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Open Source

Index

1.1 Executive Summary

Examining the open source landscape across three Commonwealth nations: Kenya, Nigeria, and Rwanda, the report draws on GitHub data, package download statistics, and insights gathered from OpenUK and OpenHQ engagements in Nairobi and Kigali in early 2026.

Africa's developer community is growing at an extraordinary pace. According to the 2025 Octoverse report, the Africa and Middle East region added 3.4 million new GitHub developers between 2024 and 2025. Innovation Graph data shows Nigeria (445,99 accounts), Kenya (167,563), and Rwanda (15,660), each country recording sharp year-on-year increases. Artificial intelligence (AI) repository contributions are accelerating in parallel, with Nigeria's AI contributors tripling over three years. Popular repositories across Africa have more than doubled, rising from 82 to 177 repos with 1,000+ stars since 2022.

Open source is also powering Africa's inclusive financial infrastructure. The open source Mojaloop payment platform has been implemented across 13 African countries and underpins Rwanda's national digital payment system (eKash), where mobile money penetration now exceeds 80% of the population.

Policy commitment is reinforcing this momentum. Rwanda has positioned open source at the centre of its digital strategy, while Kenya has established Africa's first National Open Source Programme Office (OSPO) through the International Telecoms Union and the United Nations.

The report includes case studies from Mojaloop and its Rwandan implementers, RSwitch, along with Kenya's OSPO and a further Kenya case study demonstrating open source for public good at a different level in the Kakuma refugee camp in Kenya.

On the ground, thriving ecosystems are visible. Nairobi hosts over 700 startups and 40 co-working spaces, Nigeria's OSCA has spent seven years building developer culture, and grassroots initiatives sit alongside top-down demonstrations reaching into the most underserved communities.

Africa is not merely adopting technology built elsewhere but increasingly building and governing its own digital infrastructure. The combination of rapid developer growth, policy commitments, and projects like Mojaloop positions these nations as significant and rising participants in the global open source landscape and builds open source rails for the future of these economies.

1.2 Introduction

Amanda Brock,
CEO, OpenUK & OpenHQ

What is the Commonwealth

The Commonwealth of Nations is a voluntary association of 56 independent countries, 21 of which are in Africa. They have a combined population of 2.7 billion, including African nations Kenya, Nigeria and Rwanda. I recently visited Rwanda to attend a Mojaloop Board meeting in Kigali and the Inclusive Fintech Forum (IFF) and MojaCom, Mojaloop's 30th convening. I also had the opportunity to visit Kenya and speak to some of the open source community there.

Both countries have healthy open source communities, as we can see from the data explored in section 2, and my visit presented a great opportunity to engage with them. One of many, I hope. Today's Commonwealth sees a vibrant ecosystem of global partners connected through their collaboration. Each year, a different country Chair is appointed on a rotational basis, leveraging the historic relationship to build strength and collaboration by number.

Commonwealth Day 2026

Commonwealth Day takes place each year on the second Monday in March and includes a service at Westminster Abbey. This year, I was en route to Kigali, and in London, the UK's King made a speech which was notable for its references to the challenges faced by all across the planet today - wars and unrest across the Middle East and Ukraine. Commonwealth Day served as a uniting factor in focusing on Africa, and one we have leveraged to share this report.

As with our work earlier this year in India, it is striking how countries in the Global South, which have their own particular challenges in infrastructure, etc., also face many of the same challenges we face in the UK. Often, there is an expectation that the Global North will be ahead, and in areas like AI and Sovereignty, this is sometimes not the case.

Open Source in Africa

My personal introduction to open source in 2008 came when I joined Canonical as its first lawyer and worked on the Ubuntu (oŏ'boŏntoō) operating system. Ubuntu is an ancient African word meaning "humanity to others". My three-month contract rolled into a five-year engagement. Ubuntu and its meaning have always sat close to my heart and my personal beliefs in the power of open source, which I hope this report shares.

I will never forget the stories I heard from Jono Bacon, who explained how he was inspired by a young boy in Kenya and from London-based Kenyan Damian Ondore, who is an OpenUK Ambassador today and took part in our skills short documentary. In that documentary, we explore the power of open source to enable skills development, build a living CV, and ultimately find a job and build a career. This is achievable with the right skills and talent from anywhere in the world.

Back in 2024, in his keynote at State of Open Con, Jono Bacon, who began his open source career leading the Ubuntu community, told a story about how he was influenced by Africa.

> On the other side of the world in 2006, I was working at Canonical, and I got an email from a kid. He was based in rural Africa, and he told me that he didn't have a computer and he'd do chores around the village to earn money. And then he'd walk two hours to his local internet cafe, spend that money on internet access, he'd contribute to Ubuntu, he'd write documentation, he'd do translations, and then he'd walk two hours back. And he sent me an email saying "thank you" to everyone at Canonical and the Ubuntu community team. And I was like, "What are you talking about? This is you!" But he felt empowered in the same way I was just a working-class kid in England; he was just a kid in Africa, and those stories resonate all over the world. To me, that is what's so powerful about this.
>
> **Jono Bacon**
> **CEO, Stateshift**

In our 2024 OpenUK Skills Documentary, Damian Ondore, OpenUK Ambassador, explains

> I've seen this over and over again with people here in the UK. I think about myself and my own journey; I was a boy born in Africa, and the ability to accelerate my learning entirely independently was reliant on open source. And nowadays I think that opportunity is even greater. You can interact directly and personally on Twitter with the people who are writing the stuff that you care about; you can ask questions. So I think the opportunity is even greater for people to just leapfrog ten years' worth of learning by exposing themselves to bleeding-edge technology. I think that's a huge opportunity.
>
> **Damian Ondore**
> **OpenUK Ambassador; Account Executive, Slack**

Over the last couple of decades, we have seen a rise and shift in open source. A shift not only in the scale of its adoption but also in contribution and participation. This has also been reflected in Africa and in the opportunity for codebases to be implemented locally in a “sovereign” manner by local people for local people.

My trip to Rwanda was to attend a Mojaloop Board meeting. I have a particular interest in Mojaloop as it enables the unbanked to be banked via an open source payment platform, which is being implemented in 13 African countries. India's UPI is sometimes called open source, but licensed on a non-open source license, and Mojaloop is different. In my last legal role, I spent a couple of years working across emerging markets, supporting fintech on the phone. The challenge in the projects I worked on was that they were not open source.

It's the best example of the old adage, give a person a fish, and they can dine; teach a person to fish, and they eat for life.

With the benefits of open source, going far beyond cost saving to building skills, and enabling control over the implementers' own destiny, Mojaloop is effectively teaching the implementers to fish. As time goes by, they will be able to enhance and interoperate their own additional services around Mojaloop, as well as have the necessary skills.

My last role as a lawyer was in a mobile phone company, leading the legal aspects of digital financial services, and servicing 12 countries from Pakistan, Algeria, Bangladesh, across the "Stans" to Russia and Ukraine. I worked on the first e-money in Ukraine with Kyivstar and built an airtime to app conversion in Kazakhstan. But impressive as the outputs were, I struggled with the closed systems and lack of interoperability.

For me, engaging with Mojaloop a few years ago was a no-brainer, as was taking on the role of Chair of the first United Nations Open Source Advisory Board, working with former UN Director Salem Avan and bringing Open Forum Europe and others into engagement with the UN. It's a delight five years later to have been able to work with the Kenyan National Open Source Program Office, which began in 2025 through the ITU and UN. My engagement with Mojaloop has extended to joining the Board, and as part of my time in Rwanda at the Mojaloop Board meeting, I was able to attend the Inclusive Fintech Forum and MojaCom 30, which we share more on in this report.

Kenya

Connecting from Nairobi to Kigali, the Kenya Airlines magazine feature reads "Forget Bali - Nairobi might be the best remote working hub you are not thinking about". The feature proudly shares that Google, Visa and Microsoft are deepening their African footprint, and Meta and AWS also have a presence. Explaining that the world's 35M digital nomads choose their tech hub locations not simply for the beaches but also based on career opportunity, community, cultural depth and infrastructure, the feature demonstrates significant infrastructure in Nairobi, as well as over 700 startups and 40 co-working spaces.

The tech scene in Kenya is thriving, and millions of open source developers will be added in the coming years, according to GitHub's Octoverse report. Google engineer, Nzisa Kiilu, returned to Nairobi after years in the Bay Area, and she created "Clutch Foundry", a space for Nairobi's tech community. The UN's Kenya OSPO in Nairobi joined us for an interview, and the UN is moving significant operations to the Kenyan capital.

Like many places, Kenya can be one of extremes. I genuinely believed that I was going to be mauled by a lion in the Maasai Mara. Then the next day, I experienced the sophistication of the vast capital city and its tech community. Whilst we are lucky to feature the Africa-leading Kenyan OSPO, we also pause for reflection when learning from Ramadhani Olomwene about his use of open source in the Kauma Refugee Camp. The camp is home to over 300,000 dispossessed people. If you are able to help, you will also find contact details in the interview at Section 4.2 where he tells us of life after being displaced by conflict in his home country and how he has used open source to support his mission of turning challenges into opportunities for his community in the camp.

Rwanda

I was very pleasantly surprised to find myself in the smaller of the three open source communities that we are reflecting on in this report, yet in the midst of a thriving tech hub. Rwanda has made policy-level decisions that have shifted its environment and digital ecosystem, with a clear view of leadership. The meet-up

we hosted in Kigali saw a founder from Nigeria who had moved to work on his robotics startup in Kigali, as it is easier there and a couple of Malawian women studying post-grad in Kigali. A young, thriving ecosystem at the heart of its digital future.

Attending the IFF, it was clear to me how the heart of open source, the open source Mojaloop platform that underlies the e-Kash payment platform in Rwanda, enables inclusion and ensures that the national economy is built on open source.

Nigeria

Africa's number one by number of contributors, Nigeria, was not part of my trip but is also part of the Commonwealth and the continent's leader in open source, so it could not be missed, and whilst we have not had as deep a dive there, we are grateful to Ruth Kegah for participating in the conversation.

A more international approach through OpenHQ

This Africa report builds on our work in India over the past year and our increasing international focus through our international organisation, OpenHQ. As we move towards our annual survey, we will also be opening this up to our international audience in 2026, for the first time and enabling us to build a better understanding of the role of open source in global ecosystems and digital public infrastructure in not only the UK but also in international countries.

Wishing our colleagues across the Commonwealth the best in the year ahead and sharing my personal thanks with those who have contributed to this report or shown me hospitality.

Amanda Brock
CEO, OpenUK and OpenHQ

2. The Data

2.1 GitHub Data - the development community

2.1.1 Africa as a whole

The 2025 Octoverse report explains that the global collaborative talent boom is geographically diverse across the continent. Every minute, 25 developers join GitHub, 6.5 from Africa and the Middle East, compared with 25 from APAC, 12 from Europe, and 6 from LATAM. Across Africa, 3.4M new developers were added between 2024 and 2025, attributed to Increased mobile adoption, community bootcamps, and LLMs that work locally. The countries developing fastest across Africa include Nigeria, Kenya, and Morocco, which are collectively projected to add millions of developers in the coming years.

This points to a developer population that is not only growing globally but diversifying geographically at unprecedented speed, with Africa being a significant seat of that growth.

2.1.2 Current data on user populations

There are 9,338,511 developer accounts in the whole of Africa as of quarter one of 2026. Data from GitHub and countries with fewer than 100 developer accounts are excluded from these totals.

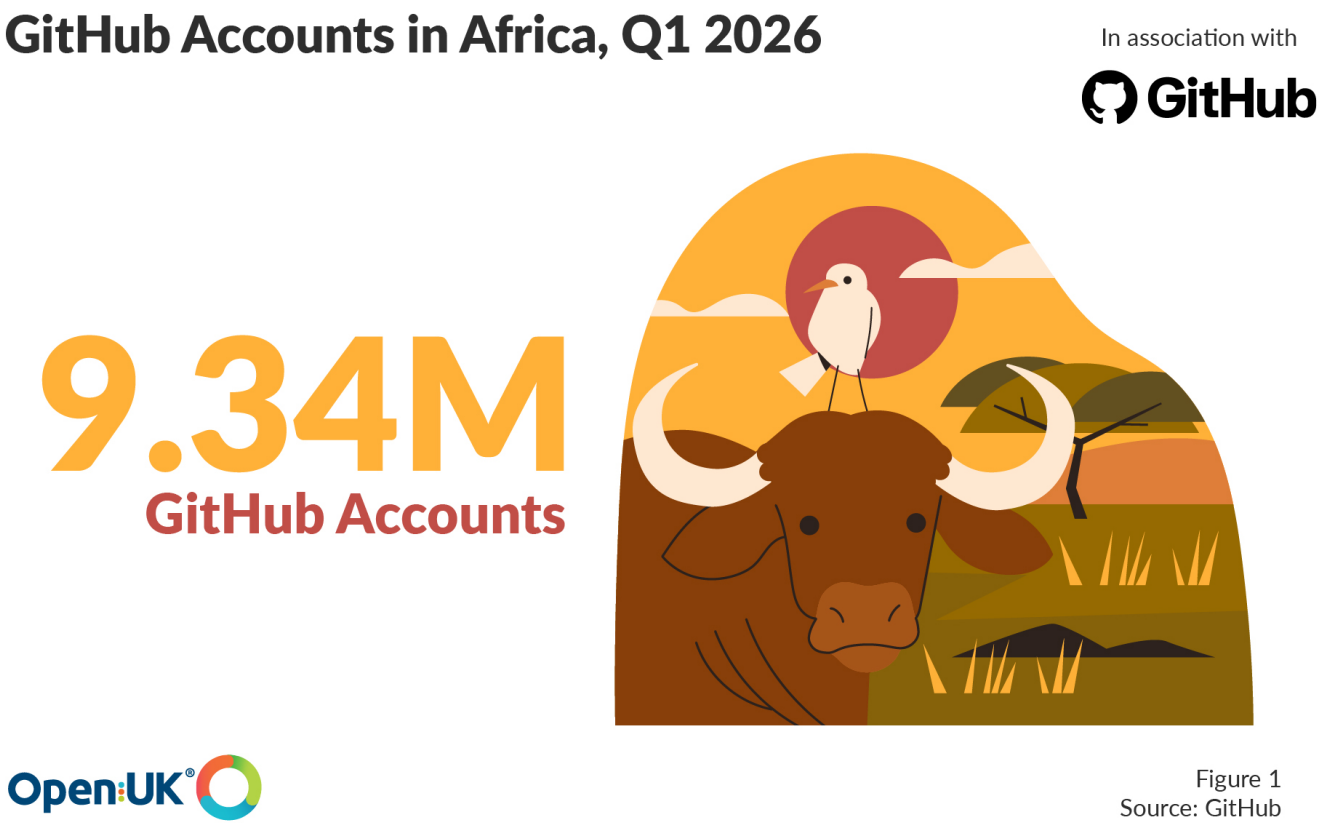


Figure 1
Source: GitHub

2.1.3 GitHub Heat Map of developers in Africa

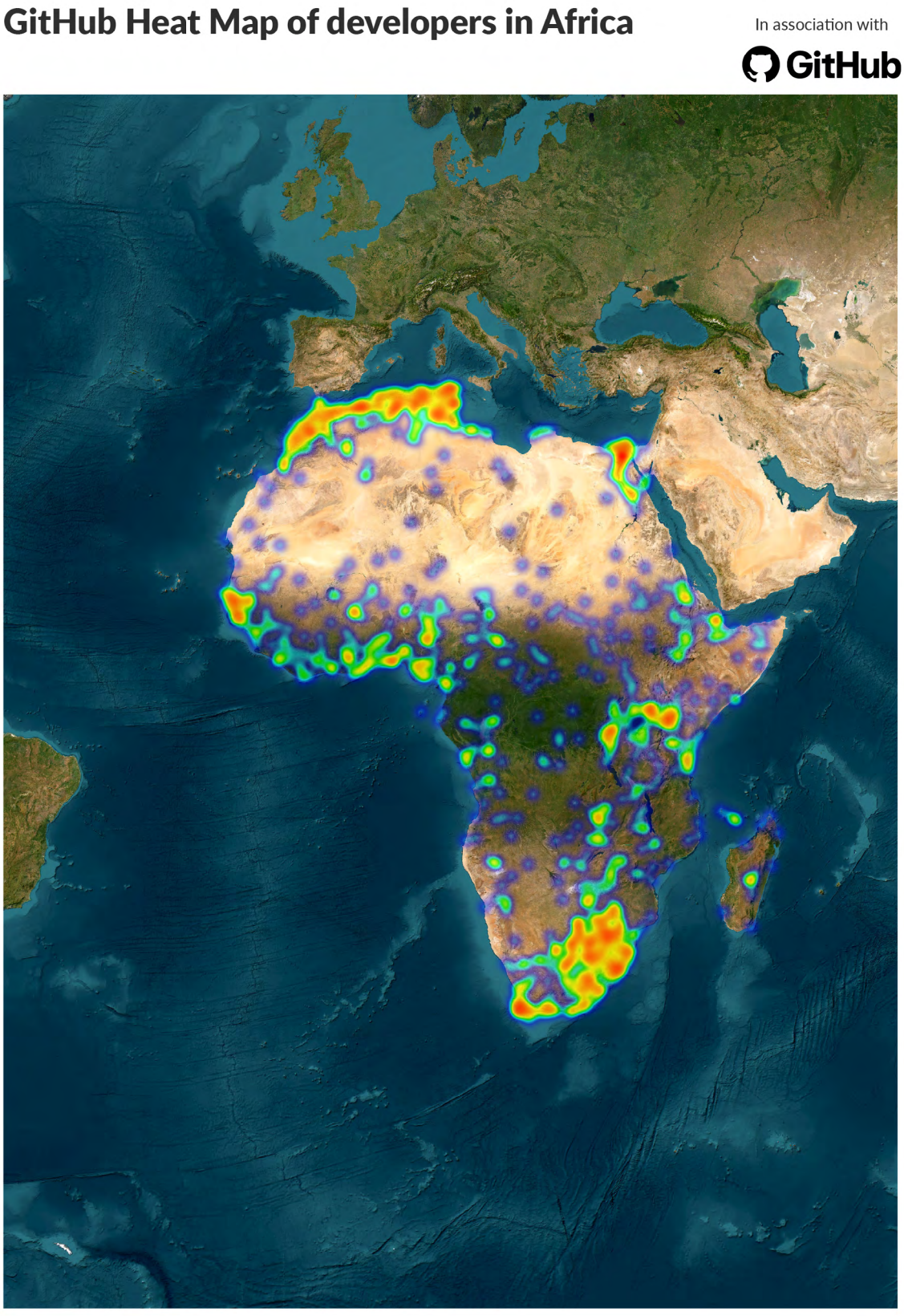


Figure 2
Source: Github

The heatmap in Figure 2 shows the locations of the developers holding GitHub accounts across Africa. We see from this that there are pockets of accounts scattered throughout the continent. Looking at the countries on which we focus in this report, we see the largest user population of 1.8M accounts in Nigeria, followed by 666,020 in Kenya, and 85,978 in Rwanda.

2.1.4 Contributors across Africa in Open Source & AI Repositories

The number of contributors making at least one commit to any open source repository in Africa shows a steady upward trend throughout 2025. Starting at 9,286 in December 2024, the figure rises to 9,715 by March 2025. By December 2025, the total climbs to 10,955 contributors.

Overall, this represents an increase of around 18% over the 12-month period, indicating sustained expansion in participation. The consistent quarterly growth suggests a strengthening and increasingly active open source ecosystem across the continent, with more developers contributing to repositories over time.

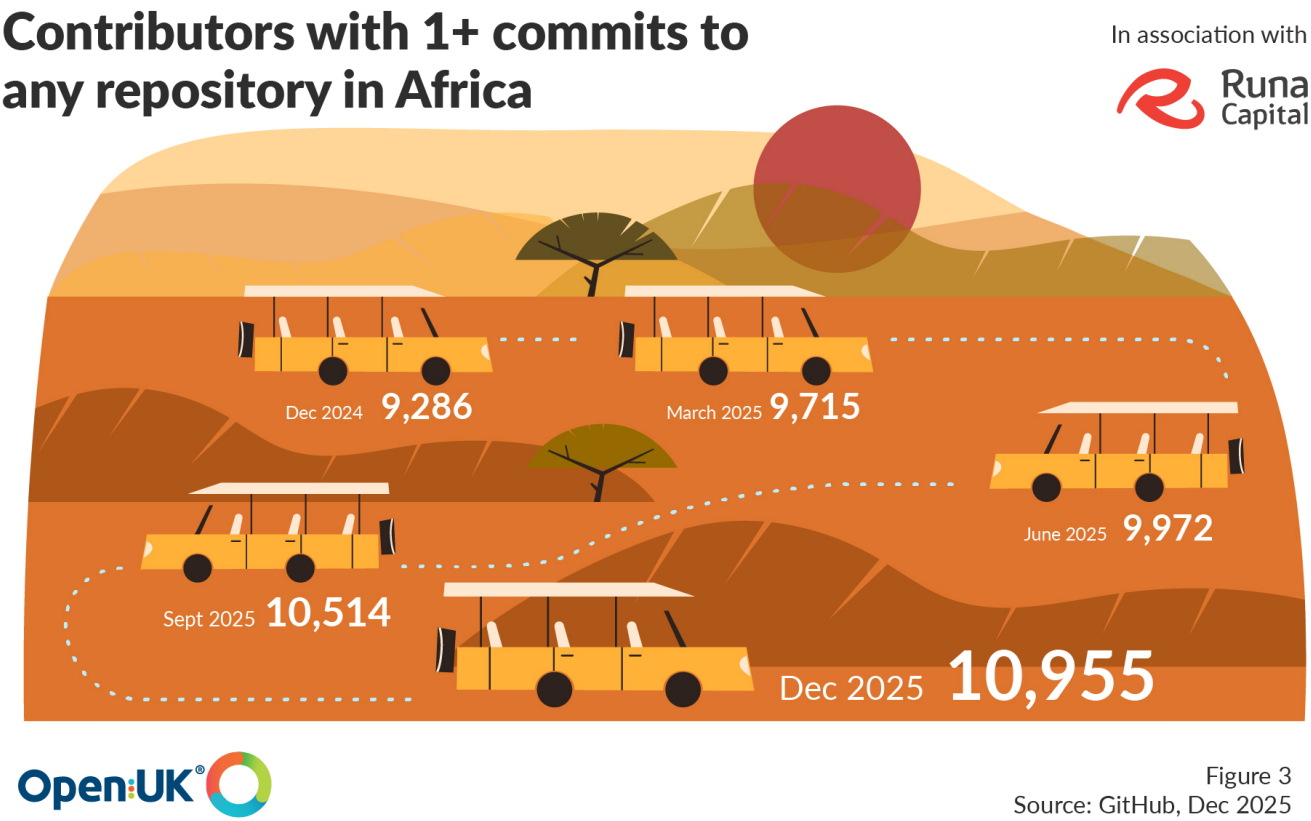


Figure 3
Source: GitHub, Dec 2025

The number of contributors making at least one commit to AI repositories across Africa shows consistent growth across 2025. Starting from 661 contributors in December 2024, the total increased to 812 in September.

By December 2025, the number of contributors rose to 863, representing an overall increase of roughly 31% over the 12-month period. This sustained growth highlights a rapidly expanding community of developers engaging with AI technologies across the continent, suggesting increasing interest, capacity, and investment in AI-related open source projects in Africa.

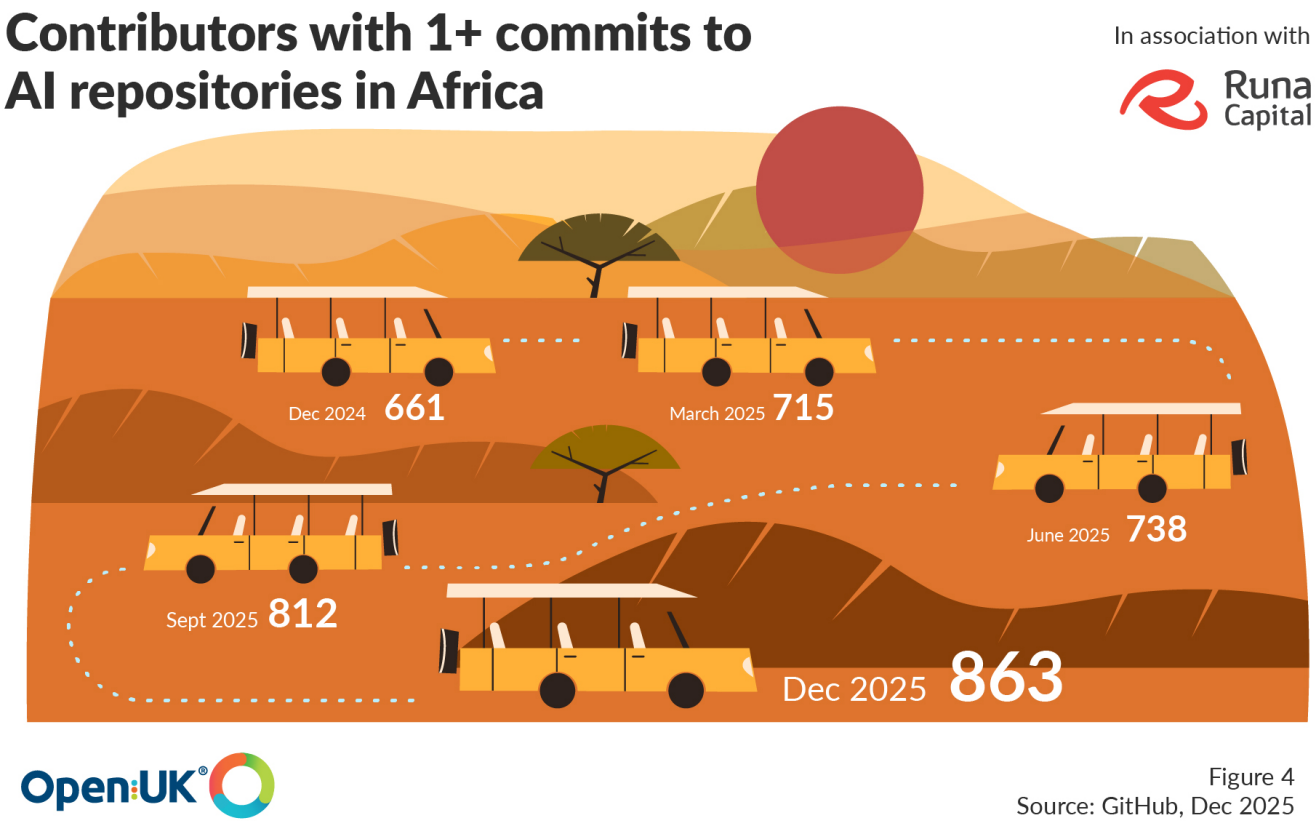


Figure 4
Source: GitHub, Dec 2025

2.1.5 Contributors by African Country: Kenya, Nigeria and Rwanda

Looking to the individual countries that this report focuses on, we find that, for the developer population, there are 1,769,566 in Nigeria in Q1 2026, an increase from 1,321,070 in Q1 2025. In Kenya, there are 666,020 in Q1 2026, an increase from 463,595 in 2025, and 85,978 in Rwanda in Q1 2026, an increase from 55,098 just one year earlier.

When adjusted for population, Kenya has the highest developer density at approximately 11.9 developers per 1,000 people, compared to 7.8 in Nigeria and 6.1 in Rwanda. This suggests that while Nigeria leads in total developer numbers, Kenya has a more concentrated developer ecosystem relative to its population. Rwanda has a population of about 14 million people, Kenya has 56 million, and Nigeria 227 million people.

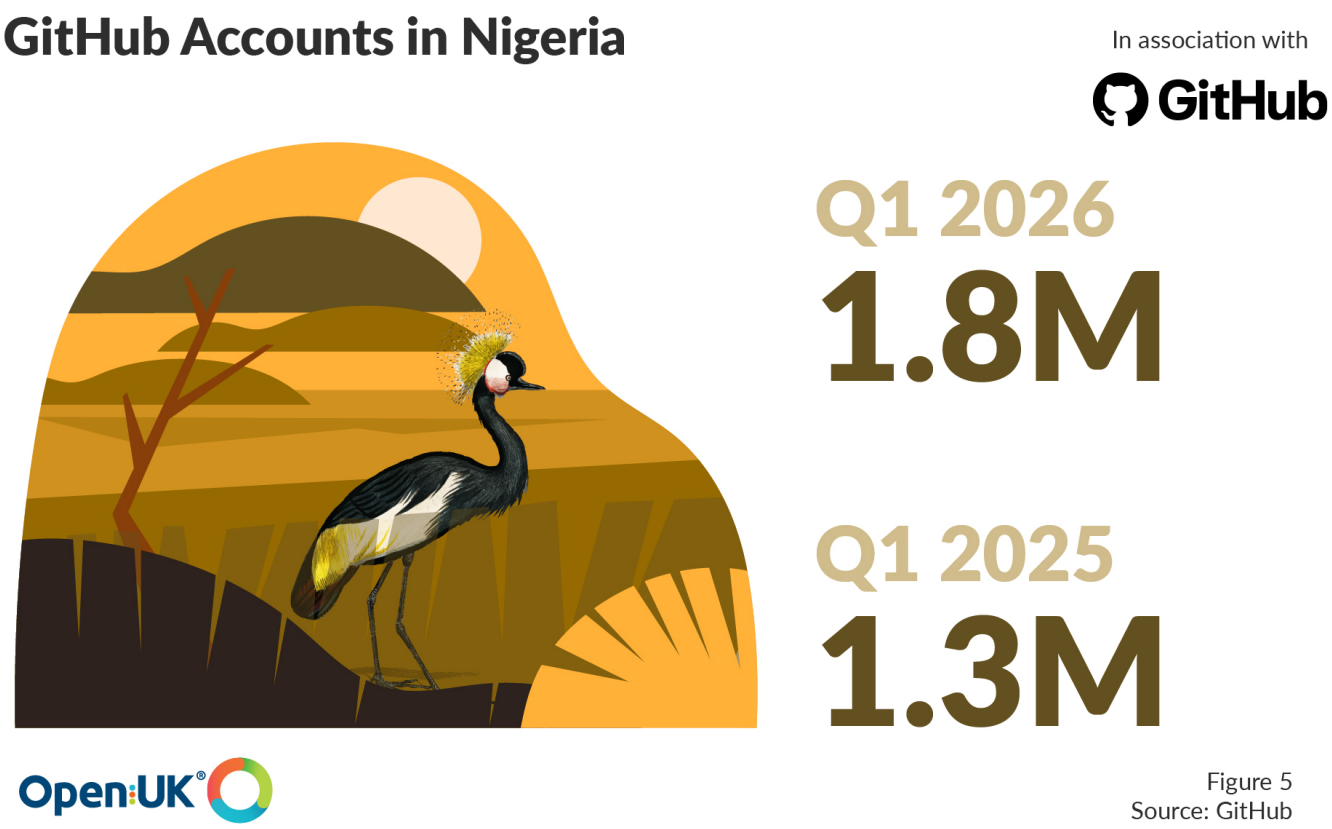


Figure 5
Source: GitHub

GitHub Accounts in Rwanda

In association with GitHub

Q1 2026
85,978

Q1 2025
55,098

Figure 6
Source: GitHub

GitHub Accounts in Kenya

In association with GitHub

Q1 2026
666,020

Q1 2025
463,595

Figure 7
Source: GitHub

2.1.5 Kenya

The number of contributors making at least one commit to any repository in Kenya shows steady growth throughout 2025.

From 862 in December 2024, the number of contributors reached 1,022 by December 2025, representing an overall increase of approximately 19% over the 12-month period. This consistent growth points to a strengthening open source ecosystem in Kenya, with a steadily expanding base of developers actively contributing to repositories.

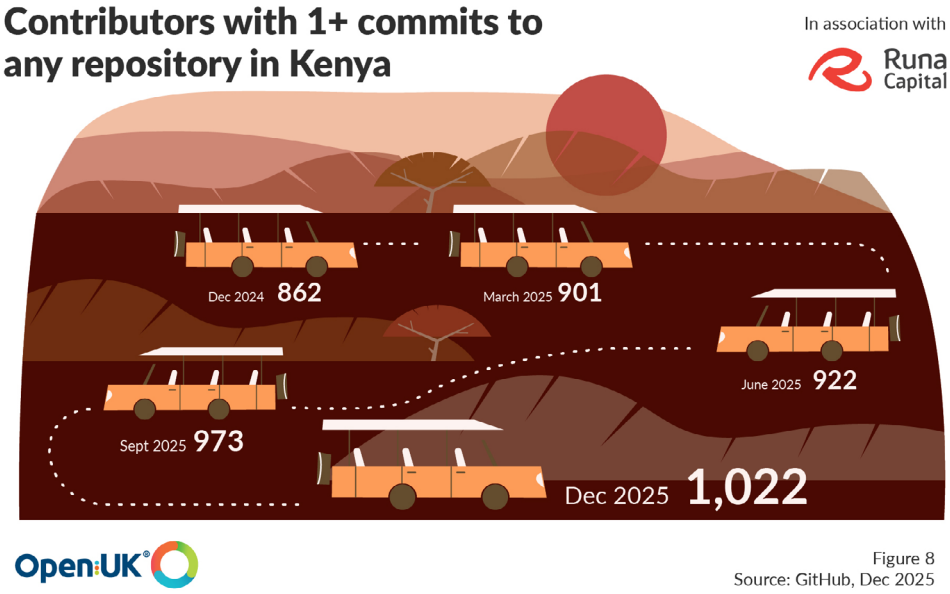


Figure 8
Source: GitHub, Dec 2025

The number of contributors making at least one commit to AI repositories in Kenya shows gradual but consistent growth across 2025. Starting at 65 contributors in December 2024, the figure increases to 79 by December 2025. Overall, this represents an increase of around 22% over the 12-month period. While the absolute numbers remain relatively small, the steady upward trend indicates a growing interest and engagement in AI development within Kenya's open source community.

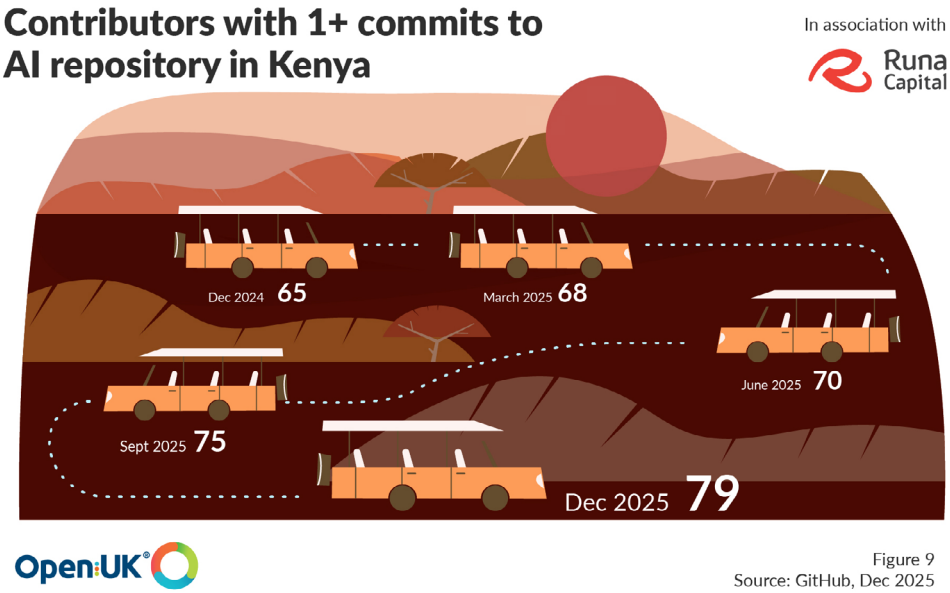


Figure 9
Source: GitHub, Dec 2025

2.1.6 Rwanda

The number of contributors making at least one commit to any repository in Rwanda shows strong growth throughout 2025. From 71 in December 2024, the number of contributors reached 112 by December 2025, representing an overall increase of approximately 58% over the 12-month period. This robust growth points to a rapidly expanding open source ecosystem in Rwanda, with a growing base of developers actively contributing to repositories.

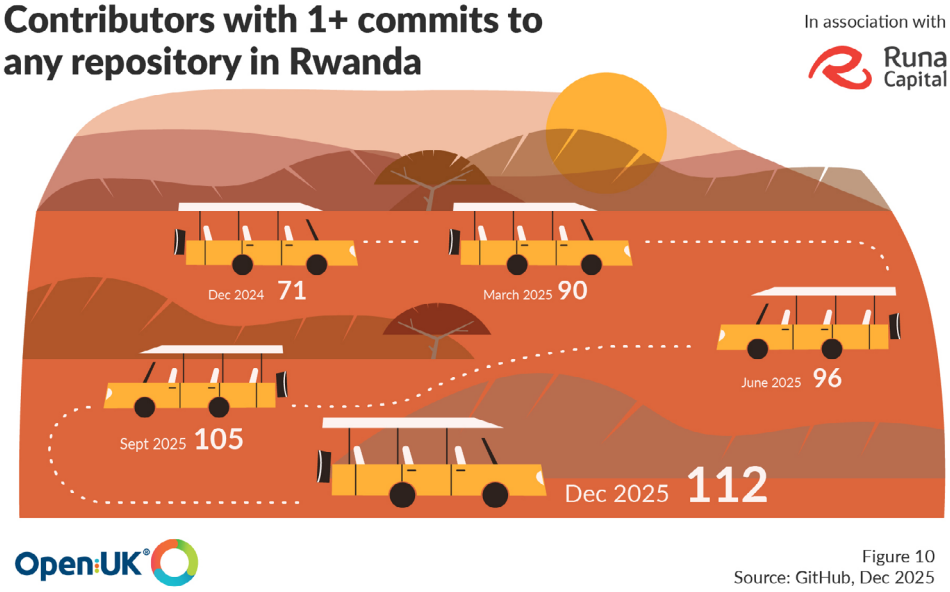


Figure 10
Source: GitHub, Dec 2025

The number of contributors making at least one commit to AI repositories in Rwanda shows modest growth across 2025. Starting at 12 contributors in December 2024, the figure increases to 15 by December 2025. Overall, this represents an increase of 25% over the 12-month period.

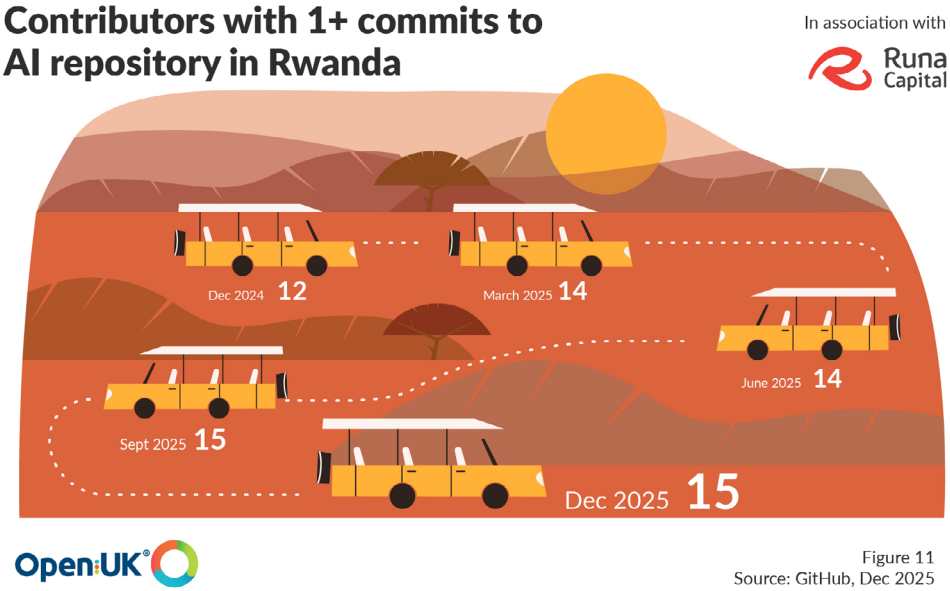


Figure 11
Source: GitHub, Dec 2025

2.1.7 Nigeria

Whilst not the key focus of this report GitHub demonstrates Nigeria is Africa's number one country, so we have included the data on Nigeria as a comparison.

The number of contributors making at least one commit to any repository in Nigeria shows steady growth throughout 2025. From 2,049 in December 2024, the number of contributors reached 2,371 by December 2025, representing an overall increase of approximately 16% over the 12-month period. This consistent growth points to a strengthening open source ecosystem in Nigeria, with a steadily expanding base of developers actively contributing to repositories.

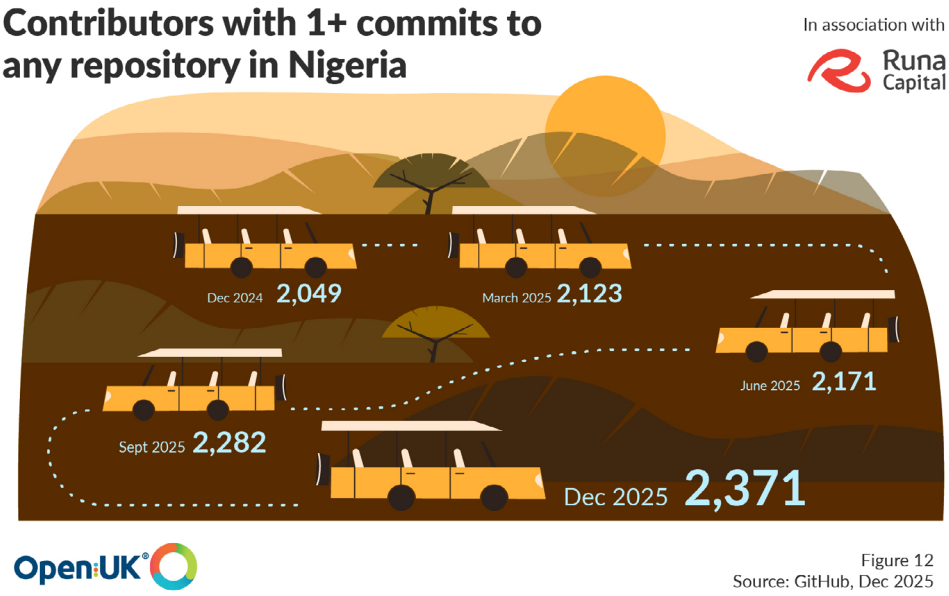


Figure 12
Source: GitHub, Dec 2025

The number of contributors making at least one commit to AI repositories in Nigeria shows strong and consistent growth across 2025. Starting at 137 contributors in December 2024, the figure increases to 180 by December 2025. Overall, this represents an increase of around 31% over the 12-month period.

With both a large contributor base and healthy growth in AI-focused contributions, Nigeria continues to demonstrate its position as a leading hub for open source and AI development on the continent.

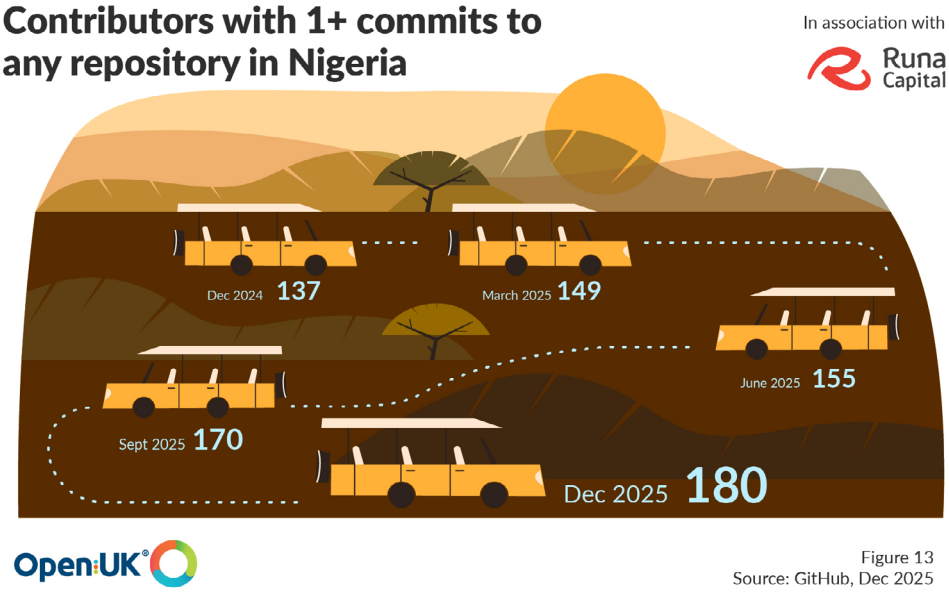


Figure 13
Source: GitHub, Dec 2025

2.1.8 Measure of developer activity and ecosystem engagement

We have used push updates from GitHub as a source of data on activity in actual development in Africa. This is the first time we have used such data. It offers an insight into one of four commands that the Git tool offers developers in their interaction with a remote repository on GitHub and an insight into real activity not just account holding.

Between Q1 2020 and Q3 2025, GitHub activity across Rwanda, Kenya, and Nigeria has grown dramatically, with all three countries showing 7 - 8 times increases in code pushes. This reflects a rapid expansion in developer participation and software development across the region.

Nigeria leads in total activity, at 2.3 million pushes, while Kenya surpasses 1.3 million, and Rwanda - though smaller in scale - demonstrates strong proportional growth. Together, these trends highlight the emergence of Africa as a fast-growing contributor to the global developer ecosystem.

This data indicates that Africa is not just adopting technology - it is actively building and contributing to it at scale. The sharp rise in GitHub activity points to a future where the region plays an increasingly important role in global software development and open source innovation.

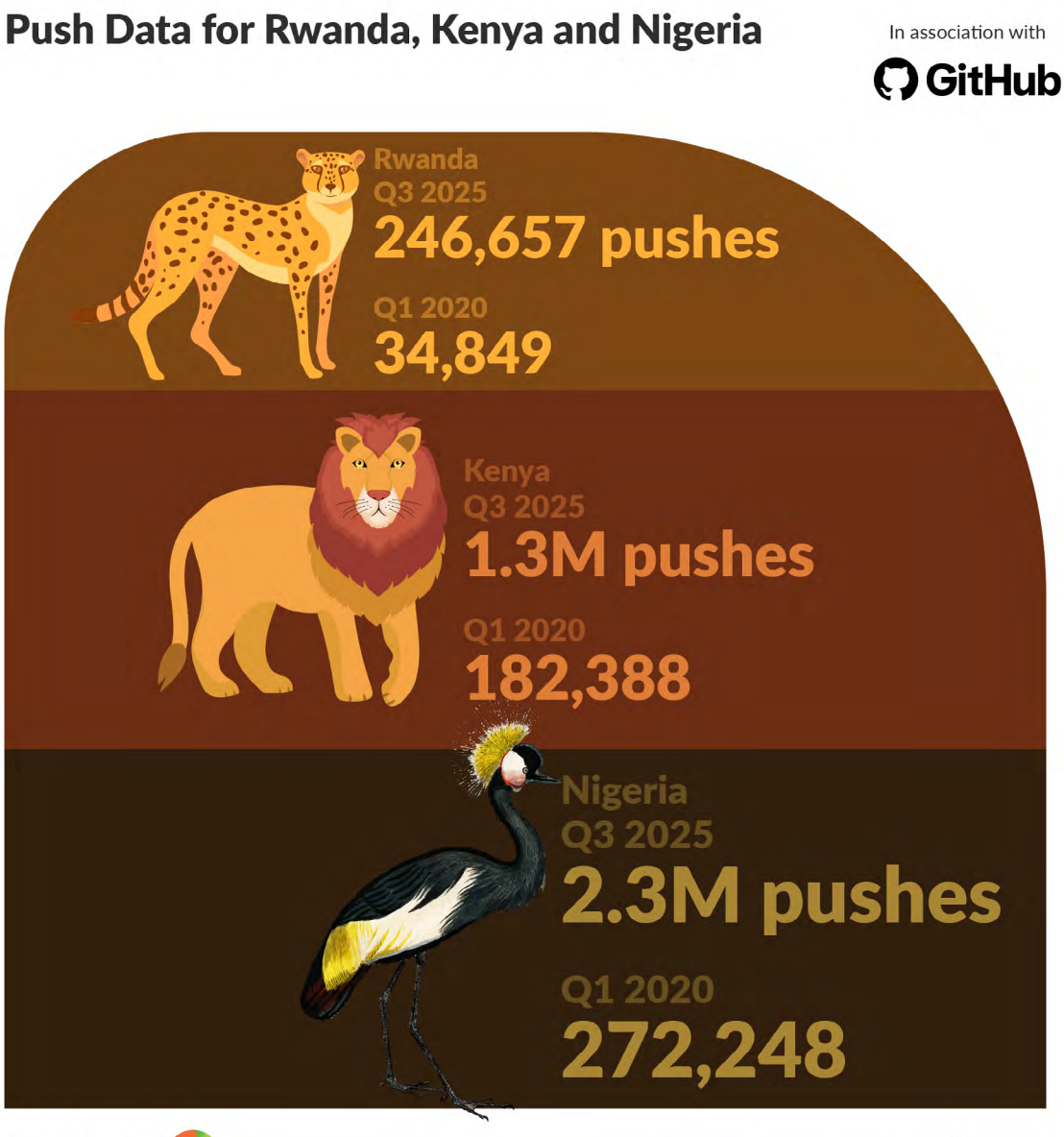


Figure 14
Source: Github innovation graph, Q3, 2025

2.2 Repository Data

2.2.1 Africa's Open source repositories

Figure 15
Source: GitHub, Dec 2025

The number of repositories with 1k or more stars across Africa has seen notable growth throughout 2025. From 127 repositories in December 2024, the figure rose steadily to 177 by December 2025. This roughly 39% percent trend reflects the growing visibility and impact of African open source projects on the global stage.

Kenyan Open source repositories

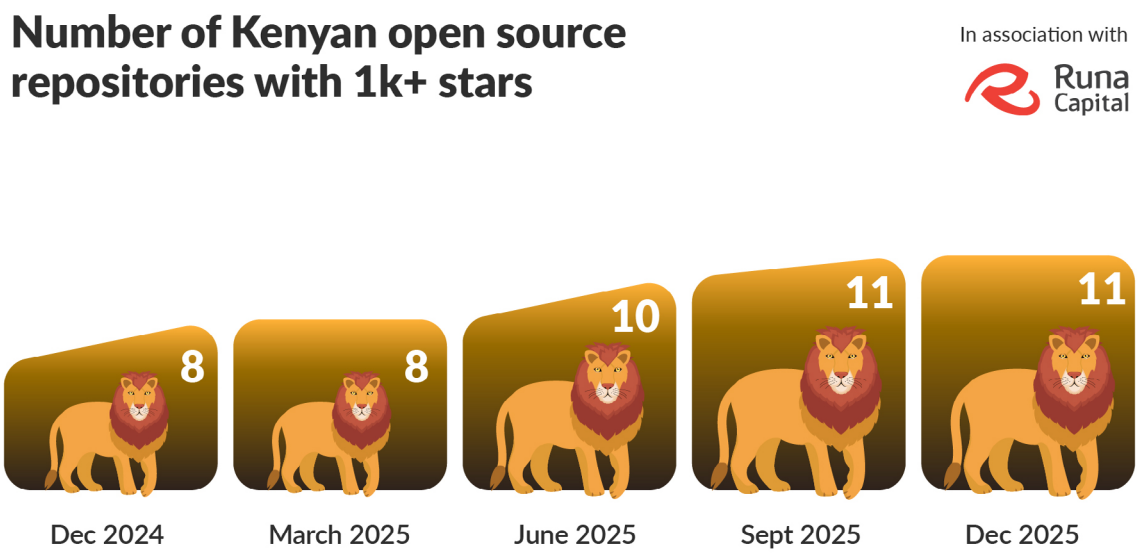


Figure 16
Source: GitHub, Dec 2025

The number of repositories with 1k or more stars in Kenya grew from 8 in December 2024 to 11 by December 2025, an increase of approximately 38%. This steady growth reflects Kenyan developers increasingly building projects that gain meaningful global recognition.

Nigeria Open source repositories

Figure 17
Source: GitHub, Dec 2025

The number of repositories with 1k or more stars in Nigeria rose from 22 in December 2024 to 26 by December 2025, an increase of approximately 18%. Nigeria continues to lead the continent in producing open source projects that attract significant community engagement.

Rwanda Open source repositories

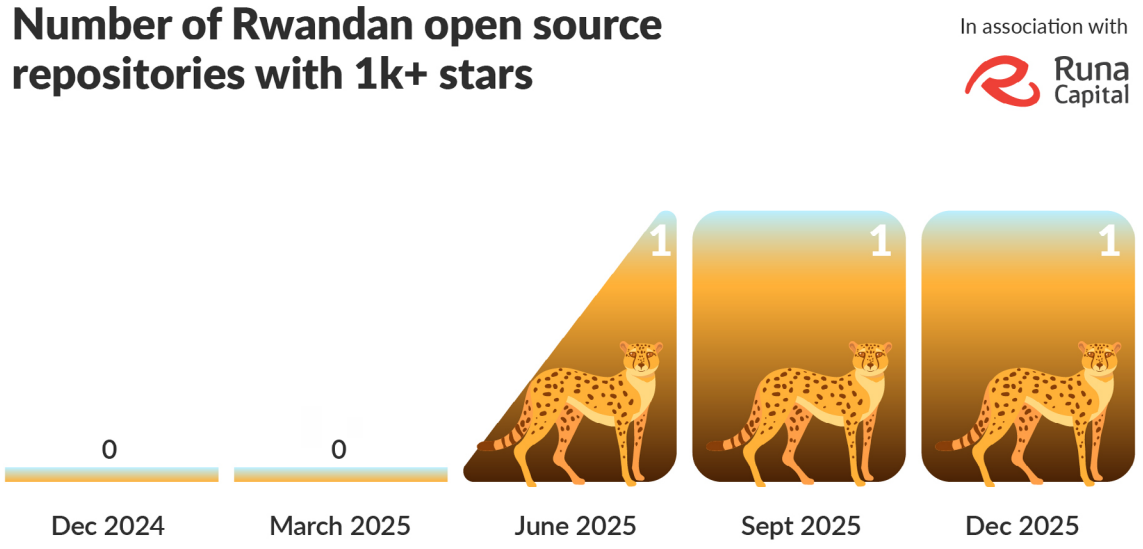


Figure 18
Source: GitHub, Dec 2025

Rwanda saw its first repository cross the 1k-star threshold in 2025, rising from zero to 1 by June 2025. While early, this milestone marks an important step for Rwanda's growing open source community.

2.2.2 AI repositories that are open

Across the three countries, AI repositories crossing the 1k-star threshold remain rare but are beginning to emerge. Nigeria was the first to reach this milestone, with one AI repository achieving 1,000+ stars by March 2025, while Kenya followed with its first in September 2025.

Figure 19
Source: GitHub, Dec 2025

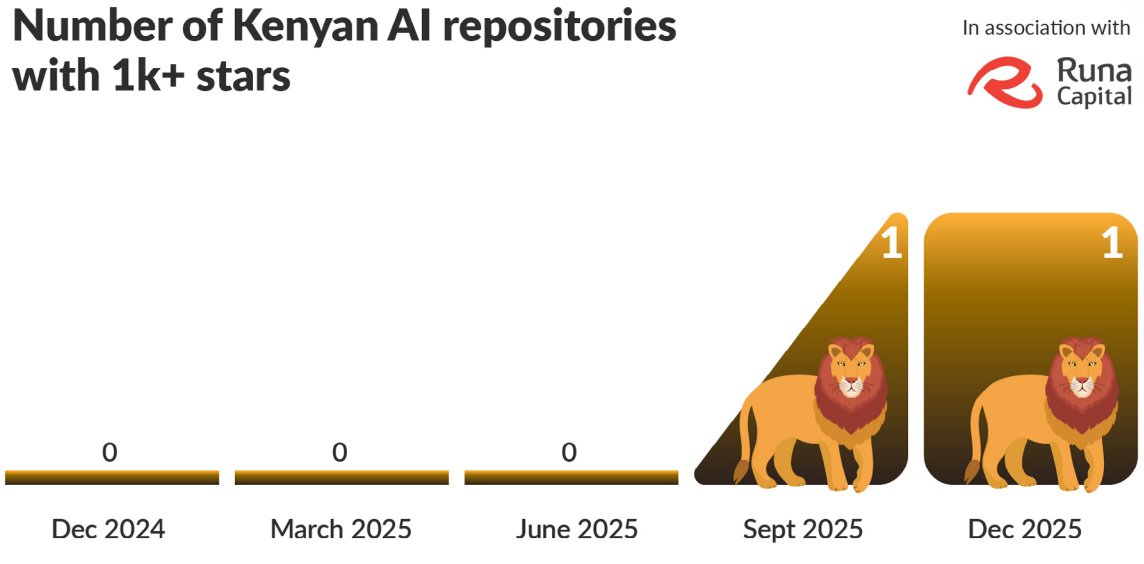


Figure 20
Source: GitHub, Dec 2025

Rwanda is yet to have an AI repository reach this level. These early milestones reflect promising growth of AI-focused open source development across the region.

2.3 Download Data, Scarf

According to data provided by Scarf, in January 2026, Nigeria recorded the highest volume with 16.9 million downloads, followed closely by Kenya with 13.9 million, and Rwanda with 3.7 million. All three countries show strong month-on-month growth — 16.8% in Nigeria, 22.1% in Kenya, and 20.6% in Rwanda — highlighting rapid expansion and increasing reliance on open source technologies across the region.

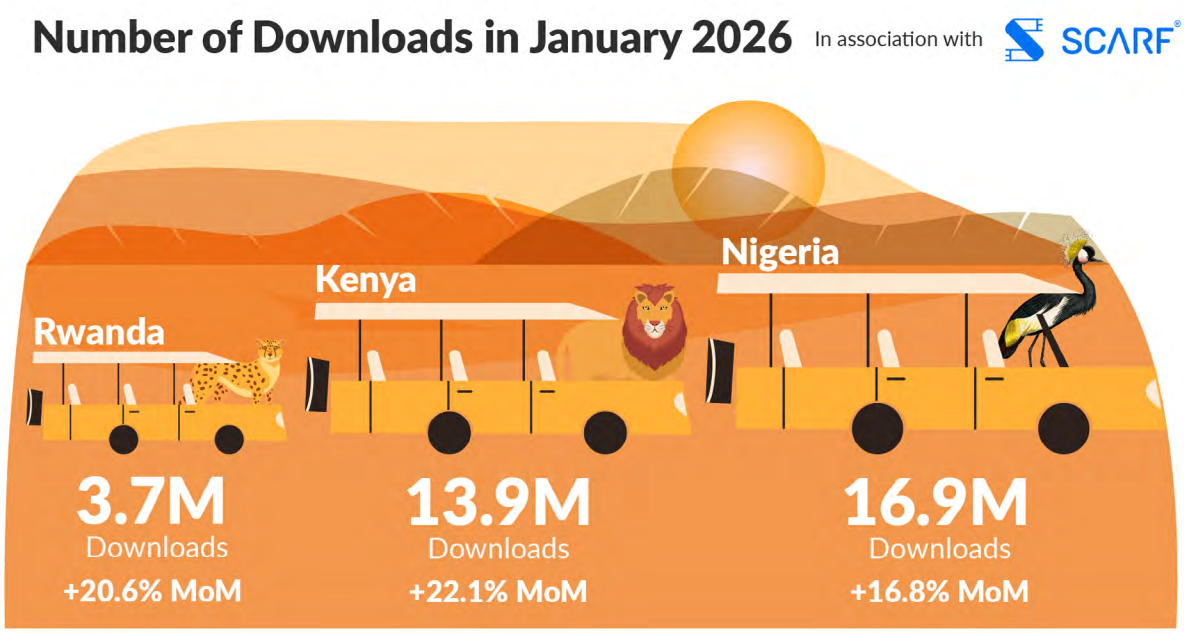


Figure 21
Source: Scarf

Unique organisations indicate how widely open source is adopted across the economy, while unique public-sector organisations show the level of government engagement. Together, they highlight both the breadth of adoption and the extent to which open source is institutionalised.

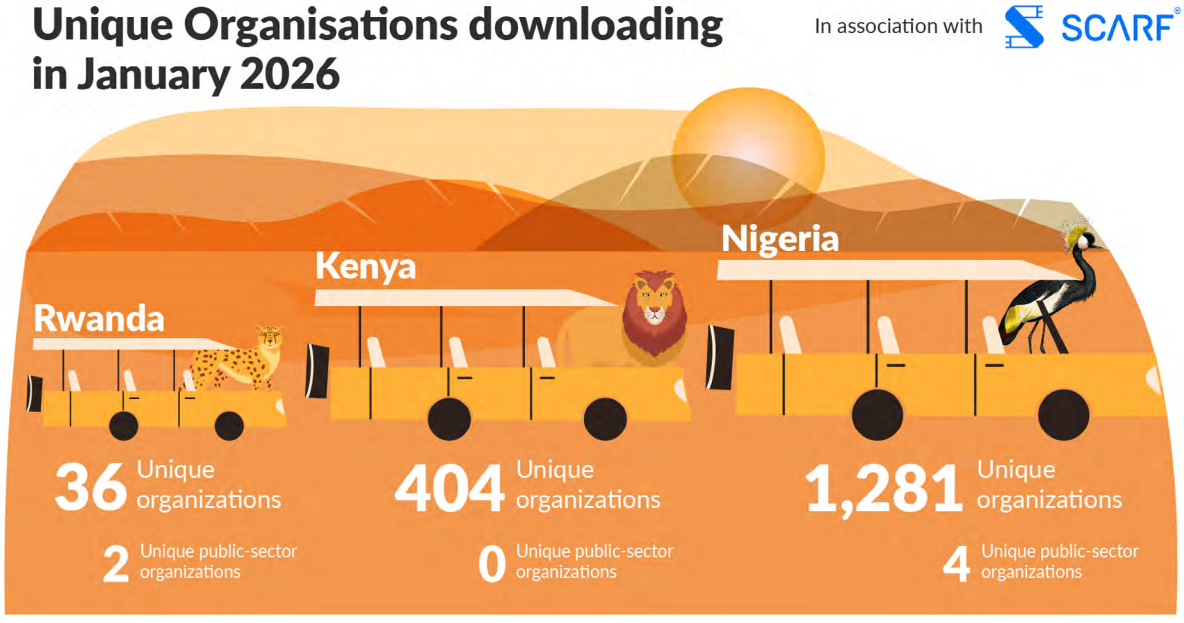


Figure 22
Source: Scarf

In January 2026, we see Nigeria lead with 1,281 unique organisations, downloading compared to 404 in Kenya and 36 in Rwanda. This indicates a broader and more distributed ecosystem at the present time.

However, public-sector participation remains limited overall, with four organisations in Nigeria and two in Rwanda, while Kenya records none — suggesting that, despite strong usage, open source adoption has yet to be institutionalised within government in most cases.

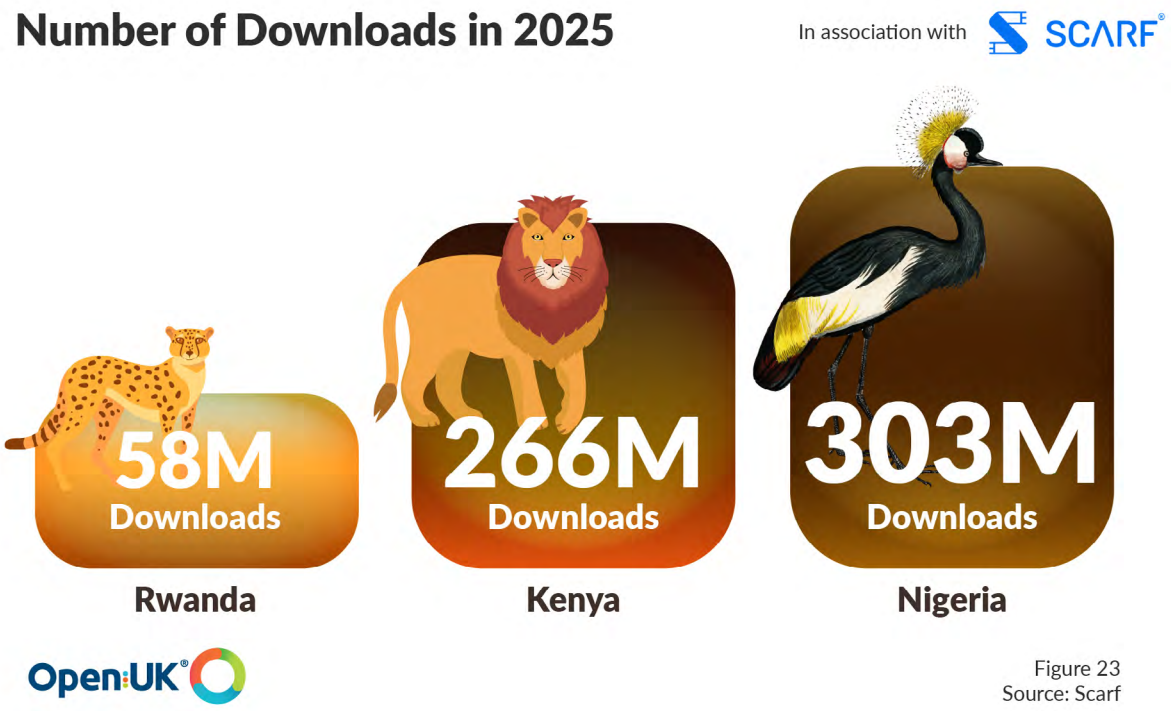


Figure 23
Source: Scarf

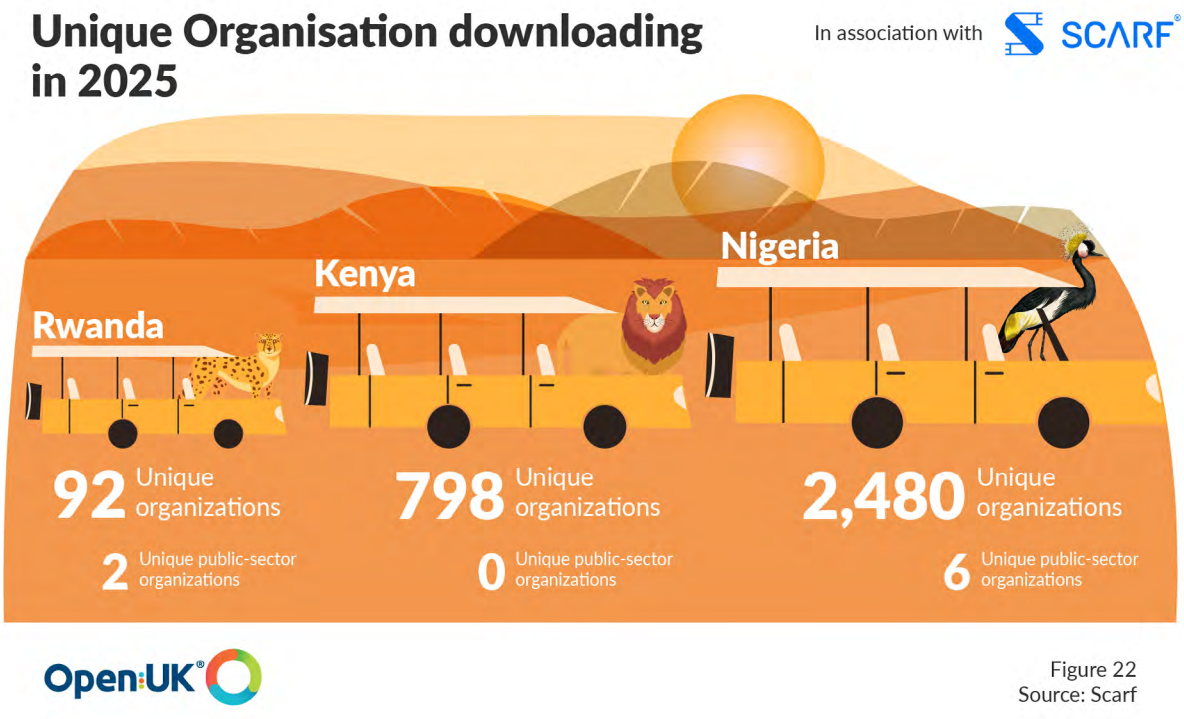


Figure 22
Source: Scarf

3. Banking the unbanked in Africa with open soure

3.1 Financial Inclusion through Open Source

Kosta Peric
Deputy Director Financial Inclusion and Chair Mojaloop Board

Chair of Mojaloop and Deputy Director of Financial Inclusion at Gates Foundation Kosta Peric is the man who persuaded Bill Gates to build open source infrastructure for payment systems to build financial inclusion. He tells us that for many people in low and middle-income countries, a payment is their first interaction with the formal financial system. Whether it is a farmer receiving payment for goods, a government paying health workers, or a parent transferring money to a child in another city, these transactions depend on infrastructure that is reliable, safe, and affordable. When the system works, trust builds. When it fails even once, that trust can be difficult to recover.

Over the past two decades, financial access has expanded significantly. In 2011, roughly 42 percent of adults in low and middle-income countries had a formal financial account. Today, that figure stands at approximately 75 percent, representing around two billion additional people. The gender gap in access has also narrowed, from about nine percentage points to five.

This progress has been shaped by a combination of factors, including government-led infrastructure modernisation, stronger regulatory frameworks, the spread of mobile connectivity into rural areas, and the growth of agent networks beyond the reach of traditional banking. Among the most consequential developments has been the shift from fragmented payment networks to interoperable ones. When providers operate in silos, costs remain high, innovation slows, and users are forced to navigate disconnected systems. Interoperability changes this. It opens the market to new providers, drives competition, and results in better services at lower cost.

The role of open source

Mojaloop is an open source platform designed for interoperable instant payment systems. It provides the infrastructure needed to connect banks, mobile money providers, and other financial institutions so that payments can move quickly and securely across networks.

The open source model offers several practical advantages. Countries are not locked into a single vendor and can adapt the technology as their needs change. Providers compete on the quality of their services rather than over control of the infrastructure itself. Innovation can happen at the edges of the system, with fintechs and banks building new products on top of shared rails. Without licensing fees, more resources can be directed toward operations and service delivery. And countries retain control of their payments infrastructure, supporting digital sovereignty and long-term adaptability.

These advantages are already visible in practice. In Rwanda, interoperable digital payments have expanded access to financial services and become embedded in everyday commerce. In Liberia, interoperability across mobile money providers is building a connected payment ecosystem from an early stage. Across Africa, 25 countries now have an inclusive instant payment system in place, five more are in development, and the majority use Mojaloop as their core infrastructure.

Sustainability beyond 2030

The Gates Foundation's Inclusive Financial Systems program, which helped catalyse much of this work, is entering its final phase and will close in 2030. The Foundation's role was designed to be catalytic — to build infrastructure, strengthen regulatory capacity, and open markets so that financial systems could expand sustainably. Over the next five years, the priority is to help ensure that every country in Africa has an inclusive instant payment system in place, supported by strong regulatory and supervisory institutions.

The question that follows is whether these systems will endure beyond the Foundation's direct involvement. Open source offers a credible path. Projects like Linux and the Apache Software Foundation demonstrate that shared infrastructure can thrive over the long term when sustained by active communities of contributors and institutions. The Mojaloop Foundation and the global community around it — central banks, operators, implementers, and developers — are positioned to carry this work forward.

As payment systems continue to evolve, they will need to adapt to new technologies, strengthen security, and meet rising expectations from users. Collaboration across the ecosystem, including with initiatives like the Tazama project at the Linux Foundation focused on fraud management, will be essential to maintaining trust and integrity. The measure of success will not be how many systems are operational in 2030, but whether they continue to strengthen economies and serve people effectively in the decades that follow.

> Open source serves as the bedrock of Africa's digital sovereignty by providing the flexibility to build locally-owned, interoperable infrastructure that bypasses the high cost and 'black box' limitations of proprietary software.
>
> The successful deployment of Mojaloop-powered systems in Rwanda and Liberia demonstrates this value, as these nations have significantly accelerated financial inclusion by launching national payment switches in record time to connect previously fragmented mobile and banking networks.
>
> **Robert Karanja, Founder & Senior Advisor, DPI4Africa and Board Member, Mojaloop Foundation**

3.2 Introduction to the Mojaloop Payment Platform

Steve Haley,
Director of Market Development, Mojaloop Foundation

National instant payment systems are the digital rails on which modern financial inclusion depends. Without interoperable infrastructure connecting banks, mobile money providers, and other regulated institutions, digital payments remain siloed. Mojaloop exists to provide those rails as open source public infrastructure, owned and operated by the countries that use them. Mojaloop is open source software developed and maintained by the Mojaloop Foundation and is built atop technologies such as Apache Kafka, Redis, and Node.js. It is described as a "reference model for creating interoperable payments platforms." Rwanda's National Digital Payment System 2.0, better known as eKash, is built on top of the Mojaloop software. What advantages do countries building national payment systems on top of Mojaloop leverage?

Origins of Mojaloop

The idea behind Mojaloop was announced in 2018 by the Gates Foundation. The problem it was created to solve emerged from the mobile money revolution, particularly in Africa, where mobile money had proven itself as a powerful driver of financial inclusion, but every system operated in isolation. These siloed networks limited the reach of digital payments and left millions unable to transact across providers.

Most existing interoperability platforms are designed as extensions of card-based payment systems. Card transactions work on a "pull" mode, where one party hands over their credentials and trusts the other party to debit the correct amount. Push payment systems, where the sender maintains control of their funds, carry fundamentally less risk and lower cost, but they require infrastructure that is purpose-built for that model. Mojaloop was designed from the ground up to serve interoperability for push payments.

Though open from the start, Mojaloop was initially expected to remain an open source proof of concept that vendors could pick up and eventually productionise. What they did not anticipate was the depth of dissatisfaction countries felt toward incumbent vendors. As Steve Haley, Director of Market Development at the Mojaloop Foundation explained, "the degree of dissatisfaction with the proprietary vendors was higher than the dissatisfaction with the fact that they were built for traditional banking systems." Because of this widespread frustration, "freedom from proprietary vendors" became a bigger selling point for countries than the technical superiority of the system itself. This created a strong demand for a completed, enterprise-grade open source system. Work on Mojaloop continued to now where it stands as a complete open source product as opposed to the initial iteration, which served only as a proof of concept.

Freedom from proprietary lock-in became the primary selling point, even more than the technical superiority of the software itself. Countries want sovereignty over their payment systems, including the ability to add new use cases, respond to local needs, and avoid submitting costly change requests to foreign vendors.

Mojaloop today

Mojaloop became an independent foundation in 2020, and its current strategy as an active ecosystem driver began in late 2022. The foundation operates with a team of twelve, supported by a wider community of roughly 200 active contributors. As of early 2026, Mojaloop is live in three countries, with an expectation of reaching twelve by the year's end.

Advantages for adopting countries

Countries building national payment systems on Mojaloop leverage several advantages. First, they build sovereign systems they own and control, while maintaining alignment with other adopters through a shared technical foundation. Second, the open source model removes the commercial bias inherent in proprietary solutions. The foundation can identify where rent-seeking occurs in payment value chains and propose ways to reduce it, which commercially motivated actors are not incentivised to do.

These advantages extend to cross-border payments. While Mojaloop was designed primarily for domestic systems, its common architecture means that countries adopting it can more readily achieve interoperability with one another. The Common Market for Eastern and Southern Africa "COMESA" is building its regional payment integration on Mojaloop, and similar initiatives are underway across other African regional economic communities.

Building local capacity

The Mojaloop model emphasises developing local technical ecosystems. The foundation runs a training program of 14 self-paced online courses and a Mojaloop Accelerator Program that creates country-specific cohorts. When a central bank or national switch operator commits to adoption, they nominate three to five local system integrators. These are typically the leading technology firms already building enterprise financial systems in-country. Training only begins once a genuine market signal exists, ensuring that capacity-building is linked to real opportunities.

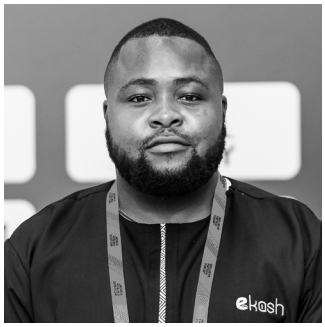
Looking ahead

Haley identifies procurement reform as the single biggest structural barrier to faster adoption. International financial institution procurement processes, designed decades ago, create a problem for locally built open source solutions by demanding prior implementation track records that, by definition, new local implementers cannot have.

Despite these challenges, Mojaloop is gaining momentum. Once the first 10 countries are live, the path to 50 becomes far more achievable. For Haley, the deeper aspiration is that the Mojaloop community will be positioned to shape future financial technology standards. He hopes the conversation around those standards will increasingly reflect the priorities of developing economies, particularly in Africa, Latin America, and Southeast Asia, rather than being driven primarily by the interests of major financial institutions and payment networks.

Mojaloop's code is freely available, but building a national payment system on it is not free. Implementation requires skilled system integrators, training programs, procurement reform, and sustained technical support, all of which carry real costs. International financial institutions such as the Gates Foundation, the African Development Bank, and the World Bank fund payment system development across the countries Mojaloop seeks to serve. As Haley puts it, the critical challenge now is ensuring that as these institutions continue to fund implementations, countries direct some of that funding to "support the open source" which in turn will sustain the shared platform their systems depend on.

3.3 RSwitch - How Rwanda built a sovereign payments system with Mojaloop



Clinton Tinotenda Chirenje,
Senior Communications and Marketing Officer, RSwitch

Rwanda's National Digital Payment System 2.0, better known as "eKash", is the country's interoperable digital payments system, enabling real-time cross-network transactions between banks, mobile money operators, and other financial institutions. Steve Haley, Director of Market Development at Mojaloop describes the RSwitch team as "by far the most qualified" implementer of Mojaloop, able to speak to the realities of operating a Mojaloop-based system at national scale.

Founded in 2003 and headquartered in Kigali, RSwitch is a private company that develops payments solutions for the Rwandan market. Under the Government of Rwanda's Vision 2050, RSwitch was tasked with building eKash, the country's national digital payments system, in a collaboration led by the National Bank of Rwanda alongside public and private sector partners. RSwitch also operates the 'SmartCash' scheme of debit cards issued by banks in Rwanda. We spoke with Clinton Tinotenda Chirenje, a Senior Communications and Marketing Officer at Rwanda's RSwitch, whose role sits at the intersection of strategy and execution.

The RSwitch Origin Story

RSwitch's journey to Mojaloop was guided by both business and national strategic priorities. The organisation needed a system that could support current payment use cases such as merchant payments but that would also scale as the payments ecosystem grows over time at a national level. Digital Sovereignty is critical and for Rwanda means full ownership and control of its national payments infrastructure, including the ability to understand, adapt, and evolve the system independently without reliance on an external vendor.

Rwanda wanted a payment platform solution that it could fully control and adapt, rather than finding itself being locked into a proprietary platform. A market survey included a detailed audit and feasibility assessment, evaluating how different potential payment platform solutions could fit within Rwanda's operational and regulatory landscape.

Mojaloop emerged as the most viable option as it aligned with the national strategy goals of universal access to financial services and self-reliance due to its open source nature. It also offered flexibility for future growth.

The team at RSwitch took a cautious, evidence-based approach, first implementing a proof-of-concept (PoC) with a single use case of merchant payments which they monitored closely for about six months. A revamped eKash was launched at the Inclusive FinTech Forum in Kigali in February 2025, supporting both personal and merchant payments. Data collected between then and September 2025 showed eKash processing 1.5 million transactions per month, with more than 800 merchants having received person-to-business payments in the period. Rwanda's experience serves as both proof of concept and a reference point for the wave of implementations now underway across Africa and beyond.

Only after gathering insights on performance, adoption, and operational readiness of the system, did they proceed with full migration. As Chirenje puts it, "Mojaloop didn't just make sense technically, it made sense strategically, socially and economically."

Implementation

Mojaloop gave RSwitch a strong foundation, saving a huge amount of time and cost by removing the need to build an instant payments switch from scratch. Instead, the team could focus energy on tailoring the solution to the market — understanding local needs, participant readiness, regulatory requirements, and the operational realities needed for seamless functioning. In short they benefited from the efficiency of re-using well managed open source software.

The core Mojaloop software was used largely "out of the box", with only minor customisation required for security configurations and login workflows. On top of that, RSwitch built additional tailored modules to meet operational needs: dispute management portals, reconciliation portals, and a centralised ledger lookup that replicated key functionalities from the previous system. Being cloud-native, Mojaloop proved inherently scalable, offering full control and the ability to deploy new use cases without overhauling the system each time.

Promesse Ishimwe, previously a Senior Payment Product Consultant at RSwitch led the Dispute Management Workstream at Mojaloop to develop a dispute management solution that can be integrated with the Mojaloop software.

Implementation relied primarily on local skill and expertise, leveraging internal capacity and local partners like WiredIn. The guiding principle was to "build for Rwandans, by Rwandans." RSwitch collaborated with the Mojaloop ecosystem for guidance and best practices, but the heavy lifting, customisation, and ongoing operations were done locally. Along the way, the team also built and enhanced internal skills, ensuring they can maintain, evolve, and scale the system independently, reinforcing digital sovereignty and long-term sustainability.

They recognise that being part of the collaborative ecosystem and a growing community of implementers and users of Mojaloop will be a big advantage as time goes by and new innovations emerge.

Challenges

There were several institutional challenges to navigate. First, there was natural doubt as this was the first time RSwitch implemented something of this scale, and stakeholders wanted to know who they could turn to if things didn't work out. Human capital and funding were also constrained; at the time, there weren't sufficient resources allocated for a system of this complexity, which meant the team had to be strategic in deploying talent and managing the project.

Past perceptions of RSwitch played a role too. Some government entities, market players, and other stakeholders were cautious about whether the organisation could deliver. Gaining their trust required careful alignment, transparency, and tangible early wins.

Market challenges added further complexity. Expanding beyond Person to Person (P2P) payments was a priority for RSwitch, but the previous system had been adversely constrained by vendor lock-in. This meant a procurement choice between securing external funding for a proprietary solution or pivoting to open source. Because Mojaloop is open source, it doesn't come fully-fledged out of the box ready for all purposes and scenarios. RSwitch built additional features and add-ons to meet the practical needs and nuances of the ecosystem, such as dispute management and reconciliation tools. However, these challenges were also opportunities as since the system is open source, every addition could be customised exactly to requirements, with full control maintained throughout.

Sovereignty and the open source advantage

Digital sovereignty was a key goal from the outset. RSwitch is not locked into a vendor's roadmap or pricing model. Instead, it can customise features, integrate participants more efficiently, and scale the system in a way that reflects Rwanda's priorities as a country.

From a policy perspective, open source aligns strongly with national and regulatory goals around many of the requirements of sovereignty - interoperability, competition, and financial inclusion. It ensures that no single player owns the rails over which the digital engine passes, creating a neutral, trusted infrastructure where banks, mobile money operators, and fintechs can participate on equal footing. This is critical for long-term ecosystem growth and innovation.

Consumer and ecosystem impact

The social impact has been tangible. Open source has enabled RSwitch to design a system that is inclusive by default. Smaller institutions like Savings and Credit Cooperative Organizations (SACCOs) and Microfinance Institutions (MFIs) can be intentionally onboarded, ensuring that underserved communities are not left behind simply because they are not commercially attractive to proprietary providers.

For consumers, the biggest shift is choice and convenience. A customer is no longer limited by their provider. They can send money across networks instantly. For merchants, especially small businesses, it means being able to accept payments from any customer, regardless of the wallet or bank they use, providing a direct boost to their ability to transact and grow.

The ecosystem has begun to shift from competition on infrastructure to competition on value. Instead of building isolated systems, institutions can now focus on creating better products, better user experiences, and more relevant financial services on top of a shared platform. As Chirenje describes it, open source has allowed Rwanda to move from a fragmented financial system to a collaborative one. We see it in a state of healthy co-opetition.

Data protection and compliance

Data protection and regulatory compliance were treated as a foundational layer of the implementation. RSwitch aligned closely with the National Bank of Rwanda to ensure that everything — from system design to participant onboarding — met national regulatory requirements, including compliance with data protection laws, payment system regulations, and oversight frameworks for interoperability.

On the technical side, security and privacy fundamentals are embedded by design. Strong encryption for data both in transit and at rest, strict access controls, and a principle of sharing only the minimum necessary data between participants during transactions. The architecture itself supports this by separating roles clearly, so no single participant has unnecessary visibility into the full transaction lifecycle.

> [Rwanda is] Not building a payment system but a financial ecosystem capable of supporting the country's digital future.
>
> **HE Paula Ingabire,**
> **Minister of ICT, Rwanda At Mojacon30**

3.4 MojaCon30, Her Excellency, Paula Ingabire,Minister of ICT and Innovation

Speaking at the Inclusive Fintech Forum's MojaCon 30 Convening, Rwanda's Digital Minister offered an insight into what is possible with a clear policy choice. Rwanda is treating every digital payment as more than a financial structure, but rather as something that includes growth and inclusivity. She explained that mobile money penetration exceeds over 80% of the population of Rwanda. Digital payments are growing rapidly.

Central to this is Rwanda's National Digital Payment System (eKash) which is the central payment platform built on the Mojaloop Digital Public Good. It's specifically designed to enable financial interoperability of payment platforms and agent networks.

She described its benefits as being "Open, interoperable, secure and designed for inclusion across the entire ecosystem."

The ecosystem, instead of operating multiple fragmented systems, can connect to a single platform, a shared national platform. Key use cases like person to person and merchant payments. This is only the beginning when you look at the use cases to be built into the system, you can only think of a brighter future. She recognises that Rwanda is "not building a payment system but a financial ecosystem capable of supporting the country's digital future."

Work together in building sustainable systems that benefit everyone. The goal remains the same across countries. Digital Infrastructure must be open, inclusive, secure and capable of supporting the next generation of the digital economy. It is possible to build payment systems that truly serve the good of all."

Steve Hayley of Mojaloop acknowledged in his speech that the Minister's leadership has become a key example for digital transformation by adopting a sovereign Digital Public Infrastructure principle.

The Minister was also a strong voice for Rwanda at the AI Impact Summit in Delhi in February, engaged in Africa's AI future and driving the agenda in the Global South.

4. Kenya's Open Source Ecosystem

4.1. Fireside Chat with Paul Statham

Paul Statham
Commercial Director, Atlancis Technologies

Paul Statham is a technology strategist and Commercial Director and plays a central role in shaping the vision and execution strategies of Atlancis Technologies. At Atlancis, he operates at the intersection of infrastructure, investment, and policy, guiding the company's mission to build sovereign digital capacity across Africa. Atlancis focuses on delivering next-generation cloud platforms, combining open source software and open hardware to create scalable, locally-operated infrastructure. Its core proposition of "Open-on-Open" centres on deploying an enterprise cloud stack using technologies such as OpenStack on hardware aligned to the Open Compute Project.

Is there notable government or public-sector engagement with open source in Kenya, and what do you see as the main barriers to deeper adoption — whether that's procurement culture, skills gaps, funding, or regulatory frameworks?

Within Kenya, the policy landscape around open source is evolving, but not yet fully crystallised into a formal "open source first" doctrine of the kind seen in some other Commonwealth jurisdictions. The Information and Communication Technology Authority has taken a leading role in promoting interoperability, standards, and vendor neutrality, while national platforms such as e-Citizen demonstrate a clear commitment to sovereign digital service delivery. These developments, coupled with data protection regulation, are creating the conditions in which open technologies become not only viable, but strategically advantageous to Kenya.

However, adoption remains uneven. Procurement frameworks continue to favour established proprietary vendors, and there is not yet a unified national policy mandating open source as a default. Awareness gaps persist at senior decision-making levels, particularly around total cost of ownership and long-term control. At the same time, the ecosystem faces structural challenges: advanced infrastructure skills are still developing, funding for capital-intensive platforms is limited, and the open hardware landscape, despite the potential of the Open Compute Project, is still nascent.

Are there active developer communities or programs helping grow the ecosystem, and how would you describe the current open source landscape in Kenya in terms of both software and hardware?
Yet, it is precisely against this backdrop that the future of open source in Kenya becomes compelling. What is most striking is the convergence now underway between grassroots capability and institutional intent.

Developer communities such as Python Kenya, Nairobi DevOps Community, and pan-African networks like Open Source Community Africa are no longer peripheral: they are forming the talent backbone of the digital economy. They are increasingly connected to global programs such as Google Summer of Code, which provides Kenyan developers with direct pathways into upstream contribution and global collaboration.

Kenya is widely seen as a leading African tech hub. How much of that status owes to open source, and how does Atlancis's vision of digital sovereignty — building and operating infrastructure locally — depend on open technologies?

Enterprise and public sector demand for cloud, AI, and data infrastructure is accelerating. This demand cannot be sustainably met through external dependency alone. The economics, the regulatory environment, and the geopolitical context all point toward greater localisation. Open source, by its very nature, is the only model that allows that localisation to occur at scale without recreating dependency in another form.

Looking ahead, what excites you most about the future of open source in Kenya over the next few years?

What is particularly exciting over the next few years is the transition in Kenya's open source environment,- from participation to ownership. Kenya has already demonstrated that it can build world-class application-layer innovation, e.g., M-Pesa. The next phase is infrastructure ownership: cloud platforms, AI compute layers, and eventually hardware supply chains. This is where the "Open-on-Open" model becomes catalytic. By combining platforms such as OpenStack with hardware approaches aligned to the Open Compute Project, there is a realistic pathway to building sovereign, industrial-scale digital infrastructure within the country.

Equally important is the generational shift currently underway.

A new cohort of engineers in Kenya is being trained directly on open technologies, collaborating globally from the outset, and approaching infrastructure with a fundamentally different mindset; one that assumes openness, modularity, and community as defaults. This cultural shift is arguably as important as any policy or investment, because it underpins sustainability.

Are there lessons Kenya can share with, or learn from, other Commonwealth nations?

From a Commonwealth perspective, Kenya is particularly well positioned. It has legal and institutional frameworks that can evolve toward "open first" policies, a strong education base, and deep integration into global technology networks. If these elements are aligned, through clearer policy direction, targeted investment, and public-private collaboration, the country can move rapidly from an adopter of open source to a shaper of it.

Where does Atlancis sit within that broader picture?

In practical terms, the future is not about replacing Hyperscalers outright, but about rebalancing the ecosystem. Sovereign, open platforms will co-exist with global services, but with far greater local control, economic retention, and strategic autonomy. Atlancis' role within this is to provide the bridge between community capability and enterprise-grade delivery: to take the principles of openness and translate them into operational infrastructure.

What is most exciting, therefore, is not a single technology or policy, but the alignment now emerging across all layers: community, capability, regulation, and demand. For the first time, the conditions exist for Kenya to build, own, and scale its digital infrastructure on its own terms. Open source is the foundation of that shift, and "Open-on-Open" is the mechanism through which it becomes real.

4.2 Case Study: Youth Training in the Kakuma Refugee Camp

Ramadhani Olomwene
Founder & CEO, Youth Education and Development Association

Kakuma Refugee Camp sits in the arid plains of Turkana County in northwestern Kenya. Established in 1992 to host unaccompanied minors fleeing war in Sudan, it has since grown into one of the largest refugee settlements in the world. The wider Kakuma-Kalobeyei area now hosts over 300,000 refugees, displaced from South Sudan, Somalia, the Democratic Republic of Congo, Burundi, Ethiopia, and elsewhere. Formal employment barely exists, and many residents are long-term refugees with limited prospects.

It is not an obvious place to find a coding school. But that is exactly what the Youth Education and Development Association (YEDA) has built. YEDA was founded by Ramadhani Olomwene, who came to Kakuma from the Democratic Republic of Congo after being displaced by conflict. He saw a need to support training to engage the camp's citizens into employment and inclusion.

Ramadhani started the organisation in June 2014, initially running hairdressing and sewing machine training funded by their own member community contributions. It was registered as a Community Based Organisation (CBO) in Kenya in 2017. Over the years, it has grown into something much broader and scaled considerably. Today it also benefits from open source software.

What YEDA does

YEDA's flagship programs today focus on tech training. It runs training in digital literacy, full-stack web development, coding, and artificial intelligence (AI). The goal is to give young refugees skills they can use to earn a living, whether through remote freelancing, online work, or building things for their own communities.

The organisation recently launched an AI training programme taking around 150 refugee youths per cohort, covering AI concepts, responsible use of AI tools, full-stack development, entrepreneurship, and problem-solving. YEDA is keen to connect this work with the wider open AI community and is looking for partnerships to do so.

Open source at the heart

Open source software runs through YEDA's digital training. In the full-stack development programme, learners build real applications using open source software such as React, Node.js, MongoDB - the same ones used by professional developers worldwide.

The reasons to engage with open source are partly obvious. Open source is freely accessible and money is scarce. But it goes further than cost. Open source tools connect learners to global developer communities. Its transparency enables them to study how software is built, and contribute to real projects. They have the potential to use their track record that is visible to potential employers anywhere to build a living CV. This is especially important in a refugee camp, where people are largely cut off from formal economies.

Ramadhani describes learners who arrived with no computer experience at all and went on to gain working development skills. Some now explore online earning opportunities. Others have started using their skills to run community projects within the camp.

Beyond digital skills

Tech training gets the most attention, but YEDA's work is much wider than that. The organisation runs English language classes for children, community health training, and peace-building courses. It also runs an ICT programme specifically for girls aged 13 to 17.

YEDA has also run livelihood programs. A solar cooking project supported by partners in the United States trained women to use solar ovens, reducing fuel costs and charcoal dependence. A sewing machine training initiative for widows and young married women visibly reduced prostitution in the camp while it was running, but stalled when funding ran out. The organisation distributes tree seedlings and runs permaculture training for refugee communities.

What they need

YEDA is a community organisation with almost no resources, teaching young refugees to code using open source software. Their commitment illustrates that open source is not just a policy choice for governments and corporations, but also the default for people who simply cannot afford the alternative.

YEDA does not have enough computers. Internet connectivity is unreliable. There is no permanent classroom. Learners need mentorship from working developers, access to scholarships and internships, and pathways to remote employment.

How to help

YEDA is asking the global open source and technology communities for practical help. Hardware, funding for training programs, developer mentorship, partnerships with open source projects, and connections to remote work and internship opportunities for learners.

YEDA welcomes partnerships, donations, mentorship, and collaboration with organizations and individuals who believe in empowering refugee communities through technology and education.

People who want to support YEDA can contribute to their programs that empower refugee youth through education, technology, and innovation. To engage please reach out directly or donate.

4.3 Case Study: Kenya Open Source Program Office

Evans Ikua, OSEE Kenya, Project Manager

John Kiria, Director of ICT, State Department for ICT & Digital Economy

Kenya is the first African nation to set up an Open Source Programme Office (OSPO) and it's certainly an OSPO with a difference. Housed at the Ministry of Information, Communications and The Digital Economy, the Kenyan OSPO was established as part of the larger Open Source Ecosystem Enabler (OSEE) project funded by the European Commission and implemented by the International Telecommunication Union (ITU) and United Nations Development Programme (UNDP). The OSPO represents the vision that open source can accelerate Kenya's aggressive digital transformation program while keeping costs manageable and building homegrown capacity. We spoke with Evanson Ikua, OSEE Kenya Project Manager and John Kiria, Director of Information Communication Technology (ICT). They are two of the three Directors reporting to Mary Kerema, Secretary, ICT, Digital Economy and Emerging Technologies.

Origins

Evanson Ikua, OSEE Kenya Project Manager is the driving force behind the OSPO's setup. He traces his involvement in open source back to 2003, when he was part of the Kenya Linux User Group (KLUG) and began championing open source adoption in the public sector. He went on to lead the Linux Professional Association of Kenya and contribute to the Free and Open Source Software Foundation Africa (FOSSFA), building networks across the continent. When the OSEE program issued a call for national OSPO proposals, Ikua applied with support from the Kenyan government and Kenya was selected as one of just two successful applicants out of 28, alongside Trinidad and Tobago. The OSPO was formally launched in November 2025 and today has a governance structure, a secretariat that supports, and 4 part-time employees.

Building understanding

The biggest challenges in the OSPO to date have been getting it off the ground which required building understanding of open source in the public sector and amongst leadership. This was delayed by the contract finalisation meaning that OSPO's initial two-year funding window lost a year in the set up and navigating internal formalities of establishing the office. Understandably people struggle with committing to the uncertainty of change and there have sometimes been misleading concerns on a number of topics around open source including security.

Implementation over advisory

The day-to-day operations of the OSPO support the government's efforts to coordinate and increase the adoption of open source software, which is currently fragmented across the public sector.

One of the first steps for the OSPO is conducting a landscape survey of software usage across the public sector which will be completed in a month. Whilst he awaits the transparency this will bring, he expects that much of the legacy utilisation is licensed enterprise versions of open source packages where support is included. Its known use of open source tends towards the server side, particularly distros and databases,

but less on the desktop. He identifies use cases of MySQL, PostgresDB and MongoDB as well as Linux Servers as being very important but much less usage and focus on the desktop."Nothing lasts forever, one day things might turn around and people will adopt open source on the desktop. We need to have a pragmatic approach to what we use," says Ikua.

As Director of ICT John Kiria explains, the OSPO prioritises engineering and delivery of solutions over the traditional advisory role that defines OSPOs elsewhere.

The office is working to shift the government away from reliance on proprietary systems, both on-premises and in the cloud. Proprietary systems are expensive and difficult to build upon. By contrast, open source offers the flexibility to develop solutions suited to the Kenyan context along with the ability to grow local technical capacity and build.

Sovereignty and policy shift

Both interviewees recognised a policy shift in Africa of late to a focus on digital sovereignty. Both in Kenya and across Africa, there is a lot of talk about sovereignty as something governments need to work towards. It isn't just data but the advantages offered by open source which for Africa is an economic driver. The OSPO's survey, expected to complete within a month from this report, will inform the development of a "Kenya-preferred Stack", a locally-defined architecture built on open standards and open source.

Due to the scale of digitalisation in the public sector licensing costs have become a huge burden. Where in the past there was certainty of budget and less interest in savings today they are looking for ways to cut costs. Open source can support digitalisation whilst enabling this with smaller budgets as there are no licensing costs.

Kenya today has a nationalised state-built Internet Service Provider (ISP) and plans a similar model when it comes to the sovereignty of its future digital services and the ICT plan is focused on sovereignty through self managed open source technologies.

The Kenya Government aims to digitalise 50,000 government services by 2027, up from roughly 22,000 achieved today, with an ultimate target to digitalise 110,000 services. Proprietary licensing costs at that scale are simply prohibitive and the OSPO will play a critical role in supporting this strategy. As Kiria puts it, delivery using an open source software basis allows them to achieve this at a fraction of the cost with a faster turnaround and removes lock-in. This focuses on shifting low risk services to open source first, then maintaining these in-house.

Building capacity across government

Capacity building sits at the heart of the OSPO's work. Kenya benchmarked its approach against the German state of Schleswig-Holstein - which committed in late 2024 to a full transition to open source - studying the policy direction and skills requirements involved as the most obvious example of an open source public sector ecosystem. They have seen a number of German businesses opening in Kenya as a consequence of this engagement.

People over code

The Kenya OSPO's key recognitions in their focus on capacity is that without enough people with the right skills you cannot build the sovereign digital future that Kenya wants to have. A training program is currently skilling technical officers working with government from basic through advanced levels, with the goal of creating a workforce capable of building new solutions on top of existing open source tools. Recognising that to be sovereign in its digital implementations it must have the work force to meet these ambitions, and to build a work force that is not only locally but internationally employed.

They are very focused on training young people to support the future but also recognising that they will have the capacity to work from Kenya with international employers if they have the right skills. “Open source gives a better opportunity to learn technology as there are fewer barriers to learning through open source. Working from wherever they are for companies in Europe, the US and beyond, with a large youth workforce that needs jobs,” Ikua tells us.

Challenges and outlook

The biggest obstacles facing the OSPO are not technical. There is an understandably-human resistance to change. Part of this stems from the public sector not fully “getting” open source and which is compounded by an ecosystem of proprietary vendors sowing the seeds of doubt about the security and reliability of open source software. The OSPO also continues cultivating international partnerships and shared learning.

Today’s open source moment can really help Kenya and other African nations with necessary change. Securing ongoing support for open source locally is a priority, with proposals being prepared for the World Bank and European Commission to scale the training program beyond its current cohort of 150 government officers

John Kiria concludes that,“today is the right time for open source, we have the momentum and mainstreaming of open source in a way that has never been there before.”

5. Nigeria

The state of open source in Nigeria

For years, Nigerian developers used the tools that built the Internet without knowing they could shape those tools themselves. Software was seen as something you downloaded, not something you collaborated on with others. This began to change when global tech programs such as Google's Summer of Code started to offer a path to developers, making open source legible in financial terms before the philosophical case landed. These programs only reached a small number of developers, however, keeping the broader ecosystem disconnected.

OSCA and the "festival effect"

In 2018, Nigerian developer Samson Goddy co-founded Open Source Community Africa (OSCA) to "reflect my love for open source while building large projects that help the budding open source community in Africa." The idea was to increase credible contributions from African developers, designers, and writers to open source projects both locally and globally, and as a result shift the perception of Africans from the next billion users to the "Next Billion Creators."

The OSCA model relies on local chapters where developers build a culture of sharing before ever touching a pull request. The flagship Open Source Festival (OSCAFest) event is OSCA's most visible expression. The first festival in Lagos in 2020 drew over 1,000 people from five countries. By 2022, it attracted over 1,400 members from nine countries across 54 local chapters.

By 2023, OSCAFest had convened over 2,000 technologists to talk, share, and learn about open source technology. The festival also served an economic need. OSCA used it as a strategy to attract international companies to sponsor events and connect with talent. A 2021 month-long collaboration with Meta resulted in a number of Nigerian contributors being approached by recruiters to work at Facebook. The Made in Nigeria repository is a clear rebuttal to the idea that Nigerians only consume technology rather than build it. Nigeria became the country with the largest number of contributing GitHub users on the continent in 2019 and held that position in 2020, overtaking South Africa, Egypt, and Kenya.

Measuring success

Understanding this ecosystem's health requires rigorous measurement. CHAOSScon Africa 2025 was held in Lagos in August, bringing together 110+ participants from Zambia, Togo, Kenya, Nigeria, and the United States. The event featured the first-ever panel on Inclusion for People with Disabilities in the African open source ecosystem. CHAOSS Africa, led by Nigerian contributor Ruth Ikegah, works specifically to develop metrics relevant to the African open source context.

Structural barriers

For all this momentum, the ecosystem operates under serious pressure. Infrastructure is a daily negotiation. Nigerian developers routinely juggle power outages, unstable internet, and difficulty receiving international payments. As one Nigerian developer put it: "There's barely a place in Nigeria with a constant power supply, and if such a place did exist, it will not be affordable for the regular software developer."

The most fundamental tension is economic. Open source requires prioritising voluntary, unpaid work. However, once paid work appears, developers drop open source projects completely. Any individual must prioritise survival for themselves and their family. This is not a failure of values, but a rational response to precarity. When paid work does come internationally, Nigerian freelancers wait an average of 51 days to receive payment, one of the slowest timelines globally, further complicated by currency volatility and foreign exchange restrictions eroding earnings.

The corporate gap

Perhaps the starkest feature of Nigeria's open source landscape is the near-complete absence of domestic corporate investment. The work of sustaining the ecosystem has fallen predominantly to NGOs, community organisations, and individual volunteers. OSCA operates through international sponsorships and community financing. The conversations about sustainability exist but remain largely disconnected from the boardrooms of Nigeria's commercial tech sector. Nigeria's open source community has built something remarkable under adverse conditions. What it hasn't yet achieved is the structural shift that makes sustained contribution economically viable for the average developer. The ripple effect already created is a testament to what full-resource support could unlock.

6. Conclusion

Dr Jennifer Barth,
Chief Research Officer, OpenUK

Africa's open source ecosystem is no longer emerging — it is scaling at pace and maturing structurally, with a sense of long-term sustainability and global relevance. The addition of 3.4 million new developers between 2024 and 2025 reflects not just growth, but acceleration and with 9.3 million developers across the continent in Q1 2026, Africa is now a significant contributor to the global developer base.

This growth is not superficial. It is deeply embedded in active contribution and participation. Contributors to open source repositories grew from 9,286 to 10,955 in 12 months (~18% growth), demonstrating sustained engagement rather than one-off adoption. AI contributors increased even faster - from 661 to 863 (~31% growth) - signalling that Africa is not only participating in foundational technologies, but actively shaping the next wave of innovation. The data shows a clear shift: Africa is moving from consumption to creation. This is reinforced by 7–8x increases in GitHub activity (pushes) across Rwanda, Kenya, and Nigeria since 2020 — a strong proxy for real development output and ecosystem intensity.

In Kenya we see increased developer density, ecosystem strength and transition to ownership. With 666,020 developers in Q1 2026, up from 463,595 the previous year, Kenya is one of the fastest-growing developer ecosystems globally. At 11.9 developers per 1,000 people, it has the highest developer density among the countries studied, indicating a highly concentrated and active technical community.

The fireside chat with Paul Statham provides critical insight into what comes next: Kenya is transitioning from participation to ownership, particularly in infrastructure (cloud, AI, hardware) and open source is positioned as the only viable path to sovereign, scalable digital infrastructure that avoids dependency on hyperscalers. This is reflecting a maturing ecosystem capable of building full-stack, locally controlled systems.

Moreover, Kenyan government ambition to digitalise 50,000+ services by 2027, as discussed in the OSPO case study, can't be achieved without open source – it's increasingly seen as a cost, sovereignty, and capacity building strategy, not only technical choice. This is becoming a common theme globally - open source is not just for the developers, it's for broader social and economic goals.

The authors of the report are so grateful to Ramadhani Olomwene from the Kakuma refugee camp (YEDA) for bringing light to the transformational human impact of open source. Open source enables access where there is no formal infrastructure, funding, or employment market. It creates pathways to global participation, turning skills into livelihoods even in the most resource-constrained environments.

Kenya shows us a multi-layered ecosystem with strong grassroots participation, expanding enterprise demand, emerging policy alignment and early-stage infrastructure sovereignty.

Rwanda provides a compelling example of how clear policy direction can rapidly accelerate the development of an open source ecosystem, even when starting from a relatively small base. Over the past year, the country has recorded the fastest proportional growth among those analysed, with developer numbers rising from 55,098 to 85,978 - an increase of approximately 56%. This sharp upward trajectory highlights not only expanding participation, but also the effectiveness of a coordinated national approach to digital development.

The trend is further reinforced by contribution data, which shows strong increases in both general and AI-focused activity. While these figures remain modest in absolute terms, they signal the early stages of engagement with advanced technologies and point to a foundation that is steadily strengthening.

What distinguishes Rwanda is that, despite its smaller scale, its trajectory is clearly upward. The ecosystem is still in an early phase, but it is accelerating with purpose and direction. This reinforces an important insight: scale alone is not the defining measure of success - sustained growth and strategic alignment are equally, if not more, significant.

At the core of Rwanda's progress is strong policy coherence and execution. Open source has been positioned centrally within national digital strategy, enabling a level of coordination that is often difficult to achieve elsewhere. A standout example is the deployment of the Mojaloop-powered eKash system, which underpins Rwanda's national digital payments infrastructure. This demonstrates how open source technologies can support large-scale, inclusive systems that directly impact everyday economic activity.

Discussions at the Inclusive Fintech Forum and within the Mojaloop community reinforce this point. Open source is not simply a technical choice in Rwanda; it is a mechanism for building interoperable and inclusive financial systems that expand access and participation.

Taken together, Rwanda illustrates a powerful model for the wider African continent. It shows that smaller ecosystems can move quickly and effectively by aligning policy, infrastructure, and community development around open principles. Rwanda is demonstrating how countries can leapfrog traditional development pathways and build resilient, inclusive digital economies from the ground up.

Nigeria, while not a focus of this report, provides context as Africa's largest and most influential open source ecosystem with 1.77 million developers in Q1 2026. Strong contribution numbers confirm leadership and Nigeria leads in ecosystem breadth and adoption. Insights from community narratives highlight challenges where growth is driven heavily by youth and grassroots communities, often with limited corporate support and there remains a gap between participation and structured institutional backing. Going forward strategy is needed to align and ensure system sustainability.

The report highlights three main themes:

1. That open source is foundational to digital sovereignty in Africa where countries are increasingly seeking control over their infrastructure and open source enables local ownership, adaptability and longer-term sustainability;

2. Adoption is outpacing institutionalisation where strong usage is above across the economies but there is still limited public sector engagement especially in Kenya and Nigeria;

3. AI is the next frontier for rapid growth as the growing number of contributors shows early capability building. At the same time, global scale outputs remain limited, indicating an opportunity for investment.

Overall, human capital is the defining advantage – from Nairobi tech hubs to the Kakuma refugee camp, the same pattern emerges.

Open source lowers barriers, it builds skills and it connects local talent to global opportunities.
This is a chance for countries in Africa to build, own, and shape its digital future.

7. Formalities

7.1 Authors of this report

Professor Amanda Brock, CEO, OpenUK and OpenHQ

OpenUK CEO, Amanda's built one of open source's most recognised and impactful organisations. Executive Producer of State of Open Con (2023- 2025), Amanda's a globally sought-after keynote speaker. A lawyer with 25 years' experience, 5 as GC of Canonical, she's been instrumental in shaping open source's legal frameworks, as she was internet law during the early 2000's. Regularly contributing to tech press, she edited 'Open Source: Law, Policy and Practice', (2022).

Recognition: Computer Weekly 50 Most Influential Women in UK Tech (2023, 2024); Computing IT Leaders 100 (2023, 2024); Lifetime Achievement Award WIPL (2022); Women Who Will Changemaker (2023); INvolve Heroes (2022, 2023); Novi Awards (2024) and Ambassador, Open Charge Alliance.

Advisory Appointments: UK Cabinet Office Open Standards Board; UKRI Digital Research Infrastructure; UKRI Exascale; KDE; commercial boards – Mimoto, Scarf, FerretDB and Space Aye; and is Fellow Open Forum Academy; Distinguished Fellow Rust Foundation; and European Representative, OIN.

Dr Jennifer Barth, Research Director, FSP and OpenUK

Jenn has more than 15 years of experience leading independent research on the intersections of emerging technologies and socioeconomic change. She provides companies with independent thought leadership and media engagement opportunities on global issues impacting and shaping our current and future technical-social lives. Her work spans the digital through to social and economic change. She has looked at sustainability, workforce skills and organisational competitiveness strategies through and beyond the pandemic with Microsoft and many other big and small organisations and works as the Chief Research Office researching the role of open source software and its potential to fuel the circular economy with OpenUK.

She has experience working on the human impact of artificial intelligence (AI) through fieldwork experiments with IBM Watson, Microsoft and other providers. She is skilled at blending research methods and working with people to bring to life the stories behind numbers. Dr Barth earned her DPhil in Geography from the University of Oxford.

Karan Saini, Operations Manager, OpenHQ

Karan is a security researcher, technologist, and open source contributor. Most recently, he was a Senior Information Controls Fellow with the Open Technology Fund.

7.2 Contributors to this Report

Evanson Ikua

Evans is an open source evangelist, an IT consultant and entrepreneur with over 25 years' experience in the IT and business landscape. He has led numerous open source and DPI initiatives in Kenya and across Africa, working with various organizations involved in the open source ecosystem. He has been instrumental in establishing critical open source advocacy campaigns that have led to the wider acceptance of the open source philosophy in the public sector, as well as capacity building initiatives through training and certification of open source professionals. Evans is currently the OSEE Kenya Project Manager, contracted by ITU and stationed at the Ministry of ICT and the Digital Economy in Kenya.

John Kiria

John Kiria is the Director of ICT at the State Department for ICT & Digital Economy, Kenya.

Kosta Peric

In his executive role as Deputy Director at Gates Foundation, Kosta leads initiatives across Africa and South Asia that help countries design and deploy digital public infrastructure—including instant payments and cybersecurity frameworks. He works closely with policymakers, regulators, private-sector partners, and global institutions to accelerate financial inclusion. He serves as Chair of the Board of the Mojaloop Foundation, guiding the evolution of the leading open source solution for instant, low-cost payments. He is also the former Board Member of the Interledger Foundation, supporting governance and ecosystem strategy for one of the core protocols enabling secure value transfer across digital platforms.

Paul Statham

A strategic leader with over 30 years of global ICT experience and success in leading high-performing teams to deliver complex commercial projects. Recognised for a customer-centric approach, excellence in business development and product lifecycle management. EMBA in progress. Passionately leading Cloud and Open Compute commercial strategies for Enterprise and Service Providers across the functions of Sales, Marketing, Product Management, Partner Management and CX.

Ramadhani Olomwene

Ramadhani is a passionate humanitarian leader and Director of YEDA, dedicated to empowering vulnerable communities in Kakuma Refugee Camp. With a strong commitment to youth development, justice, and self-reliance, he champions initiatives in education, psychosocial support, and sustainable agriculture. His leadership is rooted in resilience, innovation, and community-driven impact, helping individuals rebuild dignity and hope. Through his work, he strives to inspire change, strengthen livelihoods, and create opportunities for a brighter future. His vision is to transform challenges into pathways for growth, ensuring every voice is heard and every potential is realised.

Robert Karanja

Over the past 25 years, Robert Karanja has worked at the intersection of the private sector, international institutions, non-profit organizations and Government in responsible business leadership, sustainable development, philanthropy and digital public infrastructure across the African continent.WWAn innovative leader in digital transformation and digital public infrastructure, he has played key roles in developing several multi-stakeholder initiatives and global standards that have strengthened African led innovation in digital public infrastructure. He is currently leading innovative work across the African continent in Digital Identity, Data Privacy, Inclusive & Instant Payment Systems, Digital Public Infrastructure and Data Protection.

Ruth Ikegah

Ruth Ikegah is an open source program and community manager based in Lagos, Nigeria. She leads initiatives that support developer growth, community governance, and open source sustainability across Africa. Ruth serves as a governing board co-chair at the CHAOSS Project and has led large-scale developer programs that have trained and supported thousands of technologists across the continent.

Steve Haley

Steve has led diverse global impact-driven teams for 25 years, based in over 10 countries between work in the government, non-profit and the private sectors, always striving to build a more equitable and fairer world, particularly through inclusive financial services. As the Director of Market Development at the Mojaloop Foundation, he helps country leaders develop inclusive instant time payments that reach everyone by helping various stakeholders to understand their role in building locally owned, locally controlled, and locally operated payments infrastructure. He holds degrees in Mathematics from West Point and the University of Padova.

7.3 About the Creators of this Report

OpenUK and OpenHQ

OpenUK is the unique open tech industry organisation for the business of open technology in the UK. It spans the opens – software, hardware, data, standards and AI and is the convening point for the UK's business, academic and contributing communities across open tech. Our work supports the UK's journey to become "The State of Open". Our organisation is run with the support of our volunteer community and their leadership in the tradition of open source manner delivering on three pillars: community, legal and policy and learning.
OpenUK's Community is recognised through our world-leading recognition programme including the OpenUK Awards (the Oscars of Open Source) now in their 7th year, New Year's Honours Lists and Ambassador Scheme.

OpenUK undertakes research and reporting both on its own account and on a commissioned basis for third parties. Case studies, Thought Leadership, Surveys and desk-based research are included in our reporting which pushes the envelope and leads the way. Our Research and Reporting Show and Tell events coalesce the global open source research communities digitally to regularly update and share research practices and topics. OpenUK is developing a Fellows Network for postgraduate researchers to encourage more academic research across the opens.

The State of Open Con has become one of the world's leading open source conferences since its inception by OpenUK in 2023. In 2027 we expect to host 1000 people across 8 tracks and plenary sessions, with at least 50 partners in our delegate experience space and over 200 speakers in London. For 2026 we are on the road, with smaller events across the UK, meeting our audience.

OpenHQ is a sister entity launched in India in August 2025. It supports international work on open tech policy, and is in a stage of build and evolution.

Contact OpenUK mailto:admin@openuk.uk

Symmetry & FSP

Symmetry, an FSP company, looks beyond the surface and behind the curtain of the fundamental innovations and trends shaping our society, markets, culture, and values. We are academics and researchers looking at the intersections of emerging technology and socioeconomic impact, producing independent research for thought leadership and business solutions. Symmetry's mission is to share and grow knowledge about the interaction of technology and everyday lives. We want to understand the past, present, and future of human interaction with emerging technologies and socioeconomic changes—from behaviour to context, nature to nurture, origin to experiences—helping our clients engage their clients and public imagination.

7.4 Acknowledgements

The research was led by Dr Jennifer Barth, OpenUK Research Director and Founder and Research Director at Symmetry and OpenUK's Chief Research Officer in partnership with Amanda Brock, CEO and Policy Director, OpenUK, supported by OpenHQ Operations Manager, Karan Saini.

We are grateful to Runa Capital, GitHub and Scarf for sharing data and working with us on the analysis of that data. Thank you to Zin Nwe Zaw Lwin, who has designed this report.

We very much appreciate the individuals who participated and provided us with case studies, fireside chats and thought leadership to bring the key issues to life.

7.5 Methodology

The OpenUK research used a mixed method approach to explore and demonstrate the state of open source in Africa, with a particular focus on three countries: Nigeria, Kenya and Rwanda. Interviews were conducted

with industry leaders, founders and open source software experts and included as case studies and thought leadership.

Runa capital supported our assessment of local repositories to establish comparisons in locally based contributions and repositories from each country.Runa Capital created a dashboard collecting data on open source repositories, users and activities. The data collection processes are automated, leveraging the APIs and tools provided by GitHub and updated daily. Runa gathers data about all repositories with more than 1000 stars at the time of collection. The author of the repository can be an individual or an organisation and where they own multiple repositories, each is considered as a separate entity. For any author who has at least one repository exceeding 1000 stars, information is collected on all repositories they own. A commit in the content of version control with Git is a record of changes made to a set of files. All commits to 1000+ stars repos are collected. Every instance where a user makes a change to the code is monitored. Users are collected in terms of repository authors and contributors including profile information, number of repositories owned and largest repository. To determine the user's geolocation the process uses the Google Maps API. This is updated for user profiles once per 6 months. Contributors from the United Kingdom are defined as users who have been geographically pinpointed as being in the United Kingdom through the geolocation process. These users are identified based on the location data they provide in their GitHub profiles, which is then verified and refined using geolocation tools.

GitHub supplied data on the total number of developers in countries in Africa, in particular using data from GitHub Innovation Graph from which the heatmap has been produced. In the data provided by GitHub, countries with less than 100 developer accounts were excluded due to privacy concerns.

Repositories are categorised as being from countries in Africa based on the location of their authors. If an author is identified as being based in an African country, either through their GitHub profile or through additional reliable sources, their repositories are included in this category. To determine the Repo's location, the repo owner's location is first checked. If this is unavailable, analysis of company data from Dealroom and Crunchbase by repo domain may resolve the location. If not, then the top 3 contributors' countries are taken as the location. An AI repository is identified if its description or topics section contains any keyword from the AI keyword list. For all repository lists in the report, the methodology first filters the data for AI topic = true. Where location is important it then filters for location. Location is determined by sorting contributors by total commits to a particular repository then checking the location of the top contributor. That location is then assigned to the group or, if needed, proceed to the second and then third contributor where location is unavailable. Once the data is ordered, a manual check is undertaken to determine the use of the repository and a decision is made as to its position in the list.

The OSS downloads data from Scarf consists of pulls of Docker containers, npm packages, executables, and other raw file archives.

7.6 References

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7.7 Sponsors

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