TATA CONSULTANCY SERVICES

Building on belief

# Oil and gas data

## The exponential value of black gold

# Abstract

In the tempest of demand shifts and price volatility, the oil and gas industry is rapidly undergoing restructuring. This is evident from mergers and acquisitions grabbing the headlines every now and then, backed by significant assets sales, as companies restructure their portfolios. Joint ventures are also changing with interests shifting back and forth from raising capital to achieving greater levels of control.

Amid all these activities, there is another equally important set of acquisitions taking place- the merger and acquisition of data. Some of the questions that have surfaced in this regard include- What is an oil prospect, if not a concession coupled with the data that describes it? How can a newly acquired producing field be operated competitively without the data networks that gather its data and the historical database that describes its behavior?

In this white paper, we discuss how to evaluate a company's data and manage its access, which is a crucial part of making an oil and gas acquisition successful.


# Data in oil and gas

In a merger and acquisition scenario, what are you really buying? The assets or the data that describes them? Emphatically, the answer is data. In an important way, the oil and gas industry is as much about data as petroleum. The industry spends billions of dollars and pushes the limits of technology to gather and evaluate data. Terabytes of data are required to evaluate the typical oil and gas prospect. Huge seismic arrays visible from outer space, patrol the world's oceans gathering prospect data for offshore development. While producing wells pump out product, they pump out data as well, and oil companies sometimes build their own remote cellular networks and buy satellite capacity to move the data. The process of gathering this data is as complex as the process of moving the product to market.

There are several classes of data in a typical oil and gas enterprise. Here are a few of the most significant ones:

- Prospect data that describes potential fields in the early stages of exploration.
- Upon discovery, this data develops into reservoir data, which describes the underground formations that contain resources and the strategies for lifting product.
- Drillers and operating rigs that can cost billions to build and operate, capture massive amounts of data that control their success.
- Once completed, the wells generate detailed information about the volume, temperature, pressure, and other performance data essential to their safe and efficient operation.
- As oil or natural gas moves to markets, traders deal with location, quality, and pricing data, to match supply with demand.

- Underneath all of this, a sea of contract data describes the relationships, obligations, privileges, and responsibilities of the various parties required to discover, drill, produce, sell, and ultimately deliver oil and natural gas.

Scientists, engineers, operators, traders, and lawyers rely on the availability and accuracy of this data to make a whole host of critical and real-time decisions. Errors in exploration data can make the difference between a winner and a dry hole. Unavailable reservoir data can lead to choosing the wrong lift technology and make a well uneconomic or shorten the life of a field. Drillers may face the classic 'stuck pipe' problem which stops a drilling operation in its tracks. With high-quality production data, operators and engineers can enable higher production at lower costs. Data is undoubtedly critical to every step along the oil and gas value chain.

# Managing data in a merger or acquisition

When a merger or acquisition takes place in the oil and gas industry, it is very important to evaluate the availability and quality of critical data to achieve full value from the transaction. It is equally important to have a strategy for transitioning the data into the target enterprise, with an emphasis on preserving data security and quality during the transition where vulnerabilities may arise.

As overwhelming as this problem can be, it is not unsolvable and can be addressed with discipline, process, and experience. A data transition strategy should be a key part of the overall M&A integration plan, where data takes the same priority as the physical assets.

If proper management of data is not taken during transition, not only will part of the value of acquisition be lost or deferred, but actual harm can occur. Prospect evaluations can be delayed or derailed if data cannot be accessed or must be regathered. This can make host countries restive, in addition to making the whole project expensive. Delays can be introduced in time-sensitive drilling operations, or when joint interest partners delay payments if records are not clear. In rare cases, concessions can be lost, and the franchise becomes impaired if land lease records could not be readily accessed. New risks to operations appear if command centers cannot readily integrate production data.

Smooth integration of data can provide opportunities to increase the value of the acquisition beyond what was anticipated. For example, joint interest agreements from the acquisition may offer access to unexpected benefits, such as new sources of capital or expertise. Well records from the target company when combined with the acquiring companies' own records can provide a deeper and longer basis for well performance analytics and reservoir models. This can lead to breakthroughs in operating costs, longer reservoir life, and greater throughput.

# Making the most of data in an oil and gas acquisition

Winning with data in an oil and gas acquisition starts with due diligence. There is need to evaluate both the availability and the quality of the various classes of oil and gas data within the target. There are multiple frameworks available that provide scorecards and can display warnings and opportunities. Occasionally, these data validation exercises can lead to unexpected results. In one case, alarm bells went off when a target company's data maturity surrounding reservoir data was found to be exceptionally weak. This led to the questioning of reserve estimates and accordingly, to an examination of the valuation of the company.

Mostly, such due diligence evaluations are preparations for transition and involve having a solid concept of the purchasing company's own data architecture. Key data classes should be prioritized, based on the underlying assets they support. While this may lead to slightly different strategies for different geographies, it is still acceptable as long as data quality standards are maintained.

It is important to avoid data loss during a transition, and having a prioritized inventory provides a good defense against this. If the acquiring company doesn't have a solid governance process, this may be a good time to establish one on an accelerated basis.

Another risk during data transition is the occurrence of security breaches, caused by differences in security protocols and lax behavior brought about by changing people and data in motion. Using a secure cloud can provide a useful staging process for avoiding such openings.

A post-transition cleanup routine can go a long way in ensuring zero margin for error. For example, it is best to double back and make sure that all data that will not be used from the acquisition target has been properly archived and secured in the most cost-effective manner. Additionally, it is also useful to recheck that no regulatory violations occurred in the migration of data.

# Signs of success

Successful management of data from an oil and gas acquisition is easy to spot. Operations can be easily integrated because field operators and command centers have the data they need to operate the newly acquired assets. This ensures the development of new prospect continues unimpeded even in the face of loss of data. Data scientists can perform deeper and broader performance analytics based on an increased scope of data. At the end of the day, successful oil and gas M&A takes root from high-quality and highly integrated data between the two enterprises.

# About the author

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Tom Franklin is an Industry Advisor and Director of the TCS Energy & Resources Center of Excellence for Business Performance. He comes to TCS with over 40 years of Oil & Gas industry experience in operations and business unit management. For the last few years, he has worked with Energy & Resources Oil & Gas customers in the area of Digital Transformation. His main area of focus has been Advanced Digital Analytics for operations safety and performance improvement. He is one of the leaders of the implementation of TCS' Industry 4.0 approach for the Energy & Resources unit and its Oil & Gas customers.

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