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## Using Effective Data Management to Save Time, Money and Effort for Subsurface Exploration

April 16, 2018



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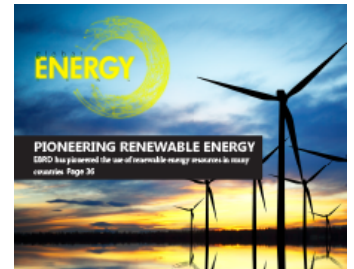
#### Enhancing subsurface exploration through effective data management

Global energy demand is expected to increase through 2050. While the composition of the various energy sources will have an increased reliance on renewables, conventional oil and particularly gas will play a leading role in the available energy supply until at least 2050. This means upstream oil and gas organisations are facing increasing pressure to enhance recovery from existing fields as well as mobilise resources in new geographies.

The challenge was intensified by the oil crash of 2014. The crash prompted upstream exploration and production businesses to do significantly more with less budget and fewer staff. This has increased the expectation to solve diverse problems with vast volumes of data and ever more complex systems to enhance decision making. To help exploration and production businesses meet these challenges, Wipro has been working closely with customers to deliver solutions that simplify the way they operate and manage data and unlock the potential value that results from well-managed, well-integrated data.

#### The challenges in capturing, analysing and managing subsurface data

Companies often load the data, by type, into functional systems that are fit-for-purpose to support the business operations for which the data has been generated. While there are some standard data



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business operations for which the data has been acquired. Unlike there are some standard data formats for select upstream domains such as seismic and well log data, each dataset received from a data acquisition company must typically be accepted and loaded to meet the needs of the business, even if there are small divergences from the usual standards. Some companies have addressed data acquisition standards while others have individually integrated the data into the company's storage system until such time when the data can be assimilated. While practical and efficient for the business function, this tends to keep the data in silos. Basic entity ID standardisation is not always enforced between systems, so bringing data together from disparate systems is a major and continual challenge in petroleum data management. Furthermore, vendor data files change over time as new technologies allow for new and improved measurements. This drives the need for petroleum data management to continually evolve to meet the challenges inherent in heterogeneous data.

For this reason, the petroleum data management organization should be seen as part of the business and there to assist the company in their day-to-day data needs, as well as defining the data acceptance standards from data acquisition companies. However, only some companies have best practice in place that meets the standards expected when it comes to data acquisition, data integration between functional systems and overall data governance. For the companies which do have such practices in place, they are able to capitalise on all the benefits that effective data management and data governance can provide, namely establishing consistent data which will serve as the foundation for business intelligence and analytics. Managing data in this way can be a key differentiator for exploration and production companies, helping them increase their competitive advantage now and in the future.

### **Single data management model vs. a federated approach**

Data Management still has some way to go in the oil industry. When looking at the initiatives that have been created for building single data warehouses of subsurface data, there has been varying success. There are many functional tools in the market place that serve the needs of functional business lines or data management, but options are limited for a solution that will fulfil both the operational needs of all the business functions and at the same time, all the needs of data management.

A practical approach to integrate all the subsurface data required for decision support, business intelligence and analytics is a federated approach towards data integration. The federated approach considerably reduces the amount of data that must be duplicated which in turn will reduce the risk of data currency issues and overall effort as compared to a monolithic all-encompassing master database. With a federated approach, data governance standards are established and managed in the data sources to be linked and a linkage between data sources is established and continuously managed. Each business line owns and maintains the data within their functional area and best practices are established. Data integrations can then be defined and managed in a secure data access portal which gives the company the benefit of data on demand for all entitled users. This approach has a considerably lower total cost of ownership than that of an all-encompassing master database.

### **The benefits of effective data management**

The primary benefit of upstream data management is the ability to save time and effort. This benefits people across the business, whether that is saving the time spent by senior exploration or interpreting staff trying to find and manage their data, or saving time spent by all entitled data users to source the data they need. It also helps save the time for new data integrations, as well as saving time spent in developing the next business intelligence or analytics application. The alternative, for companies without mature data management and data governance practices can see the task of searching for and preparing data consume up to 70% of available time for some staff. Ultimately, effective data management and analytics can minimise a potential of a drilling mistake and support oil and gas companies towards their goal of minimum cost and maximum recovery. Planning and well design based on data that comes from connecting the information from different disciplines can transform the way companies operate, and save billions through the ability to make smarter decisions. To realise these benefits management should be looking to answer this question: "How can we look at all of this data together, to get better and more meaningful insights?"

For oil exploration and production businesses, data is a vital asset. With the growing pressures facing the oil and gas industry, companies that do not understand the importance of data management are likely to waste a lot of time and effort. However, those that understand and manage their data well and grasp the importance of their data are the ones that are most likely to succeed and remain competitive.

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