WHITE PAPER

Technology Enabled Business Resilience for Energy Transformation

Abstract

We've reached a curious time in history where one of the principal material resources, oil, is being replaced by renewable energy sources. One of the key drivers behind making this transformation viable for traditional energy companies is their increasing reliance on technology. Though the oil economy still fuels the engine of trade and commerce in our journey to a post carbon future, the same business is now funding the energy transformation journey of oil and gas (O&G) companies. The latter are becoming more responsible and viable new energy companies with an increasing portfolio of renewable energy in line with the changing customer demands and lifestyle preferences.

At a time when already low oil prices are being further impacted by fluctuations in price and demand due to the current pandemic, O&G companies must focus on making assets cheaper, more effective, and safer. This is important to not only continue operations but also to fund their transformation as a future relevant new energy companies. Doing this right requires building resilience through digitalization and realizing the potential of the humongous volumes of data with O&G companies to drive down operations cost and fund their expansion into the new energy sources. Let's explore how this can be achieved.

Building business resilience to tide over crisis

To ensure the O&G industry stays relevant and overcomes the multiple challenges it is currently facing such as lower demand and increasing operations costs, it is imperative to transform into carbon neutral enterprises. This is critical to build business resilience and ensure the industry is ready for the challenges both during and after the energy transformation.

An effective approach to achieve this is by using mass personalization and leveraging digital ecosystems to reap new efficiencies, create exponential value, mitigate risk and build operational resilience into the DNA of every aspect of business.

While mass personalization is typically more applicable to consumer facing businesses, it is also a good fit for oil and gas wells, each of which carry their own specific profile and characteristics.

Leveraging a data-driven business strategy encompassing automation, cloud, IoT, and advanced analytics enables O&G firms to better understand individual well and field performance using sensor data from connected devices in the field. This ensures that some of the key operational cost elements such as the number of personnel required on an offshore platform, safety, unscheduled maintenance, and production shutdowns are minimized. This contributes directly to lower operational costs and higher operational resilience.

For instance, drone surveillance on rigs has already proved its worth for real time remote inspection, image analysis, anomaly detection and proactive maintenance. The use of Augmented Reality (AR) and Virtual Reality (VR) are also powerful ways that can contribute to Health, Safety and Environmental (HSE) training and improvements. Further, intelligent automation and the use of cognitive systems can lead to operational efficiencies that add more value to business and contribute to growth.

In the post-COVID-19 scenario, reducing the number of personnel required for operations is a priority. O&G companies are thus working to create integrated command centers that will enable remote monitoring of production, operations optimization, well monitoring, HSE, telecommunications, etc. on both onshore and offshore assets. Typically, the available space at these places comes at a premium and transporting the staff to those locations is expensive.[1] Digitizing such processes ensures minimal staffing requirements, without compromising

[1] *Baker Hughes, Pass the Remote: Bringing Equinor's Offshore Roles in to Land, https://www.bakerhughes.com/company/energy-forward/pass-remote-bringing-equinors-offshore-roles-land*

the safety of employees - another key priority for O&G companies.

The same approach can be applied to greenfield renewable projects to ensure they are future ready and can have lower installation and operational costs in the near, medium and long term.

Leveraging advanced analytics for a data-driven O&G organization

Being able to utilize the large volumes of O&G data from several decades of operations in a contextual manner and extracting actionable insights is an ever expanding area of opportunity for O&G firms. A good example of this is O&G companies such as Aker[2] and Equinor[3] leveraging their deep sea operations experience in the Norwegian Continental Shelf (NCS) to convert it to an advantage in offshore wind farm installation and operations.

One of the ways to achieve this is by partnering with a managed data services provider (MSP) to help O&G firms derive the strategic insights they need to make informed decisions, for each well. MSPs address field performance data as carefully as their owners do with their product to refine the information at a granular level and quickly build ROI on sensor and telemetry networks.

For example, analytical insights have led to lower lifting costs by identifying areas where operator training can be enhanced, and failures reduced by assessing equipment failure signatures[4]. Leveraging the knowledge gained over several decades and applying it to create both predictive and prescriptive models using Data Science can enable interventions that can lead to driving down costs. It can also enable near real time decision making on production issues, which could otherwise lead to extended disruptions.

This makes data-driven operational excellence a cornerstone in the transformation journey.

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[2] AkerBP, Aker Offshore Wind and Aker BP collaborate to drive down CO2 emissions on the Norwegian Continental Shelf, 0ct 2020 (accessed Dec 2020), https://akerbp.com/en/aker-offshore-wind-and-aker-bp-collaborate-to-drive-down-co2-emissions-on-the-norwegian-continental-shelf/

[3] Equinor, Six Ways Our Oil and Gas Expertise is Energizing Renewables, https://www.equinor.com/en/magazine/industry-competence-transfer.html

[4] Science Direct, Big Data analytics in oil and gas industry: An emerging trend, https://www.sciencedirect.com/science/article/pii/S2405656118301421

Adopting a common data standard and platform approach

While technology can enable transformation, one of the key factors is also the cost involved in deploying and maintaining these technology solutions and data. In the current O&G industry scenario, there are multiple standards and proprietary platforms, which are all individually expensive to maintain. Moreover, the lack of a consistent industry standard for data specifications and platforms raises the cost of data management for every organization.

As O&G firms make continuous efforts to minimize operations costs, establishing common standards and a common platform approach would enable companies to leverage cross-industry collaboration through data sharing. They can also leverage common data platforms to utilize custom-built third-party solutions for a common industry data foundation that can keep their data management and operation costs low.

One example of this development is the Open Energy Data Platform being developed by the Open Subsurface Data Universe™ (OSDU) Forum to support an increasing number of energy sources such as Wind Farms, Solar Farms, Hydrogen, Hydro, GeoThermal, etc.[5]

Emerging stronger in the new reality

As today's O&G companies aspire to be tomorrow's renewable energy companies, one of the key enablers will continue to be technology. Even though the future is rapidly changing and technology cycles getting shorter, the key to an oil and gas company being able to operate profitably in the new reality will lie in its ability to leverage technology effectively. This is also important to be able to afford the investments essential in transforming itself into a future ready renewable energy company. The ability to adopt technology transformations will help drive lean and efficient operations and enhance agility in responding to evolving business conditions.

By adopting design thinking, agile principles and relevant new technologies, O&G companies can realize a significant impact on the big picture and ensure relevance and profitability in the times ahead.

[5] OSDU, The Open Group OSDUTM Forum enables the Energy industry to develop transformational technology to support the world's changing Energy needs, https://osduforum.org/

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