

THE AUTONOMOUS AND DIGITAL FUTURE OF OFFSHORE ENVIRONMENTS

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In 1950, the technological requirements of a commercial airline amounted to five people sitting up front in the cockpit, piloting, communicating and operating advanced technology.

Modern-day digitalisation has seen multiple advances in streamlining the references required to pilot, communicate, and operate tomorrow's differentiating operating models became today's essential requirements, leaving most of us in yesterday's landscape.

This year, we have witnessed an autonomously operated spaceship taking civilians to the International Space Station. We now need to think, interact and execute, transcending the boundaries of conventional expert disciplines.

Interoperability requires scalability, built on commonality, forming the cornerstone approach for any Remote Operation Centre (ROC). ROCs harness technology to ensure safe, reliable operations from a centralised location, away from the remote site where the actual work is executed.



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Remote capabilities help critical industries manage assets, systems, and data from anywhere globally, resulting in:

- Centralised monitoring of distant and dispersed remote assets
- Lights-out operation of distant facilities (switch-over capability);
- Mobile controls and expert collaboration for proactive activities support;
- Anytime/anywhere access to expertise

to aid in reactive activities backing;

Autonomous geodata acquisition, cloud analytics and impactful advice are no longer ideas; it is time to start making the ideas count. However, as with much of today's conversation, the main limitations lie in power systems, emissions and safety. How do we assure that these systems can operate safely, reduce the impact of their operations on the environment and ensure that they have sufficient power to stay in the field for extended periods? Solutions are already being worked on to answer these questions. Most major governing bodies worldwide have teams of experts re-writing the rule books to change how we think about assurance. By taking people out of the most dangerous environments currently required of them, safety no longer becomes a question. It also removes the cause of most accidents at the source, doubling down on the safety bonus. Finally, their design can be overhauled by taking people out of the discussion for offshore energy fields: rather than designing spaces for human habitation, robots become the forethought, with recharging stations replacing the existing immense structures required to keep humans happy.

It is an idea, but it needs to become a given acknowledgement that ROCs will be a permanent part of business operations, which means a culture transition is required to ensure businesses act accordingly and collaborate effectively within the organisation. They entail:

- Understanding endpoints - ROCs should focus on the longer-term strategies as endpoints, which will become a massive



piece of the puzzle when building next-normal levels of visibility.

- Embracing automation – productivity shall become efficient in hybrid working environments and building capabilities that require limited human intervention.
- Focus on what is essential - dealing with operational execution, which strives for seamless workflow integration across any ROC.

So, what does the future hold for offshore energy fields? Data is the key differentiator that will allow scalable, intelligent remote-operating models to drive sustainable growth based on safe, accurate, and secure capability delivery. This is key to improving efficiency, reducing downtime, making the decision-making process instantaneous, and enhancing yearly planning for assets.

Digital twins of fields will become commonplace, with multimodal robots living in the field, primed at the touch of a button to set out and gather information (be it subsea, surface or volitant) to update the digital model or perform maintenance tasks. The live overview of all assets will allow for peak



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operational efficiency, with deficiencies being identified long before they become a real issue.

In addition, there is a paradigm shift to preventative maintenance, which is cutting downtime and reducing the risk of a major incident. Onshore hubs will allow multidisciplinary experts to sit side-by-side monitoring the situation offshore, having all the right knowledge in the room, thus allowing them to make well-informed decisions when required.

When major work is required, simulations will enable the mission to be

refined to achieve the correct outcome through the use of:

- Technology: passing the cusp of change with dedicated delivery and implementation.
- Resources: transition of a culture embracing remote as a means of change, ensuring that organisations are set up to attract and nurture the best industry talent to drive long-term performance and growth.

• Profitability: tipping the balance of cost-effectiveness towards a lower OPEX heavy organisation, elevating decision-making, integrating input from functions across the remote operations value chain.

Offshore energy fields are already taking giant leaps into the future. Fifty years from now, the concept of a 200m long ship floating 50m from an offshore structure with 200 people will seem like madness - much the same as people boarding a plane with only two people sitting upfront would have seemed to passengers in the 1950's. The world will change, and now it is time for the offshore industry to embrace and prepare itself for the magic it is about to witness. ○