



Strong support

FRISO VEENSTRA DISCUSSES THE IMPORTANCE OF SUPPORTING OIL AND GAS EXPLORATION WITH IT



The new exploration economy

In an environment of limited resources and increased competition, companies are turning to three broad options to ensure they have the best chance of making discoveries. First, re-visiting existing 'brownfield' sites to ensure they have extracted all possible value using the latest technology for identification and extraction of reserves. Second, venturing into previously unexplored or inaccessible areas such as the Arctic or deepwater. And third, making greater use of unconventional resources that previously were not worth the cost of extraction or could not be reliably extracted and refined. Combined, this is resulting in a technological arms race; with all companies trying to make sure they are operating as efficiently as possible at all points in the value chain in order to produce results.

The uses of technology

'Back-office' IT plays a central role in supporting companies throughout the production and refinement of resources. For example, by identifying those locations with the highest yield, calculating supply chains to ensure resources are delivered to the right locations in the most efficient manner and monitoring refinement processes to ensure that waste is kept to a minimum. In particular, the greatest value of 'back-office' technology comes at the very earliest stages of exploration. Being able to swiftly identify and analyse potential new resource finds is crucial to any long-term success, therefore an investment in the correct IT tools at this stage can reap huge rewards.

This goes far beyond giving exploration geoscientists a

means of communication with the rest of the organisation and access to data, which can be provided at the most basic level with email and an Internet connection. Instead, IT tools should be focused on giving geoscientists the right information that is accessible in the right way, in order to make their jobs as productive as possible. Intelligently storing, accessing, combining and analysing information on geological formations, previous yields and other exploration when possible - in ways that fit with geoscientists' working best practices - can make the difference between success and failure. Armed with this access to information geoscientists can, for example, investigate existing geological records and other data in order to perform risk assessments and decide which areas have the potential to hold new finds before ever leaving the office.

Digging into the data

While the amount of information and functionality that an IT tool can provide is important, what is most crucial is that it suits the way in which geoscientists work. From email to exploration tools; if a tool has all the information and capabilities ever needed, yet demands that geoscientists learn new skills and adopt inefficient workflows to use it, the costs may well outweigh the benefits. This is even truer of tools that require a separate level of skilled users to actually work on the software and then feed their findings down to geoscientists and other workers: meaning extra layers of complexity with information being kept out of the hands of those who can make best use of it. The Internet has significantly increased the pace of business, with deals sometimes needing to be done in days not weeks and

geoscientists having to respond accordingly. The good news is using the right technology means that instead of pouring over paper maps, geoscientists can now access multiple maps from multiple sources online, potentially allowing them to make decisions more quickly and with more certainty.

However, sometimes you can have too much of a good thing. Geoscientists have access to a wide variety of information, from academic papers to oil well yields and other proprietary data, and too much data at once can easily overwhelm, rather than aid, geoscientists. They must not only have access to all the information they might need, but also be able to quickly filter out what is most useful to them. Otherwise, they will be either too swamped in data to make efficient decisions, or make decisions based on an incomplete or inaccurate view of the situation. Either way, they will lose the benefits technology should provide. In order to ensure that geoscientists have access to this information, there are a number of tools they can use. At the most basic are consumer search engines such as Google. These options provide a very quick, high-level guide to the information that might be available on a particular area. However, given the nature of such tools the information provided will not be complete, accountable or targeted to suit geoscientists' needs. As a result, using more specialist tools will be vital.

There are a number of tools that geoscientists can use to improve their chances of success: from Schlumberger's Petrel and Studio solutions; to Wood Mackenzie's Exploration Service; to Elsevier's own Geofacets. Each has its own strengths in supporting the exploration process from ensuring that geoscientists have access to commercial metrics and geologic characteristics, to enabling them to collaborate and share knowledge with colleagues and integrate external sources of information with their own intellectual property. What is important is that geoscientists are using the tools that best suit them. If companies do beef up the back-office they should be sure to trial the available options and decide which best provides the capabilities they need in a way that supports their workers' best practices. At the same time, when aiding exploration, such technology is only as good as the information it works with. For example, consumer search engines can be intuitive, accessible and low-cost to the organisation, but without careful attention the information provided will be at best irrelevant and at worst dangerously inaccurate. Any tool should be able to bolster geoscientists' and their companies' knowledge across the exploration, extraction and refinement process.

While the process of ensuring that a tool is suited to geoscientists' needs is particularly important for analysis and investigation tools, the same should hold true across all back-office IT. From simple email to time management and archiving, geoscientists should never be fighting against technology, but instead using it as an extension of their own abilities.

Planning for the future

Investing in the right technologies is also a vital part of future-proofing the business. Ever since the mid-1980s

the supply of new geoscientists for oil companies has been dwindling. From 1985 onwards, the number of students taking undergraduate and graduate degrees in geoscience fell, as the price of oil and so opportunities in the field dropped. This has resulted in a generation of geoscientists that are within a decade of retirement without a comparable number of new arrivals waiting to take their place. Because of this, companies face a stark choice between having enough workers to perform the tasks they need, and having workers who are trained to the requisite standard.

With companies needing to expand into new areas, and National Oil Companies going beyond their borders, more organisations are trying to attract the same already limited pool of skilled workers. Furthermore, when moving into a new region a business will need to hire local personnel; due to political reasons and to make use of their local knowledge and expertise. However, local demographics and, again, competition can mean finding workers with the right combination of exploration experience and expertise is an uphill struggle.

By allowing workers to swiftly put best practices into action, as well as giving them immediate access to the knowledge they need, IT tools are a crucial part of companies' efforts to bridge these skills gaps. Giving new workers access to technology allows them to contribute sooner and provides a consistent way to perform tasks from communication to analysis that can be shared across generations. Indeed, education programmes are already realising the value of giving students and workers early access to these tools so they can use them in the workplace. One such example is ExploHUB at Aberdeen University, which is giving geoscientists at exploration companies across the world an introduction to how beefing up back-office tools will help them keep resources flowing.

Over the next half-decade we expect the number of exploration wells and other initiatives to double, as the effects of increased competition and the need to explore new resources take hold. In order to support this, and reduce the risk of exploration ventures being fruitless exercises, geoscientists need to be sure that they are spending their time efficiently. Back-office tools that fit in with established practices, provide all of the information needed in one place and are easy to pick up will be increasingly vital. 

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