

# Africa Education Summit

## *Research and Education Connectivity - Unlocking the Intellectual Potential of Africa based Researchers*

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## Some Headlines..

- *In 2008, African Universities in the UbuntuNet membership region were spending more than \$1.2million per month on less than 700Mbps – this would be 60GBps elsewhere*
- *Total bandwidth to the same members is now about 12Gbps and growing (10Gbps to South Africa) within the same total cost envelope*
- *The challenge is not lack funds – it is cost!*

# Our thesis..

- *“Improved and affordable connectivity will enable African researchers to produce proportionate intellectual output and generate a proportionate amount of intellectual property goods”*
- *Our objective: to end the intellectual isolation of academics and researchers in Africa*
- *Creation of a connected environment will attract researchers to Africa*

# From Ubuntu to UbuntuNet Alliance..

- **Ubuntu or Obuntu:** - “I am because we are”
- ...Ubuntu is not just a philosophy – it is a way of life that defines the relationship of the individual to the community and vice versa ...
- ... It recognises that individual good arises out of the community good and vice versa...
- ...It is about the *responsibility* of caring for the general welfare, supporting others.
- Ubuntu means “the essence of humanity”; Umuntu means “a human being”
- Hence UbuntuNet Alliance – an organisation owned by the National Research and Education Networks in Eastern and Southern Africa

# National Research and Education Networks

- **Serve data communication needs of higher institutions of learning, and sometimes lower levels;**
- **Two layers: the infrastructure layer; and the human layer where content sharing and collaboration occur;**
- **Enable shared applications like e-learning platforms; management information systems; i-labs; video-conference platforms; grid-computing; etc**
- **Enable collaboration in teaching, research, and administration;**
- **Enable advanced applications, and access to high capacity on demand that the private sector cannot handle;**

# Our Programme: Consolidating Research and Education Networking in Africa - **CORENA**

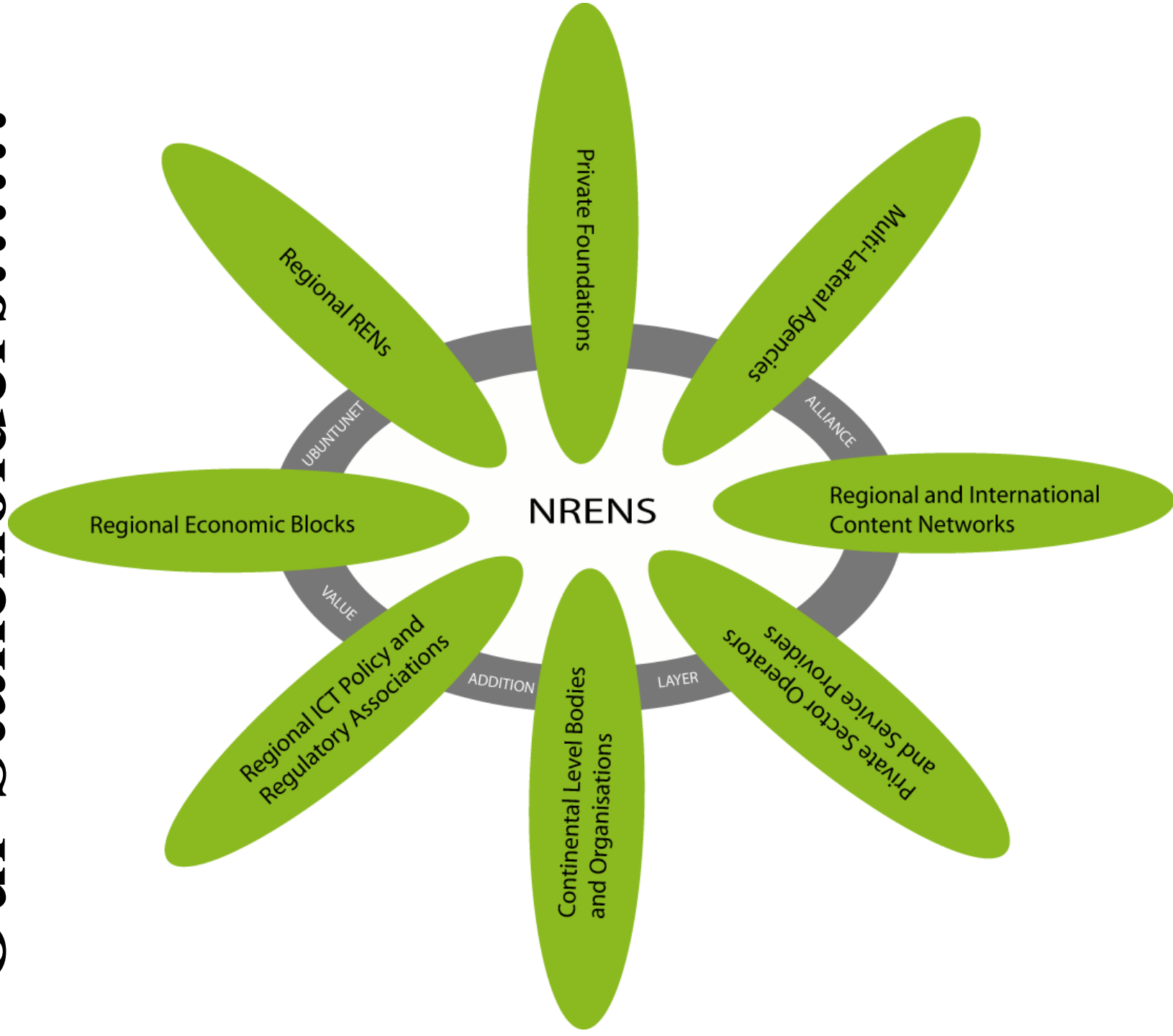
- *Overall goal : Enable an environment... African Education and Research Institutions can exploit their full potential.. contributing to national and international human development...increasing contribution to, and share in intellectual property output... effective collaboration.*
- *Principle Objective: Integration of African institutions into the global research and education community through provision of intra-African connectivity and enabling access to sufficient and affordable bandwidth.*

# Our Role....

- **Create awareness and stimulate/support growth of NRENs**
- **Create a human network of experience and expertise for mutual support and benefit**
- **Engage and enable content networks**
- **Engage policymakers and regulators to create conducive environments**
- **Engage external expertise (other RENs) and development partners**
- **Roll out and operate regional infrastructure**

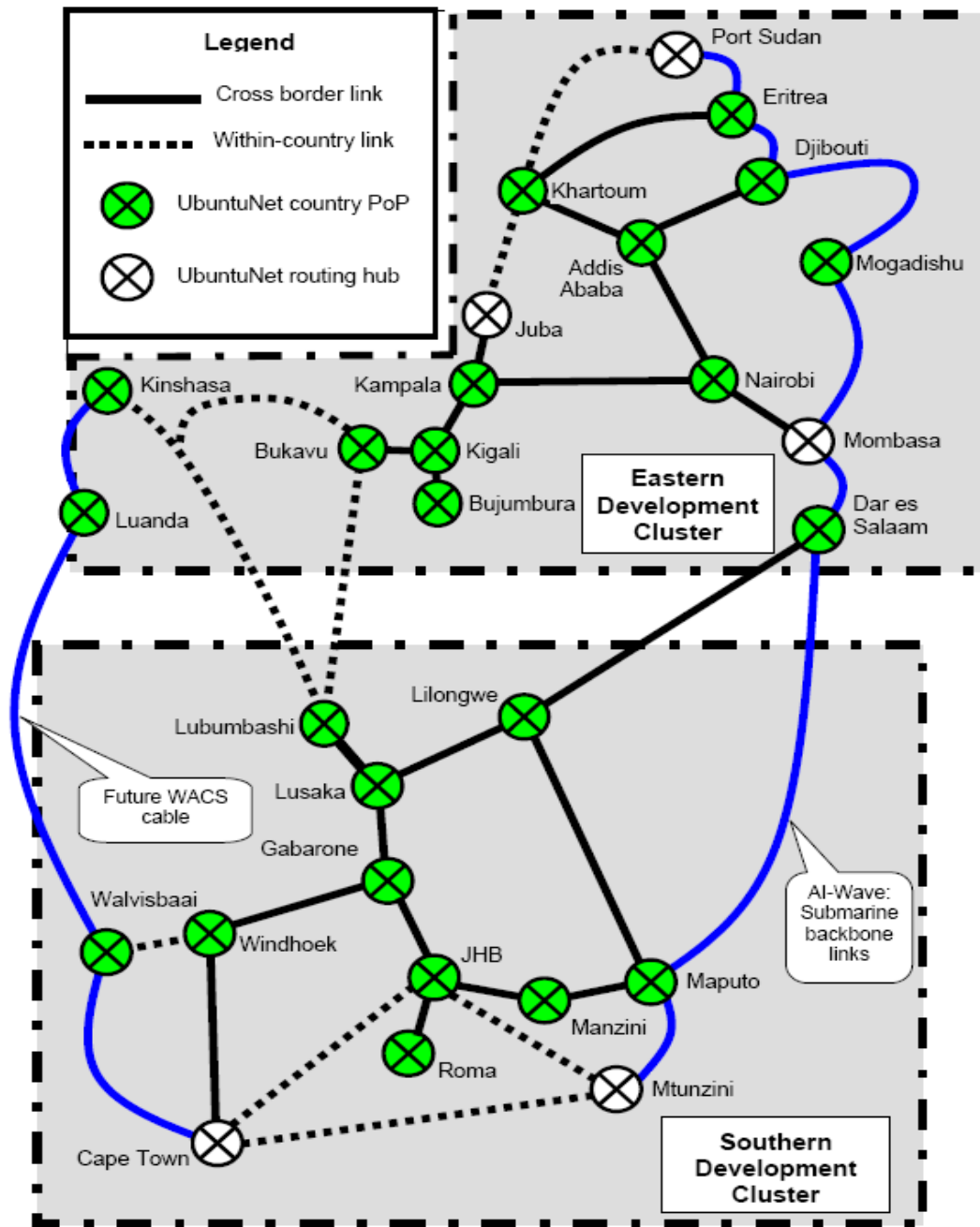


# Our Stakeholders.....



# Our Backbone Vision....

Future UbuntuNet Backbone as envisaged on 1 Nov 2008



# **African NRENs Need Broadband to...**

- Eliminate the intellectual isolation that sees researchers cut off from their peers and diverted to purely money making ventures...**
- Enable access to online resources that would improve the effectiveness and efficiency of research and learning, and therefore address the huge Intellectual Property deficit in African countries;**
- Create research synergy through regional and international content/research networks;**
- Create intellectual havens that could reverse the flow of the brain drain;**
- Reach out to schools at all levels, libraries, hospitals...**

# **Broadband needs African NRENs to..**

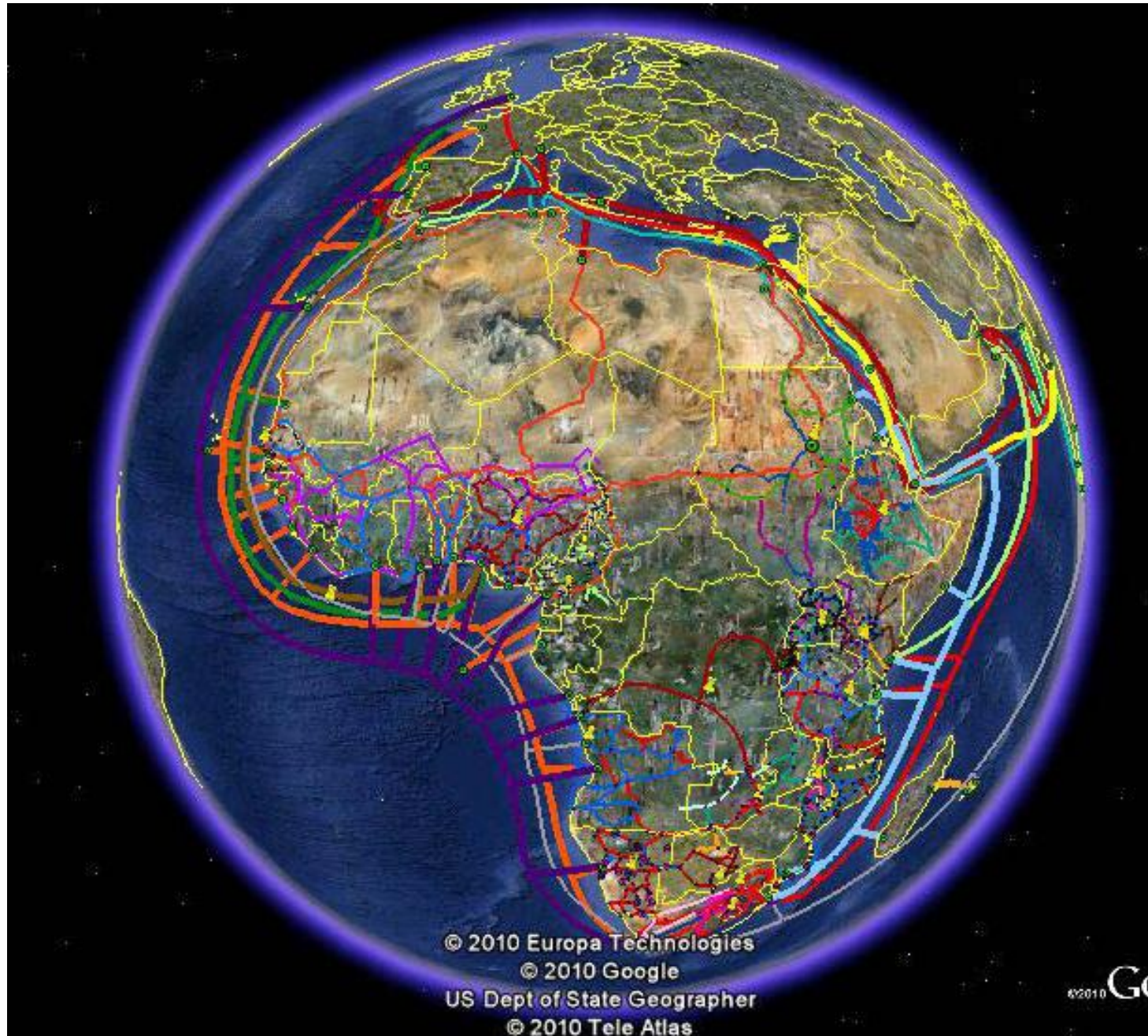
- Stimulate demand by ensuring that people entering the job-market at all levels are internet ready and thirsty for connectivity;**
- Drive the cutting edge of research and applications that will lead to advanced industrial parks associated with academic and research institutions;**
- Create an environment that will develop the human resource with the capacity to assure the availability and security of broadband ICT resources as Africa transforms**

# Some Major Opportunities

- **Growing investment in higher education**
- **More competitive access = cheaper bandwidth:**
  - More private sector and utility fiber on the market
  - Public investment into national fiber backbones
  - SEACOM, TEAMS, EASSy, WACS, ..
- **Increasing intra/extra research linkages among African and non-African universities**
- **Prices down typically to 20% or less of typical 2009 cost of \$3000per Mbps per month: releases money already in budgets to REN activities**



# Fibre to and Within Africa

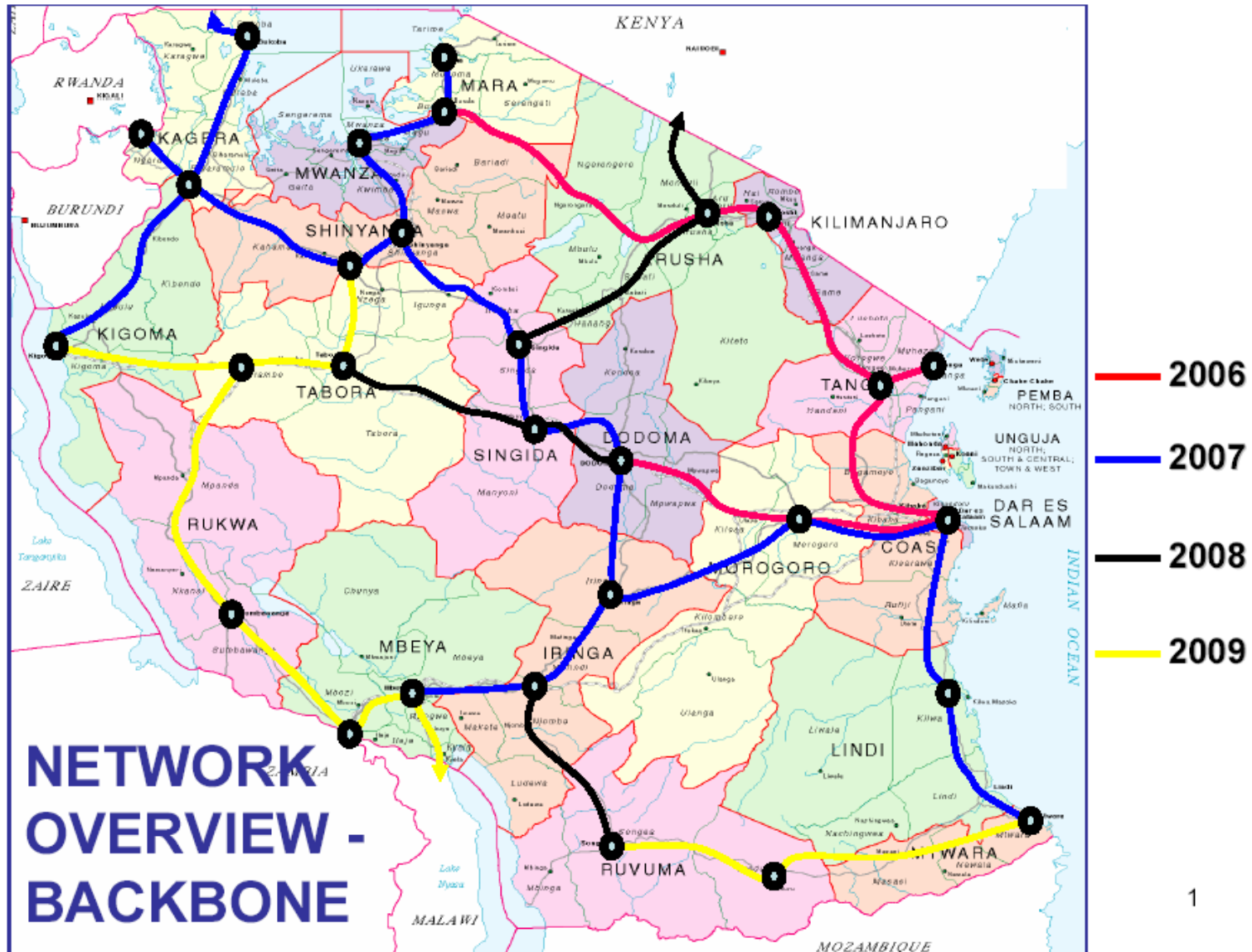


## OPTICAL FIBER NETWORKS FROM DIFFERENT OPERATORS SUPERIMPOSED ON KENET NETWORK



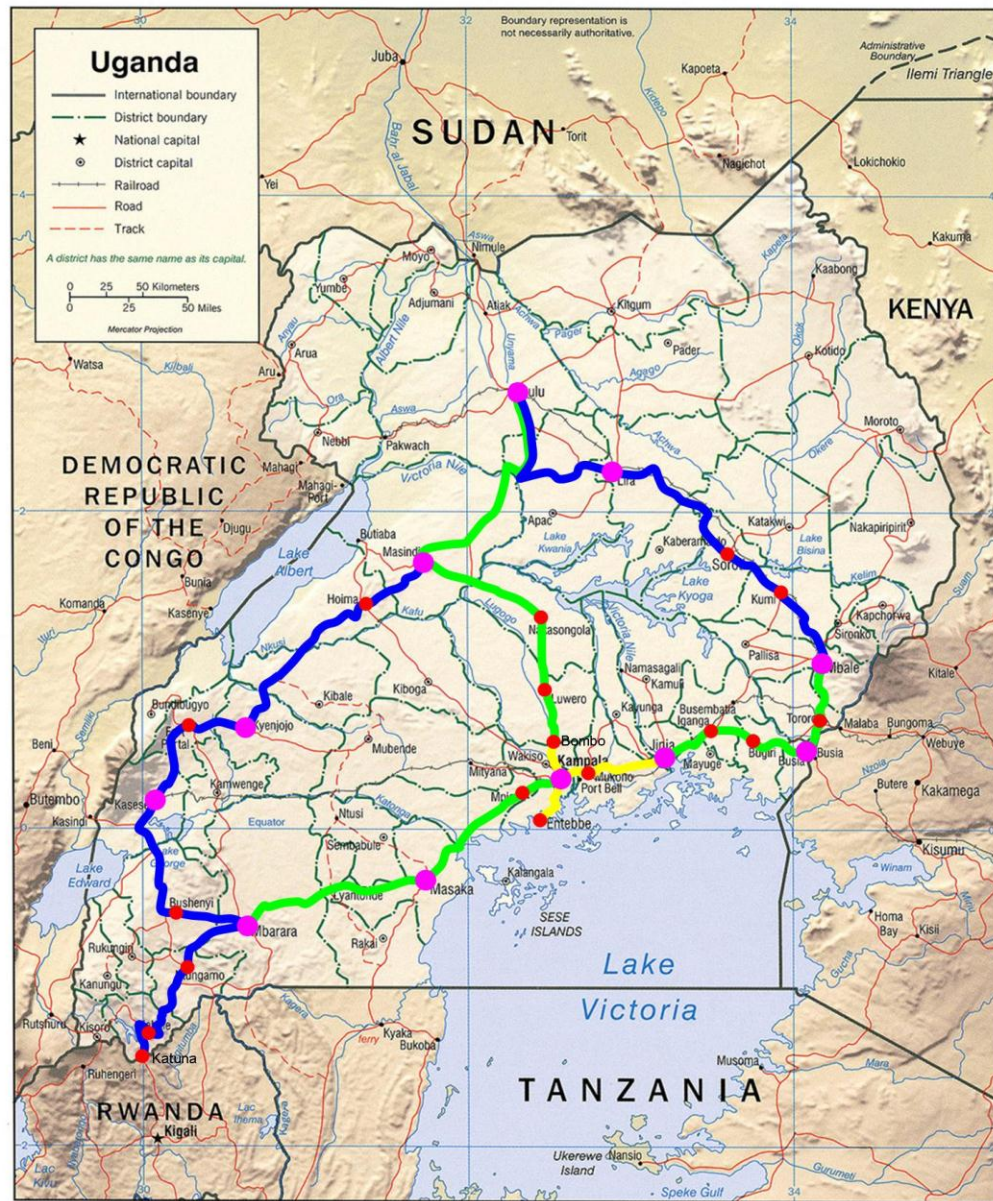


# Tanzania National Information Communication and Technology Broadband Backbone (NICTBB)







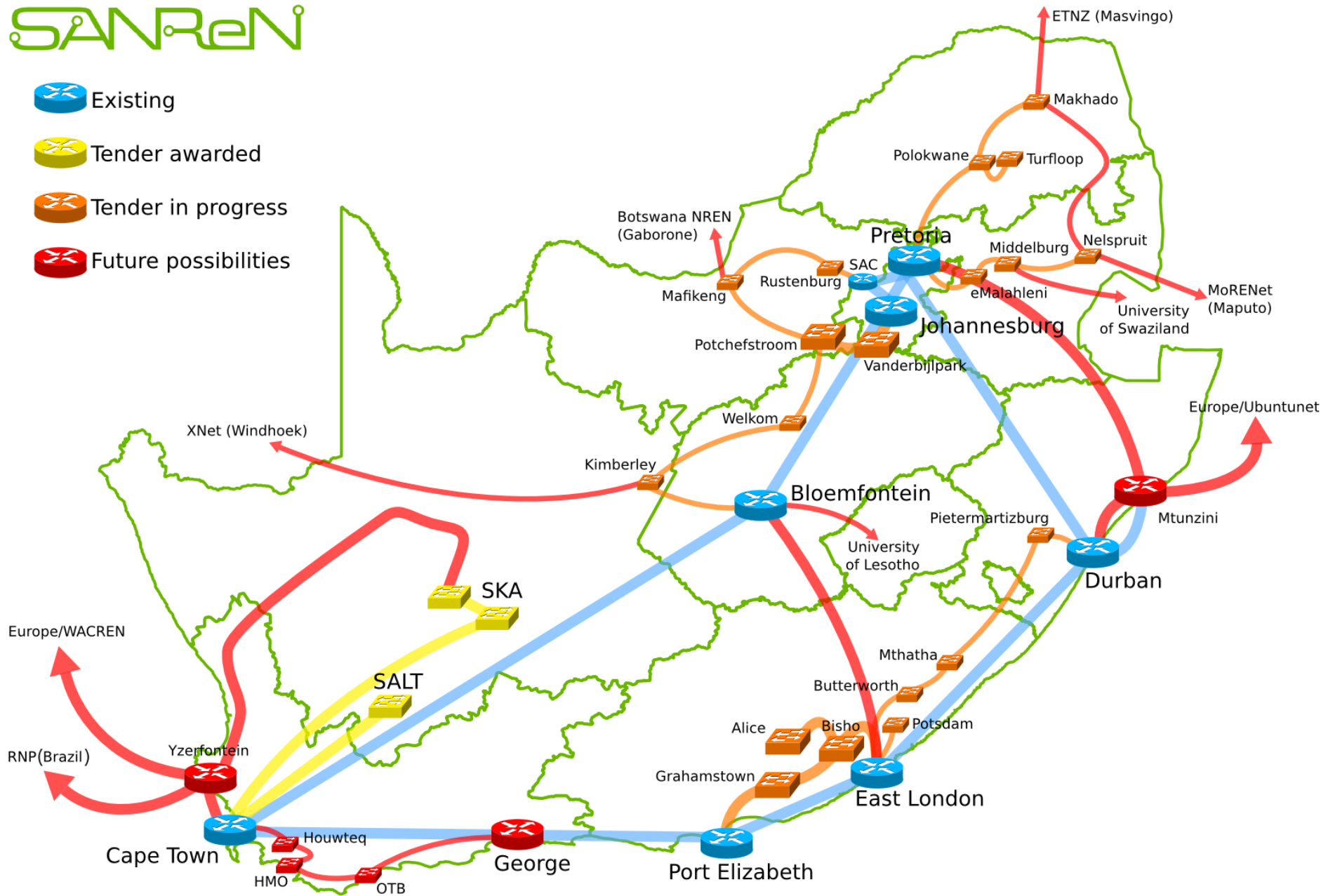


# Uganda National Fibre Backbone (Operators' fiber not shown)



# SANReN

-  Existing
-  Tender awarded
-  Tender in progress
-  Future possibilities

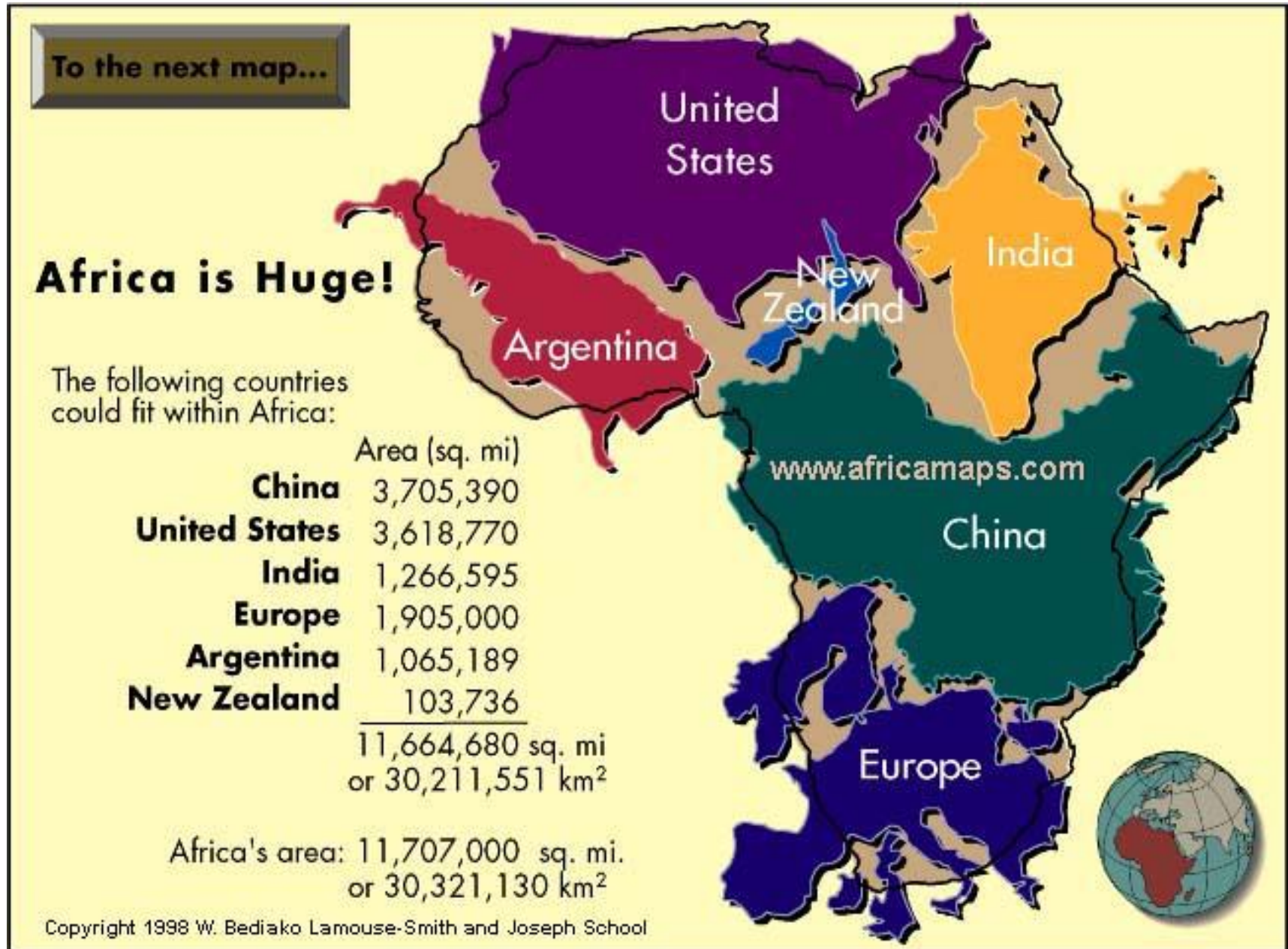


# Challenges we are addressing

- **Technical and Managerial Capacity a cross-cutting challenge**
- **NRENs still financially under-resourced (all inherently rich because of huge direct bandwidth spends)**
- **Continuing individual efforts at national level in some cases fragments the business case**
- **Working across 23 countries: differences in policy, law, regulation create the challenge of enabling cross-border and transit traffic**
- **Still – not enough fibre; prices too high**

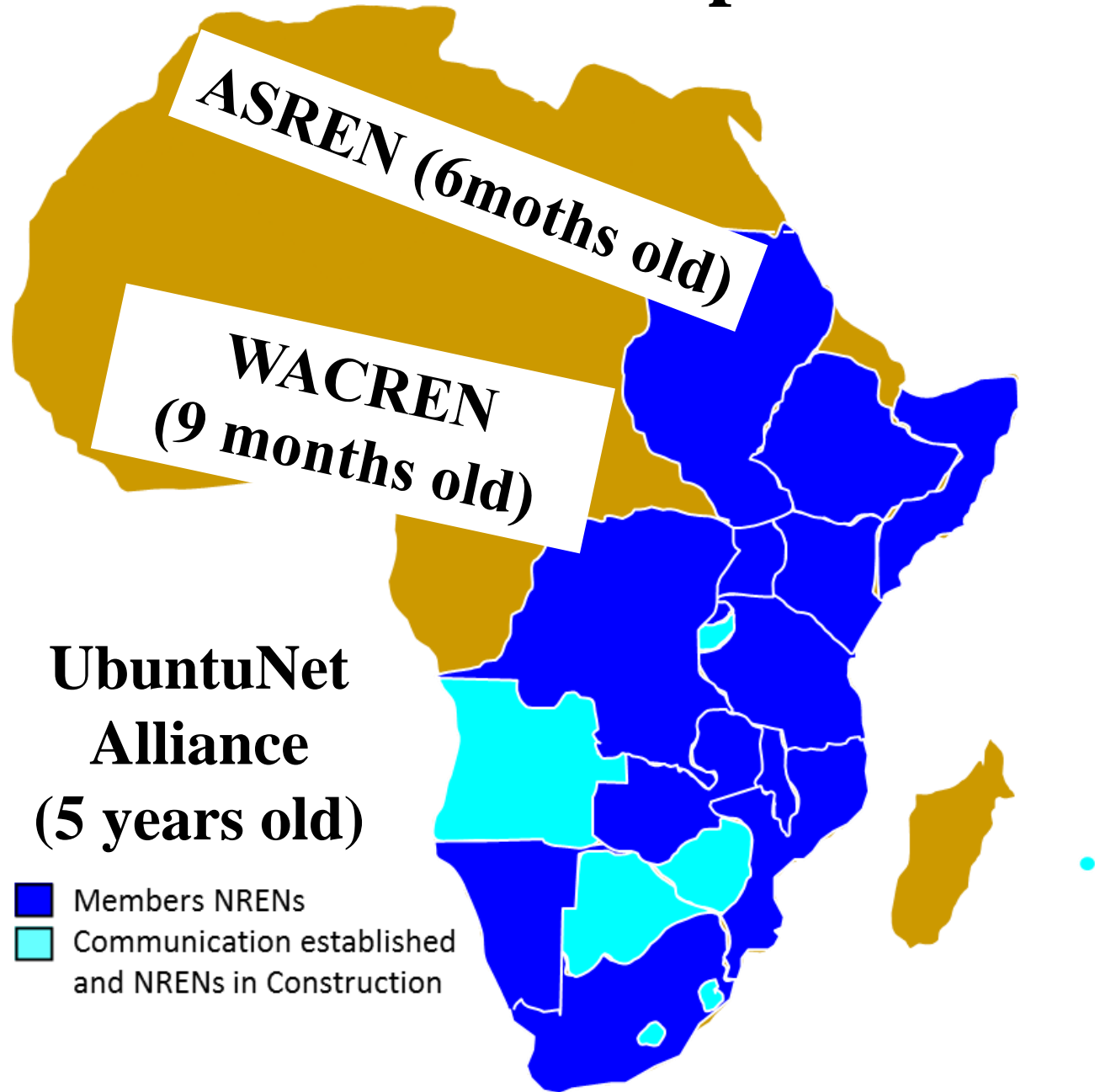


# The challenge of Africa's size is often forgotten...



# Alliance Membership Status

13 Full member countries



# What is Happening among NRENs? (1)

- ***Sudan***: *International connectivity (155Mbps) and staff costs supported by government;*
- ***Ethiopia***: *Extensive national backbone connecting universities via fiber and international connectivity (all government)*
- ***Somalia***: *Universities setting up an NREN; support from Sweden*
- ***Kenya***: *\$20m from government for connecting institutions; capacity on national backbone; 760 Mbps International Bandwidth*

## What is Happening among NRENs? (2)

- **Uganda:** *Dark fiber pair on national backbone; USAID funded equipment ordered to light backbone and first batch delivered; Also working with IEEAF through a PPP arrangement for external connectivity;*
- **DRC:** *Planning to connect through WACS in Kinshasha;*
- **Rwanda:** *Gigabit capacity on national fiber; 150Mbps International Bandwidth. Procedural holdups in activating capacity.*

# What is Happening among NRENs? (3)

- **Tanzania:** *Extensive national fiber, also connecting to borders; 150Mbps external connectivity to Alliance router;*
- **Zambia:** *NUFFIC intervention of €2.25m to support NREN infra. and capacity development.*
- **Malawi:** *Still fighting the challenges of limited connectivity and high cost with only 12Mbps.*
- **Mozambique:** *benefitting from WB funding through government for local and international connectivity; project commencing.*



# What is Happening among NRENs? (4)

- **Namibia:** *Low cost capacity on Telecom operated national backbone; working with TENET,*
- **South Africa:** *10Gb government funded R&E Backbone and 10Gb International bandwidth*
- **UbuntuNet Alliance** *has worked with DANTE, the contractor for AfricaConnect (regional network), to develop all pre-contract documentation*
- **UbuntuNet Alliance** *working to bring content networks to the center*

# Global Reach from Three Year Ago....

*UbuntuNet Alliance link to GÉANT2 enables faster collaboration for researchers and students in Sub-Saharan Africa*

**31 January 2008, Brussels, Belgium:** African research capacity is to be boosted through a high speed network link connecting the UbuntuNet Alliance to the international research community via the GÉANT2 network. The connection between the UbuntuNet Alliance's network hub in London and the GÉANT2 network enables researchers and scholars in Sub-Saharan African universities and research institutions to share information and data and to collaborate through a 1 Gbp/s link with their peers in Europe and the rest of the world.

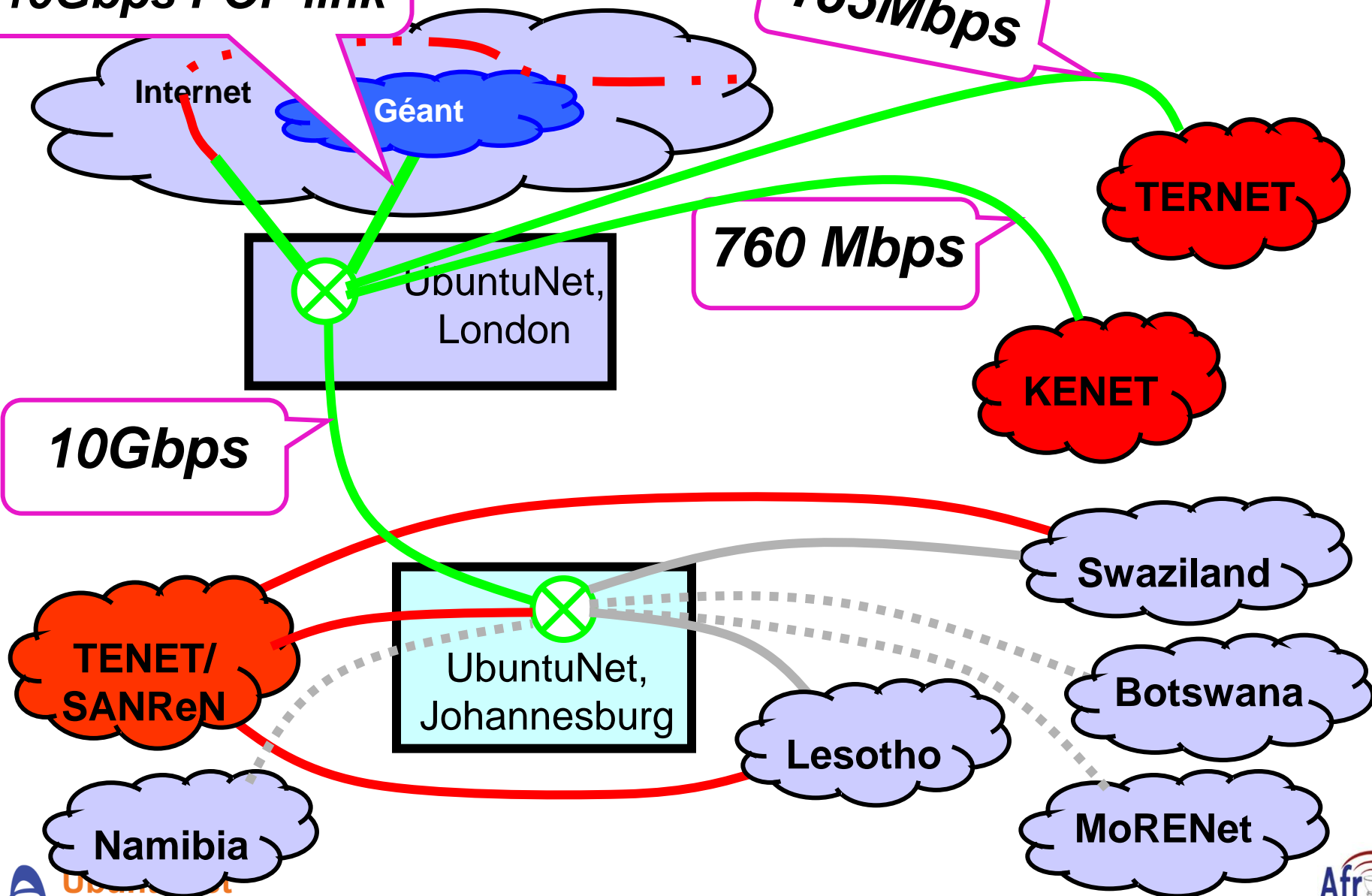
# .....To now: Current Operations

20Gbps; inc. a  
10Gbps POP link

155Mbps

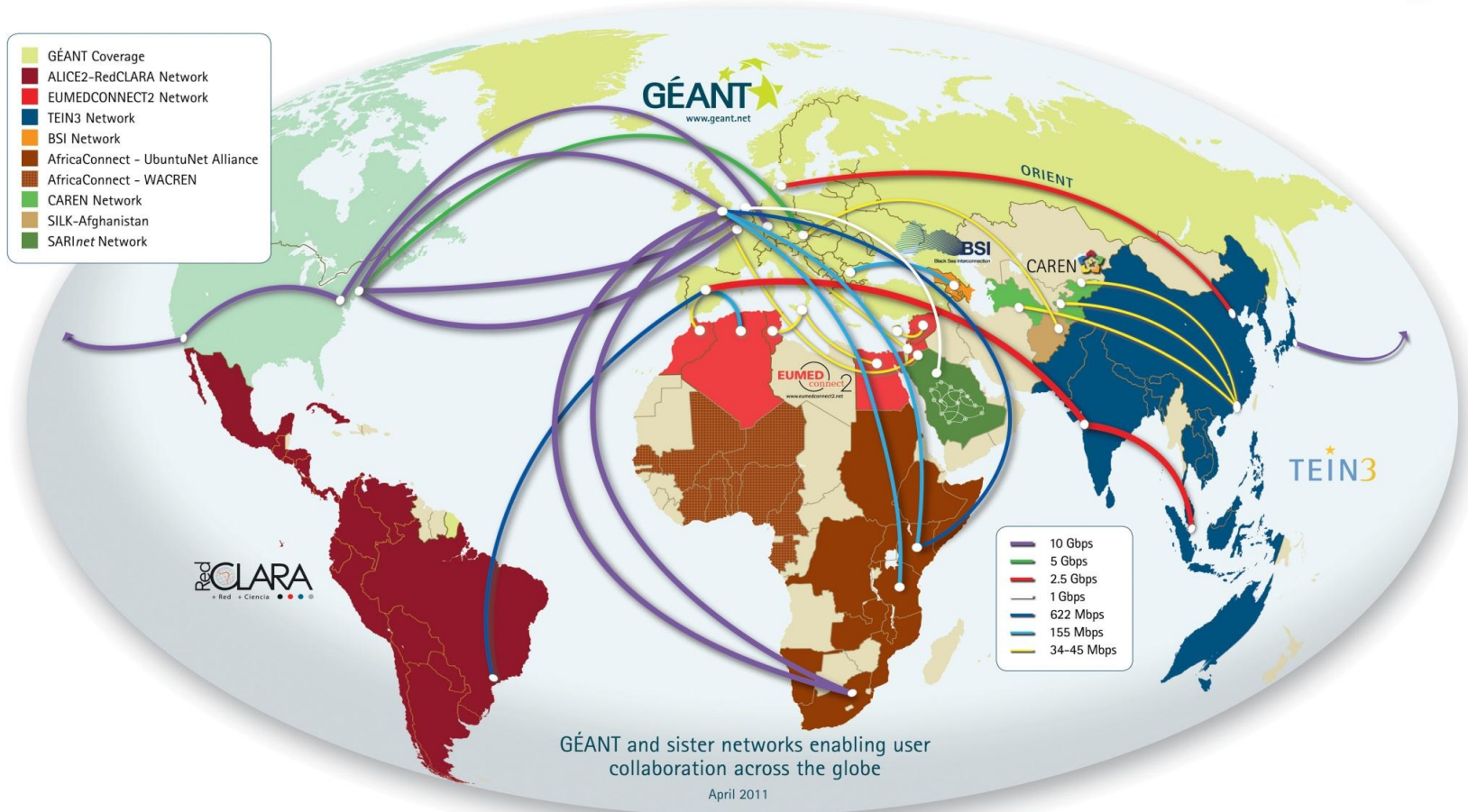
760 Mbps

10Gbps



# Connecting to the World through GÉANT

## GÉANT At the Heart of Global Research Networking



# AfricaConnect

[www.africconnect.eu](http://www.africconnect.eu)

# Overview

- 4 year project divided into Planning/ Procurement Phase and Operational Phase
  - Planning and Procurement (up to 12 months)
  - Operational Phase (months 13-48)
- Budget of 14.8 M Euro (80% EUC, 20% from AfricaConnect beneficiary partners: ***NRENs need support of their governments to raise this***)
- Location is within the Ubutunet Alliance member countries; extends to WACREN for capacity building activities

# Phase A: Planning and Procurement

- **Procurement of the network connectivity network equipment;**
- **Design of a cost-effective technical solution for the network based on offers received;**
- **Development of Cost-sharing model;**
- **Confirmation of service requirements and subscriptions with UbuntuNet Alliance**
- **Contract awards to suppliers;**
- **Start of development of a sustainability plan**

# Phase B: Operational Phase (1)

- **Network Operations:** Implement and test network prior to operational service; set up Network management and operations (in-house);
- **User support:** Support to collaborative user communities and the uptake of the use of ICT applications by the research and education community.
- **Promotion:** of the use of the network to the end-users and to the international stakeholder community



# **Phase B: Operational Phase (2)**

- **Training and support activities, including capacity building for the consolidation of the NRENs and training local staff in the effective engineering, management and operation of the network.**
- **Increasing political dialogue to raise the political and financial support necessary for a successful and sustainable network, including expansion to cover more countries**

# AfricaConnect Progress Todate

- **Feasibility study showed the Alliance Region Ready to benefit; main beneficiary**
- **Contract between DG AidCO and DANTE signed during IST-Africa 2011 (11 – 13 May, Gaborone) (The UbuntuNet Alliance is an implementing partner)**
- **DANTE and UbuntuNet Alliance have agreed all detailed work plans and the budget**
- **Implementation has started – ready to connect NRENs will get priority**

# Governments can Unlock Broadband Access for NRENs in Africa...

- Ensure regulatory environments that permit NRENs to own or get access to broadband infrastructure at globally competitive prices;
- Removing the cross-border barriers: African NRENs are exchanging traffic outside Africa!
- Provide capacity (preferably dark fibre) on the national fibre backbones that have rolled out;
- Governments to support the growth of NRENs while leaving them to operate independently;
- **How? A high level forum of Ministers of ICT and regulators to agree and implement these positions;**
- *NRENs will then do the rest.*

# The Future is Bright!

- “We know that we have it in ourselves as Africans, to change all this [*the challenges we face*]. We must assert our will to do so. We must say there is no obstacle big enough to stop us from bringing about an African renaissance.”

– *Nelson Mandela*

- *Appreciation: IDRC; PHEA; FRENIA; OSISA; EUC*

• *Thank you*