

# **Fostering Creative and Innovative Research and Education Communities**

**Annual Report 2023**



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## List of Acronyms

AAU	Association of African Universities	KENET	Kenya Education Network
AOSP	Africa Open Science Platform	MAREN	Malawi Research and Education Network
ASREN	Arab States Research and Education Network	MIF	Malawi Identity Federation
AU	African Union	MoRENet	Mozambique Research and Education Network
AWS	Amazon Web Services	MAREN	Malawi Research and Education Network
BERNET	Burundi Research and Education Network	POP	Point of Presence
BotsREN	Botswana Research and Education Network	RENU	Research and Education Network for Uganda
CAFMoz	Federated Academic Community of Mozambique	RENU	Research and Education Network for Uganda
Eb@le	NREN of Democratic Republic of Congo	RIF	RENU Identify Federation
EC	European Commission	RwEdNet	Rwanda Education Network
eduID	Educational Identity	SAFIRE	South African Identity Federation
EthERNet	Ethiopia Research and Education Network	SIF	Somali Identity Federation
EU	European Union	SomaliREN	Somalia Research and Education Network
FAFIKI	Kenyan Identity Federation for Research and Education	SudREN	Sudanese Research and Education Network
FCDO	Foreign and Commonwealth Development Office	TENET	Tertiary Education and Research Network of South Africa
FIDERN	Federated ID for Education and Research Networking	TERNET	Tanzania Education and Research Network
GÉANT	Pan-European data network for the research and education community	UOSC	UbuntuNet Open Science Cloud
IdF	Identity Federation	WACREN	West and Central Africa Research and Education Network
IdP	Identity Provider	ZAMREN	Zambia Research and Education Network
iRENALA	Research and Education Network for Academic and Learning Activities (Madagascar)	ZIMREN	Zimbabwe Research and Education Network
IUCEA	Inter-University Council for East Africa		

## Statement from the Chairperson

Dear Members of the UbuntuNet Alliance Community,

I am pleased to bring you our Annual Report highlighting key achievements that UbuntuNet Alliance made in 2023. On my recent appointment as Chairperson of the Alliance in January 2024, I was happy to read the well-articulated five-year Strategic Plan for 2023-2027, which details the aspirations of the Alliance during this period and how to get there. This Annual Report highlights the achievements from the first year of implementation of the Strategic Plan.

In 2023, the UbuntuNet Network main backbone links were upgraded from 2.5Gbps to 10Gbps links and new points of presence were established in Gaborone and Johannesburg. Also, BotsREN (Botswana) was connected to the UbuntuNet Network at 10Gbps, the first NREN to connect at such high capacity. EthERNET (Ethiopia) shall follow suit in the 2<sup>nd</sup> quarter of 2024. We are grateful to the European Union for their continued support in enabling the Alliance and its members to continue to support quality education and research in our region.

We also made significant progress developing our Open Science programme, which saw the Alliance selected as the Southern Node for the Africa Open Science Platform, set up of UbuntuNet Open Science Cloud, and bringing online the open access repository, AfricArXiv. These initiatives have placed the Alliance on a path to be a key player in Open Science in Africa.

I invite you to read the Annual Report and learn how the Alliance continues to build a strong community of members, strengthen its organisation and governance systems, and build equitable partnerships and projects. Finally, I urge the NREN community to work together to develop and sustain research and education networks in Eastern and Southern Africa for the benefit of our students and researchers as we contribute to economic development.

**Professor Hellicy Ng'ambi**





## Statement from the CEO

Dear Members of the UbuntuNet Alliance Community,

In the past year, significant progress was made in the implementation of the Alliance's *Strategic Plan 2023-2027*. With the support of the European Union under the Africa Connect 3 programme, the upgrade and expansion of the network to UbuntuNet Network 3 neared completion. Connected NRENs whose capacities ranged from 130Mbps to 4Gbps took up higher capacities ranging from 500Mbps to 8 Gbps, accompanied by a drop of 50% to 71.5% in unit costs to NRENs compared with 2022. BotsREN, our newest member was connected at 10 Gbps. The increased capacities and lower costs shall strengthen the capacity and sustainability of our members and by extension of the Alliance. As the network upgrade and expansion is completed in 2024, we expect to upgrade Rwanda and connect Ethiopia at 10Gbps.

In 2023, the Alliance was competitively selected as the Southern Node of the Africa Open Science Platform. The AOSP seeks to convene and coordinate the interests, ideas, people, institutions and resources needed to advocate and to advance open science in and for Africa. To jump start the activities of the node, National Research Fund South Africa shall provide seed funding for four years (2024- 2028).

Finally, 2023 was a challenging year for the Alliance's finances. Despite posting surplus, the Alliance's cashflow was and continues to be severely negatively impacted by the lack of timely payments by connected NRENs of their Network O&M Contributions for the connectivity services they enjoy. I will continue to work with the NREN CEOs to ensure that their accounts are current by the end of 2024, to enable the Alliance to meet its obligations in a timely manner.

**Prof Madara Ogot**

# Corporate Information

## About Us

UbuntuNet Alliance for Research and Education Networking is a membership organisation of National and Research Education Networks (NRENs) in Eastern and Southern Africa. With 15 active members, we have the potential to grow to 26 covering all the countries in our region. Collectively, the Alliance serves as an enabler for conducting leading collaborative research and provision of high-quality higher education by providing access to the global knowledge community, global digital education and research resources, and cutting-edge applications and infrastructure. On behalf of our Members, we operate the UbuntuNet Network, a broadband fibre network interconnecting national networks of the Alliance's members to each other and connecting them to research and education networks from the rest of the world and to the general Internet.

More on UbuntuNet Alliance can be found on our website: <https://www.ubuntunet.net>

## Our Vision

A vibrant, connected and sustainable community of National Research and Education Networks.

## Our Mission

To develop and grow a thriving sustainable community of NRENs and partners within Eastern and Southern Africa, enabling and

strengthening collaboration and innovation among Research and Education Communities.

## Our Guiding Principles

The Alliance is guided by three overlapping principles: **impact**, **ability**, and **sustainability**. All our activities seek to simultaneously have significant impact, be within the Alliance's abilities together with our partners, and contribute to the sustainability of the Alliance and our members.



Figure 1: Guiding principles

## Governance Structure

UbuntuNet Alliance has a three-tier structure, comprising of the Board of Trustees, the Assembly of Members, and the Secretariat. The Chairperson of the Alliance is appointed for a 4 year-term through a process that is overseen by the Secretary General of the Association of African Universities. Prof. Stephen Simukanga completed his second term as Chairperson in September 2023. A new

Chairperson, Prof Hellicy Ngambi was appointed in January 2024.

## Board of Trustees

The Board of Trustees consists of the Chairperson, the Chief Executive Officer (CEO) and seven elected Trustees. The CEO is appointed by and is Secretary to the Board. The current Board was constituted at the 16<sup>th</sup> Annual General Meeting of Members held in Lilongwe, Malawi, in April 2022. The Trustees, whose terms of office will expire in 2025 are listed in the Table 1.

*Table 1: Members of the Board of Trustees*

Trustee	Country
Prof Hellicy C. Ngambi – Chairperson (from Jan. 2024)	Zambia
Prof. Stephen Simukanga – Chairperson (Term ended September 2023)	Zambia
Dr. Julianne Sansa-Otim – Vice Chairperson (Acted as Chairperson from September – December 2023)	Uganda
Prof. Madara Ogot – CEO	Kenya
Prof. Lourino Chemane	Mozambique
Prof. Nancy Chitera	Malawi
Prof. Luke Mumba	Zambia
Eng. Musa Musazi	Uganda
Ms. Dorcas Muthoni	Kenya
Ms. Harinaina Ravelomanantsoa	Madagascar

The Board has three Committees that help it function quickly, effectively and with agility:

- Executive Committee
- Audit and Risk Committee
- Resource Mobilisation Committee

## Bidding Farewell to The Alliance's Long-Serving Chairperson

At a colourful event during the closing plenary of the UbuntuNet Connect Conference 2023 in Kampala, Uganda, the Alliance bid farewell to its long-serving Chairperson, Prof Stephen Simukanga, who served as the 3<sup>rd</sup> Chairperson from 2017-2023. Prior to becoming chair, he served on the board between 2013 and 2015.



## Welcoming the Alliance's 4<sup>th</sup> Chairperson

Prof Hellicy Ngambi became the Alliance's 4<sup>th</sup> Chairperson, effective January 1, 2024. Prof Ngambi is the Vice Chancellor of the University of Kabwe and the founder and CEO of Mutepe RARE Solutions that advocates the principles of Responsible, Accountable, Relevant, and Ethical (RARE) leadership. Her extensive background includes significant contributions to academia including, Vice Chancellor of Mulungushi University, Zambia, and leadership roles at the University of South Africa (Unisa) and Kwame Nkrumah University.

Prof Ngambi's goals and vision for the Alliance during her tenure includes a commitment to advance the Alliance's mission of connecting, developing, and sustaining research and education networks in Eastern and Southern Africa, diversifying service offerings, promoting



self-sustainability, and aligning efforts with the African Union Agenda 2030 and Vision 2063.



## The Secretariat

The Secretariat is headed by the CEO and maintains its main office in Lilongwe, Malawi.

## Members

The Membership region of UbuntuNet Alliance covers all countries in Eastern and Southern Africa including the island nations in the west of the Indian Ocean, a region comprising of 26 countries. Membership is open to all NRENs from within this region. There are three membership categories:

- **Member NREN:** NRENs who are members but are not connected to the UbuntuNet Network.
- **Connected NREN:** Member NRENs connected to the UbuntuNet Network.
- **Observer NREN:** Open to all project teams of countries within the membership region that are in the process of forming an NREN.

The fifteen members of the Alliance are (also see Figure 2):

1. Burundi Research and Education Network (BERNET)
2. Eb@le, Democratic Republic of Congo
3. Ethiopia Research and Education Network (EthERNet)
4. Kenya Education Network (KENET)
5. Malawi Research and Education Network (MAREN)
6. Mozambique Research and Education Network (MoRENet)
7. Research and Education Network for Academic and Learning Activities(iRENALA), Madagascar
8. Research and Education Network for Uganda (RENU)
9. Rwanda Education Network (RwEdNet)
10. Somalia Research and Education Network (SomaliREN)
11. Sudanese Research and Education Network (SudREN)
12. Tanzania Education and Research Network (TERNET)
13. Tertiary Education and Research Network of South Africa (TENET)
14. Zambia Research and Education Network (ZAMREN)
15. Zimbabwe Research and Education Network (ZIMREN)



# Onboarding Members to a Faster, More Resilient and Affordable Network

## The UbuntuNet Network

The UbuntuNet Network is the regional high speed Internet network interconnecting NRENs of Eastern and Southern Africa and connecting them to other research and education networks globally and the general commodity Internet. The member NRENs in turn connect their constituent institutions, providing them access to digital resources. The UbuntuNet Network currently serves over 3.5 million users from over 1,000 universities, colleges, hospitals, research centres and other institutions in 13 of the 15 member countries of the Alliance.

The UbuntuNet Network is composed of high-capacity circuits interconnecting points of presence (PoPs) in Eastern and Southern Africa – where Member NRENs connect – and in Europe – where the network peers with other regional networks. The circuits are in form of long-term leases that have been procured over time in successive AfricaConnect projects funded by the European Union and beneficiary member NRENs since 2011. Over the years, the UbuntuNet Network has grown in capacity, become more resilient and expanded its reach to new countries.

## Upgrading the UbuntuNet Network to at least 20 Gbps

The UbuntuNet Network is completing its upgrade to UbuntuNet Network 3 as part of the AfricaConnect3 project and extended to reach Botswana and Ethiopia. The core backbone was upgraded from 2.5Gbps to 20Gbps links. Procurement of most of the links that were part of the upgrade and expansion of the network were completed during the year. The status at the end of the year for the links to be completed in 2024 are summarised in Table 2. (see Figure 3).

Table 2: Status of procurement of links

Link	Status
Blantyre to Mchinji (Malawi/Zambia border)	85% completed
Mchinji Border to Lusaka	85% completed
Lusaka to Kazungula (Zambia/Botswana border)	100% completed
Kazungula to Gaborone to Johannesburg	100% completed
Beit Bridge to Johannesburg	85% completed
Kigali to Kampala to Nairobi	100% completed

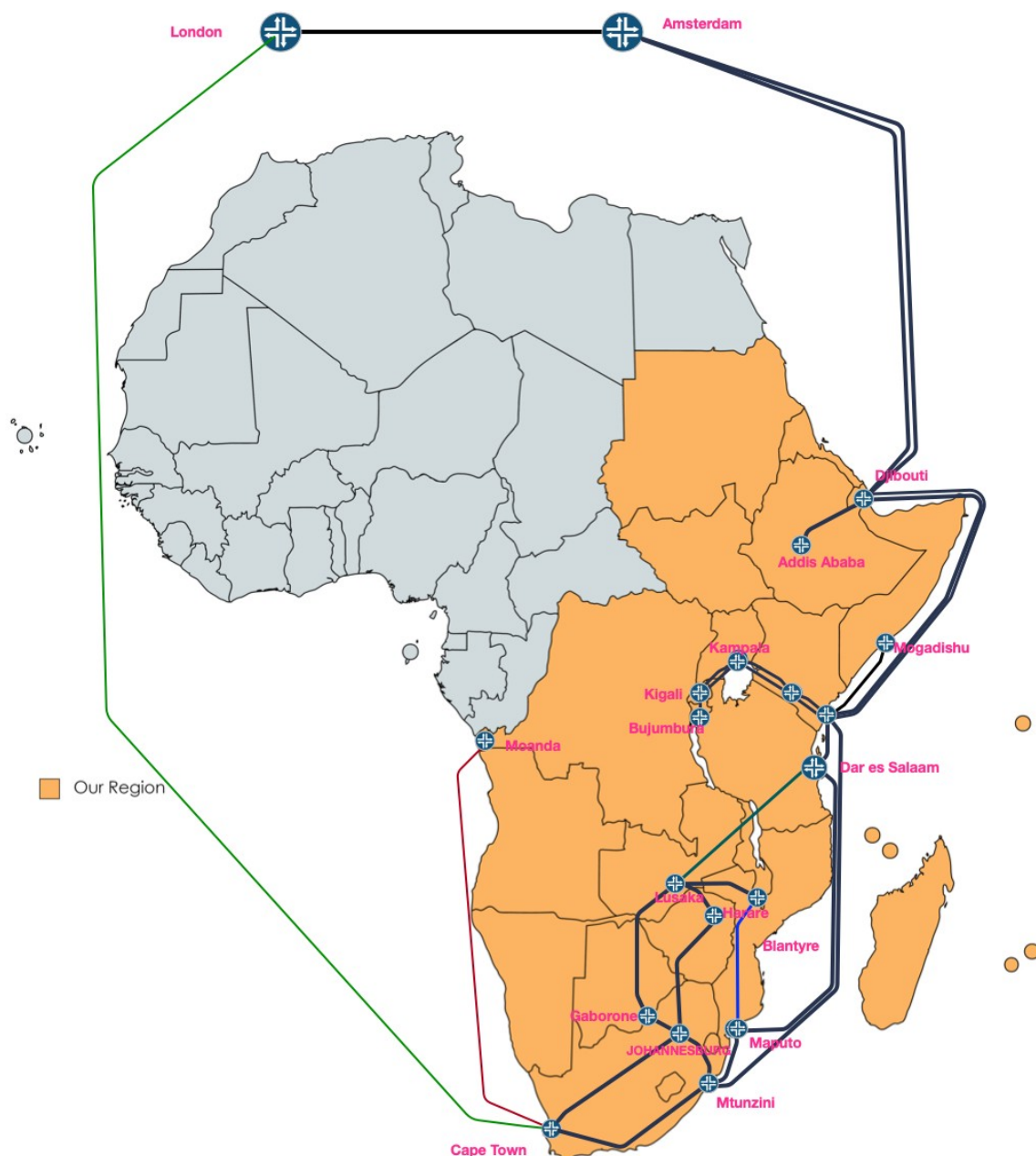


Figure 3: UbuntuNet Network 3

## Extending the UbuntuNet Network to Botswana and Ethiopia

Two new UbuntuNet PoPs were established in 2023, one in Gaborone, Botswana to serve BotsREN and another in Johannesburg to enhance the network. The establishment of the PoP in Botswana, along with the activation of the links that connect it were completed in September 2023, making BotsREN the 13<sup>th</sup> NREN connected to the UbuntuNet Network. The UbuntuNet PoP in Johannesburg enables

the UbuntuNet Network to peer with NAPAfrica, a major internet exchange point in Africa.

As at the end of the year, procurement of a framework agreement for the supply and support of network equipment was under way. Once completed, new PoPs will be established in Djibouti, for onward connectivity for EthERNET in Ethiopia, and in Mombasa, to enable the UbuntuNet Network to peer at iColo

data center, one of the major Internet exchange points in East Africa.

## Encouraging utilisation capacity by connected members

It is common practice for research and education networks to operate at about 70% of available capacity to allow them to provide on demand, additional capacity for special research applications. At the same time, it is important not to have too much excess capacity on the network to minimise payment of operation and maintenance costs to suppliers for unused capacity.

Since the upgraded five NRENs have increased their capacity as shown in Table 3. shown the capacities taken by each NREN during the year. These increases were also accompanied by significant reduction in unit costs (\$/Mbps) to the members, thereby strengthening their position within their respective markets, their sustainability and by extension the sustainability of the Alliance. Looking ahead to 2024, Rwanda has committed to increase uptake to 10Gbps and Ethiopia shall come on board at the same capacity.

Table 3: NREN capacity uptake

NREN	Baseline capacity (Gbps)	Current capacity (Gbps)
BERNET	0.13	0.4
BotsREN	0	10
MAREN	1.2	4.5*
RENU	4	0.4
TERNET	0.45	5
ZAMREN	2	8*

\*Upgraded in April 1, 2024.

UbuntuNet Alliance is also working on applications in research and education that increase demand for connectivity services. First

in this line of activities is the procurement of a Framework Agreement for cloud services from Amazon Web Services (AWS). Procurement of the framework agreement is underway, aiming to award contract to an AWS reseller in early 2024. Through the Framework Agreement, NRENs will be able to offer AWS services to their constituents at deeply discounted prices.

## European Union Commission Approves Funding for AfricaConnect4

In November, the European Union approved proposals from UbuntuNet Alliance and the WACREN for activities under AfricaConnect4, the fourth phase of the AfricaConnect Programme. Tentatively starting in November 2024 for four years, the €40million project shall seek to:

1. Enhance the delivery capacity and the financial and institutional sustainability of the UbuntuNet Alliance and its member National Research and Education Networks (RENs) in East and Southern Africa.
2. Ensure Southern and East African R&E communities' access to affordable, reliable, high-speed connectivity infrastructure and connection to the global R&E community;
3. Strengthen the delivery of over-the-network services by UbuntuNet Alliance and its member NRENs to R&E communities in Sub-Saharan Africa, with particular focus on supporting e-learning and climate change science and related disciplines.

Also, unlike in the first three phases of the project, the Alliance pushed for and the Commission accepted to include a national component. From a €2 million pot, the national component shall provide funds to selected NRENs to upgrade campus networks amongst their members, an area identified as a critical bottleneck in increasing internet capacity uptake by many member universities.



# Enabling World-class Research and Innovation

## Developing demand -driven, value, cloud-based research support services

### *Utafiti Africa*

UbuntuNet Alliance developed and operates *Utafiti Africa* (<https://research.ubuntunet.net>), a free online platform that publishes information about grant opportunities and open call for proposals. Initially meant to transition to a paid-up service, the platform remains free after the Alliance secured funding for its further development and operation from the European Union under the ongoing AfricaConnect3 project. The platform is regularly updated with new opportunities. During the year the number of active users grew to 1,043.

Utafiti Africa includes video-on-demand short courses supporting researcher. Three interactive courses were uploaded to the platform during the year based on in-person trainings from the Development of Emerging Digital Technology-based Applications for Socio-Economic Development project funded by the UK Foreign and Commonwealth Development Office (FCDO).

## Supporting the actualisation of Open Science

UNESCO defines open science (OS) as (UNESCO Recommendations on Open Science, September 2021):

“an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation,

evaluation and communication to societal actors beyond the traditional scientific community.”

It is within this context that the Alliance has embarked on several initiatives in support of Open Science.

### *Setting up and operationalising the UbuntuNet Open Science Cloud*

UbuntuNet Alliance is setting up a multi-site cloud infrastructure in Lusaka and Kigali to support open science. In 2023, installation was completed in Lusaka. The equipment for Kigali was delivered in February 2024. The UbuntuNet Open Science Cloud (UOSC) will support the cloud needs of the Alliance and it's research and education community.

### *Africa Open Science Platform (AOSP): Southern Node*

In 2023, UbuntuNet Alliance was competitively selected as the Southern Node of the African Open Science Platform (AOSP). The AOSP seeks to convene and coordinate the interests, ideas, people, institutions and resources needed to advocate and to advance open science in and for Africa. The Alliance's objective's as the Southern Node are to facilitate students, faculty, researchers and innovators within the Southern Africa region and the continent as a whole to harness the benefits of open science as an enabler for rapid scientific advancement for the benefit of it citizens through open scientific knowledge, science infrastructures, and science communication coupled with open engagement with stakeholders and dialogue with other knowledge systems, such as indigenous knowledge. To jump start the activities of the node, National Research Fund South Africa shall provide seed funding for five years (2024-2028).



*Open Science Workshop, Kampala, Uganda*

### *Open Science: Capacity Building*

UbuntuNet Alliance identified libraries as a key community in promoting and supporting open science. To ensure that the librarians have the necessary capacity to promote and support open science in their institutions, UbuntuNet Alliance organised a 1-day training workshop for librarians as part of its capacity building programme under AfricaConnect3. Attended by 20 librarians from the Alliance's membership region, the workshop focused on FAIR principles, AfricArXiv, persistent identifiers and a practical session on uploading, curating, and deploying scholarly content. The workshop was held as a pre-conference event at UbuntuNet-Connect 2023 in Kampala, Uganda.

UbuntuNet Alliance, working with KENET, launched the UbuntuNet Sandbox, a cloud-based Virtual Innovation Hub that provides computing resources (i.e. virtual machines on demand) to researchers. The platform provides access to pre-configured research applications and appliances to enable researchers carry out computations. The platform was used by eight research teams (five from Kenya and three from South Africa) under the UK FCDO funded project. The intent is to support KENET to expand the computing capabilities of the platform and make it's use widely available.

## **Supporting the development and use of Trust and Identity Services**

### *Trust & Identify Services*

Trust and Identity services enable seamless access to digital resources across the research and education community globally. They form the infrastructure the allows users from one institution to log in and access digital resources in another institution using their home credentials. During the year, UbuntuNet Alliance worked with MAREN and TERNET to establish their identify federations, and join eduGAIN, the global federation of identity federations. The Malawi Identity Federation (MIF) is operational and is a candidate member of eduGAIN. TERNET is awaiting installation of infrastructure to host the various components of the federation. To date, seven countries in the UbuntuNet Alliance region have identify federations and are members of eduGAIN. (Table 4).

*Table 4: Identify Federations*

Country	Federation	eduGAIN
Ethiopia	EFIS	Participant
Kenya	FAFIKI	Participant
Malawi	MIF	Candidate
Mozambique	CAFMoz	Suspended
Somalia	SIF	Participant
South Africa	SAFIRE	Participant
Uganda	RIF	Participant
Zambia	FIDERN	Participant

### *Accessing Research4Life through Identity Federations*

In collaboration with GEANT, the Alliance is working with Research4Life to pilot access to their resources using national identity federations. Research4Life provides free access to thousands of digital resources to universities in low and medium income countries. Under the pilot, Research4Life will become a service under eduID.africa, which the Alliance operates together with WACREN. Traditionally, access has been provided through institutional IP addresses limiting access to users on campus and on the university network. Access through the identify federations will enable researchers to access the resources from anywhere using their institutional login credentials.

### *eduroam*

eduroam is a global WiFi roaming services that allows users from participating institutions to log in and access WiFi in other participating institutions using their home login credentials. In 2023, the

Alliance worked with the Eb@le and ZIMREN to establish eduroam in DRC and Zimbabwe, respectively, and with RwEdNet to re-establish the service in Rwanda. The three works-in-progress and are finalising their federation level radius servers. eduroam is currently operational in Ethiopia, Kenya, Madagascar, Malawi, Mozambique, South Africa, Tanzania, Uganda and Zambia.

In Uganda, RENU has had great success in implementing eduroam within the city, but outside university campuses. The service, metro eduroam, is popular because it brings the NREN's internet closer to its users when they are not on campus. Metro eduroam is now available in over 300 hotspots in Uganda. The service was launched during COVID-19 when educational institutions closed in the country. In addition, RENU offers eduroam on-the-Go, a portable router that lets users access eduroam from any location within Uganda.



# Building a Strong Community of Members

## Operate as a membership organisation

The UbuntuNet Alliance Strategic Plan 2023-2027 restructured the membership categories into Member NRENs and Connected NRENs. The new categories were operationalised through a membership agreement that includes obligations of members to the Alliance and the Alliance to the Members. Previously, member NRENs were accepted to the Alliance without any signing of formal members documents.

## Proactively engage NRENs and community stakeholders

The Alliance continues to establish avenues to proactively engage member NRENs to build a vibrant engaged organisation. Highlights of these initiatives follow.

### *NREN CEOs Forum*

Two NREN CEOs forums were held during the year. The first in Harare, Zimbabwe in May preceding the Annual General Meeting and the second in Kampala, Uganda in October at the UbuntuNet-Connect 2023. Both meetings accommodated online participants who could not travel. The CEOs forum also to the digital space through an active WhatsApp group.

### *Communications Group*

UbuntuNet Alliance established a network of communications persons from the NREN community. The purpose of the group is to increase the visibility of NRENs by sharing

impact stories from the community. NRENs utilize the group as a conduit for acquiring stories to disseminate within their respective national communities as well as for announcing events and capacity-building initiatives. The Communications Group has representation from nine of the fourteen NRENs.

### *Online Visibility*

The UbuntuNet Alliance website is the main communications platform for the organisation. It receives an average of 7,953 unique visitors a month. The Alliance is also present on X (formerly Twitter), LinkedIn and YouTube. On Twitter, the Alliance's handle received 556 new followers and published 249 tweets. The YouTube channel, UbuntuNetTV is still in its infancy and is expected to pick up speed in 2024. A LinkedIn page was reactivated at the beginning of the year and it has added 371 followers.

### *NUANCE*

NUANCE, the Alliance monthly e-newsletter is a popular outlet for news from the UbuntuNet Alliance Community. The newsletter received 317 new subscribers in 2023. During the year, 12 issues were released (one each month). In total, 87 stories were published. These are all accessible on the homepage of the Alliance's website.



*Pioneer Award Recipients*

### *UbuntuNet-Connect 2023*

The UbuntuNetConnect 2023 Conference held in Kampala, Uganda on October 26-27 ranks as the highest attended with 240 participants. The conference theme, Fostering Creative and Innovative Research and Education Communities, sought to identify and find approaches to translating challenges and opportunities in the community into academic research, practices and techniques that lead to creative and innovative solutions. The conference attracted large interest across the community whose papers were presented across twelve parallel sessions and three plenaries. The number of corporate sponsors has also steadily increased over the years with the 2023 edition raising \$39,000 from 15 companies.

During the conference, the Alliance recognised Africa's Research and Education Networks' pioneers Dr. FF Tusu Tusubira, Dr. Boubakar Barry of the West and Central Africa Research and Education Network (WACREN), and Dr. Yousef Tourman of the Arab States Research and Education Network (ASREN). **"Pioneers Award –** In recognition of your innovative spirit, pioneering contributions and a trailblazer in the development of Research and Education Networks."





### *Satisfaction Survey*

An NREN Satisfaction Survey was carried out towards the end of the year with the aim of understanding how satisfied the NRENs were with the Alliance and its service delivery. The survey asked questions that were grouped into the following 5 categories: general satisfaction; activities (capacity building and events); communication; AfricaConnect3 management; and connectivity and bundled services. The NRENs gave the Alliance an overall satisfaction score of 72% against a target of 80%.

### **Supporting the formation of NRENs in all countries in our region**

In 2023, the Alliance continued to work with teams and governments in Angola, Djibouti, Eswatini, Lesotho, Mauritius, Namibia and South Sudan for the establishment of NRENs in their respective countries. The World Bank has been a key partner in this effort, especially in countries where they have programmes, including Angola, Lesotho, Mauritius and South Sudan. These engagements will continue in 2024.

### **An active voice in the design and implementation of digital initiatives in support of research and education**

UbuntuNet Alliance considers its relationship and engagement with development partners, regional and continental bodies and national governments as key in ensuring a strong NREN community and in fulfilling its objectives. During the year, the Alliance continued these engagements as it positions itself as an active voice in the design and implementation of digital initiatives that support research and education in Africa. Engagements included with:

- **The European Commission:** The EU finances the AfricaConnect3 project. The Alliance continued to engage them on project related matters and for continued support post AfricaConnect3.
- **The World Bank:** Has over the years shown interest and supported the development of NRENs in the region. MAREN, MoRENet and

SomaliREN have benefited from such support, which led to their operationalisation. In 2023, the Alliance continued to engage them for further counterpart funding support for Madagascar, and NREN support in countries where they have programmes.

- **Inter-University Council for East Africa (IUCEA):** As part of the MOU activities between the Alliance and IUCEA, IUCEA supported capacity building for NRENs of East Africa and the UbuntuNet Connect Conference.
- **Association of African Universities (AAU):** In 2023, the AAU played its role in leading the search process that ended in the appointment of Prof Hellicy Ng'ambi as Chairperson of the Alliance.
- **Africa Open Science Platform (AOSP):** UbuntuNet Alliance hosts a regional node for AOSP and together the two entities are promoting open science in Eastern and Southern Africa. The CEO of the Alliance was appointed to the AOSP Governing Council.

### *Participation in Events*

UbuntuNet Alliance actively participated in workshops, conferences, and other fora to build awareness of and forge partnerships for the Alliance and its members. During the year, the Alliance attended the WACREN 2023 Conference held in Accra, Ghana (March) and the GEO Ministerial Summit held in Cape Town, South Africa (November). The Alliance also made presentations at the Regional Open Science Policy Dialogue at University of Pretoria (April), TNC 2023, Albania (June), Open Repositories Conference, South Africa (June), AU's Innovation in Africa (November), and the South Africa Science Forum (December).

### *Policy Briefs*

UbuntuNet Alliance published two policy briefs on topical issues relevant to the community: [Strengthening the Emerging Digital Technologies Ecosystems in Kenya](#) and [Enhancing the Emerging Digital Technologies Ecosystems in South Africa](#). The Alliance also produced a report, [Emerging Digital Technologies Ecosystems in Kenya and South Africa: States of Maturity 2023](#).



*Trust and Identity Training in Dar es Salaam*

These documents were as a result of a UK FCDO funded project in collaboration with the University of Nairobi and the University of Johannesburg. Details of the project can be found at <https://edt.ubuntunet.net>.

- **Zambia Cyber-security, T&I In-Country training (August):** The approach for the eduroam and Trust & Identity workshops was changed from regional to in-country to have a larger impact by training more staff and building communities

## Building Member Capacity

Capacity building is key in ensuring that there is critical mass of engineers and systems engineers that can ably operate NREN infrastructure and protect it against bad agents. At the beginning of the year, the Alliance developed a capacity building programme and published on its events portal. The programme was developed in collaboration with partners and our members to meet the needs of both the emerging and the mature NRENs. All planned events were successfully held.

- **Cyber-Security II (April):** The face-to-face training was held in Nairobi, Kenya and 23 participants attended.
- **BGP Zero to Hero (March):** This was a three-week on line self-paced hand on workshop on routing protocol (Border Gateway Protocol) concepts from basic to advanced level with 11 participants.
- **Routing Security (July):** The regional 5-day face-to-face hands-on workshop was held in Lusaka, Zambia and 21 engineers from 11 NRENs attended the workshop.





of practice within the targeted countries centered around their NREN. The 3-day workshop attracted 41 participants.

- **Tanzania Cyber-security, T&I In-Country training (September):** The workshop was similar to the one held in Lusaka, Zambia with 40 participants in attendance.
- **MPLS Applications for NRENs (September):** The 5-day workshop featured an extensive curriculum designed to equip NREN personnel from member NRENs with the knowledge and skills required to harness the benefits of MPLS. In attendance were 17 engineers.
- **AWS Cloud Services: Economics & Security (April):** This was an online workshop which was conducted jointly with Amazon Web Services and was attended by 23 participants.
- **AWS Services for Research & Education Webinar (June):** The webinar focused on significant success achieved by universities in Africa and around the world that have adopted cloud services to enhance student experiences as well as how higher education institutions and research institutions can build resilient systems using AWS services. There were 40 participants.

- **UbuntuNet Alliance Services Webinar (July):** The online workshop was an annual consultative event on current service developments by National Research & Education Networks where the Alliance also presents her services catalogue (current, under development and future) to members plans. The webinar attracted 46 participants.
- **Digital Object Identifiers (DOI) Webinar (August):** The webinar explored the relevance of DOIs to the NRENs and their institutions. It attracted 39 participants.

### 1<sup>st</sup> Alliance Women Hackathon

The women hackathon was held as a pre-event of the UbuntuNet Connect Conference, from October 23-25 in Kampala, Uganda for the exploration of innovative solutions in three focus areas: Innovations for 21st Century education, innovations for improving research uptake, and innovations for Improved collaboration. From over 300 applicants, five three-women teams were selected: Team Malawi (Research Aggregator), Team Zambia (CollabScholar), Team Kenya (NovaNex), Team Uganda (Digitalizing the Education) and Team Zimbabwe (KUSHA). Team Zambia emerged victorious.

Team Zambia



# Strong Organisation and Governance

## 17th Annual General Assembly

The Annual General Assembly is an important gathering of members, where key policy issues of the Alliance are discussed and Trustees elected. The 17<sup>th</sup> AGM was held at Cresta Lodge in Harare, Zambia on May 5, 2023. At the AGM, members adopted the Annual Report and Audited Accounts for 2022, and appointed Auditors for 2023. Eight NRENs were present at the AGM.

Table 5: NREN Representatives at the 17th AGM

Representative	NREN	Country
Prof. Gregoire Njejjimana	BERNET	Burundi
Ms. Helina Emeru	EthERNet	Ethiopia
Dr. Alice Njuguna	KENET	Kenya
Ms. Harinaina Ravelomanantsoa	iRENALA	Madagascar
Dr. Levis Eneya	MAREN	Malawi
Mr. Nicholas Mbonimpa	RENU	Uganda
Mr. Duncan Greaves	TENET	South Africa
Prof Yohana Mashala	TERNET	Tanzania
Prof. Pinalo Chifwanakeni	ZAMREN	Zambia
Ms. Miriam Chahuruva	ZIMREN	Zimbabwe

## Developing a culture of effective business planning and operations

In 2023, UbuntuNet Alliance put in place a series of practices aimed at developing and enhancing a culture of effective business planning and operations. For the first time in several years, the Alliance developed a corporate business plan which

would be implemented in 2024 and tracked by the Resource Mobilisation Committee. The *Business Plan 2024* was developed to ensure that the Alliance lays the proper foundation to become sustainable in the short-term. It builds upon the Alliance's strategic direction presented in the *Strategic Plan 2023-2027*. The plan focuses on revenue generation and increasing the Alliance's net cash position. Under the plan, the Alliance shall pursue revenue from three main areas:

- Connectivity – operational
- Open Science – operational
- UbuntuNET+ -- under development

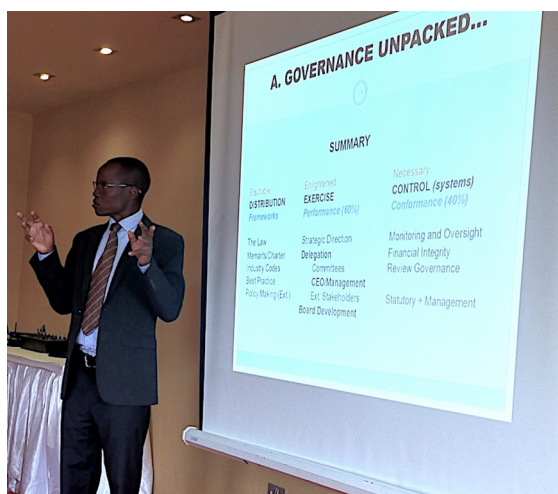
Further, the Alliance focused on updating its policies to align them with present realities and developed new ones where they did not exist. The following policies and manuals were developed/updated:

- Services and Network Manual (Operating Procedures) (new)
- ICT and Cybersecurity Policy (new)
- Disaster Recovery Plan and Business Continuity Plan (updated)
- Human Resources Manual (updated)
- Board Manual (updated)
- Anti-Corruption and Anti-Fraud Policy (new)
- Whistleblowing Policy (new)

## Strengthening the Alliance's Corporate Governance

In 2023, the Board of Trustees carried out its first self-evaluation of the functioning and operations of the Board and its committees.

The outcomes from the exercise were reviewed and discussed at a Corporate Governance Workshop held in Kampala Uganda, facilitated by the Institute of Corporate Governance of Uganda. Trustees engaged in candid discussions on their responsibilities on the Board and on the latest developments in corporate governance, highlighting the nuances and peculiarities unique to many African countries.



## An establishment and human resource to deliver the strategy

The UbuntuNet Alliance Strategic Plan 2023-2027 defines new strategic directions for the Alliance. The staff establishment of the Alliance was therefore revised to align it with the strategic plan. The effect of this re-alignment was the merger of the Networks and Services departments, revision of job descriptions, abolishment of some positions and introduction of new positions. Further, the staff appraisal system was redesigned to align it with annual work plans. Staff members now agree with their line managers on the targets for the year, which form the basis of the annual appraisal.

## Retaining and motivating staff

UbuntuNet Alliance values its staff and aims to ensure that staff members are retained and remain motivated. As part of this endeavour, a staff training needs assessment was carried out and a staff training plan developed and implemented. Technical staff received training in cybersecurity, finance staff received QuickBooks training and finance and project staff spent a week at GÉANT offices in Amsterdam to receive tailor-made AfricaConnect3 procurement training.

## Full compliance with legal and regulatory frameworks

UbuntuNet Alliance is taking a proactive approach to ensure that it is compliant with legal and regulatory frameworks in Malawi and in the countries where it operates. Having business-like operations when registered as a non-profit Trust places the Alliance in a delicate situation when it comes to applicable taxes. A consultant was hired to provide guidance on what sort of taxes the Alliance is liable to pay in Malawi. The tax consultant provided a report and the Alliance granted him the go ahead to engage the Malawi Revenue Authority.

## Systems Audit

A Systems Audit carried in the last quarter of 2022 made a number of recommendations on areas where the Alliance needed to improve. These were captured in an implementation plan approved by the Board at the beginning of the year and monitored by the Audit & Risk Committee throughout the year. By years end, 30 of the 32 identified areas had been addressed (representing 94% completion rate).



# Equitable Partnerships and Projects

## Growing portfolio of funded projects

UbuntuNet Alliance sustainability depends on revenues from members and support from externally funded projects that align with the Alliance's objectives. AfricaConnect3 project is a key example of such high impact projects that the Alliance has been implanting, which has helped the Alliance build the regional research infrastructure upon which it is able to offer affordable connectivity to its NREs. In addition to supporting the main proposed activities, external funded projects also provide funding support to the Alliance through indirect costs and budget support towards recurrent expenditures. During the year, the Alliance developed an indirect costs policy to be consistently applied on externally funded project so that their financial contributions makes an impact on the Alliance budget.

In 2023, the Alliance successfully brought on board three externally funded projects:

- **ORCID Global Engagement Grant.** UbuntuNet Alliance in partnership with Access 2 Perspectives received a 1-year grant from ORCID to implement AfricArxiv. AfricArxiv is a digital archive for African research items such as research manuscripts, reports, datasets, code, illustrations, presentations, and more. Enhancing the visibility of African research, will enable discoverability and collaboration opportunities for African scientists on the

continent as well as globally. The repository will be hosted by UbuntuNet Alliance

- **Southern Node for Africa Open Science Platform.** UbuntuNet Alliance was selected as a Southern Node for the Africa Open Science Platform (AOSP) for 4 years. The project will kick off from Quarter 1, 2024.
- **RISA funded project:** UbuntuNet Alliance partnered with University of Nairobi and University of Johannesburg in implementing a 1 year Emerging Digital Technologies (EDT) project funded by the UK Foreign and Commonwealth Development Office (FCDO). More details at <https://edt.ubuntunet.net>.

## Partnerships to co-develop and implement mutually beneficial programmes

UbuntuNet Alliance is actively looking for mutually beneficial partnership opportunities with other organisations. In 2023, the Alliance signed a Memorandum of Understanding (MOU) with Access 2 Perspectives transferring AfricArxiv, an open access digital repository for sharing and accessing African scholarly output, to the Alliance that will not host it on the UbuntuNet Open Science Cloud (<https://africarxiv.ubuntunet.net>)

Through an MOU signed in 2022, the Alliance partnered with IUCEA to improve ICT capacities in East African universities. The



partnership saw IUCEA supporting UbuntuNet-Connect 2023 and other capacity building activities organised by the Alliance. The Alliance also signed 17 agreements with industry partners as sponsors for UbuntuNet Connect 2023. Sponsorships for conference also provided an opportunities for the community to interact with industry partners and learn about their new products and services.

### Implementation of AfricaConnect3 Project

AfricaConnect3 is a major project that the Alliance is implementing. Co-funded by the European Union and beneficiary NRENs, the project is supporting the creation, development and use of advanced, reliable internet connectivity for the teaching, learning and research communities of Africa. To ensure a smooth project management and accountability, it is imperative that the Alliance implements all planned project activities and submits reports to the funders when they fall due. In 2023, the Alliance submitted all due reports to the EU.

AfricaConnect3 was originally intended to close in November 2023. The Alliance, together with all regional partners, GÉANT and WACREN requested the EU to grant the project a 1 year no-cost extension to allow a successful completion of project activities that were affected by the COVID-19 pandemic. The no-cost extension was approved and will now end in November 2024.

AfricaConnect projects remain critical in extending the reach of the UbuntuNet Network to connect new NRENs. UbuntuNet Alliance together with GÉANT and WACREN spent much of the year negotiating with the European Union for AfricaConnect4 to support the Alliance and upgrade and extend the network to additional countries. Funding for AfricaConnect4 was approved by the European Parliament in October 2023. With a tentative budget of EUR25 million, the new project will kick off in November 2024 and run for a period of 4 years.

*Stakeholders workshop in Lesotho for establishment of LesREN*



# Financials

In 2023, the Alliance realised an income of \$2,404,779 against \$2,393,911 in expenses, yielding a surplus of \$10,868. *Connectivity Services* accounted for \$1,902,318 or 79.1% of income. *Network Operating Costs* accounted for 39% of expenditure or \$928,032. *Connectivity Services* income dropped by 18.1% from 2022, primarily as a result of the Alliance passing savings realised during the on-going upgrade to UbuntuNet Network 3 to the NRENs. *Networking Operating Costs* reduced by 22% during the year. The \$10,868 surplus was a drastic drop from \$181,128 realised in 2022. The drop emanates from the \$165,524 *Reversal of Over Provision of Unrecoverable Loss*, that was recognised as income in 2022 significantly increasing the surplus. Details of the 2023 financials are summarised in the figure below. Finally, NREN arrears in their Network O&M Contributions for their connectivity services continues to be a major burden on the cashflow of the Alliance. More stringent measures shall be taken in 2024 to ensure all member accounts remain current.

