Digital transformation of terminal operations

Nokia solution for port and intermodal terminal operators

“Port and terminal operators worldwide are eager to leverage the productivity gains on offer with cargo handling automation – and secure, reliable, high-bandwidth, low-latency connectivity is an essential part of that equation. By integrating our pioneering Kalmar solutions with the latest Nokia digitalization innovation, we can deliver a new generation of offerings that transform port terminal operations.”

Antti Kaunonen, **President Automation Solutions, Kalmar**

KALMAR

Kalmar and Nokia announced an extended partnership to provide new solutions for ports and intermodal terminal operators seeking to automate operations. The companies will combine their communications and cargo handling technology expertise in new joint go-to-market ventures, integrated solution development and research collaboration. In the first of the new collaboration programs, Nokia and Kalmar will incorporate 4G and 5G private wireless into solution offerings for use with automated straddle carriers, automated stacking cranes and automated rubber-tyred gantry cranes.

Key challenges of terminal operations

Nokia understands bigger vessels and tighter supply chains are increasing the pressure on your terminals to operate at peak productivity and efficiency. Shipping lines depend on your promised capacity while you need to deal with the dynamics of the logistics industry and aim to become even more cost-effective.

Increasing moves per hour and reducing cost per move are your key imperatives.

Digital transformation of your terminal operations let you meet this challenging paradigm.

2x increase

Container traffic by seat to be doubled till 2050

23,964 TEU

Capacity of largest container vessels increasing but short turnaround times

Reducing cost

Need for reducing cost to stay competitive

Dynamic volumes

Volumes handled by terminal operators dynamically changing day per day

Digital transformation of terminal operations

At Nokia, we create the critical networks and technologies to bring together the world's intelligence, across businesses, cities, supply chains and societies.

We are a leader in industrial wireless communications, advanced analytics and the Internet of Things. We have extensive experience in working with port and intermodal terminal operators worldwide and would like to explore with you how your terminal operations can benefit from a complete digital transformation.

Digital transformation converges Information Technology (IT) and Operational Technology (OT) at your terminal for data-informed, real-time and longer-term decisions to respond accurately, effectively and proactively to your operations. It bridges advanced business analytics and dynamic operational systems with your physical environment including assets such as cargo handling machinery and mobile workers in the yard.

Nokia solutions for port and intermodal terminal operators

Nokia offers a modular suite of communications and automation solutions to support your digital transformation journey towards the next-generation of terminal operations. Our industry and technology experts look forward to meeting you.

Private Wireless

Private LTE and 5G networks powered by our Nokia Digital Automation Cloud provide you with a terminal-wide bubble of pervasive and robust wireless connectivity to enable a variety of use cases. You will overcome the limitations of today's wireless while benefitting from a technology simplification.

IoT & Analytics

Data collection and analytics help you advance situational awareness and optimize yard operations. Our SpaceTime scene analytics solution translates audio and video streams into data and our Integrated Operations Center provides you with a single view across your operations.

Local and Wide Area Networking

Our Optical LAN, our Wavence microwave and our IP routing and switching portfolio provides you with a better way to structure your LAN. SD-WAN powered by Nuage Networks from Nokia and our optical transport products boost inter-terminal collaboration with a secure, programmable and unified infrastructure.

Use cases for private wireless in terminal operations

Leverage a single, unified private wireless network based on LTE or 5G technology and powered by our Nokia Digital Automation Cloud for all your business-critical communication needs – including data, voice and video. This allows to realize a variety of coexisting use cases over a single infrastructure.

Pre-defined wireless systems are available by Nokia to build out use cases. Wireless systems are composed by a portfolio of user equipment, purpose-build applications, and end-to-end integration of network services.

Many more use cases are possible where the private wireless network functions as an enabler.

Wireless data for manned operations

Modern Terminal Operations Systems (TOS) require a seamless data link between mobile and central applications for dynamic queuing. But interferences, reflections and white spots of today's wireless infrastructures limit productivity as container handling equipment is forced to do unnecessary moves.

A private wireless network of Nokia with highly available and reliable wireless connectivity across the whole yard increases productivity of conventionally operated terminals.

Voice communications

Communications between and with workers is key for terminal operations. Today's dedicated Private Mobile Radio (PMR) solution are often end-of-life and limited in features.

A network-based team communications solution of Nokia on top of the unified private wireless network brings advanced communication capabilities including push-to-talk (PTT), push-to-video (PTV), group calls and emergency calls.

It also helps to reduce wireless Total Cost of Ownership (TCO) by avoiding a patchwork of dedicated systems.

Wireless remote control for (semi-) automated operations

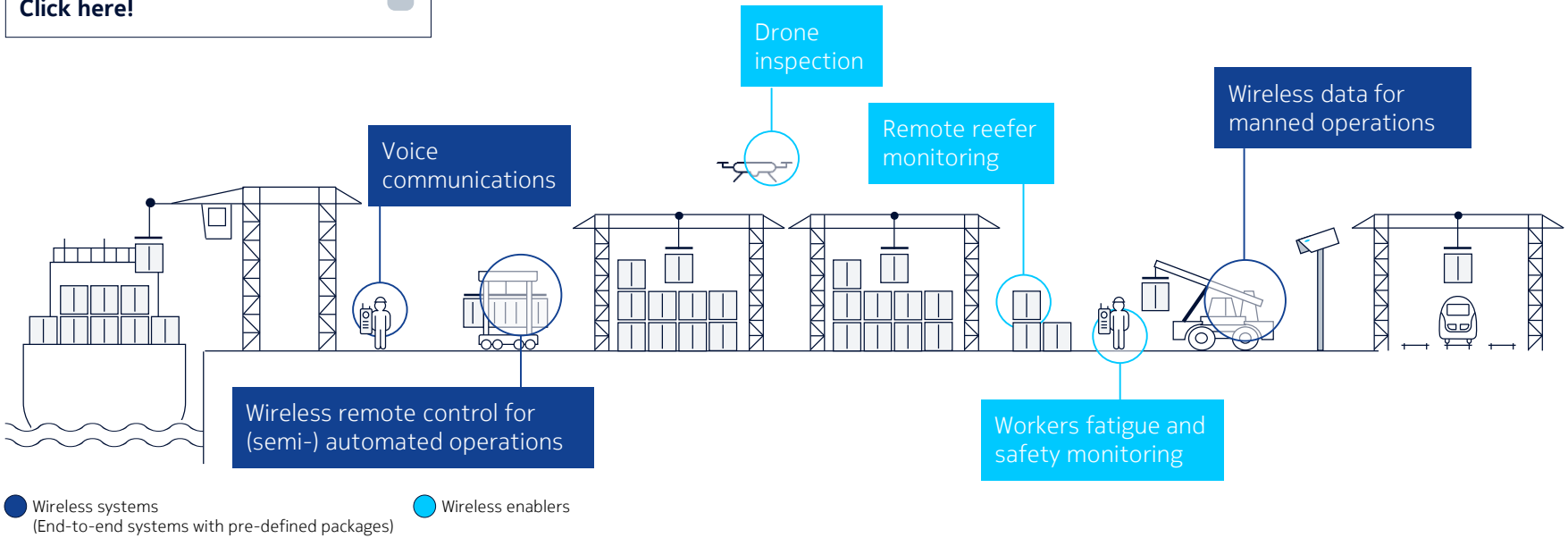
Remote controlled yard operations require – more than ever – highly reliable and available wireless across the yard. Most current wireless systems are not designed to meet the low-latency, mobility and video uplink needs of remote control.

A private wireless network from Nokia provides highly available, reliable and low latency wireless connectivity with Quality of Service across the whole yard. An end-to-end system design allows to transport industrial protocols required for remote control.

This reduces emergency stops and avoids system related accidents or injuries. In result, the productivity is increased.

Use cases for private wireless in terminal operations

Watch a use case video online.
Click here!



Global track record of reference projects

Our experiences include deployments for port authorities and terminal operators around the globe as well as partnerships with industrial players.

220+ private wireless customers worldwide

Steveco, Port of Hamina Kotka, Finland

Case study

Nokia together with its partner Ukkoverkot deployed a private wireless for solution at the Steveco terminal in the Port of Hamina Kotka in Finland.

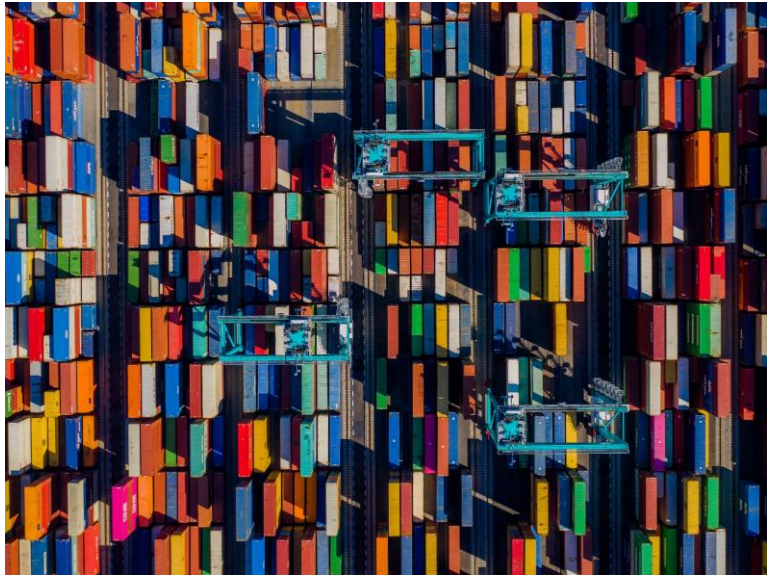
Steveco suffered from its existing Wi-Fi based wireless network that lacked both coverage and capacity to support modern terminal operations. Besides connecting cargo handling equipment in the terminal yard and in the warehouses for seamless information flow and asset tracking, the solution with its mobile broadband services enabled Steveco to improve situational awareness of cargo handling and terminal security by wirelessly connecting cameras on ship-to-shore cranes. These provide real-time video streaming and analytics.

The deployment leverages the Nokia Digital Automation Cloud solution.

Watch a case study video online.
Click here!

SSA Marine T5, Port of Seattle, USA

Case study



Nokia together with its partner Tideworks Technology will introduce its Nokia Digital Automation Cloud with high-performing private wireless across the yard of Terminal 5 in Port of Seattle.

Capable of delivering seamless wireless connectivity across operations, the deployment of private wireless will enhance communications between logistic parties. This will deliver major increases in efficiency, workers safety and terminal handling performance by reducing the complexity of port flow.

The solution also incorporates ruggedized tablets and smartphones for terminal-wide mobile voice communications and yard inventory applications.

“We want to be a pioneer in port digitalization and have therefore chosen a private LTE solution [...] as the basis for wireless critical communication in our port area.”

Mira Juola, **Port of Oulu, Finland**


NOKIA