Giga

UNICEF Office of Innovation

2023 Annual Report

Report submitted to [BLANK]

30 November 2023

Table of Contents

Global Progress on Giga

In the ever-evolving landscape of global connectivity, 2023 has proven to be a landmark year for Giga with significant progress made in scaling Giga's efforts across the globe, and the partnership with [BLANK] has played a pivotal role in this progress.

Giga has now reached an exciting point in our journey; we've proven that our open-source approach to map, finance, and procure connectivity for schools works, and more countries have joined us – in just the past 3 months, 12 countries have signed agreements with Giga for us to start working with their governments to extend connectivity to all schools in the country, including Brazil, South Africa, Zimbabwe, and others.

This takes the number of countries that Giga is working in to 30 countries as of 2023, marking a significant milestone in our efforts to scale and connect every school in the world by 2030. This milestone could not have been reached without the immense support that [BLANK] has provided to Giga since our partnership began in 2019.

Map

Mapping is critical to Giga's efforts in ensuring that lack of access is visible and schools without reliable Internet connectivity are prioritized by national governments. By the end of this reporting period, with support from [BLANK] and other partners, **we have mapped 2.1 million schools across 140 countries** on Project Connect, which is roughly 40% of all schools worldwide. This is an increase of 90% since last year's reported numbers (1.1 million schools mapped across 50 countries last year). Using artificial intelligence, we have identified and mapped more than 29,000 schools around the world, including Ghana, Kenya, Niger, Rwanda, and Sierra Leone.

Having visibility and understanding the quality of service that schools are receiving in their connectivity has always been an important challenge for Giga. This data allows for better monitoring of connectivity, troubleshooting, and opportunities to improve quality of service. The Daily Check app developed in collaboration with [BLANK], a first of its kind technical collaboration for Giga, has been instrumental in addressing this challenge. **The Daily Check App has been rolled out in more than 6,300 schools across 17 countries**. This is a significant increase from last year (app rolled out in 762 schools across 5 countries in Q4 2022).

This year nearly **90k schools across 25 countries are reporting real-time connectivity status, a 42% increase from last year** (63k schools reporting real-time connectivity last year).

Model

While Giga aims to map every school in the world solving a crucial information gap, modelling and analysing infrastructure data overlaying the school connectivity maps allows us to find out how to connect schools to the nearest infrastructure connectivity point. Giga is modeling and analyzing telecommunications infrastructure data in more than 10 countries.

In Africa, we are currently working on infrastructure analysis for Benin, Botswana, Guinea, Namibia, Rwanda, and Zimbabwe. In Zimbabwe, in collaboration with Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ), Giga collected infrastructure data on fiber node locations, cell tower locations, and cellular coverage areas to evaluate coverage availability and suitable towers for the optimal connectivity solution. In our modeling exercise we found that ~50% of the unconnected schools can be connected by microwave, ~30% by fibre and ~20% by satellite.

Finance

To date, Giga has helped mobilize more than $1.7 billion to fund school connectivity in eight countries. Coming from various sources such as ODA grants, IFI loans, Universal Service Funds, and proceeds from government auctions, these funds are critical to connecting schools in the world's most remote and underserved areas.

Contract

Giga has connected nearly 6,000 schools and 2.4M students in 21 countries in just a span of four years. Improving market access and supporting procurement is a key part of the technical assistance Giga offers to countries. This year we supported 2 countries to launch procurement processes: Niger and Guinea. Unfortunately, the procurement in Niger has stalled because of the coup.

This year we developed guidelines for ISPs to connect schools to the Internet through competitive bidding processes. The guidelines state the key requirements for ISPs to take into consideration when participating in competitive bidding processes. More information is available on the website giga.global/10-school-connectivity-guidelines/. We have also developed a procurement toolkit that will help advise procurement for the countries we are supporting.

In the 30 countries where Giga provides advanced connectivity support, core Giga activities are being implemented at various stages, including solutions for school mapping, infrastructure planning, real-time connectivity monitoring, financing, and the improvement of market access and procurement processes. Giga countries have also established their respective national-level steering committees, with the support of various government ministries.

We have set up two centers for our operations, Giga Global Connectivity Center in Geneva for enhancing our connections with other UN agencies, Swiss tech companies, and private equity firms, and the Giga Technology Center in Barcelona for Giga engineers and data scientists who will build our open-source tech products.

We are continuing to expand our partnerships and collaborations. We have recently collaborated with the European Space Agency (ESA) for School Electricity Access. Giga launched a collaboration with the European Space Agency (ESA) in August 2023 to develop AI models to measure the likelihood of school location and other infrastructure including electricity and Internet connectivity based on multiple data sources, including earth observation data (e.g., NASA's VIIRS Nighttime Imagery, Copernicus Sentinel 2) and auxiliary data on mobile phone usage. Led by researchers from ESA and other world-class organisations, the aim of the project is to enhance and scale existing models to predict accessibility to electricity and Internet connectivity.

We are excited to see such progress in our efforts to bridge the digital divide and improve Internet access for children around the world, and it could only have been done with the support from our partners. Despite the above success, we clearly need to move faster. Thanks to ITU, we know that 2.6 billion people remain offline. At least 50% of schools are still unconnected. If we want to have a chance to truly accelerate SDG 4 and solve the global learning crisis, we need to turbocharge our work around connectivity.

We very much hope that the support from our partners will continue to help us find major acceleration pathways to do so. The collaboration between Giga and [BLANK] stands as a testament to the power of public-private partnerships in implementing innovative solutions for connectivity and driving meaningful change.

Daily Check Application

After testing the App in 2022, throughout 2023 Giga has been focused on **deploying the App in countries** that expressed interest in Real Time Monitoring: to date, the App has been deployed in 6,300 schools across 17 countries, including: Kazakhstan, Mongolia, Uzbekistan, Botswana, Honduras, Trinidad and Tobago, Rwanda, Saint Lucia, Grenada, Saint Vincent and the Grenadines, Barbados, British Virgin Islands, Anguilla, Saint Kitts and Nevis, Antigua and Barbuda, Montserrat and Panama.

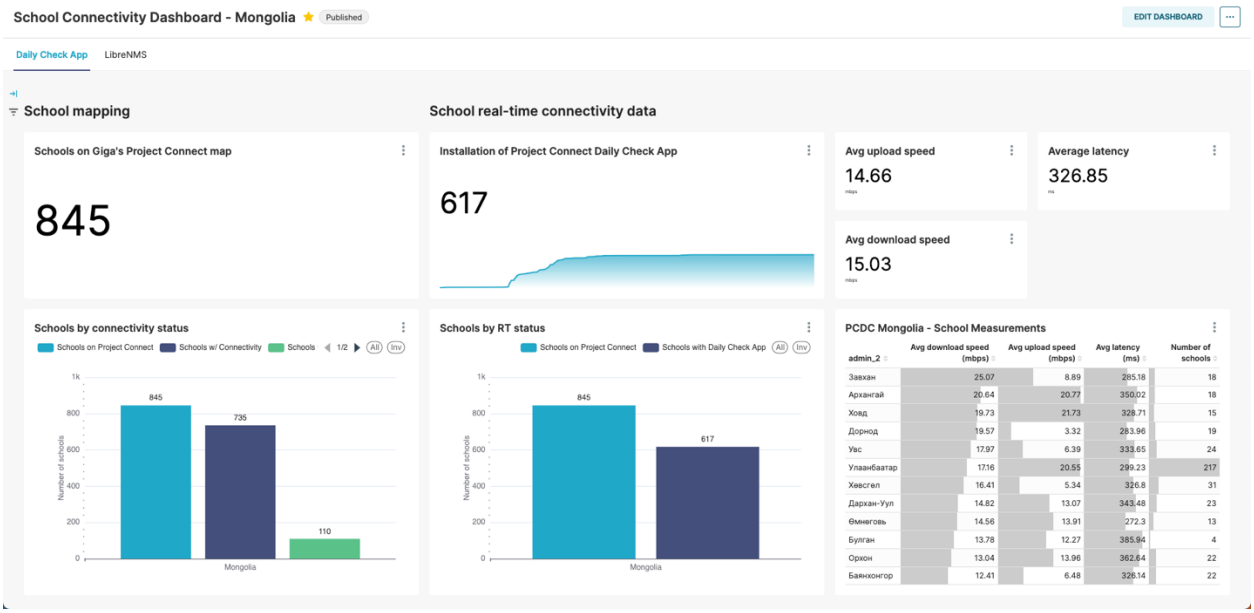
2023 has been a year of scaling the app beyond initial pilot installations. Giga has achieved important coverage of the app in connected schools in Kazakhstan, Mongolia and Uzbekistan. Scaling the application has been made possible by the acknowledgment of key government counter parts of the value added from the application – namely, the possibility of using real-time data to advocate for better connectivity. Key users also regard the Daily Check App as an important instrument within their monitoring toolkit as it provides a glimpse into what occurs at LAN level, a layer of data oftentimes missed by traditional industry monitoring tools.

The growth in the use of the app has also surfaced key limitations and bugs within the application. Over the past few months, the team has focused on resolving issues and bugs identified during the Daily Check App's deployment. The most common issue centers on the registration processes and the workflows to match a user to the relevant school unique identifier. Initially, the registration process required users to input their unique school ID and subsequently confirm the information associated with their school. While school IDs are unique within a single country, there are cases where multiple schools worldwide share the same ID. In such instances, users of the Daily Check App were required to identify and select from a longer list of IDs (containing country information) the right ID associated with their school. At this stage, some users inadvertently selected the wrong school from the list, leading to a misclassification of their data, and posteriorly, storing and attributing school-level data to the wrong country. In response to this issue, the Giga Team has worked on a multi-pronged solution, including:

- **Improving the school registration process**. The current flow requires users to specify their country before entering their school's ID. As within a country school IDs are unique, users no longer need to select their school from a long list of IDs associated with other countries, thus avoiding this mistake.
- **Adding an IP detection feature.** Additionally, the application now includes an automatic IP detection function to triangulate a user's rough location using ip.info, Autonomous System (AS) numbers and international registries. On the backend, the team has created an alerting flow which will flag schools for which the detected and registered location significantly differ.
- **Rectifying data mismatches.** Furthermore, the Giga team is working to rectify data mismatches caused by registration errors without requiring schools to reinstall and

register on the application again. This involves updating the local memory in users' applications with the right unique identifier and retroactively assigning the data from mismatched schools to the correct identifier.

Over the past year, the Giga team has also moved the needle forward on its commitment to share the data collected via the App, making it easily accessible to UNICEF Country Offices and key government partners. Besides visualizing the data on Project Connect, over the past quarter, the team has shifted from sharing PDF bulk downloads of the data with partners, to granting access to dynamic dashboards that update daily. These dashboards, besides key aggregate figures, include a time-series and comparison view of school's connectivity status. Dashboards are currently available for Mongolia and Botswana, but will be iterated across all countries using the Daily Check App.



Over the next year, Giga is eager to expand its support to countries' as they monitor their schools' connectivity status. Countries such as Sao Tome and Principe, Bosnia and Herzegovina, Benin, Zimbabwe and El Salvador have expressed interest in installing the application in their schools. We have developed a streamlined workflow to support country installations, minimize the occurrence of known issues and speed up the time it takes for schools to begin deriving meaningful insights from the data collected. We also aim to update the app's test protocol, from NDT-5 to NDT-7 to reflect latest advances in Internet measurement tests.

In 2024, we want to add alerting and notification features on top of the data collected from the Daily Check App. Detecting when a school stops sending in data, or when a value for a critical statistic, such as latency doubles or triples, will enable us and the data users to be more proactive when it comes to addressing potential connectivity issues.

We also want to do a better job of integrating data from the Daily Check App within national monitoring tools and/or alerting systems. To do so, we will be rolling out an API that will enable different governments to programmatically sync their systems with the data. The API will support users to access school connectivity data from the application.

We also want to pursue different avenues to collect school connectivity data. Given end-users recognition of the value of the app, but also accounting for the logistical difficulties of supporting the installation and maintenance of a desktop application across countries with various degrees of decentralization, remoteness and digital literacy, Giga realizes that the Daily Check App may not be the right solution for all contexts. Additionally, countries that do not use Windows devices, or have tablets instead of desktops within school premises cannot use the Daily Check App. *See section on giga.global/isps.*

Daily Check App impact stories

Kazakhstan accelerated deployment of the Daily Check App to more than 5000 schools

Monitoring Internet connections in schools is a priority area for Kazakhstan withing the framework of the Giga initiative. Giga, in partnership with the UNICEF Country Office and JSC "NCREE "Taldau" (formerly Kazakhstan's Information and Analytical Center) started testing solutions to measure the speed of the Internet in a few public and secondary schools in early 2022.

With the release of the Daily Check App, UNICEF Kazakhstan and JSC "NCREE "Taldau" with support of Ministry of Education spearheaded the App deployment and conducted a comprehensive study, shaping recommendations for the initiative's future steps. Therefore, the year 2023 marked a significant acceleration in scaling up the Daily Check App deployment, with over 5,000 schools actively transmitting data to Project Connect by November (more than 70% of the schools in the country). During the deployment, JSC "NCREE "Taldau" also collected feedback from schools, stakeholders in the education system, national and international partners within the framework of the Giga initiative.

Key recommendations stemming from the study underscore the importance of sustained collaboration with Giga, the UNICEF Country Office, and other relevant stakeholders to further testing and disseminating the Daily Check App in schools. The government of Kazakhstan also expressed the need for more direct access to Daily Check App data, a concern that is being addressed through the development of an API. The API will not only facilitate easier access to data but also allow the government to seamlessly integrate the Daily Check App data with existing national systems. Anticipated to be operational by mid-2024, this capability represents a forward-looking step in enhancing the Giga initiative's impact on monitoring and improving Internet connectivity in Kazakh schools.

Daily Check App data will support Mongolia's Information Technology Center for Education to develop strategies to enhance connectivity in remote and underserved schools

In Mongolia, significant progress has been made in the deployment of the Daily Check App, with 617 schools (73% of all schools) successfully installing the app and transmitting data to Project Connect. This widespread adoption demonstrates a commendable commitment to leveraging data for the enhancement of digital education.

In Mongolia, urban schools have access to a good bandwidth (100mbps), while remote schools, hampered by infrastructure limitations, receive limited bandwidth, ranging from 7-10mbps. This limited bandwidth hinders the effective utilization of advanced applications and content in remote schools and underscores the need for targeted interventions to ensure equitable access to quality education.

The Education Information Technology Center of Mongolia (EITC), which manages the dedicated Internet network for education in the country, plays an important role in addressing this challenge. Tasked with advising the Ministry of Education on strategies to enhance connectivity in remote and underserved schools, EITC has already implemented a Real-Time Monitoring system, which captures data on schools' bandwidth utilization, uptime, and related metrics via LibreNMS (a network management system) across all connected schools. However, the data available via LibreNMS covers layers of the network outside and up to the school customer premise equipment and falls short in providing insights into the happenings at the Local Area Network (LAN) level within schools. Additional visibility into this layer of the network helps monitor issues that may be happening inside of the school impeding quality connections, such as infrastructure constraints, as well as the quality of the Internet for end-users.

Recognizing this gap, EITC, in collaboration with Giga, is exploring how to analyze and triangulate the data from the Daily Check App with the data from LibreNMS. By triangulating these datasets, EIC aims to gain a holistic understanding of the challenges faced particularly by remote schools. This multifaceted approach will enable the identification of specific issues at different points in the network, shedding light on some of the obstacles impeding or enabling the quality of the Internet distributed by EIC, received by schools, and experienced by students and educators in these underserved areas. Through this collaborative effort, EITC and Giga aspire to develop targeted strategies and recommendations for the Ministry of Education. The ultimate goal is to bridge the digital divide and ensure that all schools, irrespective of their location, have access to a high-quality digital learning environment.

The Government of Rwanda is promoting the use of the Daily Check App to all stakeholders connecting schools

In 2023, the Rwanda UNICEF Country Office piloted the Daily Check App in 36 schools that were previously connected with support from the Giga initiative. Following the successful deployment of the App in these schools, the Government of Rwanda through its Ministry of ICT has reached out to other development partners currently implementing school connectivity projects, and strongly encouraged them to deploy the application. The goal of the government is to create a unified map and point of reference, thus ensuring transparency and accountability from all the stakeholders.

Global Impact Stories

High level engagement and governance

Kazakhstan: Increasing the minimum bandwidth requirement for schools

In Kazakhstan, the Giga steering committee plays a pivotal role in bringing key national stakeholders together under a common agenda, which is school connectivity. The steering committee is set up as a platform for governance, which enables discussions of opportunities and challenges related to school connectivity in a country and discuss changes needed.

One of the challenges highlighted to the committee through Giga's data collection and through a feasibility study that Giga supported, was the low bandwidth available to schools. While many schools were connected to the Internet in Kazakhstan, about 30 percent of schools were connected at less than 5 Mbps, and 56 percent were connected at less than 10 Mbps. The Minister of Digital Development, who is the chair of the Giga steering committee, based on this information and following Giga's recommendations, made 20 Mbps the minimum bandwidth requirement to connect schools. The Steering Committee is continuing to actively guide other stakeholders on improving school connectivity based on insights from the study. The common platform plays an important role in getting tangible results for school connectivity.

Technical assistance for mapping and monitoring

OECS: Using school mapping for disaster response

The Organization for Eastern Caribbean States, which includes 9 island countries, is exploring the Giga school dataset to support the development of the Children's' Climate (and) Disaster Risk Model (CCDRM) for disaster response planning. This region is prone to natural disasters

such as hurricanes, floods, and in some cases volcanic activity. Access to the location and connectivity status information of schools will help decision makers plan disaster response activities and communication, as schools can be, and are often, used as centers for disaster response communication, shelter, or distribution for essential lifesaving supplies. The CCDRM is being piloted at https://geosight.kartoza.com/ with plans to integrate additional data sets to improve future modelling and analytics.

Multiple Countries: Giga's contribution to the establishment or enhancement of national Education Management Information Systems (EMIS)

In several countries, Giga played a pivotal role in supporting the compilation of comprehensive national school data and maps, which in many cases did not exist before Giga's support. Whether by advocating for the inclusion of or providing technical advice on connectivity indicators, newly geolocating schools, or aiding in data cleaning, Giga contributes to the establishment or enhancement of national Education Management Information Systems (EMIS).

Since 2020, Giga has been actively involved in Niger, collaborating with UNICEF Niger and the National Agency for the Information Society (ANSI) to map and connect schools. In 2022, this effort resulted in a dataset of 20,000 schools on Project Connect, which includes school connectivity status data. Giga's advocacy extends to the creation of unique school IDs for improved data management and the deployment of the Daily Check App for Internet quality monitoring. Despite a current temporary pause due to the coup, Giga plans to resume support with a focus on these initiatives.

In 2023, Giga supported UNICEF Sao Tome and Principe with the coordination of the first national school mapping exercise. Providing technical advice and contributing to the development of a comprehensive questionnaire, Giga ensured the collection of essential information, that will be integrated in the national EMIS platform, which is currently under development. This data will guide the deployment of the Daily Check App in connected schools and will be used, together with infrastructure data, to identify efficient connectivity solutions for unconnected schools.

Similarly, in Nigeria, Giga successfully advocated for the inclusion of connectivity data in the official EMIS. These indicators will be integrated in future school data collection efforts and will provide crucial information to address connectivity gaps and improve educational opportunities.

In nine countries within the Organisation of Eastern Caribbean States, Giga provided training for school location and connectivity data collection resulting in updated school data sets with the inclusion of connectivity indicators at the national level for the first time.

In Benin, Bosnia and Herzegovina, Ghana, and Sierra Leone Giga provided technical advice on relevant indicators for data collection as well as collation of existing data to create comprehensive national school data sets which were not available previously. Similarly, in South Sudan, Giga technical support has led to the first ever school location data set in the country.

Bosnia and Herzegovina: school mapping helped unveiling the digital divide and prompted action

Bosnia and Herzegovina (BIH) is characterized by a complex political landscape: the country is divided into two entities and a district. Any systemic change in education requires agreement between sixteen line ministries. A comprehensive map of all schools was non-existent and mapping them presented several challenges. In 2021, the UNICEF BIH team embarked on a comprehensive school mapping exercise which resulted in April 2023 with the inclusion of all Bosnia and Herzegovina schools on Giga's Project Connect website. To achieve this, UNICEF BIH adopted a participative approach, which involved empowering local authorities to own and independently manage the data collection process in their respective geographic areas. The collected data extended beyond geographic locations, encompassing school connectivity status, availability of electricity and devices, and other crucial indicators.

The resulting map unveiled the digital divide in Bosnia and Herzegovina and allowed UNICEF BIH to approach national stakeholders with the necessary evidence and a clear direction on where immediate intervention to close the digital divide was most needed. Following the mapping, the Communications Regulatory Agency of BIH became a crucial partner, endorsed the Giga initiative institutionally, and supported the setting up of the first comprehensive, national school ID system.

The school map is already being used not only by UNICEF – but also other UN agencies, including UNESCO, UNDP, but also other organizations including OSCE, Save the Children have used the map as a blueprint for their digital initiatives and efforts. The map has also already sparked the interest of the private sector and prompted action. Following the presentation to UNICEF's BIH Business Advisory Council, which includes representatives from major ISPs, one of the ISPs committed to bring the Internet to the 78 disconnected schools. The ISP has promptly dispatched its engineers for an investigation and is collaborating with the local Ministry of Education to explore avenues to connect these schools to the Internet, which would guarantee 4G compared to no Internet connectivity at all.

Finally, all these efforts were recognized by the state-level authority – during the Western Balkans Digital Summit 2023 held in Sarajevo, the Call for Action to connect every school to the Internet was endorsed by the BIH Ministry of Communications and Transport, BIH Communications Regulatory Agency and four biggest ISPs. This represents the first multi-

stakeholder platform which will complement the needs and competencies of the BIH education authorities and support the process of digital transformation in BIH education systems.

Kenya: Monitoring the quality of Internet service in school

UNICEF and a contracted ISP used a combination of measurements in a school to identify that the main network router at the school premises had been disconnected from power, resulting in no connectivity. Here the ISP network data monitoring measurement showed that the school network was on, because it was receiving connectivity. However, the measuring device on the Local Area Network (LAN) which connects the computers was off. This led the ISP to call the school. The school then checked the network router and saw that it had been unplugged from the power source. The school representative plugged the router back in and the connection was re-established. Incidentally, power issues are one of the most common disruptions to networks. This example shows how having access to real-time connectivity data can lead to improved service, not just from a contractual perspective but also from a practice or usage perspective.

Procurement Support

Honduras: Schools as Connectivity Hubs in remote areas

Honduras has a low connectivity rate, with less than 6% of its 16,445 schools currently connected. Coverage, affordability, and electricity continue to impede the expansion of connectivity. Giga estimates the need for USD 85 million of CapEx and USD 47 million of annual OpEx to connect all schools in Honduras. This requires a complex and sustainable financial solution, as grants alone will not be sufficient. Giga is partnering with the Government, ITU, and UNICEF Honduras to address this issue by providing technical support to connect 24 remote schools with hotspot technology, aiming to cover operating costs by extending connectivity to the surrounding communities. As of now, 40 schools have been successfully connected. The 40 pilot schools have connectivity between 20 and 40 mbps, with minimum number of devices, content (Learning Passport Honduras), teacher training and a sustainable business model where schools resell connectivity through a hotspot to the community. Giga supported only the connectivity part, while UNICEF Honduras brought the other components. The knowledge gained will inform broader school connectivity efforts in the country.

Kazakhstan: Improving the Quality of Connectivity

In collaboration with the Government of Kazakhstan and UNICEF Kazakhstan, Giga evaluated the feasibility of technical and financial solutions, as well as possible regulatory and policy measures for broadband upgrades of connectivity in Kazakh schools. Giga supported a feasibility study that identified areas of opportunity to improve connectivity speeds and

recommended technical solutions for achieving the upgrade of school connectivity to broadband speeds in Kazakhstan, through a pilot of 38 schools. Further, with advocacy from Giga, local governments can now allocate resources for school connectivity (previously restricted to only the national government), helping to create a sustainable pathway to connectivity.

Unlocking financing for connectivity

Unlocking IFI financing in Sierra Leone and Kenya

Giga helped unlock financing from international financial institutions in Sierra Leone and Kenya. In Sierra Leone, USD 5 million have been mobilized from the Islamic Development Bank (IsDB) to accelerate school connectivity. Giga and UNICEF Sierra Leone provided support to the government in technical discussions with the donor, as well as, in preparing the technical proposal which was accepted. Giga and UNICEF Sierra Leone will continue to provide guidance to the government in the implementation of the funds to ensure affordable and quality connectivity for schools connected though them.

In Kenya, Giga helped in mobilizing USD 10.5 million from the EU for school connectivity and digital education. Giga supported UNICEF Kenya in technical discussions with the EU around the process of connectivity for schools and provided support to develop the successful technical proposal. Giga will continue to provide technical guidance on procurement of connectivity for the 1000 schools covered under this grant to UNICEF Kenya.

Our Human Impact

By connecting schools around the world, we are empowering students and educators with digital resources, enabling them to adapt and thrive in an increasingly digital world, regardless of their geographical location or economic circumstances.

For example, in Noonkopir Primary School, Kajiado County, Kenya (~33km from Nairobi Business District), students have been motivated to learn on their own, and Jenny, an 8th grade student is one of them – “The Internet has helped us learn many things including those that the teachers don’t teach in class… I want to say that the Internet is also helping other youths - you can get news even

when you're far. When I have my phone, I can just connect to the Internet and check what is going on in the world and find out what's happening. I'm happy that we have the Internet in the school."

Brianna Salvador, aged 11, a student in the José Vicente Cáceres Basic Education Center in Omoa, Honduras, echoes the substantial benefits from using the Internet for learning: "[With the Internet,] education no longer only has to be in books or on the blackboard… we can also have fun while we learn, think, dream, [and] grow our imagination… I would also like it to reach all parts of the country because there are many schools where it is also needed." [trans.]

On the other hand, the Internet also enables teachers to maximise their efficiency and utilise new tools to improve their teaching in the classroom, as explained by Kabiligi Feniace, a teacher at G.S. Murama, Rwanda: "When I arrived at Murama, there was no Internet connection. And this made teaching a bit more difficult. Things truly became different when we got connected to the Internet. It used to be a challenge but now I prepare lesson plans, exercises, and everything else on my computer… I also came up with the idea of starting a WhatsApp group to share learning material to help students stay on track with their studies. All this resulted in my students performing better in class upon their return to school compared to before the pandemic hit."

As Giga scales its efforts globally, including to previously unconnected schools, we will continue to reach more students such as Jenny and Brianna, as well as teachers like Kabiligi, enabling them to maximise their full potential.

Events and Communications

We kicked off the year by commemorating our partnership through a global UNICEF campaign unveiled at WEF, focusing on the Sustainable Development Goals. This collaboration received prominent visibility on the global campaign website and gained traction across various social media platforms. The campaign unfolded in multiple phases, culminating in the April launch of a global report titled "Creating Impact Together: How Private Sector Partnerships Are Shaping the Future," where [BLANK] was recognized as a valued partner (https://www.unicef.org/partnershipsforthegoals).

Our partnership also garnered attention in an op-ed article in Fortune Magazine co-authored by Carla Haddad Mardini, the Director of the Private Sector Fundraising and Partnerships Division

at UNICEF (https://fortune.com/2023/04/07/unicef-working-corporations-helping-real-progress-sustainable-development-goals-carla-haddad-mardini/).

We also identified and reiterated the importance of renewed key messages to become more efficient in the workflow with the communication assets. Considering this, [BLANK] had commissioned a PR-agency, Porter Novelli, to further develop the partnership messages that UNICEF drafted and supplied last year. UNICEF reviewed and finalized the partnership key messages this year, after [BLANK]'s review-rounds with agency Porter Novelli.

Giga participated in the Transform Africa Summit (TAS) (2023) to discuss practical ways to advance the commitment of transforming Africa into a fully digitized economy where technology is harnessed to fully reap the benefits of our integration efforts (satellite technology, etc.).

Furthermore, the achievement of noteworthy Giga milestones, such as the mapping of 2 million schools and its expansion to 30 countries, was strategically promoted through collaborative social media campaigns and targeted key messages.

This year, Giga was also recognised as an honoree in FastCompany's 2023 Innovation by Design Awards (Impact category), and as a 'game-changing digital solution' for SDG 9 (Industry, Innovation, and Infrastructure) at the sidelines of UNGA 2023.

During UNGA the partnership was also profiled during our co-hosted side event alongside Governments of [BLANK] and Rwanda and the Office of the Secretary General's Envoy on Youth that championed the importance of supporting young social innovators and the critical role of connectivity. Selected SoMe examples can be accessed here; Unlock Unlock hero stories Post-event video.

Giga Next Steps and Goals

Giga's forthcoming initiatives revolve around several key areas, aimed at catalyzing substantial impact and progress. First on the agenda is the establishment of an investment fund specifically tailored for infrastructure financing. This fund aims to mobilize significant financial resources—exceeding $10 million annually until 2025—to support country-level projects. The overarching goal is to facilitate the connectivity of 30,000 schools, providing access to 17 million students within the initial phases of implementation.

Additionally, Giga is committed to shaping the market dynamics in a manner that delivers cost savings to governments. Through strategies like pooled procurement, reduced transaction costs, economies of scale, improved market information, and advanced demand forecasting, Giga aims to streamline processes and generate cost efficiencies.

Another pivotal aspect of Giga's roadmap involves the creation of a Connectivity Learning Hub. This initiative involves the development of a comprehensive core curriculum centered on school connectivity. Scheduled workshops, set to launch in Q2 of 2024 in collaboration with Giga partner countries, will serve as a platform to disseminate this curriculum. Simultaneously, Giga seeks to establish a demonstration and solution space, showcasing the latest advancements in connectivity technologies.

Moreover, Giga is focused on tech support. This includes the adoption of Giga's open-source technology tools, anticipated to yield substantial cost savings to Governments—estimated at over $50k USD annually. These tools aim to enhance efficiency, streamline operations, and facilitate smoother implementation of connectivity initiatives on a national scale.

Over the past three years, our collaboration has yielded remarkable progress. We believe that continuing this partnership holds immense potential to further accelerate our shared goals. By leveraging [BLANK]'s expertise and our joint commitment to bridging the digital divide in education, we are poised to make an even greater impact.

Appendix

School Mapping Details – *Data Available on Project Connect as of Nov. 2023*

Table Header Definitions:

- Schools with static connectivity: number of schools for which Giga has data on Project Connect indicating whether the school has Internet access (Y/N)
- Schools with coverage data: number of schools for which Giga has data on Project Connect indicating whether there is mobile coverage (2G, 3G, 4G) at the geocoordinate location of the school
- Schools with daily updates: number of schools for which Giga has at least daily data on Project Connect reporting the quality of service (Mbps) of connectivity received by the school

Country	School locations mapped on ProCo	% schools with static connectivity	Schools with static connectivity data	% schools with coverage data	schools with coverage data	% schools with daily updates	schools with daily updates
Afghanistan	1,733	0.00%	0	0.00%	0	0.00%	0
Algeria	10,601	0.00%	0	0.00%	0	0.00%	0
Anguilla	12	100.00%	12	91.67%	11	33.33%	4
Antigua and Barbuda	43	100.00%	43	90.7%	39	4.65%	2
Argentina	47,558	0.00%	0	0.00%	0	0.00%	0
Armenia	913	0.00%	0	0.00%	0	0.00%	0
Australia	17,088	0.00%	0	0.00%	0	0.00%	0
Austria	6,012	0.00%	0	0.00%	0	0.00%	0
Azerbaijan	2,305	0.00%	0	0.00%	0	0.00%	0
Bangladesh	6,280	0.00%	0	0.00%	0	0.00%	0
Barbados	106	100.00%	106	92.45%	98	9.43%	10
Belarus	4,663	0.02%	1	0.00%	0	0.02%	1
Belgium	10,587	0.00%	0	0.00%	0	0.00%	0
Belize	372	90.59%	337	56.18%	209	0.00%	0
Benin	8,666	10.56%	915	96.5%	8,363	0.00%	0
Bhutan	205	0.00%	0	0.00%	0	0.00%	0
Bolivia (Plurinational State of)	15,661	0.00%	0	0.00%	0	0.00%	0
Bosnia and Herzegovina	2,007	100%	2,007	0.00%	0	0.00%	0
Botswana	1,031	94.37%	973	93.7%	966	17.75%	183
Brazil	138,753	99.98%	138,731	82.34%	114,244	59.88%	83,089
British Virgin Islands	23	100.00%	23	100.00%	23	21.74%	5

Bulgaria	2,568	0.00%	0	0.00%	0	0.00%	0
Burkina Faso	5,065	0.00%	0	0.00%	0	0.00%	0
Cambodia	2,149	0.00%	0	0.00%	0	0.00%	0
Cameroon	4,565	0.00%	0	0.00%	0	0.00%	0
Canada	21,952	0.00%	0	0.00%	0	0.00%	0
Central African Republic	1,144	0.00%	0	0.00%	0	0.00%	0
Chile	8,407	0.00%	0	0.00%	0	0.00%	0
China	57,132	0.00%	0	0.00%	0	0.00%	0
Colombia	46,645	85.15%	39,716	0.00%	0	0.00%	0
Congo	2	50.00%	1	0.00%	0	50.00%	1
Costa Rica	4,598	100%	4,598	100%	4,598	0.28%	13
Côte d'Ivoire	2,664	0.00%	0	0.00%	0	0.00%	0
Croatia	2,478	0.00%	0	0.00%	0	0.00%	0
Cuba	3,381	0.00%	0	0.00%	0	0.00%	0
DRC	11,087	0.00%	0	0.00%	0	0.00%	0
Denmark	3,541	0.00%	0	0.00%	0	0.00%	0
Dominica	68	100.00%	68	100.00%	68	0.00%	0
Dominican Republic	1,708	0.00%	0	0.00%	0	0.00%	0
Ecuador	8,246	0.00%	0	0.00%	0	0.00%	0
Egypt	1,094	0.00%	0	0.00%	0	0.00%	0
El Salvador	5,162	100.00%	5,162	100.00%	5,162	0.00%	0
Ethiopia	2,954	0.00%	0	0.00%	0	0.00%	0
Finland	4,974	0.00%	0	0.00%	0	0.00%	0
France	64,971	0.00%	0	0.00%	0	0.00%	0
Georgia	2,302	0.00%	0	0.00%	0	0.00%	0
Germany	55,566	0.00%	0	0.00%	0	0.00%	2
Ghana	34,704	1.62%	562	67.38%	23,384	0.00%	0
Greece	5,458	0.00%	0	0.00%	0	0.00%	0
Grenada	95	100.00%	95	85.26%	81	22.11%	21
Guatemala	1,339	0.00%	0	0.00%	0	0.00%	0
Guinea	15,271	99.95%	15,263	96.67%	14,763	0.00%	0
Haiti	5,314	0.00%	0	0.00%	0	0.00%	0
Honduras	16,514	98.43%	16,255	98.52%	16,269	0.02%	3
Hungary	2,393	0.00%	0	100.00%	2,393	0.00%	0
India	49,235	0.00%	0	0.00%	0	0.00%	0

Indonesia	43,307	0.00%	0	0.00%	0	0.00%	0
Iran (Islamic Republic of)	13,592	0.00%	0	0.00%	0	0.00%	0
Iraq	7,761	0.00%	0	0.00%	0	0.00%	0
Ireland	5,143	0.00%	0	0.00%	0	0.00%	0
Israel	3,105	0.00%	0	0.00%	0	0.00%	0
Italy	29,727	0.00%	0	0.00%	0	0.00%	0
Jamaica	690	0.00%	0	0.00%	0	0.00%	0
Japan	57,373	0.00%	0	0.00%	0	0.00%	0
Kazakhstan	6,915	99.97%	6,913	39.96%	2,763	70.44%	4,871
Kenya	37,902	4.62%	317	99.68%	37,782	0.14%	54
Kiribati	118	88.14%	104	16.1%	19	0.00%	0
Kyrgyzstan	2,080	100.00%	2,080	0.00%	0	0.00%	0
Latvia	1,150	0.00%	0	0.00%	0	0.00%	0
Lesotho	1,783	0.00%	0	0.00%	0	0.00%	0
Liberia	4,962	0.00%	0	81.28%	4,033	0.00%	0
Libya	2,557	0.00%	0	0.00%	0	0.00%	0
Lithuania	1,438	0.00%	0	0.00%	0	0.00%	0
Madagascar	3,078	0.00%	0	0.00%	0	0.00%	0
Malawi	7,062	0.00%	0	70.94%	5,010	0.00%	0
Malaysia	1,011	0.00%	0	0.00%	0	0.00%	0
Mali	11,540	0.00%	0	0.00%	0	0.00%	0
Mauritania	2,739	0.00%	0	77.47%	2,122	0.00%	0
Mexico	159,541	0.00%	0	0.00%	0	0.00%	0
Mongolia	845	100%	845	43.2%	365	69.11%	584
Montserrat	17	100.00%	17	100%	17	5.88%	1
Morocco	2,920	0.00%	0	0.00%	0	0.00%	0
Mozambique	787	0.00%	0	0.00%	0	0.00%	0
Myanmar	3,230	0.00%	0	0.00%	0	0.00%	0
Namibia	1,778	88.25%	1,569	96.91%	1,723	0.00%	0
Nepal	24,419	0.00%	0	0.00%	0	0.00%	0
Netherlands	9,100	0.00%	0	0.00%	0	0.00%	0
New Zealand	4,368	0.00%	0	0.00%	0	0.00%	0
Nicaragua	1,364	0.00%	0	0.00%	0	0.00%	0
Niger	19,492	100.00%	19,492	70.19%	13,682	0.04%	8
Nigeria	108,808	0.00%	0	96.46%	104,951	0.00%	0
Norway	9,901	0.00%	0	0.00%	0	0.00%	0

Pakistan	4,549	0.00%	0	0.00%	0	0.00%	0
Palestine	2,963	100.00%	2,963	0.00%	0	0.00%	0
Panama	3,178	100.00%	3,178	0.00%	0	0.03%	1
Papua New Guinea	2,649	0.00%	0	0.00%	0	0.00%	0
Paraguay	3,717	0.00%	0	0.00%	0	0.00%	0
Peru	108,523	0.00%	0	0.00%	0	0.00%	0
Philippines	39,914	100.00%	39,914	0.00%	0	0.00%	0
Poland	9,660	0.00%	0	100.00%	9,660	0.00%	0
Portugal	6,911	0.00%	0	0.00%	0	0.00%	0
Republic of Moldova	733	0.00%	0	100.00%	733	0.00%	0
Romania	2,445	0.00%	0	100.00%	2,445	0.00%	0
Russian Federation	45,453	0.00%	0	0.00%	0	0.00%	0
Rwanda	4,093	100.00%	4,093	99.88%	4,088	0.76%	31
Saint Kitts and Nevis	44	100.00%	44	88.64%	39	18.18%	8
Saint Lucia	93	100.00%	93	86.02%	80	21.51%	20
Saint Vincent and the Grenadines	94	100.00%	94	90.43%	85	11.7%	11
Sao Tome and Principe	104	100.00%	104			0.96%	1
Saudi Arabia	2,114	0.00%	0	0.00%	0	0.00%	0
Senegal	2,904	0.00%	0	0.00%	0	0.00%	0
Serbia	4,085	0.00%	0	0.00%	0	0.00%	0
Sierra Leone	11,941	100%	11,941	71.7%	8,562	0.18%	21
Slovakia	1,295	0.00%	0	100.00%	1,295	0.00%	0
Slovenia	1,013	0.00%	0	0.00%	0	0.00%	0
South Africa	32,925	0.08%	26	99.92%	32,899	0.00%	0
South Sudan	6,363	100.00%	6,363	43.69%	2,780	0.00%	0
Spain	25,785	0.00%	0	0.00%	0	0.00%	0
Sri Lanka	5,545	0.00%	0	0.00%	0	0.00%	0
Sudan	20,276	100.00%	20,276	0.00%	0	0.00%	0
[BLANK]	8,494	0.00%	0	0.00%	0	0.00%	0
Switzerland	9,419	0.00%	0	0.00%	0	0.00%	0
Syrian Arab Republic	4,520	0.00%	0	0.00%	0	0.00%	0
Taiwan	9,692	0.00%	0	0.00%	0	0.00%	0

Tajikistan	400	0.00%	0	0.00%	0	0.00%	0
Thailand	24,298	100.00%	24,298	100.00%	24,298	0.00%	0
Togo	10,119	0.00%	0	0.00%	0	0.00%	0
Trinidad and Tobago	761	100.00%	761	59.53%	453	12.75%	97
Tunisia	2,774	0.00%	0	0.00%	0	0.00%	0
Turkey	17,365	0.00%	0	0.00%	0	0.00%	0
Uganda	29,224	0.00%	0	0.00%	0	0.00%	0
Ukraine	18,105	0.00%	0	0.00%	0	0.00%	0
United Arab Emirates	1,107	0.00%	0	0.00%	0	0.00%	0
United Kingdom of Great Britain & Northern Ireland	51,755	0.00%	0	0.00%	0	0.00%	0
United Republic of Tanzania	16,983	0.00%	0	0.00%	0	0.00%	0
United States of America	207,460	0.00%	0	0.00%	1	0.00%	0
Uzbekistan	10,098	99.68%	10,066	86.24%	8,709	22.69%	2,291
Venezuela	4,186	0.02%	1	0.00%	0	0.00%	0
Viet Nam	7,062	0.00%	0	0.00%	0	0.00%	0
Zambia	438	0.00%	0	0.00%	0	0.00%	0
Zimbabwe	7,913	100.00%	7,913	75.57%	5,980	0.00%	0