

Enterprise Intelligence that creates a smarter future

Verizon's vision for the
manufacturing sector
in Singapore

verizon^v



Driving innovation in the new industrial age

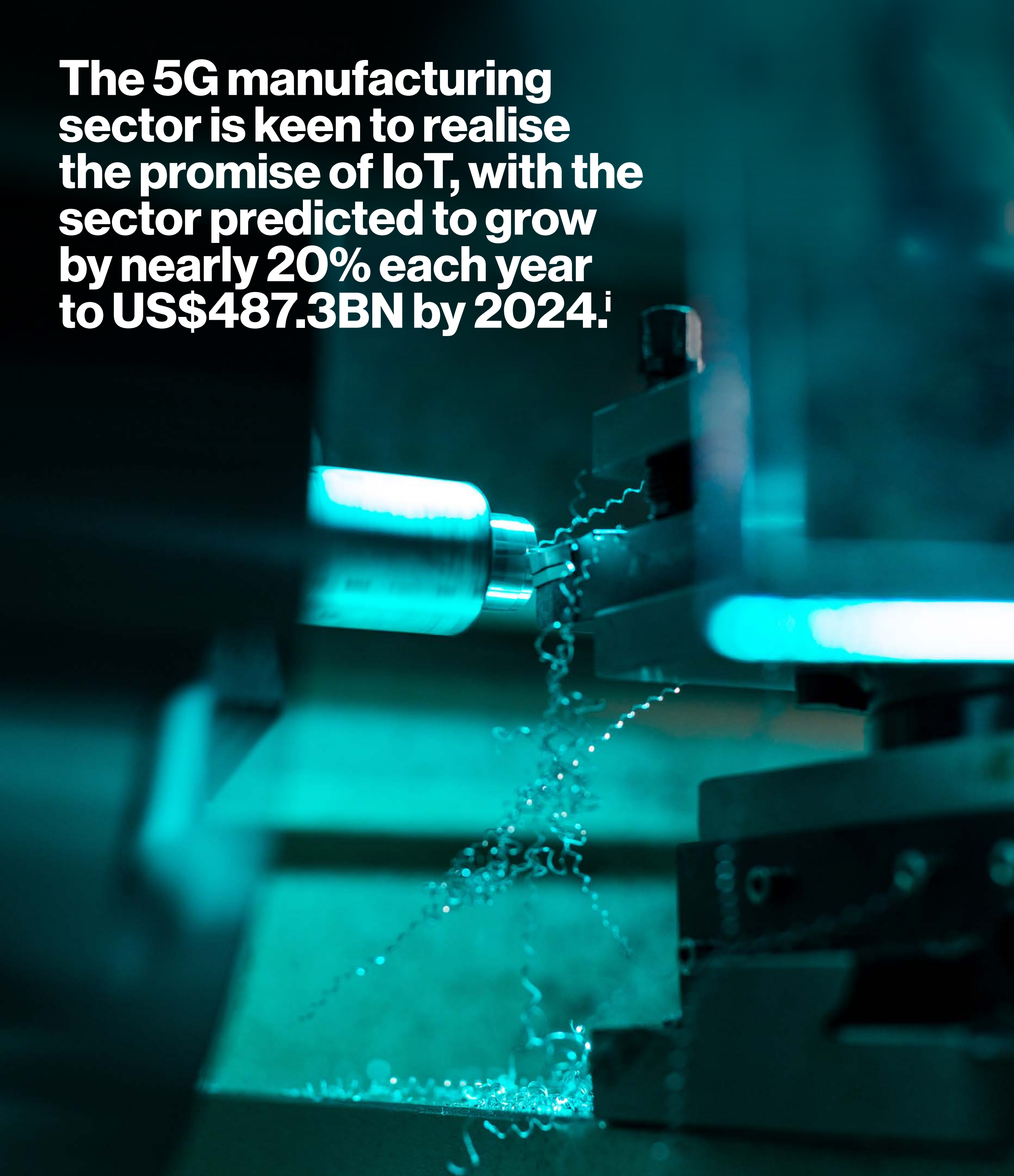
Moving towards Industry 4.0.

Manufacturing has been a hotbed of innovation since the first assembly lines were built. The drive to do things smarter and faster creates exciting opportunities to push the boundaries of what is possible.

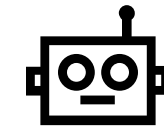
If data is the electricity that is driving digital transformation, then the Internet of Things (IoT) acts as a series of transformers, pushing energy around a circuit board. It creates an ecosystem where connected sensors channel data across the manufacturing environment. This allows siloed systems to 'speak' to each other, and this Enterprise Intelligence drives smarter insights, better functionality and faster decision-making.

Enterprise Intelligence can accurately predict maintenance and other requirements to reduce downtime and prevent machine failure, boosting overall equipment effectiveness (OEE), amongst other things.



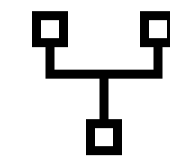


The 5G manufacturing sector is keen to realise the promise of IoT, with the sector predicted to grow by nearly 20% each year to US\$487.3BN by 2024.ⁱ



Industry 4.0

As we enter the fourth industrial revolution, the role that technology and data play in driving the pace of innovation is more important than ever. The convergence of IT/OT, robotics, artificial intelligence (AI), multi-access edge computing (MEC) and the cloud work together to reduce waste and make manufacturing more transparent.



Connectivity

Operating decisions are fed through connected sensors in an IoT-enabled environment, shaping many of the revolutionary aspects of the new industrial age. IoT data feeds into AI and machine learning (ML) programs, enabling MEC so that you can predict maintenance needs and make other proactive decisions – a result of true Enterprise Intelligence.



Security

Globally, cyber criminals directed more attacks at manufacturing than any other sector in 2021. Asia was the most targeted region, receiving 26% of all attacks.ⁱⁱ In response, governments have introduced new legislation to tackle the growing risk of cyber attacks. To meet increased security and regulatory compliance requirements, you need technology partners with solutions that are simple to use but sophisticated enough to keep modern cyber threats at bay.

Manufacturing insights in the Asia Pacific

Rising costs and labour shortages in mainland China have been the catalyst for two key trends in the sector. The production of lower order goods is increasingly being outsourced to Southeast Asia. And manufacturing itself is moving up the value chain through large-scale investment in robotics, AI and blockchain.

Asia Pacific is a global hub for manufacturing and accounts for nearly half the world's outputⁱⁱⁱ. As the region's economies rely on industrial sectors to drive post-pandemic recovery, investment in smart technologies is only going to accelerate.



Challenges of today

93% of APAC organisations place a higher priority on smart manufacturing than in North America and EMEA.^{iv}

So, it is important that the technologies used to create an ‘intelligent’ production environment can address specific manufacturing challenges.

Production quality

51% of consumers regularly share experiences with quality issues on social media.^v Therefore, improving quality assurance (QA) processes can help manufacturers protect brand reputation and build a competitive edge. QA driven by AI can spot up to 90% more defects than human operators. It can also help reduce yield detractor by up to 30%.^{vi}

Production output

Manufacturing needs to become intelligent – not just automated. Context-aware robotics can increase productivity by more than 20%. And output is boosted by a further 25% with automated guided vehicles (AGVs). Costs can be reduced by up to 10% with predictive maintenance capabilities.^{vii}

Work-related injuries

Safety is a top priority, especially as manufacturing sites can be hazardous places to work. In 2019, work injuries in US-based factories and warehouses cost manufacturers US\$171BN.^{viii}

Cyber security and data privacy

Cyber espionage has become one of the most significant threats to the sector. In Australia, 66% of organisations increased cyber security budgets in 2022, compared with 70% in Singapore.^{ix}

Manufacturing in APAC has experienced a turbulent few years

- The Singapore government is capping electricity costs for manufacturers
- New Zealand has had to import plasterboard from Australia because of material shortages
- Japanese steel prices have plummeted because of China’s lockdowns

Industry benchmarks: How do you compare?

APAC is reliant on manufacturing for economic growth. We can see this in its willingness to invest in smart technology, particularly IoT, to boost productivity and drive efficiencies.

APAC leaders are also much more optimistic about growth than other regions and understand the vital role technology will play in realising opportunities.

82% of APAC IT leaders are planning to expand into new markets in the next 12 months, compared with only 59% of decision makers in EMEA

75% plan to move more business functions to the cloud, to future-proof operations and drive growth^x

63% are increasing IT budgets post-pandemic – significantly more than all other regions

From 2022 to 2025, IoT spend is predicted to grow in:

- Smart manufacturing from US\$100.7BN to \$140.6BN
- Discrete manufacturing from US\$60.9BN to \$88.7BN
- Process manufacturing from US\$39.8BN to \$51.9BN^{xi}

Investment in smart warehousing and supplier network management is also forecast to increase to US\$21.5BN by 2024. This indicates manufacturers are embedding intelligence across the supply chain to increase resilience and reduce disruption.^{xii}

Verizon: We'll build a solution just for you.

Verizon can help make your vision of a smart manufacturing future a reality, faster. As your transformation partner, we'll co-create a production environment that is connected, efficient, safe and secure.



How we do it...



Optimise production monitoring

An IoT-enabled manufacturing environment helps you manage production with greater clarity than ever before. IoT sensors and cameras automate the collection of detailed production data, and analysis in the cloud predicts performance outputs.

AI can be integrated to adjust and adapt to change, and onsite 5G provides the connectivity to process monitoring data using 5G Edge. This optimises loading dock management and automates shipment planning and staff tasking.

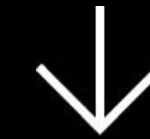
Identify maintenance needs ahead of time using ML. By taking a proactive, rather than a reactive, approach, predictive analysis applications improve operational efficiencies and reduce costs.



Strengthen quality control

Technology plays a critical role in ensuring that your organisation meets quality standards in a cost-effective way.

Identify and report defects in near real-time with cameras equipped with Verizon 5G, video analytics at the edge and low-latency computer vision. ML picks up recurring production issues to help reduce waste and improve efficiencies.



Minimise downtime

Gain operational insight, locate lost items and identify production bottlenecks with Verizon's long-range barcode scanning cameras and insights. A just-in-time production environment can increase automation and track items with enterprise resource planning (ERP) updates. Downtime is kept to a minimum by aligning production schedules with deliveries and expectations.

Computer vision tracks material movements end to end, and video analytics identify materials and locations, providing near real-time alerts. ML creates data models that predict production roadblocks and provide insights on how to improve processes.

Continues...

How we do it...



Protect workers from injury and minimise loss

Reduce the potential for injury by providing immersive training experiences using augmented reality (AR) and virtual reality (VR) connected via Verizon networks. Safety and worksite management is also improved using 5G applications and real-time safety monitoring with biometric and environmental sensors.

Verizon's technologies can also automate the detection of theft and break-ins and unauthorised use of machinery using geofencing and equipment tracking.

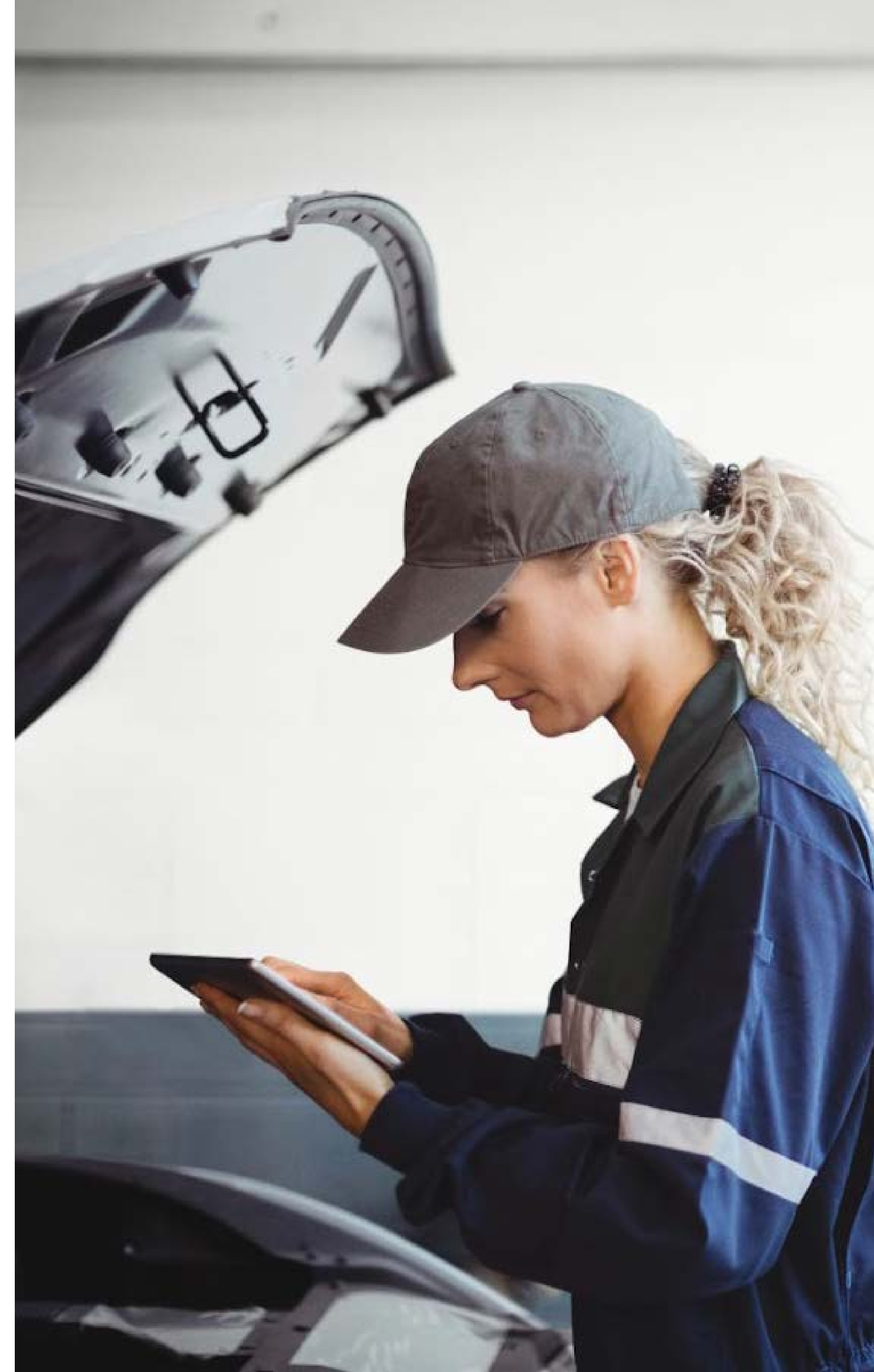


Boost your cyber security profile

Realising the full potential of Industry 4.0 at scale without compromising security depends on keeping endpoint devices and the extended IT/OT network aligned.

Verizon has a breadth of security experience in the APAC region and can protect your IoT devices with a verification layer created by digital and public key infrastructures. This is becoming a popular authentication technique for large-scale deployments.

We can help you stay on top of firmware patches, as outdated IoT devices are prime targets for security attacks. Verizon is also able to support your 5G manufacturing security strategy and take on the responsibility of testing for vulnerabilities in the security net.



How it all comes together



TATE & LYLE



Challenge

A global food and drink supplier needed a new, transport-agnostic infrastructure to drive global expansion plans.



Solution

A managed software-defined wide area network (SD-WAN) solution with intelligent routing control. Verizon installed remote circuits to maintain performance, even in isolated, hard-to-reach locations.



Results

Cut costs by over 10% through getting more value out of redundant network resources.

Increased application performance by automating the routing of traffic according to network quality and requirements.

Enabled global expansion with the seamless addition of endpoints in remote areas across 28 countries.

How it all comes together



Challenge

A leading manufacturer of three-phase transformers required a smarter, more flexible infrastructure to support global growth. The legacy multiprotocol label switching (MPLS)-based network did not offer end-to-end visibility across applications, making it impossible to optimise performance.

Solution

Deployment of a managed SD-WAN solution with intelligent routing control.

Results

Increased productivity through traffic routing automation.

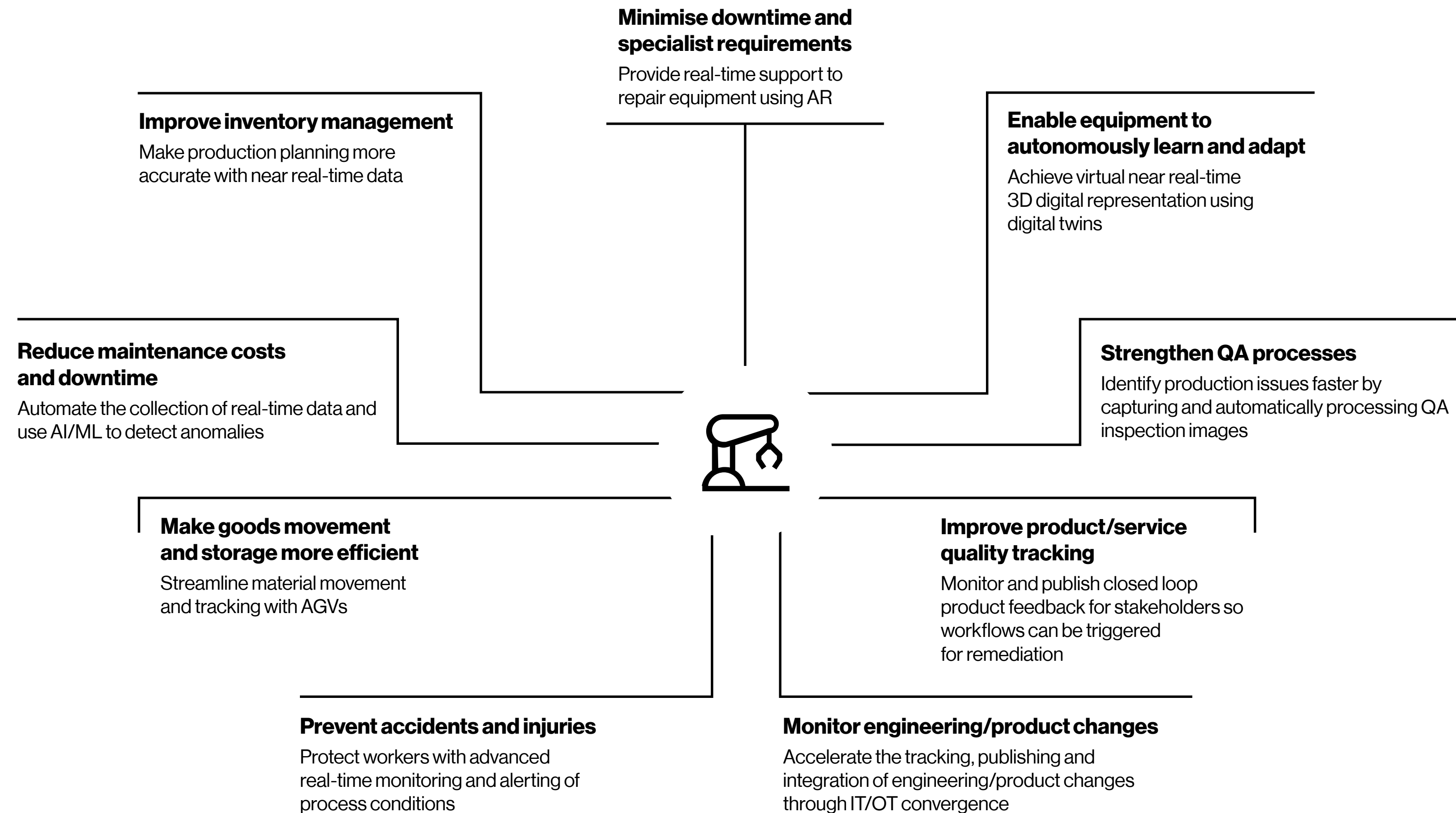
Enabled business growth through the automatic addition of endpoints.

Reduced costs through better utilization of redundant network resources.

Improved visibility through a centralized dashboard.

Smart manufacturing

Achieve production excellence with connected devices, sensor-based technologies, and automation.



The value Verizon adds

- A smart manufacturing environment in a single ecosystem
- Enhanced efficiency and quality across the manufacturing process
- A better employee experience by improving safety and reducing complexity
- Smaller, more adaptable facilities by improving alignment between production and demand

A strong local presence

Verizon has built a strong presence in Singapore. We employ a dedicated local team who operate from three locations – SGP Science Park, Mapletree Anson and an innovation centre at Ocean Financial Centre OFC. Our offering spans cyber security, advanced communications, secure network services, professional services and media.

Verizon takes security seriously. Here are some of our local and global capabilities:

Singapore

Managed Security Services

Advanced Security Operations

Autonomous Threat Hunting

DDoS Shield

Network Threat Advanced Analytics

Software Defined Perimeter

Ethernet access – Private IP

Private 5G

Partner Access – Starhub/Singtel

Secure Cloud Interconnect with
AWS/Microsoft/Google/Alibaba

Global

ISO 27001

ISO 27002

Payment Card Industry Data Security Standard
(PCI DSS)

National Institute of Standards
and Technology Cybersecurity
Framework (CSF)

National Institute of Standards
and Technology SP 800-53

CSA Cloud Controls Matrix

Cybersecurity Capability Maturity Model

Control Objectives for Information Technologies
(COBIT)



Our global strength

When you choose Verizon, you'll not only benefit from dedicated local resources, but our global capabilities too. This combined strength gives you unrivalled connectivity and protection from cyber threats.

99%

of Fortune
500 companies
as customers

9

security operation
centers (SOCs)
globally

150+

countries

2,400+

certifications and
training for security
team members each
year

34TN

raw logs processed
each year to protect our
customers and minimise
threat

We are also a globally recognised:

- Gartner Magic Quadrant Leader (Network Services and Managed IoT Connectivity Services)
- Omdia Global IT Security Services Leader
- Unified communications as a service (UCaaS) leader for enterprise

Next steps

Let's take our partnership to the next level with an executive briefing.

Verizon can help you progress towards your smart manufacturing future – no matter where you are on your journey.

We can also organize one of our Connected Future Workshops to help you define your future vision. By following a tried and tested framework, we can help you:

- Learn what industry leaders are implementing
- Walk through your transformation agenda
- Brainstorm opportunities
- Create a roadmap
- Decide on next steps

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- i. [IBM Security X-Force Threat Intelligence Index 2022 Full Report](#)
- ii. [IBM Security X-Force Threat Intelligence Index 2022 Full Report](#)
- iii. [SGInnovate: Trends shaping advanced manufacturing in APAC 2022](#)
- iv. [The State of Smart Manufacturing Report – Plex Systems, a Rockwell Automation company in association with Hanover Research](#)
- v. [Most Common Reasons for Calling Out Businesses on Social? - Social Media Today, 2020](#)
- vi. [Smartening Up with Artificial Intelligence – McKinsey](#)
- vii. [Smartening Up with Artificial Intelligence – McKinsey](#)
- viii. [The National Safety Council \(US\) – US Department of Labor](#)
- ix. [ExtraHop 2022 Cyber Confidence Index – Asia Pacific](#)
- x. [Increased IT Spending in Asia-Pacific Fuels Ambitious Expansion Plans – Interconnections – The Equinix Blog](#)
- xi. [APAC smart manufacturing IoT spending to reach \\$140bn by 2025 \(enterpriseiotinsights.com\)](#)
- xii. [Manufacturing technology investment trends in Asia Pacific from IDC – InfotechLead](#)

