

SOLUTION BRIEF

Nokia Health and Safety services with AI

Driving safer deployments with artificial intelligence and machine learning

NOKIA





Leveraging AI to ensure health and safety in high-risk deployments

Health and safety are critical in high-risk network deployment scenarios, where the stakes are high, and the challenges are complex. Radio network deployments often require teams to operate in hazardous environments, managing tasks like working at heights, handling live electrical systems and coordinating intricate logistics such as driving to and from sites. These activities are not just operationally demanding but also pose significant risks to the safety of the workforce.

Our approach to ensuring safety

In this context, ensuring health and safety is more than a compliance requirement—it is a fundamental responsibility that directly impacts the well-being of workers, the efficiency of operations and the trust of customers. Effective safety measures can mean the difference between seamless execution and critical disruptions. Recognizing this, Nokia has made safety a necessity of our operations. By integrating advanced digital tools, artificial

intelligence (AI) and strict adherence to safety protocols into its processes, Nokia addresses these challenges head-on, ensuring that risks are avoided or mitigated wherever possible.

A holistic commitment to safety

How does this sound for text - Nokia prioritizes health and safety across its workforce, partners, suppliers and customers. By safeguarding people and enhancing operational reliability, Nokia builds trust with customers. This commitment is embedded in rollout operations, with hundreds of projects completed and millions of safety checkpoints monitored. In this solution brief, we will dive deeper into how Nokia leverages artificial intelligence and machine learning (AI/ML) to enhance health and safety in our field operations. Our ultimate goal is clear: to achieve zero incidents in all projects and create a workplace where everyone returns home safely at the end of each day.



Unlocking business value through AI-based safety solutions

In the evolving landscape of site deployments, both Communication Service Providers (CSPs) and enterprises face persistent safety challenges that require innovative solutions. The three most significant risks are working at heights, electrical hazards and last-mile logistics, including travel and material transport to sites. Addressing these risks is not only a compliance requirement but also an opportunity to enhance productivity, reduce costs and build customer trust.

Enhancing safety through innovation and technology

The current market is moving toward digitalized and AI-assisted solutions that transform how risks are managed. For instance, remote monitoring, AI-driven threat detection and digital site twins have become critical tools in ensuring safety. These innovations align with broader industry

trends, such as sustainability and efficiency. Nokia's solutions are already ahead of the curve, enabling customers to reduce site visits by 30% and eliminate unnecessary physical tasks through virtual alternatives like drone-based site captures.

Proactive measures with Nokia solutions

Looking forward, Nokia is preparing for a future where metaverse and omniverse technologies will enable immersive training using digital site replicas. Enhanced machine learning solutions are already being implemented to proactively identify potential threats, positioning Nokia as a leader in leveraging technology for safety. With these advancements, Nokia not only addresses current pain points but also prepares customers for a future of safer, smarter deployments.

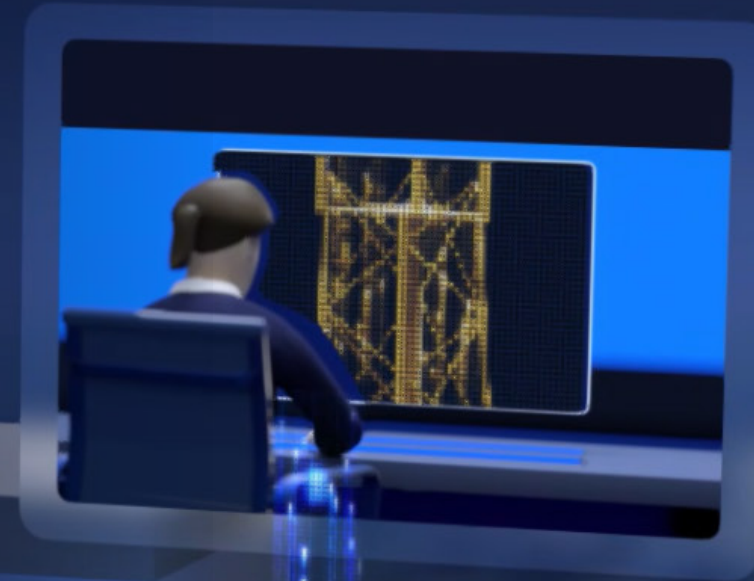
Nokia's portfolio

Nokia's industry-leading portfolio addresses safety challenges across all deployment activities through risk avoidance, mitigation and industry-leading digital solutions. By integrating advanced technologies and sustainability principles, Nokia ensures efficient, safe and environmentally conscious project execution. Key use cases include:

Proactive risk avoidance:

Nokia leverages digital tools to minimize physical exposure to hazardous conditions by reducing the need for on-site tasks:

- **Digital site twins:** Enable engineers to conduct virtual walkthroughs, eliminating unnecessary site visits while saving time and resources.
- **Drone-based site capture:** Provides high-quality site assessments without requiring physical access, significantly enhancing safety while streamlining data collection and analysis.
- **Remote call testing:** Replaces traditional drive testing with virtual solutions, reducing emissions and increasing operational efficiency.



Comprehensive risk mitigation:

Innovative safety solutions ensure consistent compliance and risk reduction throughout the deployment lifecycle:

- **PPE and equipment pre-checks:** AI-driven tools analyze site images to verify proper usage of personal protective equipment (PPE) and readiness of tools before work begins.
- **Real-time oversight:** Mobile applications monitor worker locations via geofencing and ensure compliance with safety certifications, allowing supervisors to intervene quickly if risks arise.
- **Enhanced field performance validation:** Automated analysis of GPS-linked radio events and signaling messages delivers 24/7 performance insights, replacing manual drive tests and achieving a 30% improvement in time-to-target performance. This solution avoided 83,000 drive tests in 2023 alone, preventing 1,050 tons of CO₂ emissions over the past two years.

Integrated digital and AI safety controls:

Nokia's Delivery Platform (NDPd) consolidates all safety workflows and tools into a seamless, user-friendly system:

- **Hazard Detection Lens:** On-device AI detects real-time electrical hazards using mobile camera feeds, embedding hazard identification directly into site workflows. This solution preserves data privacy and functions offline, addressing customer concerns about connectivity and security.
- **Automated workflow management:** Integrates digital checks into routine processes, ensuring consistent safety protocols are followed without disrupting field operations.





Global safety standards and training:

Nokia's "License to Work" program ensures all personnel meet rigorous safety standards:

- **Universal certification:** Over 35,000 workers are certified worldwide, with training delivered through mobile apps in local languages for accessibility and effectiveness.
- **Real-time verification:** Confirms worker certification and preparedness before tasks begin, reinforcing safety and accountability.

Sustainability and innovation at the core:

Nokia's commitment to sustainability and continual innovation is evident in its approach to risk management and efficiency improvements:

- Drone-based solutions reduce climbing risks, improve safety and accelerate site assessments, requiring only a single operator.
- Future developments include expanding AI-driven quality checks and vehicle monitoring systems to enhance safety and operational efficiency further.

Nokia's comprehensive approach to safety is not just about addressing immediate risks but also about building a sustainable framework for safer deployments in the future. By combining advanced digital tools, proactive risk mitigation strategies and a commitment to universal safety standards, Nokia ensures that every project is executed with precision, efficiency and care for all involved.



Why Nokia?

Nokia places safety at the heart of its operations, embedding it into every stage of our processes to protect employees, partners and customers. With a zero-harm philosophy, Nokia strives to prevent every injury and incident, ensuring all personnel return home safely at the end of the day. This commitment is supported by strict adherence to six lifesaving rules, which address critical areas such as road safety, working at heights, and electrical safety:

Road safety:

- Always wear a seatbelt in ANY vehicle. Required for everyone in the vehicle.
- Do not drive distracted or tired. Take a break every two hours.
- Always drive at a safe speed for road, traffic, and weather conditions.

Working at heights:

- Always attach yourself and your equipment.
- Always make sure that nobody enters the space below.

Electrical safety:

- Do not work on any electrical system unless you are trained.

Nokia integrates these principles into projects globally, fostering a culture of safety and accountability across all levels.

Nokia drives safety innovation with AI-powered solutions and digital tools integrated across every step of the process:

- **AI-Powered tools:**
Real-time hazard detection, automated pre-checks and machine learning-based safety verification ensure proactive risk management.
- **Digital Solutions:**
Tools like digital twins, drone-based site captures and remote call testing eliminate unnecessary physical risks and improve efficiency.
- **Advanced Platforms:**
Solutions such as the Nokia Delivery Platform (NDPd) integrates safety and operational controls, providing real-time visibility and oversight.

A full-page background image showing a worker in a red safety suit, helmet, and glasses, working on a metal structure, possibly a tower or scaffolding. The worker is looking upwards and to the right. The background is a blurred outdoor scene with some vegetation.

Collaboration is another defining strength of Nokia's approach. By working closely with suppliers, customers and other partners, Nokia enforces consistent safety practices across our ecosystem. Key initiatives include:

- **Close Partnerships:** Nokia partners with suppliers to maintain consistent safety standards across all operations.
- **Regulatory Alignment:** Nokia adheres to strict customer-specific requirements and regional standards, such as GDPR and NSA, to deliver compliant and secure solutions.

Looking towards the future, Nokia is committed to advancing safety technologies further by developing new solutions such as expanded vehicle monitoring systems and AI-driven quality checks. We are also pioneering innovations like metaverse-based training and enhanced machine learning tools to proactively identify and mitigate risks. By integrating these forward-thinking technologies into our operations, Nokia ensures that safety remains a core strength, delivering smarter, safer and more sustainable deployments for our customers.

For a greater overview of Nokia Mobile Network Services, please refer to the Services Solution Brief [here](#).

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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, 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.

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