

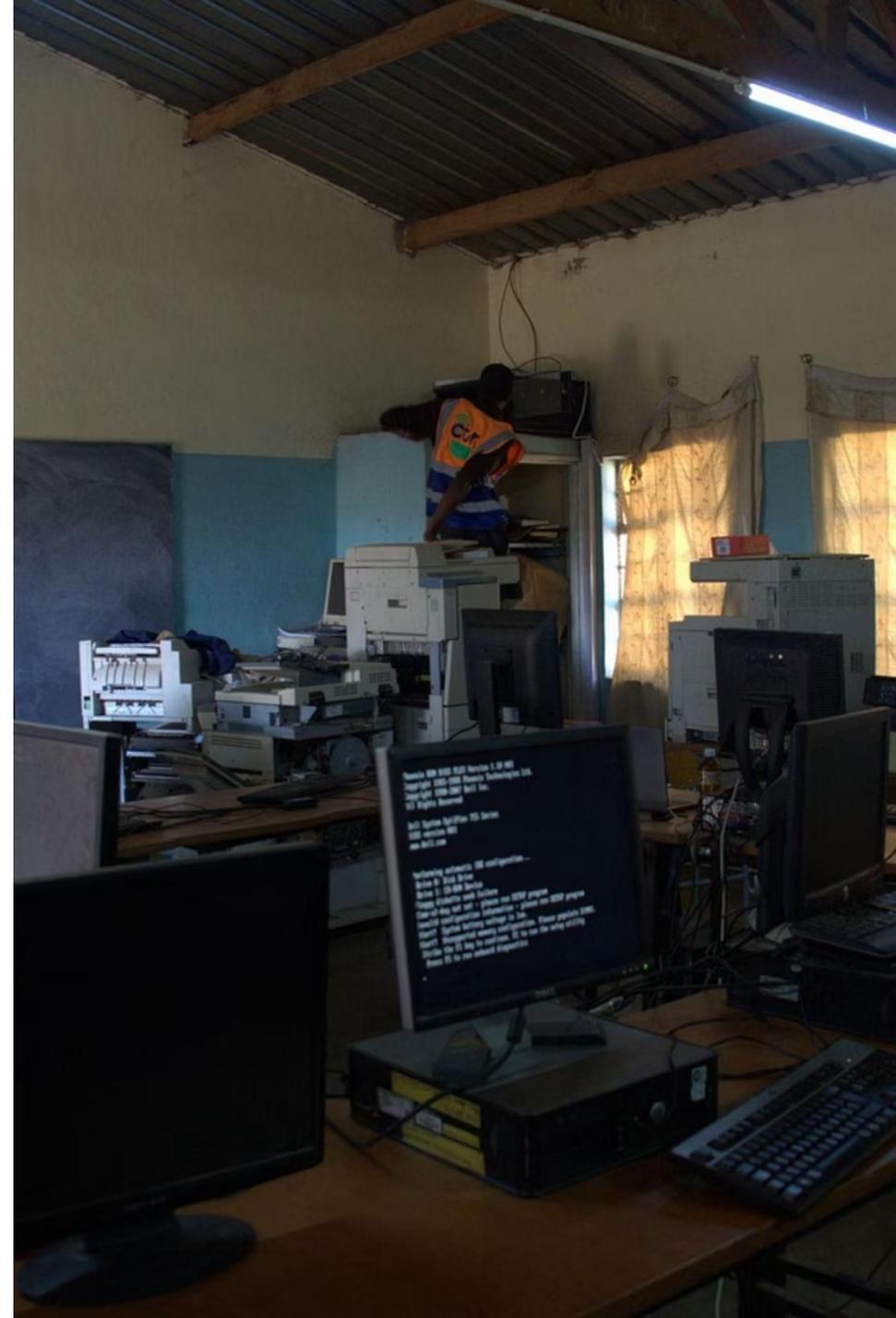
Challenges in Measuring School Connectivity

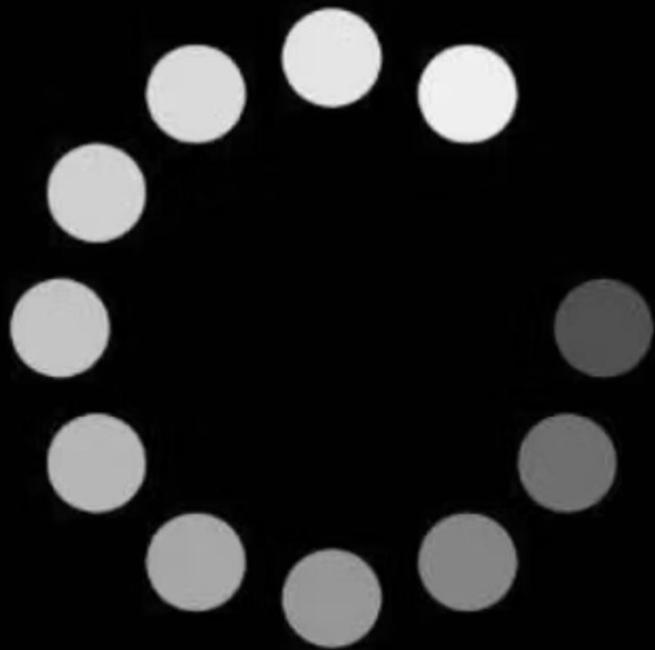
5 Years of Global Insights from Giga

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PIMF Indonesia

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Buffering...

The Connectivity Paradox

Governments might declare schools “connected” based on:

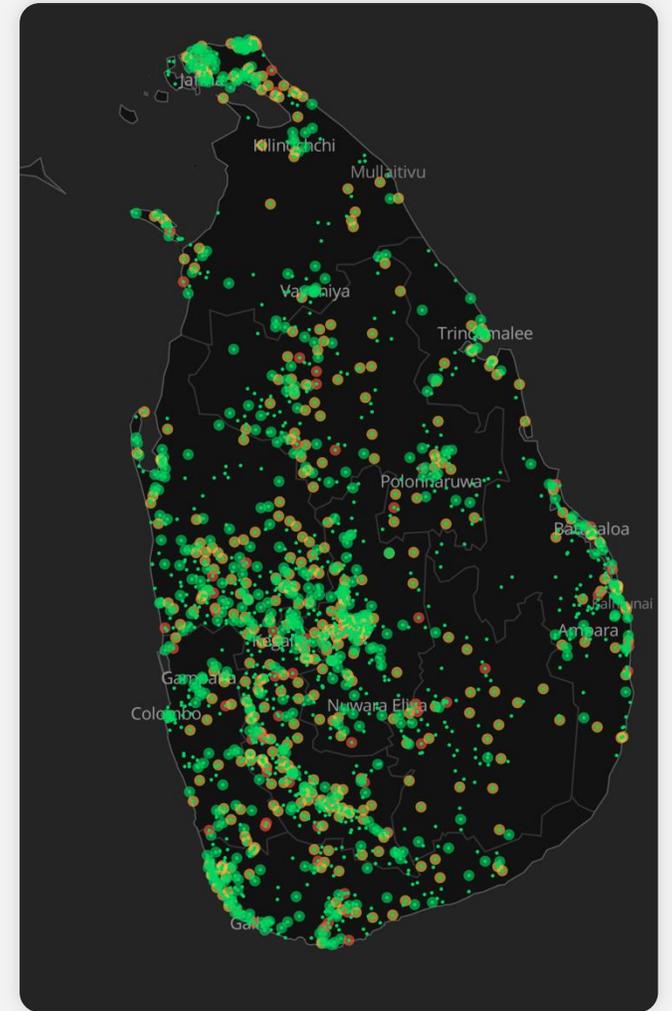
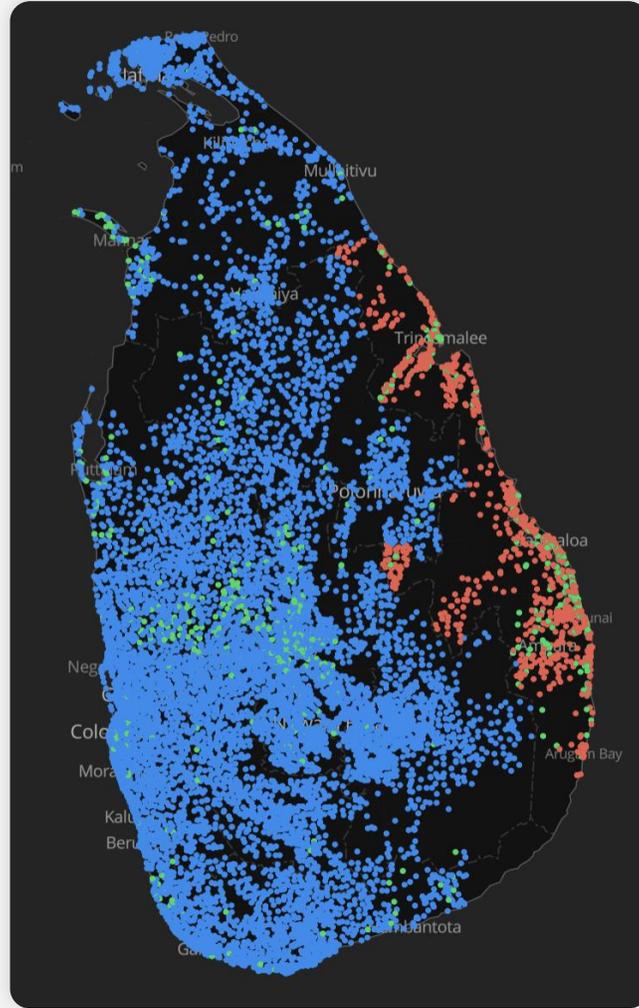
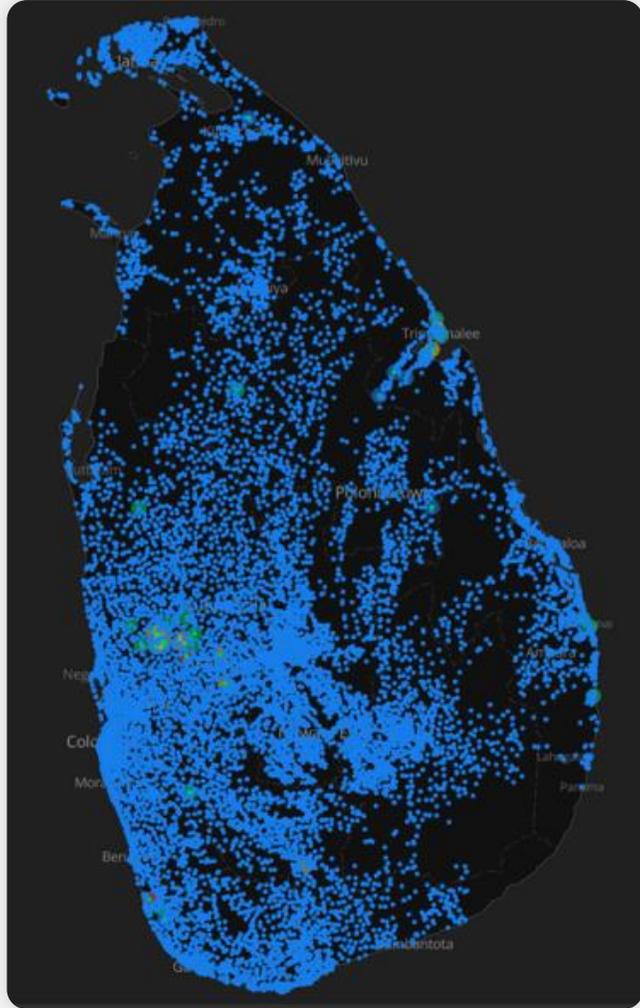
- whether an ISP contract exists
- a teacher hotspots a PC from their private phone line
- an annual paper-based school census marks it as connected

Declared ≠ Proven

Available ≠ Reliable

Connected ≠ Functional

Is a school getting <1 Mbps down / 300 ms latency during school hours at the computer lab, a connected school?



Giga at a Glance



Map

Map the location of schools and monitor school connectivity status in real-time



Model

Model the infrastructure and investments needed to deliver school connectivity



Finance

Support governments to build the right-layered financing to pay for connectivity



Contract

Help governments contract connectivity for schools



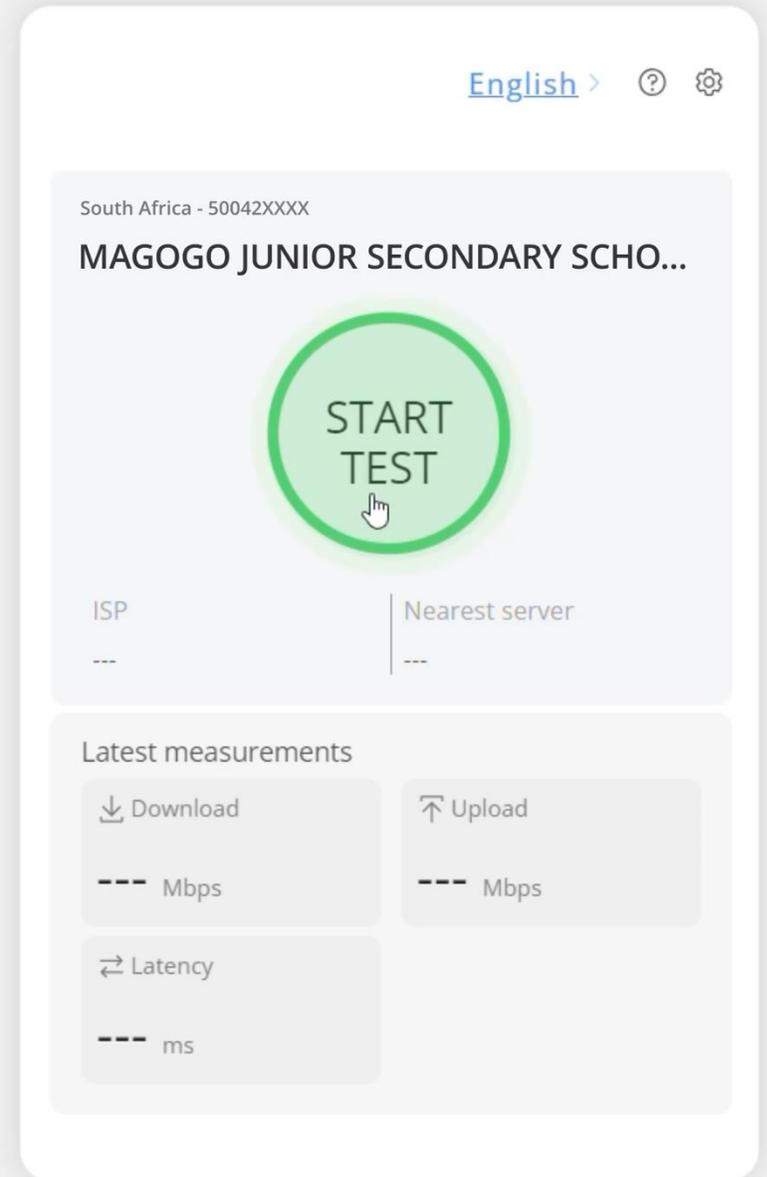
Supports **convening and governance** of all stakeholders relevant to school connectivity

Strengthens capacity of stakeholders to implement, sustain and scale connectivity initiatives

Giga helps governments gain **real-time visibility** into internet performance in schools.

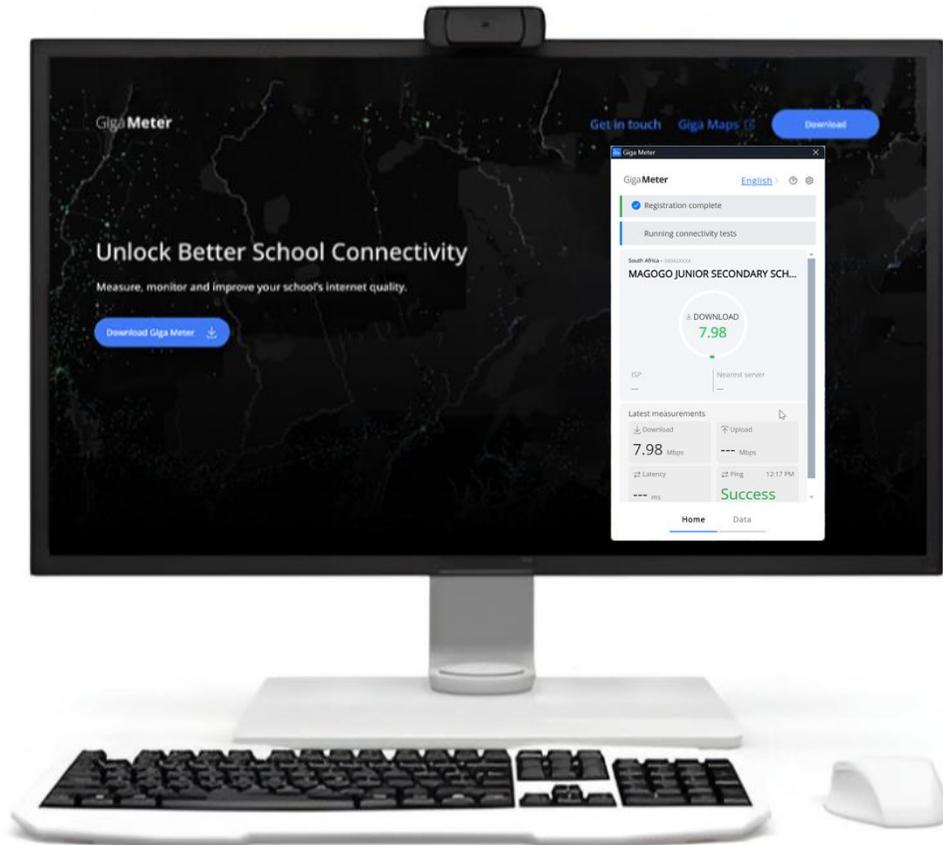
01 | **Giga Meter**, an open-source measurement tool to collect connectivity data directly from schools every day (powered by M-Lab's NDT7 + server infrastructure)

02 | **Data access**, for schools and other stakeholders, via Giga Maps, customizable dashboards and APIs.



How does **Giga Meter** work?

meter.giga.global



Window OS application that uses **minimal data** to automatically perform **internet measurements in schools daily**.

If the computer is switched on and in use, it automatically performs periodic Internet tests:

- **Speed Tests (down / up / latency)** up to 4 times per day
- **Ping Test** to determine whether the device has internet connectivity - every 15 minutes during school hours (8 AM–8 PM local time).

Users can also trigger a test at any time.

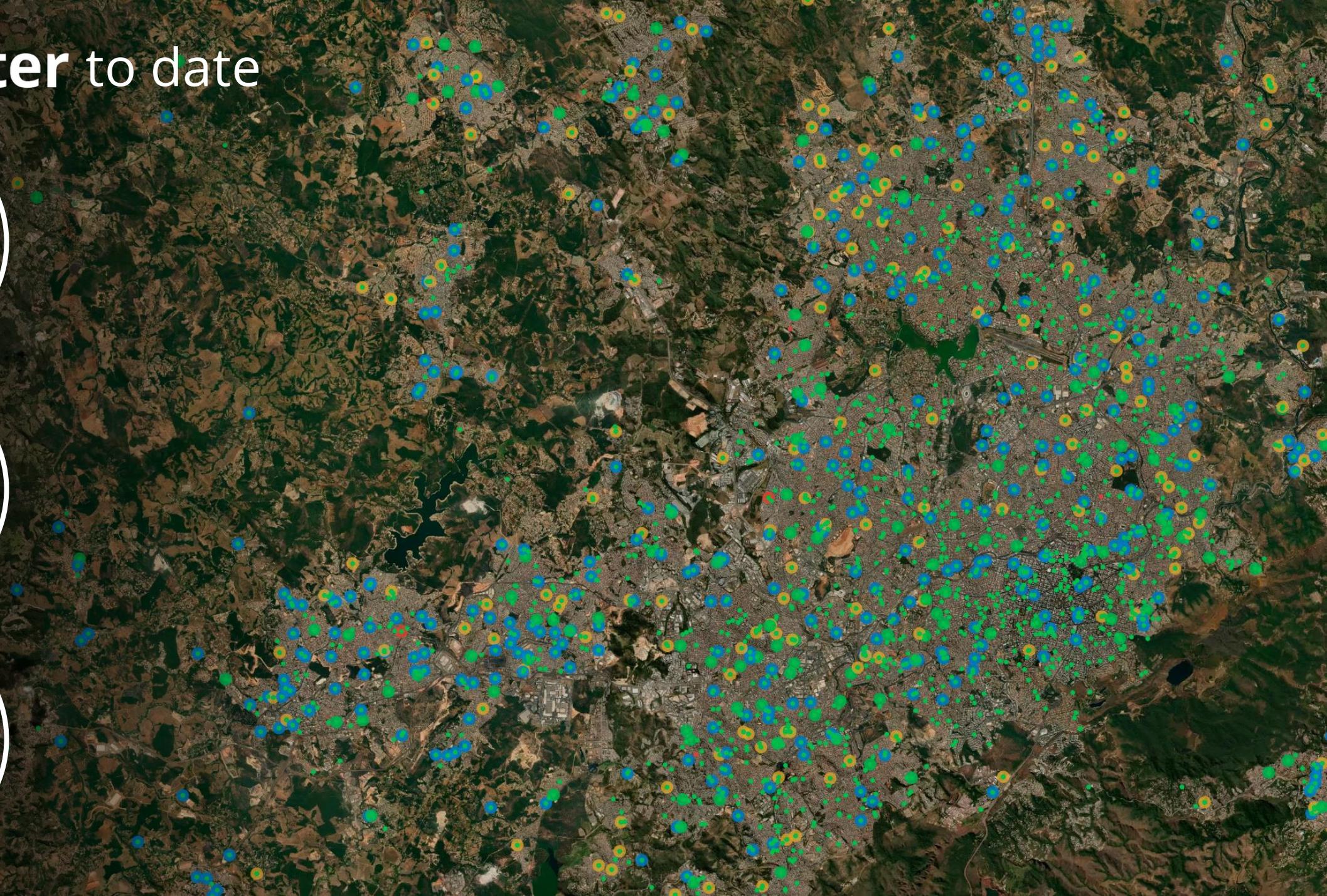
Only **network performance data** is collected.
No browsing (search) or other data.

GigaMeter to date

+17k
schools

31
countries

2.97M
measurements



Challenge: What are you actually measuring?

The definitional and technical measurement gap

Measurement Location Matters

End-user measurement \neq ISP NOC monitoring. Giga Meter captures **user experience** inside the local area network; ISP data covers up to the router but not beyond it.

Geographic Effects of Infra

Server distance impacts performance: Malawi schools measuring to Maputo (1,300 km) showed ~30% performance degradation versus local servers.

Technology-Specific Challenges

Satellite connectivity is bursty with high variance – base station location might impact routing and therefore latency. Different measurement approaches suite fiber vs. LTE vs. satellite.

Challenge: How do you measure?

The deployment puzzle

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1 (Deployment) Model Doesn't Fit All

Centralized, top-down government led deployment works in some contexts. In others, it is local champions who drive success. No single playbook.

70% Utilization Challenge

Across countries, only 70% of schools with installed measurement tools actively send daily data. Both software and hardware require active maintenance.

Electricity, Devices, Security

Not all connected schools meet basic requirements to deploy a measurement tool – be that a secure cabinet, a dedicated laptop, or electricity.

Challenge: What do you do with the data?

From measurement to action

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Speed Isn't King

Raw throughput or latency is only one dimension. Whether connectivity supports actual educational use cases matter more for policy decisions than a single speed number.

Data to the Right Stakeholders

Measurement data is only as useful as the people who see it. Provincial directors in Sri drove action to PM level. Without the right audience — contract managers, procurement officers, planners — data sits unused.

Integrating Into Decision Workflows

Data needs to live where decisions are made — inside EMIS systems, procurement processes, and contract management cycles.

Lessons Learned

What makes school connectivity measurement successful

Local Technical Capacity Building

Internet measurement is institutional capacity building. The stakeholders accountable for school connectivity are often not proficient in network design or management.

Persistence over Precision

Prioritize persistency over precision – consistency in measurement beats a one-time very accurate assessment.

Use Cases That Resonate with Governments

Contract management: Real-time data for ISP accountability and payment verification

Investment prioritization: Evidence for infrastructure planning and budget allocation

Policy compliance: Measuring against national connectivity standards

Triangulation Holds the Key?

Leveraging open data infrastructure and APIs enables real-time monitoring and integration with various platforms.

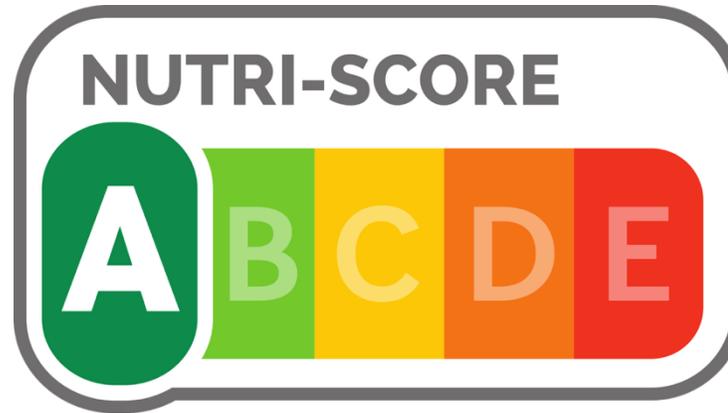
Our Roadmap

From network parameters

Latency
Speed
Uptime

Hard to make sense of for non-experts

To an Internet Quality Barometer for Education



Easy to understand; clarifies which learning activities are meaningfully enabled



Open Questions for Research

What is the minimum viable measurement to assess school connectivity quality?

How do we design measurement that survives device constraints, power unreliability, and deployment challenges?

What frameworks can bridge the gap between ISP-reported and student-experienced connectivity?

How do we triangulate measurement sources to obtain the most robust assessments considering government use cases?

How do we move from "connected" as binary to "connectivity quality" as a continuous, measurable standard?

M-Lab and Giga to Launch Community of Practice to Advance School Connectivity Measurement



Join our Community of Practice (CoP)

- **Who:** We seek Internet measurement experts, and stakeholders from industry, policy, education, development, and advocacy.
- **Why:** To bring together shared expertise and apply open, rigorous Internet measurement to real-world connectivity challenges — especially for schools and underserved regions.

Our goals:

- **Strengthen credible, global measurement** of school & public-facility connectivity
- **Address measurement gaps** (ex: adding servers to the M-lab platform, other data sources)
- **Generate actionable insights** by combining available data (e.g. Internet Quality Barometer, Pulse, and other telemetry)
- **Develop a shared framework for Internet Quality in Education (IQB-Edu)** to support evidence-based planning and investment

What's next:

- Attend our formal launch in early 2026 and [sign up to join the Connectivity CoP!](#)

