accelerate

Contents

In the following pages you will find information about Giga's Accelerate program and the projected outputs and deliverables for the year 2021.

This presentation is categorized into: **Key Questions** that will guide the pilots to inform current and future Giga implementation;

the **Targets** that we aim to achieve in the expected timeline

followed by the **Accelerate Countries** that we are collaborating with to roll out 'accelerate' and develop resources to further tailor Giga inputs into the national package and advance on our pillars of work;

and the **Key Accomplishments** thus far.

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23 Key Accomplishments

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OVERVIEW

What is Accelerate?

Accelerate targets a set of countries focusing on quick sprints to prototype for scale and provide insights to fast-track governments' universal connectivity programs.

Through **"Accelerate",** Giga is connecting the **first schools** in each partner country and exploring diverse **technologies**, **business models** and **regulatory arrangements** to provide broadband connectivity solutions to schools and communities.

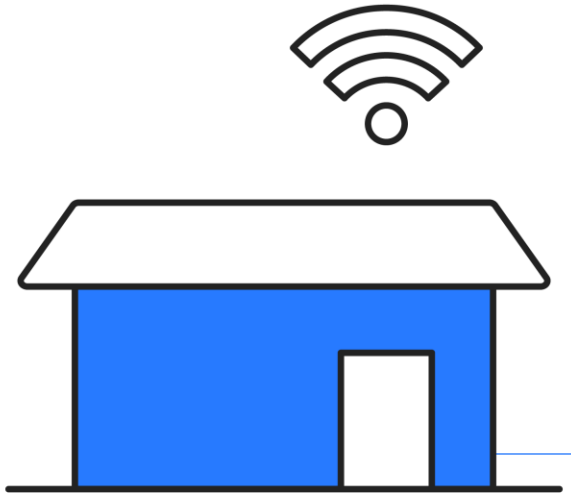
1,000
Schools per country

~2M
Learners

9
Countries

$4.8M
Committed
+
$5M
Expected

Why schools?



Schools are the entrance point for Giga to identify connectivity gaps.

Through **school mapping** and **real-time monitoring** of connectivity, Giga can use the school as a **node** to test technologies and business solutions that enable sustainable and affordable connectivity for schools and surrounding communities

2020

800,000+
schools mapped across 30 countries

2025

2,000,000
Schools mapped

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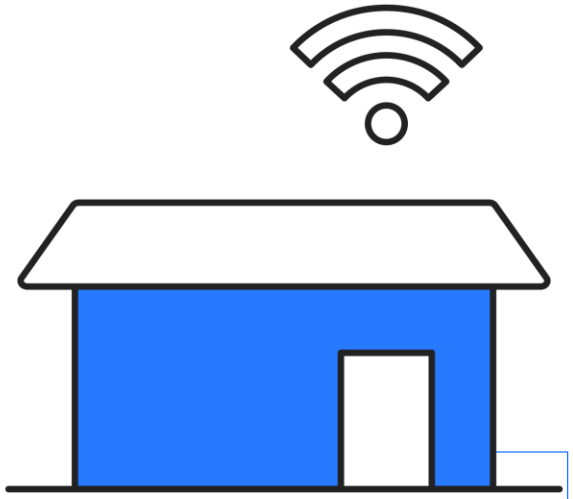
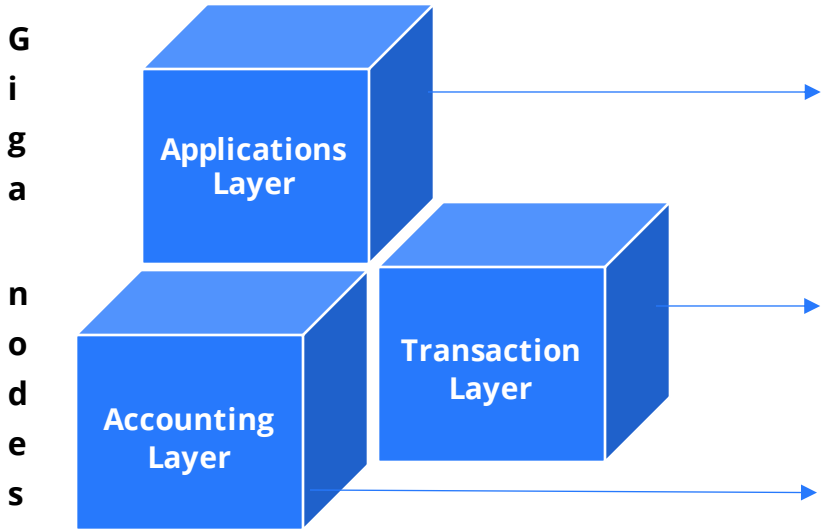
Schools as Giga nodes



Schools connected through Accelerate will work as nodes to test and prove solutions to integrate young people and communities to information, opportunity and choice

Giga nodes will have three layers:



- Financial services, digital payments, Fintech, SME products
- Methods for exchange of value: i.e.: Sandboxes to use crypto / interface between sellers & buyers, smart contracts
- Monitoring and tracking Gb flow for billing

OVERVIEW

Minimum Requirements for a school to work as Giga Node

Mapping

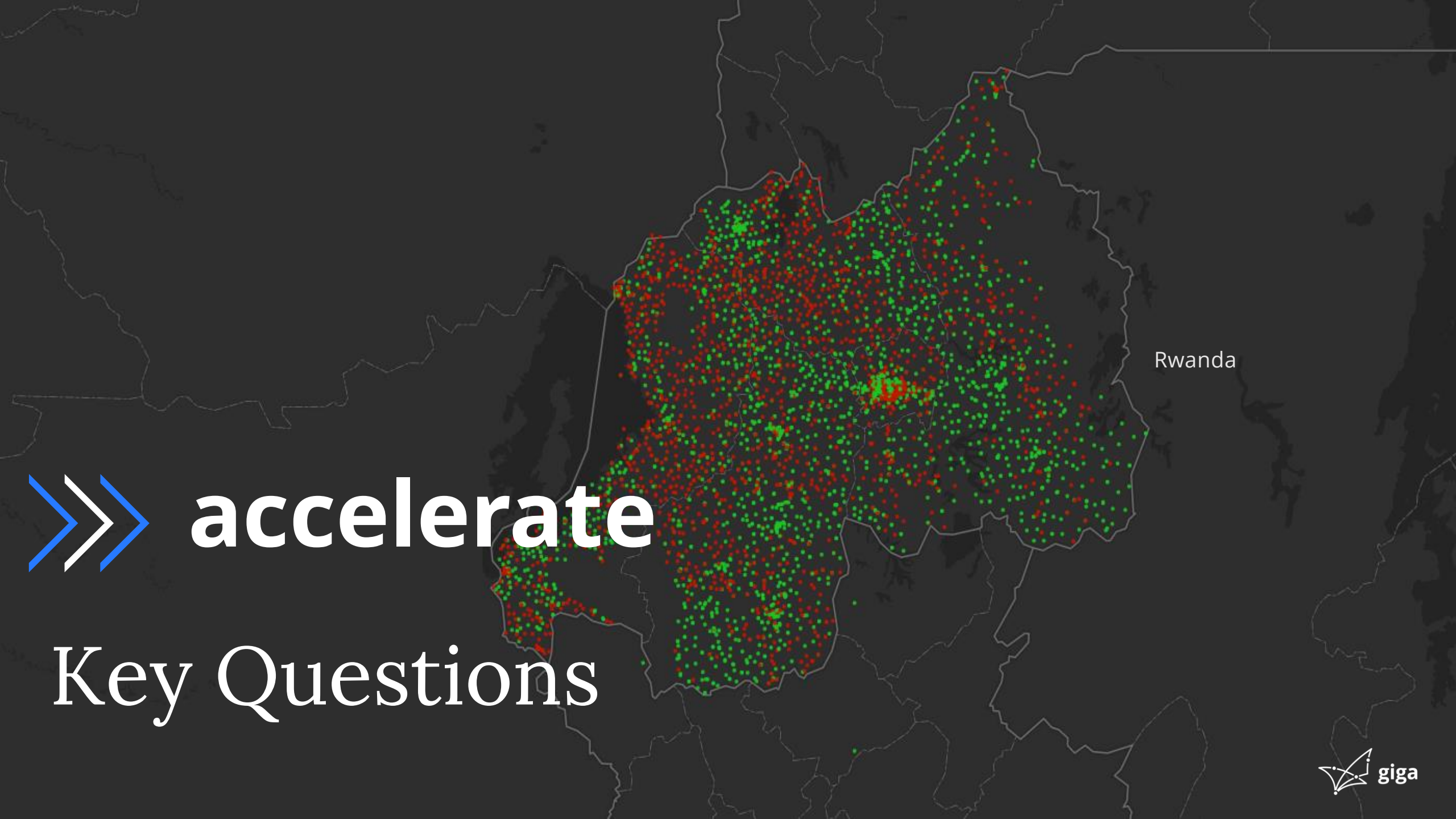
- Location of school mapped and publicly available in Giga's Project Connect live map
- Identity markers & contact information

Connectivity & Monitoring

- Capacity to report connectivity quality of service in real time
- 1-to-2-year contract for connectivity service provision with at least 20 Mbps per school
- Service agreement with the connectivity provider to share real-time data

Safety & Accessibility

- Safeguarding procedures for online safety and Child Online Protection
- Positive assessment of schools' readiness for deployment of digital solutions (including digital learning products)



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Key Questions

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KEY QUESTIONS

Accelerate areas of exploration

Accelerate will explore and test solutions in 3 major areas:

- **Technologies**
- **Business models**
- **Regulatory arrangements**

The lessons learned and best practices observed will guide future Giga programming and resource mobilization efforts at the national, regional and global level.

What **technologies**, **business models** and **regulatory arrangements** can help to...

- use real-time monitoring for transparency and accountability?
- connect schools in rural, remote and challenging environments?
- improve schools' connectivity and quality of service?
- ensure schools can pay for connectivity services over time?
- use the school as a hub to extend connectivity and services to the community?

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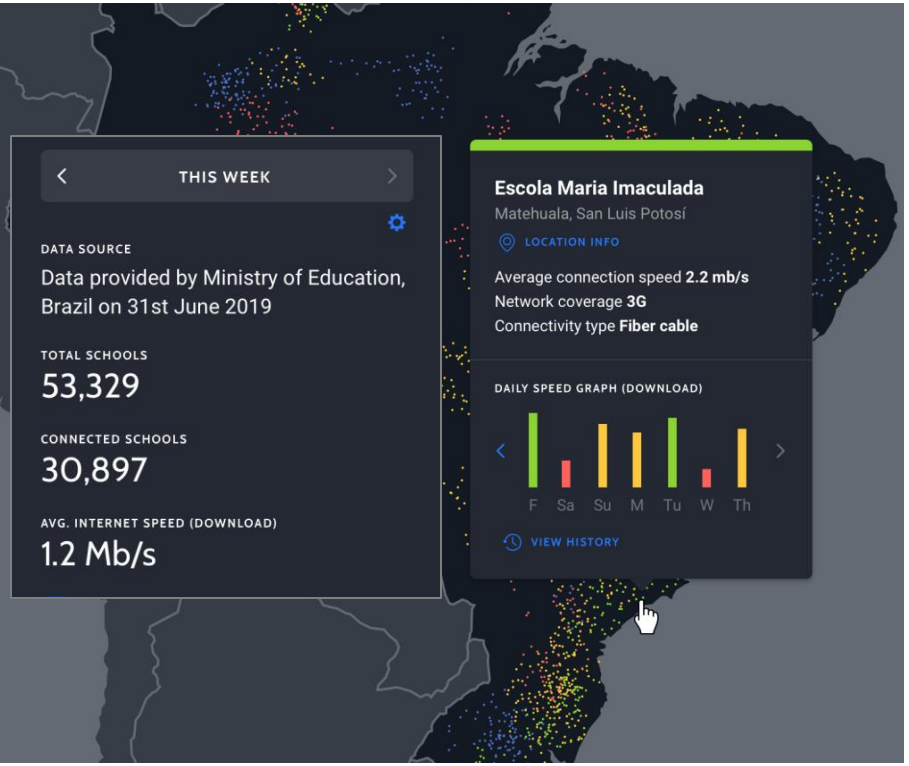
KEY QUESTIONS

1 How might we use real-time monitoring?



Real-time school mapping in Brazil, soon to be live on Project Connect in Q2 2021

RT monitoring can track the progress and quality of connectivity of schools over time, providing data to identify untapped demand and improve accountability and transparency for investment opportunities.

The following RT monitoring tools will be tested in accelerate schools:

Service level agreements

all Giga Accelerate providers report RT QoS data on the connected schools

Browser extension measurement tool

developed by Measurement Labs, to report the RT QoS of Internet at the device.

Data sharing agreements with ISPs/MNOs

to obtain periodical updates of the QoS of school connectivity through an API.

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KEY QUESTIONS

2 How might we connect schools in rural, remote and challenging environments?

High costs are a barrier for connectivity, but emerging technologies and business models for rural areas can help

Accelerate will launch innovation challenges for the ICT industry to test their technologies to **provide sustainable and affordable connectivity** to schools in remote areas and extend the connectivity, through a commercial model, to the most disadvantaged populations. These include but are not limited to:

Last-mile technologies

tv white space, airborne network infrastructure, fiber POP within range of Wi-Fi links, LEO satellites, mesh networks, directional wi-fi, light beams, etc.

Sustainable and affordable business models

cooperative PPPs, network as a service, third party network ownership, freemium Wi-Fi hotspots for community access etc.

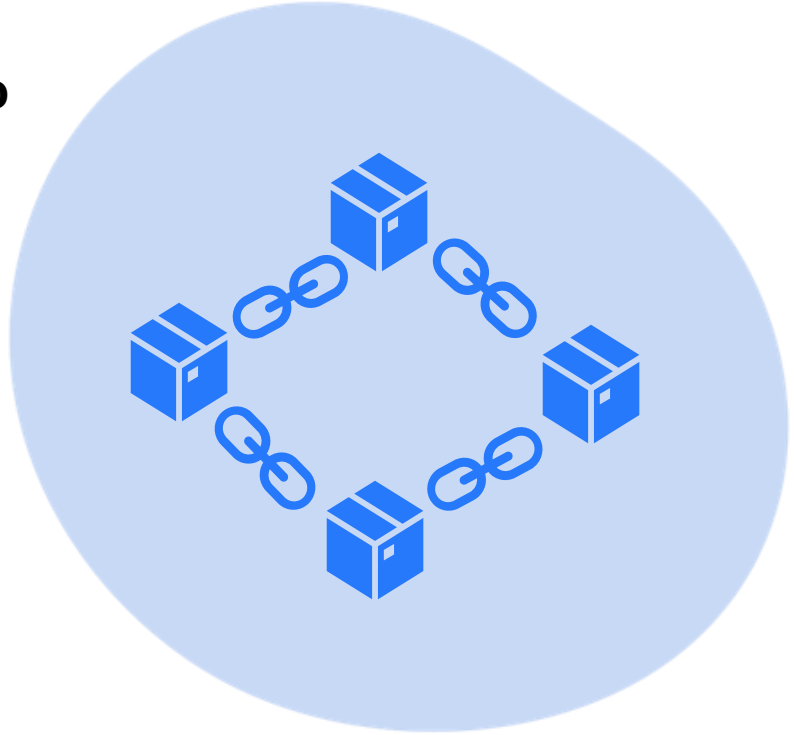
KEY QUESTIONS

3 How might we improve schools' connectivity and quality of service?

Giga can create the incentives for service providers to deliver better quality of service

For example, blockchain can be used to increase efficiency, transparency, and accountability for investments, managing payments and the relation with ISPs

Accelerate countries can prototype:



ProCoChain

to store and monitor RT data on a public blockchain, receive donations in crypto, pay ISPs, transparent bidding.

Smart contracts

automated pay-by-performance and incentive-based models for procurement of connectivity services.

KEY QUESTIONS

4 How might we ensure schools can pay for connectivity services over time?

Buying models (i.e., demand aggregation) and financing mechanisms (i.e., USF, Giga Bond, digital impact bonds) can help make investments in school connectivity more efficient and sustainable.

Demand aggregation

- **Users:** Estimation of latent demand based on # of learners, curriculum, and surrounding community's needs
- **Public buyers:** Aggregate latent demand of users regionally and over time to improve negotiation power

Universal Service Funds (USF)

Opportunities to test the mechanisms to link needs to connectivity financing, in cases where there have been recent changes to USF regulation and operation.

Sustainability

Models that enable schools and communities to pay for their connectivity services

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5 How might we use schools as hubs to extend connectivity and services to the community?

School connectivity can directly benefit the surrounding community by improving access to connectivity infrastructure

These pilots explore how schools can monetize the connectivity they receive, understanding "monetization" as the reselling of connectivity outside of school hours in order to raise funds for schools' connectivity expenses.

Solutions

- **Local WISP & community networks:** Locally owned and operated networks
- **Open-source software and hardware network designs** for local ISPs
- **Technologies:** Directional wireless, mesh, etc.

Operator models

- **Free / freemium Wi-Fi hotspots:** Wi-Fi, microwave relays, TV Whitespace, renewable energy solutions (for example, Mawingu in Kenya; AirJaldi in India, ViRural in Nigeria, Bluetown, among others)

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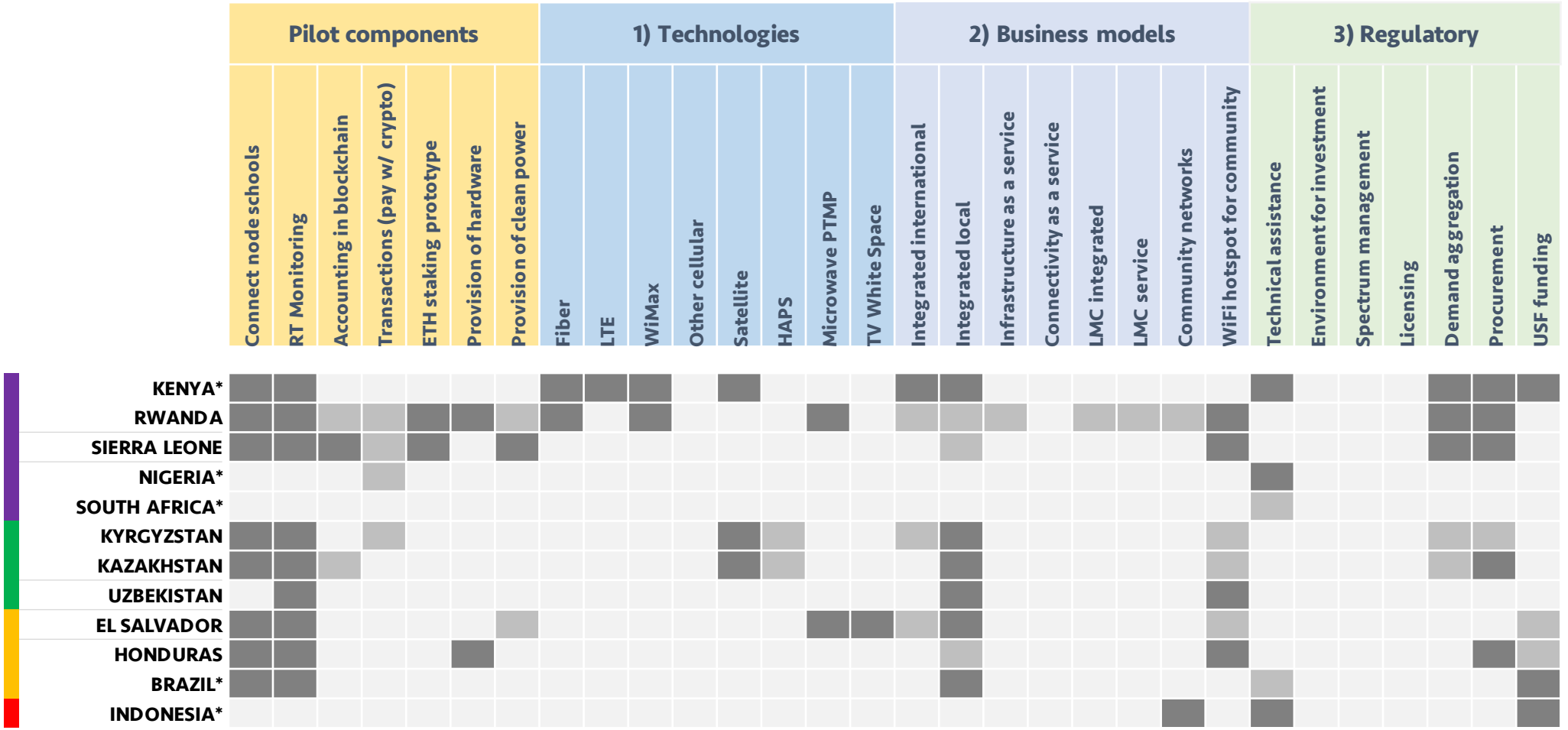
Prototypes Grid

Updated Apr 6, 2021



** FCDO countries*

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What do countries want to test?

	Prospective Accelerate Prototypes	What do we want to know?
Kenya* 	**Connect first 1,000 schools where DLP devices have been distributed** • Demand aggregation procurement for 100 schools • Provide unlimited connectivity (10 Mbps download & 5 Mbps upload) • Monitor connectivity QoS in real time • Test LTE, WiMax, satellite and fiber solutions • Streamline process to use and apply for USF funding	• How to scale from 100 to 1,000 to 10,000 schools in a country? • Results from creating synergies with national scale programs (i.e. DLP) • Cost-efficiency and quality of service from different technologies
Rwanda 	**Connectivity "packages" for the most disadvantaged schools** • Initial procurement for 63 schools (including schools in refugee camps) • Bundled technology and business model solution proposed by industry • Connectivity package includes unlimited data, minimum of 25 Mbps per school and clean and stable power supply to schools • Possible extension of the connectivity from selected schools to the community	• How to embed sustainability into connectivity provision? • What do we need to know when connecting schools in challenging environments? • Is the required standard of 25 Mbps per school the ideal for Rwanda? • What is needed to extend the connectivity from schools to the community?
Sierra Leone 	**Connectivity in environments without power supply** • Technologies to provide connectivity where most of the schools lack access to a stable power supply (~90% without electricity) • Provide unlimited connectivity (10 Mbps minimum per school) • Test the use of blockchain for smart contracts and financing	• What technologies and business models are the most appropriate to connect schools where there is no electricity? • Use of blockchain to improve transparency • Prototype uses of crypto to fund connectivity

* FCDO country

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ACCELERATE COUNTRIES

What do countries want to test?

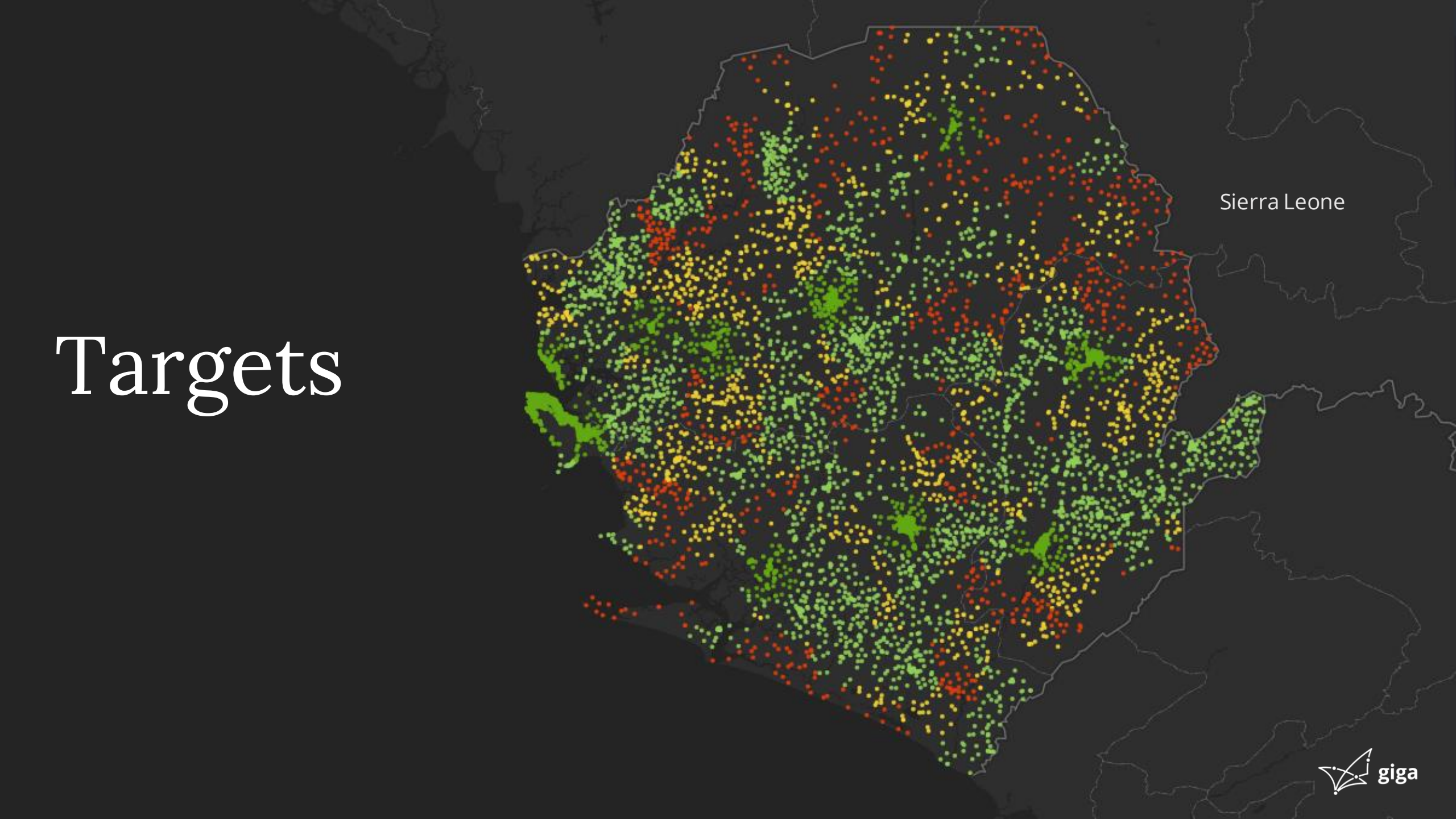
	Prospective Accelerate Prototypes	What do we want to know?
Kyrgyzstan 	**Connecting mountainous schools** • Connect at least 8 of the 20 mountainous schools that remain unconnected where costs far exceed national average (~$60k/school) - far away from current fiber points of access (>30km) • Unlimited data, 10 Mbps minimum per school international zone / 50 Mbps KG zone • Test last-mile disruptive technologies (i.e., LEO satellite, open source software & hardware network designs, directional wireless, light beams, etc.) • Pilot extension of the connectivity to the community • RT reporting of quality of connectivity • Possible prototype of payments to service providers using crypto	• What technologies and business models are the most appropriate to connect schools in mountainous, inaccesible and challenging environments? • Create a model (technology + business solution) to connect schools in the most challenging environments
Kazakhstan 	**Connecting the hardest-to-reach schools** • Connect 25 schools that remain unconnected in the country • Unlimited data, 10 Mbps minimum per school • Test last-mile disruptive technologies • Possible extension of the connectivity to the community • Pilot extension of the connectivity to the community • RT reporting of quality of connectivity	
Uzbekistan 	**Real-time monitoring for decision-making and extension of connectivity** • Use RT monitoring to inform MoPE's school connectivity program decision-making • Leverage the network of 200 schools that will be connected by MoPE, MoICT, IT Park, to extend the connectivity wirelessly to the community and assess the impact	• RT monitoring for decision-making use case • Impact of extending connectivity wirelessly to the surrounding community

What do countries want to test?

	Prospective Accelerate Prototypes	What do we want to know?
El Salvador 	**Connect schools as nodes of the National Connectivity Network** • Test TV White Space, Microwave PtP and WiFi to connect 35 schools in the most impoverished areas. • Unlimited data, 20 Mbps • Leverage Secretaria de Innovacion's partnerships with ETESAL (the national telecommunications company) to create an investment model where part of the returns from connectivity projects will be reinvested to extend connectivity in rural areas.	• Is TV White Space a long-term sustainable solution for extending connectivity to rural areas in El Salvador? • Effectiveness of PPP models to extend connectivity in the country.
Honduras 	**Use schools as Wi-Fi hotspots to extend connectivity to the community** • Connect 10 schools with the ideal bandwidth to support digital learning • Develop a model for schools to provide Wi-Fi to the community • RT monitoring of school connectivity • Link results from the pilot with available sources of funding from development banks	• Feasibility of using schools as connectivity hubs for the community
Brazil* 	**Connectivity pilot to inform better practices to use Universal Service Funds** • Connect 20 schools to provide insights and best practices for governments on how to use the *Fundo de Universalização dos Serviços de Telecomunicações* (FUST) for school connectivity. • Lessons from the connectivity pilot to inform advocacy campaigns • Streamline process to use and apply to FUST funding.	• How to streamline the process of using FUST resources for school connectivity projects • Show the impact of school connectivity for learners and the community to advocate for FUST usage

* FCDO country

Targets



TARGETS

Accelerate global (illustrative)

Outcome/Outputs	Indicators	Target			
		Q2	Q3	Q4	Q1 (2022)
Outcome 1: Improved access and quality of connectivity in schools and surrounding communities					
Output 1.1: Schools connected as nodes for connectivity meeting minimum connection speed and required bandwith	# of schools connected as Giga nodes	360	740	1000	1500
Output 1.2: Increased community access to internet through extension of school connectivity	# of Giga nodes being used as a hub for community to access internet	25	50	75	100
Output 1.3: Increased access to digital solutions and services	# of Giga nodes used to provide digital solutions and services	15	30	45	50
Outcome 2: Improved accountability and transparency in connectivity service provision					
Output 2.1: Real-time connectivity data mapping for schools	% of connected schools reporting real-time data (browser extension, ISPs, MNOs, routers)	5	15	25	35
Output 2.2: Capture school location and connectivity data on public blockchain	# of countries with full data captured on blockchain	5	15	25	35
Output 2.3: Smart contracts to automatically manage agreements and service delivery of connectivity providers	# of countries managing relations with ISPs using smart contracts			1	2
Outcome 3: Strengthened financial delivery systems/technology through and for schools (i.e. digitial payments, lending and funding)					
Output 3.1: Develop Giga credit to be used by various providers	# of countries piloting Giga credit				2
Output 3.2: Digital payments for service delivery	# of countries	3	3	3	15
Output 3.3: Funds mobilised for connectivity	Amount raised (USD)				

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TARGETS

Accelerate in country (illustrative)

Outcome/Outputs	Indicators	Target			
		Q2	Q3	Q4	Q1 (2022)
Outcome 1: Improved access and quality of connectivity in schools and surrounding communities					
Output 1.1: Schools connected as nodes for connectivity meeting minimum connection speed and required bandwith	# of giga nodes connected	80	120	200	300
Output 1.2: Increased community access to internet through extension of school connectivity	# of nodes being used as a site for community to access internet	5	10	15	20
Output 1.3: Increased access to digital learning solutions and devices	# of nodes providing digital learning solutions	5	10	15	20
Outcome 2: Improved accountability and transparency in connectivity service provision					
Output 2.1: Real-time connectivity data mapping for public schoos	% of schools reporting real-time data (browser extension, ISPs, MNOs, routers)	5%	40%	80%	>80%
Output 2.2: Capture school location and connectivity data on public blockchain	% of schools with full data captured on blockchain	5%	40%	80%	>80%
Output 2.3: Smart contracts to automatically manage agreements and service delivery of connectivity providers	# of smart contracts			1	2
Outcome 3: Strengthened financial delivery systems/technology through and for schools (i.e. digitial payments, lending and funding)					
Output 3.1: Test Giga credit to be used by various providers	# of service providers piloting Giga credit				2
Output 3.2: Digital payments for service delivery	# of schools				
Output 3.3: Funds mobilised for connectivity	Amount raised (USD)				

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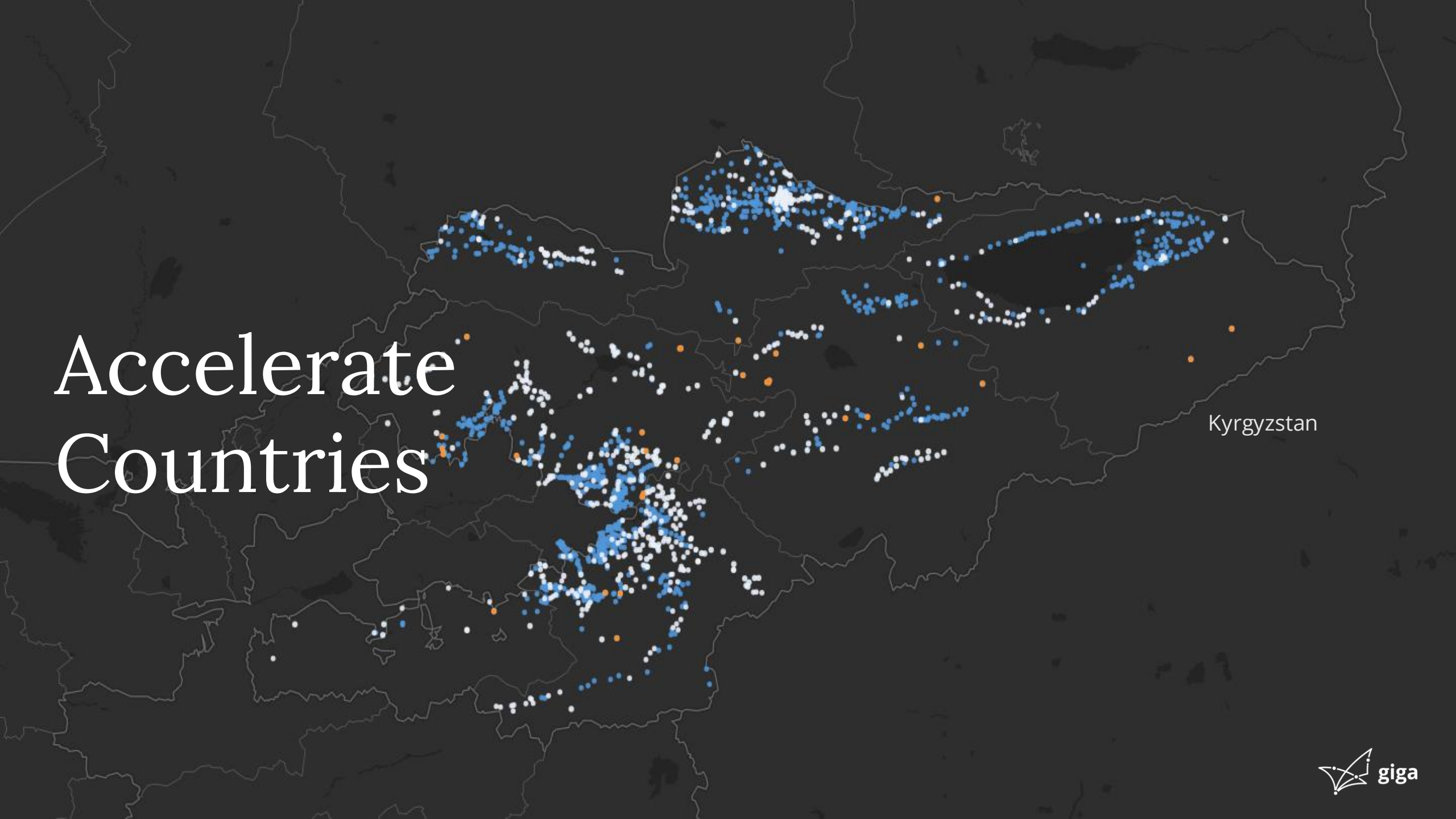
Accelerate Countries



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Accelerate country onboarding

Accelerate countries have committed a minimum investment of $100,000 to connect a cluster of unconnected schools as Giga nodes and are piloting a combination of the 5 key accelerate prototypes.

Accelerate countries also have a plan for:

- Physically **mapping all schools** in the country (lat, long) and making public the data in Project Connect
- Reporting **information on the connectivity status for schools** on existing public contracts; and
- **public procurement for school connectivity**

ACCELERATE COUNTRIES

Funds raised to implement accelerate in countries

ESARO

Kenya

$1.4M

Rwanda

$920,000

WCARO

Sierra Leone

$985,000

MENA

ECARO

Kazakhstan

$310,000

Kyrgyzstan

$165,000

LACRO

El Salvador

$400,000

Honduras

$290,000

Brazil

$215,000

$4.8M

Raised*

*Funding sources: Dubai cares, Musk, 7%.

Accelerate Funding Breakdown *internal only*

Status		Country	Amount Allocated / Funding Source				Totals
			7% 2020	7% 2021	Dubai Cares	Musk Foundation	
Confirmed	1	**Kenya**	*$374,000*		*$450,000*	*$600,000*	$1,424,000
	2	**Rwanda**	*$20,000*		*$300,000*	*$600,000*	$920,000
	3	**Sierra Leone**	*$85,000*	*$50,000*	*$250,000*	*$600,000*	$985,000
	4	**Kazakhstan**	*$210,000*		*$100,000*		$310,000
	5	**Kyrgyzstan**		*$65,000*	*$100,000*		$165,000
	6	**El Salvador**	*$200,000*	*$200,000*			$400,000
	7	**Honduras**	*$200,000*	*$90,000*			$290,000
						Total	**$4,494,000**

Set aside funds/ activities - but pending confirmation	8	**Uzbekistan**		*$60,000*	*$100,000*		$160,000
	9	**Brazil**		*$215,000*			$215,000
	10	**Botswana**		*$67,000*			$67,000
	11	**Palestine**		*$200,000*			$200,000
	12	**Nigeria**		*$50,000*			$50,000
	13	**Costa Rica**		*$70,000*			$70,000
	14	**OECS**					$-
						Total	**$387,000**

Annex

Connectivity

	Q2	Q3	Q4
Kenya  **$1.4M**	**25/ 220** schools connected (11%) **0%** RT	**155+**	
Rwanda  **$920,000**	**RFP launched** to connect **63** schools **0%** RT		

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ACCELERATE COUNTRIES

Accelerate country overview

ESARO

Kenya

$1.4M

Rwanda

$950,000

Botswana

$67,000

WCARO

Sierra Leone

$900,000

Niger

$50,000

Nigeria

$

ECARO

Kazakhstan

$200,000

Kyrgyzstan

$165,000

Uzbekistan

$100,000

LACRO

El Salvador

$400,000

Honduras

$290,000

Brazil

$215,000

Costa Rica

$70,000

OECS

$

$4.8M Raised*

*Funding sources: Dubai cares, musk, 7%.

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Musk Global Targets Year 1

- Connect ~360 schools in 3 countries as **prototypes for national bids** (2021 Q4)
- **Live map of connectivity** for schools (NOC) for management
- **300 schools and 5 governments** testing Giga 'accelerate'

	Targets	2021 Q2	2021 Q3	2021 Q4	2022 Q1
	Prototype schools connected Each school running full Giga Nodes	Start: **80 Rwanda** & **80 Kenya;** + 200 underway **360 Total**	Start: **80 Sierra Leone;** + 300 underway + 360 **740 Total**	**>1,000 Total**	**>1,000 Total**
giga nodes	**Applications layer** **Testing use** - i.e.: teacher/school payments	**3 Countries** Pay kids for locating schools w/ crypto	**Same 3 Countries** Staking Eth. For rev & pay teachers for service	**Same 3 Countries** Expand prototypes to national scale	**Scale to 15 Countries**
	Transactions layer **Testing methods of exchange** of money	Monitor Gb flow to nodes	Interface between sellers and buyers of Gbs	Create Giga credit that works across various service providers	Test credit across consumers & across borders
	Accounting layer **Testing monitoring mechanisms** – measure Gb flow for billing	**5 Countries** Browser based connectivity reporting	**15 Countries** Add MNO/ other data APIs for connectivity & identity	**25 Countries** Full data capture on public blockchain	**35 Countries** Reporting from school routers
	Risks/ Need	Technical capacity	Government buy-in and commitment	Scalable product	TBD

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Overview