

NumoData Ontology:

The semantic intelligence layer for telecom AI operations.

An AI ready future demands a unified source of truth.

It's hard to believe that over a decade ago, most communications service providers ran comparatively vertically integrated networks and could afford to treat the future as a distant, mostly speculative discussion. There were no whispers about higher autonomy, AI, or intent-based networking. Fast-forward to 2026, and that landscape has flipped almost completely: instead of a few tightly coupled stacks, CSPs now operate across cloud native cores, 5G stand-alone (SA), edge sites, partner ecosystems, and a patchwork of domain specific tools. Every new vendor, platform, and microservice introduces its own data and API, fragmenting information across OSS, BSS, network, and IT domains. The result is a colossal amount of data with little to no understanding.



25%

Projected growth of network data traffic in the next 5 years

[Mordor Intelligence, 2025](#)

60%

of CSPs will abandon AI projects

[Gartner, 2025](#)

AI is reshaping every industry and CSPs are no exception. CSPs have joined the global AI investment wave-funding pilots, models, and infrastructure with the expectation of step changes in autonomy and efficiency. Yet like most enterprise AI efforts, most of the initiatives stall in the pilot phase. They deliver dashboards instead of durable operational transformation. The issue isn't spending on AI, but that it is being built on a foundation that is fragmented, disjointed, and lacks context. The next wave of value will come from fixing this foundation-building an AI-network of meaning, not more AI on AI.

Key facts

- 90% of telco partners engage with AI [Nvidia 2024](#)
- Poor data quality is the primary roadblock for GenAI [Forrester, 2024](#)
- The primary reason for AI failure is the inability to effectively train them [RAND, 2024](#)
- Most AI projects have a hallucination rate of 25% or above [AllaboutAI, 2025](#)
- Organizations lose close to \$5 million USD annually due to poor data quality [Forrester, 2024](#)

A unified AI-Ops platform built on Ontology

- ✓ Predict issues
- ✓ Automate RCA
- ✓ Reduce MTTR 50-75%
- ✓ Avoid SLA penalties
- ✓ Closed-loop remediation



Unlock AI ready intelligence with Ontology.

What is it?

Ontology is a semantic digital twin that delivers the intelligence layer for autonomous networks. By integrating with your existing network systems and data sources, Ontology forms a real time knowledge graph of your infrastructure, business systems, and more. Within weeks, Ontology forms semantic relationships and analyzes intent across every layer before applying telco-specific rules, inferences, and semantics. This serves as the powerful foundation you need to streamline operations and automate with confidence.

Knowledge graphs organize data.

Ontology gives it meaning.

Many CSPs treat graph database selection as the most important step in their journey towards an AI-ready network data foundation, but in reality, it's only the starting point for building meaningful, trustworthy, and autonomous operations. Ontology is the antidote for fragmented data. It brings together storage, meaning, and intelligence in one cohesive layer that serves as the foundation for advanced autonomous operations.



Graph Infrastructure

Storing and traversing relationships



Embedding telco-specific relationships and then storing and traversing network information at scale.



Semantic Modelling

Defining meaning, rules, and context



Creates a trusted shared source of truth that enables AI to perform its best



Operational Intelligence

Enabling real use cases such as impact analysis and automation



Drives network autonomy projects to be more explainable, adaptable, meaningful and outcome-oriented.

Unlock revenue.
Reduce costs.
Deliver efficiently.

**AI-grade data for true autonomy.**

Ontology continuously recognizes, prioritizes, and updates data gaps across multi-domain network layers to power AI-grade intelligence and autonomous operations confidently.

**Quickly predict and understand impact.**

Instantly see what customers and services are affected by network faults, planned changes, upgrades, or outages. Ontology delivers prioritized, actionable insights that help you quickly understand which SLAs, VIP customers, and network elements are at risk.

**Pinpoint common cause with zero guesswork.**

Pinpoint the real root cause in a sea of alarms. Ontology traverses through multidomain topologies in seconds to identify the single shared dependency behind failing elements, ranked by business impact, so teams know exactly what to fix first, saving time and resources.

**Optimal paths. Less friction. More margin.**

Design the best service path the first time. Compute optimal service routes in seconds, slash order-to-cash delays, and turn every quote into faster, higher margin revenue.

**Reduce your network's attack surface.**

Turn sprawling multi-vendor networks into a continuously audited security compass that proactively charts misconfigurations, vulnerable or unpatched assets, and policy drifts, reducing your attack surface and protecting your customers.

**Accelerate sales.**

Compress manual effort across the entire order-to-cash cycle reducing the cost per quote, enabling you to monetize your network into a repeatable growth engine for sales.

**Ontology in action:
Real networks,
real outcomes.**

“With Ontology, we are well positioned to fulfil our digital transformation strategy of making our network ‘zero-touch’ via automation.”

Senior Manager, Network Engineering. Vodafone.



Vodafone Germany utilizes NumoData Ontology’s semantic digital twin to enhance end-to-end network visibility, data quality, and zero-touch automation across assurance, fulfilment, planning, and optimization.



MTN leveraged NumoData Ontology to federate inventory, standardize naming and modelling, and understand change and vulnerability impact analysis. This optimized their OPEX across RAN, core, and transport, helping them deliver on customer promises.

Want to learn more?

Discover how NumoData Ontology boosts security, visibility, understanding, and advanced automation to streamline operations and accelerate proactive network issue resolution.

Schedule a meeting »

About NumoData

NumoData is a global software company delivering AI-powered network intelligence, AIOps, and analytics for CSPs and enterprises. We are a trusted partner that helps your organization augment existing systems with generative AI, predictive analytics, advanced autonomy, and end-to-end monitoring across mobile, broadband, and private 5G, enabling superior operations and customer experiences.