

Fueling transformation in Oil and Gas



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Helping oil and gas companies
accelerate their digitalization with
4G and 5G private networks



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Connectivity is key to the future success of Oil and Gas

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The oil and gas (O&G) industries are under immense pressure to improve operational efficiency, productivity and worker safety; maintain cybersecurity; and, at the same time, reduce environmental impact.

To solve these challenges, oil and gas companies are accelerating their digital transformation. As they adopt use cases

around automation, smart safety and environmental monitoring, the oil and gas sector is increasingly looking to advanced cellular connectivity to help drive efficiencies like these, while being more environmentally sound. According to McKinsey, the use of advanced connectivity to optimize drilling and production throughput and improve maintenance and field operations could add up to USD 250 billion of value for oil and gas upstream operations by 2030.¹

Ericsson's private cellular network solutions for the oil and gas industry are enabling major safety and efficiency improvements and uncovering business value for the oil and gas sector.



1. <https://www.mckinsey.com/industries/oil-and-gas/our-insights/how-tapping-connectivity-in-oil-and-gas-can-fuel-higher-performance>

A tall order: increase efficiencies while transforming quickly, safely and sustainably

For an industry that's no stranger to pressure, today's oil and gas sector faces unprecedented expectations. Produce more, but do it at lower cost. And while protecting both workers and the environment.

Produce at a lower cost

Multiple economic and social shifts are contributing to the downward pressure on oil and gas profits. Work-from-home policies, which began during the pandemic, are now a new norm. Other factors include the renewed international focus on clean energy and climate change and competition from alternative fuel sources like wind and solar. Oil and gas companies have no choice but to continue their cost-reduction trajectory.

Produce more cleanly

Governments, society and even their own shareholders expect oil and gas companies to contribute to cleaner energy and corporate social responsibility (CSR). Ultimately, the industry is expected to meet the global goal of net zero carbon by 2050. Companies must find ways to supply their products with fewer emissions and less waste.

This can be achieved only by heightening efficiency of operations (less waste of resources) and monitoring and measuring live operations to quickly identify leaks and other issues. The best opportunities to control waste can be found in more rugged and remote locations. Digitalization of infrastructure will play an important role in enabling these efficiencies.

Worker and assets safety compliance

It's a harsh reality that oil and gas production can be a dangerous profession. Conducting manual site inspections of oil platforms are some of the most hazardous tasks in the industry. The process is time-consuming and results in downtime and loss of production. It also exposes oil and gas workers to dangerous conditions. The industry's fatality rate is seven times greater than any other industry, despite the industry's best efforts to improve workplace



health and safety. Safety rules are becoming more stringent by the day, made more complicated by the new precautions required during the pandemic.

The connected worker affords the ability to make real-time decisions in day-to-day operation and emergency situations.

Aging staff / staff turnover

The oil and gas industry expects a lot of turnover and attrition due to retirement in coming years. Attracting younger workers to replace and replenish this aging workforce has been challenging. Advanced connectivity and digitalization can help. Together, they allow for fewer workers for operational and maintenance tasks and enable side-by-side training of newer workers. Younger workers are attracted to workplaces featuring cutting-edge technologies such as artificial intelligence/machine learning, drones, flexible IT tools and remote work choices.

It's a risky business in other ways

In addition to challenges that can be solved through technology, oil and gas companies deal with many factors that are often beyond their control:

- Geological risk is encountered when companies explore greater depths in the ground or deep in the ocean to find reserves.
- Political risk—Global oil and gas companies also encounter political risks when doing business in other countries. Instability in the nation's political system or even subtle changes of political administrations in stable countries can create lasting and impactful changes to the oil and gas industry.
- Price or market risks are dictated by supply and demand at microlevel and more long-term trends at the macrolevel. These can all affect the price of oil and, therefore, the margins oil and gas companies can extract at any given moment.
- Oil and gas companies contend with cost or operational risk as equipment, personnel and operations task costs continue to fluctuate.



Extracting efficiencies with cellular connectivity

While technology can't mitigate political risk, digitalization enabled by cellular connectivity can change the outlook for oil and gas companies in many ways. With high-performance, low-latency private cellular networks, the oil and gas industry can leverage Industrial IoT (IIoT) to meet the challenges.

Private cellular networks will increase the electrification and automation of assets and processes. Real-time monitoring, using sensors, of the conditions and performance of vital assets lets providers detect when a piece of equipment is at risk for damage or malfunction.

Edge computing opens up new capabilities for companies in the upstream sector, allowing for collected data in the upstream sector to be actionable in real-time. With insights into conditions, companies can more easily maintain optimal productivity and output levels—lowering cost per unit and gaining more leeway for profitability.

Advanced connectivity will also empower workers with devices and wearables that will not only make their jobs easier and faster to complete, but increase their safety. Using mobile device-accessible schematics and plans, combined with features like Ericsson's Push-to-Video and Push-to-Talk, make workers more efficient both on-and off-site. Connected workers are not only more productive, but they are also safer.

By deploying Automated Guided Vehicles (AGVs) and drones in dangerous areas, companies can avoid putting employees at

risk. High-resolution video drones can easily perform these tasks with much more precision and accuracy than any human. It also removes them from the danger of performing the inspection manually. Drones require highly reliable and high-bandwidth connectivity to accommodate flight orders and send high-quality imagery and analyses. Only cellular can provide the performance and reliability needed to support them.

To address staff turnover, advanced connectivity allows companies to offer remote expert training. Training can be customized for connected workers and tailored for differing levels of expertise and for the various scenarios of the job.

Reducing environmental impact

The challenge to reduce, remove and manage carbon risk necessitates widespread visibility and smart monitoring of processes. To support compliance and regulation towards global

targets, lifecycle and asset performance management is essential, together with a redesign of operations through increased transparency and collaboration. Private networks using LTE and 5G connect highly dispersed, data-intensive workflows in complex value chains and bring a competitive edge to companies in extreme environments and in a volatile, converging market.

Such connectivity also prevents environmental hazards by tracking fugitive emissions, methane leaks and corrosion with IIoT. By optimizing speed control, private cellular networks enable efficient energy spending of such common production assets as frequency drives, compressors and electric motors. Collectively, these digital solutions limit the CO2 footprint by reducing waste and increasing collaboration. Another popular application can be to send drones with specialized gas-detecting sensors and cameras to locate methane leaks on aging equipment.



Drones can reduce:

inspections times by **90%**

downtime costs caused by manual inspections by **65%**

health and safety incidents, resulting in **35%** less cost to the provider ²

Benefits of a digitally enabled workforce:

8.5%

more productive³

48%

less loss from health and safety incidents⁴

8%

reduction in operational spend, due to the increased effectiveness of a connected worker³

Not all digitalization technologies are the same

Oil and gas companies have some options for connectivity available. Wi-Fi is the most common route to simple wireless networking connectivity. While Wi-Fi networks meet some needs, they have limitations, from scalability to reliability, security to latency, all hampering digital transformation. Wi-Fi quality of service (QoS) is not up to the required standards for industrial applications and use cases. Other technologies also fall short of oil and gas needs.

We, at Ericsson, believe that 3GPP-based technologies, which include 5G SA, best achieves the goals of the oil and gas industry. 3GPP standards guarantee the level of performance required for the industry's demanding applications. 3GPP-based technologies, such as LTE and 5G NR, are part of the large ecosystem shared by almost all of the world's mobile providers. The 3GPP ecosystem can accommodate different localized technologies such as LoRa, Wi-Fi and Bluetooth. In typical deployments, LTE and 5G NR can act as both middle and last mile and can be the base underlying wireless technology for a typical oil and gas plant. Because of these benefits, 3GPP has been increasingly adopted by industrial sectors that have very similar use cases and requirements to oil and gas.



Partner with Ericsson

Success cannot be achieved through one company or alone with one strategy. Partnerships are key. Ericsson works with many different players—device makers, system integrators and software vendors, including network vendor equipment providers—to help oil and gas companies on the road to digitalization.

Ericsson has a broad portfolio for private networks, including the most extensive Citizen Band Radio Service (CBRS) radio portfolio of any major Tier-1 vendor. We have the global experience and references to provide proven technology that can easily be deployed by oil and gas enterprises. In addition, with Ericsson's software-only upgradable portfolio, oil and gas companies being able to test and readily utilize 5G technologies can be cost-effective with Ericsson solutions.

Ericsson's private networks are Plug n Play. Our solution has options ranging from as low as 100 user licenses, called Small Core, to 25k users, called Large Core. Ericsson's Radio System portfolio comes in a variety of sizes. Radios the size of smoke detectors can accommodate small indoor building spaces. Our medium-sized radios, called micro radios, are ideal for average to medium applications. Our unique CBRS AIR radios can cover a reasonably large area (small city), with a moderate amount of subscriber density.



Reference cases

Centrica Storage 5G-ready private network

Centrica Storage Limited (CSL) is the gas storage and processing unit of UK gas and electricity supplier Centrica. Centrica wanted to digitize their operations and launch a connected worker solution that would increase the safety of workers in the facility. Using Ericsson radio and core networking gear, Vodafone built a private LTE network, upgradeable to 5G, that allows Centrica's staff to connect to a new set of maintenance, operation and safety applications via their handheld devices. The new 5G-ready infrastructure enables Centrica Storage to automate, monitor and centralize much of its critical maintenance and engineering operations. [Learn more](#)

Tampnet deployment in Gulf of Mexico

Tampnet operates the world's largest offshore high-capacity communications network in the North Sea and the Gulf of Mexico, serving more than 240 oil and gas platforms, floating production storage and offloading units (FPSOs), exploration rigs and vessels. Upgrading their existing 2G network, Tampnet aimed to offer high-capacity, low-latency data and voice coverage in the Gulf of Mexico. Deploying an Ericsson redundant Core LTE network, Tampnet now boasts the largest offshore high-capacity communications network in the world. The network improves the quality, health, safety, efficiency and welfare for offshore operations. It also provides revenue opportunities from oil rig workers, commercial and cruise ship roaming traffic in the Gulf. [Learn more](#)

Ooredoo Qatar private 5G-ready network

Ooredoo is Qatar's leading communications company, delivering mobile, fixed, broadband internet and corporate managed services tailored to the needs of consumers and businesses. Partnering with Ericsson, Ooredoo implemented a 5G-ready private network solution to support offshore operations and modernize the oil and gas current enterprises' communication infrastructure, simplifying customers' communications while ensuring safety, reliability and security over Ooredoo's network. [Learn more](#)

"Safety is critical at CSL and this solution will reduce risk for everyone on our site. The mobile private network will help us address 1970s problems with a 21st century solution, taking our business to the future from the moment it's live."

— Paul Stevens, Information System And Technology Director at Centrica Storage Limited

Why choose Ericsson cellular solutions?

For oil and gas companies, digitalization powered by Ericsson private networks is a single, one-time investment that delivers a substantial triple bottom line that includes improved safety for workers and more responsible environmental impact along with major efficiency and financial benefits. For telecom service providers, Ericsson 5G-ready wireless technology can provide a foothold in a growing industry segment.

Ericsson is leading the way in the specialized world of connectivity for the oil and gas industry. Our market-leading 4G and 5G solutions are based on 3GPP (formal standards) that aligns with large ecosystem players among device manufacturers. By utilizing the same radio and baseband portfolio that the larger providers do, our Private Network portfolio enables a broad reach that helps fit solutions to the needs of larger multinational oil and gas companies. Our ecosystem includes a wide range of industrial partners, enabling us to address our oil and gas

customers' unique challenges. With extensive relationships with many of the world's service providers, we can easily facilitate hybrid solution offerings in partnership with local providers. We put all our resources at your service to find the exact, right solution for your unique needs.

How can we help you?

Bringing about change is never simple. But the advances of automation enabled by private networks have the potential to solve many of the oil and gas industry's ongoing challenges—and even shape the future of the industry.

Find out more about wireless connectivity for oil and gas and let us help you on your digitalization journey.

Visit our website: [ericsson/oil-and-gas](https://www.ericsson.com/oil-and-gas)



About Ericsson

Ericsson enables communications service providers and enterprises to capture the full value of connectivity. The company's portfolio spans the following business areas: Networks, Cloud Software and Services, Enterprise Wireless Solutions, Global Communications Platform, and Technologies and New Businesses. It is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's innovation investments have delivered the benefits of mobility and mobile broadband to billions of people globally. Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

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