

# Nokia End-to-End and Performance Management Services

Outsmart your network.  
Automate to save.  
Focus on growth.

**NO**KIA

# Voice chats. Video calls. Mobile data. Streaming. Gaming.

To thrive in an environment where subscribers expect flawless quality and widespread coverage across every service, organizations must continuously refine their network performance. And for that, they need an end-to-end awareness of how their infrastructure affects their users.

Partnering with a Managed Services Provider like Nokia provides the

telecom expertise and AI-powered tools required to achieve this – and more. With our End-to-End and Performance Management portfolio, telecommunication providers and mission-critical enterprises can reap the rewards of a subscriber-centric network that reliably operates at its highest potential.

# Why good performance demands great visibility

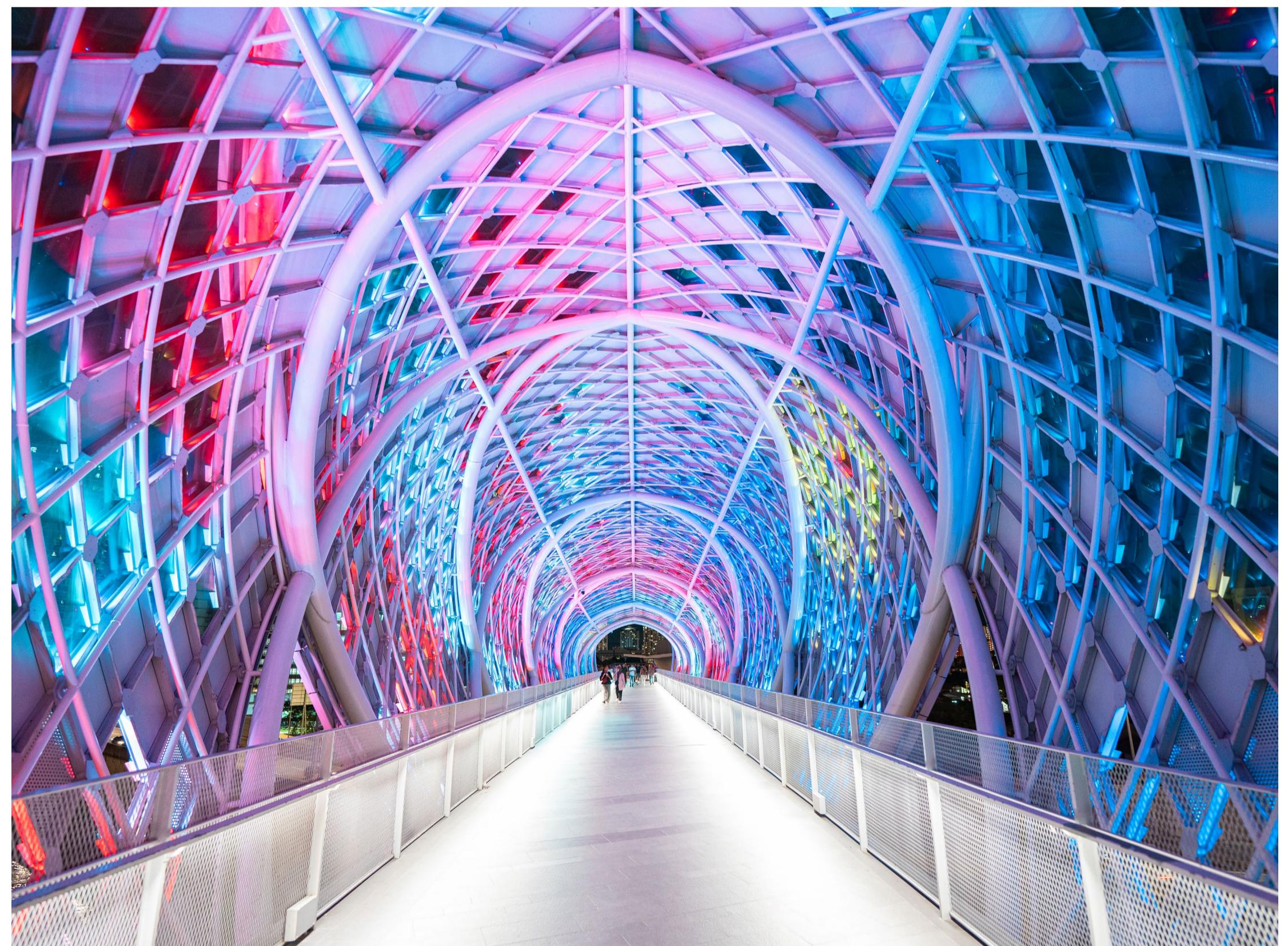
Right now, most telecommunication providers and mission-critical enterprises rely on a mix of systems delivered by multiple vendors to facilitate their connectivity – spanning anything from RAN and Core, to Transport, IP, and Fixed Network domains.

Keeping all these disparate elements running at peak performance requires large and diverse teams of specialists, but for most organizations, that level of internal expertise is practically unachievable from a training, resourcing, and cost perspective.

And while all of this is happening behind the scenes, the external pressure to provide unimpaired connectivity is constant. Investing in new tools often feels like the logical, quick-fix solution – but without the right skills and infrastructure to extract value, those investments will quickly become underutilized or totally redundant.

Siloed systems, teams, and operational processes only amplify an environment in which thousands of data points are feeding in and out of increasingly complex technology stacks. This makes it seriously challenging to gain a transparent, holistic view of service health and efficacy.

With that, insights are obscured. User behavior becomes difficult to track. Technical issues are harder to diagnose. And performance bottlenecks take more effort to address. Because without true end-to-end visibility, organizations simply can't understand or influence the experiences their customers receive.



# The Nokia Promise: From outsourcing to outsmarting

The Nokia Managed Services portfolio is designed to deliver peace of mind to our customers. We take a comprehensive, next-gen approach to network management, equipping telecommunication providers and mission-critical enterprises with a competitive, connected, and cost-efficient system – without the stress and strain of handling it all in-house.

At its core, the Nokia promise is founded upon partnership and trust. Our customers outsource their operational responsibility to us, and in return we provide the skill, scale and confidence needed to manage their infrastructures effectively. By blending our extensive industry insight and global reach with our mature suite of AI-driven automation tools, we operate networks that are seamless, predictable, and ready for the future.

Supported by deeper network analysis, this business-based approach is what helps us guide customers away from firefighting at the domain level, and towards true end-to-end optimization. Only then can they rest assured their network subscribers are receiving the highest standards of user experience.



# A proven method for powerful network performance

In practice, the Nokia Promise grants customers the power of true end-to-end visibility and enhanced network performance. It cultivates a communications ecosystem in which issues are identified before they're felt, operations are constantly optimized, and service levels are protected without the relentless need for manual intervention.

And best of all, these outcomes are all taken care of by us – allowing customers to focus their energy and resources on strategic and commercial growth. Because when customers choose our End-to-End and Performance Management portfolio, they unlock:

- **Peace of mind**, by ensuring operational simplicity, security, and superiority.
- **Offloaded responsibility**, with 24/7 support tailored to the unique needs of our customers.
- **Centralized knowledge** that covers every domain and the full length of a network lifecycle.
- **Patented AI-driven applications** built to elevate network performance.
- **Heightened awareness** of both the subjective and objective experiences of the end-user.
- **Optimization of current investments** rather than recommending needless extra spend.
- **Technical accessibility** for non-specialists through low-code automation.
- **Enhanced availability** during high-traffic periods via reliable 5G.
- **Scalability**, with Managed Services models that adapt to networks of any size, sector, or strategy.
- **A seamless environment** for introducing AI and acceleration to achieve high automation levels.

# Optimizing what matters, where it matters

**What sets Nokia apart from other Managed Services Providers is that we always adopt a holistic approach – viewing networks as the interconnected systems they really are, rather than as a melting pot of isolated technologies. This gives us the unique ability to optimize what matters, where it matters.**

With over 5000 **Nokia experts** working around-the-clock at our **Global Delivery Centers**, our NextGen combination of **AI-powered solutions** and **deep telecom knowledge** is totally **vendor-agnostic**. That means we can easily adapt to – and streamline – the existing tech stacks of our customers.

More than anything, this comprehensive perspective allows us to embed **rapid automation** processes into the parts of a network that will benefit the most. Total network integration also builds the perfect foundation for our unique **Quality of Experience framework**, which translates vast amounts of subscriber data into clear, actionable insights about the quality of user experiences.

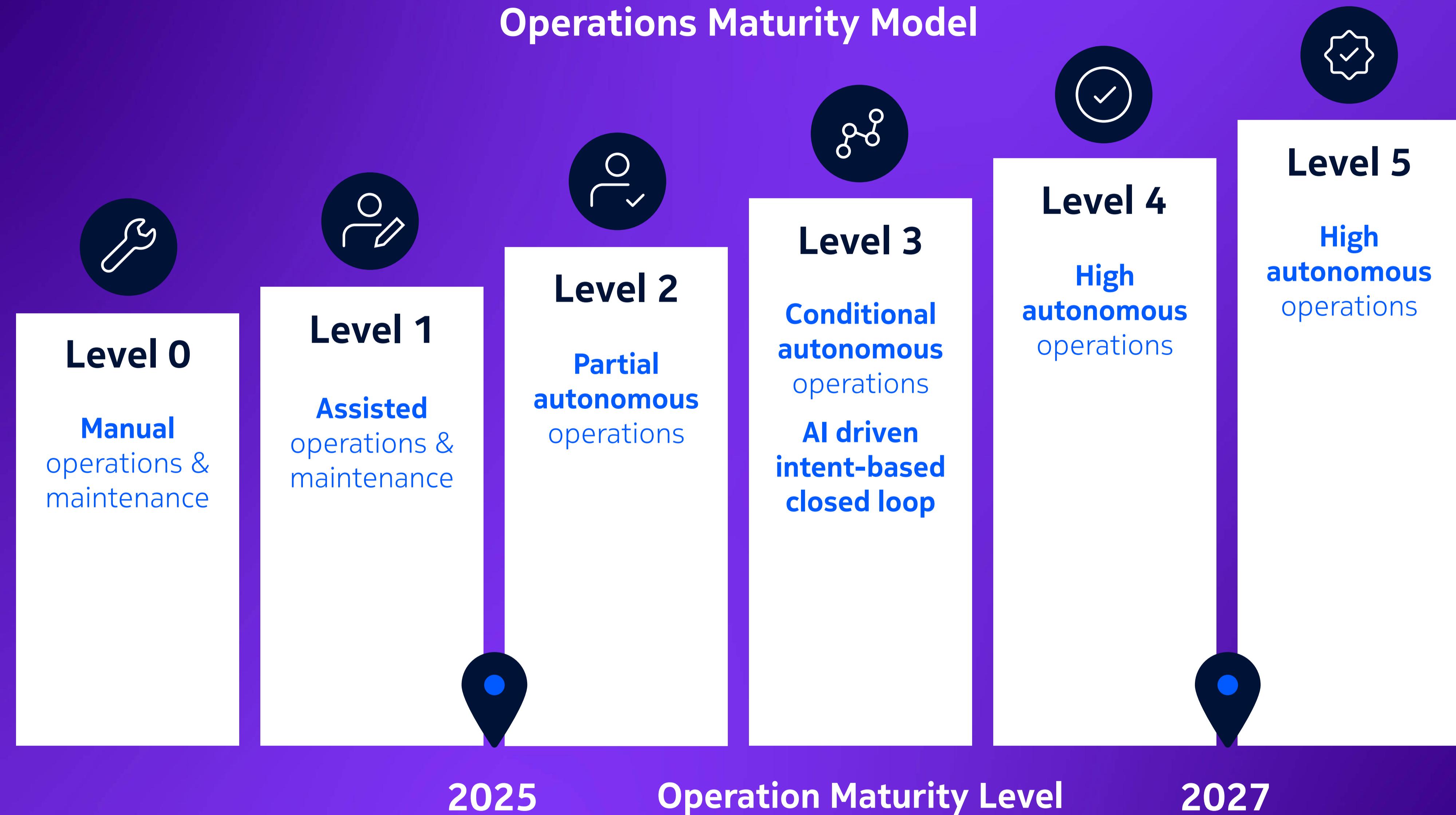
On a practical level, Nokia can manage **RAN, Core, IP and optical** issues, deliver end-to-end monitoring and optimization for **Fixed Wireless Access** and **network slicing**, and facilitate the **densification** and **interworking** steps necessary for transitioning towards 5G SA and 5G Advanced. All of this adds value to the experience of the end user.

Armed with the dynamic zero-touch internal operations and broader visibility that these capabilities provide, our customers are empowered to cut through complexity. They can make confident strategic choices that help them on their journey without the stress and strain of handling it all in-house and reach faster TM Forum level 4/5.

All of that – and more – is exactly why Nokia has been recognized as **the world's leading Managed Services Provider** for five consecutive years<sup>1</sup>.



# The journey towards Autonomous Operations



# The facts and figures

26

different customers  
utilizing E2E and  
Performance  
Management

2000+

operational KPIs  
optimized

Up to  
22%

increase in Net  
Promoter Score

“Tier One”

customer achieving  
best-ranking  
network on a  
national level for  
**3 years in a row**

The world's  
leading  
Managed  
Services  
Provider  
**for 5 years  
consecutively**



# End-to-End and Performance Management explained

To cover all bases when we manage our customers' networks, we target four strategic pillars of performance: **Experience Benchmarking, Network Assurance, Network Optimization, and Service Monitoring.**

Nokia End-to-End and Performance Management is an AI-driven managed framework that revolutionizes the availability, user-friendliness, and overall quality of multi-vendor, multi-technology networks.

As part of this service suite, we oversee subscriber-facing applications and device performance with an end-to-end focus, offer benchmarking assurance for Quality of Service and Experience, and streamline connectivity that can sustain even the highest peaks of traffic.

In context, this works as a continuous cycle of measurement, analysis, action, and validation:

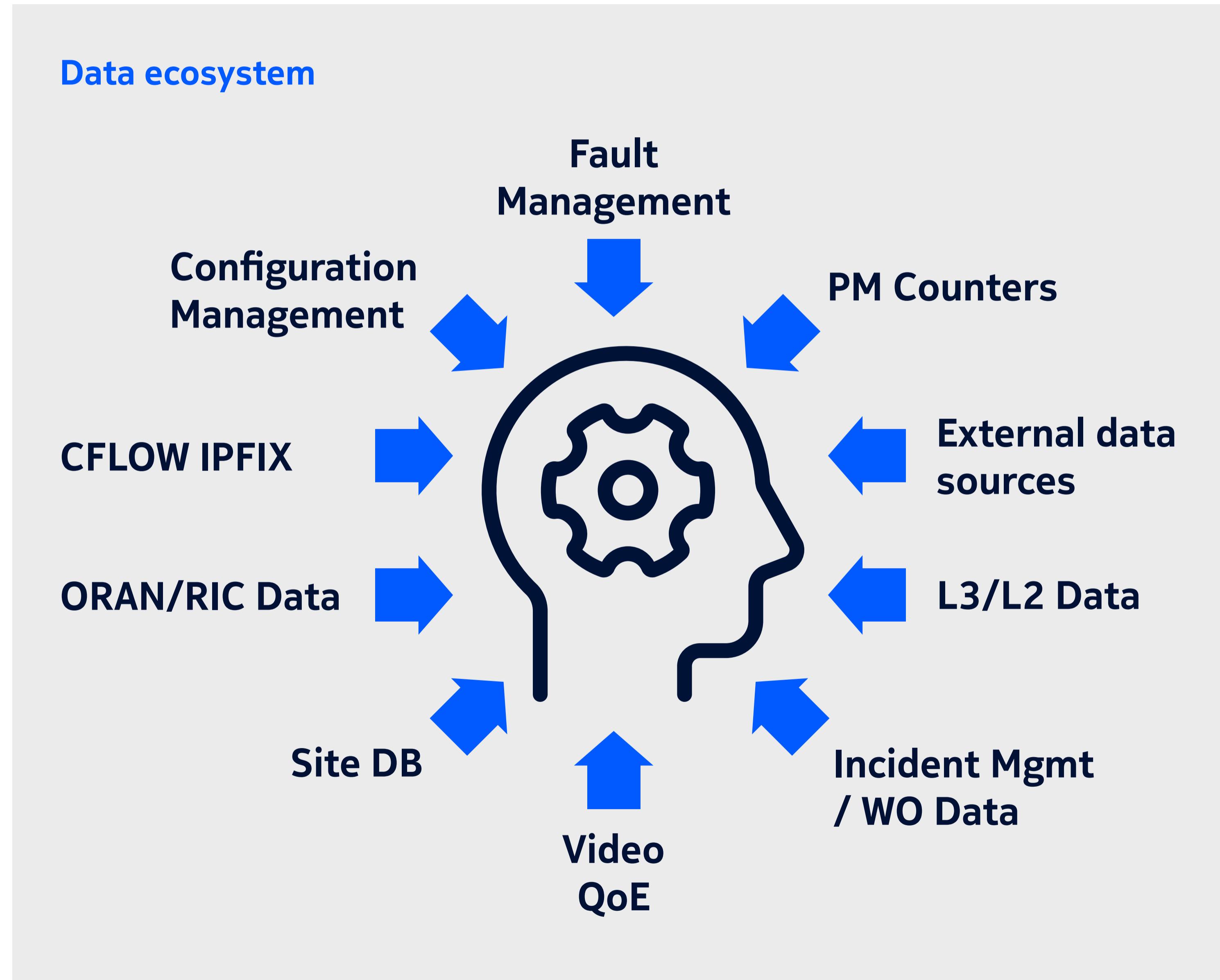
- **Telemetry** from every layer of the network is ingested into a unified data ecosystem
- **Anomalies** are detected and triaged
- **Automated root-cause analysis** isolates likely sources in RAN, Transport, Core, Applications or devices
- **Preventive or corrective measures** – like configuration changes or targeted optimization initiatives – are executed either automatically or with guided human maintenance
- **Application performance** analysis to identify poor Content Delivery Network and protocol performances.

Depending on the evolving requirements of telecommunication providers, private operators, or mission-critical enterprises, this process can be fulfilled periodically (quarterly or yearly) or on an ongoing basis under SLA-backed KPI commitments. That adaptability means service quality can be raised and operational overheads reduced at a rate that suits the long-term growth and aspirations of each individual project.

# End-to-End and Performance Management explained

## Our data ecosystem comprises of:

- Fault management
- Configuration management
- OSS Counters
- External data sources
- L3/L2 data
- Incident Management/WO data
- Video/Gaming/Collaboration Tools QoE
- Subjective Experience
- Applications performance data
- Site DB
- CDRs
- System Logs
- CFLOW IPFIX ORAN/RIC data
- Crowdsourcing data

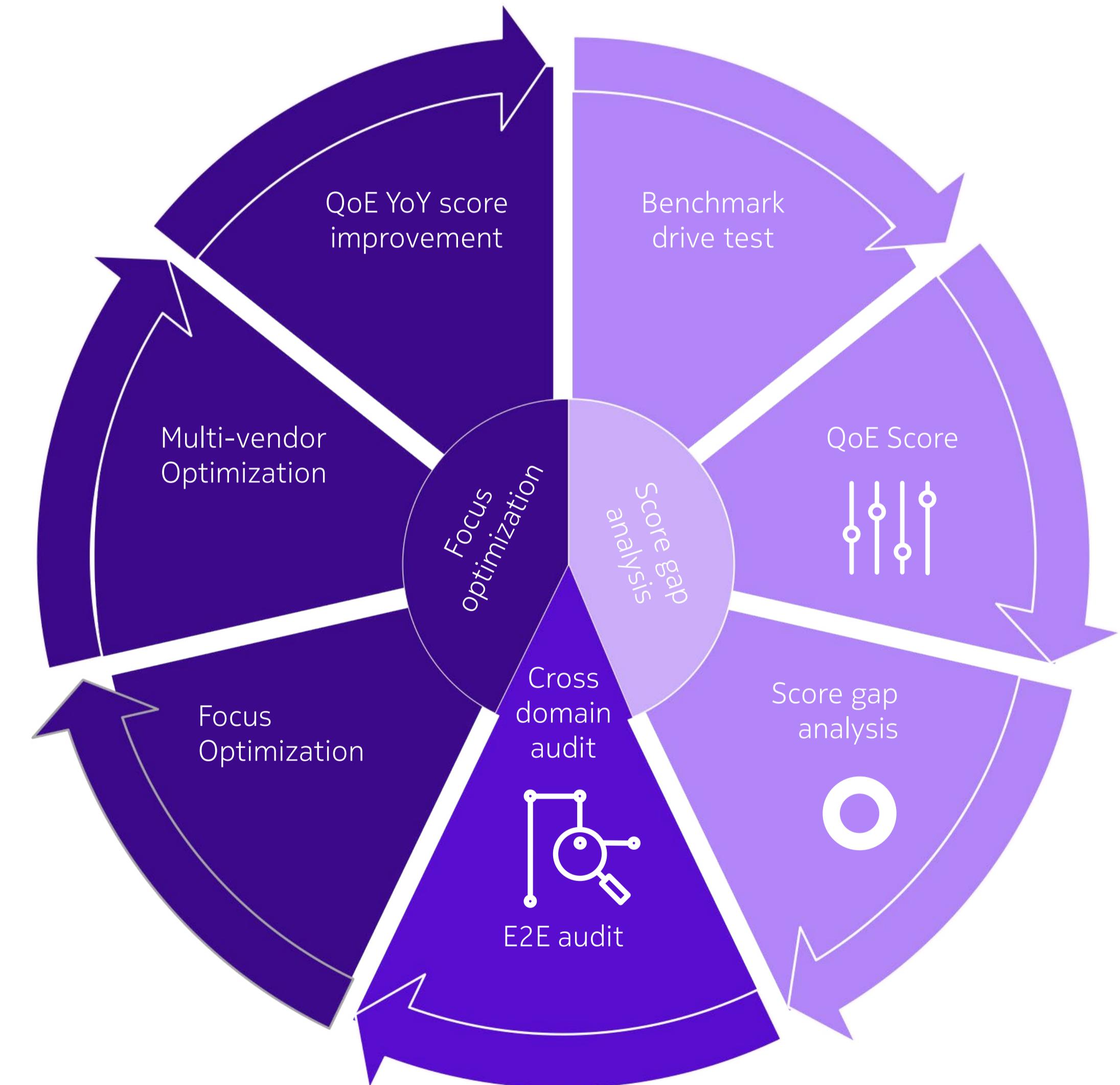


# Pillar One: Customer Experience

**Among all the Nokia solutions available to enhance the Customer Experience, Our benchmarking methodology produces a thorough and actionable assessment of network service quality to give customers an objective and subjective measure of their end-user experiences.**

We initiate the process with a benchmark drive, leveraging crowdsourcing data to significantly reduce the cost and complexity of traditional drive testing. This rich dataset generates a precise QoE score, ranking operator's network capabilities against national and sector peer groups. This approach accelerates Score-Gap Analysis by 50-60%, enabling rapid identification of critical performance optimization opportunities and their immediate correction.

Building on these insights, we conduct a comprehensive cross-domain audit, spanning Radio Access Networks, transport, CORE and end-to-end services. This audit uncovers hidden bottlenecks and targets specific areas for improvement, ensuring measurable enhancements in QoE. Our repeatable, vendor-agnostic cycle is designed for continuous, year-on-year improvement across all QoE metrics. Furthermore, it is fully 5G-ready, ensuring future performance boosts through seamless transitions across the available mobile technology for connectivity. The use then of our Experience and Data Analyzers solutions can capture the subjective and objective experience of all used Apps which are further correlated with subscriber's measurements to have a full understanding of the QoE.



# Pillar Two: Network Assurance (core optimization example)

**Tapping into our network analysis solutions, we shift our customers' operations from reactive firefighting to proactive resilience – safeguarding a service that's as high-quality as it is secure.**

This approach begins with rapid AI-assisted analysis that identifies the causes of performance degradation – recognizing whether bottlenecks stem from data congestion, poor configuration, interoperability gaps, or infrastructural limitations.

Empowered by our global expertise, advanced automation tools and detailed analytics, our powerful delivery model then gets to work addressing the vulnerabilities that have been discovered: automating operations to remove the friction of manual workflows, realigning KPI

and SLA agreements with evolving capabilities, or taking architectural actions like densification or centralization when capacity and latency demand it.

Special attention is also given to 4G-5G interworking to guarantee seamless user experiences during periods of migration or hybrid operations. Altogether, these assurances create a more predictable and productive core that reinforces and streamlines the rest of the network from the inside-out.

## Powerful delivery model

Automation & analytics

Global expert in delivery

E2E assurance

Multi-vendor expertise

AI-driven approach

## Functional focus

Process automation

Evolved KPI & SLA mgt

Densification & centralization

Evolved core mgt

4G-5G interworking

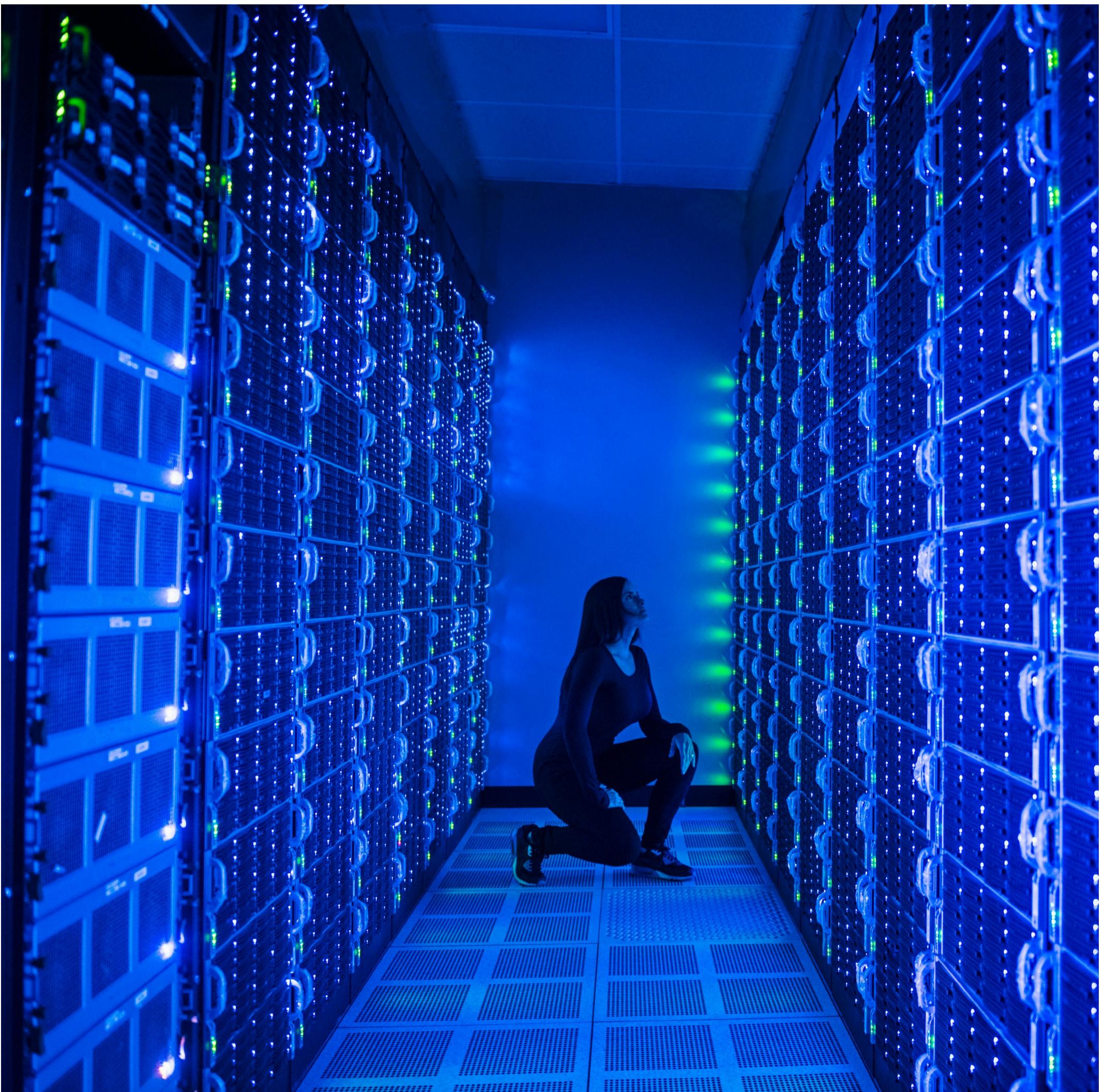
# Pillar Three: Multi-vendor, end-to-end network optimization

**By trusting in our AI-powered solutions and industry-leading telecom knowledge, customers receive the end-to-end clarity and capability they need to retain and attract subscribers.**

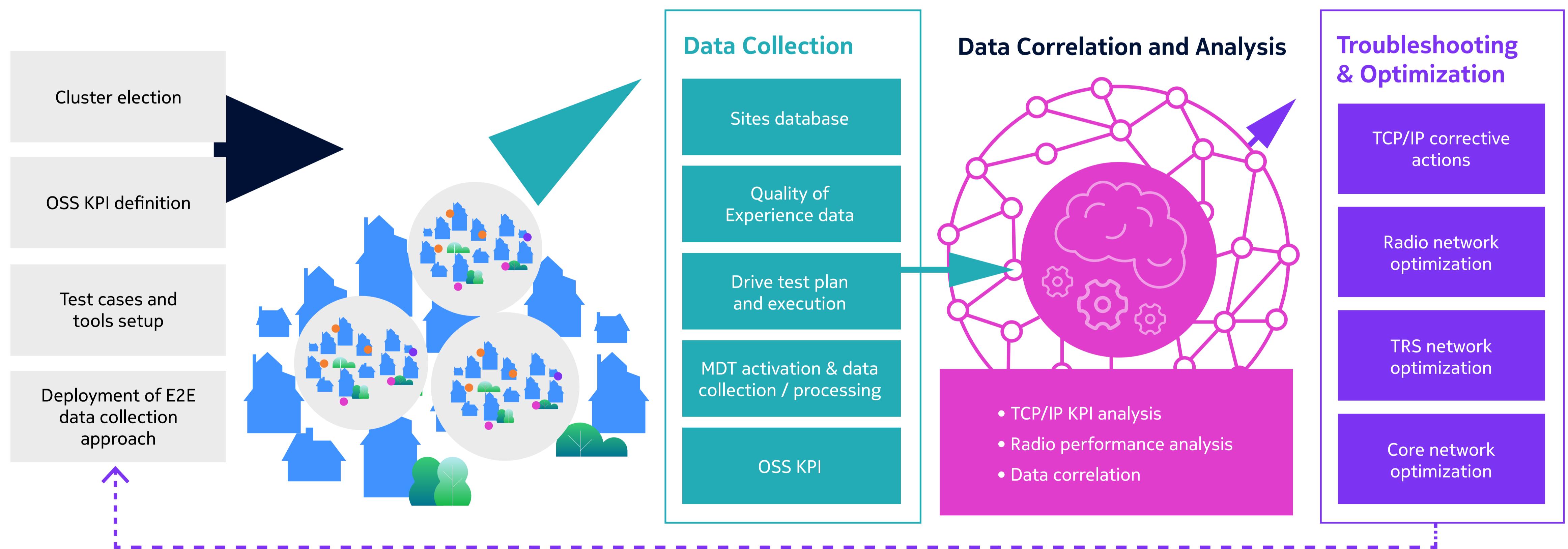
First and foremost, each optimization program opens with a fact-finding mission to define the project's objectives, scope, and infrastructure – establishing a clear blueprint for trackable improvement. From there, we apply a proven and flexible methodology based on data collection: selecting the most helpful statistical clusters, conducting strategic drive tests, and enriching insights with call traces, OSS Counters and application data captured by network probes.

Once collated, this data undergoes detailed analysis to surface issues that directly and indirectly impact service quality. With these insights in hand, our experts – empowered by automation tools – can troubleshoot across all domains to identify the outcomes that will deliver the greatest performance uplift.

At the end of each cycle, this cross-domain approach is proven to strengthen a network's capacity, connectivity, topology, and configuration in one sweep. Ultimately, this reduces manual churn and helps operators to satisfy their users in a highly competitive network landscape.



# Pillar Three: Multi-vendor, end-to-end network optimization



# Pillar Four: Service monitoring of subjective subscriber experiences

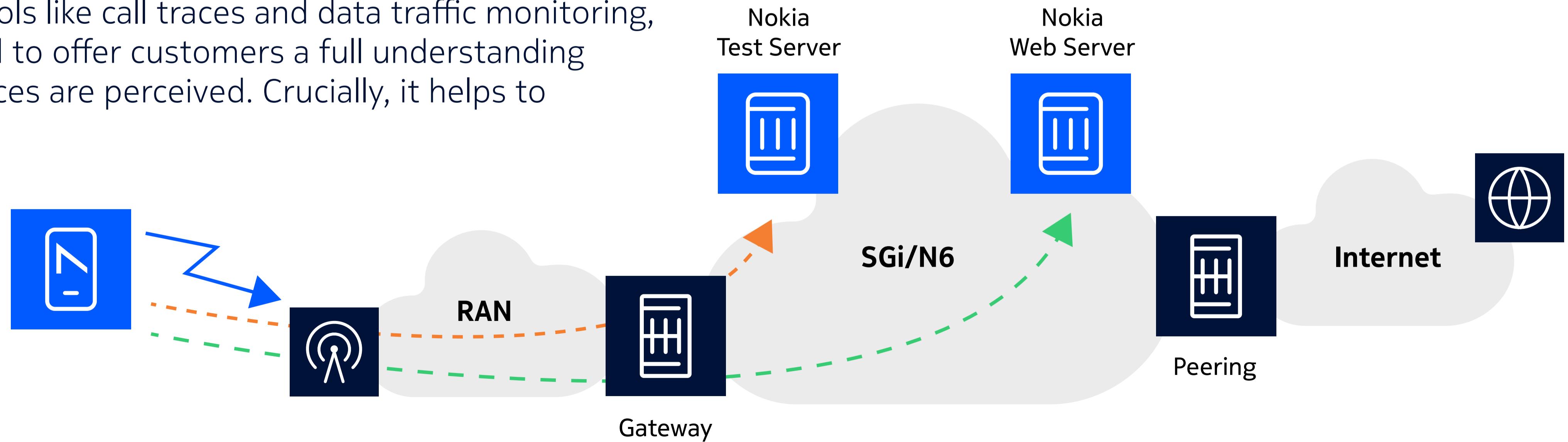
**When the focus eventually shifts from network performance to the quality of services received by subscribers, methods of data analysis need to consider that experiences are subjective.**

Traditionally, actions taken as a result of network data analysis fail to factor in the subjective elements of the subscriber experience. Solely viewing end-user behavior and service perception through an objective lens can be a significant oversight when monitoring applications and patterns – creating a blindspot through which poor experiences, increased complaints or lower Net Promoter Scores can creep in.

That's why our Experience and Data Analyzer solutions, alongside tools like call traces and data traffic monitoring, are designed to offer customers a full understanding of how services are perceived. Crucially, it helps to

identify, track, and remedy the patterns that directly concur with poor subjective experiences.

Powered by automated root cause analysis and AI-driven forecasting, this component of our End-to-End and Performance Management services helps to guarantee 24/7 service monitoring and further optimize the end-user experience on a real, human level for both mobile and fixed networks.



# The operational and commercial benefits

With full visibility, intelligent automation, and quality assurances firmly in place across every network layer, organizations will swiftly start to see core operational benefits:

- **Improved operational efficiency**, accelerating decision-making and minimizing the need for manual input.
- **Stronger internal processes and applications**, empowered by accurate and real-time performance data.
- **Superior subscriber experiences** with fewer disruptions and consistent connectivity across every touchpoint.
- **Scope for further innovation**, built on a solid foundation of AI/ML-driven automation and analytics.

Across our diverse pool of customers, Nokia's End-to-End and Performance Management services have also yielded the following commercial outcomes:

- **Deeper customer trust** thanks to their fresh experiences of a fully connected and reliable network.
- **Meaningful rises in user satisfaction**, quantified by Net Promoter Score improvements of up to 22% in some use cases.
- **Improved public reputation** and **market confidence**, as illustrated by one of our "Tier One" customers being awarded top national ranking according to independent benchmarks.
- **Long-term subscriber retention**, with customer loyalty rates reaching 95% in some of the networks that we've optimized.

Altogether, these advantages bring the **Nokia Promise to fruition** – meaning every customer interaction serves to strengthen external perceptions, delivering measurable short and long-term value on all investments, and taking networks to optimum performance levels.

# Case in point

Nokia recently worked with a major Communication Services Provider based in Western Europe to elevate the quality of a network that covers over 4,300 sites and serves over 3 million subscribers.

## The challenge



Initially, the customer was perceived to be falling behind its competitors. To disprove that, it was important to meet and exceed independent regulator benchmarks across speech quality, download speeds, gaming responsiveness, and video streaming. Ultimately, our ambition was to help the customer become the best-performing network within its region – specifically the four most major cities.

## What did we do?



We spearheaded their improvement by adopting a dual approach. First, we put their radio network through a **RAN Best Quality Network** program focused on identifying problems, resolving pain points, optimizing performance, and modernizing with 5G.

At the same time, we drove premium performance levels across the whole network as part of an **End-to-End Best Quality Network** program. We analyzed and categorized performance issues across every domain, mapped areas for improvement, tested and validated changes – all while prioritizing the actions that would have the greatest impact on subscriber experience.

## The outcome



Nokia delivered on exactly what was intended and more. According to an independent survey, the customer outperformed its competitors thanks to the changes we implemented – scoring **956 out of 1000** for service quality in the targeted test areas while also ranking highest for **reliability** and **data performance**.

Plus, by Nokia's own metrics, the customer witnessed a **8-15% surge in the overall service quality** across its network, securing approximately **94% 5G availability** in all four cities we targeted. As a result, the customer was able to maximize its return on infrastructure investment and vastly strengthen its reputation in the public eye.

# Stay one step ahead with AI-driven operations

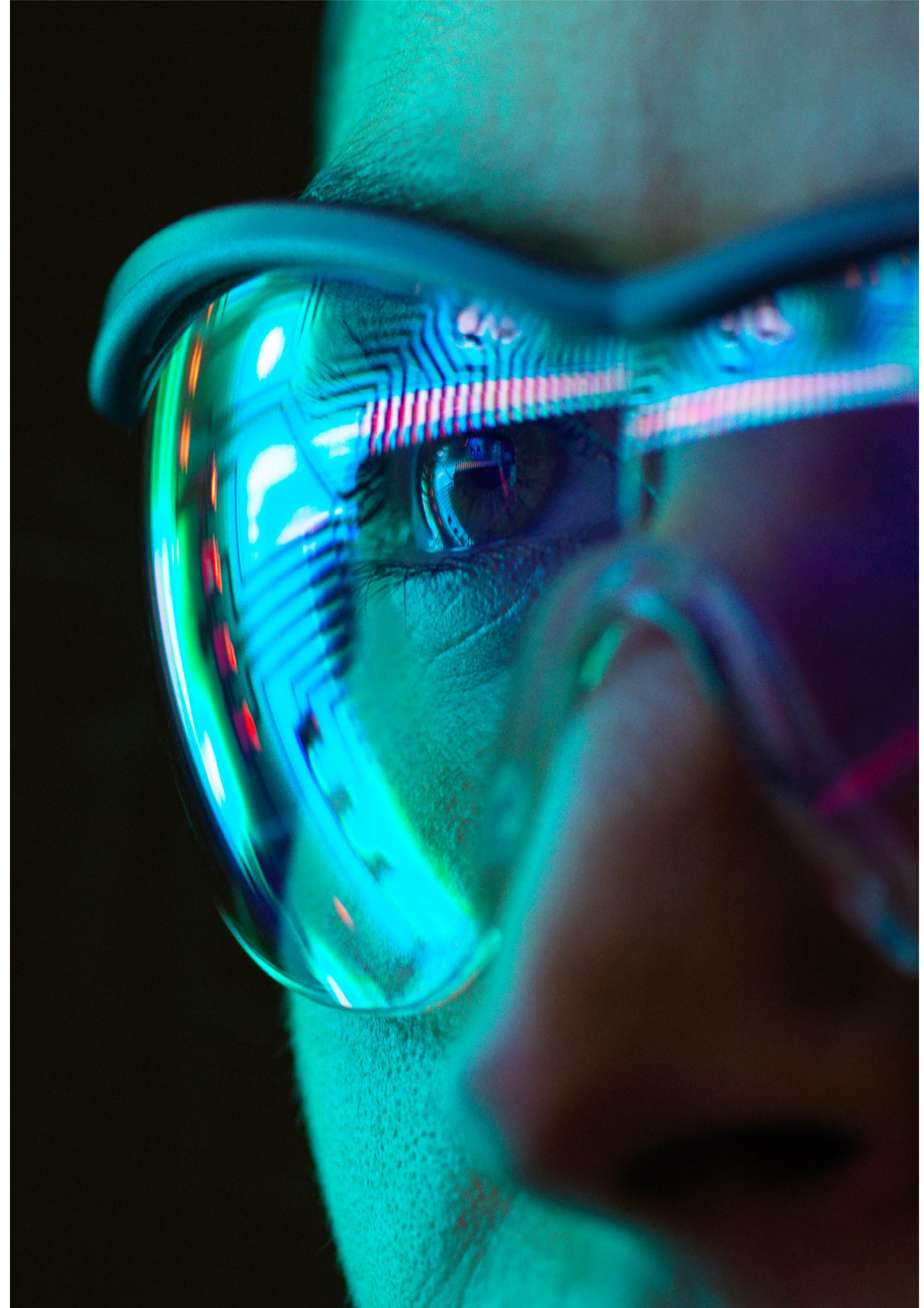
When customers outsource the stresses and complexities of network management to Nokia, they unlock the full extent of our extensive telecom experience, global network of experts, and mature AI-driven automation tools.

As a key component of this broader suite of Managed Services, Nokia's End-to-End and Performance Management portfolio ensures that the right actions occur at the right moments throughout a network. Features like automated core internal processes, advanced data-driven insights, and always-on connectivity all pave the way for unprecedented levels of user experiences and network performance.

This customer-centric and subscriber-led approach keeps our customers' telecommunications operations seamless, simple, sustainable, and secure – empowering them to innovate and grow with confidence and without distraction.

To learn more about how our support is reshaping network connectivity globally:

[Visit our Managed Services homepage](#)



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At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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