INNOVATIONS.
OPPORTUNITIES.
DEVELOPMENT.

Private Networks

START

What is a Private Network?

Private networks provide resilience, speed and control in an enterprise network. They allow organisations to capitalise on 5G capability and provide a key stepping stone for companies looking to leverage innovations like advanced automation, VR/AR and robotics.

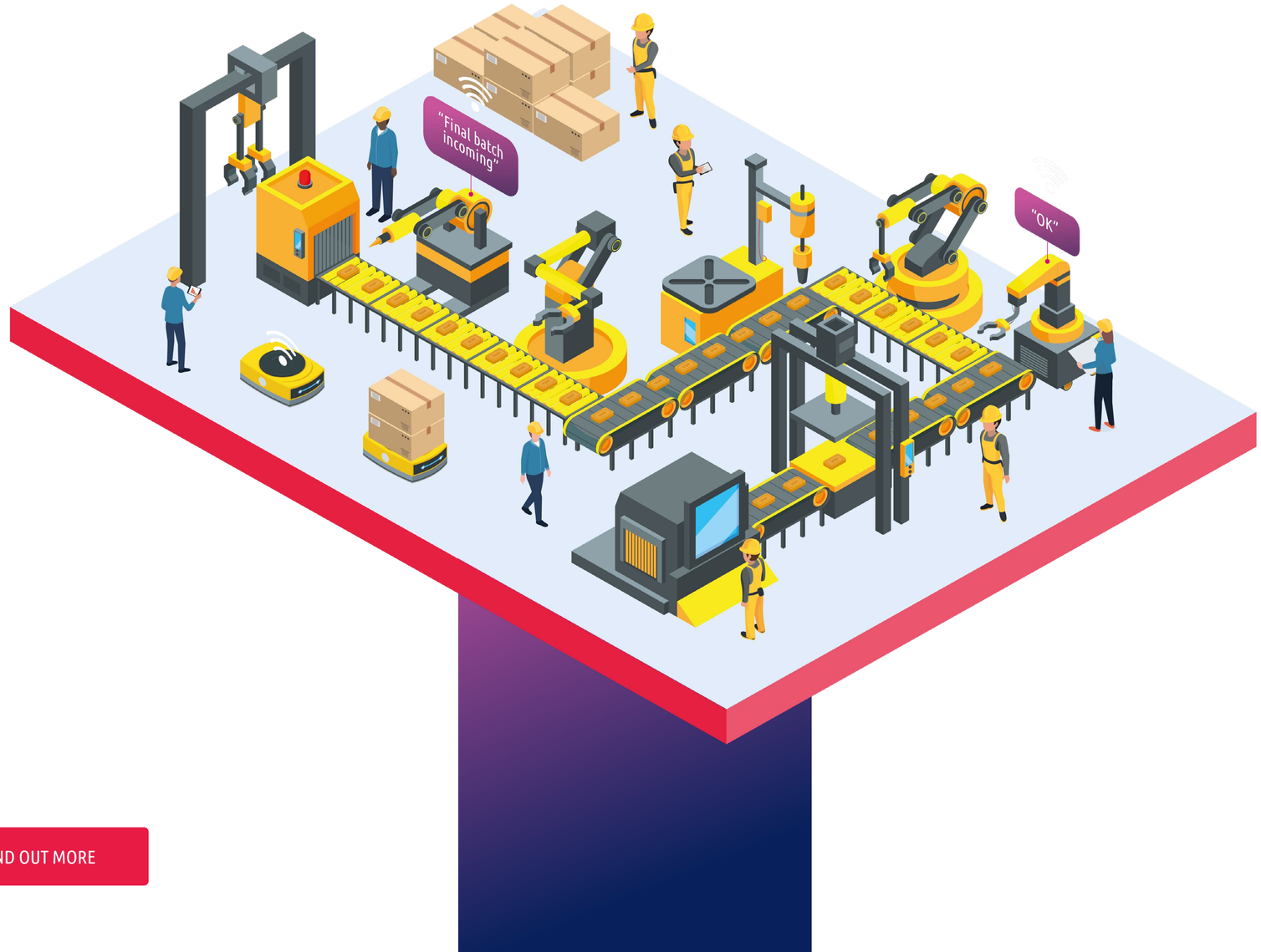
To create a 5G private network, cellular networks that are separate from the mobile operator's own cellular infrastructure are deployed on-site at an enterprise's premises, to support its mission-critical applications and services.

In large-campus environments, private networks are becoming an engine for change, giving better visibility across these highly complex environments and supporting them as they adopt transformative technologies like increased automation, robotics and autonomous vehicles.

Do you want to learn more about how a Private Network can help your organisation? Our Private Network experts, based at our Centre of Excellence, are ready to guide you.

Combined with edge computing, private networks allow fast and reliable data collection and analysis, which is facilitating real time decision-making and driving productivity and competitiveness.

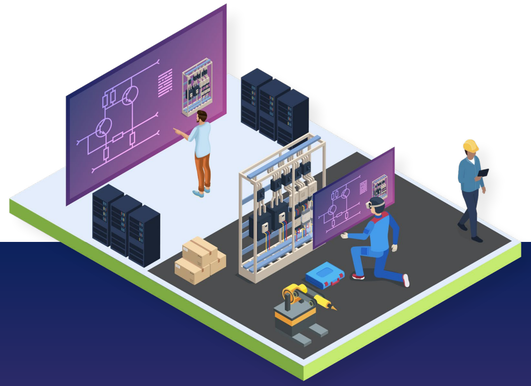
FIND OUT MORE



How are organisations using Private Networks as a digital enabler?

Mobile robots and Autonomous Guided Vehicles (AGVs)

5G private networks offer lower latency and enhanced coverage (indoors and outdoors) and are not as susceptible to interference as Wi-Fi. As a result, they create the ultimate environment for mobile robots and AGVs, allowing products and equipment to be moved from point A to point B safely and quickly across any large-campus environment. Mobile robots and AGVs elevate what can be a labour intensive and often unpredictable task by automating it, and with a 5G private network the process is infinitely smarter.



Virtual and Augmented Reality

Wearing a VR/AR headset, on-site technicians can be guided by the equipment or parts manufacturer to identify and repair a fault. In this scenario, businesses will no longer need to wait for the manufacturer to travel to the site. This vastly reduces downtime and is a boon to production efficiency. But true AR, with high definition video streaming capabilities, needs super-low latency to eliminate jitter, which can have a nauseating effect on technicians operating the device. A 5G private network, with its high data rates and virtually no latency, ensures the quality of the AR environment.

Asset tracking

A 5G private network means businesses have full visibility of all their devices, in real time. Sensors are wirelessly tracked as they make their way through the supply chain or anywhere in the campus environment, and a central dashboard displays the exact location of each asset. The benefits are obvious for sites such as airports, who are already using private networks to track airfield vehicles and other assets, and to prepare for future developments like autonomous vehicles and remote-control robotics.

Process automation

With its comprehensive coverage, and its ability to connect a huge number of devices or sensors, a 5G private network will change the game for process automation. Across large sites it will enable businesses to monitor and control even the most complex processes by automating sensors such as humidity, pressure and temperature and actuators like valves, pumps and heaters, all visible both from a mobile handset/tablet or via a centralised dashboard.

How are organisations using Private Networks as a digital enabler?

Predictive maintenance

Through continuous remote monitoring, businesses can view in real time how their equipment and machinery is performing. They can establish what normal looks like and identify early if a machine is under performing and may require maintenance. By applying predictive models, businesses can predict when their equipment will need maintenance actions making it easier to develop maintenance schedules and reduce equipment failures, emergency call-out costs and the downtime that comes with production stoppages.

Machine-to-Machine communications

For machine-to-machine communication to be effective, connectivity loss needs to be minimal. Even a millisecond loss of connection could lead to a breakdown of communication at a critical moment. As a range of industries -- including manufacturing plants, ports and airports -- continue to introduce autonomous vehicles, a 5G private network and its ability to effectively connect a large number of machines will be a game changer. The foundations of machine-to-machine are already being laid by advanced shipping ports, where autonomous container handling equipment uses high-reliability private networks to maintain continuous connectivity even in the dynamic quayside environment.

Dynamic environments

With no need for cables, large machines, such as printing or packaging machinery, no longer need to live in a set place. They can be moved with minimal disruption to specific locations when required; entire factory setups can be revised faster and more efficiently to accommodate changes in production schedules. In this wireless environment, 5G private networks deliver the consistent connectivity businesses need to ensure the machines being moved are still connected and operational.

VIEW INFOGRAPHIC

Private Network Benefits

With faster speeds and throughput rates, lower latency and extended coverage, 5G private networks have replaced WiFi in large campus environments and ushered in a new era of connected and automated machines.

Guaranteed uninterrupted throughput:

With its interference-free signal and seamless handover between base stations, a 5G private network means enterprises can be confident of a reliable, continuous high-speed connection.

Low latency for responsiveness and safety:

Instant communication between machines and AGVs is made possible by the lower latency available with a 5G private network.

Coverage and connection density:

A 5G private network's broad coverage without the risk of interference across a campus is supplemented by greater device per km2 capacity.

Security:

A private network has highly secure encrypted radio transmission, which is considered the international standard for public and mission-critical networks. This reduces the risk of security breaches on the network.

	Data Throughput	Low Latency	Coverage	Connection Density	Security	Guaranteed throughput/no interference
Mobile Robots and Autonomous Vechicles	✓✓	✓✓	✓		✓✓	✓✓
Virtual & Augmented Reality	✓✓	✓✓	✓		✓✓	✓✓
Asset Tracking			✓✓	✓✓	✓✓	✓
Process Automation	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Predictive Maintence	✓		✓✓	✓✓	✓✓	
Machine to Machine	✓✓	✓✓	✓	✓	✓✓	✓✓
Dynamic Enviroments		✓✓	✓✓	✓	✓	✓

Private Networks delivering reliable coverage at one of the world's busiest airports

Increased passenger demand is leading to a significant growth in air travel, and airports all over the world are dealing with record numbers of aircraft and people. At one of the world's busiest airports, an aircraft takes off and lands every 45 seconds. In this time-sensitive environment where seconds matter, communication is vital.

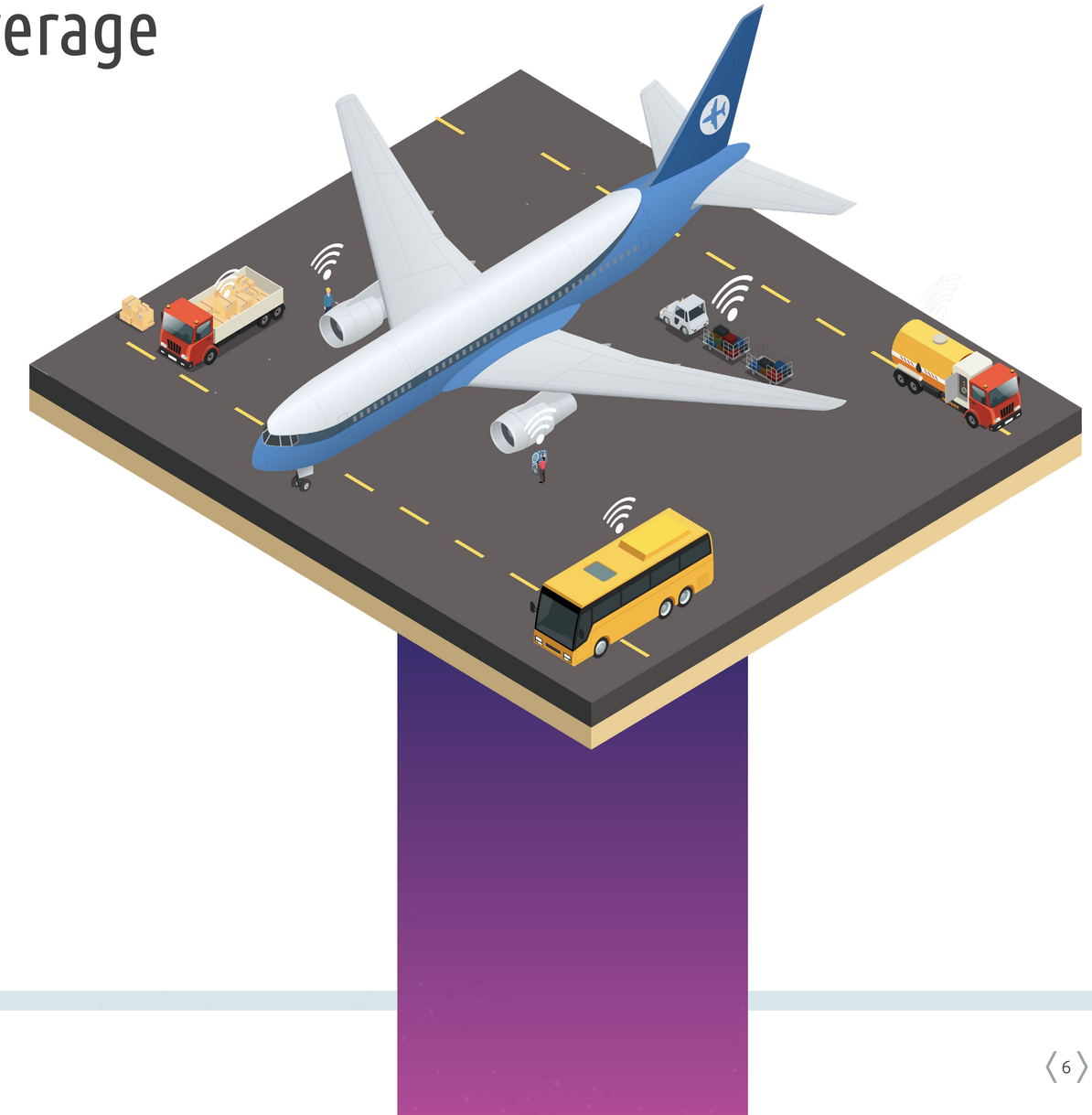
The world's busiest two-runway airport needed a network that would facilitate collaboration between its teams and guarantee no communication failures to ensure the smooth running of this challenging environment.

At this airport, equipment, employees and vehicles are spread across its 4.7 square-mile airfield. Any communication gaps between teams and assets could have a significant impact on the arrival and departure of aircraft. After a consultation it became clear that the airport needed a dedicated and reliable network that was capable of bringing connectivity to all areas of the airfield that is unimpeded by passenger network demands.

This always-available network would form an essential part of operations and provide essential oversight of employees and equipment.

A private LTE network was installed at the airport to address these issues, bringing consistent connectivity to all areas of the airfield. Increased reliability in communications has improved team collaboration and enhanced maintenance and safety procedures where multiple teams need to work together under tight deadlines. Engineers are now able to collect real-time data, reducing the time spent dealing with any issues, and with connectivity reaching every corner of the airfield, the airport can keep track of all its assets. The private network has also facilitated the rollout of remote stand entry guidance systems, boosting air traffic flow. As the airport looks to a digital and automated future it knows it has the foundational network in place to embrace new technologies.

WATCH VIDEO



Private Networks driving digital transformations

Driving efficiencies at global ports

A 5G private network offers the ability to scale and take on new innovation like automation and remote control quickly. The potential for automation in the port environment is huge: remotely operated cranes can deliver efficiencies gains of up to 25%. In a sector where it's all about unloading cargo off ships and into the distribution network as quickly as possible, gains like this are a game changer.

Enabling cost reductions across the world's airports

With its lightning fast speeds, low latency and ability to connect thousands of devices, a 5G private network opens the door for automation and computer-operated remote control. From a centralised hub specialist engineers can use VR/AR to guide employees through machine maintenance, increasing their own efficiencies and reducing the need for on-site visits.

Helping to build connected factories

With a 5G private network, manufacturing firms can embrace automation, IoT and remote control to transform their operations. Robots, sensors, software, and tools, and other devices can all be connected, working in harmony to predict machine downtime, servicing and maintenance patterns, and other potential issues.

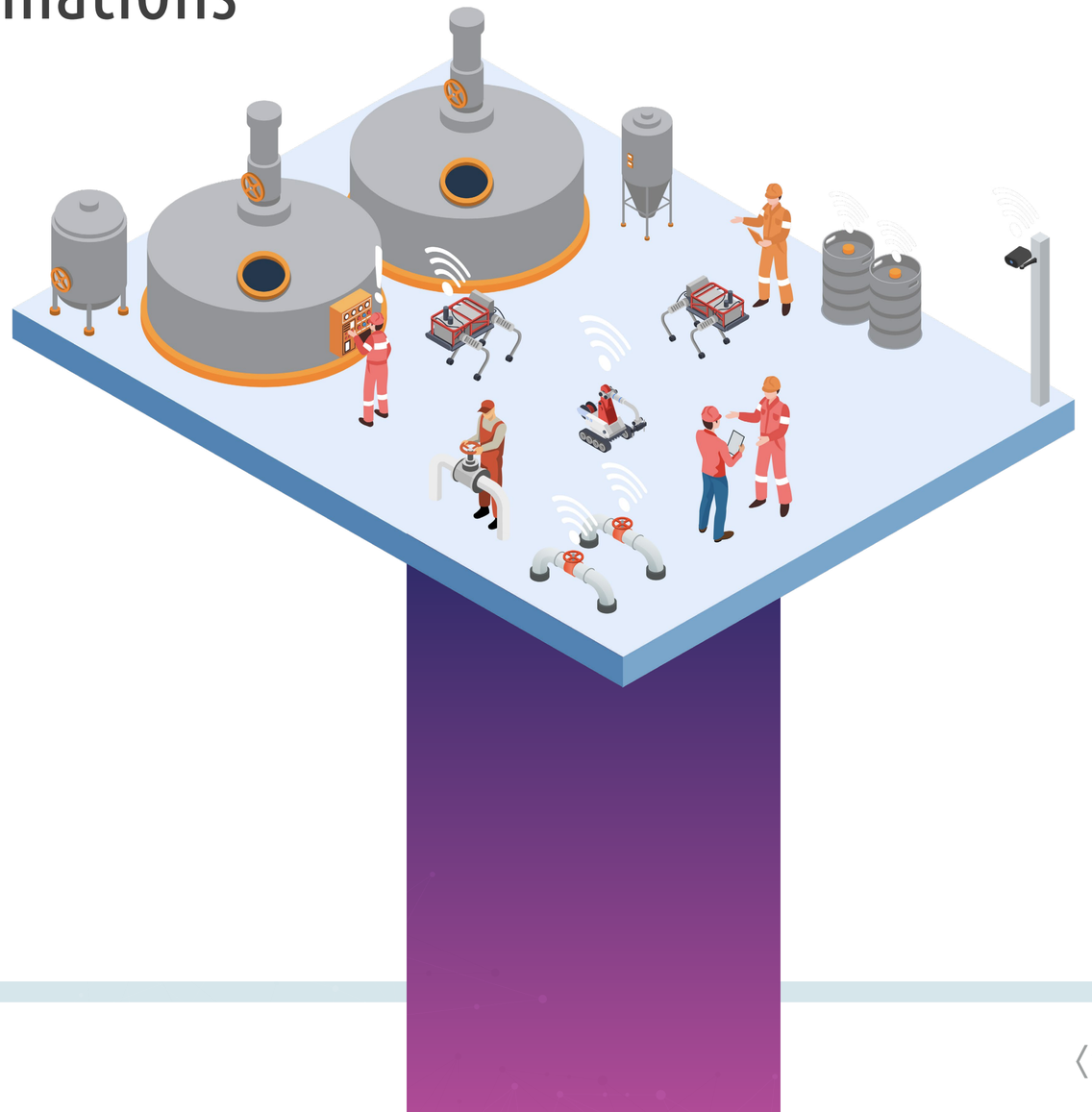
Ensuring safety and reliability in the utilities sector

With its reliability and ultra-low latency connectivity a 5G private network means utilities firms can automate routine tasks with robots. A private network also allows utilities to place a sharp focus on worker safety with proactive notifications of potential safety hazards.

Streamlining and safeguarding the healthcare sector

In a healthcare setting 5G private networks deliver the reliable connectivity and zero-latency that means surgeons can use AR to directly access enhanced clinical information. With security built in, a 5G private network enables the safe exchange of confidential patient data.

VIEW INFOGRAPHIC



Private Networks delivering reliability for one of the UK's busiest ports

As large ports face increased cargo volumes and demands for faster turnaround times, reliable connectivity has become critical. One of the UK's busiest ports needed a robust, port-wide network that would help it increase operating efficiencies and facilitate the adoption of autonomous vehicles and remote-controlled cranes. The network would also need to provide a solid foundation for the port's new terminal operating system.

The port had previously relied on a WiFi network. However, after upgrading its terminal operating system, the port discovered that the WiFi network could not deliver the necessary throughput to support the new OS. After considering several connectivity options, it became clear that a private network was the only solution that would meet the changing conditions of the port and provide guaranteed connectivity throughout the port terminal.

A private LTE network was installed at the port, bringing consistent 4G speeds to all areas of the terminal site. This always-on connectivity helped drive efficiencies by improving access to the operating system for all port drivers, who were able to seamlessly move from one job to the next.

In an industry judged by how fast ports can move containers on and off vessels, eliminating connectivity lags has made a dramatic difference. Guaranteed connectivity has also helped improve safety measures at the port, which now has complete visibility of all workers and vehicles at all times. And the private network means the port can confidently look to the future and the adoption of autonomous vehicles, robotics and remote-controlled cranes.

WATCH VIDEO

Private Networks are creating smart factories

Elevating the efficiency and productivity of machines

A 5G private network has become integral to M2M communication. It boasts low latency performance, broader coverage across larger areas - indoor and outdoor - and a licensed spectrum, which isn't prone to interference from Wi-Fi - key to driving assisted engineering.

Rapid-fire date analysis for enhanced performance

Connected machines produce even more data throughout the manufacturing plant, such as those surrounding temperature, power fluctuations, and wear on mechanical apparatus. This highly granular data is collected in real time, and used to execute immediate decisions. This drives new efficiencies, such as prompt workstation replenishment, faster asset location through better tracking, and the avoidance of production line downtime through predictive maintenance alerts.

Adapting to ever-evolving demands

Free from costly, cumbersome cables, 5G private network-enabled factory layouts can be reconfigured quickly and at short notice, so manufacturers can adopt limited-run, just-in-time, and build-to-order approaches. This has the power to transform production lines, and meet consumers' rising expectations of high performance, low costs, and short lead times.

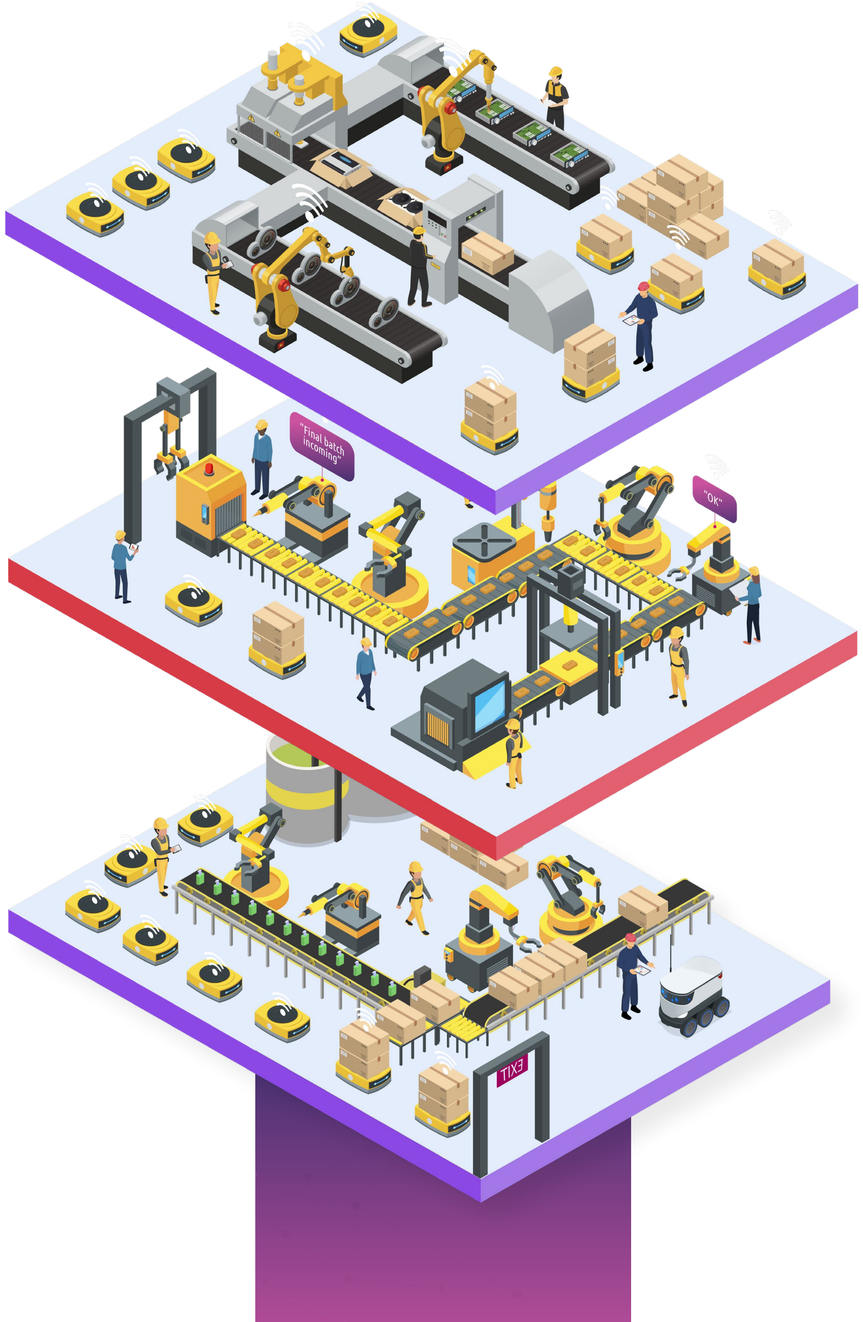
Delivering scalability, reliability, and performance

Drawing on a 5G network's higher capacity for device density, machines become more secure than when connected by Wi-Fi. Greater connectivity means more responsiveness, and makes adding new devices and sensors totally seamless. And because 5G is so reliable, it's easier to ensure user access to improved mobile connectivity for safety-critical equipment as it moves around the factory.

Making factory operations smarter

A 5G private network increases the use of smart tools in factories, as well as supporting AR and VR to improve quality assurance testing. With the evolution of robotic manufacturing, 5G makes robot tracking and repair more efficient, and supports more autonomous guided vehicles (AGVs). Factories can gain efficiencies and improve safety if they automate routine delivery and distribution of finished goods and components around their site. Data gathered from AGVs can integrate with other systems to produce rich insights, support decision making, and increase certainty.

FIND OUT MORE



Why 5G Private Networks?

Private networks are fast becoming synonymous with enabling digital advancement, particularly in sectors with large campuses that have struggled to find a connectivity solution they can rely on.

A reliable, secure and agile private network means organisations have the potential to increase the effectiveness of their processes and boost productivity. This steadfast and robust connectivity is a driver in the adoption of advanced technology like autonomous vehicles, condition monitoring and predictive maintenance.

We've seen how today's organisations are already tapping into the potential of a private network but we are just at the tip of the iceberg. As technologies and use cases evolve we will continue to see innovation and transformation happening across organisations in all sectors.

Learn how your enterprise can embrace digital transformation with a 5G private network.

We have designed and delivered networks for critical infrastructure campuses. Our ecosystem of IoT solutions and applications can be integrated into most environments, and 5G, the technology that separates a private cellular network form alternative solutions, is our core business. Our Private Network team, based at our Centre of Excellence for Private Networks, are experts in this dynamic connection alternative for large environments.

Learn how your enterprise can embrace digital transformation with a 5G private network.

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