Sea change

Unlocking the value of data in one of the world's most challenging environments

Bringing automation and advanced AI to remote parts of the ocean floor is complex. It's part of the reason why the offshore energy industry still relies heavily on traditional techniques to monitor subsea pipelines and associated equipment.

Whilst other industries have rapidly adopted Digital Transformation programmes, applying these innovations to some of the harshest places on our planet presents numerous physical, economic and technical challenges. But as oil and gas profit margins have tightened, increased automation has become a priority.

i-Tech 7, a company delivering inspection, maintenance and repair services to the global offshore oil, gas and Energy sectors recognized the potential for Digital Transformation to help it disrupt traditional ways of working and differentiate itself from its competition.

i-Tech 7 also recognized that looking outside its own industry for solutions and capability could help fast track this transformation, and after a short selection process, embarked on a relationship with Leidos in 2017.

The promise offered by digital transformation is the ability to economise in a sustainable way that doesn't compromise quality.

AUGMENTED INTELLIGENCE: HUMAN EXPERTISE PLUS AI

Leidos has a 50-year track record in digitalising and automating organisations in complex, high-risk sectors. We've worked with vast volumes of data and autonomous machinery in sectors like intelligence, defence, and aerospace. Leidos' approach to digitalization involves leveraging augmented intelligence and harnesses AI as well as human expertise to deliver superior results.

Automated systems have unparalleled power to spot patterns and repetitively process vast quantities of data quickly and cheaply. Combine this capacity with human subject matter expertise, and you enable informed decision-making that minimises errors, raises standards, and is guided by human specialists.

In 2018, Leidos and i-Tech 7 formalised its relationship inking a five-year partnership and embedding Leidos digital specialists with i-Tech 7's teams. The challenge: to set a new bar for efficiency, safety, and value in the offshore energy sector, and aiming to stretch the boundaries of what's possible within an established industry that truly embraces transformative operational change.
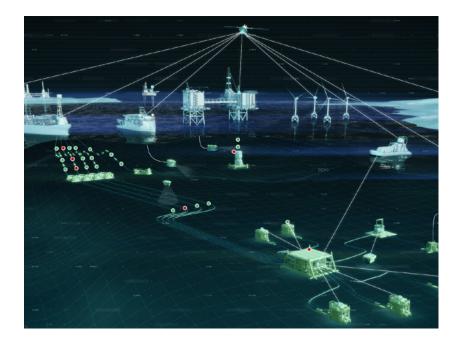
REDUCTION IN TIME AND EFFORT

Leidos and i-Tech 7 are using technologies such as machine vision, AI, and neural networks in order to reduce repetitive aspects of experts' jobs. Applying these techniques and capabilities to the subsea Pipeline Survey and Inspection process is freeing up substantial amounts of time (automating up to 75% of certain aspects of the process) which can be better used for high-value tasks that involve creativity, decision-making, and intuition.

Advanced AI capabilities are able to automatically detect features and anomalies in a subsea pipe, measure, and categorise them. As well as optimising labour and improving accuracy, this drastically shortens the timeline between data collection, analysis, and response.

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"We are intentionally starting to disrupt this industry," says Kit Wilkinson, Leidos UK's technology director, "in the same way that digitalisation is disrupting the whole of society. We can use what's being done in some of the easier spaces to make a real difference in a place where it's difficult and dangerous."

PUTTING DATA AT THE HEART OF BUSINESS

"i-Tech 7 recognises the latent potential of its data, which has been acquired over several decades" says Matt Gordon, Business Development Manager within the Leidos UK Energy team. "Making this data work for them is key to providing their customers with new and valuable insights they need on these critical assets."

i-Tech 7 offers its customers much more than the vessels and remote inspection vehicles needed to monitor pipelines and rigs.

It's fleet of advanced ROV's and AIVs uses a sophisticated array of sensors to gather data on the state of subsea infrastructure and equipment.

The information gathered can be automatically cross-referenced against historical data, allowing i-Tech 7's experts to detect changes, and use data in new ways to predict with greater speed and accuracy where and when problems will occur.

On the other hand, if an inspection reveals that predicted wear and tear isn't happening, the lifespan of equipment and infrastructure can be extended, reducing costs, minimizing risk and environmental impact.

GETTING AHEAD OF A WAVE OF CHANGE

The pace of change in Oil, Gas and Energy is increasing, fueled by Digital Transformation. Marketsandmarkets predicts that the market for AI software in oil and gas will grow from an estimated $1.57 billion in 2017 to $2.85 billion by 2022.

The automated processes Leidos is putting in place for i-Tech 7 offer powerful analytical capabilities and automated decision-making support, streamlining many of the previously manual processes. There are also several secondary benefits: the life of infrastructure can be extended, teams can be kept out of hazardous environments, and jobs can be made more fulfilling. Incidents such as leaks and spills that can damage trust and harm the environment will be minimised because of better asset integrity data.

These improvements are flexible, scalable, and represent real value to customers, who are simultaneously saving on costs.

It's this value boost is helping i-Tech 7 to position themselves at the forefront of a wave of change. "Our Digital Transformation partnership with Leidos' has already made a real difference to our bottom line and evolved what we can offer our clients," says Hugh Ferguson, Strategy Director, i-Tech 7.

"We are excited to see where things go from here."