

Reducing alarm noise by 97%: accelerating the resolution of complex network failures with Totogi

Mobile network operator serving 10M+ subscribers in Sub-Saharan Africa

Background

A leading mobile network operator in Sub-Saharan Africa serves over 10 million subscribers and holds a dominant market position in its national market. Despite its scale, the competitive environment is increasingly intense, with mobile penetration exceeding 100%, economic volatility pressuring ARPU, and new MVNO entrants raising customer expectations. To maintain service quality, customer retention, and operational efficiency at scale, the operator has been investing in modernizing its network infrastructure management and operations.

The Challenge

Network availability was falling below target as the operator struggled to detect, prioritize, and resolve faults in real time. Over 1.2 million alarms were generated per week across power, transmission, and RAN domains. Many were redundant or cascading from a single underlying issue. With separate monitoring tools and incompatible data models across domains, teams were unable to correlate events quickly or identify root causes. This caused delayed resolution, degraded customer experience, and rising call center volumes. The operator needed a cross-domain solution to cut through alarm noise, detect failures proactively, and restore visibility and control.

The Solution

The operator partnered with Totogi to build an intelligent, cross-domain alarm management capability powered by the Totogi Ontology. The ontology, aligned with TM Forum standards, provides a unified semantic model for ingesting and interpreting real-time alarms from power, transmission, and RAN systems.

The Totogi Ontology mapped the operator's operational data structures into entities aligned with the ontology model. Most mappings were handled by AI, with computed entities created where no direct equivalents existed. Custom extensions were added to reflect operator-specific processes and terminology.

Two advanced correlation techniques powered the alert engine:

- Temporal graph networks to detect cascading failures based on timing and topology
- Machine learning clustering to identify regional or pattern-based anomalies

Together, these techniques enabled the Totogi Ontology to compress more than 1.2 million raw alarms into just three actionable root causes in one week. The system filtered out noise, surfaced what mattered, and restored clarity without replacing existing NOC tools or re-architecting OSS systems.

The business pain points

- Overloaded network operations center (NOC) receiving 1.2 million alarms per week with no cross-domain correlation
- Repetitive alerts masking true root causes
- Manual triage across fragmented fault management tools
- Delayed resolution impacting customers and driving call volume
- No unified view of fault propagation across power, transmission, and RAN

Benefits and Outcomes

The Totogi Ontology enabled the operator to shift from reactive firefighting to real-time, AI-driven fault resolution. Within days, the alert engine processed 1.2 million live alarms, mapped them semantically, and compressed them into just three root causes. This dramatically improved the signal-to-noise ratio.

Key outcomes included:

- **97% reduction** in alarm noise
- More than **75% improvement** in mean time to resolution (MTTR)
- Real-time root cause identification across domains

Operators no longer needed to triage dozens of dashboards. Instead, they received consolidated alerts with root cause context, impact analysis, and recommended next steps such as dispatching one team instead of many.

The Totogi Ontology also created a reusable foundation for broader AI use cases, including customer experience, service assurance, and topology-aware automation. All of this was achieved without replacing existing OSS or network management systems (NMS).

From symptoms to root cause

Without Alert Engine:

"We have 47 alerts in one region. Everyone is paged. Everyone is stressed. No one knows where to start."

With Alert Engine:

"One root cause: Power rectifier failure in node X affecting 8 sites. Dispatch one team. ETA 45 minutes."

Alert compression in action

Alert compression pipeline

- Raw alarms: **1,209,340**
- Correlated groups: **49,913**
- Actual root causes: **3**
- Affected sites: **241**

The network operations center now sees just 3 actionable problems instead of 1.2 million alerts.

Before

1.2 million uncorrelated alarms across domains

Manual triage across fragmented NMS tools

Operator fatigue, slow resolution

No visibility into cascading impacts

Fragmented semantic models

After

Just 3 root causes surfaced from 1.2 million alarms

Faster triage with automated insights

Contextual recommendations linked to root cause

Clear visualization of cross-domain fault propagation

Unified semantic layer for future AI use cases

With the Totogi Ontology, the operator cut through 1.2 million raw alarms in just one week and surfaced just 3 root causes in real time, transforming how network failures are detected and resolved across domains.

Totogi helps operators resolve complex network issues faster, without replacing existing systems.

Ready to go from noise to insight in days?

Talk to Totogi to see the **Totogi Ontology** in action.