Reduce cost of multiple old legacy railway networks

Use case

The railway industry has traditionally deployed separate, legacy communication networks to support individual applications and services. These networks, on which railway operations are heavily reliant, are largely outdated, are costly to maintain and are unable to meet the growing demands of new, bandwidth-hungry services. Nokia can help you to transform your legacy networks with a complete, mission-critical, end-to-end railway communications portfolio.
Challenges

Most communications networks used by railways around the world are either obsolete or approaching end of life. These legacy systems can no longer meet the needs of railway operators who face new demands for extreme efficiency, ultimate safety and a superior customer experience. Renewing these communications systems is a high priority.

How we help you

With more than 30 years of experience in the sector and the most complete portfolio of products and services, Nokia is the market leader with 20 GSM-R networks and more than 80 mission-critical railway networks deployed.

As a principal driver of the industry’s standardization work in GSM-R and the evolution to LTE, Nokia knows the complexities and requirements of migrating from legacy to IP-based networks. In addition, Nokia has helped operators worldwide migrate from TDM, SDH, or SONET networks to modern IP/MPLS and optical networks.

Figure 1. Nokia end-to-end mission-critical railway solutions for safe, on-time and connected journeys

GSM - Railways
- ETCS L2 and voice
- Interoperable and standardized (EIRENE)

IP/MPLS mission-critical network
- Unified management/data/communication/signaling
- QoS per service, fast re-route
- Traffic segregation and engineering
- Packet optical and microwave

Professional railway services
- Reliable networks, 24/7 service
- Planning, design, integration and managed services, security

LTE solutions for railways
- Multi-services network for: CBTC, PMR, Driver look-ahead, CCTV, PIS, PAGA, passengers...
- Low latency, QoS, high bandwidth, end-to-end IP

IoT/Connected train
- Device and sensor management
- Data collection and analytics
- Cyber-security, Internet of Things.
Nokia is a unique vendor in the industry with a complete mission-critical end-to-end railway communications portfolio. Our complete offerings include the world leading GSM-R solution, LTE for railways, broadband on trains, a reliable transport network, Internet of Things (IoT) solutions and a dedicated professional service team with proven, turnkey capabilities and a global presence.

Nokia helps railway operators future-proof their communications network investments with carrier-grade, highly reliable solutions based on standardized technologies. We also enable a smooth migration of legacy products and services to the next generation of railway broadband technology.

How our approach changes the game

Maintain safety as the highest priority by:

• Meeting the availability and reliability requirements of mission-critical applications, such as automatic train control (European Train Control System Level 2 (ETCS L2) and CBTC)
• Deploying new and advanced safety-related applications
• Supporting non-stop operations through an always-on, secure and reliable communications network

Run on-time and efficient operations by:

• Smoothly migrating to a next generation, IP-based communications network to support mission-critical operations with no performance compromise
• Supporting anywhere machine-to-machine (M2M) and IoT communications to enable, for example, more effective preventive maintenance
• Deploying standards-based network technology to ensure long-term viability and interoperability
• Automating trains and operations to achieve higher efficiency and greater capacity

Improve the passenger experience and generate non-fare revenues by:

• Deploying broadband for passengers to improve the journey experience and achieve a competitive advantage
• Deploying broadband multi-service networks to support more reliable operations
Why our approach is different

- Over 30 years of railway experience with the most complete end-to-end portfolio and professional services.
- A market leader with 20 GSM-R networks and over 80 mission critical railway networks deployed and live.
- A specialist in multi-service communication networks for both operations and passengers.
- An expert in the smooth migration of legacy networks to IP.
- LTE leadership and best-in-class broadband solutions for passengers and train stations.
- Ready for the future with solutions that enable railway standardization from legacy to the next generation.
- Leading innovations with Bell Labs to shape the railways of the future.

How you benefit

- Enhanced safety and security
- Improved operational efficiency
- Innovative passenger services

Nokia is your trusted partner for the transformation of legacy networks with a complete, mission-critical, end-to-end railway communications portfolio that makes it easier to create safe, on-time and connected journeys.


About Nokia

We create the technology to connect the world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry’s most complete, end-to-end portfolio of products, services and licensing.

From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in virtual reality and digital health, we are shaping the future of technology to transform the human experience.