

Research and Education Networks in Africa



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Community needs

- Research and Education communities have special technological needs that are often not scalable when obtained from commercial providers... its about sharing
 - More bandwidth because they are large communities
 - Transferring/accessing large datasets
 - Storage and Processing of data
 - General access to digital resources
 - General collaboration tools
- Today, further compounded by increasing paradigm shift in the way research is conducted
 - Multi-disciplinary teams
 - Members from different geographic locations
- With recent technological advancements, there is no turning back
 - Too much data available [...big data]
 - More storage and computing required to process [cloud computing]
 - Dedicated networks required

National Research and Education Network

- This has led to establishment of special purpose vehicles to deal with connectivity needs of the research and education institutions.
 - National Research and Education Network (NREN)
- NREN is a specialised internet service providers dedicated to the data communication needs of the research and education communities in a country.
- NRENs provide:
 - high-quality network connectivity, by interconnecting institutions to each other, to other NRENs and to the general commodity internet
 - a range of expertise and services in Trust and Identity, Security, Storage, Collaboration, etc

National Research and Education Networks

Take different legal forms ranging from public entities to community-led with varying levels of funding sources

Provide dedicated, uncongested Internet connectivity and value-added services for knowledge institutions in their country, such as: universities, research centres, and libraries

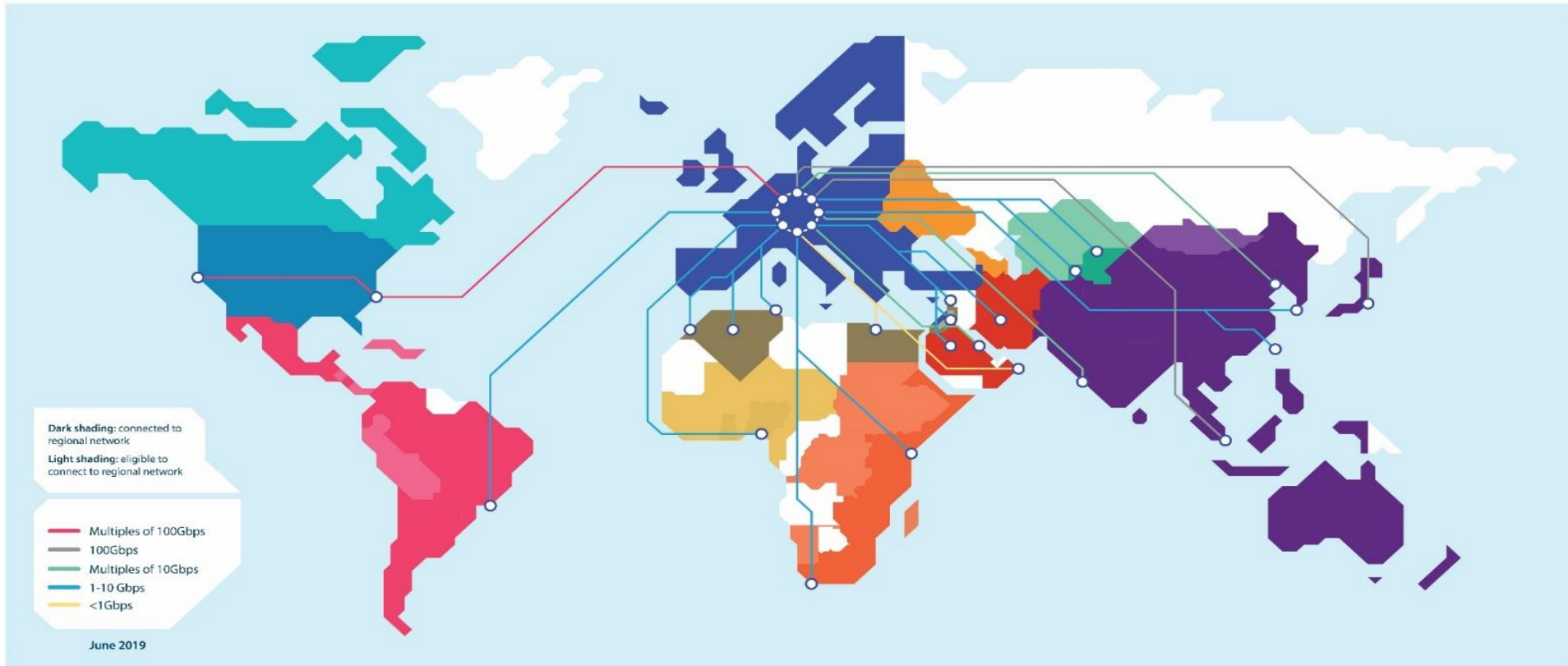
Typically connected to a regional counterpart (RRENs)

African RRENs are linked to global research and education networks across the globe via its interconnection with GÉANT

These linkages facilitate collaborative research and innovative learning worldwide

There are over 120 NRENs worldwide with 38 in Africa

AT THE HEART OF GLOBAL RESEARCH AND EDUCATION NETWORKING



Canada & USA	Latin America	Europe	North Africa & Eastern Mediterranean	West & Central Africa	Eastern & Southern Africa	Central Asia	Asia-Pacific	Other R&E Networks

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African Regional Networks and Actors

Africa's research and education networking infrastructure is coordinated by 3 Regional RENs

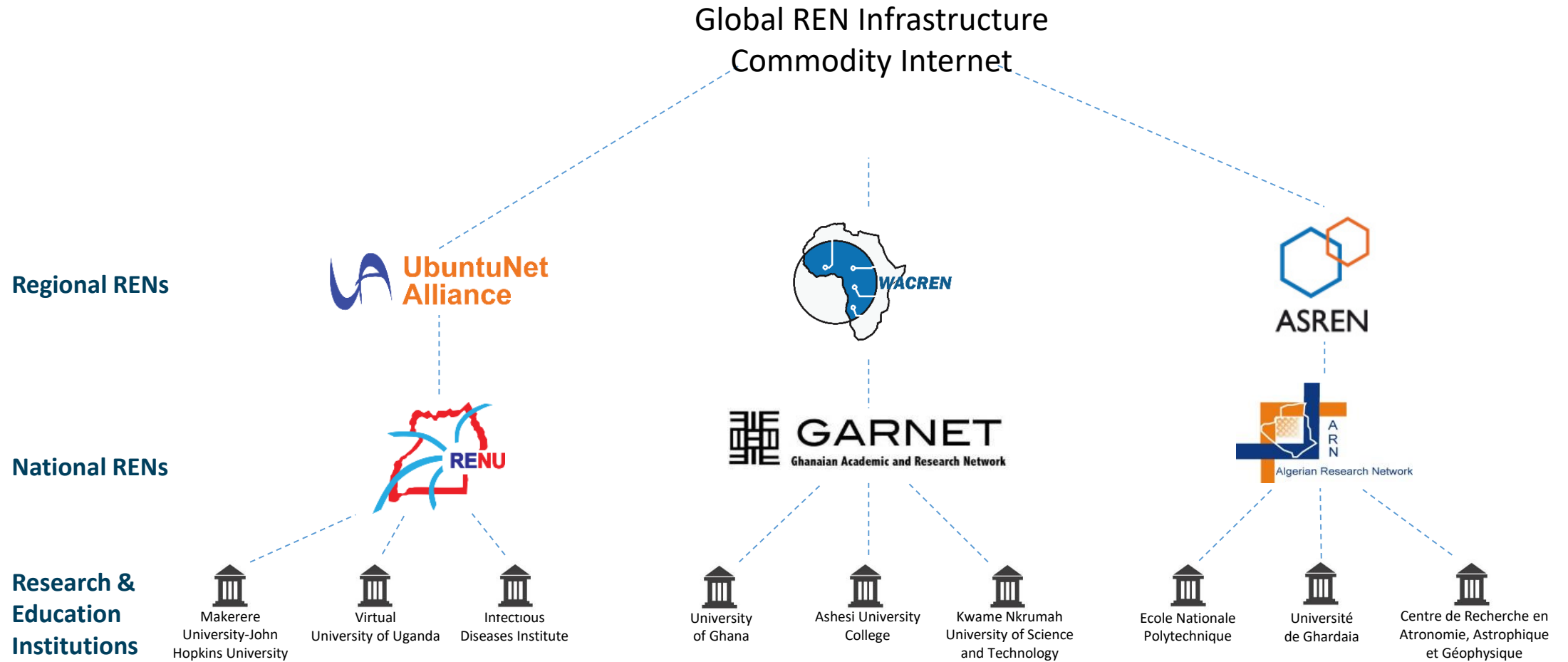


- ASREN**
 - Algeria, ARN
 - Egypt, EUN
 - Marocco, MARWAN
 - Tunisia, CCK

- WACREN**
 - Burkina Faso, FasoREN
 - Cameroon, RIC
 - Chad, TchadREN
 - Côte d'Ivoire, RITER
 - Ghana, GARNET
 - Ghana, GhREN
 - Guinea, Gn-REN
 - Mali, MaliREN
 - Niger, NigerREN
 - Nigeria, NgREN
 - Sierra Leone, SLREN
 - Togo, TogoRER
 - Liberia, LRREN

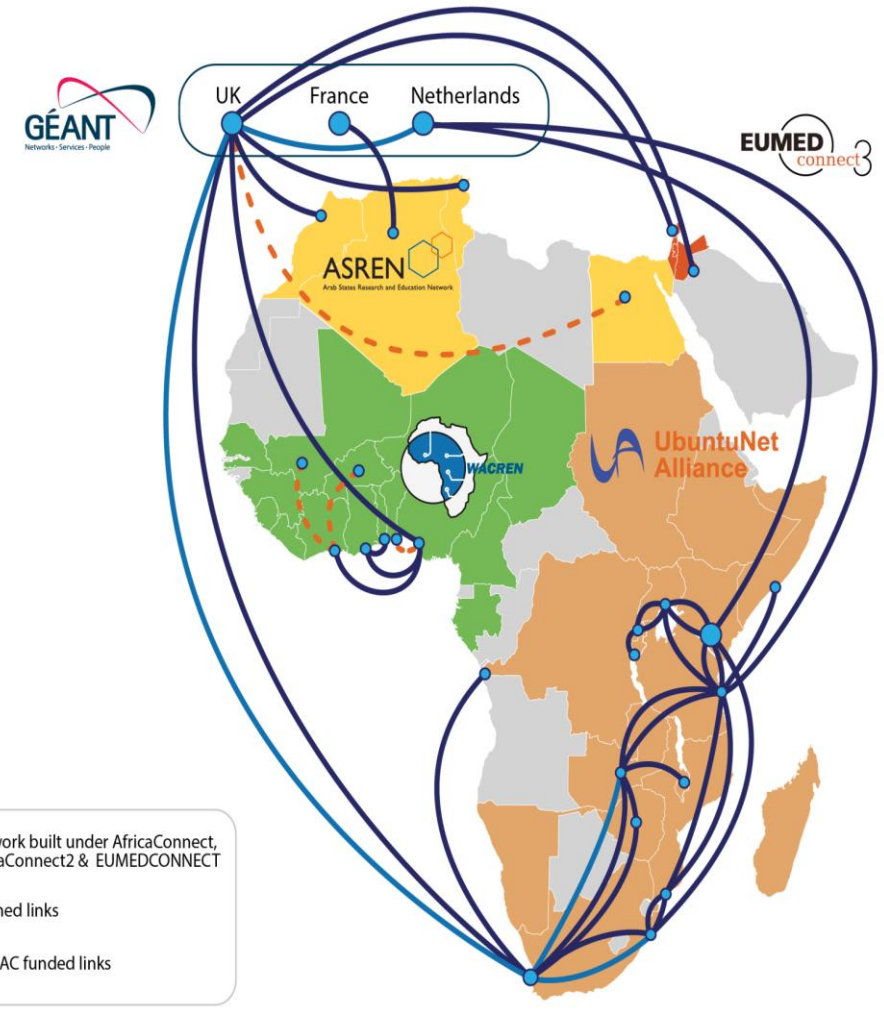
- UbuntuNet Alliance**
 - Burundi, BERNET
 - D. R. Congo, Eb@le
 - Ethiopia, EthERNet
 - Kenya, KENET
 - Madagascar, iRENALA
 - Malawi, MAREN
 - Mozambique, MoREnet
 - Namibia, Xnet
 - Rwanda, RwEdNet
 - Somalia, SomaliREN
 - South Africa, TENET
 - Sudan, SudREN
 - Tanzania, TERNET
 - Uganda, RENU
 - Zambia, ZAMREN
 - Zimbabwe, ZAMREN

How do NRENs connect students and researchers?



A Pan-African Network in the making

- 19 African NRENs are connected to a regional network out of the 38 Regional NREN members:
 - **UbuntuNet (11)**: Burundi, Kenya, Malawi, Mozambique, Rwanda, Somalia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe
 - **WACREN (4)**: Côte d'Ivoire, Ghana, Nigeria and Togo
 - **ASREN (4)**: Algeria, Egypt, Morocco and Tunisia
- All three regional networks are still under construction.
- More than 1900 African institutions can collaborate with peers across the world:
 - helping to connect remote users
 - retain local talents and fight brain drain



Connected institutions share high economies of scale



Before and After connecting to the Regional Network

NRENs	Capacity growth	Cost drop (per Mb)
ZAMREN, Zambia 2011 / 2015	X60!	-94%!
RENU, Uganda 2013 / 2017	X19!	-89%!
ARN, Algeria 2003 / 2015	X55!	-97%!
TERNET, Tanzania 2011 / 2017 – 2012 / 2017	X7!	-75%!

Source: NRENs



Engagement with end user communities

- National Research and Education Networks
- Universities are fully engaged and are leading the NREN initiatives, but Research institutions are lagging behind.
- Dedicated WP in AfricaConnect3 dealing with user communities, starting with AfriGEO and GMES
 - Ensure that all sites are connected to local NRENs
 - Deploy eduroam in all AfriGEO sites
 - Deploy Trust and Identity services in all AfriGEO sites
 - Important: Understand the needs of the community to respond properly

Thank you

Any questions?



@AC3_News



AC3-Community



africconnect3.net

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