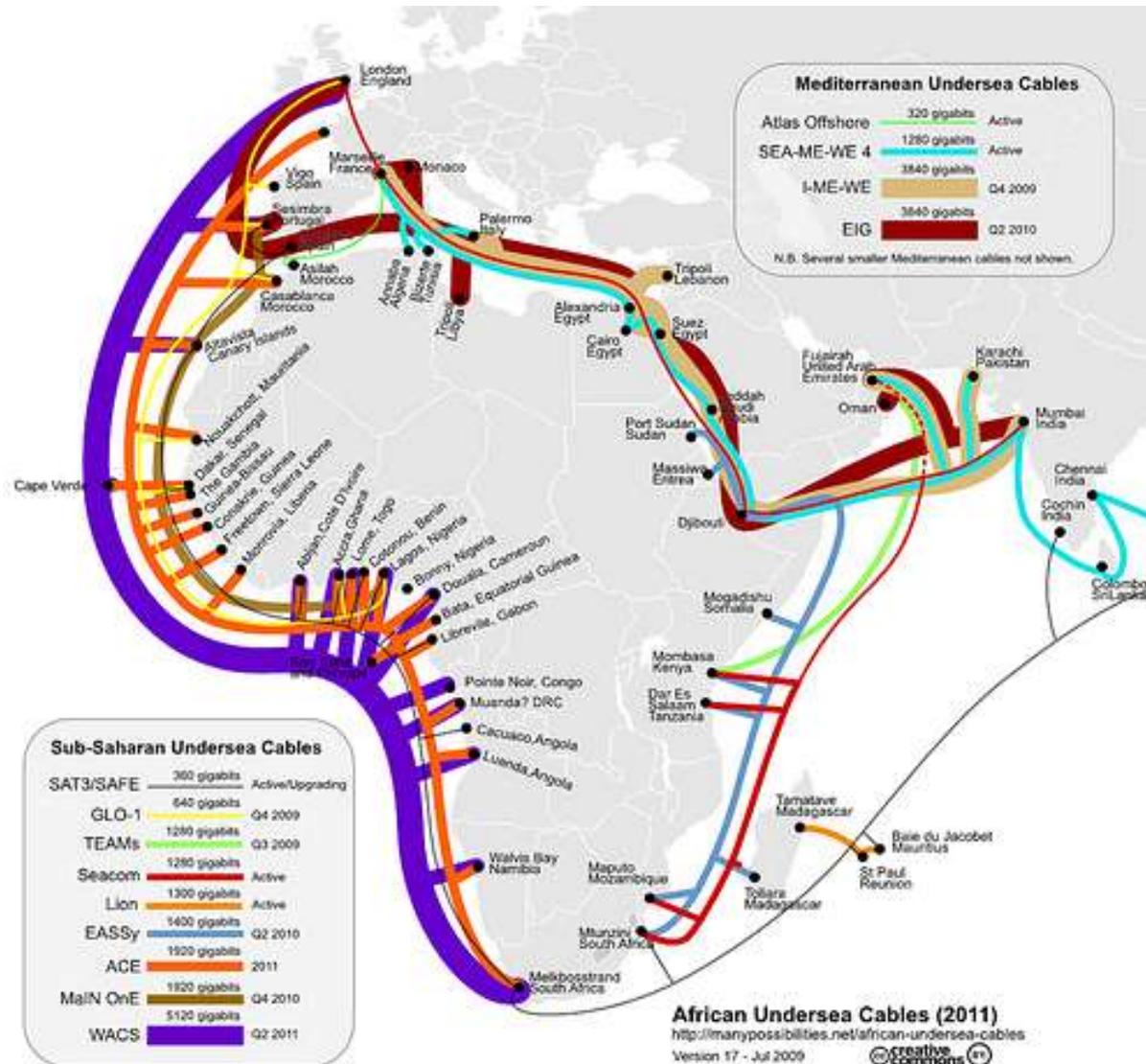


Source: GLIF



HOWEVER ...

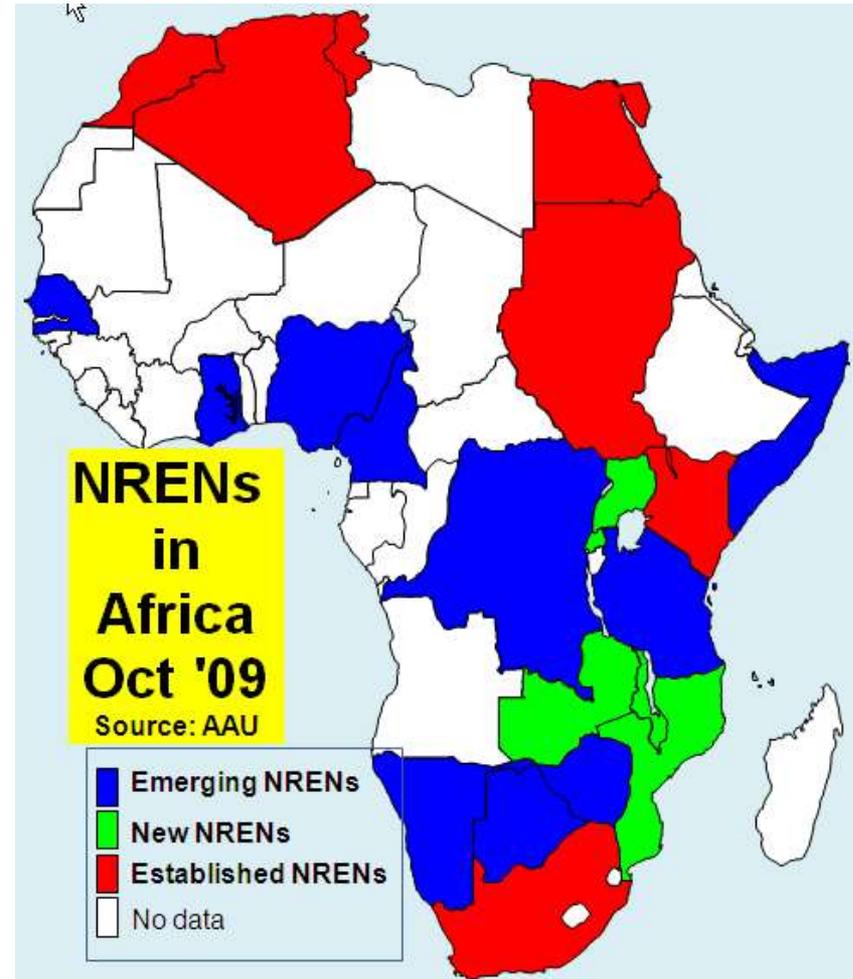
Telecom infrastructure is growing





NRENS in Africa - global picture

- Can be categorized in 3 groups
 - Established (functioning) NRENS
 - New NRENS
 - Emerging NRENS (NRENS in formation)





Established NRENs

- Active RENS essentially established in Northern, Southern and Eastern Africa
- Well established NRENs include:
 - TENET (South Africa)
 - KENET (Kenya)
 - EUN (Egypt)
 - MARWAN (Morocco)
 - RNU (Tunisia)
 - CERIST (Algeria)
 - MAREN (Malawi)
 - SUIN (Sudan)



New NRENs

- Several initiatives in all African regions for the formation of NRENs
- Most of the initiatives in Southern/Eastern Africa (UbuntuNet momentum):
 - Eb@le (DRC)
 - MoRENet (Mozambique)
 - RENU (Uganda)
 - RwEdNet (Rwanda)
 - TERNET (Tanzania)
 - EthERNet (Ethiopia)



Emerging NRENs

- Advanced initiatives include:
 - ZAMREN (Zambia), NAMREN (Namibia)
 - NgREN (Nigeria)
 - Commitment of 10s of VCs to have it established by end of 2008 (has not been met); move towards a cluster approach
 - GARNET (Ghana)
 - Policy dialogue ongoing; establishment of 2 working groups (policy and architecture); NREN expected to be formed by Q2 of 2010
 - Cameroonian REN (embryo exists with RIC)
 - Commitment of government
 - Policy dialogue meeting in December 2009
 - Senegal (RENER)
 - Policy dialogue ongoing. Meeting of actors and decision makers held in July 2009; target for establishment of the snNREN: April 2010
 - Côte d'Ivoire
 - Policy dialogue ongoing despite difficult political situation



Regional RENs

- First regional initiative in Africa: EUMEDConnect project
 - Funded by European Union
 - Links Mediterranean African countries with Europe through GEANT
 - Direct links from individual countries to GEANT
 - Now, move to interconnection between the countries (next phase)
- Other major initiative: UbuntuNet Alliance
 - Alliance of several Southern/Eastern African NRENs to interconnect and share bandwidth
 - Connected to GEANT since January 2008
- Initiative for a regional REN in West/Central Africa
 - WACREN: second consultative meeting held in Accra in Nov '09
 - Target for producing core documents for incorporation: May '10
 - Facilitator: AAU



Progress – but still challenges

- Awareness raising at highest level (VCs, Ministers, Heads of State) on the importance of R&E Networking for African development
- Development of clear and coherent national ICT policies taking into account both regional issues and R&E specific needs
- Regulatory environment
- Power supply
- Disparity of market environment throughout the continent; need for harmonization
- Human capacity development



REN/Campus networks and IP resources

- Research and education networks are dedicated networks that allow only traffic between R&E institutions
- For this to happen (i.e. transit allowed), these networks must be identified as such through their ASNs
- As consequence: R&E traffic must be clearly separated from commodity Internet traffic
 - This means: no access to the global R&E networks with IP resources provided by the ISPs for access to commodity Internet
- To be part of the global R&E community (with its huge possibilities):
 - Each NREN must have its own ASN number in order to be identified as such within the community
 - Same consequence for the member institutions of the NRENs regarding IP resources



REN/Campus networks and IP resources (2)

- To encourage NRENs and R&E institutions to acquire their own institutional IP resources: agreement between AfriNIC and AAU to apply a 50% discount on fees for IP resources
- Next level (just about to be implemented): the AAU will pay for the remaining 50% (for the first year)
 - Applicants won't have to pay anything for the first year; they will only pay for the recurrent costs of the following years (still with the 50% discount)
 - Made possible through a FRENIA grant to the AAU
 - Will be publicized within the next couple of days
- To be considered by AfriNIC: to allocate for free IPv6 resources to any education or research institution that commits to use them immediately, and to waive subsequent fees for at least 3 years (w/ research MoU)



Enabling role players – Opportunities

- Many enablers and supporters of the African REN community
 - Continental bodies: AU, EU, AAU, AfNOG, AfriNIC, ...
 - Governments
 - Regional and national bodies: RECs (SADC, ECOWAS, WATRA, CRASA, national regulatory authorities, ...)
 - Development partners: IDRC, PHEA, Carnegie, ACBF, SIDA, Andrew W Mellon Foundation, ...
 - Various other organisations: NSRC, IEEAF, OSI, KTH, ...
 - Private sector
 - Civil society
 - Last, but not least: the international REN community (GEANT, DANTE, Internet2, RENATER, DFN, GARR, ...)
 - And many others



THANK YOU !

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