



WHITE PAPER | September 2023

STRONGER TOGETHER: Lessons from Luumbo on the Power of Partnerships in Digital Advancement

CONFRONTING THE CHALLENGES OF RURAL CONNECTIVITY



TABLE OF CONTENTS

INTRODUCTION	3
LUUMBO PROOF OF CONCEPT: NEW FUTURES FOR MARGINALIZED COMMUNITIES	4
CONFRONTING THE CHALLENGES OF RURAL CONNECTIVITY	4
DIGITAL ENABLEMENT STIMULATES EDUCATION AND BOOSTS BUSINESS	5
SHARED LEARNING PROMOTES CONFIDENCE AND COMMUNITY INTERACTION	6
IMPROVING HEALTHCARE	7
CONCLUSION	8

Cover Photo Credit: Mwabu

AN INTRODUCTION

Digital Participation for the Next 50%

The N50 Project accelerates digital adoption and community enrichment through innovative applications, network design, and business models to enable the next 3 billion people to participate in the digital world. Broadband adoption will be accelerated and sustained, globally, through commercial, non-profit, government, and community partnerships.

The N50 Project focuses on tech-neutral connectivity, literacy, language, and bringing together partners to deliver human-enriching applications around education, healthcare, agriculture, and local entrepreneurship. We believe this model in partnership with private enterprise is the opportunity to scale.

Overview

The Luumbo Proof of Concept, launched by the N50 Project in the remote community of Luumbo, Zambia, is transforming the lives of marginalized communities through digital enablement. Previously cut off from the digital world, Luumbo residents, primarily farmers, are now experiencing the benefits of affordable and sustainable rural mobile broadband. The project's objectives are to enhance education, enable local businesses, and improve knowledge and services in agriculture and healthcare.

Working hand-in-hand with organizations like African Mobile Networks (AMN) and local IT specialists, Luumbo's Primary and Secondary Schools have been connected via Wi-Fi, bringing a world of educational resources to students' fingertips. Smartphones, tablets, and laptops loaded with e-learning materials have been distributed to community leaders and farmers, fostering digital literacy and enabling continual learning. This surge in digital connectivity, coupled with a substantial reduction in network data costs, has made the digital universe more reachable for the people of Luumbo.

The Luumbo Project has not only stimulated education and boosted local businesses but also improved healthcare services. A smartphone application developed by the N50 Project partner Virtual Doctors connects local clinical officers with volunteer doctors in the United Kingdom, enabling quick decision-making and reducing the need for referrals. This initiative aligns with the UN's Sustainable Development Goals, promoting well-being, quality education, and lifelong learning opportunities for all. Luumbo stands as a scalable and replicable model for extending digital adoption to other marginalized communities, empowering individual growth and changing lives.

LUUMBO PROOF OF CONCEPT: NEW FUTURES FOR MARGINALIZED COMMUNITIES

"My children are able to read now".



These are the words of Precious Banji, a parent and farmer in Luumbo, a remote community in Zambia. They are a powerful testimony to the potential for digital enablement to enrich the lives of marginalized communities.

Luumbo is where the N50 Project has launched its Proof-of-Concept initiative to create a blueprint for the affordable and sustainable adoption of rural mobile broadband.

This is our story so far.

CONFRONTING THE CHALLENGES OF RURAL CONNECTIVITY

Luumbo is a drought-prone, rural community comprised primarily of farmers who cultivate resilient crops such as millet, cotton and maize. It is considered by residents to be a favorable place to live, given that it has tarred roads, a clinic, two schools and a natural spring. But what the people of Luumbo didn't have was access to the digital world. Residents had to walk long distances to make calls, as the nearest telecommunications tower was 30 kilometers away.

The N50 Project's vision is to enable the next three billion people to participate in the digital world. Through our international partner network, we have been able to combine innovation, expertise and creative problem-solving to overcome the immense challenges and prohibitive costs associated with the deployment of a rural communications infrastructure.

N50 Project partners worked closely with members of Luumbo's community to define their key objectives for mobile broadband connectivity. These are to:



Enhance
Education



Enable Local
Businesses



Improve Knowledge and
Services in Agriculture and
Healthcare

DIGITAL ENABLEMENT STIMULATES EDUCATION AND BOOSTS BUSINESS



Photo Credits: Mwabu

[African Mobile Networks](#) (AMN) supports Zambia's telecommunications provider, MTN, to deliver mobile services infrastructure to the most rural parts of the country. The organization is an N50 Project Partner and has played a key role in facilitating broadband access for the residents of Luumbo.

Intermittent signal strength due to elevation issues required the deployment of a Wi-Fi network to connect Luumbo's Primary and Secondary Schools. The Primary School is more than 250 meters away from the Secondary School, which far exceeds the 100 meters that is ideal for transmitting power and data over copper cable. Making use of a signal booster kit, solar power and access points, local IT specialist [LANWAN Technologies](#) was able to boost and rebroadcast the signal into the Primary and Secondary Schools.

A Deep Edge Content Delivery Network (CDN) by [picoNETS](#) has been integrated with the Wi-Fi network and MTN's 4G LTE network to enable a variety of content - including education, finance, business and healthcare - to be made available to the community. The network can be scaled as additional N50 Partners participate in the project, transforming learning, wellbeing and boosting trade for a community that was previously excluded from the digital world.

Smartphones were allocated to the heads of the community, religious leaders, and farmers, all of whom have collective responsibility for the safekeeping of their devices. In addition, 30 tablets, 15 [Dell](#) laptops, as well as charge carts and associated hardware have been set up in Luumbo's Primary and Secondary Schools. The devices are pre-loaded with e-learning content based on their curricula, provided by N50 Project partner [Mwabu](#). Teachers have received training to equip them with the digital skills required to fully utilize the services offered.

Another major obstacle to digital adoption in marginalized communities is the cost of network data. In order to minimize the cost to the residents of Luumbo, they have been given the option to use the Wi-Fi network to access cached data, which has been pre-loaded onto an [Intel](#) NUC content delivery network, for no additional cost.

SHARED LEARNING PROMOTES CONFIDENCE AND COMMUNITY INTERACTION

“Technology is an eye-opener,” says Vincent Malundu, Head Teacher at Luumbo Primary School. “It’s amazing to see the knowledge the pupils have acquired and the ease with which they have been able to access information on the app.”



He noted that the initiative increases awareness of the ways in which technology can offer other avenues for learning, building a stronger community, improving academic results and launching new opportunities for the future.

A recent survey of community members indicated that 85% of users had accessed Mwabu content on their phones, with children comprising 67% of users. The benefits highlighted were: improved literacy and education for adults and children, as well as the opportunity for continual learning.

One of the parents, Maxwell Mwiinga, observed that “children are able to reinforce each other’s learning through discussions about the app”.



Community members who have been allocated smartphones share them with their neighbors, gathering weekly to learn about a range of topics from Mwabu’s interactive educational content. This has enabled them to grow in confidence as they expand their knowledge and feel empowered to support their children’s learning.

Having access to mobile broadband has given a boost to local business owners, as they are no longer required to make the four-hour journey to Lusaka to determine market pricing and ascertain demand for their produce. They have also been able to use [MTN Mobile Money \(MoMo\)](#) service to send and receive payments. The result has been quicker response times and an increase in productivity and efficiency.

The enthusiastic uptake of broadband access and growth in digital literacy demonstrates that the Luumbo Project has been a catalyst which has stimulated a desire for learning and enabled access to enhanced services. As the N50 Partner network expands, new applications are being added, providing further opportunities to develop skills. These include [Money FM](#) for business and financial news, an online library of books in local languages provided by [Bloom Library](#) and an online version of the Bible in the widely-spoken Tonga language. [World Vision](#) will also be leveraging digital content such as storybooks and methodologies through its partnership with [All Children Reading: A Grand Challenge for Development](#). Its mission is to advance EdTech innovation and research to improve reading outcomes for marginalized children in low-resource contexts.

IMPROVING HEALTHCARE

The difficulties associated with accessing secondary healthcare services from Luumbo are numerous: the long drive to Lusaka along poor roads, the cost of transport which can be prohibitive for low-income communities and the need to arrange accommodation for family members.

The clinic in Luumbo also provides healthcare services to individuals from outside the catchment area, due to the distances that surrounding communities must travel to reach other facilities. On an average day, a Clinical Officer (CO) attends to a minimum of 30 patients. Network connectivity has been a challenge, particularly when contacting the next level of care or requesting an ambulance for patient referrals.

A smartphone application developed by N50 Project partner [Virtual Doctors](#) has removed some of these barriers by connecting COs at Luumbo's Health Center with volunteer doctors in the United Kingdom. Following initial training on how to use the app, there has been encouraging uptake, with local healthcare providers being given the opportunity to access a broader knowledge base and expand their learning through sharing case studies with their peers on a monthly basis.



Dorcas Tembo, General Clinical Officer notes: "The Virtual Doctors app provides me with a convenient way to seek advice and receive informative responses. Moreover, it has reduced the number of referrals to higher levels of care. The interactive nature of the app allows me to ask questions when I encounter difficulties, enabling quick decision-making that can save lives."

The ease of use of the app allows seamless transitions when staff are transferred to new roles and the dedication of Luumbo's Clinical Officers has been instrumental in providing quality healthcare to the community. The growth in learning has been evidenced by the fact that CO's have subsequently become more selective about which cases they refer. Between February 2022 and May 2023, a total of 74 cases were referred to Virtual Doctors. These included remotely supporting a CO to perform a bladder washout in a patient with a urinary tract infection.



"It has been a great opportunity for me to interact with doctors from different backgrounds and learn from their expertise," says Lazarus Mulekelwa, Medical Licentiate.

Virtual Doctors is also working with the District Health Office to share data which can help to identify the spread of specific diseases and highlight gaps in provision. The next phase includes plans to onboard local doctors to increase areas of specialization.



Photo Credits: Virtual Doctors

CONCLUSION

BROADBAND CONNECTIVITY: AN ANCHOR FOR SUSTAINABLE DEVELOPMENT

Broadband connectivity, exemplified through the Luumbo initiative, transcends being a mere stand-alone objective; it is, in fact, an essential thread intricately woven through the fabric of the [United Nations Sustainable Development Goals \(SDGs\)](#). This technological enabler possesses the capacity to catalyze holistic transformation across the spectrum of these global objectives, ranging from the imparting of crucial digital skills, fortification of educational systems, enhancement of healthcare services, to the ignition of economic dynamism in the most underserved and marginalized regions of our world.

The N50 Project's recipe for community enablement, as showcased by the Luumbo initiative, embodies a singular mission to empower digitally disadvantaged communities and manifests the UN's Sustainable Development Goals. It does so by shining a spotlight on SDG 17: Partnerships for the Goals, illuminating the importance of collaborative spirit and synergistic alliances as tools for ushering in meaningful change. Luumbo serves as a testament to the transformative potential that arises from forging partnerships and alliances in the pursuit of digital advancement.



ensure effective and beneficial partnerships to implement and revitalize sustainable development and solutions

Luumbo stands as an exemplary model, one that invites investors and stakeholders to join hands in amplifying digital outreach across communities worldwide. It also serves as an invitation to replicate its success, fostering the spirit of digital inclusion far and wide, thereby magnifying its transformative impact and igniting the aspirations of countless individuals. In this way, Luumbo is not just a local initiative but a global beacon, beckoning us all to harmonize our efforts to align with the UN's Sustainable Development Goals to create a brighter and more equitable future for all.

"Partnerships, broadband, and exponential technology are the essential catalysts that can accelerate education, health, and economies in remote communities and villages. The Luumbo community stands as a shining example of how collaborative innovation can bridge the digital divide, unlocking boundless potential and transforming lives where it's needed most. These essential partnerships bring together diverse expertise and resources for community empowerment."

- Kevin Schwartz, Executive Director of the N50 Project



CONCLUSION

Other targeted SDGs in the Luumbo Project include:



ensure healthy lives and promote wellbeing for all at all ages



ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



ensure the elimination of gender discrimination and promote equal opportunities for all

The success of Luumbo and the ethos of SDG 17 converge to send a resounding message: When we bridge the digital divide through strategic partnerships, we don't just change lives; we elevate entire communities toward sustainable futures.

ABOUT THE N50 PROJECT

The N50 Project is the Geeks Without Frontiers led initiative that is focused on the next 50% of the planet that does not fully digitally participate. The N50 partners' primary focus is to launch projects for marginalized communities using best-practice playbooks for long-term delivery of ICT solutions. N50 is an open, inclusive ecosystem that is fueling transformation in some of the world's most challenging environments. Our live 'Digital Participation' projects in the field are designed to enable communities to access the education, health, social and financial benefits that flow from affordable and sustainable digital inclusion.

To learn more about the N50 Project, visit: www.n50project.org