CASE STUDY

# North American operator takes autonomous RAN optimization to the next level with AI-powered MantaRay AutoPilot

- 100% accuracy in detecting network incidents
- 99% effort saved per day with autonomous contextualization
- 90% faster issue detection and repair
- 30% enhancement in network KPIs

NOKIA

A North American mobile network operator has outstanding 4G and 5G experience at the heart of its promise to subscribers.

The operator has continuously invested in spectrum assets and built a nationwide high-performance 5G network to ensure a consistent user experience.

Nokia is a key 4G and 5G Radio Access Network (RAN) provider in the customer's multi-supplier environment.

The North American operator has been using Nokia MantaRay SON, our self-organizing networks solution, for several years for automated network optimization in its multi-supplier network.

Industry analyst companies have recognized MantaRay SON as the leading solution in the SON market for nine consecutive years.

In 2024, the operator decided to trial the AI-powered MantaRay AutoPilot.

This case study illustrates how the autonomous capabilities of MantaRay AutoPilot helped our customer elevate network optimization of a large-scale multi-supplier network to the next level, resulting in significantly enhanced efficiency and network KPIs.

## OBJECTIVE

# Boosting the efficiency of radio network optimizations

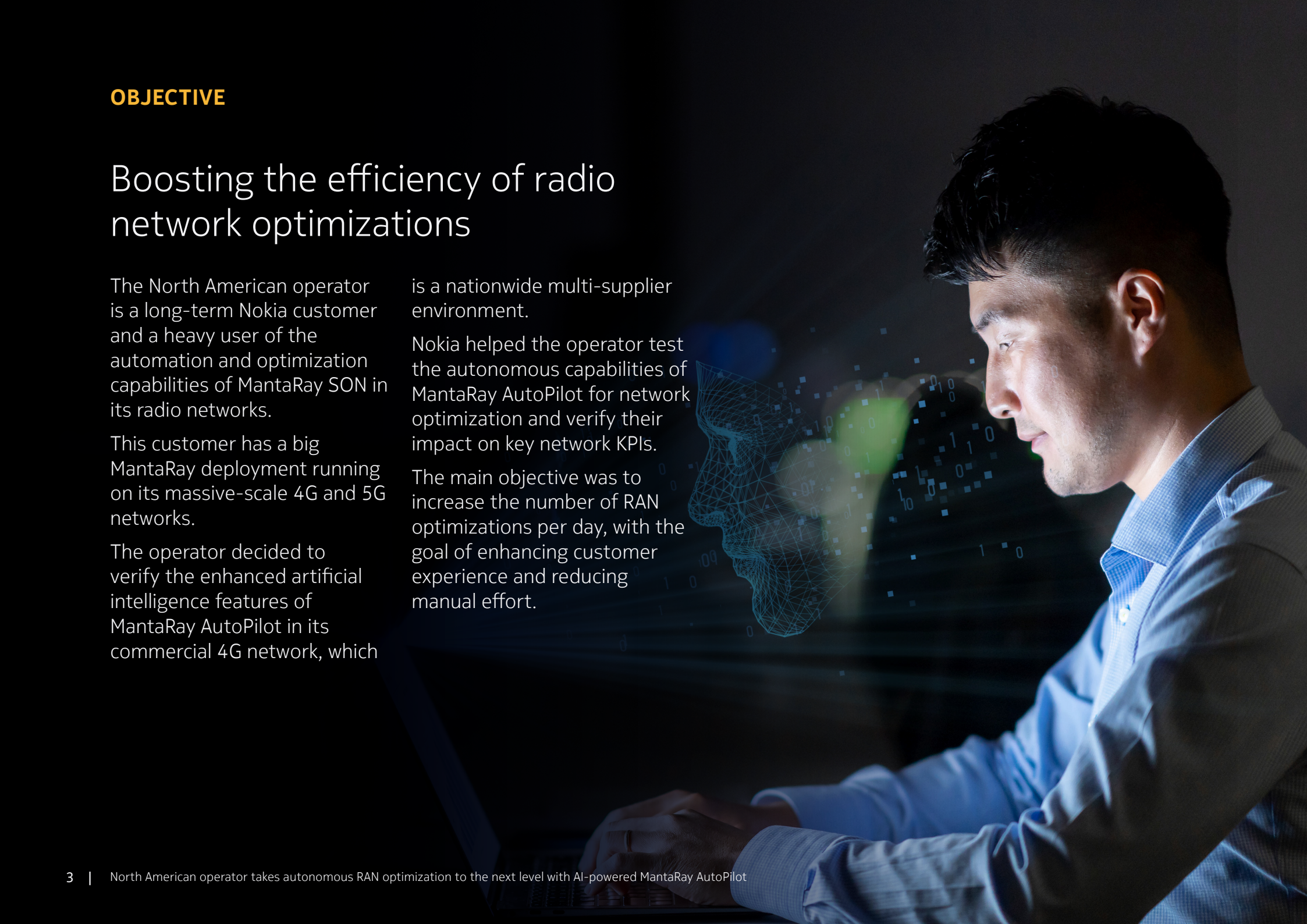
The North American operator is a long-term Nokia customer and a heavy user of the automation and optimization capabilities of MantaRay SON in its radio networks.

This customer has a big MantaRay deployment running on its massive-scale 4G and 5G networks.

The operator decided to verify the enhanced artificial intelligence features of MantaRay AutoPilot in its commercial 4G network, which is a nationwide multi-supplier environment.

Nokia helped the operator test the autonomous capabilities of MantaRay AutoPilot for network optimization and verify their impact on key network KPIs.

The main objective was to increase the number of RAN optimizations per day, with the goal of enhancing customer experience and reducing manual effort.



SOLUTION

# AI-powered autonomous RAN operations with MantaRay AutoPilot

To support the customer's objective of increasing the number of RAN optimizations executed per day, Nokia provided its AI-powered MantaRay AutoPilot for autonomous RAN operations.

MantaRay AutoPilot autonomously optimizes the network. Its AI algorithms orchestrate the optimization modules without human intervention to reach the performance objectives that the operator has defined for a set of cells in the radio network.

MantaRay AutoPilot identifies radio network incidents and any performance degradations, analyzes them, initiates corrective actions and verifies the results. These autonomous operations enhance operational efficiency in environments marked by exponentially growing complexity.

With its enhanced AI capabilities, MantaRay AutoPilot can reach level 4 of TM Forum's autonomous network framework already today.

It helps elevate the cost savings and productivity enhancements of autonomous radio planning and optimization to a completely new level compared to using the MantaRay SON platform without these capabilities.

# MantaRay AutoPilot: A three-step approach to autonomous network optimization

## 1. Objective definition

- Operator sets a high-level performance objective, which is applicable to a set of cells in the network.
- The objective can be set manually, or MantaRay AutoPilot can use the best-performing cells as a target.
- Example of a performance objective: 95% of 4G cells have a good downlink throughput of 200Mbps or more.

## 2. Contextualization of the cells

- Each cell has multiple static and dynamic characteristics. The AI capabilities of MantaRay AutoPilot identify and set the dynamic context based on network KPIs and keep it always up-to-date.
- Examples of static context: frequency band, location such as urban or rural, cell type such as 4G or 5G, supplier, macro or small cell, etc.
- Examples of dynamic context: cell density, mobility, load level, traffic volume, etc.

## 3. Corrective actions

- MantaRay AutoPilot detects degradation of performance compared to an objective.
- AI uses cell contextualization to understand the network issues and apply the right corrective actions by running the related optimization modules.
- MantaRay AutoPilot verifies the results and if needed, takes additional corrective actions.

## RESULTS

# Unparalleled accuracy in automated optimization with significant improvement in network KPIs

The North American operator observed several significant enhancements as a result of the autonomous optimization of its multi-supplier 4G network with Nokia's MantaRay AutoPilot.

The key results included:

- 100 percent accuracy in detecting network incidents.
- Up to 22 times faster module execution with 9 times more optimization opportunities detected.
- Up to 65 percent fewer resources used by the optimization modules orchestrated by MantaRay AutoPilot.

From the automation perspective, MantaRay AutoPilot was able to:

- Save over 99 percent of effort per day with autonomous contextualization.
- Detect and repair network incidents almost 90 percent faster.

The end result was a 30 percent overall enhancement in network KPIs, which will directly impact the user experience of mobile subscribers.

Accuracy in detecting network incidents

100%

Effort saved with autonomous contextualization

>99%

Overall enhancement in network KPIs

30%

# MantaRay AutoPilot brings AI-driven efficiencies to the optimization of complex multi-supplier networks

The telecommunications industry relies increasingly on automation to enhance operational efficiency. As operators accelerate their investments in 5G, they typically deploy technology from multiple RAN suppliers. This presents an additional challenge for performance optimizations.

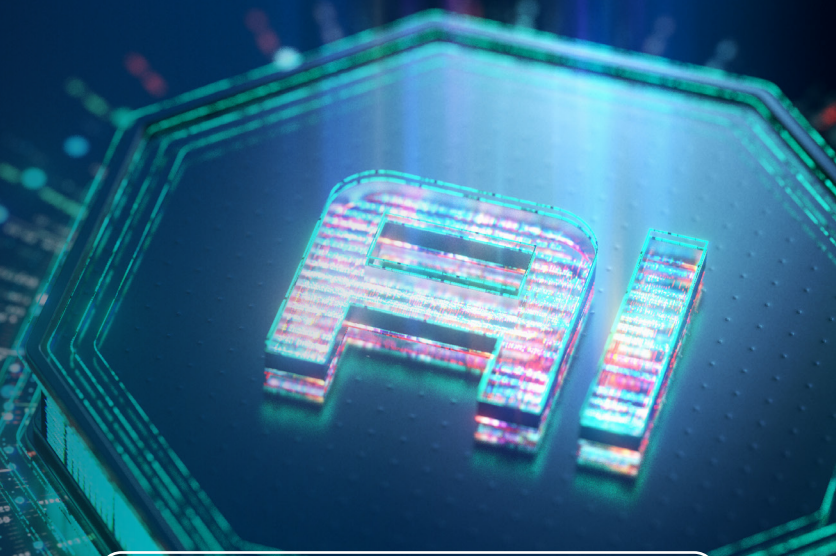
Today, manual operations are not efficient and cost-effective enough to achieve operational excellence: we need artificial intelligence to take the lead.

Nokia's AI-powered MantaRay AutoPilot significantly reduces the manual effort required for network planning and optimization work. This allows human engineers to focus more on business-relevant operations that require unique competencies.

With its enhanced AI capabilities, MantaRay AutoPilot takes autonomous radio network optimization to a completely new level.

Together with customers such as the North American operator, Nokia has proven the capabilities of MantaRay AutoPilot in large-scale multi-supplier networks.

MantaRay AutoPilot boosted the efficiency of radio network optimizations with autonomous operations, leading to a significant enhancement in key network KPIs.




**Visit MantaRay SON webpage**

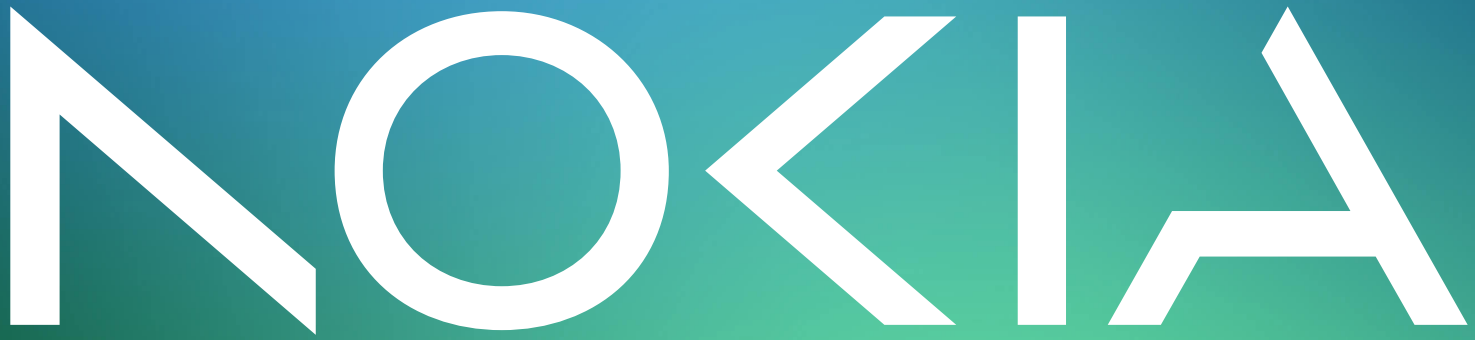
**Read MantaRay AutoPilot solution brief**

Nokia OYJ
Karakaari 7
02610 Espoo
Finland

Tel. +358 (0) 10 44 88 000

CID: 214178

nokia.com



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, which is celebrating 100 years of innovation.

With truly open architectures that seamlessly integrate into any ecosystem, our high-performance networks create new opportunities for monetization and scale. 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.