

How Oil & Gas Operators Are Investing for Innovation

By Stephany Romanow, Industry Consultant

The oil & gas (O&G) industry is under constant pressure due to fluctuating commodity prices, shifting regulatory policies, antagonistic political pressure and other factors. In recent years, O&G companies have also had to contend with volatile commodity prices, a shrinking pool of experienced workers, and shareholder demands for increased profitability. To navigate and prosper under these conditions, leading O&G operators are focusing on technological advancements and modernizations to solve operational issues and sustain profits.

The Challenge: Innovate or Die

Because of the ever-changing business environment, O&G operators can no longer thrive, or even survive, by relying solely on yesterday's technologies. They must reinvent themselves to be competitive within the marketplace and remain attractive to investors.

Wall Street knows this and has connected the dots in terms of recognizing and rewarding firms adopting new technologies to gain a competitive edge. Specific to the O&G industry, investors are keenly aware of innovative methods enabling operators to reduce capital (CAPEX) and operating (OPEX) expenses, increase production and optimize the supply chain.

For example, according to Goldman Sachs' recent O&G report entitled, *Shale Innovation: Brawn to Brains to Bytes*, "after initially relying on 'brawn' and 'brains' to improve well productivity, the oilfield is now shifting its focus to 'bytes' (Figure 1). Big data analytics, artificial intelligence (AI) and machine learning

(ML) are at the forefront of several E&Ps' and service providers' minds as they look to not only improve well productivity, but also lower CAPEX and OPEX through better and faster decision-making, more reliable equipment, less human intervention, etc."

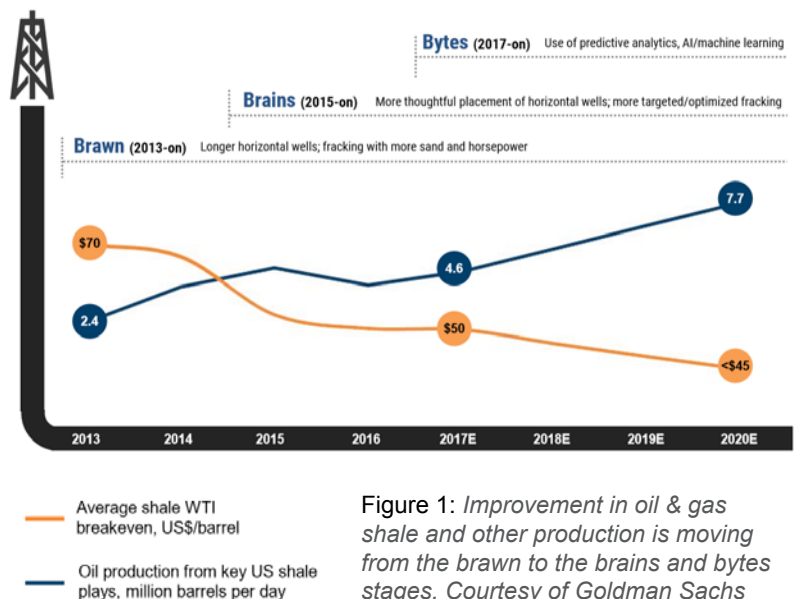


Figure 1: *Improvement in oil & gas shale and other production is moving from the brawn to the brains and bytes stages. Courtesy of Goldman Sachs*

O&G executives are taking this message to heart. "We have to disrupt ourselves," said Tim Dove, chief executive officer of Pioneer Natural Resources at a recent industry conference. "That is why transformation must be driven from the top down."

The challenge for O&G companies seeking new technologies and solutions is the answers are not always found in the larger services companies. Instead, smaller and more agile startup firms often provide better solutions because they are typically quicker to market with innovations—especially in big data, AI and ML.

Often these innovative firms can be hard for O&G companies to identify, and even when found, O&G companies can be hesitant to work with unestablished firms on what can be mission critical projects. At the same time, many startups do not have the deep connections required to establish credibility with O&G companies. The O&G companies are increasingly aware of this disconnect between leading-edge ideas and their access to them, which can result in an “innovation gap” in their technology portfolio.

Just as operator companies often shy away from working with smaller innovative firms, these firms often lack all the tools, resources and customer guidance required to move from great ideas to vetted products, and eventually to sales.

Investor/Owner/User Model

One solution for addressing the needs of both innovators and operators is to create an investor/owner/user model whereby O&G companies can work together to find innovative firms, and the try out their solutions.

Four O&G companies—Apache, Devon Energy, EQT and Pioneer Natural Resources—have taken this approach. As part of their internal strategies to adopt new technology into their organizations, these leading O&G companies have invested with Altira, an O&G venture capital firm founded in 1997.

These Altira partners share a keen interest in identifying the latest technology trends. More importantly, they need early access to innovative tools and products from startup firms to improve operations and production outcomes. Investing with Altira provides them with lower-risk access to startup firms, and therefore an accelerated innovation pipeline. The model is also advantageous for the innovative firms Altira invests in because it provides them with preferred customer access to Altira’s investors.

An example is Seeq, a firm delivering solutions for “byte” solutions. Seeq’s analytics software enables users to derive insights by leveraging big data and ML innovations.

With this kind of collaborative arrangement, the operators may be able to reduce adoption risks for the

latest technologies, and accelerate market penetration and top-line growth.

The Value in Advanced Analytics

This inventor/operator partnership is demonstrated by Altira’s investment in Seeq. Altira was attracted to Seeq because the company’s analytics software applications address a problem found in many processing industries, including the O&G sector. Most process industry companies are “data rich” because they have been collecting and storing time-series data for many years in process historians.

And because of the IIoT and associated innovations, many companies will be storing even greater volumes of time-series data. But simultaneously, many of these companies struggle to leverage these massive data sets for decision making. The process industry, including O&G companies, still has poor insight on its operations and assets, as illustrated in Figure 2.

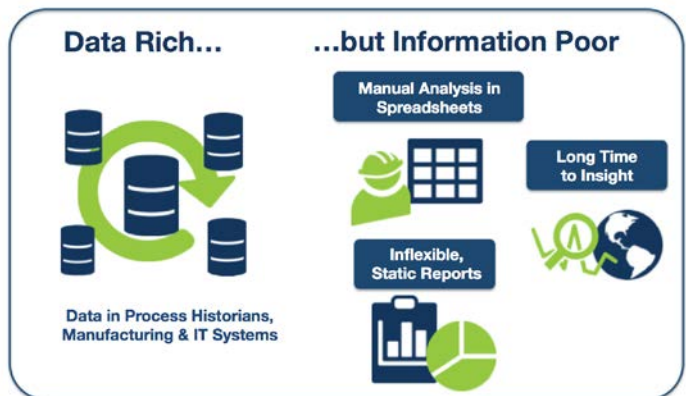


Figure 2, DRIP: Most oil & gas companies have tremendous amounts of data on hand, but not enough actionable information.

A key reason for this is until recently engineers and other process experts have relied on outdated solutions, typically spreadsheets, thereby wasting valuable engineering time cleansing, modeling and investigating data. Seeq works to address this issue by helping develop insights for these companies. Due to this, awareness of Seeq and its products is growing within the O&G sector and other process industries (Figure 3).

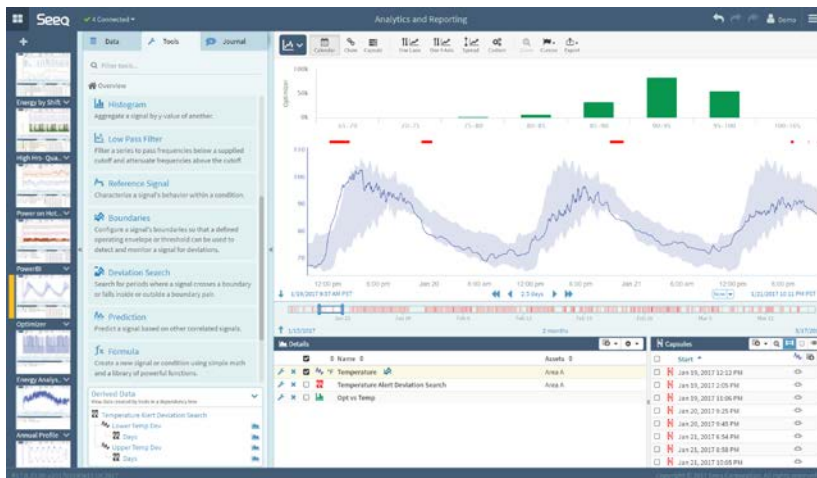


Figure 3, R17 screenshot: Seeq empowers engineers and other process experts to visually interact directly with the data of interest, without the need for assistance from data scientists or IT personnel.

Altira’s model works to create value for both the operators and startups. It gives Seeq exposure to the firm’s O&G company investors by providing access to senior management, input on development roadmaps from subject matter experts (SMEs), presentations on behalf of Seeq at industry conferences, published case studies, influential reference customers and more. As a result, Seeq is experiencing adoption of its analytics across the four O&G companies investing in Altira.

Oklahoma City Workshop Demonstrates the Altira Model at Work

An example of the Altira model in action was the Seeq User Group Meeting at Devon Energy’s offices in Oklahoma City. (Figure 4). This workshop was not a traditional user group event as the presenters and attendees were from the investing operators, joined by key Seeq personnel. The presence and coordinating efforts of Altira supported the spirit of collaboration among Altira’s operator partners and Seeq.

Such open feedback is crucial when adopting new technologies from startup firms. The attendees provided feedback on the features of the Seeq products, and on desired improvements and enhancements.

Altira, the operators and Seeq discussed product roadmaps and use cases. Seeq engineers reviewed past enhancements and new solutions for upcoming releases.

Accelerated by Altira’s investment, all four operators have Seeq software in place. Existing users presented their current projects and included areas for improvement with Seeq products. New users outlined projects to be tackled with Seeq.

At the event the operators shared a common goal: empower engineers to do problem solving, and not data searching and cleansing. “I want smarter tools and solutions that I can use to solve my problems. I don’t want a black box that just solves the problem,” said Adam Scarr, a Senior Drilling Team Leader at EQT.

According to Goldman Sachs, the O&G industry is embracing this type of advanced analytics software and making progress. As Michael Behounek, Senior Drilling Adviser at Apache remarked, “Data quality is key to any simulation or modeling project. If your



Figure 4, Workshop: A Seeq User Group Meeting was held at Devon Energy’s offices in Oklahoma City, Oklahoma in April 2018. Presenters and attendees were from Altira’s investing operators, joined by key Altira and Seeq personnel.

data is not valid, then your models do not and will not work. The Seeq tools promise to allow our engineers to speed up the data cleansing step before populating our models. We have a lot of data and want a reliable method to move forward.”

The presented cases histories from the operating companies varied significantly from as each has very different plans and approaches for using Seeq.

Improving the efficiency of these operating companies is critical as they gear up to handle increased workloads. “Oil production in the Permian Basin is expected to quadruple. Finding the oil is not the problem, the challenge is instead producing the oil eco-

nomically while anticipating fewer available human resources. Seeq empowers our prized engineers, SMEs and managers to more effectively get value out of our data and improve operational efficiency,” observed Chris Cheatwood, Executive VP and CTO at Pioneer Natural Resources.

Given the challenges faced in the O&G industry, operating companies need access to the latest technologies to improve global competitiveness. In moving from the “brawn” to the “brain” and “byte” stages, O&G operating companies are seeking leading-edge technologies to fully extract knowledge from their big data. The Altira model has demonstrated a new approach to address this issue for O&G companies.



About the Author

Stephany Romanow is an oil & gas downstream industry expert with over 25 years of experience in process operations and publishing. She directed the editorial content for the technical publication Hydrocarbon Processing as Editor and Senior Process Editor, and published over 100 articles and editorials discussing market trends and hot-button issues in the energy industry. Stephany is a featured speaker and panelist on petrochemical and petroleum markets, and she holds a BS degree in chemical engineering with a minor in petroleum engineering.

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