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The connected offshore field
Connectivity for complex offshore energy activities

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LEO connectivity is used for building stronger data-driven foundations.

The connected offshore field

Connectivity for complex offshore energy activities

Offshore operations for oil & gas, and wind farms, consist of a vast array of different activities and requirements. This high-value complex work takes place in what can be harsh and remote offshore environments with potentially hazardous conditions. Consequently, these activities have critical and unique connectivity requirements for safety and efficiency. Not only do primary facilities such as drilling rigs, production platforms, and wind turbines need connectivity, so do support vessels used for intervention, diving, lifting, anchor handling, logistics, and accommodation.

Reliable high-performance connectivity is one of the keys to safe and successful operations in these environments. For example, energy companies can increase their remote surveillance of critical operations, equipment, and facilities, using Internet of Things (IoT), video streams, robotics, and remotely operated vehicles (ROV) to monitor, inspect, and address conditions to field personnel to improve safety and production. Often these critical data points are not readily available, so improved access to remote resources helps expand operational analytics and decision-making capabilities. With more information made readily available operating companies can be safer and more efficient.

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Connectivity for complex offshore energy activities (continued)

OneWeb's low Earth orbit (LEO) satellite connectivity delivers industrial-grade connectivity and primary, hybrid, or backup solutions that meet the unique requirements of offshore operators and support organisations. It empowers digital solutions and enhances business processes to improve operational safety and increase efficiency to drive a step change in business performance. LEO satellite can be used as the backbone for local wireless solutions such as WiFi and 5G.

The benefits of reliable, high-speed, low-latency connectivity include support for reliable process automation, information and data sharing, onsite and remote analytics, personnel safety, increased surveillance and monitoring, robotics, document management, work management, and collaboration. In addition, high-performance connectivity allows the implementation of new use cases that feature artificial intelligence (AI), machine learning (ML), and virtual/augmented reality (VR/AR) to revolutionise traditional offshore working practices and enhance process and worker safety.

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LEO connectivity can easily integrate dispersed operations support systems with existing networks.

Connectivity challenges

Offshore field and platform operations are increasingly benefiting from digital tools that make them more productive, more efficient, and safer. These tools generate larger amounts of data to improve working processes and practices. In addition, workers need access to cloud-based work management systems, facility documentation, and process historians.

The data generated by the field along with the stored documentation, is used by personnel onshore and offshore through numerous digital tools to monitor, review, analyse, make recommendations, as well as to safely control work. Ensuring there is real-time consistent access to this data is crucial for decision making. When data is not available, decisions and work are delayed, deferring the benefits and increasing risk. This becomes even more critical as the use of real-time tools such as AI, AR/VR, robotics and autonomous vehicles becomes more prominent and further increases the range and volume of data.

Providing underlying connectivity to the offshore environment has been difficult. Due to their offshore locations, which can be more than 100 miles from shore, connectivity has been limited to low-performance satellite or high capital investments in fibre. Microwave has distance and atmospheric limitations. As such, connectivity capability has varied region by region, causing significant challenges in day-to-day digital needs, as well as the deployment of new digital tools, leading to many underutilised digital investments.

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Connectivity solutions

The ideal connectivity solution is one that can provide high performance and consistent capability around the world, and do so while minimising energy company investments while they focus on core business activities. The connectivity solution integrates with other infrastructure and digital systems to enable a high-quality experience to the end users while delivering data across a diverse set of detailed use cases and business processes.

With a global network designed to deliver reliable, high-speed coverage everywhere, including above the 60th parallel north, OneWeb provides opportunities for critical high-performance connectivity in energy exploration and production, regardless of location. With this, companies can adopt new and more efficient digital tools and business processes to deliver safe and efficient operations depending upon big data, real-time data, and remote data. OneWeb's LEO solutions integrate with field networks such as those using SD-WAN, fibre, microwave, and satellite networks to provide solutions that can connect remote operations to corporate data centres and the cloud.

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Enhanced opportunities

Making field networks more robust

OneWeb's connectivity can work with other transmission systems such as fibre and satellite when integrated together using technologies such as SD-WAN to maximise availability, prioritise the most critical traffic, and securely segregate traffic based on use cases. Third parties can use SD-WAN to create additional virtual networks to gain access to the equipment they manage and monitor offshore such as rotating equipment. LEO solutions can work as primary, backup, and alternate routes based on the traffic and reliability needs of the field network.

Making offshore platforms and fields safer

OneWeb satellite connectivity assists worker and process safety by readily making critical data available to engineers, and tools to identify and mitigate adverse conditions prior to them impacting safety. Engineers have access to the data from their onshore facilities which minimizes the need for offshore travel to research potential issues. Through the use of enhanced monitoring such as wearable technology, IoT, detection systems and AI, machine learning, and other state of-the-art digital tools, conditions can be quickly analysed and actions taken, including pre-planned or auto-initiated, to bring conditions into a safe state with early detection, providing additional time for other measures and actions to minimise risk to people and plant.

Enhanced opportunities (continued)

Bringing the right skills to the work

OneWeb connectivity solutions enable engineering and expert support to see what is happening offshore before, while, and after work has been performed. With this, they can assist the on-facility personnel to efficiently complete their work. Using collaboration tools such as industrial helmet cameras and tables, personnel can get immediate guidance to ensure they are getting the job done right. Likewise, with the use of autonomous vehicles, drones, and robots, onshore personnel can complete inspections using subject matter experts without having to bring them offshore to improve response time while ensuring the right information is available.

Industry digitalisation

LEO satellite connectivity can empower technologies that enable offshore field operators and owners to increase safety and efficiency. A full suite of digital tools reliant on low latency and high bandwidth can be used to streamline operational processes. Earlier detection of equipment malfunctions and piping issues reduces the risk of unplanned outages.
Owners and operators will use LEO connectivity to transform their operations, drive uptime and production efficiency, and realise more offshore field potential.

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Real-time control and visual monitoring will enhance safety and management onsite.

Enhanced and new applications

Predictive maintenance

The ability to support more sensors and IoT applications for mointoring equipment allows for faster detect-and-repair processes. as well as improved performance planning.

Real-time data analytics

Improved access to field production data drives analysis and faster, better-informed decisions from experts onshore.

Real-time control and visual monitoring

With access to low-latency network solutions, personnel onshore can safely manage processes and facilities remotely. In addition, they can safely operate inspection and surveillance systems including autonomous underwater vehicles (AUV), ROV and robots to inspect and complete work activities in a timely manner. Remote control can be extremely beneficial during startups and restarts, after shutdowns and following a turn-around. Remote control and visual monitoring are also critical when regulations require onshore monitoring of offshore activities such as drilling.

Remote inspection and assessment

Maintaining knowledge of people, plant, and process is critical to safe and efficient operations. Digital tools and sensor networks can be developed to understand and trend data. Video tools - cameras and robots - become available for visual assessments.

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Enhanced and new applications (continued)

Onshore & field collaboration

Connected field workers using industrial collaboration tools can collaborate with audio and point of work video to complete work safely, timely and effectively with real-time guidance and feedback.

Access to the cloud

High bandwidth and low-latency LEO connectivity allows companies to store applications and data in the cloud. Onshore and field personnel access the cloud using the same tools, for better digital investment.

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The OneWeb system
will deliver global,
low-latency coverage.
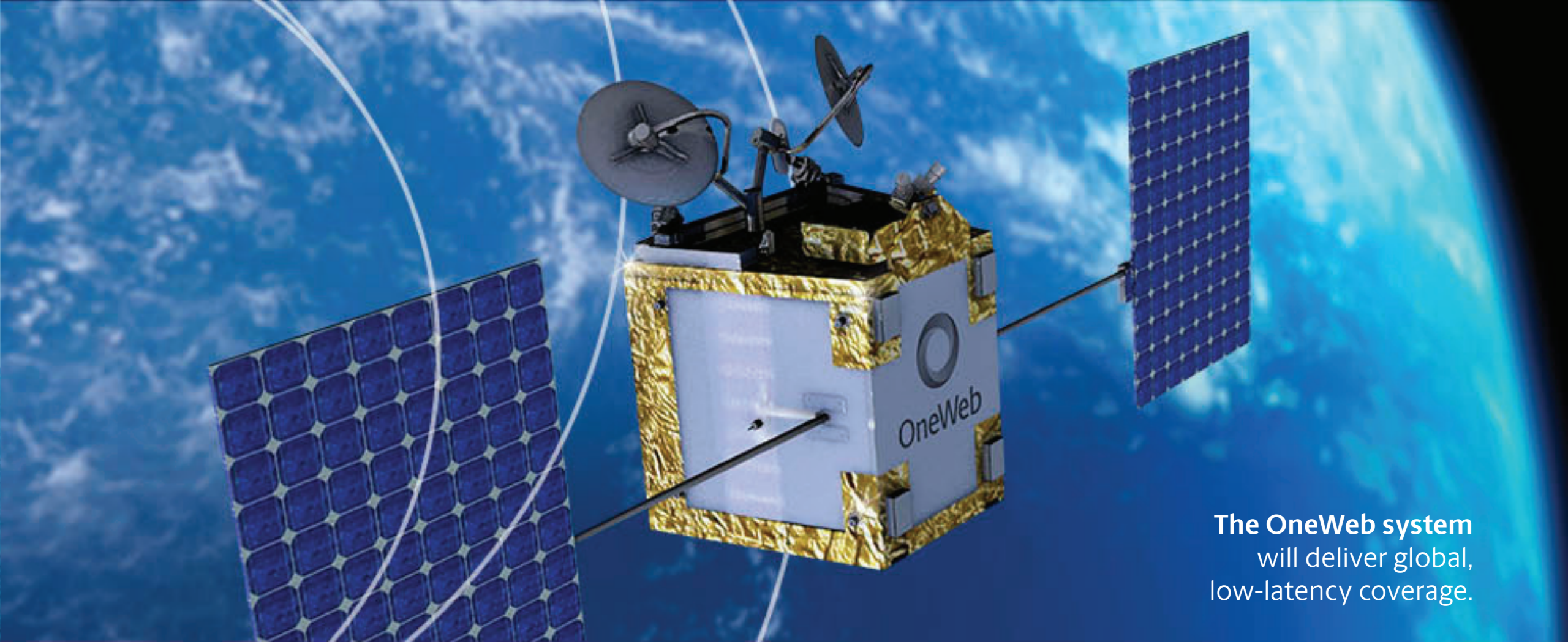
Global space-based connectivity made easy

OneWeb LEO satellite connectivity can enable the connected fields and maritime operations in new and safer ways. Offshore field, platforms, drilling rigs, and ships, support vessels, and work vessels can utilise data, automation, robotics, AI, and other cutting-edge digital solutions, to improve operations and worker safety.

OneWeb products and plans deliver the data speed, reliability, and low latency for primary, backup, and hybrid network solutions that enable the latest operational applications, and digital and AI tools. Our user terminals are simple to order, deliver, install, and maintain for the requirements of modern maritime companies.

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Speedcast is OneWeb's Global Distribution Partner and will be integrating OneWeb's Low Earth Orbit (LEO) satellite connectivity into Speedcast's Unified Global Platform (UGP). Together with OneWeb services, Speedcast's global platform will ensure customers in the maritime, energy and enterprise industries benefit from a multi-path, multi-orbit future that includes new LEO connectivity options.

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