ERICSSON

Connected Industries

A guide to enterprise digital transformation success

A report on digital transformation by Ericsson | September 2020

In this report

If it's a business, it's a digital business

Digital transformation has been buzzing through the landscape for more than a decade. Now the time for talk is over. The power of IoT multiplied by cellular technology creates a world of possibility that previously could not exist.

By 2025, five billion cellular connected devices will be chattering away with unprecedented potential. And with 5G becoming a reality, enhanced by AI and edge computing, cellular technology isn't just about a minor leap in efficiency.

It's about laying down the building blocks to liberate business. Inventing what's never been thought of. Secure the freedom to grow all over the world. And change the shape of enterprises to transform industries.

Let's get going.

Six key realities

Landing transformation in the real world

Ericsson interviewed 25 original equipment manufacturers in six different sectors to discover how digitalization could transform their businesses for good. Six realities rose to the top.

Business considerations

OEMs understand that if they don't digitally transform their businesses and products, they can quickly find themselves out of business.

Transformation

Reinventing to win in business, at the speed needed to keep pace with digital-native rivals.

Getting to market first with a digital product can make an enormous difference in capturing market share. The wealth of customer information captured provides insights the OEM can use to improve the product, foster customer intimacy and remain ahead of competition.

As well as complying with regulations, especially in some industries such as utilities and automotive, OEMs must meet rising safety and efficiency standards – and ensure their products, services and business processes are future-proof to meet these demands.

Optimization

Using digitalization to drive productivity and minimize inefficiency.

Productivity and efficiency are the main drivers for most IoT projects today. For instance, smart meters allow utility companies to save up to $200 per meter per maintenance trip by not needing a technician out in the field to read or fix them.

While digitalization is helping enterprises optimize operations and combat competitive cost pressure, information on how their products and services are performing and how customers are using them helps deliver better quality of service, proactive customer engagement and personalization.

Sustainability

Reducing consumption and powering an intelligent and sustainable environment.

More and more enterprises are committing themselves to the United Nations' Sustainable Development Goals in response to the growing public expectations on environmental and social issues.

Digital transformation is playing an important role for them to become socially and environmentally responsible in tackling global challenges. In logistics, IoT is helping to reduce the 30% of food wasted globally as it moves from farm to fork, while in automotive, connected safety cameras allow car makers to reduce collision rates upwards of 20%.

Gartner expects that by 2021, 50% of OEMs will use their IoT offerings to obtain customers' data on their usage in order to drive their own product strategy, up from 25% today; and by 2022, 75% of OEMs will use their IoT products to sell new services or consumable offerings to their customers, up from 28% today[1].

1. Gartner, "Drive IoT Product Strategy Based on OEMs' Benefit Priorities," Published 12 August 2019

Technology considerations

Digitalization

Automating and making smart use of data to make light work of heavy processes.

It's often said today, "data is the new oil." Digitally driven automation is replacing labor-intensive manual work with systems that are more accurate and cost-effective. It's also creating new business models, from connected products to as-a-service offerings in markets where they have previously not existed. Digitalization is driving many markets toward a consumption based model, with Uber as a very visible example, transforming the business model for consumer automotive and car ownership as a whole.

Security

A proactive, protective environment that spans the world without being breached.

Security is the most significant concern voiced by OEMs when it comes to digital transformation. They need to make sure their connected offerings — and, in fact, their whole digitalized business — can stay ahead of threats, both physical and digital, and they need to be able to protect the privacy of their customers, something that consumers, businesses and a growing number of laws are now demanding. Whatever form digitalization may take, it was clear in Ericsson's conversations with OEMs that security must be an inherent part of the transformation journey.

Flexibility

The foundation to get to market first, scale up fast, and keep growing your business.

The final technology consideration is flexibility. The business world moves quickly, so it's critical for OEMs to move rapidly from the initial idea to launching a new product or service. Additionally, in our increasingly globalized world, connected products must scale quickly and work anywhere — across town, across the country and across continents.

Finally, the accelerating rate of technological change makes it important to future-proof digitalized assets, especially those with long lifespans such as cars and smart meters.

Digital transformation in action

Denmark-based Grundfos began manufacturing and shipping water pumps in 1945. Now a $3 billion multinational enterprise, Grundfos is working with Ericsson to incorporate IoT into its pumps because, as commercial and industrial buildings become "smart," building managers and owners are demanding that every element of their infrastructure be connected.

Grundfos' goal is not just to shift from selling pumps as hardware to pumps-as-a-service; the ultimate goal is to provide water-as-a-service — all made possible by digitalization.

By building the IoT ecosystem for water management, Grundfos will remain an innovative leader in water management technology. With predictive analytics, Grundfos can determine not only when a pump may need to be replaced, but also how to optimize the flow and delivery of water. These analytic capabilities put Grundfos in a position to successfully evolve their business model. Grundfos adheres to their core values of providing ground-breaking solutions while improving the quality of life for people and taking care of the planet. Estimating that 10% of all electricity used in the world today goes to pumps – a figure that would drop to 6% if all pumps were upgraded to the latest technology and even lower with IoT, Grundfos is advancing the sustainability cause while standing to reap big savings in energy consumption by making its pumps intelligent.

Why cellular?

An unrivaled foundation for transformation

IoT is the heart of digitalization. The heart of IoT is connectivity. And cellular is the ultimate connector – the only technology able to provide a seamless, see-through view of the entire product lifecycle, from the first line of research to its decommission and reinvention as something else. So that when transformation happens, it happens as a whole.

The connected product lifecycle

Non-stop visibility from research to recycling.

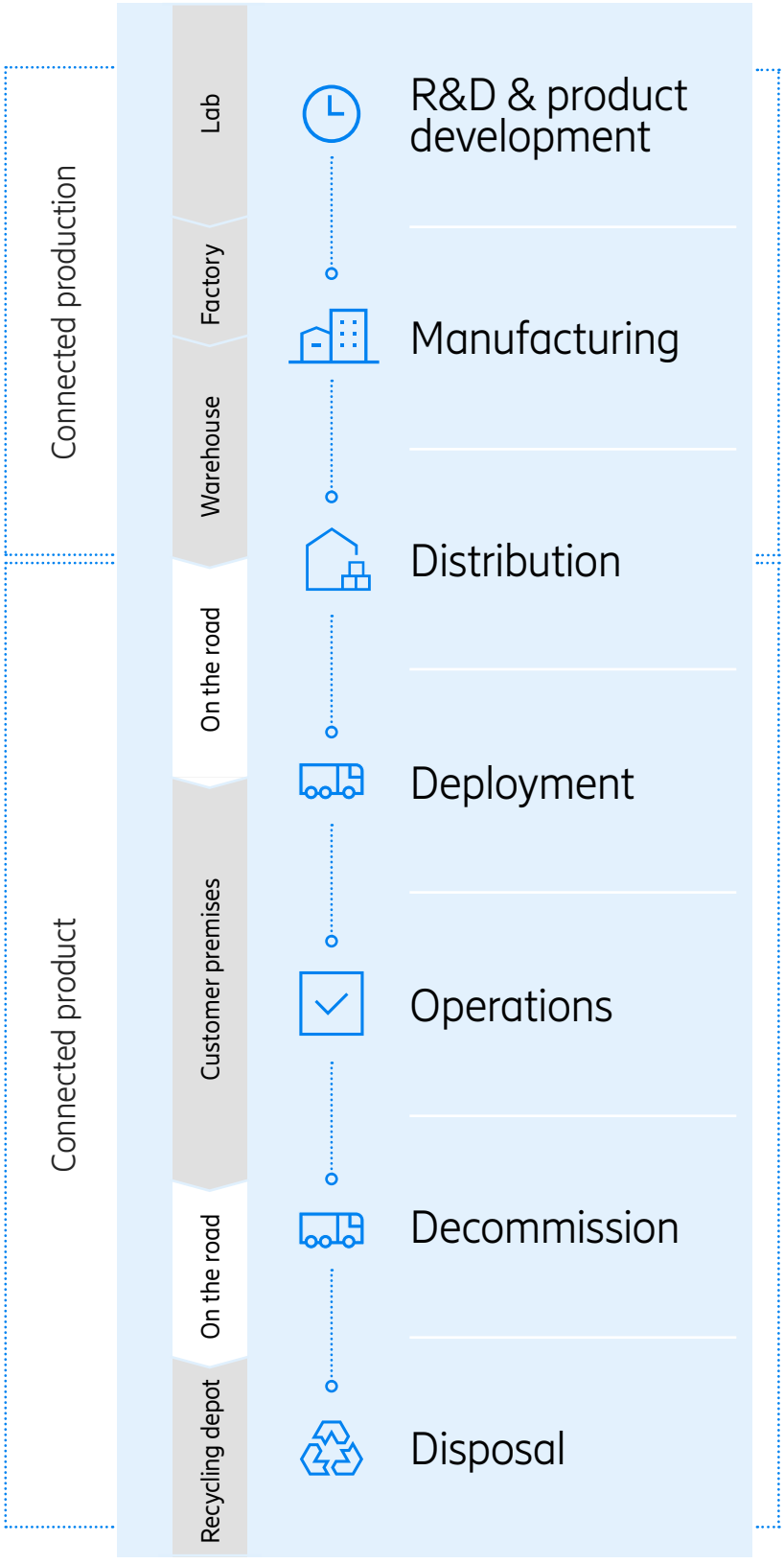
The connected product begins its life in the lab, before being manufactured at a factory. Once ready for use, it moves to a warehouse where it awaits distribution by some form of transport via land, air or sea. It will then be deployed at the customer premises and, over time, serviced and updated. Finally, at the end of its life, the asset is decommissioned, put back on the road and disposed of in a landfill or recycling depot.

Currently, the various stages of this lifecycle are typically disjointed and technology decisions in each stage tend to be made in isolation. As a result, enterprises lack seamless and transparent visibility of the product as it moves through the lifecycle.

With assets going through both the "connected production" and "connected product" stages, key questions that enterprises need to ask are:

- Will the connected products work across all sites? How about customers' and suppliers' sites?
- Will all of these sites support both current and future connected products?

While most enterprises do not yet have full visibility throughout the entire product lifecycle, the possibility for this new reality is here.



One for all

A single infrastructure for all sectors and devices.

01

Borderless coverage

02

Perfect performance

03

Built-in security

04

Uncompromising reliability

05

Complete control

06

Instant scalability

01

Borderless coverage

Putting the whole world in reach

Combining indoor and outdoor penetration with genuinely global coverage that moves easily across sectors and devices.

Cellular's global coverage enables seamless connectivity no matter where connected assets are located, which is a critical capability for products-as-a-service. Cellular can provide extensive indoor and outdoor support to reach every device, sensor and machinery. Additionally, cellular operates at long distances with global coverage for assets that are constantly on the move or distributed globally. There's no need to switch between different wireless sources, so coverage is complete throughout the entire supply chain.

02

Perfect performance

A platform to out-perform

Built on high-speed, low-latency technology with unparalleled positioning capabilities.

Performance is another key strength of cellular. Today's cellular technology provides high speed and low latency, both of which are enhanced even further with 5G. And when paired with location functionality, it can provide unrivaled positioning capabilities, which are increasingly important to many sectors including automotive and industrial. As a result, cellular offers both communications and positioning in a single, unified infrastructure. It also excels in energy efficiency: cellular technology has been optimized for power consumption, with cellular devices consuming very small amounts of energy. Long battery life is of great importance to long-life assets that may not have access to a power supply, such as water and gas meters.

03

Built-in security

Giving protection without restriction

Licensed spectrum couples security with control.

As a standardized technology using licensed spectrum, cellular is highly secure. Licensed spectrum also means cellular networks can support very large numbers of connected devices per square meter with predictable latency and performance. Cellular has built-in encryption and global identity management ensuring the most stringent levels of authentication and protection. Consequently, cellular-based IoT projects are inherently secure from their inception, instead of having to add security measures later on.

04

Uncompromising reliability

Outstanding predictability as standard

Reliability that doesn't waver, even during surges and peaks.

Enterprises need to accelerate the speed and scale of their digital transformation in order to stay ahead of the competition. Cellular provides the superior coverage and performance needed to achieve this. It is also the only technology that is able to offer seamless connectivity across different sectors, geographies and devices.

05

Complete control

Managing the whole without holes

With total and transparent visibility across the entire product lifecycle.

Cellular's reach means seamless communications from the factory, to the loading dock, through transport to its final destination. Furthermore, enterprises and their customers won't need to worry about coverage or managing logins for different locations. They can directly access and have full control over connected devices and data without having to rely on intermediaries such as another localized connectivity technology, another device or another OS platform, which could not only compromise performance, but also introduce privacy and security concerns.

06

Instant scalability

Powering growth on demand

Through the ability to scale on the spot, sparked by the exponential potential of new connections.

In a fast-moving business environment, it's important that connected products can scale quickly and work anywhere. The cellular industry's established global ecosystems present unique advantages for connectivity, with compatible devices, applications and chipsets woven into its rich fabric. Cellular is the only technology deployed today that can make global scale simple and seamless. Its high reliability and massive scalability allow it to meet the connectivity needs of even the largest and most demanding deployments.

5G-ready whenever you are

Compatible with all existing ecosystems, and set to soar with exponential new possibilities with the arrival of extreme low latency and network slicing.

Finally, cellular technology has a clear roadmap, with vast and diverse global ecosystems. With 5G now deploying around the world, the technology offers valuable new capabilities such as extremely low latency, high speed connectivity and network slicing for the most demanding SLAs and use cases. 5G will support enterprises, their partners and customers wherever their business takes them, whether that's new services, customers, use cases or markets and geographies. Plus, current cellular IoT technologies (NB-IoT and Cat-M1) are part of 5G and will continue to be fully supported and compatible with 5G networks.

Sector by sector

Three times the transformation

A look at three different worlds where cellular technology is setting new possibilities free.

Smart metering

Cities with a snooze button, grids that only eat when they're hungry, and a new reign of sustainable consumption ruled by the surge of smart meters.

Cellular technology is setting the world of energy free from wires, inefficiencies and unnecessary emissions.

As the world moves toward smart cities, digitalizing and optimizing the power and energy market will be crucial. National, regional and local governments are putting considerable political and regulatory pressure on top of rising societal expectations for utilities to dramatically reduce greenhouse gas emissions. To respond to these demands, utilities need automated, energy efficient smart meters to provide current data that will inform their strategies.

Smart metering offers clear benefits, ranging from automated meter reading, time-of-day pricing and grid communications, allowing for dynamic balancing of power demand and supply. While smart meters have been around for decades, they have mostly been connected via proprietary wireless technologies. However, cellular technology is rapidly making inroads because it provides clear advantages to better meet the sector's evolving needs.

Today, cellular-connected meters use NB-IoT and Cat-M1, which are well suited for meter use cases as they can provide coverage both indoors and outdoors. Additionally, because cellular smart meters only wake up while transmitting data, they offer excellent energy efficiency. Strict security requirements are another driver for cellular adoption, as cyberattacks increasingly target utility networks, deemed critical national infrastructure.

Looking ahead, near real-time monitoring and control systems, integration of renewable energy sources, and attempts by both metering and utility companies to enter the home and building automation markets will call for low-latency and high-availability networks. And because the meters themselves will be in operation for at least a decade, it's critical that connectivity technologies need to be future proofed. The cellular roadmap, with 5G capabilities, fulfills these requirements.

Enterprises:
E.ON, Ellevio, Kraftringen

Telecom service provider:
Telia Sweden

Partners:
ONE Nordic, Sagemcom and Landis+Gyr

Product:
NB-IoT network

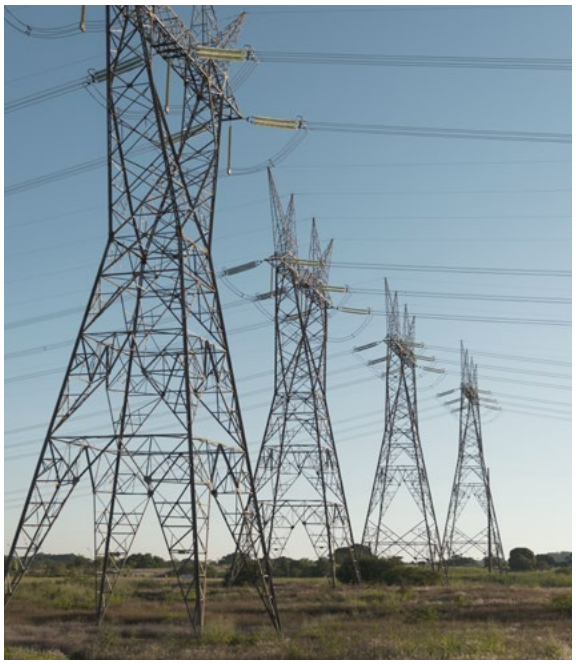
Country: Sweden

Telia

A smart start for Sweden

Swedish mobile operator Telia wanted to disrupt the traditional market for connecting smart meters in a power grid by providing better efficiency and interoperability through cellular networks. It was a tough challenge for Telia. They needed to convince large power companies that the legacy methods of connectivity they'd already widely deployed were not the best bet long-term. Previous methods of connectivity had created silos and prevented true smart grid development.

Telia's pitch to power companies was that cellular technology, specifically NB-IoT and Cat-M1, was a more economical, scalable and effective solution in the long run. Through proof-of-concept trials, it demonstrated that total cost of ownership of NB-IoT was lower than that of PLC and RF Mesh for last-mile connectivity, and that managing millions of smart meters was also simpler. Today, Telia and its system integration partners are in the process of converting and managing more than 2 million of the 5.4 million electric meters across Sweden with cellular-enabled meters from Landis+Gyr and Sagemcom for utility companies E.ON, Ellevio and Kraftringen.



Southern Linc

Telecom service provider: Southern Linc

Product: Private LTE network

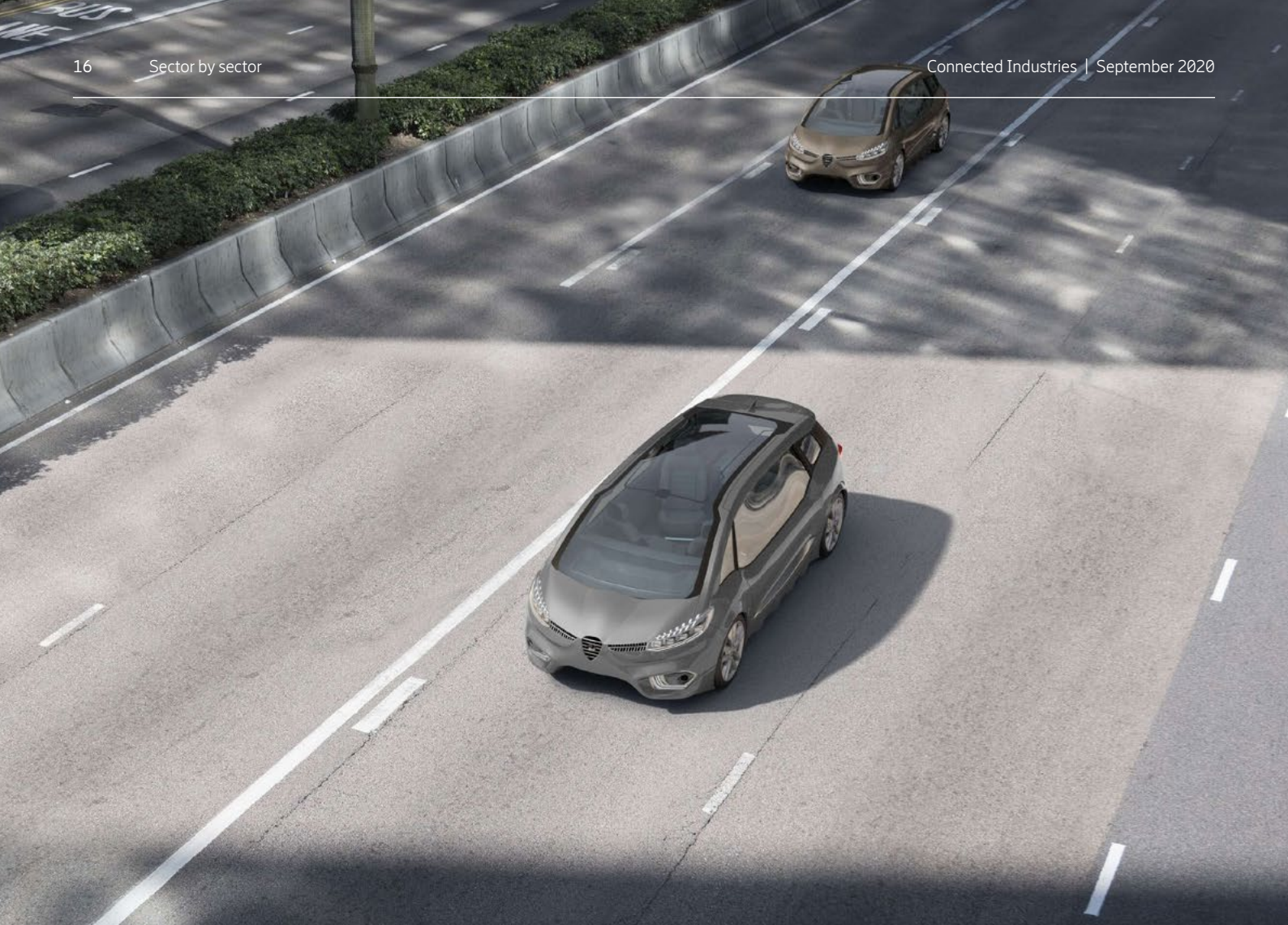
Country: USA

Southern Linc

Electric progress, in the face of extreme weather

As a wholly-owned subsidiary of The Southern Company, an Atlanta-based electric utility, Southern Linc provides network coverage to Georgia and three other states. Founded in 1996, it supports more than 20,000 SCADA devices that help control the electric grid for the Southeast United States. After almost two decades in operation, the company decided to overhaul its narrowband network instead of making incremental updates with the goal of increasing efficiency, security and reliability, especially in the face of extreme weather.

Southern Linc chose an Ericsson private LTE network solution, which now provides improved security, reliability, resiliency, low latency, priority and pre-emption. It also faced a serious test in 2017, performing well even as Hurricane Irma tore through Georgia. The dedicated network has recently been enhanced with mission critical push-to-talk (MCPTT) functionality, which will benefit utilities as well as first responders and other public sector agencies. Both the LTE network and MCPTT will evolve over time to cater for new capabilities, including the eventual deployment of case-based 5G.



Automotive

Collisionless cars. Cities that don't have traffic. Clean, green, driverless machines, and factories to make Mr Ford jealous.

Cellular technology is the engine in a self-driving world of safer, more sustainable and more amazing forms of vehicle.

With connectivity now an integral part of the modern vehicle, automakers are eager to incorporate not only telemetry, but also the emerging vehicle-to-everything (V2X) technologies. To date, cellular has proven to be the only viable technology capable of supporting telemetry applications such as vehicle location and engine function. Also, only cellular can provide global coverage, mobility and seamless connectivity across multiple geographies. And although 5G is not required for current telemetry use cases, it does provide the necessary future-proofing to ensure support for new product lifecycles.

The telemetry market is already large and growing, with adoption driven not only by automakers' need to gain efficiencies, but also by new regulations mandating new vehicles to be connected. Cellular is already a well-established and understood technology for both embedded and aftermarket telemetry solutions, with plenty of opportunities to create new business models: from remote control of vehicles and maintenance alerts to over-the-air software updates and even personalized insurance premiums.

Looking to the near future, 5G can uniquely enable assisted and autonomous driving as well as V2X capabilities. Finally, by combining cellular, edge computing and AI, entirely new use cases and business models will emerge. Hyper-personalization in a mobility-as-a-service era, 3D dynamic maps that change in real time as traffic patterns shift, and sophisticated sensors that assist drivers moving through busy intersections — these previously impossible scenarios only scratch the surface of automotive V2X potential.

Enterprise: Mercedes-Benz

Telecom service provider: Telefónica Germany

Product: Private 5G network

Country: Germany

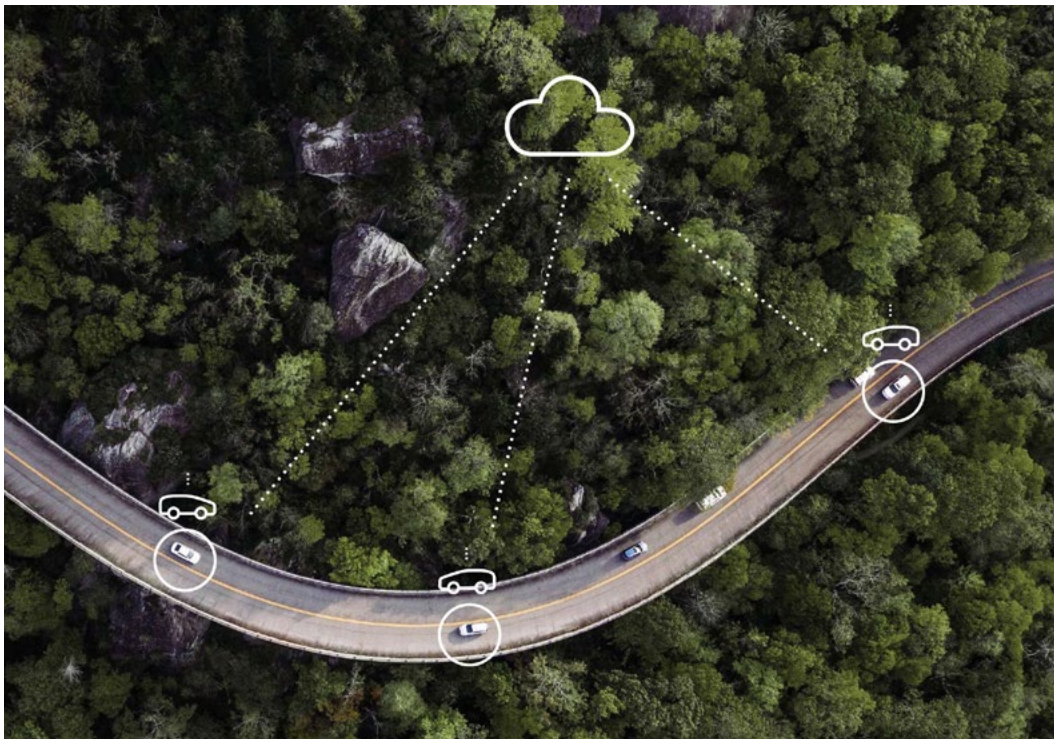
Mercedes-Benz & Telefónica Germany

Breaking Mercedes-Benz' speed limit

As Mercedes-Benz was designing its newest manufacturing facility, Factory 56, it wanted to replace its traditional assembly line with automated driverless transport systems and improve efficiency and flexibility on its production lines. To accomplish these goals, Mercedes-Benz knew it would need a to implement innovative technologies.

The automaker partnered with Telefónica Germany to deploy the world's first 5G mobile network for car production. The solution is an Ericsson private network with 5G Radio Dot System for high-performance, on-premises coverage of 20,000 square meters today, planned to be expanded to all 220,000 square meters of the facility. All production systems and machines in the newly-built Factory 56 will be connected and operated via secure 5G with gigabit data rates and extremely low latency while handling large amounts of data.

The 5G network facilitates data linking or product tracking on the assembly line, with all processes optimized to be adapted at short notice to fit market requirements. And as a private network, the intelligent connection of production systems and machines is done in a secure way. As a result, Mercedes-Benz gains higher efficiency, flexibility and production precision.



Enterprise:
Lexus Australia

Telecom service provider:
Telstra

Product:
LTE network

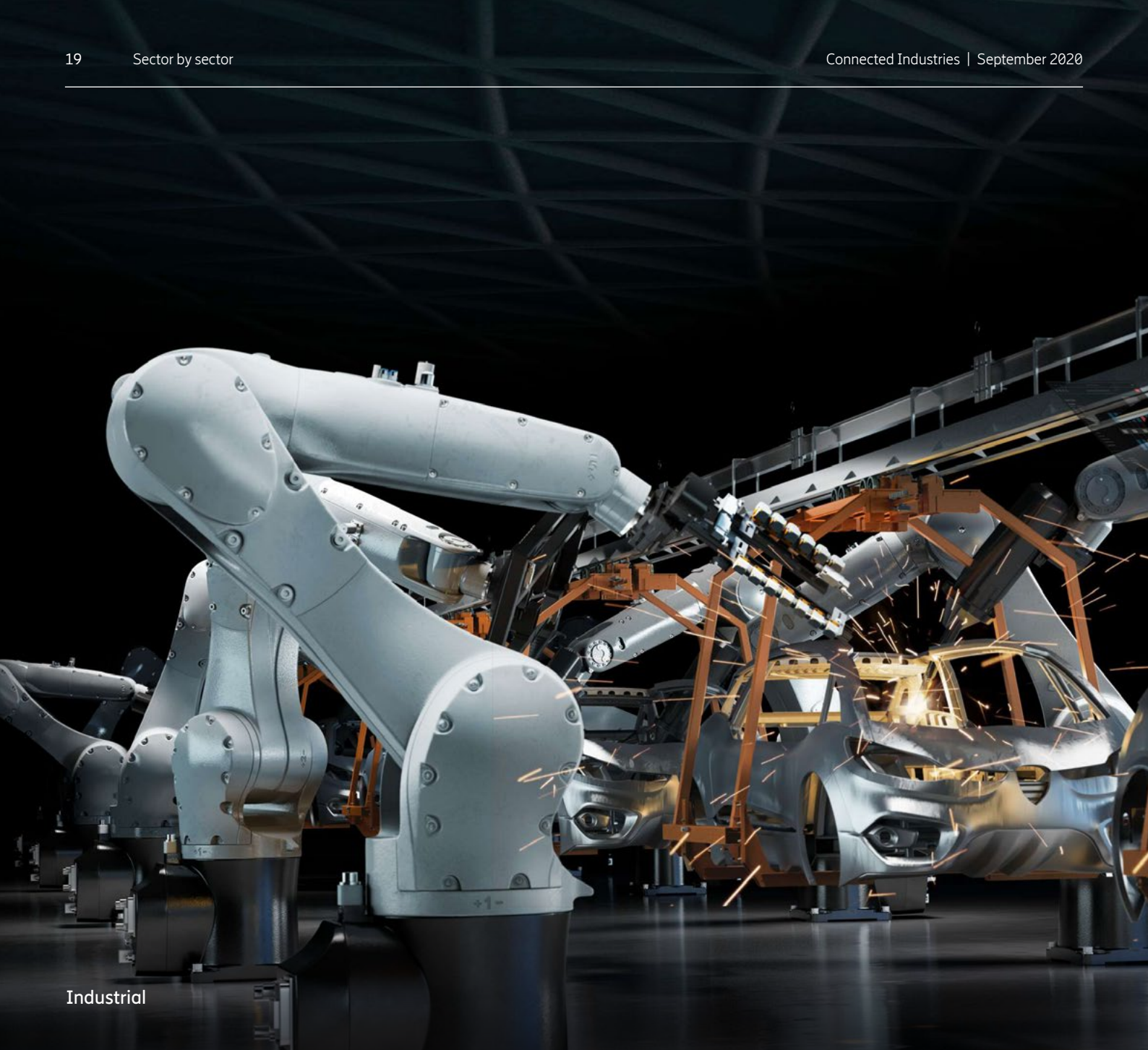
Country: Australia

Lexus Australia & Telstra

The road to no road deaths

The Victorian state government has developed a "Towards Zero" road safety strategy whose goal is the prevention of traffic deaths on the road. One of the pillars of this strategy is the testing of connected vehicles with advanced technology to prevent accidents. As part of this program, mobile operator Telstra and Lexus Australia were awarded a large grant to run a field trial of 4G-based connected vehicle technology.

Telstra optimized its LTE network for very low-latency communications while Ericsson provided a C-V2X platform to connect Lexus Australia's two SUVs to each other, as well as to cloud-based traffic management centers and the state government's real-time traffic data. In the test, the system achieved near real-time responses in the 30 to 50 millisecond range, demonstrating the suitability of LTE for connected cars, with the promise of even better performance with 5G.



Industrial

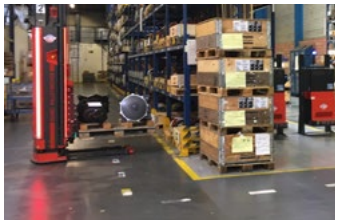
Factories that think for themselves, fields you can farm with your phone, and a new era of one-of-a-kind production line.

Cellular technology puts more online in the factory line to fire up a conveyor belt of new opportunities.

Industrial is a broad sector that includes equipment such as pumps, motors, instruments and tools used in industrial and commercial settings. Regardless of products and use cases, today's industrial manufacturers must be nimble so they can adapt to continuous, changing requirements from customers to offer product enhancements and new innovations. The demand for smart and customized products is growing to the point where "off-the-shelf" and "one-size-fits-all" are beginning to sound substandard. Production energy efficiency as well as green packaging and distribution are high on the agenda of the industrial sector the world over.

Digital twins allow industrial companies to evaluate production, visualize products in different environments and troubleshoot equipment. Human-robot interaction and virtual/augmented reality are further advancing the sector, both in the production and product deployment stages. Cellular provides the capacity, reliability and coverage to support rapidly growing amounts of data associated with these developments.

With a shift to as-a-service models, manufacturers can gain a constant revenue stream, while customers can transform what was previously a capital expense into an operating expense. In addition, as 5G is deployed more widely, additional possibilities emerge to integrate AI, edge compute and robotics for new use cases.



Enterprise: Atlas Copco Airpower

Telecom service provider: Orange Belgium

Product: Private LTE network

Country: Belgium

Atlas Copco Airpower & Orange Belgium

A new prototype of production line

This air compressor manufacturer needed reliable and flexible connectivity in order to gain better insights into its production process. The ultimate objective was to transform its existing environment so that it could be part of a digitalized production chain and increase the value of its products.

Working with Orange Belgium, Atlas Copco deployed Ericsson Industry Connect, a dedicated indoor network along with edge compute, in the factory. With reliable, pervasive LTE connectivity, the company was able to connect programmable logic controllers (PLCs), AGVs, sensors and mobile operator devices. The end result is a smart factory that provides the insights Atlas Copco needs to create an efficient, digitalized production chain.

Enterprise:
Stanley Black & Decker

Telecom service provider:
T-Mobile Austria, part of Deutsche Telekom

Product:
IoT platform

Country: India

Stanley Black & Decker & T-Mobile Austria

Self-watering soil

In the Indian state of Telangana, farmers faced serious challenges irrigating their crops. Their previous systems used unreliable electric and diesel powered water pumps, which were not only expensive and labor-intensive to maintain, but also produced significant pollution. When the pumps were down for repair, crops suffered, threatening farmers' livelihoods.

To solve the problem, Stanley Black & Decker partnered with T-Mobile Austria, part of Deutsche Telekom. Stanley Black & Decker's solar-powered, cellular pumps were installed, with SIM cards from T-Mobile Austria, which also provided connectivity management for the pumps, powered by the Ericsson IoT Accelerator platform.

Using mobile phones, farmers can now remotely control and monitor pumps for preventive maintenance, which significantly reduces downtime and provides a consistent water supply, allowing them to harvest up to three crops per year. In addition, farmers can sell excess energy for additional income to the government, which in turn gathers valuable insights that can inform better agricultural and industrial policy.

Final word

A wide-open landscape for growth

Cellular technology sets enterprises free to explore the new possibilities of a world that is ever more digital. It provides an unmatched connectivity foundation for the digitalization of any industry. With a versatility that can handle the requirements of even the most demanding deployments.

The ultimate connector

Providing non-stop control of the whole product lifecycle.

Cellular provides seamless connectivity and uninterrupted insights throughout product life lifecycles and supply chains.

Safe new worlds

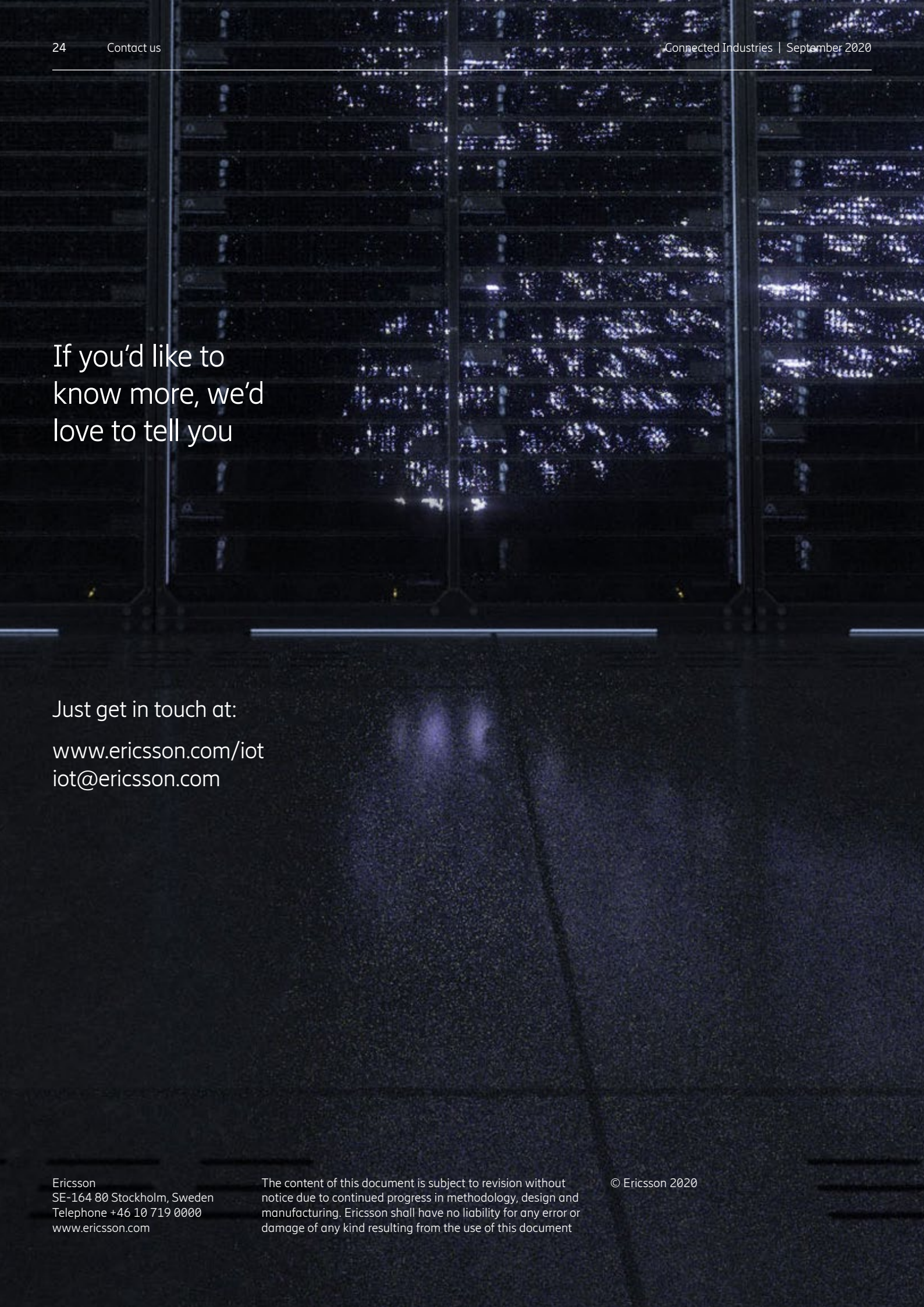
Secured with the freedom to go, and grow all over the globe.

Security efforts will always need to stay ahead of an evolving threat landscape, and it must be a key part of any product lifecycle and supporting network. Cellular comes with built-in security standards which are enhanced with 5G.

The internet of giant leaps, and things we can’t even begin to imagine

Already making its impact felt in industry and soon to show its full might in the era of 5G.

Digital transformation isn’t just changing businesses, but entire industries. With cellular at the heart of the future connected world, new capabilities and opportunities are only limited by imagination.



If you'd like to know more, we'd love to tell you

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