Rising competitive pressures and new complexities in the global oil & gas sector mandate all key players to sharpen the focus on analytics to obtain fresh insights on the emerging challenges in business. It is important for oil & gas companies to visualize the business information to stay ahead of the growth curve. However, most oil & gas companies, especially those operating in the E&P segment, have met with rather limited success from investing in data management projects.

The expectation gap is attributed to several underlying issues, such as, business users not being adequately engaged in analytics and their general distrust of the data in use, traditional databases under-delivering, relatively long gestation of data management projects, inefficient use of metrics, and the business leadership view that investments in data management projects do not deliver the expected ROI.

Data management initiatives in oil & gas companies are also constrained by the management and project teams not sharing enough information on analytics with the business users. Consequently, the users tend to view data management and analytics as IT functions in which they have no direct role. They are also circumspect about basing their business decisions on data sets that they do not trust fully. The common view therefore is that the pain of change is greater than the gain of change.

In the pursuit of appropriate solutions to the intractable data management issues, companies need to dive deep into the symptoms and causes of the flare-up.

At the outset, data management initiatives in the oil & gas sector are perceived to be complex with low visibility for the users. The metrics and milestones pertaining to data management are usually not well-defined, and the course checks are not robust. As a result, the business users fail to see the specific benefits they will derive from the data management initiative.

The users often experience an initiative overload characterized by highly complex data that is difficult to deal with. Many a time, accessing the data itself proves difficult, resulting in loss of productivity. Inconsistency in the data captured across databases, lack of a unified system to track, maintain and govern data, and the data itself being siloed in different corporate locations add to the users’ predilection with the usage of analytics for decision making.

Among other key issues, the industry has assessed that traditional databases are just not enough to power upstream data management. Data stored in multiple databases with no integration between them is costly to maintain and lacks the ability to impose data standards or governance.

With no measurable and/ or visible milestones in place, the data management project will likely under-deliver. The initiative will also end up taking on too many data sets and/ or developing architectures in too much detail.

There is a misplaced apprehension among business users toward analytics, since the more traditional databases have typically under-delivered and have been largely inefficient.
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The constraints cited above tend to influence the business leadership into believing that data management projects do not deliver value for money. Also, there are usually no metrics in place to measure data management initiative benefits or the attendant risks.

For want of an integrated approach, oil & gas companies deploy high-cost resources to clean up and manage complex data. For instance, geologists and geophysicists are seen to spend inordinately long time on managing seismic data (low value) rather than interpreting seismic data (high value). These companies also spend excess money on seismic data acquisition costs because of poor data management practices (data is lost, stored on local drives, purchased twice, stored in non-digital form, not accessible remotely, etc.). Usage of analytics will help these companies to visualize the prospects more efficiently and tide over the difficulty of there being too few qualified, experienced resources to evaluate reservoir prospects.

The prevalence of legacy systems wherein data sources (structured and unstructured) are siloed impedes the companies’ ability to obtain an integrated view of upstream/production data. In such situations, the business users tend to abdicate the responsibility for data and leave the issue of data quality to be addressed by the IT or project teams.

Further, in the absence of an integrated upstream data management system, oil & gas companies lean on manual methods that are riddled with challenges. As a case in point, the IT staff evaluating the existing data sets and, while running scripts, are wont to discover data issues such as inconsistencies and lack of standards. When these issues are found, high-cost business experts are brought in to fix the problems. They request for sound data to be further described in spreadsheets and go through the data line by line, reviewing thousands of well, drilling, production or exploration exceptions one by one. This creates a cyclical process whereby three separate data sets are used at the same time (i.e., original scripts derived by IT, spreadsheets which are reviewed and edited by business experts, and new business data generated at source). In the end, thousands of labor hours and dollars are spent on a project yielding results that are not maintainable, repeatable or reproducible.

Looking into the future, oil & gas companies that initiate data management projects should carry out a reality check on the barriers to the adoption of analytics. This will greatly help the data management project team to deliver on the expected lines. Given the complexity of oil & gas business and the unique circumstances that dictate decision making, a case-by-case approach will be the preferred approach to analytics.

It is equally important for the company to develop a high-level data architecture with standard common applications and integrated workflows. Use of open architecture and common standards will help companies develop solutions that can be modified as per changing business needs. A sharp governance and architectural vision will help firms in converting the data assets into powerful insights for building business strategies.