DIGITALISATION FOR OFFSHORE OIL & GAS

A Signature Energy Solution

Solution Brief

SES | Networks

NEW OPPORTUNITIES IN DEEP WATERS

The upstream oil and gas industry is increasingly focused on digitalisation as a means to improving operational efficiencies.

New digital technologies have the potential to transform your operations and maximise profitability by driving automation, improving agility, and supporting better strategic decision-making. Effective use of digital technologies in the oil and gas sector could cut upstream operating costs by 3 to 5%, resulting in substantial cost savings and increased profitability.[1]

The value of digital technologies becomes even more pronounced in light of recent trends in the offshore space. Oil and gas companies are conducting significant activity in the deepwater and ultra-deepwater segments. Analysts estimate that 74% of the 3.9 billion barrels of oil equivalent discovered in the first half of 2018 was from ultra-deepwater.[2] The combination of higher oil prices and capital efficiency improvements mean offshore operators are better positioned to tap reserves previously thought to be too difficult and too expensive to access.

As the industry shifts into deeper waters, it is driving demand for Floating Production, Storage and Offloading systems (FPSOs). The number of FPSOs in operation is on the rise, with the FPSO market expected to grow at a CAGR of 11.2% over the next five years.[3] By enabling expansion into regions where subsurface pipelines aren't feasible or cost-effective, FPSOs help you capitalise on new reserves, and more effectively counter competitive plays by onshore producers, such as shale extraction, characterised by lower costs and faster returns on investment.

To effectively compete in today's oil and gas market, you need to maximise output while reducing the cost of production. Digitalisation leverages advanced technologies such as analytics, mobility, and the cloud to reduce costs and drive value for the offshore segment.

- **Improved operational efficiency**
  Mobile applications—including real-time recording of field data, improved communications to ensure crew safety, and RFID tags for asset tracking—optimise your offshore logistics by providing information where and when it is needed. Transferring functions onshore brings offshore costs closer to those of onshore operations, while also improving safety by reducing the number of people transported to and from the offshore location.

- **Enhanced business performance**
  Implementing "digital twins," in which a virtual model of an offshore asset such as an FPSO is created and populated with real-time performance data from the physical version, can yield valuable data on the asset's performance and health. That data can then be leveraged for a range of use cases, enabling proactive maintenance, process optimization, analysis of "what-if" scenarios and more efficient system design.

- **Improved brownfield recovery rate**
  Mature oilfields are typically decades old, operating on legacy technology implemented when the field was originally developed. New technologies enable higher recovery rates in brownfield scenarios, including wireless sensor monitoring for continuous real-time information from different formations and wells to enable better reservoir management.
  The return on these technologies is tangible—after a decade of decline, the UK Continental Shelf has seen a production increase of 16% since 2014.[4]

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1 Choudhry, Harsh et al. *'The next frontier for digital technologies in oil and gas.'* McKinsey, August 2016. *https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-next-frontier-for-digital-technologies-in-oil-and-gas*

2 Wood Mackenzie, Exploration Service.

3 *'Global Floating Production Storage and Offloading (FPSO) Market Outlook, Trend and Opportunity Analysis, Competitive Insights, Actionable Segmentation & Forecast 2023.' Energias Market Research.* 20 July 2018.

4 *'Two new reports to boost decommissioning intelligence.' Oil & Gas UK,* 28 November 2017. *https://oilandgasuk.co.uk/two-new-reports-to-boost-decommissioning-intelligence/*

CONNECTING DIGITAL VESSELS OFFSHORE

Digitalisation in the oil and gas sector has been delayed due to historically healthy profits, and the prevalence of legacy technology.

Yet, the industry is now changing due to price volatility, new competition, and shifting demand. Offshore players increasingly recognise the value of digital technology to help them gain maximum value from their capital investments.

Your digital transformation relies on robust and reliable connectivity—a challenge for FPSOs and other deepwater facilities that are frequently out of range of traditional terrestrial networks. Building dedicated submarine fibre-optic cable is expensive and time-consuming, and offshore wireless infrastructure often lacks the reach or availability required. Satellite provides coverage to remote areas, but must be able to address the specific requirements of modern digital applications.

Reliable, High-Quality Connectivity

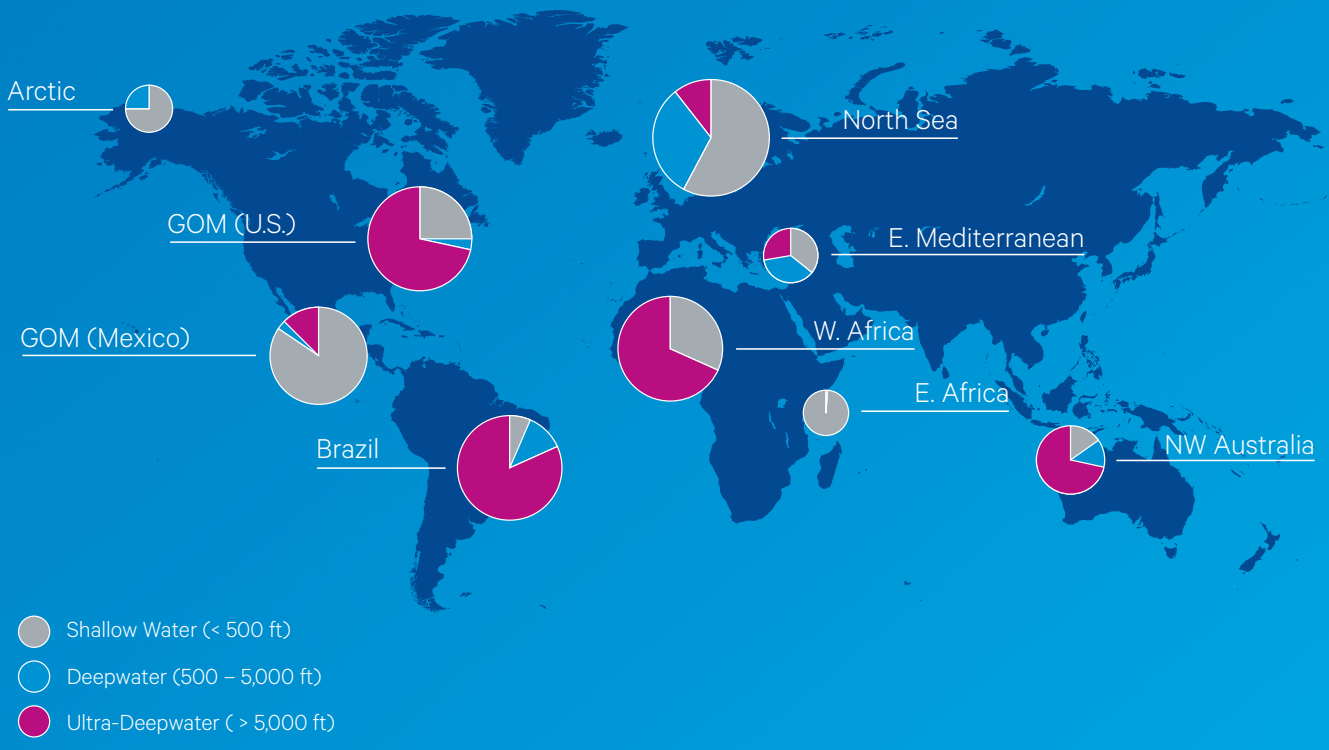
Digital applications—including condition monitoring, remote diagnostics, and process simulation—require a high-speed, low-latency connection with a guaranteed quality of service to both onshore locations and the cloud. So, too, do crucial crew safety systems, such as notifications and alarms. The network also needs to be able to prioritise specific applications, ensuring that mission-critical data takes precedence over less time-sensitive communications or the crew's personal use.

Cost-Effective Scalability

As offshore players adopt new digital technologies, vessels are generating exponentially greater quantities of data, and therefore increasing demand for bandwidth. To fully capitalise on the efficiencies and savings afforded by digitalisation, you need the ability to scale bandwidth investments easily and cost-effectively as your requirements ramp up.

END-TO-END DATA SERVICES FROM SES NETWORKS

Our solution for deepwater, part of SES Networks' Signature Solutions portfolio, helps offshore producers achieve their digital transformation initiatives. Our O3b MEO constellation footprint provides coverage to regions with the highest volumes of proven deepwater reserves, providing high-performance and cost-effective data services to your most remote oilfields.



Global Oil Reserves
Covering regions with the highest volumes of proven reserves.

FIBRE-LIKE SPEEDS TO THE VESSEL

Our O3b MEO constellation provides the low-latency, high-speed connectivity deepwater vessels need, including a fibre-equivalent broadband experience with aggregated data rates up to 1Gbps, and round-trip latency less than 150ms. This enables your crew and vessel to access cloud-based digital applications, transfer sensor data for centralised processing and analysis, and leverage a wide variety of video streaming and conferencing applications.

A TAILORED AND SCALABLE OFFERING

Delivered as a managed service offering via our global network of partners, our solutions enable offshore producers to cost-effectively scale connectivity as needed throughout the lifecycle of an oilfield. This minimizes your need to predict connectivity requirements in advance, and ensures you are not paying for capacity you don't need, and won't be overwhelmed when traffic demand increases as part of your digital transformation.

FUTURE-PROOF TECHNOLOGY

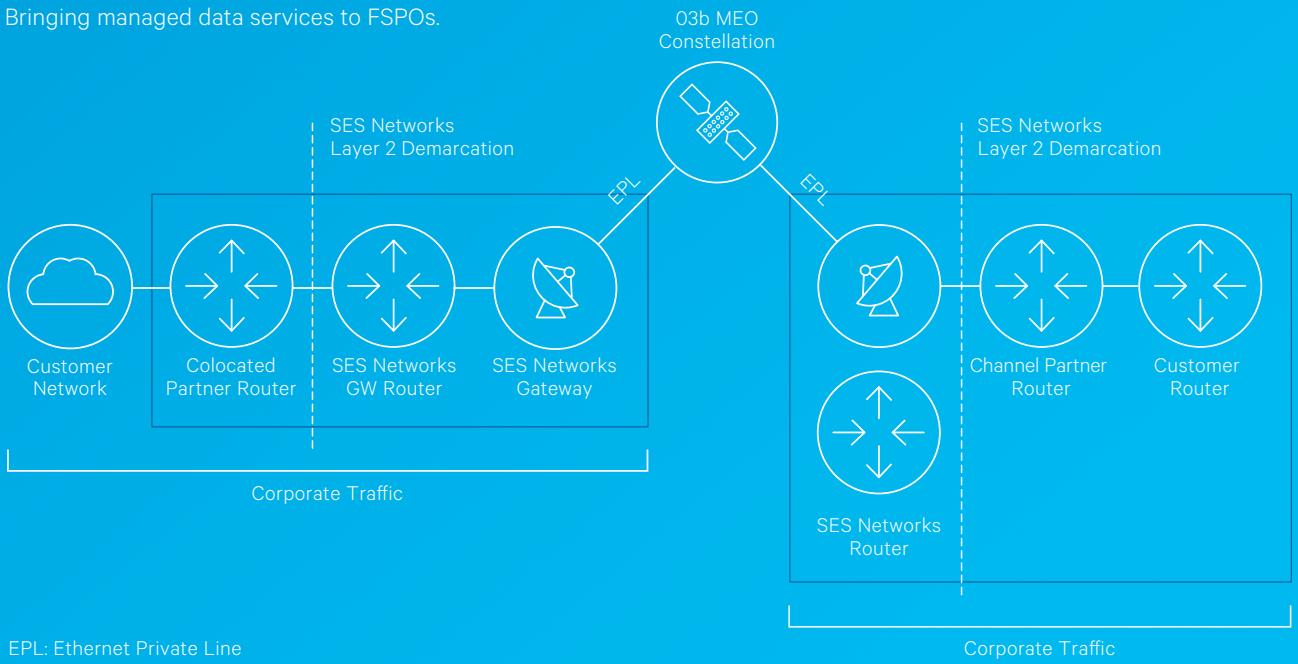
As data consumption continues to grow, our ongoing technology investments ensure we keep pace with the offshore industry's digital transformation. In 2021, our existing low-latency service will be augmented by the next-generation O3b mPOWER satellite constellation, providing unprecedented flexibility, scalability, and cloud-scale reach to our customers.

A REPUTATION FOR RELIABILITY

The world's leading oil producers rely on our low-latency O3b MEO constellation to deliver digital services and technologies to offshore vessels, including multiple FPSO implementations. MODEC, a global supplier and operator of FPSOs, leverages our MEO solution to support real-time collaboration across its Brazilian fleet for improved production, and enhanced operational efficiency. We also provide high-speed, low-latency communications for multiple FPSOs in Nigeria and Angola.

End-to-End Offshore Communications

Bringing managed data services to FSPOs.



EPL: Ethernet Private Line

LEVERAGING DIGITALISATION FOR DEEPWATER PROFITABILITY

Deepwater and ultra-deepwater oilfields represent a significant opportunity for offshore operators—provided they can keep the cost of expanding further offshore sufficiently low to remain competitive. Digitalisation is the key to achieving this goal, enabling improved efficiencies and lower costs by centralising functions and capitalising on emerging sensor technology and connected devices. The success of your digital transformation depends on a communications infrastructure that can address your vessels' unique requirements. Our solutions are scalable and market-focused, providing high-speed, low-latency satellite connectivity to your deepwater oilfields. By reducing the complexity and cost of broadband connectivity at sea, we help pave the way for the digitalisation your organisation needs to mitigate the challenges of fluctuating oil prices and production.

Talk to us today about how our deepwater solutions can help you achieve your digital transformation initiatives.

Ready to digitally transform your deepwater operations?

getconnected@ses.com

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