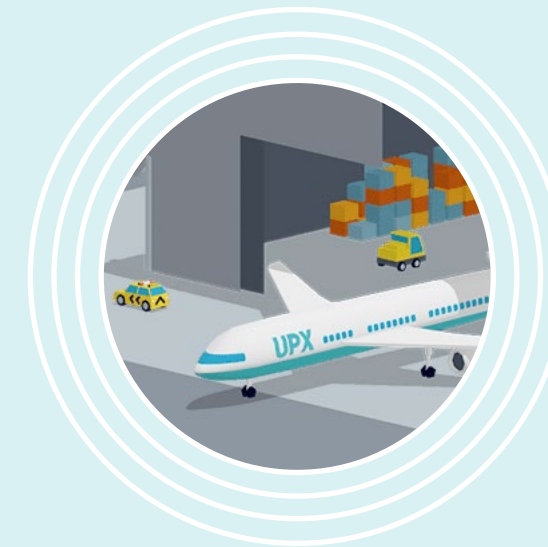




Your digital airport is cleared for takeoff
Nokia Industrial-grade Private Wireless for Airports

NOKIA

In this guide we look at how industrial-grade private wireless can help airport operators do extraordinary things, zooming in on practical use cases for creating new efficiencies, increasing operational awareness, enhancing the passenger experience, improving airport sustainability, and even creating new revenue streams.



Make Industry 4.0 a reality

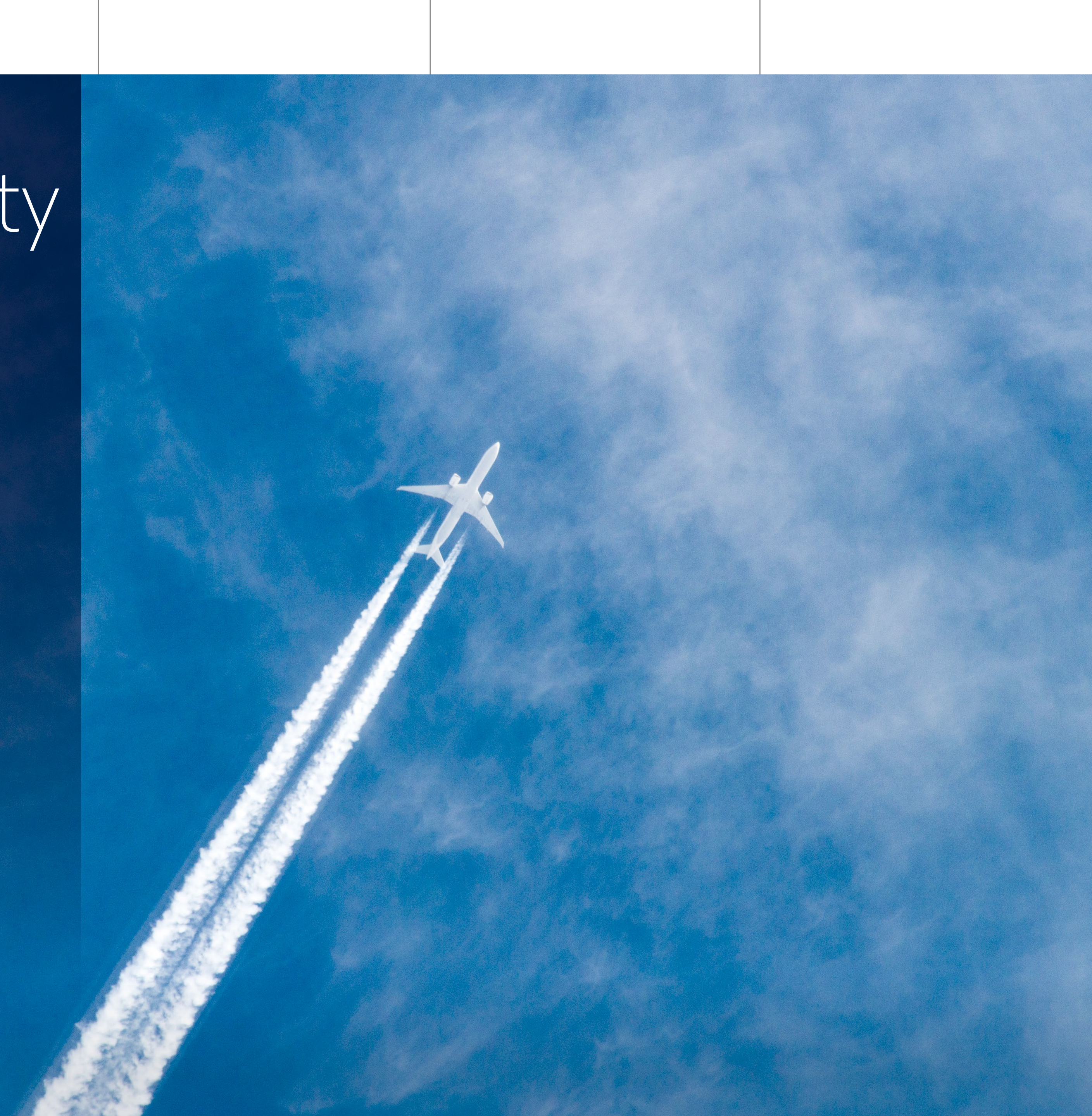
The fourth industrial revolution is well underway – but how are airports able to turn the possibilities of Industry 4.0 into operational realities?

The technologies – industrial IoT, AI, machine learning and more – are available to help you sharpen your competitive edge, enabling new operational efficiencies and automation capabilities throughout your airport.

But gaining all those advantages hinges on one thing: connectivity.

The trouble is, the shared wireless networks airports currently use to support operational and passenger services weren't built for the data-intensive, bandwidth-hungry applications that digital airports rely on. They simply can't deliver the low-latency, high-reliability, and predictable performance that airports now need. And with an increasing number of processes relying on wireless connectivity, the network is becoming a key strategic asset for airports.

To realize the promise of Industry 4.0 in your airport, you need industrial-grade, pervasive wireless connectivity dedicated to operational services. With a private LTE or 5G network, you can deliver real competitive advantage and prepare your organization for what's next.



Nokia Industrial-grade Private Wireless is here

The LTE networks that were once only available to mobile network operators are now within reach for airports

Governments around the world have been designating spectrum for industry, and Nokia has been pioneering small cell technology ideal for private industrial networks. That means you can deploy a purpose-built private wireless network with LTE and 5G capabilities that meet your needs.

You can meet critical operational connectivity requirements with a dedicated LTE/5G network built to handle the demands of digital airport applications, offering you:

- **Intrinsic security**
to ensure truly safe and reliable connection
- **Mission-critical reliability**
for guaranteed operational continuity
- **Deep, wide coverage**
to connect everyone and everything, eliminating prohibitive fiber costs at airside while ensuring nose-tail coverage to support above-wing processes
- **Predictable performance**
for industrial automation and real-time asset coordination
- **High capacity**
to easily handle the rapid growth of airport digitalization. An increasing amount of applications, analytics and processes use wireless connectivity. Capacity must be there, even during peak turnaround time
- **Operational autonomy**
airport operators can now provision required services themselves to respond quickly to changing business needs
- **Increased awareness**
built on trusted 3GPP mobile standards, allowing airports to gain better operational and situational awareness through mobile cameras for improved decision-making and greater security.



Nokia Industrial-grade Private Wireless for Airports

Connect and control your digital airport with a dedicated, reliable and secure network.

Today's airport operators rely on vast quantities of data to keep aircraft flowing through their airports and ensure passengers' journeys are as smooth as possible. In the digital airport, an increasing number of processes will be digitalized to support operational excellence and enhance the passenger experience, requiring reliable, secure wireless communication. This digitalization of processes will affect every operation and every airport stakeholder, from baggage handlers and ground service managers to APOC staff, airlines and emergency responders.

Airports currently use a mix of siloed, wireless technologies to connect people and support operations. Often though, these technologies have service quality or coverage issues, and they lack a clear evolution path; they're simply not equipped to support the bandwidth-hungry applications and the communication needs of the digital airport.

That's why one of the digital airport's most important strategic assets will be private wireless.



Enhance efficiency and effectiveness – from APOC to apron

Nokia Industrial-grade Private Wireless provides a purpose-built, secure wireless network that prioritizes operational traffic and protects your investment.

It provides guaranteed coverage and capacity, both terminal and airside, for greater situational and operational awareness, and ensures reliable connectivity to enable faster, more efficient aircraft turnaround processes. It also enables you to offer the optimum Quality of Service for different stakeholder needs and unify communications between all stakeholders for better decision-making.

From now to next

- **Aircraft turnaround processes:** Purpose-built wireless at the stand to guarantee coverage and capacity for digitalizing and optimizing turnaround processes (below and above wing)
- **Marshall applications:** Real-time data for 'follow me' cars on runway activity and projected flight traffic
- **Situational and operational awareness:** Reliable, flexible video connectivity for real-time insight into incidents, as well as air quality, noise, vehicle tracking, and speed sensors for additional insights
- **Operational efficiency:** Digital work orders to prevent staff from having to return to HQ for new orders, and secure wireless CCTV for stand analytics, with cameras flexibly positioned at airside



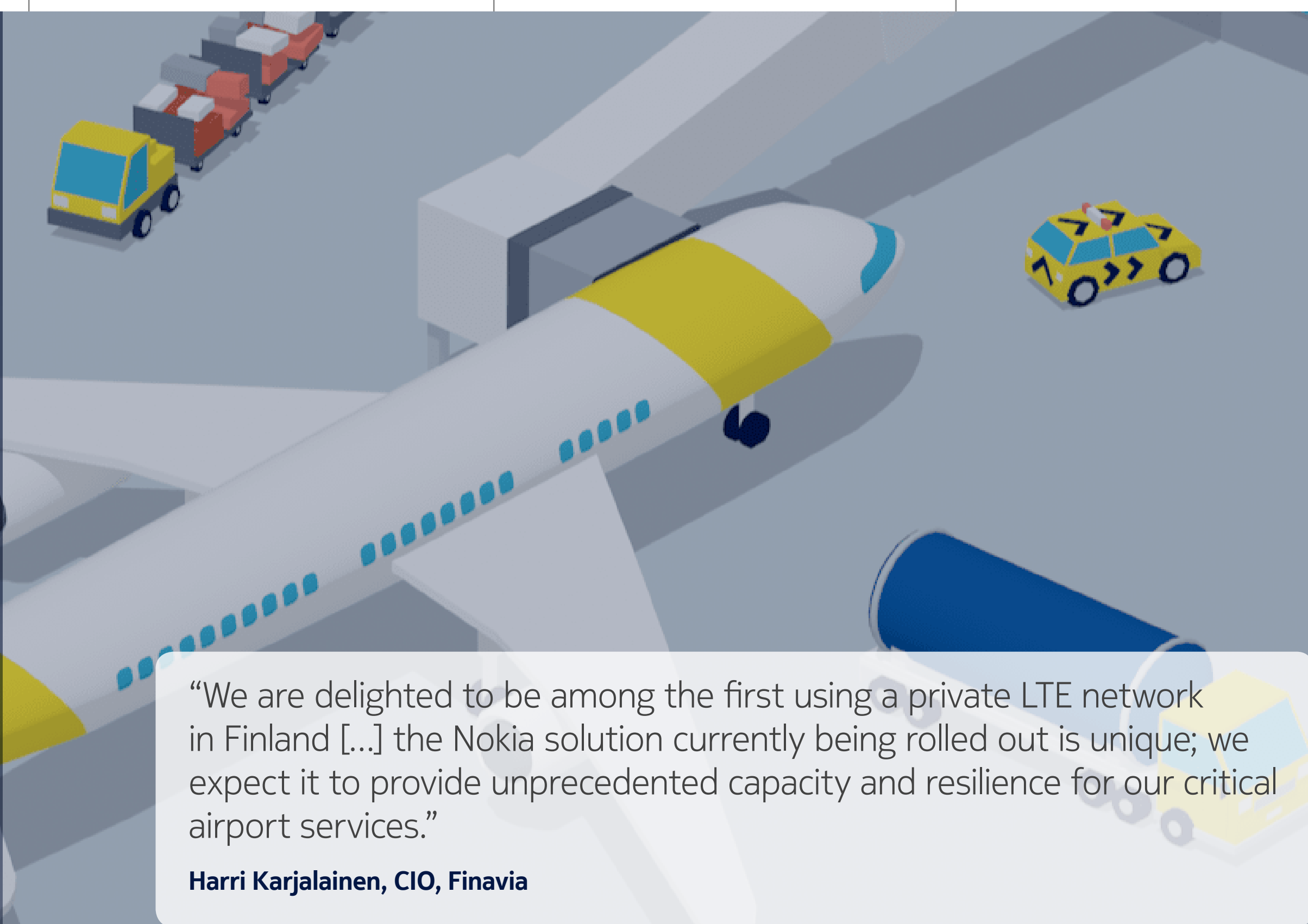
Aircraft turnaround processes

Get unprecedented connectivity for critical communications and real-time insights across your airside operations.

Give marshals instant updates on all runway activity so they can guide pilots to the right locations more efficiently. Secure and accelerate turnaround times with reliable wireless connectivity to tablets, baggage scanners and other below wing devices, enabling de-icers, baggage handlers and ground crew managers to operate more efficiently.

Private wireless connectivity also enables you to offer value-added services to airlines. Cost-effectively offload aircraft diagnostic and operational data over a secure, reliable connection. And use pervasive connectivity to deliver real-time updates for the above wing process: directly to pilots' electronic flight bags and the tablets of cabin crew within the aircraft.

- Reliable, secure connectivity for airside operations
- Real-time runway and flight information in 'follow me' cars
- Scan and process baggage more efficiently with low-latency connectivity
- Superior coverage throughout the entire airport site, with the flexible deployment of airfield sensors enabling complete visibility without the challenge of wired connectivity
- Update pilots' EFB and get the latest passenger information to cabin crew tablets
- Secure, reliable connectivity allowing for paperless processes
- Rapid, cost-effective offload for terabytes of flight data



“We are delighted to be among the first using a private LTE network in Finland [...] the Nokia solution currently being rolled out is unique; we expect it to provide unprecedented capacity and resilience for our critical airport services.”

Harri Karjalainen, CIO, Finavia

Brussels Airport confirms its pioneering position in digital innovation as one of the first airports in Europe to install its own 5G-ready network. In addition to allowing a further optimisation of the airport's operations, the 5G technology will enable us to accelerate digital innovation and facilitate the integration of future technologies.”

Arnaud Feist, CEO, Brussels Airport Company

Enhanced operational and situational awareness

Respond faster to changing operational needs and emergency incidents with greater situational awareness.

Increase emergency center and APOC situational awareness and emergency responder effectiveness with reliable connectivity for remote control PTZ or thermal cameras on vehicles or at strategic locations. Control cameras and view footage in the APOC – with the video streams recorded and stored on site for verification and compliance purposes – to provide a deeper level of insight for better informed decision-making. And provide connectivity for wearables such as body cameras to keep personnel connected to dispatch and the APOC, delivering greater insight into officer safety and supporting improved decision-making.

Position wireless CCTV cameras anywhere at airside to eliminate blind spots and introduce stand analytics through wirelessly connected video cameras. In addition, relocate cameras at a moment's notice when you need to temporarily monitor specific areas such as construction zones, or when a high-profile gathering is taking place and additional visual insight is required.

- Wireless CCTV cameras for blind spot removal
- PTZ cameras on vehicles
- Connected bodycams with Push-to-Video
- Better-prepared emergency response as well as enhanced safety for emergency workers
- Enhanced APOC situational awareness



Improved passenger experience

Give passengers better connectivity and smoother travel experiences from check-in to take-off.

Move operational services onto private wireless and free up existing shared Wi-Fi network and public mobile network to give passengers a faster, better wireless experience. Increase passenger satisfaction and Airport Service Quality scores with improved connectivity. And provide consistent, streamlined travel experiences by using a dedicated wireless network to improve operational efficiency.

- High-quality, fast connectivity throughout the terminal
- Increase Airport Service Quality score
- Streamlined travel experiences
- Greater passenger satisfaction

Increasing non-aeronautical revenue

Turn your private wireless network into a revenue-generating asset.

Boost the return on your private wireless investment by offering specific wireless services to airlines, baggage-handling and ground crew companies, and aircraft maintenance, repair and overhaul firms. Use network slicing on LTE/5G networks to segregate and prioritize traffic to offer reliable, affordable wireless services. Reduce customers' operating expenses while creating new revenue streams for your airport by replacing incumbent service providers.

- Use private wireless investment to create new revenue streams
- Segregate and prioritize network traffic
- Commercialize wireless services for airport customers

Nokia Industrial-grade Private Wireless

To compete today, you need to transform your operations now. But it's difficult to get the most out of the Industry 4.0 technologies that will support your transformation when you're relying on existing wireless networks that just aren't up to the task.

You need industrial-grade private wireless: a dedicated LTE/5G network that offers the predictable performance, massive coverage and capacity, and built-in security and mobility.



Nokia Industrial-grade Private Wireless

We deliver networks that solve unique, industrial-scale challenges, giving you:

- **Remote management of resources:** Connect every site, device and person throughout the airport for greater visibility and control
- **Reliability:** Support efficient, round-the-clock operations and enhance operational and situational awareness
- **Security:** Gain peace of mind with an intrinsically secure, private network
- **Capacity:** Handle multiple HD video streams and thousands of sensor feeds
- **Performance:** Enable extreme automation and real-time coordination of manned and automated operations
- **Agility:** Make rapid operational adjustments to meet changing demands
- **Choice:** Deploy on-premises or in the cloud, owned or as-a-service

Why Nokia?

They might not know it, but more than a billion cellphone users worldwide rely on Nokia networking technology and expertise every day. And they're not the only ones.

With more than 1,550 mission-critical networks and more than 260 private wireless deployments around the world, our industrial customers trust us because we have:

- Extensive real-world experience in key industrial sectors, including designing, building critical communication networks for transportation, utilities and public safety organizations
- Deep relationships with airports, airlines and air navigation service providers around the world
- Industry-leading 4G and 5G wireless technologies end to end: small cells, cloud packet core, IP and optical transport, with common management and orchestration
- A rich analytics and application suite
- A powerful ecosystem of industrial partners
- Professional services to help build the business case and plan for the future
- End-to-end management and orchestration
- Engineering services to assist with design, deployment and maintenance
- Nokia Bell Labs innovations feeding market-leading solutions

Let's get started

To learn more about what you could achieve now with Nokia Industrial-grade Private Wireless – and where it could take you next – get in touch with one of our experts:

Nokia Industrial-grade Private Wireless gives you a dedicated network that solves the unique connectivity challenges your airport faces now – and that will be a strategic asset for your airport’s digital future.

Want to learn what reliable, secure, high-performance wireless connectivity could do for your airport? Get in touch with one of our experts today:



NOKIA

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

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

Nokia Oyj
Karakaari 7
02610 Espoo
Finland

Tel. +358 (0) 10 44 88 000

CID 207216

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