PRODUCT OVERVIEW

QOS MONITORING FOR TELECOM REGULATORY AUTHORITIES

RPM SYSTEM

The quality of every mobile network in your country, measured every hour

The RPM System reads the 3GPP PM files that each operator's network already produces. It computes the 3GPP KPIs on every cell and shows the regulator where quality of service falls below its guidelines.

12
regulators served by PNI since 2005

4
vendors: Huawei, Ericsson, Nokia, ZTE

2G to 5G
GSM, UMTS, LTE and NR

24/7
every cell, every hour, all year

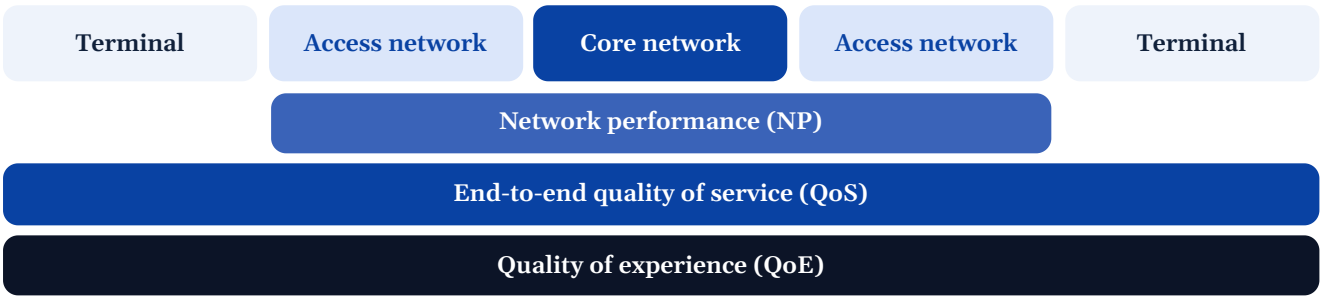
STANDARDS: 3GPP TS 32.432 · ITU-T E.800 SUPPLEMENT 9 · ETSI EG 202 057-3

Planet Network International, France

Subscriber experience starts in the network

Network performance, QoS and QoE

What a subscriber feels (the quality of experience, or QoE) depends mostly on the quality of service (QoS) the network delivers, and QoS depends on network performance (NP). The link between QoS and QoE is exponential, so better network QoS usually means a better experience. Regulators are therefore advised to monitor QoS from the network side too, in terms of capacity and resource availability, and not only at service level.



What a QoS monitoring tool gives the regulator

- The QoS of every mobile network in the country, every day.
- Real figures to help subscribers choose an operator.
- A way to check what operators claim.
- A clear view of the mobile market.
- Pressure to keep quality up where competition is weak.
- Fair competition, with one method for every operator.
- Interconnected networks that work well together.

Four questions every subscriber asks

NA

Is the network there?

Network Availability: which sites and cells are on air, which are down, and for how long.

SA

Can I get the service?

Service Accessibility: call setup and data access success, on every cell.

SR

Does it hold until I finish?

Service Retainability: dropped calls and dropped data sessions.

SI

Is it good enough?

Service Integrity: throughput per user, against the threshold in the regulation.

From the operator's OSS to the regulator's report

Read-only, non-intrusive, every hour

Every hour, each operator's OSS writes 3GPP performance measurement (PM) files. The RPM System collects them one hour later over an encrypted VPN, checks that they are complete and computes the KPIs for each cell. The RPM System only reads these files. Nothing is installed in the operator's network.

1
Operator OSS
Hourly 3GPP PM files with cell-level counters, from every vendor

2
Collection
Encrypted VPN and SFTP, automatic, one hour after capture

3
Integrity checks
Source Availability and Reliability Indicator for each day

4
KPI computation
From cell to national level, from the hour to the month

5
Results
Dashboards, alarms, audit reports and the D.QoS public portal

Highlights

No field measurement costs

The RPM System works from counters the operators already produce, so there are no drive-test teams, vehicles or probes to pay for.

Continuous monitoring

Every cell, 24 hours a day, 365 days a year, for every operator.

Passive and proactive

The RPM System reads and never writes. Alarms tell the regulator about a degraded area before the complaints come in.

Cooperation rather than coercion

The figures come from the operators' own counters, which makes them hard to dispute and easy to discuss.

Monthly audit reports

Warning and penalty cells are listed automatically each month, in line with ITU-T E.800 Supplement 9.

Every vendor

Huawei, Ericsson, Nokia and ZTE, in XML, CSV or ASN.1, for GSM, UMTS, LTE and NR.

Every result traces back to a published reference

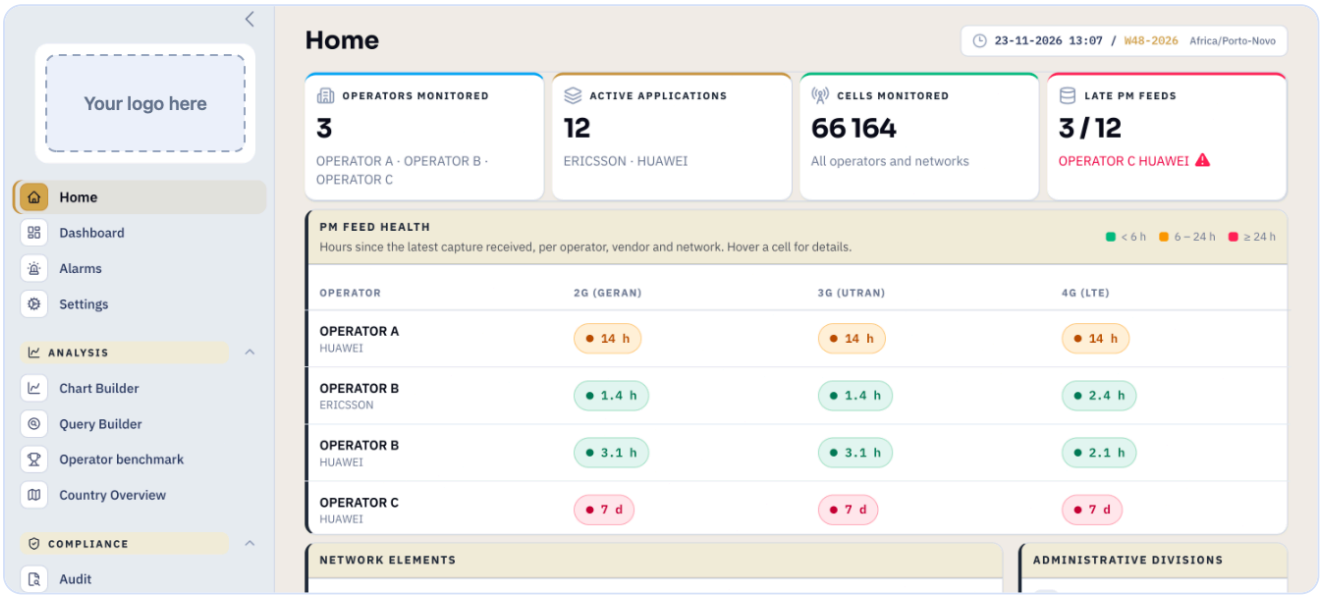
What the regulator gets	Reference
3GPP PM files collected from the OSS	3GPP TS 32.432 and TS 32.435
KPIs at cell level	3GPP TS 32.410 (2G, 3G), TS 32.450 (4G), TS 28.554 (5G)
QoS delivered: NA, SA, SR and SI	ITU-T High-Level KPIs for QoS evaluation, from the end user's point of view
QoS measured from network statistics	ETSI EG 202 057-3
Enforcement, from warning to penalty	ITU-T E.800 Supplement 9

The standard KPIs are the 3GPP KPI Formulas, applied as published. A question about a method is a question for 3GPP, ITU or ETSI, not for the regulator.

One system for the whole country

Every operator, vendor and technology on the same screen

The RPM System has been in production with regulators since 2012. The upgrade keeps everything regulators rely on and adds a single view of the country. There is one interface and one login, and every operator appears next to the others.



Home page: operators, applications, cells monitored and the health of each 3GPP PM file feed (operator names masked).

Feed health at a glance

The home page shows how many hours have passed since each operator last delivered files for each network. A late feed turns red the same day.

Late files are taken into account

When an operator delivers files late or delivers them again, the RPM System recomputes the hours and days they affect.

Busy hour views

Every KPI is available per hour, day, week and month, and at the busy hour of each day, week and month.

Multi-vendor network KPIs

An operator with Huawei in one region and Ericsson in another gets one KPI for its whole network.

Topology import and history

Operator topology files load in a few clicks. Every change to a site or cell is kept, so past results stay correct.

Exports for every use

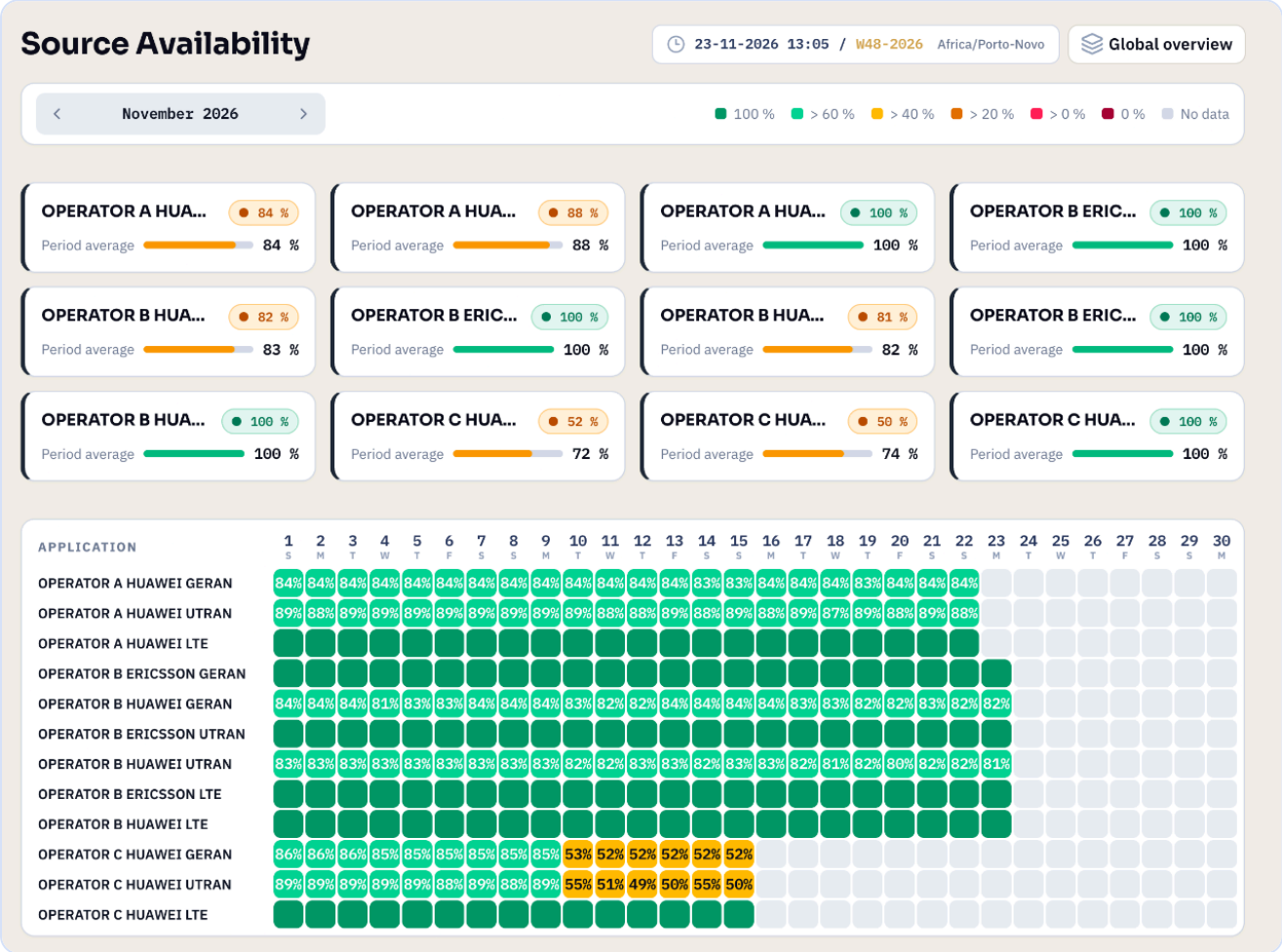
Excel, CSV and PNG for reports, and KML to open coverage areas in Google Earth. The interface is in English and French.

Standards: 3GPP TS 32.432 · ITU-T E.800 Supplement 9 · ETSI EG 202 057-3. *The standards have not changed. The upgrade brings new functionalities, ease of use and more capacity to process the 3GPP PM files.*

Know what the figures are built on

A KPI is only as reliable as the files behind it

Before a regulator acts on a figure, it needs to know how much of the network that figure covers. The RPM System measures this every day, for every operator and technology. Missing hours and incomplete files show up the same day, so no decision rests on partial data.



Source Availability, November 2026. From the 10th, one operator's 2G and 3G files drop to about half of what is expected (operator names masked).

Source Availability

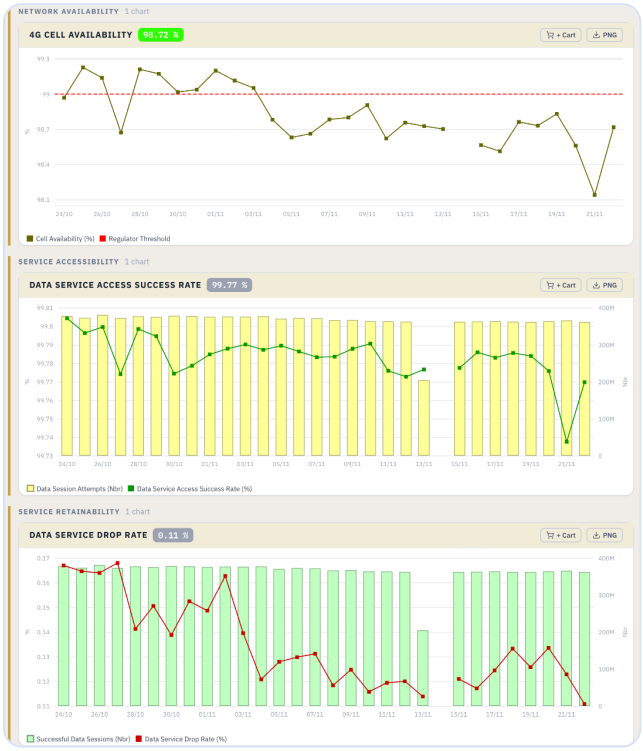
A calendar per application, with one colour per day. For each day it gives the share of the expected hourly 3GPP PM files that were received, and the same share over the period. An operator that stops delivering part of its data is visible at once.

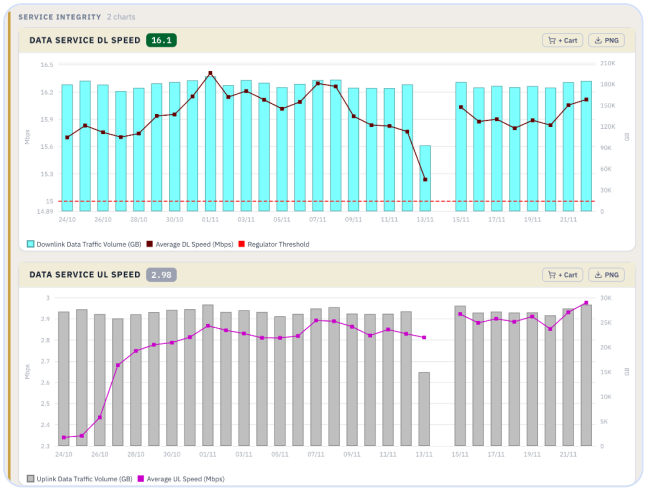
Reliability Indicator

A daily percentage of data completeness for each application, shown at the top of the monthly audit. When it is low, the regulator knows that day's results need care before they are used in an audit.

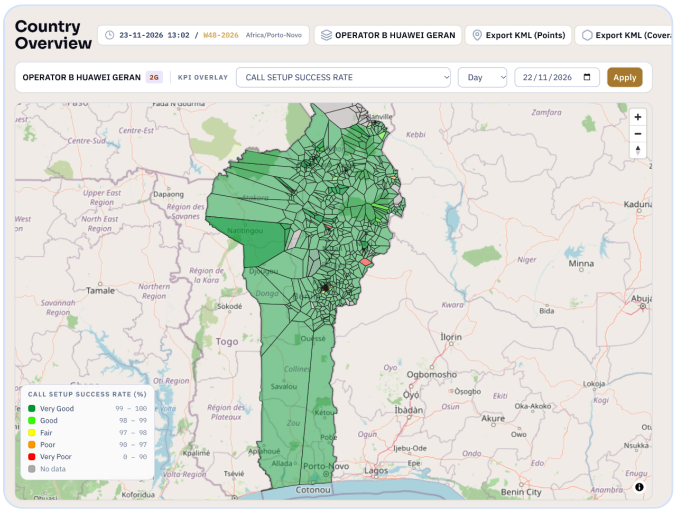
Four QoS categories, from national level down to the cell

NA, SA, SR and SI, for voice and for data





Standard charts: one chart per QoS category for the chosen network, here an LTE network over the last 30 days, with the regulator's threshold.



Country Overview: call setup success rate per cell for one day, coloured by the regulator's thresholds.

Any level, any period

Results are aggregated by network element (cell, site, BSC, RNC), by administrative division (country, region, department, city, district) and by clusters the regulator defines itself.

On the map

Each cell's service area is coloured from Very Good to Very Poor. Coverage areas and sites export to KML for Google Earth.

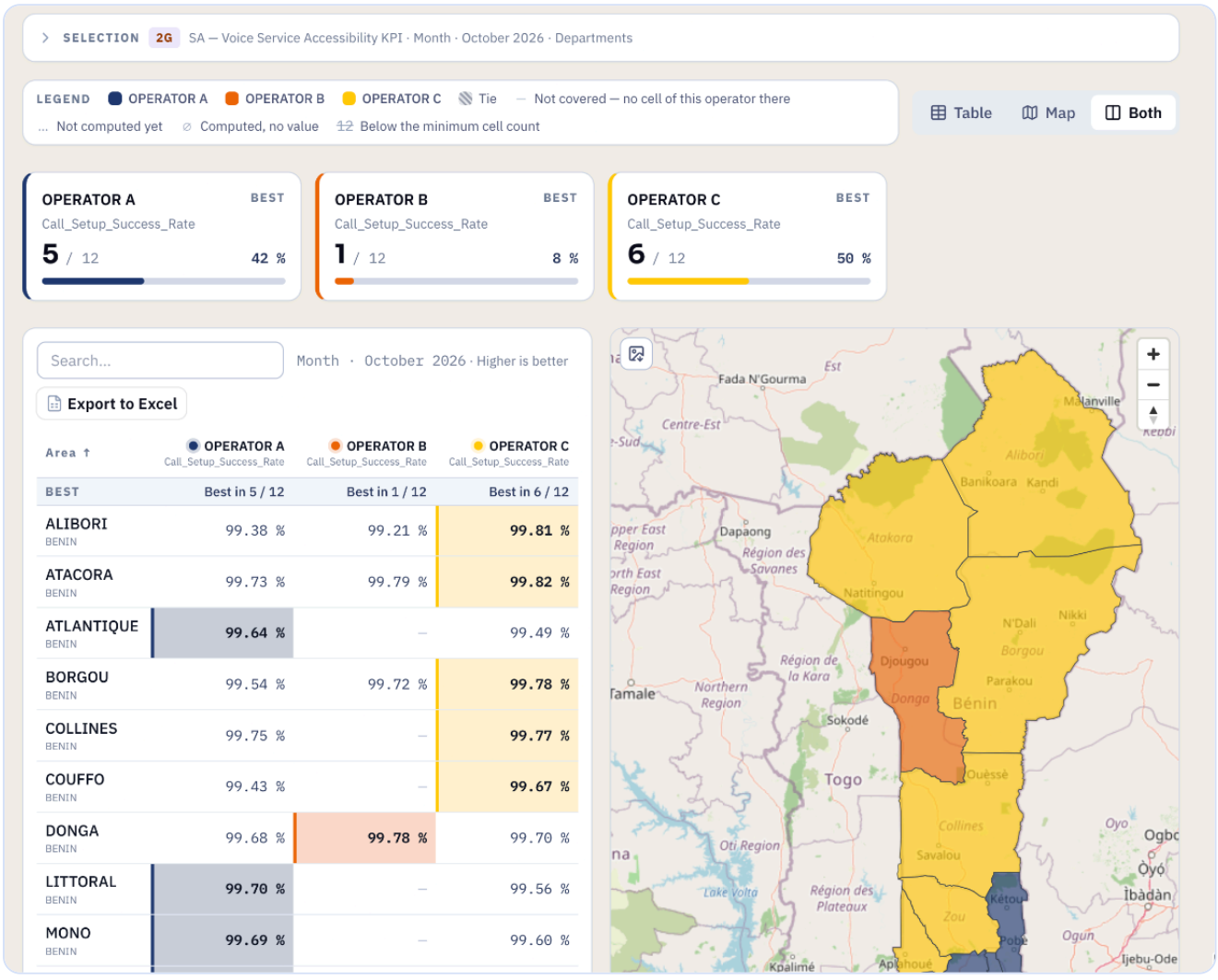
Dashboards to share

Standard dashboards come with the system. Each team can build its own and share it.

Which operator serves subscribers best, area by area

One method for every operator, from the department to the district

Pick a technology, a QoS category and a period. The RPM System compares the operators in every department, city, district or cluster, and colours the map with the leader in each area. Each operator's card counts the areas it leads. The best operator in the capital is not always the best one in the rest of the country.



Voice Service Accessibility on 2G, October 2026, by department (operator names masked).

Like for like

Compare whole networks or a single vendor. The RPM System warns when the columns would not be comparable.

A fair sample

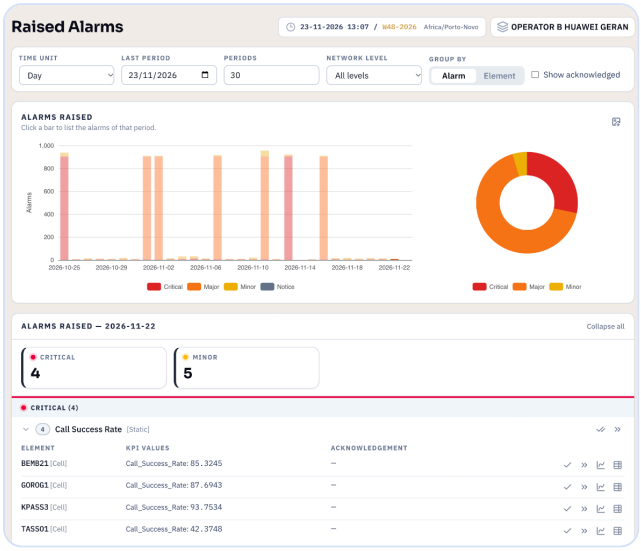
A minimum cell count keeps areas where an operator has very few cells out of the ranking.

Ready to publish

Export the comparison to Excel, ready for a report or a press release.

From the first alarm to the penalty, with evidence

Built on the thresholds in the regulator's QoS guidelines



Raised alarms over 30 days, by severity, and the cells behind each one.



Monthly audit: warning cells, with their fault days and the alarms raised.

Alarms per KPI and per cell

Critical, Major, Minor and Notice levels. Static alarms fire when a value crosses a threshold. Dynamic alarms fire when a cell moves away from its own recent history, and top-worst alarms list the worst cells of the period. Each alarm can be acknowledged and traced back to its KPI values.

Enforcement in monthly steps

A cell that stays faulty for the number of days set in the regulation receives a warning. If it is still faulty, it gets a second warning, then a penalty. Each month's list comes with the evidence behind it.

MONTH M
Fault days counted, warning on faulty cells

M + 1
Second warning if the cell is still faulty

M + 2
Penalty per cell still at fault

EVERY MONTH
Audit report: charts as PNG, tables as CSV and an Excel report

Ask your own questions

The engineers who own the data can explore it without waiting for a report

Query Builder

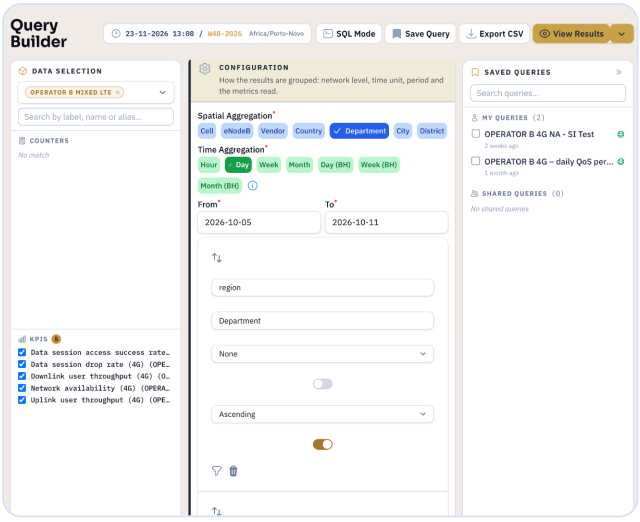
Choose applications, counters and KPIs, a network level, a time unit and a period. Add filters on values or on network elements. Save the query, share it with colleagues and export the results to CSV.

KPI Builder

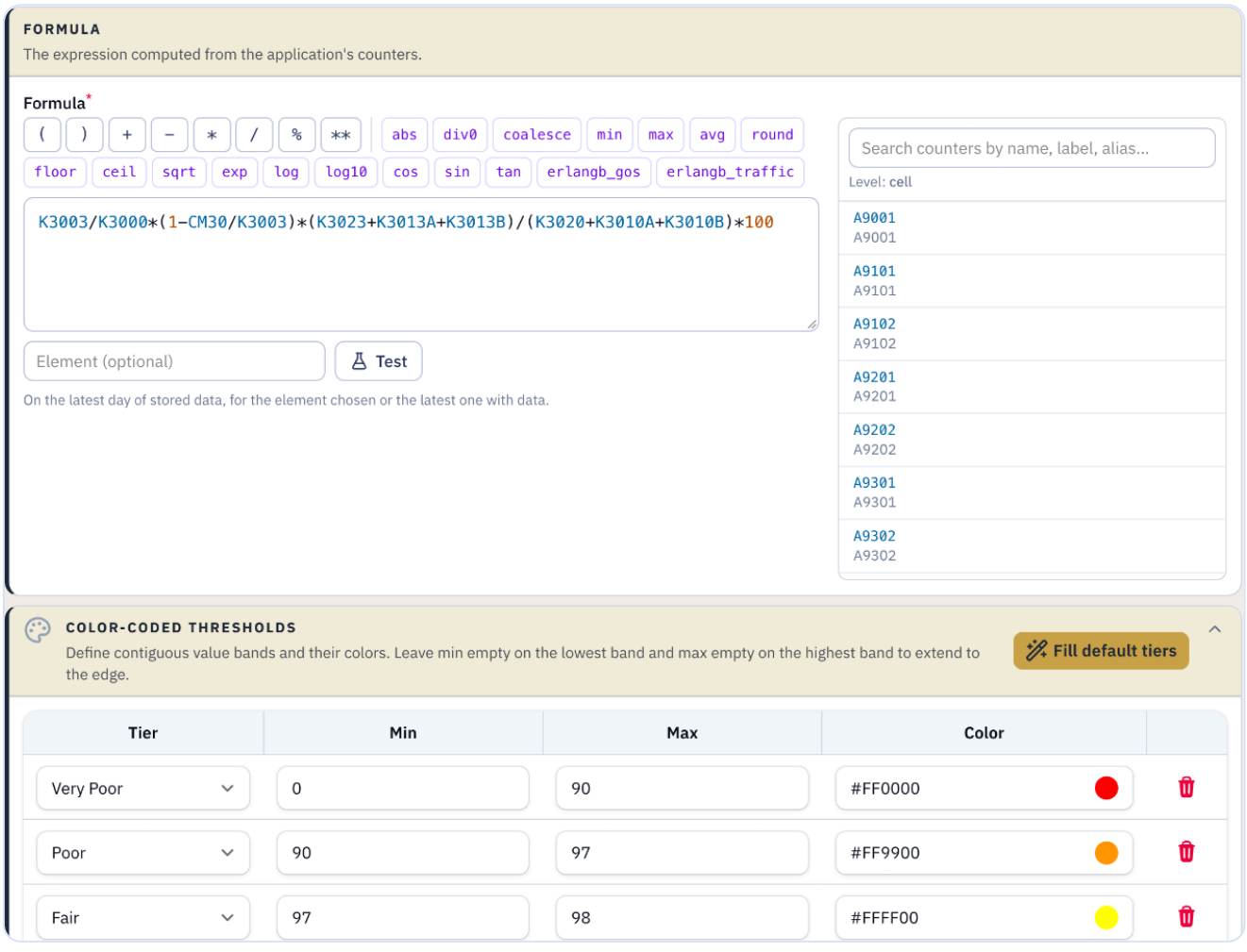
Write a formula from the vendor's counters, with the usual operators and functions, including Erlang B. Test it on stored data before enabling it, then set the colour thresholds used on maps and dashboards.

Chart Builder

Plot any KPI over time for several elements or operators at once, with the Reliability Indicator alongside, and export the chart for a report.



Query Builder: a saved query of five 4G KPIs, per department and per day.



KPI Builder: a call setup success rate formula built from Huawei 2G counters, with its colour thresholds.

Your servers, your data

Installed at the regulator, fed by the operators' 3GPP PM files

On your premises

The system runs on servers at the regulator's site. PM data never leaves the country, and the regulator owns it.

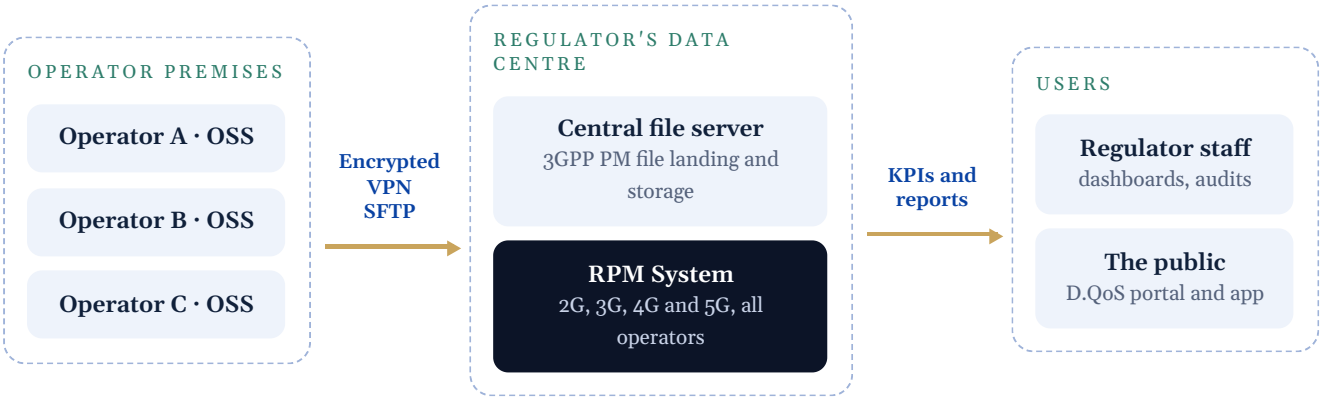
Sized for your networks

The hardware is specified from the number of operators, technologies and files to process. Capacity can be added as networks grow and 5G arrives.

Clear costs

Hardware and the software licence are bought once, followed by a yearly maintenance and support contract. There is no fleet of test vehicles to run.

A typical installation



Network statistics and drive tests

DRIVE TESTS

What one test phone experiences

- Measures the experience of a real handset on the road.
- Periodic campaigns, on the routes and days driven.
- Vehicles, equipment and teams to pay for each time.
- Cannot follow every cell, every day.

NETWORK STATISTICS (RPM)

What the network measured for every subscriber

- Every cell of every operator, 24 hours a day, all year.
- Every vendor and every technology, with one method.
- No extra measurement cost: the counters already exist.
- Warnings and penalties cell by cell, with an audit trail.

The two are complementary. Drive tests show where there is no coverage at all, since a call that never reaches the network leaves no trace in its counters. Network statistics follow everything else, everywhere, all the time.

Built to grow with your networks

An upgrade of the RPM System, by the team that maintains it

The upgrade is built on open-source components that are used around the world and actively maintained. For the regulator, this means a system with room to grow as networks grow. PNI installs it, maintains it and supports it for the whole life of the contract.

How the system is organised

Interface	Dashboards, maps, charts, settings
Application server	Keeps the application loaded in memory, so pages respond quickly
Processing	Collection, file reading, KPI computation and aggregation, through several job queues
Data	Counters and KPIs over time, with a fast-access cache
Platform	Containers, health monitoring

What it brings the regulator

Uses all the hardware

When files pile up, the system starts more workers on its own and stops them once the work is done. More cells or a new 5G network keep the same servers busier, up to their limit.

Many files at once

Every 3GPP PM file that arrives is split into small tasks, and many tasks run at the same time. Late or resent files are processed alongside the newest data, so fresh hours keep coming in. A failed task is retried automatically.

Years of history

The database is built for measurements over time. Past years stay available, so this month can be compared with the same month last year in a few clicks.

Proven, current tools

The building blocks are at their latest major versions and have run large systems worldwide for years. Their communities publish security fixes regularly, and PNI applies them.

Daily health checks

Dashboards follow disk space, processing queues and file collection on every installation, so the team sees a problem before it shows in the KPIs.

Upgrades in a planned window

Automated tests and code analysis check each change. Every upgrade, whether a new module, a fix or a security release, is then applied in a maintenance window agreed with the regulator, at off-peak hours.

What regulators see stays the same: the same KPIs, methods and standards. The upgrade adds capacity, new views and room to grow.

Your system keeps running while the upgrade is installed

Side by side, checked against your current figures, with training for your team

A regulator's audits cannot stop for a software change. The upgrade is installed next to the RPM System in service, on the servers already in place. Both read the same 3GPP PM files for a validation period of at least one month, so the regulator sees the same values in both, over a full monthly audit, before its team moves to the new interface.

1
Preparation
PNI installs the upgrade on the servers already in place. The system in service keeps collecting and reporting

2
Side by side
Both systems process the same 3GPP PM files for at least one month

3
Same values
KPI values are compared, per cell and per hour, with the regulator's team

4
Training
The regulator's engineers and analysts are trained on the new interface

5
Switch
The regulator confirms the results, and its team works in the new interface

What stays the same

The same measurements
The same 3GPP PM files, the same 3GPP KPI Formulas and the thresholds of the regulator's QoS guidelines.

Nothing new for the operators
The operators keep delivering the files they deliver today, in the same way. Nothing is installed in their networks.

The same team
The PNI engineers who support the regulator today carry out the migration and the training, and stay in support afterwards.

What the regulator's team gains

One view of the country
Every operator, vendor and technology in one interface, with one login.

New tools
Operator benchmark, feed health on the home page, busy hour views, and the Query, KPI and Chart Builders.

Room to grow
More cells, more 3GPP PM files and 5G networks, on a platform sized to follow them.

The migration is planned with each regulator, one authority at a time, at a date that suits its audit calendar.

A TURNKEY PROJECT, THEN A LONG-TERM PARTNER

From the first consultation to support, one team

The team that designs the platform also installs it, trains your staff and supports you afterwards, 22 hours out of 24. Installation, training and support are available in English and French.

1. Project consultation
2. Needs analysis
3. Solution development
4. Purchasing
5. Staging
6. Installation and integration
7. Commissioning
8. Customer training
9. Support
10. Continuous system enhancement

TRUSTED ACROSS AFRICA · 12 REGULATORS SINCE 2005

Southern Africa

BOCRA Botswana
ZICTA Zambia
POTRAZ Zimbabwe
ESCCOM Eswatini
INCM Mozambique

West Africa

NatCA Sierra Leone
NCA Ghana
ARPT Guinea
ARCEP Benin

Central and East Africa

ARCEP Gabon
ARPTC DR Congo
ARCT Burundi

Independence

The system runs on the regulator's infrastructure, and the regulator owns the data.

Standards first

PNI is an Associate member of ITU-T. It implements ITU-T Recommendations, 3GPP specifications and ETSI documents as they are published.

Developers in house

Dashboards are adapted to each regulator's requests, as long as the data is in the 3GPP PM files.

TALK TO US

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rpm SYSTEM

PNI