



Digital Transformation in the Oil & Gas Business



In boardrooms across all industries, digital transformation (or DX) is a hot topic. It brings both disruption and opportunities – there's huge potential to create value but also many challenges to manage. Some industries have embraced and exploited it, others see the potential but view it more warily. Where does the oil & gas business sit in this? We've talked to senior clients and contacts and asked our own network of subscribers in a survey, plus those of our partners at The Oil & Gas Year, to get their views on DX as well as reviewing the many papers put out by leading consultants to the industry.

SOME DEFINITIONS

- What is digitisation, digitalisation, digital transformation?
- Digitisation: the physical process of turning information into bits and bytes
- Digitalisation: the use of digital technologies to add value
- Digital Transformation: digitalization across a company or industry, where it is embedded in every decision, process, service and product

It encompasses technology that most people in the industry are familiar with - eg cloud computing, robotics – with those that they may be aware of but not familiar with – eg Machine Learning and Blockchain - and some that are new to them – such as Augmented Reality, and the Industrial Internet of Things. The chart below shows most of our respondents are familiar with the terminology but fewer are actively involved with more than one or two DX tools.



WHO ARE THE LEADERS IN DIGITAL TRANSFORMATION?

In our interviews, a number of companies repeatedly came up as being leaders in their field: among IOCs that have made a good start on Digital Transformation, Shell, Equinor, BP, Exxon, and Total came up regularly, and Petronas was mentioned among NOCs; the table below lists some of the other names that were highly rated for three specific areas:

	Data	Information Systems Architecture	Data Science & Tools
Operators	Woodside, Apache, Mongo	Woodside, Apache, Mongo	Woodside, Apache, Mongo
Technology Companies	Woodside, Apache, Mongo	Woodside, Apache, Mongo	Woodside, Apache, Mongo
Service Companies	Woodside, Apache, Mongo	Woodside, Apache, Mongo	Woodside, Apache, Mongo
Consultancies & Other	Woodside, Apache, Mongo	Woodside, Apache, Mongo	Woodside, Apache, Mongo

HOW DX CAN WORK SUCCESSFULLY – AN EXAMPLE

The Board of an oil company identified the potential value of data analytics and machine learning to improve their field performance and reduce costs. But they were also aware that many of their oilfield domain experts had no data science background and might resist not only an influx of (expensive) new hires specialising in data, but also a change to their tried and tested ways of running an oilfield. Such resistance would mean they would not only fail to realise the potential value on offer, but also risked the company's future given the cost of getting it wrong.

CREATING INTERNAL TALENT

Rather than simply imposing a new data analytics function on the oil field managers, run by people with limited knowledge of the energy business, they took time to communicate the urgent need for change and the potential offered by data science and machine learning. Simultaneously, they identified highly qualified petroleum engineering staff who were interested in new technologies and looking for new career opportunities. They trained these individuals in deep learning data analytics and got them – not an outside



provider – to build the new tools for their former colleagues. Knowing these tools had been developed by people with deep knowledge of oilfield issues and existing processes, their colleagues reacted enthusiastically to the new approach as it enabled better well design work and helped their own technology learning. Internal crowdsourcing supported buy-in as well as generating additional ideas.

COLLABORATION & COMMUNICATION

This strategy required close collaboration and support and communication at multiple levels, including line managers, who were encouraged to identify and make available, candidates for DX work, L&D teams to facilitate networks of engineers and business professionals, as well as provide training in coding, and senior leaders from both the business and data science who acted as mentors to these home-grown data scientists. All was coordinated by a central “Digital Excellence Hub” that allocated resources but otherwise enabled a bottom-up approach.

COSTS DOWN, PRODUCTION UP

Ultimately the company trained several thousand staff to leverage data analytics and integrated data throughout its businesses, avoiding the need to import huge teams of new people. By monitoring basic KPIs such as daily log-ins to new digital applications, they were able to encourage and ensure company-wide adoption of the new approach. Costs fell, as potential equipment failures were detected several weeks ahead, and they achieved higher production levels than competitors in similar fields.

* Based on a combination of examples provided during our research

CONCLUSION

Looking at the results of our survey and the conclusions of all those reports (see links below), three things stand out:

- It's about people, not technology. Culture matters.
- Communication and mutual understanding, especially between business teams and technology experts, is vital
- There's an opportunity to future-proof careers in energy by getting to grips with the digital world. Learning & Development teams should be taking the lead on ensuring a successful transition for their employees

We welcome your views – please feel free to comment. If you'd like to know more about what we are doing in this area, and our own DX, Change Management and Leadership programmes, please get in touch.