Research and Education Networking in Africa - Status

Future Internet Summit 2014

KR - Africa session

Seoul, 15 October 2014
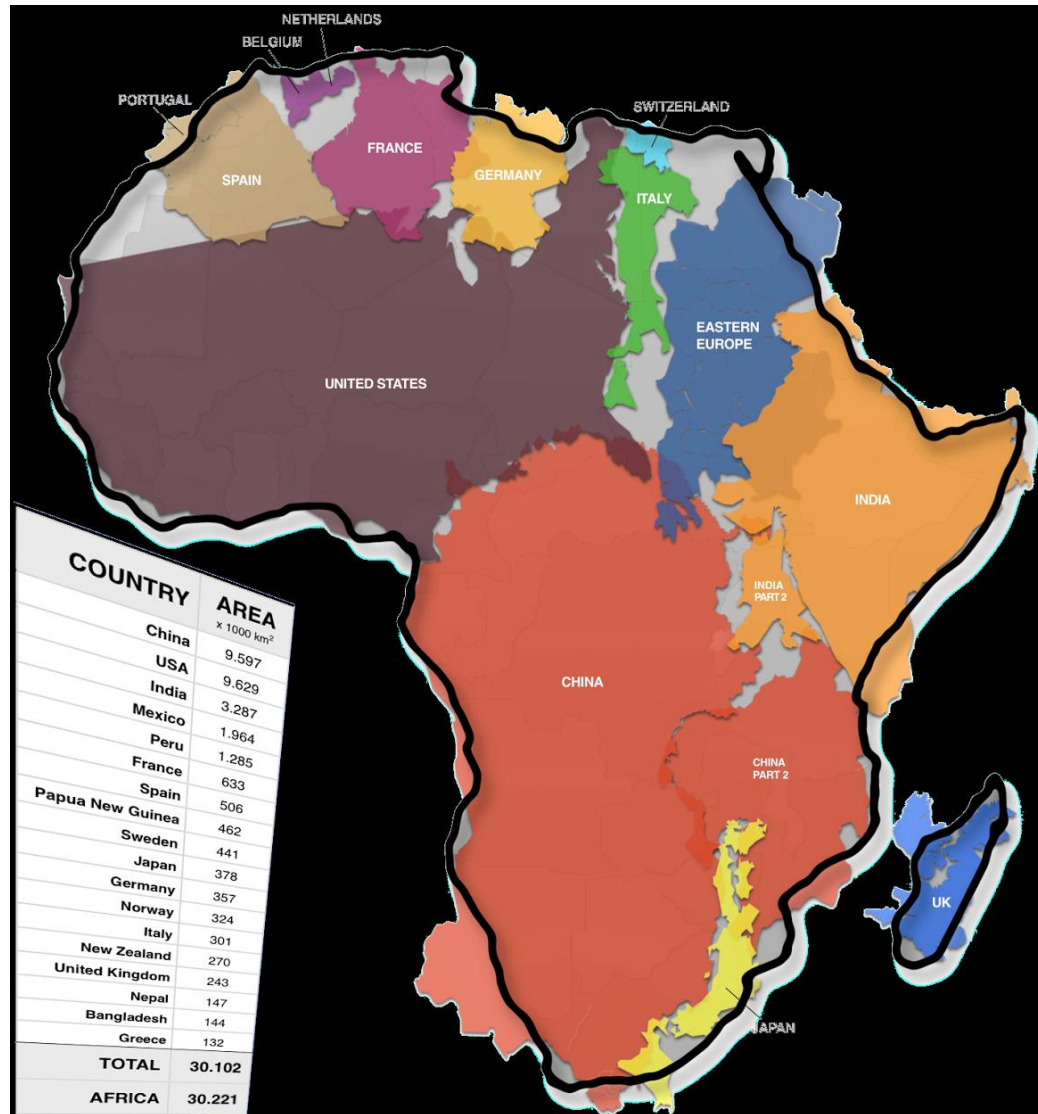
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Agenda

- Some facts on Africa
- Role of higher education and research
- NRENs in Africa – brief history
- WACREN in a nutshell
    - Network topology
    - Recent developments
    - Status of NRENs in the region
    - WACREN activities
    - Current and short-term focus
    - Partnerships
- AfREN

Africa is not ... a country!

Some facts on Africa (1)

- Population: ~1,000M (15% of world population)
- Telephone subscriptions: 1.3% (mobile: 69%)
  - World average: 16% (95.5%); Europe: 39% (125%)
- Internet penetration: 19%
  - World average: 40%; Europe: 75%
- Mobile broadband subscriptions: 19%
  - World average: 32%; Europe: 64%
- 7% HigherEd gross enrollment rate (world average: 29%)
  - Huge demand, but access challenges
  - Massification
  - High student/faculty ratio: 40:1 and more
  - Brain drain

Role of HE, research and ICT

- It is proved and generally accepted that HE critical for socio-economic development

- Sector neglected for more than 20 years in SSA
    - IMF and WB-imposed policies
    - Emphasis on basic and secondary education

- Results:
    - Inadequate infrastructure
    - Massification
    - High Students/Staff ratio
    - Aging faculty
    - Inappropriate qualification of large segment of faculty

- Recent shift in policies
    - Important role of ICTs to achieve objectives (access, quality, …)

Role of HE, research and ICT (cont'd)

- Access to adequate infrastructure crucial to be part of the cyberspace
- However: bandwidth in Africa still most expensive in the world (up to US$3,000 per Mbps/month and more)
  - But improving in some countries ($200 or less)
- Role of IT infrastructure, especially RENs, in African context:
  - Sharing of scarce resources
  - Improvement of access through blended learning
  - Reduction of researchers isolation and creation of critical masses
  - Participation in global research projects
  - Facilitation of contribution of the African Diaspora

African RENs – Brief history

- First RENs in the continent emerged in Eastern and Southern Africa
  - The UbuntuNet Alliance established in 2005, with 5 founding members
  - Currently 14 member NRENs
- West and Central African Research and Education Network (WACREN) established in 2010; more on WACREN later in this presentation
- Arab States Research and Education Network (ASREN)
  - Established in 2012
  - Covers North Africa as well as other countries in the Middle East
  - Current members include 13 NRENs in the ASREN region
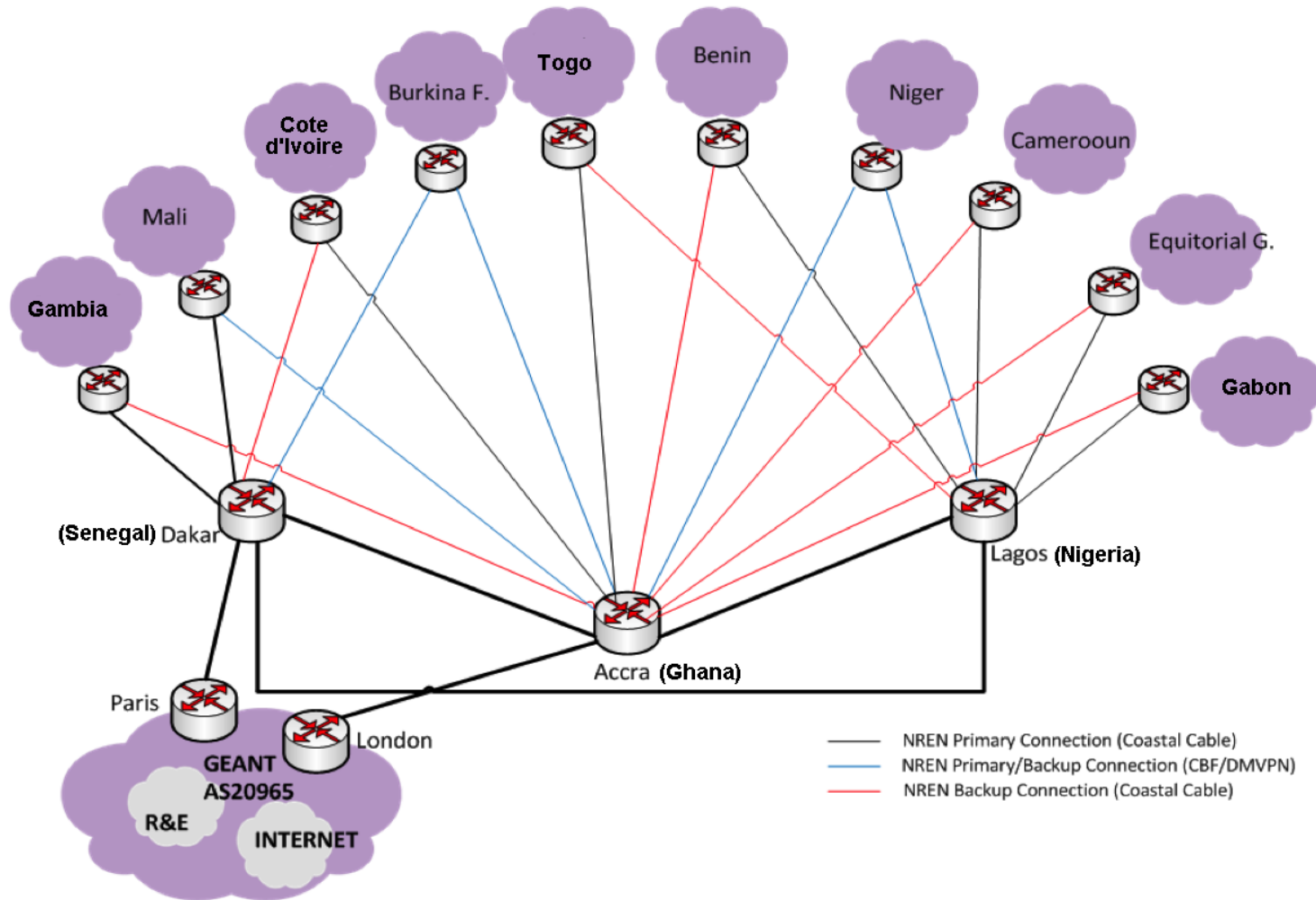
WACREN in a nutshell

- Incorporated in 2010 after long process facilitated by the AAU (from 2006)
- Currently 8 formally established NRENs
  - GARNET – Ghana
  - snRER – Senegal
  - MaliREN – Mali
  - Niger-REN – Niger
  - GabonREN – Gabon
  - NgREN – Nigeria
  - TogoRER – Togo
  - RerBenin – Benin
- NREN embryo in Cameroon
- Recent initiatives in Chad, Guinea and Cape Verde
- Potential NREN membership: 22

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WACREN in a nutshell (cont'd)

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Network topology

NREN Primary Connection (Coastal Cable)
NREN Primary/Backup Connection (CBF/DMVPN)
NREN Backup Connection (Coastal Cable)

Network topology (cont'd)

- Core + Access
  - 10G+ Core
  - 1G+ Access
- 3 main hubs: Accra, Dakar and Lagos (+ Douala/Libreville)
- Redundant links from hubs to NRENs
- At least 2 intl. links: to Paris and London
- Multiple Submarine Cable Access
- Long term IRU's where possible

Recent developments

- 1st AGM in July 2013 in Abuja, Nigeria
    - New Chair of the Board of Directors
    - Appointment of CEO (effective 1 October 2013)
    - Search process for other Board members
- New Board of Directors in September 2013
- 1st Annual Conference and 2nd AGM in March 2014 in Lomé, Togo
    - Good participation from community, friends and partners
    - New membership structure
    - Fundraising campaign
- First regional training workshop: Sep 2014 in Accra
- Some countries very close to having their NRENs operational
    - Expectation that at least 2-3 NRENs will be operational by the end of 2014

Status of NRENs in the region

- RITER (Côte d'Ivoire)
  - 3 universities interconnected
  - 2 in the process of being connected soon
  - 10 lecture halls equipped for videoconferencing
- GARNET (Ghana)
  - The 17 members agreed on network topology
  - Contract with operator signed
  - Implementation by end of 2014
- Niger-REN (Niger)
  - Interconnection of 9 institutions to start soon
  - Collaboration with SokREN (Nigerian REN cluster)

Status of NRENs in the region (cont'd)

- **NgREN (Nigeria)**
  - About 30 institutions connected to NOC
  - Commissioned in July 2014
  - 102 others universities and 17 teaching hospitals to be connected within the next year

- **snRER (Senegal)**
  - Interconnection of the 5 public universities completed
  - Videoconferencing equipment already installed in all these institutions
  - International connectivity in procurement process

- **TogoRER (Togo)**
  - 5 member institutions
  - Objective: NREN to be operational by end of 2014

WACREN activities

- AfricaConnect (capacity building component)
- eI4Africa
    - 3rd thematic workshop hosted by WACREN in Lagos in March 2014

- Participation in JRES 2013 in December 2013

- WACREN Statutory meetings
    - Board meeting on 8 October 2013 (online);
    - Board meeting on 12 March 2014 in Lomé
    - WACREN 2014 Conference on 13-14 March 2014 in Lomé
    - Annual Conference and Annual Conference and AGM
    - 3rd Board meeting on 8 October 2014

- Regional capacity building workshop in Accra (Sep 2014)

- Participation in this Forum

WACREN activities (cont'd)

- **Planned activities:**
  - Workshop on eInfrastructure for R&E in collaboration with UbuntuNet Alliance and DANTE during IST Africa: Mauritius, **6-9 May 2014**
  - 4th thematic workshop of the eI4Africa Project: Dar es Salaam, **3 June 2014**
  - AIS 2014 in Djibouti: **2-6 June 2014** (with AfREN scheduled on **2 June**)
  - Training workshop in collaboration with NSRC: **15-19 September 2014**
  - Training workshop in collaboration with RENATER/IRD/CIRAD: **November/December 2014**
  - Next WACREN Annual Conference and AGM: **11-13 March 2015**

Current and short-term focus

- One-year project under current phase of AfricaConnect Project
    - Started in May 2014
- Conclusion of negotiations with operators and provision of affordable connectivity and services to members
- Capacity building
    - Training needs assessment
    - Organization of other training workshops
- Provision of services to members
- Readiness for second phase of AfricaConnect
    - NREN readiness
    - Securing counter-part funding

Partnerships

- **MoUs signed with:**
  - RENATER
  - UbuntuNet Alliance
  - ASREN
  - Other MoUs in preparation

- **Interconnection agreement with GEANT underway**
  - Router already installed in London (Cisco/ISOC donation)

- **Ready for cross-connect with UbuntuNet Alliance and ASREN**

- **Partnership with NSRC on capacity building activities**

- **WACREN open to other partnerships**
  - Including interconnection with APAN

AfREN

- Platform for experience sharing and collaboration on research and education networking

- Organized by the African REN community in collaboration with AfNOG (African Network Operators Group) and AfriNIC (the regional Internet registry for Africa)

- First edition in 2007 in Abuja, Nigeria

- Strong support from the academic community, especially through the Association of African Universities (AAU)

- Integral part of the AfNOG/AfriNIC annual conferences, now rebranded as Africa Internet Summit

- Good participation from Korea at the last edition in Djibouti (Prof. Dae Young Kim, Prof. YoungHee Lee and Prof. Taekyoung Kwon)

  - Interest in AfREN from Korea started with earlier participations spearheaded by Prof. Kilnam Chon.

Keeping in touch with WACREN …

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THANK YOU
for the kind invitation to the FI Summit 2014

SEE YOU

at WACREN 2015 in Abuja (11-13 March 2015)
and
at AfREN 2015 in Tunis (1 June 2015)

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