

# How ICTA Uses Ookla Data for National ISP Performance Monitoring

## Benefits



Monitored ISP performance over time



Compared provider-reported coverage against actual regional presence



Simulated the national impact of improving the performance of key ISPs

Ensuring reliable and competitive broadband performance across Azerbaijan is critical for the country’s digital transformation. Fast, accessible internet plays a central role in education, economic growth, public services, and everyday life. As the national regulatory authority, the Information Communication Technology Agency (ICTA) is tasked with overseeing the performance, fairness, and transparency of the telecommunications market — particularly internet service providers (ISPs).

To effectively monitor this ecosystem, ICTA relies not only on official declarations from providers — such as subscriber counts and regional coverage areas submitted through the Data Collection System (DCS) — but also on independent, real-world testing data from Ookla.

“We use Ookla data as the cornerstone of our National ISP Performance Monitoring and Strategic Optimization program. This isn't just about oversight; it's about independent, real-world data that allows us to objectively track performance, validate ISP claims, and drive meaningful improvements across the sector. This strategic framework has already delivered enhanced transparency and smarter resource allocation, fundamentally strengthening Azerbaijan's digital future.”

— **Islam Baghirzade**, Director of Information Technologies, ICTA

## Situation

While ISP-reported figures are foundational for regulatory oversight, there is always a risk of overstated or understated service availability, especially in remote or underserved regions. Such discrepancies can lead to distorted planning, inefficient infrastructure development, and regulatory blind spots.

Moreover, with dozens of ISPs operating at different performance levels, it's not feasible to demand equal improvements across the board. Regulatory capacity and resources are limited, and not all providers have the same impact on national service quality. A targeted, data-driven strategy is needed to identify which providers can most significantly influence nationwide internet performance.

Under the framework of National ISP Performance Monitoring, ICTA faced four challenges in ensuring fair, efficient, and data-driven oversight of internet service providers:



### Monitoring Provider Performance Objectively

ISP-reported data on service quality lacks independent verification. ICTA needed a consistent method to track monthly performance trends across providers, highlight underperformers, and drive QoS improvements across the sector.



### Validating Regional Coverage Declarations

ISPs declare their regional subscriber presence via the Data Collection System (DCS). However, without real-world validation, these declarations could misrepresent actual service distribution — especially in rural or underserved areas — distorting planning and policy decisions.



### Prioritizing Impactful Improvements

With limited regulatory resources, ICTA needed a tool to identify which ISPs provide poor services, thus, hindering achieving the country's internet speed objectives. A scalable, simulation-based approach was essential to target high-impact providers rather than applying blanket requirements.



### Road-Level Signal Monitoring

Mobile service quality often fluctuates along roads and transport corridors, disrupting calls and data connectivity. Manual drive tests to detect such issues are costly and limited in scope. Using Ookla Cell Analytics, ICTA now monitors signal strength continuously across major roads in Baku, with GPS-tagged results from real users highlighting weak spots and guiding more effective infrastructure planning.

# Solution

To address the core challenges of performance tracking, declaration validation, and strategic targeting, ICTA developed a unified approach using Ookla Speedtest data and internally built Power BI dashboards. Rather than relying on off-the-shelf solutions, the agency designed custom tools tailored to Azerbaijan’s regulatory needs.

## Monitoring ISP Performance Over Time

Using Ookla Speedtest results, ICTA tracks:

- Monthly average download speeds by provider
- Trends in provider performance
- National averages and sector-wide development

Data is processed in-house and visualized with interactive dashboards that include filters by provider, server, and date range, giving regulators clear, real-time visibility into how ISPs are performing.



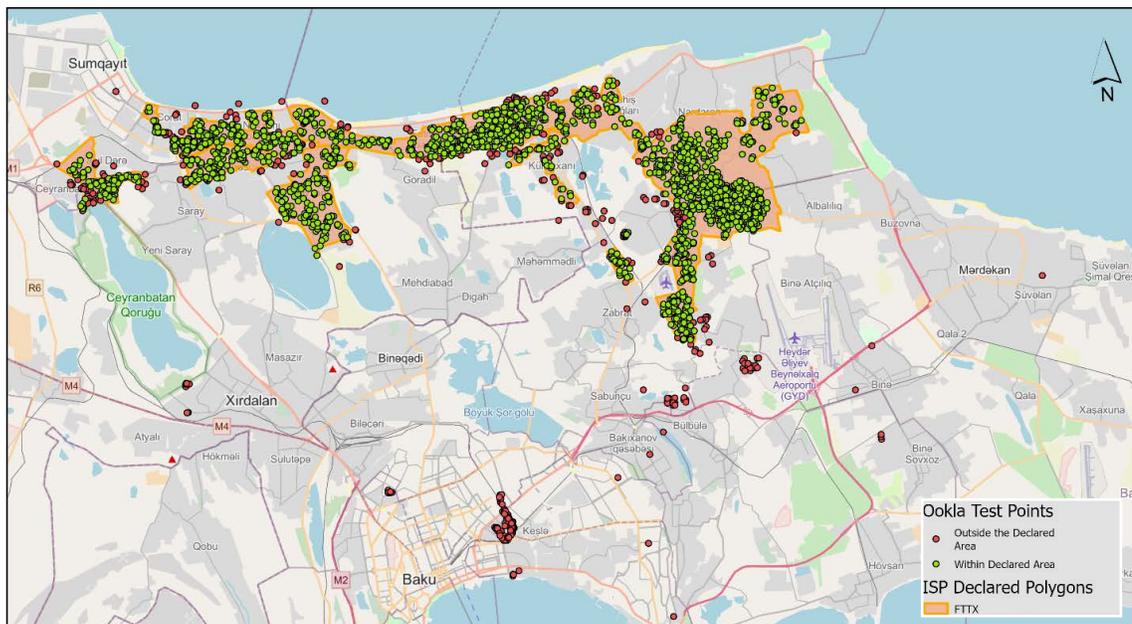
## Validating Regional Declarations with Real-World Tests

To verify provider submissions through the Data Collection System (DCS), ICTA compares:

- Declared subscriber counts by region
- Actual test/device counts from Ookla data

This allows regulators to detect mismatches between reported and observed presence — ensuring more accurate infrastructure planning and holding providers accountable for their claimed coverage.

Ookla and DCS results comparison								
Date	Region	Subscriber count	% Subscriber count	Test count	% Test count	Device count	% Device count	Difference DCS and Ookla Device
2/25	Bakı şəhəri	1,169,407	53.02%	637,479	47.18%	74,841	55.98%	-2.96%
	Abşeron	127,342	5.77%	110,008	8.14%	14,961	11.19%	-5.42%
	Sumqayıt şəhəri	69,719	3.16%	75,459	5.58%	9,035	6.76%	-3.60%
	Gəncə şəhəri	41,434	1.88%	47,214	3.49%	5,292	3.96%	-2.03%
	Şəki	27,444	1.24%	11,841	0.88%	1,596	1.19%	0.05%
	Lankaran	26,124	1.18%	28,413	2.10%	3,236	2.42%	-1.24%
	Şəmkir	25,902	1.17%	14,340	1.06%	1,625	1.22%	-0.04%
	Bardə	25,281	1.15%	11,424	0.85%	1,335	1.00%	0.15%
	Xaçmaz	24,157	1.10%	28,226	2.09%	3,036	2.27%	-1.18%
	Zaqatala	23,772	1.08%	4,328	0.32%	671	0.50%	0.53%
	Sabirabad	23,245	1.05%	8,907	0.66%	1,160	0.87%	0.19%
	Cəlilabad	22,605	1.02%	13,565	1.00%	1,261	0.94%	0.08%
	Masallı	22,536	1.02%	23,378	1.73%	2,241	1.68%	-0.65%
	Tovuz	20,579	0.93%	7,834	0.58%	1,014	0.76%	0.17%
	Quba	20,265	0.92%	19,148	1.42%	3,106	2.32%	-1.40%
	Göyçay	19,799	0.90%	11,966	0.89%	1,132	0.85%	0.05%
	Qəbələ	19,636	0.89%	11,368	0.84%	2,473	1.85%	-0.96%
	Goranboy	18,653	0.85%	6,930	0.51%	824	0.62%	0.21%
	Yevlax	17,972	0.81%	4,249	0.31%	683	0.51%	0.33%
	İmişli	17,288	0.78%	9,642	0.71%	931	0.70%	0.09%
	Qusar	17,164	0.78%	11,768	0.87%	2,022	1.51%	-0.73%
	Salyan	17,146	0.78%	12,228	0.90%	1,205	0.90%	-0.12%
	Balakan	16,583	0.75%	5,903	0.44%	762	0.57%	0.18%
	"	15,212	0.71%	6,112	0.47%	1,222	0.94%	0.01%
	<b>Total</b>	<b>2,205,719</b>	<b>100.00%</b>	<b>1,351,205</b>	<b>100.00%</b>	<b>133,700</b>	<b>100.00%</b>	<b>0.00%</b>



## Simulating Targeted Improvement Scenarios

To maximize regulatory impact, ICTA built a simulation dashboard that models the national performance effect of increasing speeds for specific ISPs. The process includes:

- Identifying providers with significant test presence (Top 5 - 10)
- Monitoring and regulating poor performers among these providers to achieve national-level goals

This enables a focused strategy that prioritizes a small set of high-impact providers, optimizing resource use while driving measurable improvements in overall internet quality.

**Scenario Simulation**

**Date**

2025-09

**Percentile**

0.40 0.60

**Simulation Parameter**

+10

+20

+10

+20

**70**

Lower Bound Percentile

**89.79**

Download before simulation

**91.51**

Top + 10

**91.47**

Top + 20

**Provider Name**

All

**Within Selected Percentile Range**

Provider Name	Test count	Test count (%)
	5257	27.37%
	3474	18.09%
	1993	10.38%
	1871	9.74%
	1443	7.51%
	1235	6.43%
	578	3.01%
	432	2.25%
	410	2.13%
	223	1.16%
	206	1.07%
	203	1.06%
	197	1.03%
	197	1.03%
	189	0.98%
<b>Total</b>	<b>19205</b>	<b>100.00%</b>

**Simulation**

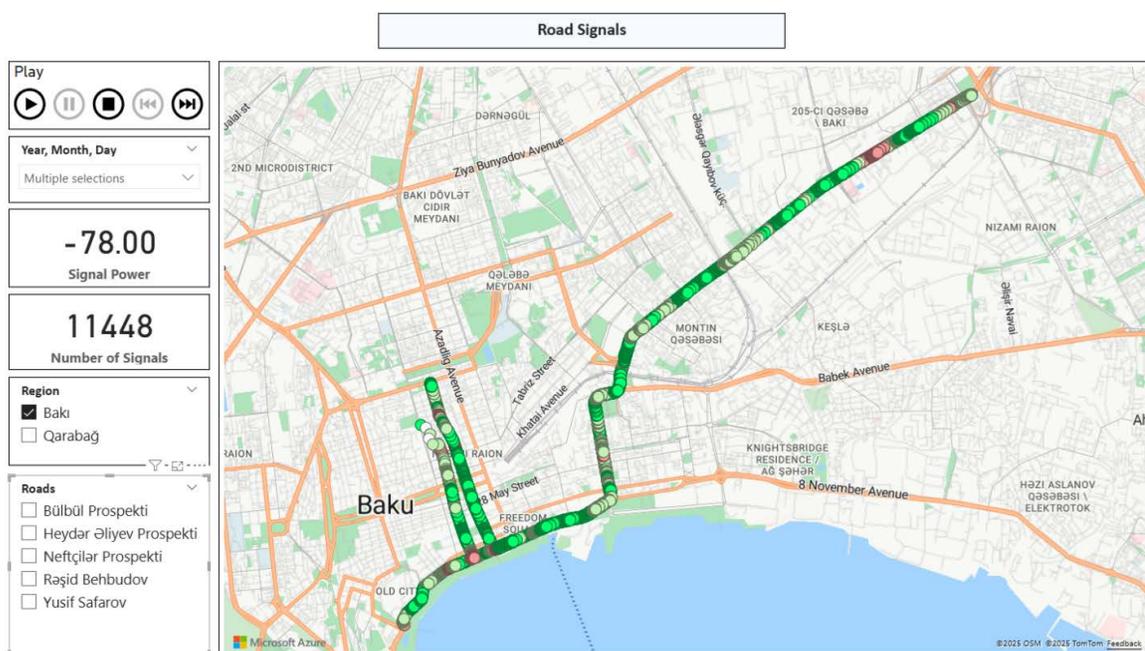
Provider Name	Download	AG Telecom + 10	AZ-BAKTELECOM + 20	Top + 10	Top + 20
	396.08	396.08	396.08	396.08	396.08
	190.71	190.71	190.71	190.71	190.71
	146.72	146.72	146.72	146.72	146.72
	143.34	143.34	162.82	143.34	162.82
	94.63	94.63	114.54	94.63	114.54
	92.93	92.93	92.93	92.93	92.93
	92.86	92.85	92.86	92.86	92.86
	91.74	91.74	91.74	91.74	91.74
	81.62	91.62	81.62	91.62	81.62
	91.39	91.39	91.39	91.39	91.39
	88.30	88.30	88.30	88.30	88.30
	85.65	85.65	85.65	85.65	85.65
	83.62	83.62	83.62	83.62	83.62
	80.52	80.52	80.52	80.52	80.52
<b>Total</b>	<b>89.79</b>	<b>91.51</b>	<b>91.47</b>	<b>91.51</b>	<b>91.47</b>

## Road-Level Signal Monitoring in Practice

The Road Signals dashboard aggregates thousands of geo-tagged test results monthly, each acting as a virtual drive test under real-world conditions. Regulators can:

- Filter results by date, road, or region
- View average **signal strength** values and detect coverage gaps
- Compare provider performance at street and highway level
- Track recurring problem zones and improvements over time

This granular visibility ensures that regulatory efforts address not only national averages but also the real connectivity experience citizens face every day.



## Outcome

The National ISP Performance Monitoring framework — powered by Ookla data and customized analytics — has significantly strengthened Azerbaijan’s ability to regulate and guide the development of its internet ecosystem.

### Key Outcomes:



#### Enhanced Transparency and Accountability

By comparing provider-reported data with real-world test results, ICTA now flags discrepancies in regional coverage declarations, supporting more accurate audits and promoting fair competition.



#### Improved Regulatory Oversight

With month-by-month tracking of ISP download speeds, regulators can monitor trends, evaluate the impact of policy or market shifts, and spotlight top and underperforming ISPs. This visibility incentivizes providers to improve performance in alignment with public expectations.



#### Smarter Resource Allocation through Data-Backed Decision

The simulation dashboard enables ICTA to concentrate oversight on providers with the greatest influence on service quality countrywide. By identifying high-impact ISPs and holding underperformers accountable, ICTA ensures that regulatory resources are used effectively to raise connectivity standards across the sector.



#### Stronger Geographic Coverage Assurance

Road-level monitoring strengthens ICTA’s ability to assess service continuity along critical transport corridors, ensuring that regulatory strategies address not just averages, but also the geographic reliability of connectivity essential for economic activity, mobility, and safety.

## About ICTA

The Information and Communication Technologies Agency (ICTA) is a public legal entity under the Ministry of Digital Development and Transport, established by a decree of the President of the Republic of Azerbaijan on October 11, 2021. The agency’s responsibilities include certification, registration, regulation, and control within the fields of information communication technologies and communications, including telecommunications and postal services. It also regulates the interconnection between telecommunication operators and manages the radio spectrum.