Adapting to the Digital Future:
The Subsea Industry in 20 Years

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Session 2:
Subsea Communications / Sensor Integration

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Digital Vision:

Leverage the full power of data to achieve a step change in decision making, reduce cycle times and improve process safety with the aim of enhancing competitiveness.

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Key Themes Relating to Subsea Communications / Sensor Integration

Use cognitive assistants to surface hidden insights from existing data and reduce biases in decision making

Integrate surface and subsurface data in single sources of truth to enable better decisions across the value chain

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Thoughts for the future . . . .

Use cognitive assistants to surface hidden insights from existing data and reduce biases in decision making

Are there easy wins to be gained in our brownfield assets from our existing data sets, delivered from current sensors through the existing subsea communications? If so, then in which system will the cognitive assistants reside and how do we pass off the data to this system (and provide control feedback if the cognitive assistant automates some decision making)?
Is the answer to these questions different if designing such a solution for a greenfield development?

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Thoughts for the future . . . .

Historically, the purpose of the subsea control system has been for the provision of process safeguarding and control. This has in turn driven the integrity requirements for the sensor packages and communications protocol. Such integrity will need to be maintained for those sensors associated with process safeguarding and control, but for those providing data inputs for optimisation and surveillance purposes can we accept less demanding (i.e. lower cost) solutions?

Integrate surface and subsurface data in single sources of truth to enable better decisions across the value chain

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Thoughts for the future . . . .

I expect there to be a step change increase in the volume of data being captured and communicated subsea. The 'subsea factory', increased use of multi-phase flow metering, all-electric systems and resident ROV/AUV systems will all contribute to more data from within the current data boundary of the subsea production system. I expect however that we will escape the current constraints of just collecting data within the immediate proximity of the umbilical termination unit. Subsea/suburface WIFI will allow a more distributed architecture of sensors.

Integrate surface and subsurface data in single sources of truth to enable better decisions across the value chain

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Thoughts for the future . . . .

In terms of communications and sensor integration: -
- Some sensors will incorporate intelligence at source and may only communicate by exception.
- Distributed sensors may be remotely powered and as such communications protocol will have to consider power management.
- Some data may not be required in real time and as such may be periodically data harvested.

Integrate surface and subsurface data in single sources of truth to enable better decisions across the value chain

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Thoughts for the future . . . .

Will Operators develop proprietary systems to integrate and analyse this massively increased data set (thus providing clear, but potentially non industry standard, requirements for subsea communications and sensor integration)? Or, set against a back-drop of a trend towards minimal owners teams, will Operators look for vendors to propose system wide fully integrated solutions?

Integrate surface and subsurface data in single sources of truth to enable better decisions across the value chain

Are Operators sufficiently digitally literate to adequately develop either of the above solutions? Do vendors truly have the breadth and depth of system wide expertise to develop and operate such integrated solutions and if so what contracting model could be used to incentivise the production optimisation/enhancement opportunities, balanced against the need for reservoir and asset integrity ?

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Remember the Digital Vision?

Leverage the full power of data to achieve a step change in decision making, reduce cycle times and improve process safety with the aim of enhancing competitiveness.

➢ In deploying digital tools we have untapped potential to safely increase availability and production.

➢ Some of this potential exists right now, so an Agile mindset will be required to quickly realise these opportunities.

➢ There is however no business value in improving the safety or reliability of a system which already demonstrates ALARP and has a very high level of reliability.

➢ As always, the key is to demonstrate the business value of digitisation!

Session 2 – Subsea Communications/ Sensor Integration

Session 2 Agenda:

- Introduction

- Sonardyne: Case Study: Wide Area Hydrocarbon Leak Monitoring Offshore Papua New Guinea

- Proserv: Enhanced Production optimisation and asset monitoring

- Dashboard: Cutting Edge Computing and IoT solutions for pipeline monitoring