Aircraft maintenance, repair and overhaul

Improving operational efficiency and customer service with 5G

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MRO challenges

For aircraft maintenance, repair, and overhaul (MRO) companies, C and D checks are typically performed at the MRO's site. This has traditionally required the physical presence of the aircraft owners to take necessary decisions when visually assessing findings. The same applies when aircraft owners ask for modifications or conversions.

MRO companies are looking for innovations to improve operational efficiency, enhance customer service, maintain business continuity, and reduce their carbon footprint. So, they are interested in the possibility of remote inspections and some have been trying for some time to offer remote inspections based on Wi-Fi connectivity.

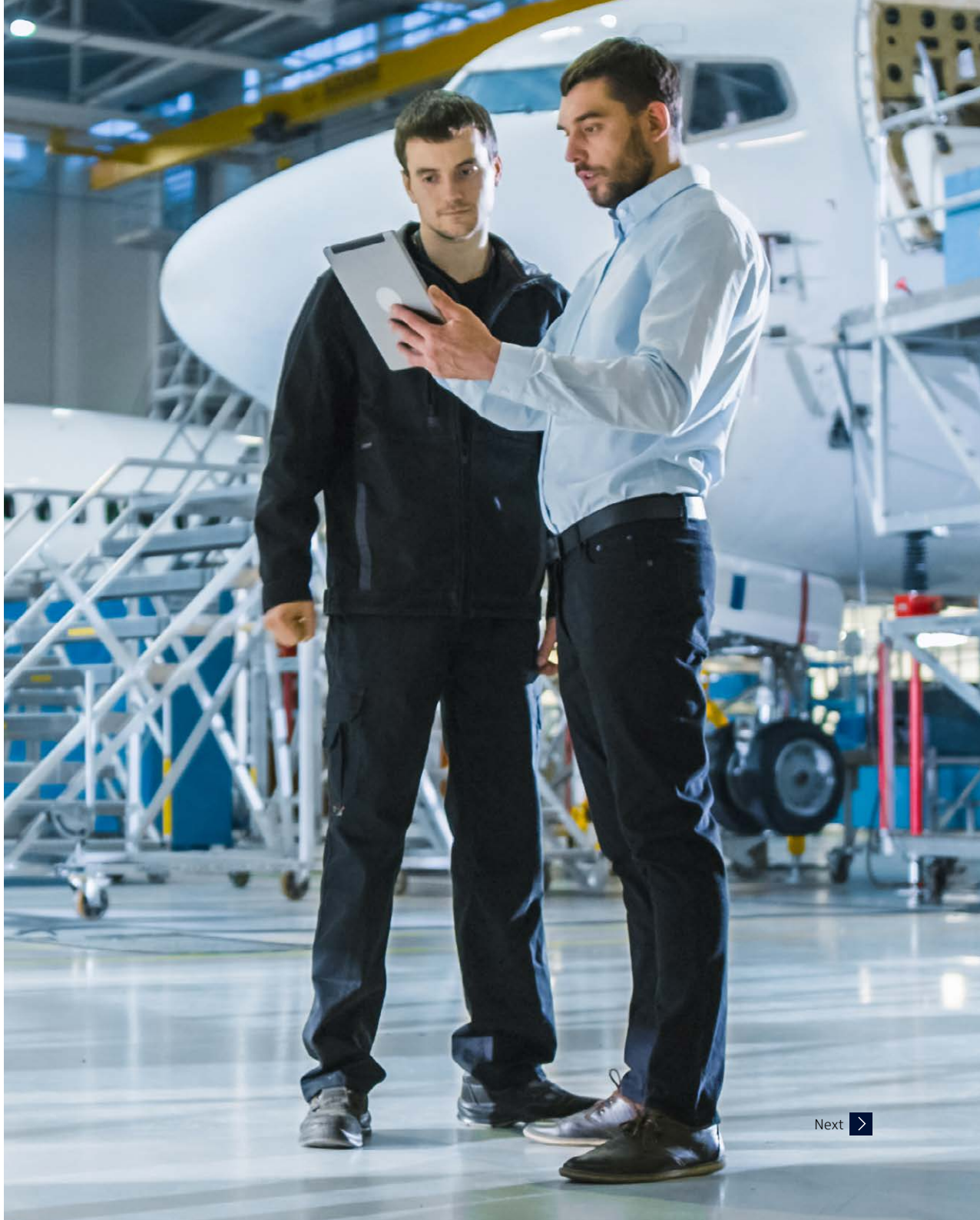
Wi-Fi performs poorly, however, in these MRO shop environments. The number of metal surfaces typically present can cause too much radio interference. Wi-Fi also lacks mobility features, hampering handovers from one Wi-Fi access point to another. As a consequence, the quality of the remote service to MRO clients is unpredictable — video streams stall and poor image quality prevents the MRO from offering a professional, efficient inspection. No MRO wants to expose its clients to such a poor service for such a costly and time-critical process.

The Nokia solution

The Nokia industrial-grade private wireless solution overcomes the limitations of Wi-Fi and supports high-quality, industrial-grade 5G, as well as 4G, private wireless. The solution provides high capacity, low latency, and ultra-reliable wireless connectivity that enables new use cases such as remote inspection and augmented-reality-assisted work processes.

Uplink speeds are very demanding for MRO during remote inspection because they need to stream high-quality video back to the client. 5G brings high bandwidth and low latency, combined with seamless handovers and service reliability — all mandatory to fully support this application and ensure best inspection quality towards the MRO client.

The Nokia solution ensures that the inspection can be carried out with the utmost fidelity and flexibility, thereby ensuring business and operational continuity. It simplifies the logistics associated with MRO inspections, thereby lowering costs, reducing travel and its associated issues, and guarantees that high quality remote inspection and approval can take place.



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MRO inspection use case: Lufthansa Technik

Lufthansa Technik, the MRO arm of the German carrier, asked Nokia to provide a wireless connectivity solution that would enable it to support remote inspections of engine overhauls and repairs with 4K UHD cameras. They were looking for much better performance than Wi-Fi could render, which was not able to provide reliable connectivity in their production environment. The application required four ultra-high-definition video streams in parallel in order to display the finest details of individual parts.

The Nokia Digital Automation Cloud (DAC) solution was able to meet the requirements of Lufthansa Technik. By embracing 5G as an essential component of their digitalization strategy, Lufthansa was able to reap the operational benefits that 5G brings at an early stage.

Lufthansa Technik — successful trial!

Lufthansa Technik is very satisfied with the performance of the 5G network, which has been deployed at one of their 8,500 sqm hangars in Hamburg. Since the beginning of the trial, it has reliably reduced the time and cost of inspecting engine overhauls for its civil aviation customers. The network uses private 5G spectrum that is available in Germany for enterprise use. Cellular radio such as 4G and 5G is much better equipped than any other radio technology to deal with challenging environments such as an MRO facility that is cluttered with metallic surfaces. This connectivity performance improvement translates into an efficient, reliable and accurate inspection process for the MRO and their clients.

The service has met the demanding uplink and downlink speeds required for the remote video application. Using the Nokia solution, Lufthansa Technik is able to virtually transport its civil aviation customers directly to the overhaul shop floor, while sitting at their desks in a remote location. This keeps customers abreast of the condition of their assets and enables much faster approvals and changes in the scope of work, without the need for physical presence.

Although unplanned, the Nokia 5G private network showed its utmost value during the COVID-19 crisis, where remote inspection was the only way for Lufthansa to continue their MRO business. The value for business continuity could not have been demonstrated more dramatically.

Lufthansa Technik — future plans

With the success of this “Virtual Table Inspection” trial, LHT is planning on extending the coverage to other hangars at their site and onboarding other use-cases that are waiting for 5G enablement. Soeren Stark, Lufthansa Technik Executive Board Member, responsible for Technical Operations, Logistics and IT said:

“The first application cases already impressively demonstrate the valuable contribution 5G technology can make to the aviation industry.

It will also pave the way for numerous new innovations at Lufthansa Technik that will benefit our company, our employees and also our customers.”

“It will also pave the way for numerous new innovations at Lufthansa Technik that will benefit our company, our employees and also our customers.”

Soeren Stark, Lufthansa Technik Executive Board Member, responsible for Technical Operations, Logistics and IT

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The Nokia private wireless promise

Lufthansa Technik, their MRO customers and other MRO providers are excited by the possibilities of our industrial-grade private wireless solution. It enables the digital transformation of many critical processes, allows them to rethink their existing processes and achieve enhanced efficiency, continuity and reduced cost.

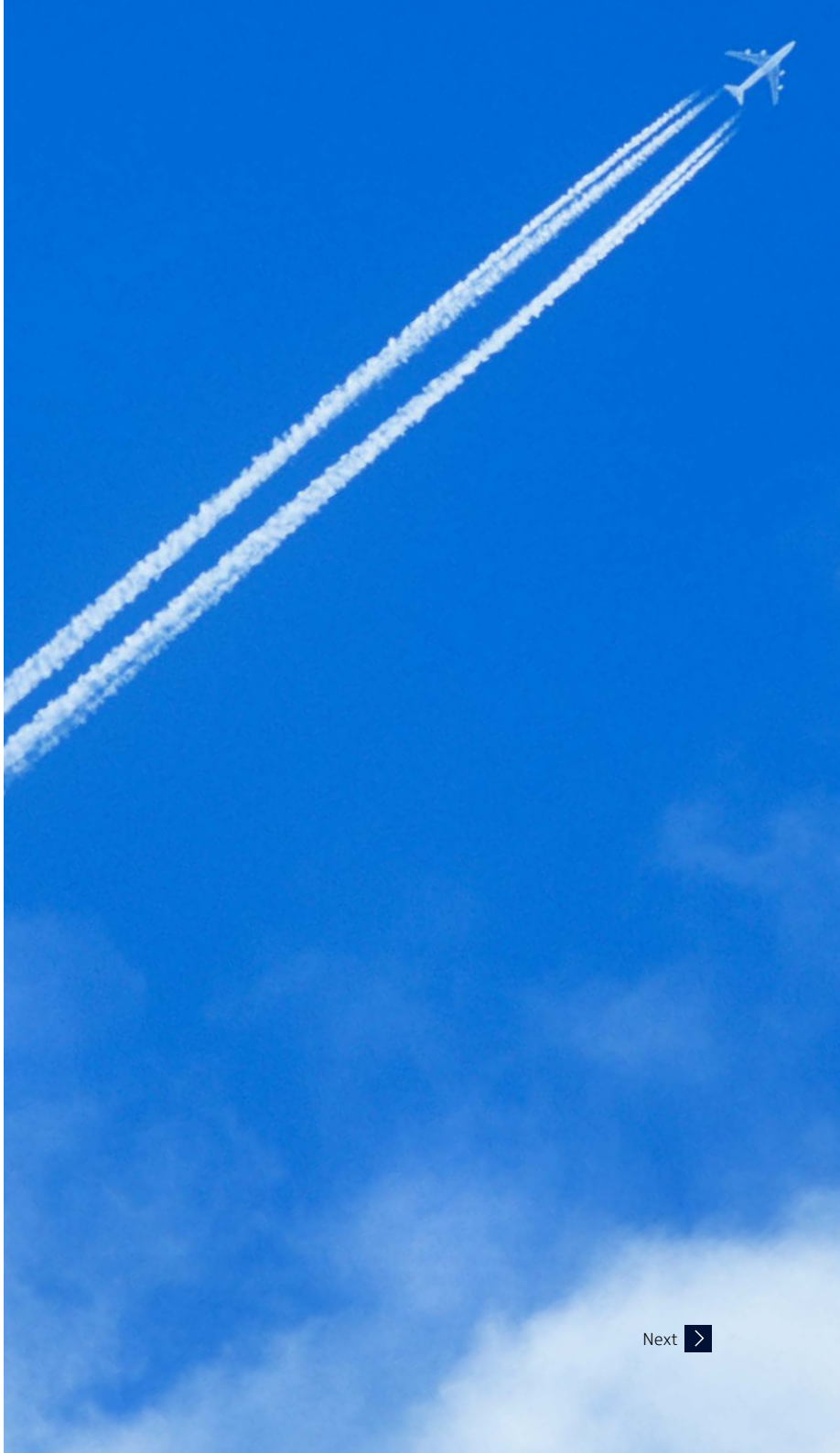
Intrinsic security to ensure truly safe and reliable connections

Mission-critical reliability for guaranteed operational continuity

Deep, wide coverage to connect everyone and everything

High capacity to easily handle the rapid growth of applications, analytics and processes using wireless connectivity

Other use cases that are especially attractive to MRO include the use of augmented reality and IoT sensor connectivity. Technicians can use 5G to support augmented reality applications that enables them to have databases worth of information at their fingertips as they conduct maintenance and repairs.



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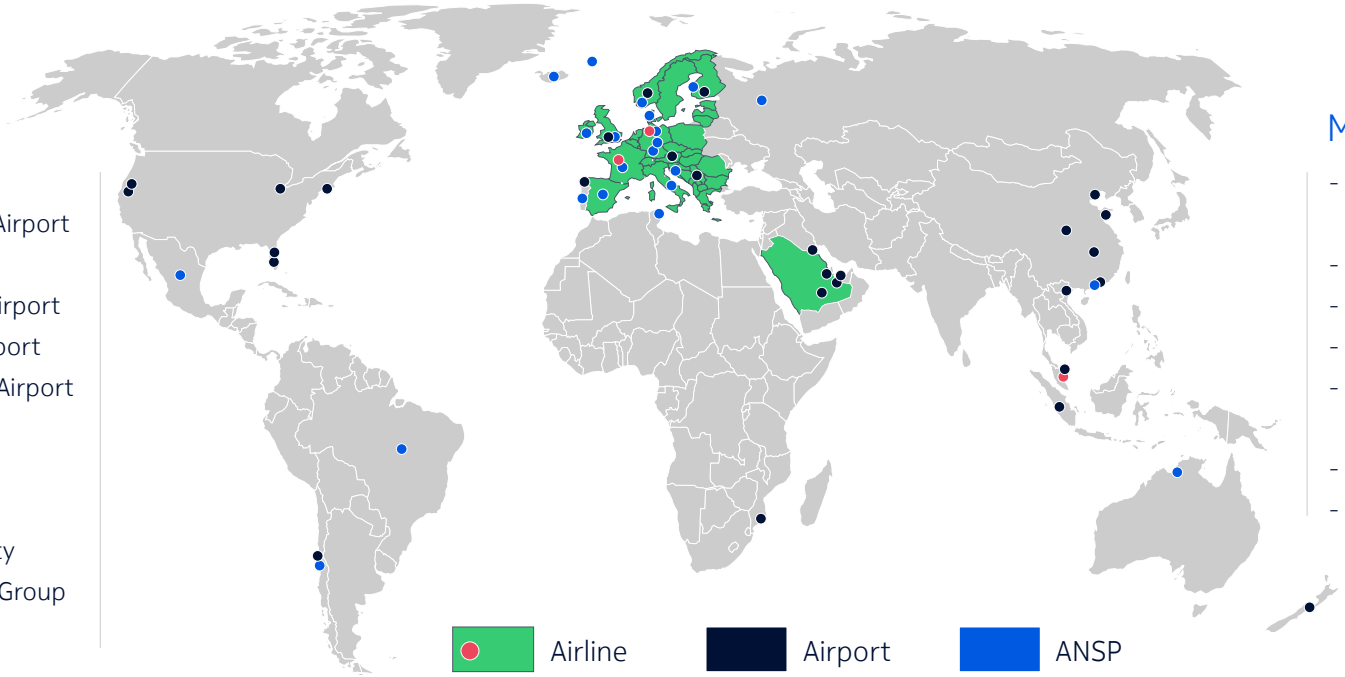
Why Nokia?

Nokia has extensive experience serving the aviation industry. Its client base includes ANSPs, airports, airlines, and MRO companies. The Nokia Industrial-grade Private Wireless solution gives you a dedicated network that solves the unique connectivity challenges you face now – and that will be a strategic asset for your digital future.

Sample Customers

- Helsinki Airport
- Vienna International Airport
- Brussels Airport
- Berlin Brandenburg Airport
- Berlin Schönefeld Airport
- Hamad International Airport
- ENAV
- Skyguide
- Avinor
- Irish Aviation Authority
- International Airlines Group
- Lufthansa Technik



Memberships

- Civil Air Navigation Services Organization
- Airports Council International
- Air Traffic Control Association
- EUROCONTROL
- International Civil Aviation Organization
- Seamless Air Alliance
- Aerospace Industries Association

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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.

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